

# **Urban Forestry and Nature Protection for Sustainable Urban Growth: Hangzhou - PLUREL case study region**

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**Copenhagen, Denmark, 19, Oct, 2010**



# Outline

- Urbanization and peri-urban issues in Hangzhou
- Development of Urban forestry
- Main outcomes of PLUREL Hangzhou case



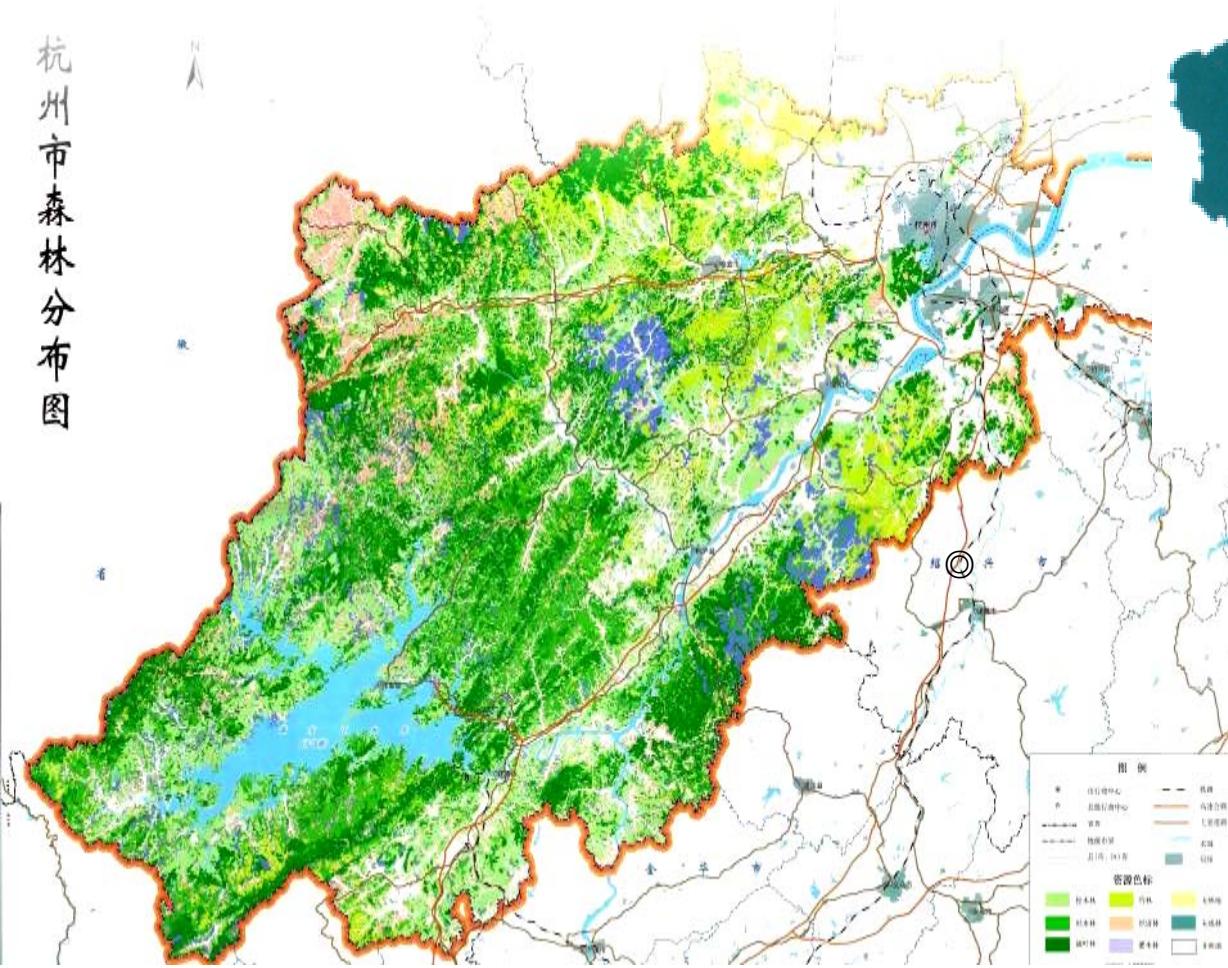
Picture taken at the ASIA PRO ECO on Urban Forestry meeting in Hangzhou, September, 2006



