

Balancing Conservation and Development by Paying for Ecosystem Services in China

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March 16, 2010



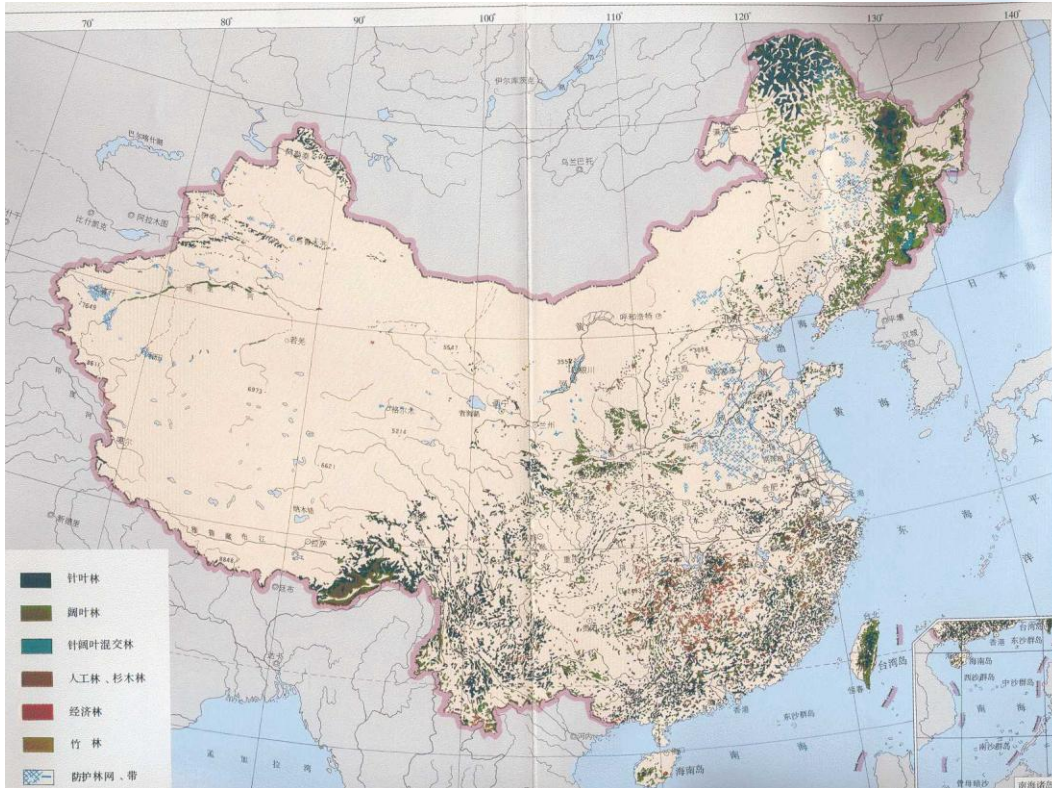
Why Visit China?



But Some May Have Hesitations...



Forests of China



Forest coverage:

1949: 8.6%

2008: 20.36%

2004-2008:

