

# Creating and Sustaining a Market for Environmental Services from China's Tropical Forests

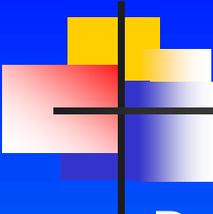
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# 1 Project Description

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- **Project title: Creating and sustaining a market for environmental services from China's tropical forests**
- **Tasks: To explore the functions, patterns and risks of markets for forest environmental services, and start the marketization process.**
- **Main outputs:**
  - **Background report on China's forest services;**
  - **Development of a website on "China's forest ecosystem services";**
  - **Establishment of a trading agent of forest services;**
  - **Organization of two cases of forest service trading.**

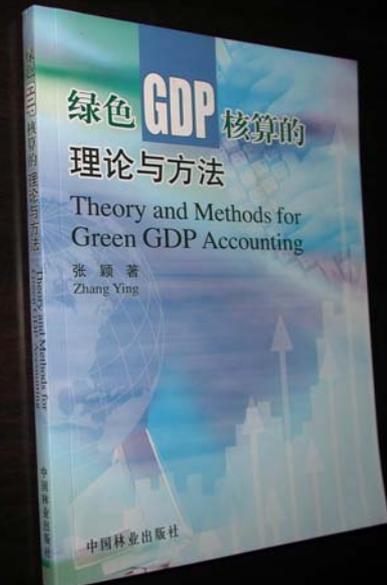
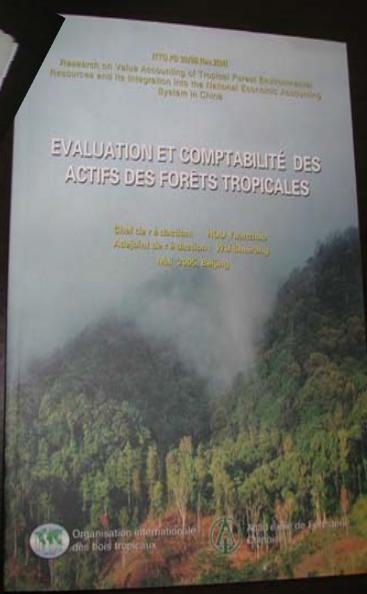
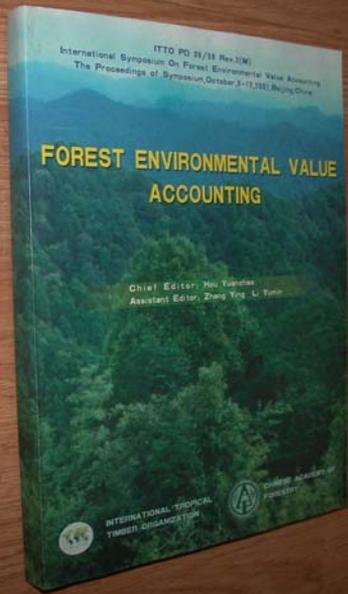
**Upon completion of the project, the first trading platform for forest services will be established.**



## 2 Theoretical basis of the markets

- ITTO project “ Research on value accounting of tropical forest environmental resources and bringing of it in line with the national economic accounting system in China” (ITTO PD 39/98 Rev.2(M) laid a foundation for theories, methods and personnel on value accounting of forest resources in China.
- The project has published 10 monographs, such as “Accounting of forest resources (volume 1, 2)”, “Natural resource and environmental economics”, “Valuation and green accounting of tropical forest assets” etc. and conducted 2 influential case studies in China (Value accounting of forest resources in Beijing Municipality, and that of in Hainan province), organized 2 international workshops. These studies have formulated the theoretical framework of China’s forest environment economics, and formed an inter-agency research group.