Picture taken at the PLUREL kick off meeting in Copenhagen, January, 2007

# Overview of Hangzhou

杭州市森林分布图



**Area:** 16,600 km<sup>2</sup>

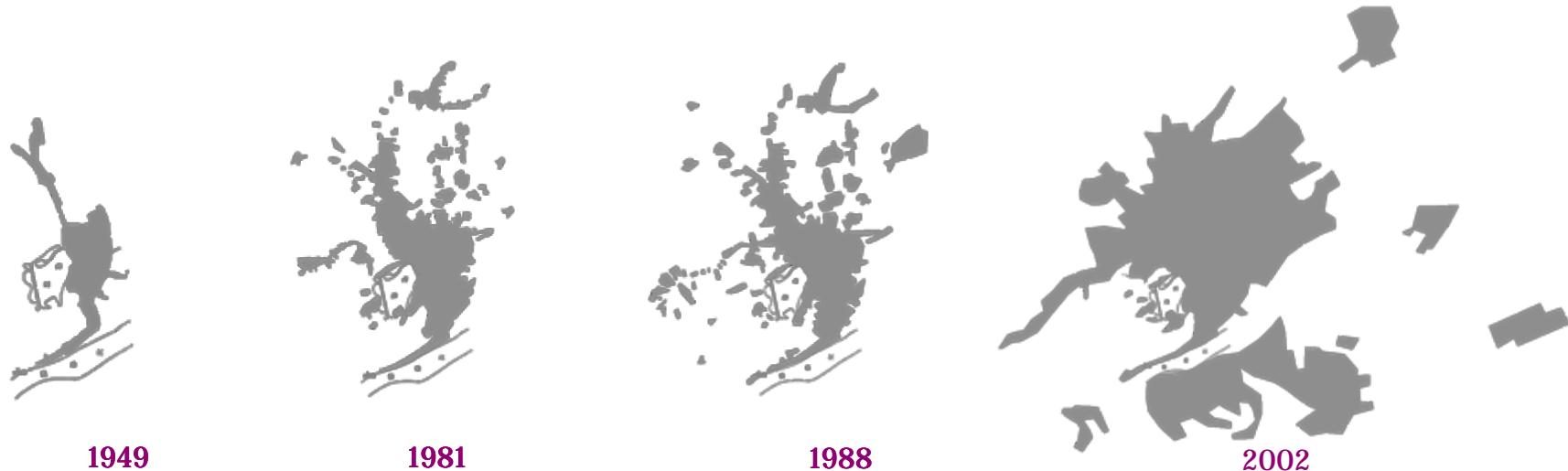
**Population:** 6,720,000 inhabitants

**Administration:** Capital of Zhejiang province; 8 districts, 3 cities and 2 counties

**Hangzhou is located in the Yangtze River Delta in China, and the capital of Zhejiang province . It is an important national tourist and cultural and historical city.**

# Expansion of Urbanization

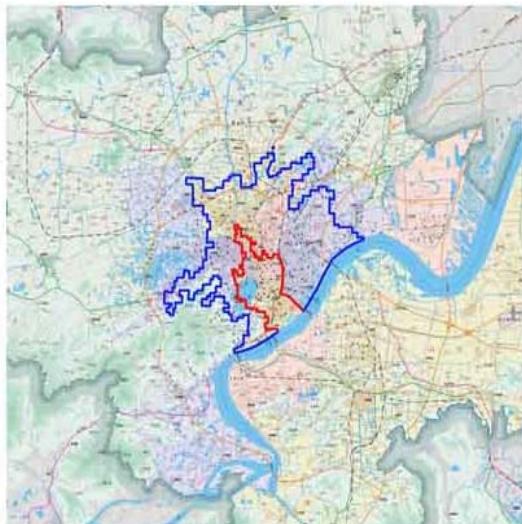
## Land use development - urbanization 1949 - 2002



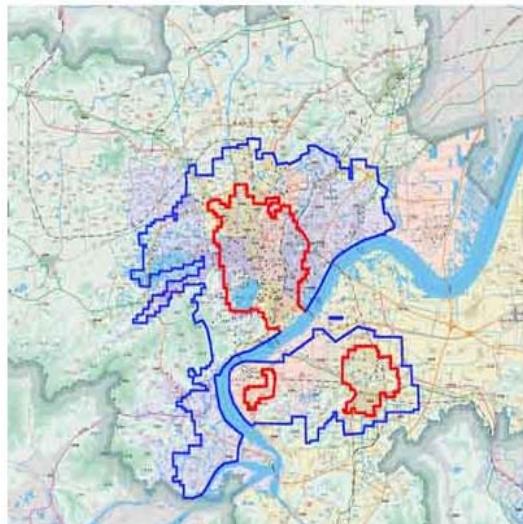
## Population & urban growth

- Average annual population increase: 0.8% (+50,000)
- Strong economic growth

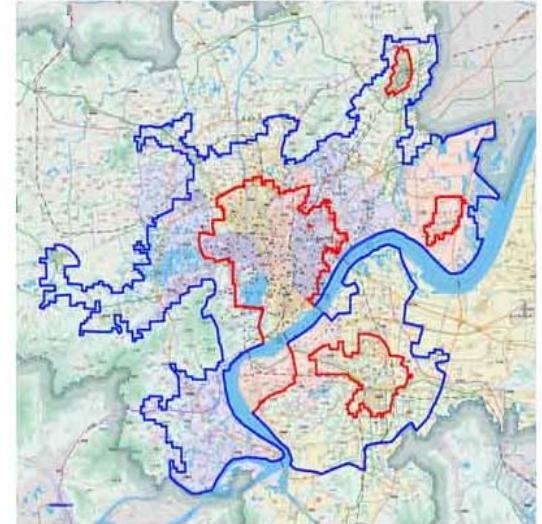
# Peri-urbanization



1988年



1998年



2004年

- Urban core increased 7 times
- Peri-urban expanded 4.5 times
- 1988: core area/ peri-urban: 1:4.6
- 2004: core area/ peri-urban: 1:3.1
- Densification of urban core: 72% increasing to 84% built up area
- Peri-urban: 46.2% - 44.4%
- Rural: 12.6% - 19.7%

# Issues on peri-urbanization

- Extreme speed of land conversion from natural and agricultural to urban;
- Insufficient implementation of land use planning;
- Erosion of the ecological green system due to urban development;
- Social conflicts



Sprawl in the rural zones due to extension of farm houses. (Photos: S. Pauleit, left: north of Hangzhou Aug, 2008; right: south of the airport in the south-east, Nov, 2008)