20 million ha
= California

The World is Watching China

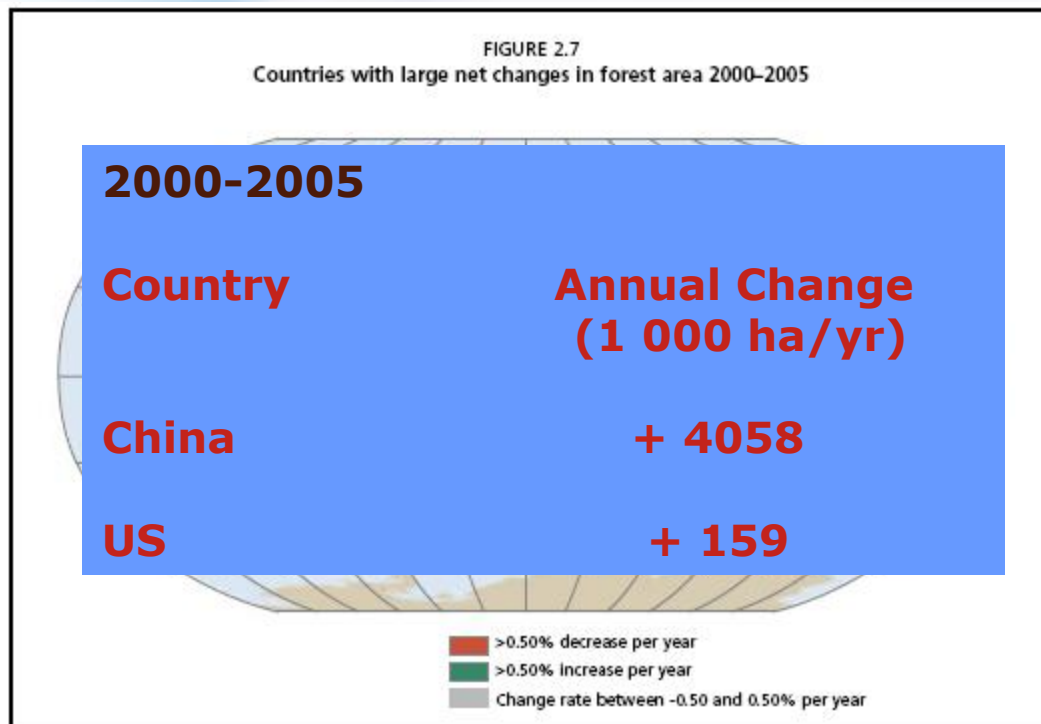
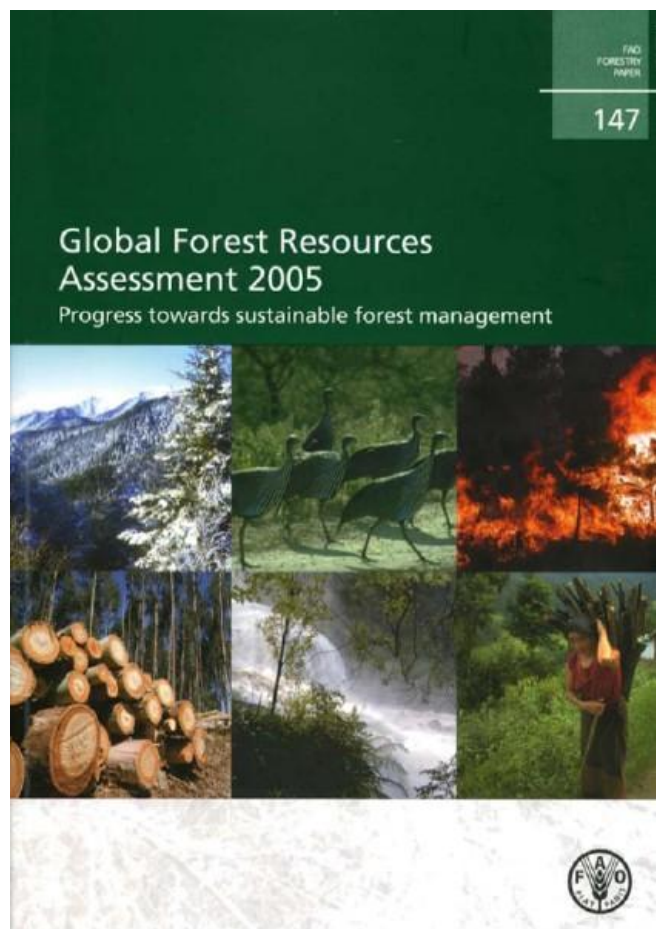


TABLE 2.5
Ten countries with largest annual net loss in forest area 2000–2005

Country	Annual change (1 000 ha/yr)
Brazil	-3 103
Indonesia	-1 871
Sudan	-589
Myanmar	-466
Zambia	-445
United Republic of Tanzania	-412
Nigeria	-410
Democratic Republic of the Congo	-319