CAF

# ( 热带 ) 森林环境经济及绿色政策国际研讨会

2004年3月2~5日, 中国·北京

International Workshop

On Environmental Economics of Tropical Forest and Green Policy

March 2~5, 2004, Beijing, China



ITTO



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陈根长



森林环境价值核算国际研讨会  
INTERNATIONAL SYMPOSIUM ON FOREST ENVIRONMENTAL VALUE ACCOUNTING  
中国·北京



2004.03.02-05

# 国家准创新研究群体

森林环境价值核算国际研讨会  
SYMPOSIUM ON FOREST ENVIRONMENTAL VALUE ACCOUNTING



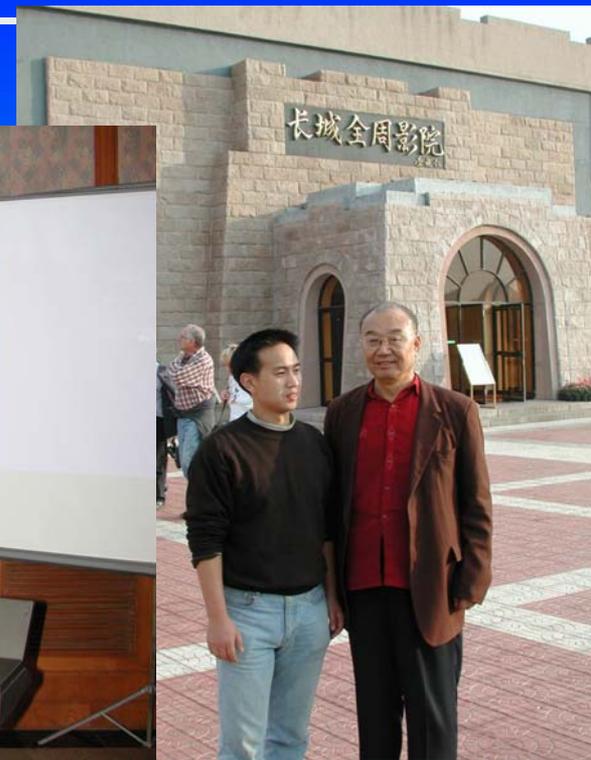
2001年10月09-12日



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### 3

## Types of forest services and its market extent

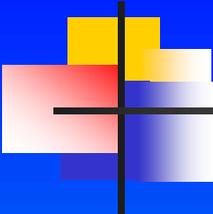
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- Forest services include 7 types of services :
  - Water conservation
  - Soil conservation
  - Carbon sequestration and oxygen generation
  - Climate buffering and environment purification
  - Biodiversity conservation
  - Agricultural protection
  - Landscape and recreation



# Valuation System of Forest Assets

1. market goods (assets and products)	11 physical and monetary quantity of forest land (including sand land)
	12 physical and monetary quantity of wetland
	13 physical and monetary quantity of standing timber (including bamboo)
	14 physical and monetary quantity of economic forests
	15 physical and monetary quantity of flower production and transaction
	16 physical and monetary quantity of timber industry
2. Quasi-market goods (products and services)	21 physical and monetary quantity of non timber forest products
	22 residuals in forestry industry
3. non-market goods (forest ecosystem services)	31 physical and monetary quantity of watershed protection
	32 physical and monetary quantity of soil protection
	33 physical and monetary quantity of carbon sequestration and oxygen generation
	34 physical and monetary quantity of environmental purification
	35 physical and monetary quantity of biodiversity conservation
	36 physical and monetary quantity of agricultural protection
	37 physical and monetary quantity of landscapes and recreation
4. invisible assets (forest social benefits)	51 physical and monetary quantity of catastrophe prevention and abatement services
	52 physical and monetary quantity of scientific cultural and spiritual functions
	53 physical and monetary quantity of employment increase
	54 physical and monetary quantity of national defence services
	55 physical and monetary quantity of improving investment environment



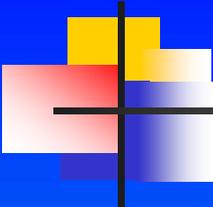
# 4 Market process of China's forest services

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## 4.1 Markets for forest carbon sinks

- During the period from 1981 to 2000, China's carbon sink of the terrestrial vegetation with forests as the mainstay approximately offsets 14.6%-16.1% of the CO<sub>2</sub> emission during the same period.
- The current forest area is 175 million hectare in China, annual timber production is 500 million m<sup>3</sup>. The national forestry development goal is to increase forest area by 46.96 million hectare by 2050 and to increase the forest coverage to over 26%.
- In addition, more than 13 million hectare marginal land can be rehabilitated with vegetation which will also increase carbon sink. The current forest volume in China has potential to be doubled and also the capacity of carbon sink will be doubled.