# Instruments for sustainable urban growth

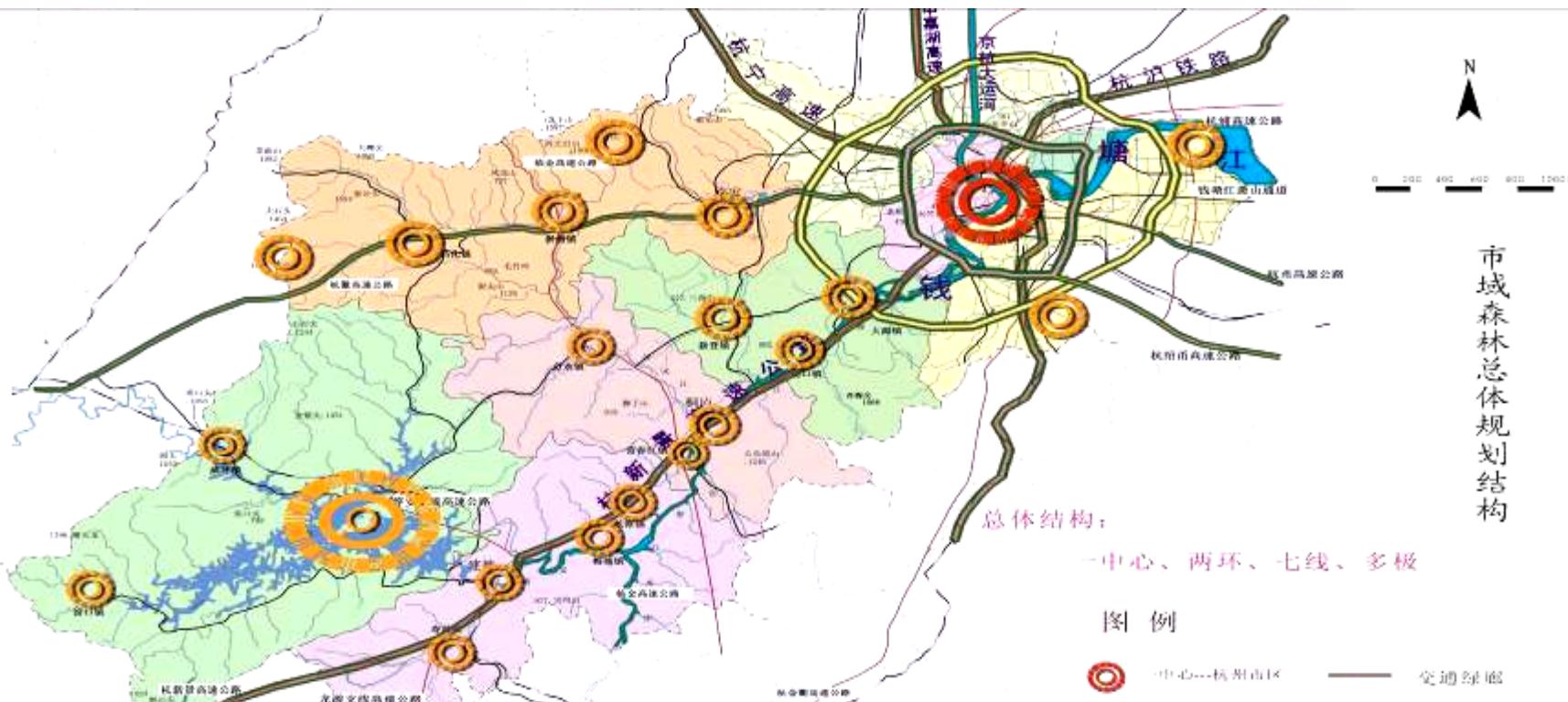
- URBAN FORESTRY
- PLUREL APPROACH: OUTCOMES OF HANGZHOU CASE



# URBAN FORESTRY

## Strategies and actions

- ***Master planning of Hangzhou Urban Forestry Development*** was compiled and implemented, and it also formulated the spatial landscape structure: “one core, dual axe, five patches, many corridors” in administrative district, “one center, two rings, seven lines and many points” in Hangzhou regions.



- Advocating and implementing new conception of UF: “***Building forest in city and allowing the city to embrace the forest***”,
- Enlarge space for development of urban forestry ,
- Managing urban forest ecosystem,
- Improving urban forestry health conditions,
- Strengthening international cooperation in urban forestry fields.



# International cooperation

➤ Developing Policy Formulation and Implementation Tools for Providing Support for Ecological Forest Management in China's Urban and Peri-Urban Areas

Duration: 18.11.2005 – 17.11.2007

**Grant Contract CN/ASIA PRO ECO/12 (109260)**

## Partners:

### China:

- State Forestry Administration
- Chinese Academy of Forestry
- Hangzhou Forestry and Water Resources Bureau

### Denmark:

- Danish Centre for Forest, Landscape and Planning, University of Copenhagen

### Finland:

- University of Turku
- Union of the Baltic Cities

### Estonia:

- Estonian Society of School Forests

## Positive impacts of cooperation

- Formulated the guide book & int. Platform and widely used in some province
- Strengthened the capacities of policy makers and foresters
- Learned the advanced activities of European urban forestry and greening
- Established the excellent cooperation between China and Europe sides.



- **Hangzhou Urban Forestry Development Model: *Ecology and Economy Sharing Common Interests, Fusion of the Scenery and Humanities, Interaction between City and Countryside*** had been used widely in the whole country.
- **National Forest City (2009);**
- **Xixi wetlands was listed in Wetland of International Importance (2009).**



This is to certify that

*Hangzhou Xixi Wetlands*

has been designated as a

**Wetland of International Importance**

and has been included in the  
List of Wetlands of International Importance  
established by Article 2.1 of the Convention.  
This site No.: 1867