TABLE 2.6
Ten countries with largest annual net gain in forest area 2000–2005

Country	Annual change (1 000 ha/yr)
China	4 058
Spain	296
Viet Nam	241
United States	159
Italy	106
Chile	57
Cuba	56
Bulgaria	50

Contradiction between the supply and demand of forest products in China

• 2005

- Demand: 240 million m³
 - Supply: 170 million m³
 - Shortage: 70 million m³
-

• 2015

- Demand: 330 million m³
 - Supply: 195 million m³
 - Shortage: 140 million m³
-

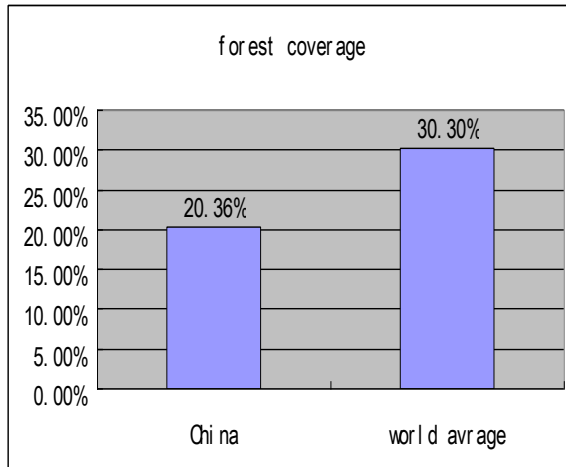
Short-term: Increase timber importation

Long-term: Determined by its basic national conditions

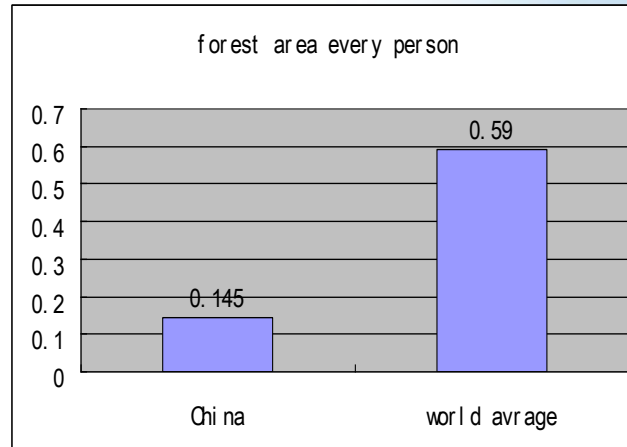
Solution: “Program for Fast-growing and High-yielding Forest”

In 2001 - 2015 , about 13.33 million ha fast-growing and high-yielding plantations will be established, offering 130 million m³ of timber

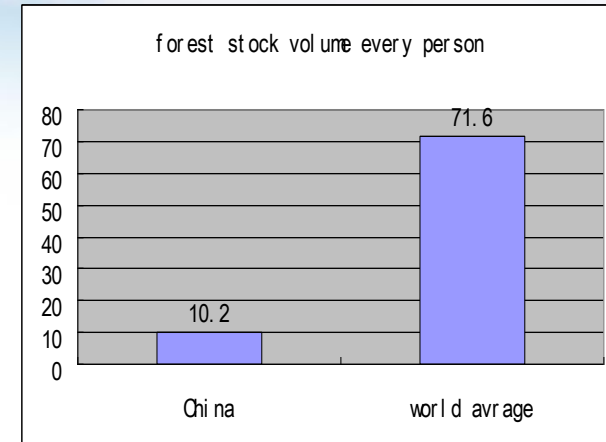
Challenge 1: Forest Resources are Scarce