# 4 Market process of China's forest services

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## 4.1 Markets for forest carbon sink

- In 2007 June, Chinese government announced “China national plan for counteract climate changes”.
- In 2007 March, China's Clean Development Mechanism Fund (CDMF) officially started its operation. The fund is managed by the Ministry of Finance.
- In 2007 July, the China Green Carbon Fund was established, with a contribution of RMB 300 million by the China Petroleum and Natural Gas Group which will be dedicated to reforestation for carbon fixation, and other smaller contributions.

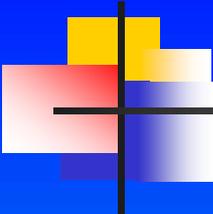


# 4 Market process of China's forest services

## 4.1 Markets for forest carbon sinks

- Up to date, China has 2 CDM carbon sequestration reforestation projects, with a total cost of US\$ 3.35 million, together with 3-4 free trade projects, the total cost of forest carbon sequestration comes to US\$ 7 million. Although there are not many carbon sequestration projects, the projects have received wide public concern, many local governments have showed strong interests and many enterprises have also done good preparations.
- China does not take the obligation of emission reduction defined by the “Kyoto protocol”, but Chinese government is devoted to energy saving and emission reduction. The State Forestry Administration has also taken 6 major indirect emission reduction measures.





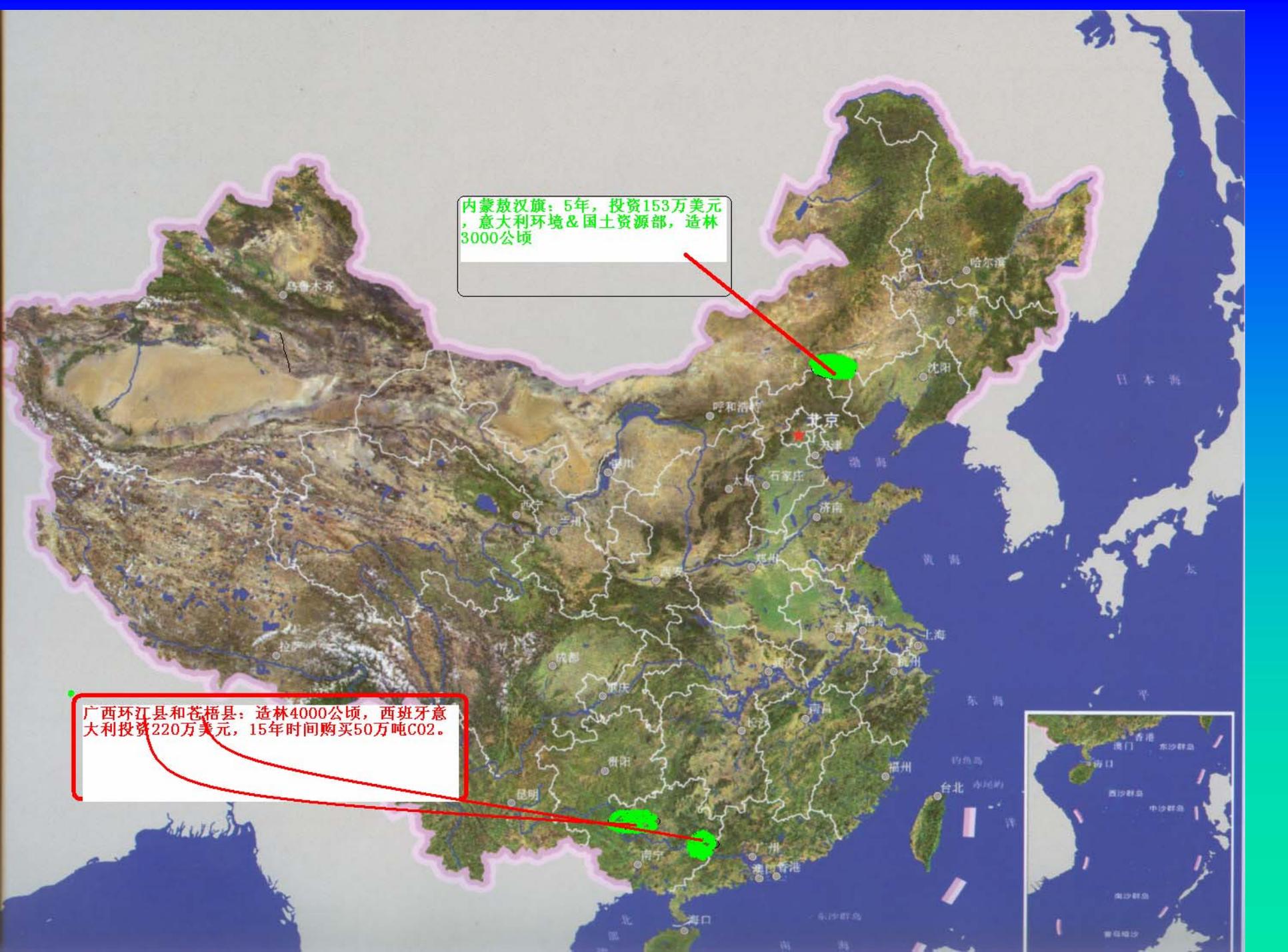
# 4 Market process of China's forest services