Date of designation: 7th July 2009

Secretary General  
Convention on Wetlands

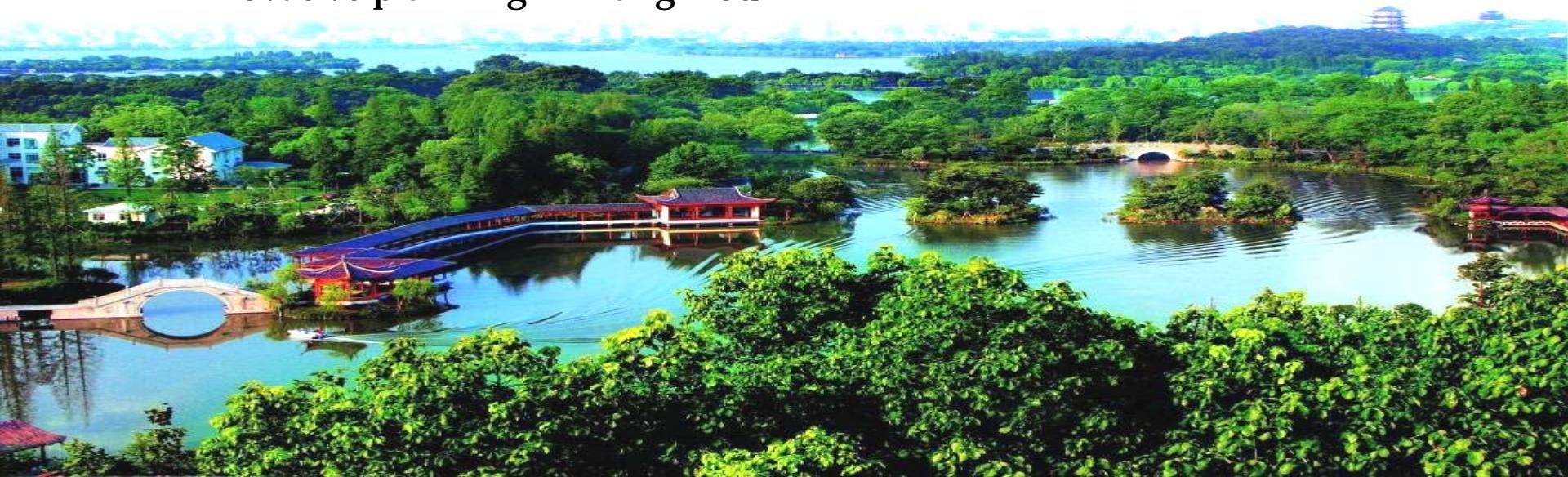
A handwritten signature in black ink, appearing to read "ABG".

# OUTCOMES OF PLUREL-HANGZHOU CASE

## Why choose Hangzhou case

- Excellent cooperation in the past years based on ASEM
- Hangzhou is extreme urbanisation rates, with large, and dynamically evolving peri-urban areas.
- Hangzhou is a special case in the PLUREL project. Situated in China, it represents a type of urban area, development process, and planning culture which is very different from the six European case studies.

- Strong growth
- Top down planning system
- No private land property
- Innovative planning in Hangzhou



# Planning system

National  
level

Regional  
level

Municipal  
level

The Eleventh nation  
Five Year Plan

Regional  
planning

Urban  
Comprehensiv  
e plan

(Urban Master plan of  
Hangzhou 2001-2020)

Land use  
comprehensiv  
e planning

Ecological  
city planning

(Ecological city  
construction plan of  
Hangzhou 2002-2020)

Ecological  
public benefit  
forest Master  
plan

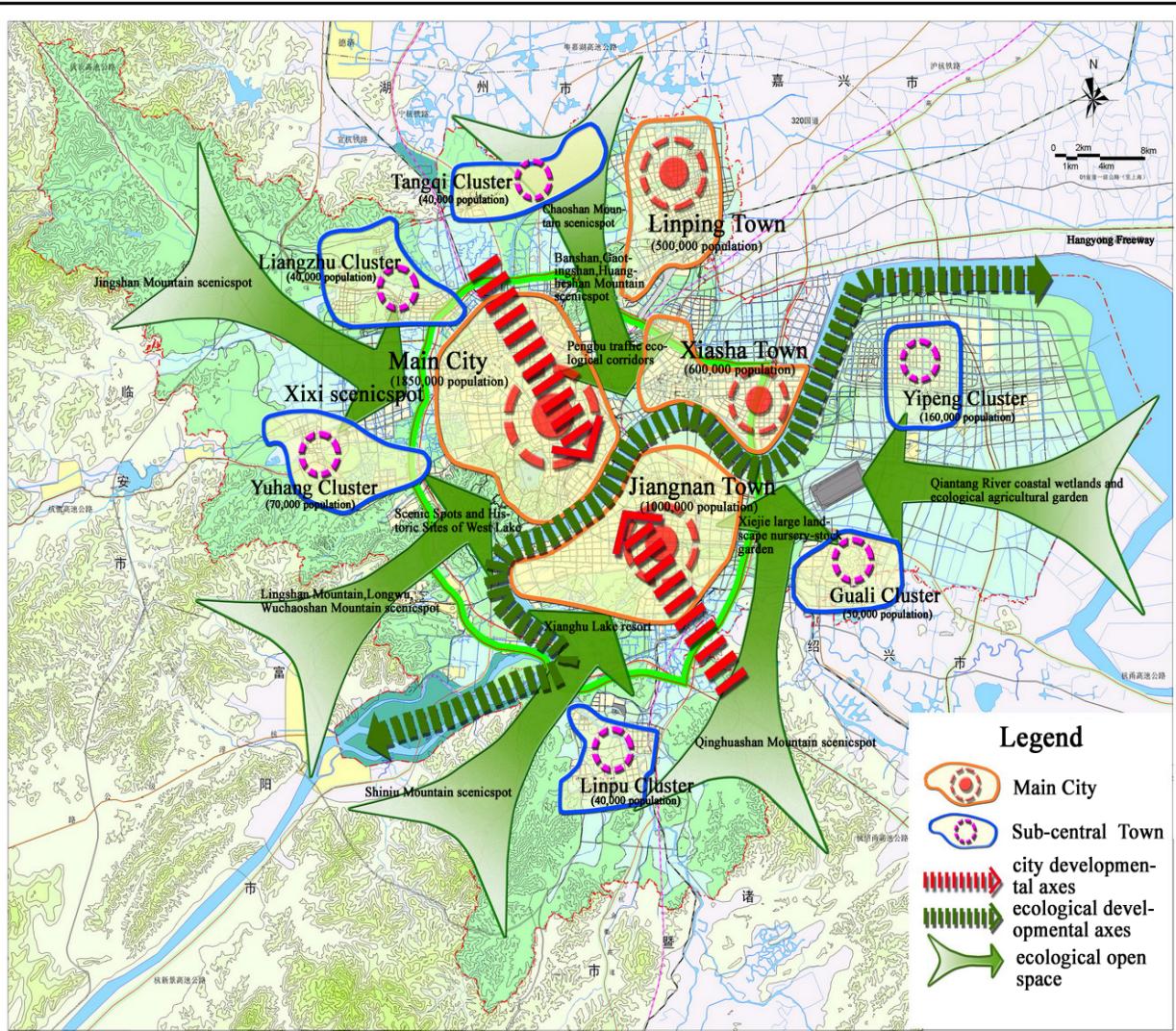
Hangzhou  
urban planning  
bureau

Hangzhou Land  
use Resources  
Bureau

Hangzhou  
Environmental  
Protection  
Administrative  
Bureau

Hangzhou  
Forestry &  
Water  
Resources Bureau

# Spatial structure of urban planning (2001-2020)



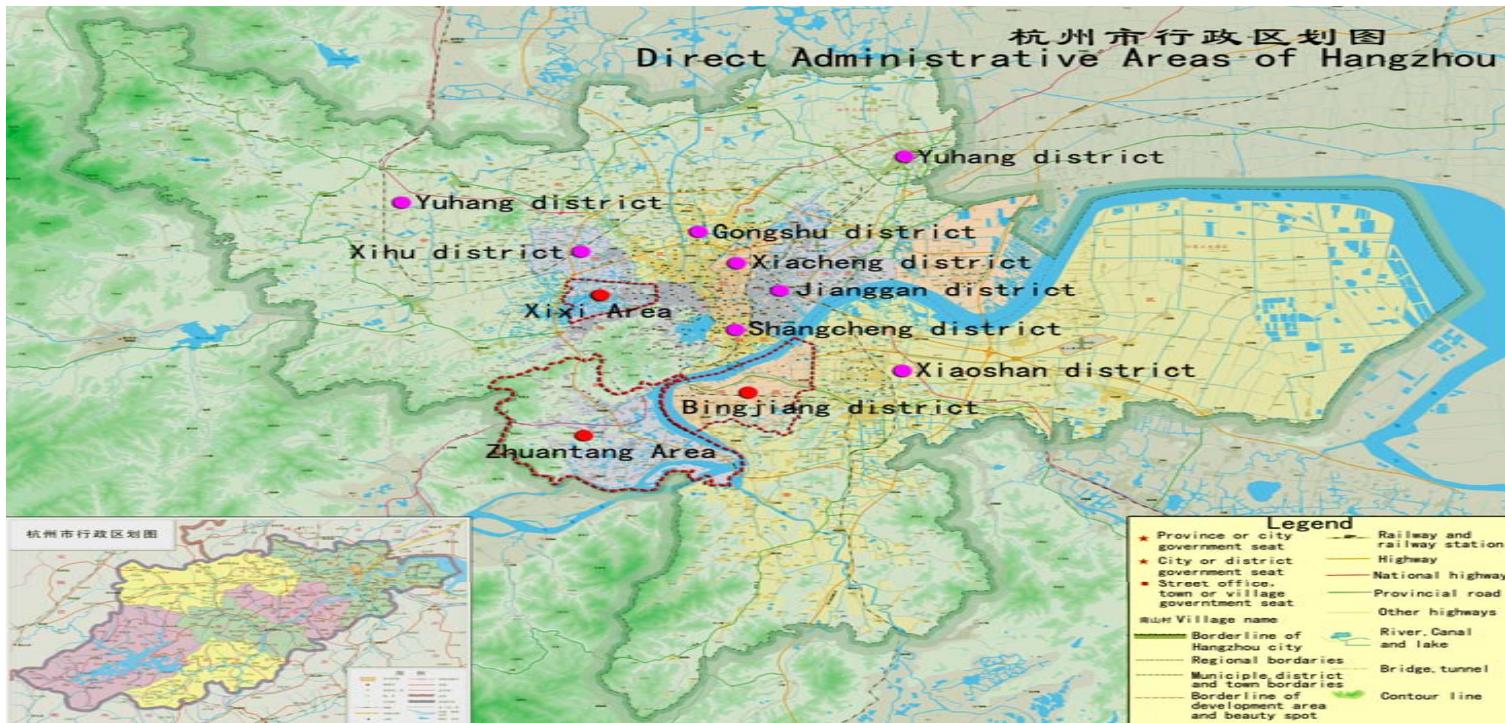
Comprehensive Planning of Hangzhou  
— structure plans

**New spatial development strategy:** urban expansion eastwards, tourism westwards and urban development along and across the Qiantang River.