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## 4.1 Markets for forest carbon sinks

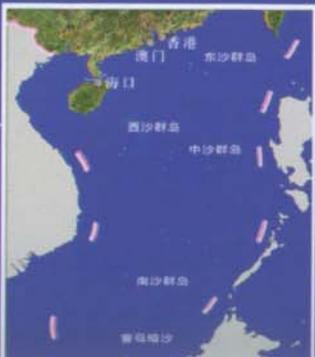
- China's carbon sequestration market has great potential and wide basis.
- In future, actual forest carbon sequestration projects that can be included in CDM will not be very large, but the development of carbon sequestration free trade will be much enhanced.





内蒙敖汉旗：5年，投资153万美元，意大利环境&国土资源部，造林3000公顷

广西环江县和苍梧县：造林4000公顷，西班牙意大利投资220万美元，15年时间购买50万吨CO2。



# 4 Market process of China's forest services

## 4.2 Markets for forest watershed protection

- Cases of trading of forest watershed services can be found throughout China.

There are mainly 4 types:

- The national government is the buyer;
  - Local government is the buyer;
  - Trading among local governments;
  - Private investments.
- Different project involving different levels of governments have different extents of market.



# 4 Market process of China's forest services

## 4.2 Markets for forest watershed protection

- Different patterns of trading have emerged, such as “water rights trade”, “different area exploitation for eco-compensation” and “ecological inter-construction and share mechanism of watershed”
- If the historical “Guangdong and Hong Kong water supply trade” (started from the 1950s) are not considered, the first modern free trade of water use rights was occurred in Zhejiang province, up to date, the trade of water use rights between up and down streams have been spread throughout the province.



# 4 Market process of China's forest services

## 4.2 Markets for forest watershed protection

- **The potential of China's watershed service market is great. Reasons are:**
  - **Water resources are rich in south China but scarce in the north. South-to-North Water Transfers is an inevitable trend.**
  - **China's mountain and forest areas have rich water resources but economically lag behind, while the downstream areas are economically developed but lack of water resources.**
  - **The public has a strong willingness to protect water resources, and the market potential of watershed protection will be great.**





官厅水库  
密云水库

北京市的水源涵养区

© 天津

**Forest watershed services  
trade between Beijing and  
Zhangjiakou city and  
Chengde city in Hebei  
province.**

**Within 5 years since 2007,  
Beijing will provide RMB  
10 million for the two city  
to protect water  
conservation forest.**