**The spatial system:** one city core and three civic cities, dual axes, six clusters and six ecological belts”

**Urban spatial pattern:** “Active East, Quiet West, New South, Beautiful North and Prosperous Centre”.

# Assessment of specific strategies in three study areas



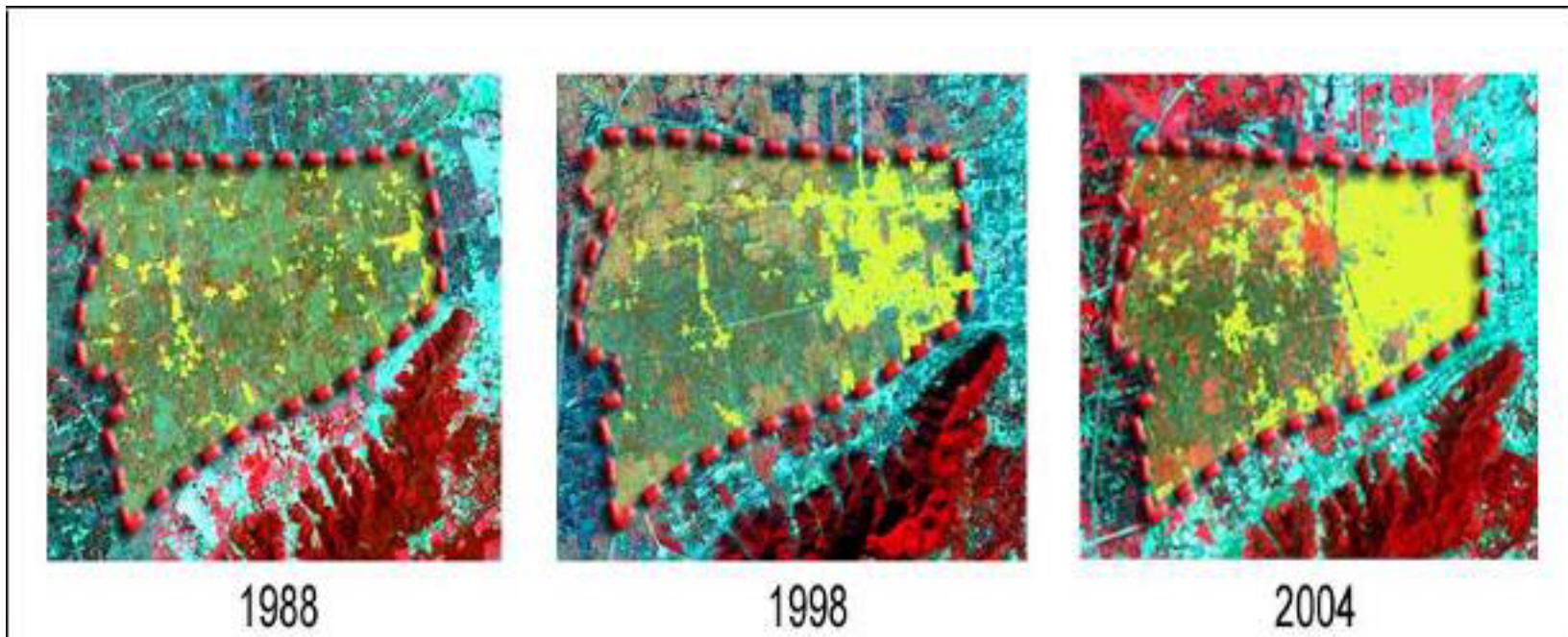
## Aims:

to highlight different approaches to respond to the challenges of peri-urbanization

## Methodologies:

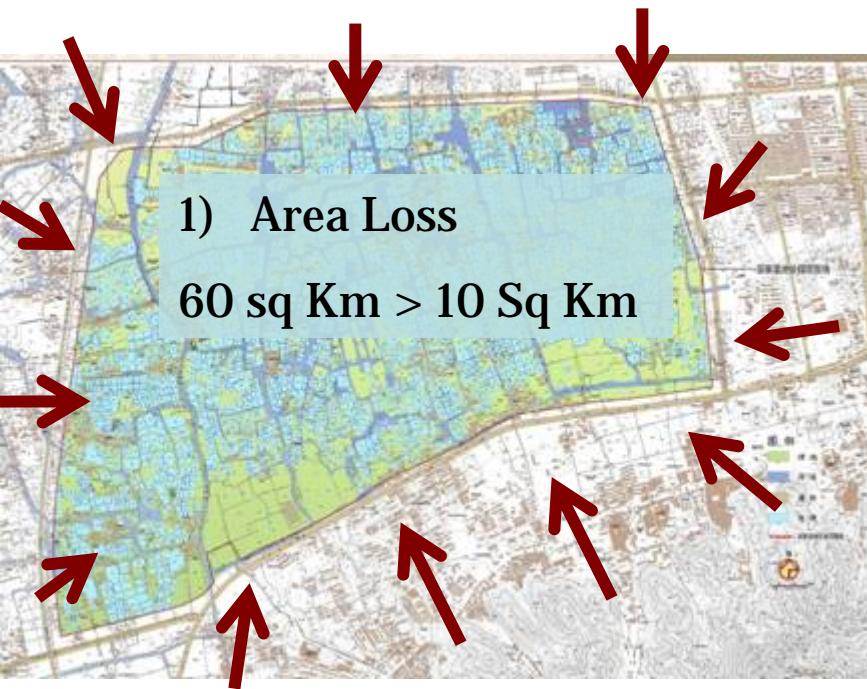
- 1) 3 specific study areas were chosen after survey and discussion;
- 2) Assessment of the strategies: based on analysis report, follows the draft 'Framework for the Assessment of Reports' (Aalbers & van Dijk, June 2008) prepared by Module 3

## **Xixi areas – a case for landscape restoration and up-market residential areas (23.06 km<sup>2</sup>)**

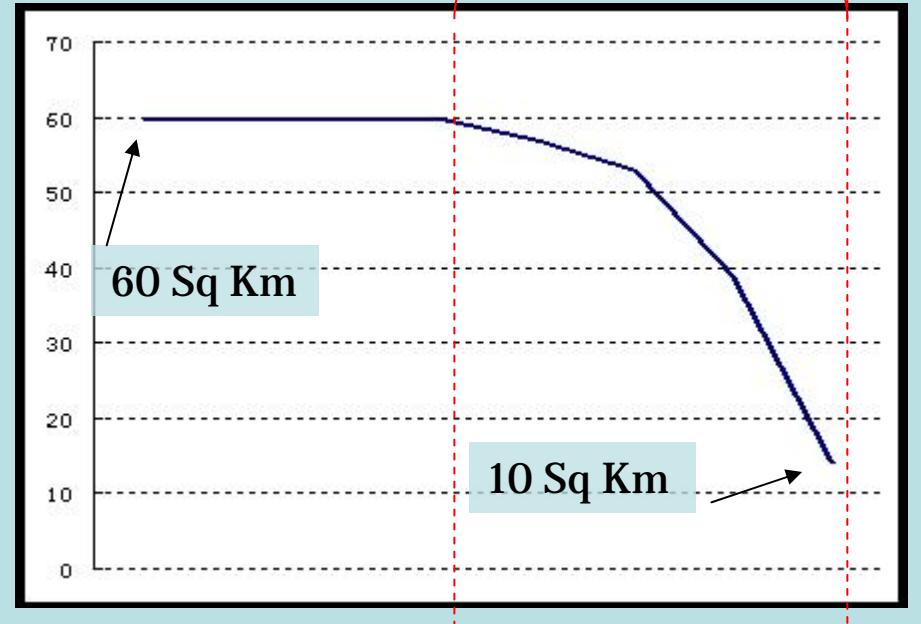


### **Major issues:**

- Rapid westward urban development before 2004
- Housing development rapidly;
- Decline of wetland areas dramatically;
- Degradation of ecological, cultural and landscape function;
- Guarantee of farmers' interests



### *Area Loss of Xixi wetland*



Scenic, Historic and Cultural Loss and Damage



**Water pollution**



## Strategy for Xixi areas: Culture & landscape restoration, tourism and residential development

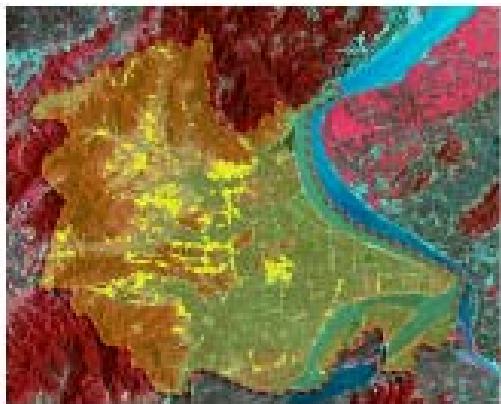
- “Jiangcun Phenomenon” and the planning of New Jiangcun
- Supporting the livelihood of land-lost farmers
- Construction and management of Xixi National Wetland Park

### Sub conclusion:

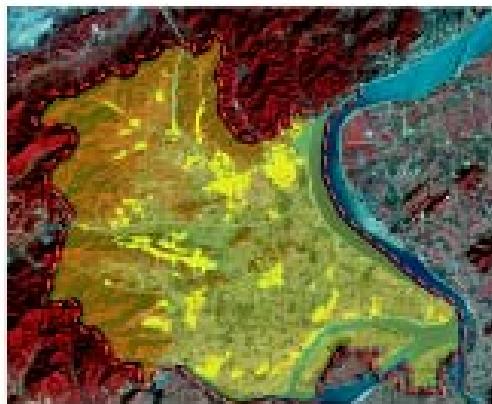
In Xixi, peri-urban development was initially pushed **by the market forces and later guided by the government through planning**. The Xixi Wetland Protection Project is an innovation of wetland protection practices and at the same time an urban management concept conducted by Hangzhou Municipality.



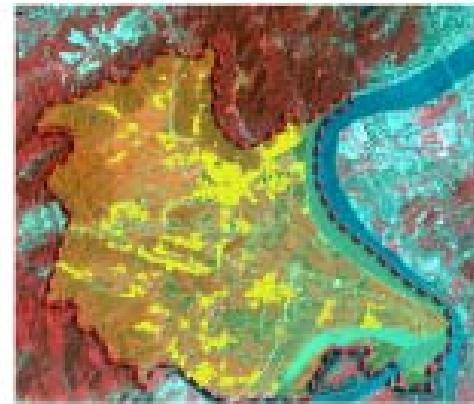
## **Zhuantang areas – a case for conservation and controlled growth (156.35 km<sup>2</sup>)**



**1988**



**1998**



**2004**

### **Major issues :**

#### ***How to balance protection with economic growth***

- Planned Functions:
  - Scenery, tourism
  - drinking water source protection zone
  - agricultural products
  - ecological barrier for the city core: one of the “six ecological belts”
- Preserve its natural landscapes and water resources.
- severe restrictions to control Zhuantang’s economic and social development.

# **Strategy for Zhuantang: ecological conservation and controlled urban growth**

- Environment and natural resource protection.**

- “Protection” is the most important theme
- valuable natural environment and drinking water source
- severe restrictions to control development
- new concept: “active protection”

- Development of tourism**

- Zhijiang National Tourism Holiday Resort was established
- Preferential policies to improve tourism development



- **Development of cultural and creative economy.**

- In 2007, the College of Visual Art under China Academy of Art located in Zhubantang.
- Development of rural tea houses and home inns.



College of Visual Arts, China Academy of Art

- **Support culturally valuable agriculture**

- **Protection and development of tea industry : Longjing tea**
- Luo Family Shrimp Cultivation Demonstration
- Recreational Fishing Garden
- *Pelodiscus sinensis* Cultivation Demonstration Garden
- Crop Demonstration Zone
- Grape Cultivation Demonstration Garden
- River Crab Breeding Demonstration Garden
- *Brasenia schreberi* Cultivation and Processing Demonstration Garden.