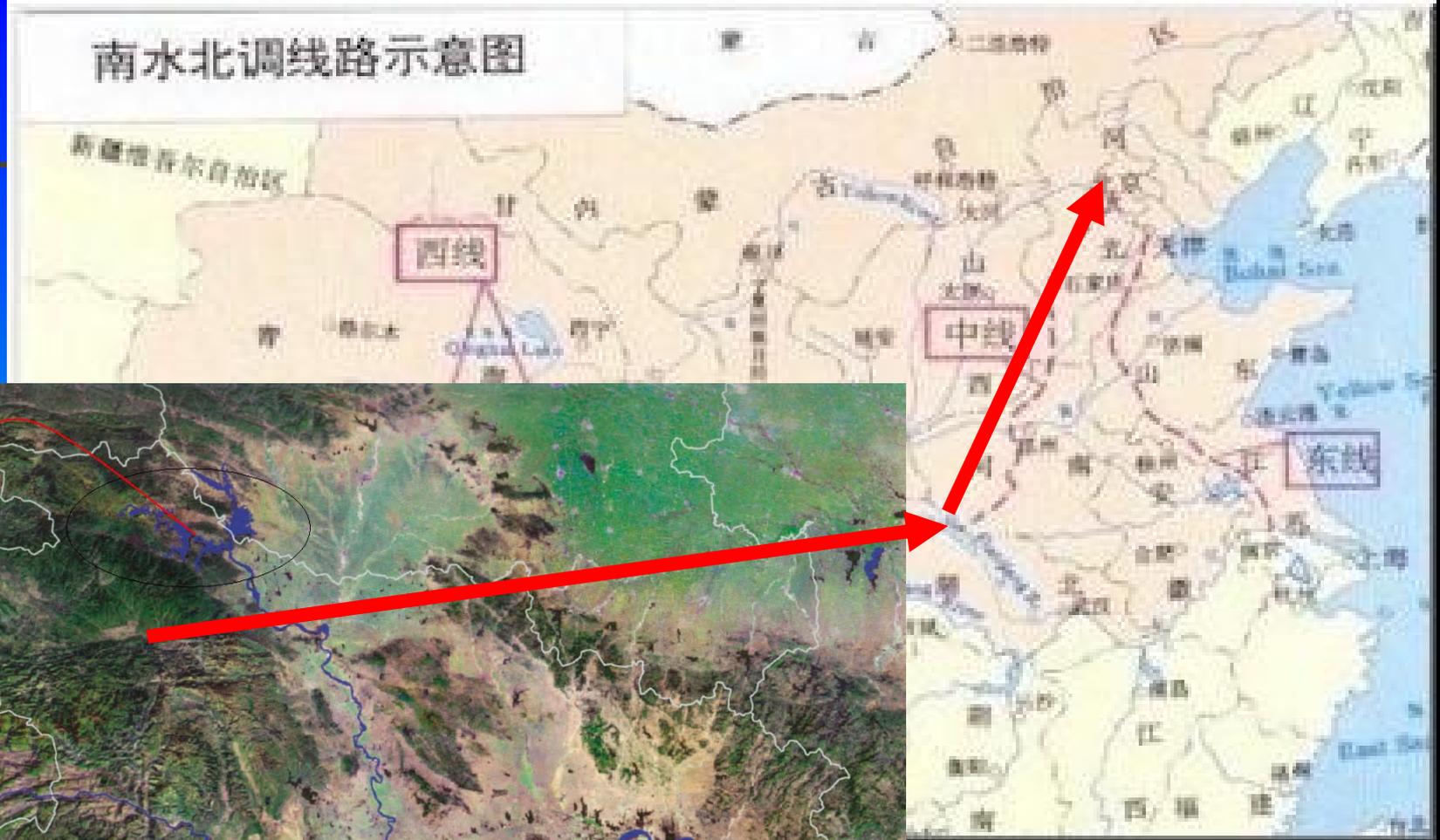


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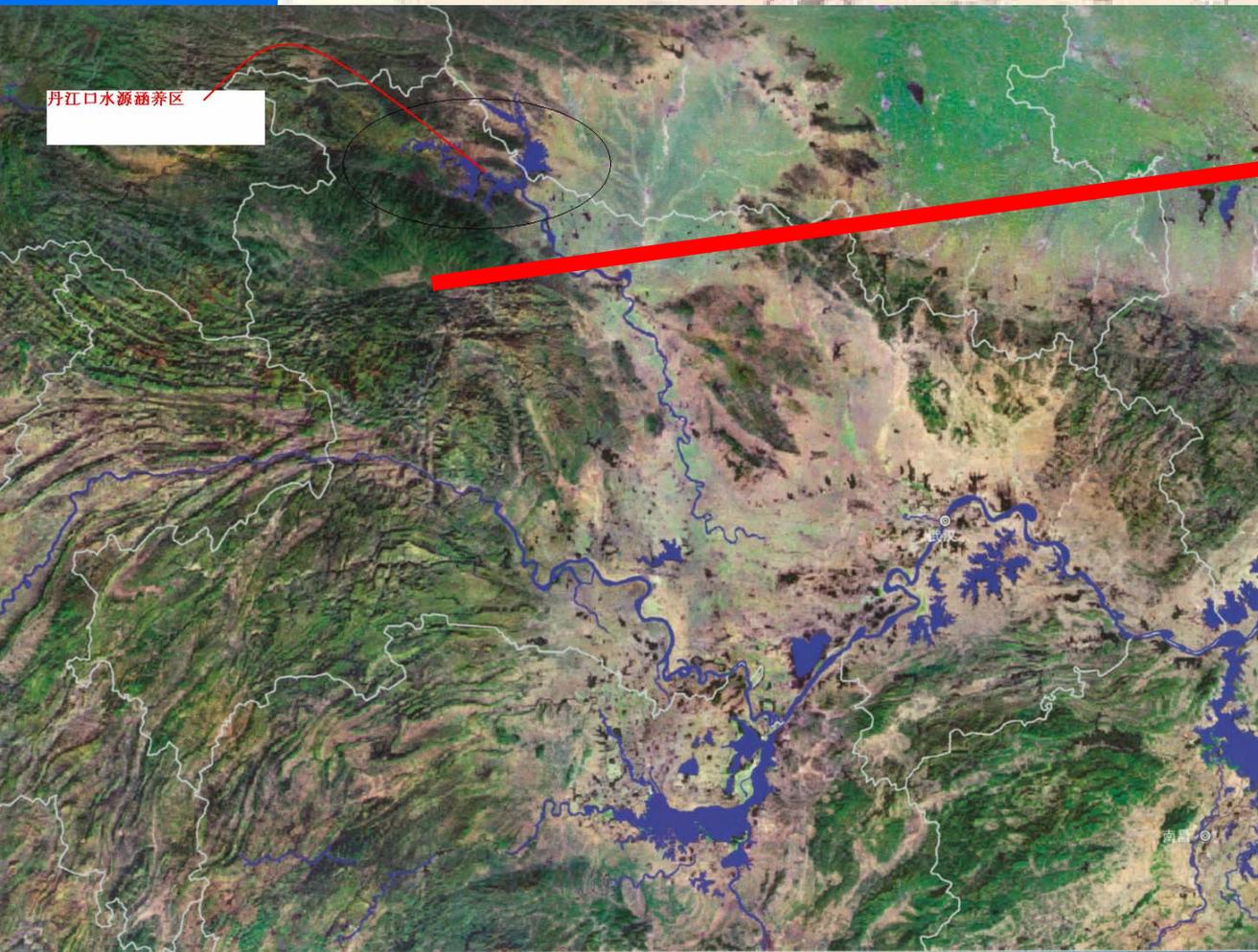
**Cities and industrial areas  
in Songliao plain of  
Northeast China are in  
short of water supply.**