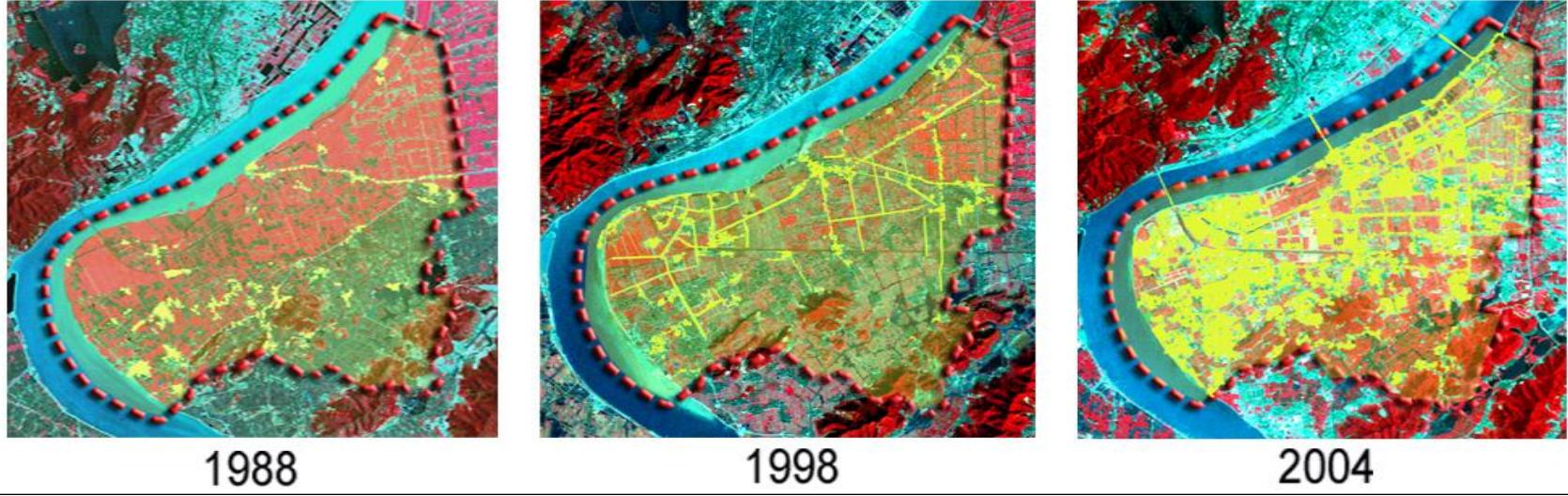
## **Sub conclusion:**

- The strategy aims to coordinate overall urban interests and local interests in the process of peri-urbanisation.
- Former strong restrictions for development through greening belt, scenic tourism and drinking water source protection zones and
- The mere focus on tourism industry were relaxed to position Zhuantang area as a satellite town (New Town) at the periphery of Hangzhou.



**Pictures taken at Zhuantang Areas**

## ***Bingjiang areas – a case of rapid large scale development from low to highly productive commercial conditions (73.33 km<sup>2</sup> )***



### **Major issues :**

- Expansion of urbanization rapidly;
- Industrial development;
- Many of the green spaces are located in broad belts along roads to serve visual improvement, but inaccessible for use
- Green space for private use and green agriculture landscape are few
- Farmer's interests

# **Strategy for Bingjiang: high technology & economic development**

- Development of high-tech industry;
- Reemployment training for land lost farmers;
- Development of White Horse Lake eco-culture-creative town;
- Preferential taxation policy and independent budget system;
- Improvement of residential construction and infrastructures.



**High-tech industry zone**



**Resettlement houses**



**White Horse Lake zone**

## Sub conclusion:

- Binjiang area is a typical peri-urban area whose development has been entirely under the leadership of the government (**top-down planning and management**).
- Its positioning has shifted from the initial exclusively industrial function to an international sci-tech town with mixed urban functions and a high quality environment.
- Moreover, the urban management model which is characterised by low cost and high efficiency as well as the uniquely enjoyed preferential treatment in terms of **self-administration and budgets** are important elements of the Binjiang approach



滨江区远景规划鸟瞰图

Birdview picture of perspective planning of Bingjiang District

## Conclusions:

- At the current stage of rapid urban expansion, it is of great significance to keep the different strategies and plans consistent and implement them in a unified way. This requires linkage and coordination of planning at top and bottom levels as well as for different times and stages.
- The functional relations between the whole municipality needs to be emphasized in terms of orientation, building scale and spatial pattern of urban development during the peri-urbanization of Hangzhou.
- How to balance the conflicts between the protection of farmland and ecologically important areas and urban development is important in the peri-urbanization of Hangzhou. To solve these problems requires improvement of building land use efficiency and good spatial development patterns implemented through spatial planning and development policies.
- Farmers are the group directly impacted by peri-urbanization, multiple policy measures and approaches to protect their interests and help them live as urban residents should be taken. This is a strategic work which is of crucial importance for social stability and sustainable development.

## **Summary:**

- Urban forestry is a very useful tool for green growth in urban and peri-urban regions.
- Efficient governance, spatial planning strategies are very important for sustainable urban growth.
- Urban forestry and PLUREL Program have produced positive impacts on the urban growth in Hangzhou, local government hope Hangzhou is viewed as a platform for further cooperation between China and Europe.
- Excellent cooperation relationship had been established between CAF and European research organization through studies in urban forestry based on the ASEM and EC Framework Program.

# Thanks for your attention!

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