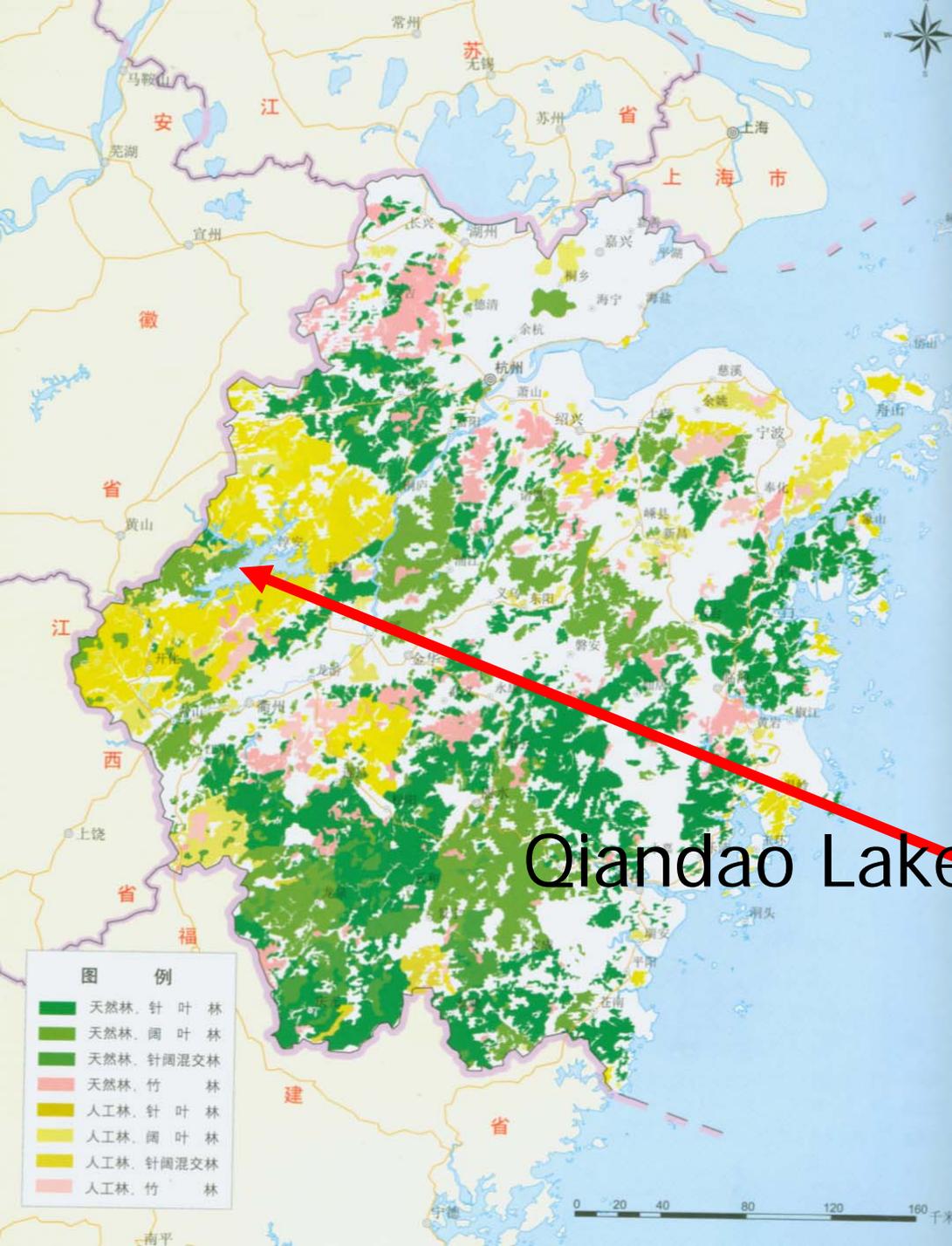
**Experts say this problem  
would be overcome by  
protecting forest  
catchment upstream.**

# 南水北调线路示意图



丹江口水源涵养区





Forest watershed services trade between Hangzhou city Zhejiang Province and Huangshan city Anhui province.

Xin'anjiang water system originate from Huangshan mountain area. It feeds 6 billion m<sup>3</sup> purify water for Qiandao Lake downstream every year, accounted for **over 60% of total water of Qiandao Lake.**

Qiandao Lake

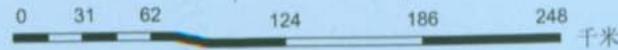




**Bassin versant du fleuve de l'Est**

河源市新丰江水源涵养区，是香港水源，现在正规划成为深圳、东莞、广州等珠江三角洲地区的水源供应地

图 例	
	针 叶 林
	阔 叶 林
	针阔混交林
	竹 林
	国家特别规定灌木林



东沙群岛

# 4 Market process of China's forest services

## 4.3 Markets for forest landscape and recreation

- Markets for forest landscape and recreation is the most matured among various forest services. Main market form is sales of entrance tickets. This mechanism is very common in China.
- China has very rich forest eco-tourism resources. By 2006, 2,067 forest parks have been established with a total area of 15.6825 million hectare. According to statistics, the total number of visitors to forest parks reached 213 million, bringing a comprehensive tourism income of more than 95 billion RMB. The development of forest parks and forest tourism industries have benefited 2,700 villages and nearly 20 million farmers, helped 4,654 surrounding villages of forest parks to alleviate from poverty.

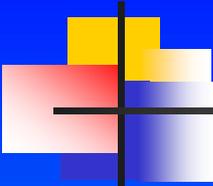


# 4 Market process of China's forest services

## 4.4 Markets for **biodiversity conservation**

- **China's forest biodiversity conservation market includes three aspects:**
  - **purchase of biodiversity conservation;**
  - **wildlife trading;**
  - **biodiversity utilization.**
- **For biodiversity conservation, up to 2005, Nature Reserves managed by forestry sector reached 1,699 with a total area of 120 million hectare, which protected 90.6% China's terrestrial ecosystems, 85% wildlife animal populations and 65% populations of high plants, 45% natural wetlands and 20% natural forests. China's investment in biodiversity conservation was RMB 515 million**





# 4 Market process of China's forest services

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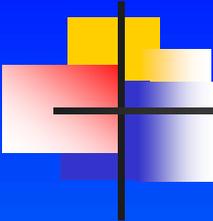
## 4.4 Markets for **biodiversity conservation**

- For wildlife trade, China's total wildlife export was amounted RMB 141.1 billion in 2005, displaying a 70% increased compared with 2004.
- For biodiversity utilization, China has 25 approved international hunting sites by 2005, with a total income of US\$ 36.39 million.
- China has about 10,000 plant species that have medicinal uses, of which 1,000 species is used for regular medicines. In the past 20 years, the annual increase of China's herbaceous medicine production was 9%, and production of wild herbaceous medicines accounted for 60% of the total production.





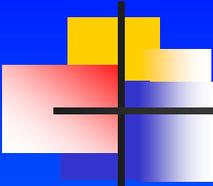




## 5 Legal environment for market development of forest services in China

- China has a firm foundation for markets of forest services. Since 1992, there have been 9 times of announcing laws and regulations on development and improvement of the compensation systems for forest ecological benefit.
- Provincial and local governments have also developed local policies for compensation.
- These laws and regulations have ended from theory the history of free use of forest services, providing a legal basis for forest service market.



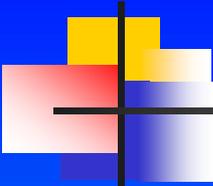


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## 6 Challenges and risks for markets of China's forest services

- There are 4 models of payment for forest services: public payment, mutual negotiation, market trading, and ecological labeling.
- Public payment and mutual negotiation are currently the main models in China. Development of market trading and ecological labeling will be restrained for some realistic conditions.





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## 6 Challenges and risks for markets of China's forest services

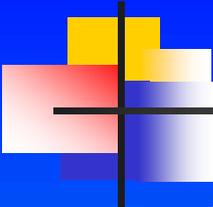
### ■ **Challenges:**

- How to define and quantify forest services;
- How to price forest services;
- How to construct a service platform.

### ■ **Risks:**

- Overuse of forest services may exceed the carrying capacity of ecosystems, therefore leading to security problems of ecosystems themselves ;
- Accounting of services is an unavoidable barrier, the extent of services is not clear if the problem is not solved.



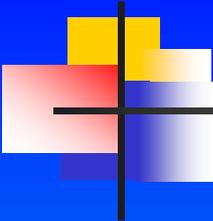


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## 7 Conclusions

- **Markets for forest watershed services in China is at the leading position. Many successful cases have been naturally occurred. We summarized 29 cases, but they were only a part of the iceberg, there are many more such cases.**
- **China has high marketization extent in forest landscape and recreation and biodiversity conservation, with large amount of trading, which has played roles in forest protection and local economic and social development.**
- **Markets for carbon sink in China has a great potential. Government pays great attention to this.**



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- **The environmental awareness of Chinese citizens is rapidly increasing.**
  - **China has very good research basis in accounting of forest assets, production and services.**
  - **The legal environment for markets of China's forest services is also very good, but the framework, rules and supporting systems for market are still lag behind.**
  - **Market mechanism has not been adequately used in China's public financial transfer.**



*THE END!*