Forest Coverage
2/3 of world average

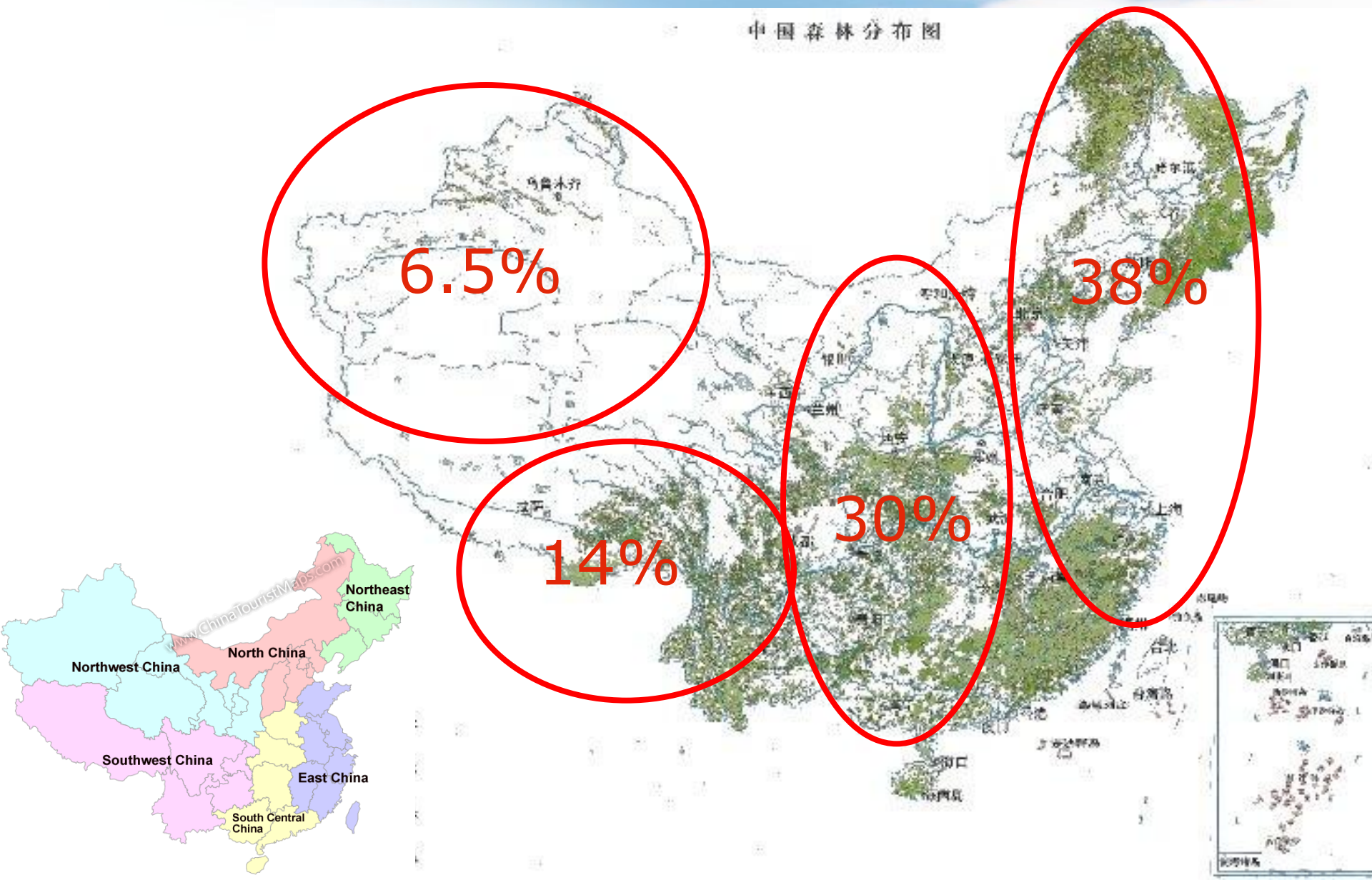


Forest Area per person
1/4 of world average



Forest Stock Volume per person
1/7 of world average

Challenge 2: Forest Distribution Unbalanced



Challenge 3: Afforestation Will Be More Difficult

- Chinese government's commitment to UNFCCC* in 2009
 - ✓2010, forest area increase 4 million ha
 - ✓2011-2020, annual mean afforestation area > 5 million ha
 - ✓2050, compare with 2020, increase 47 million ha



- 13% good land for afforestation
- 52% poor quality of land for afforestation
- Pay higher cost for future

* UNFCCC: United Nation Framework Convention on Climate Change

Challenge 4: Forest Quality is Poor

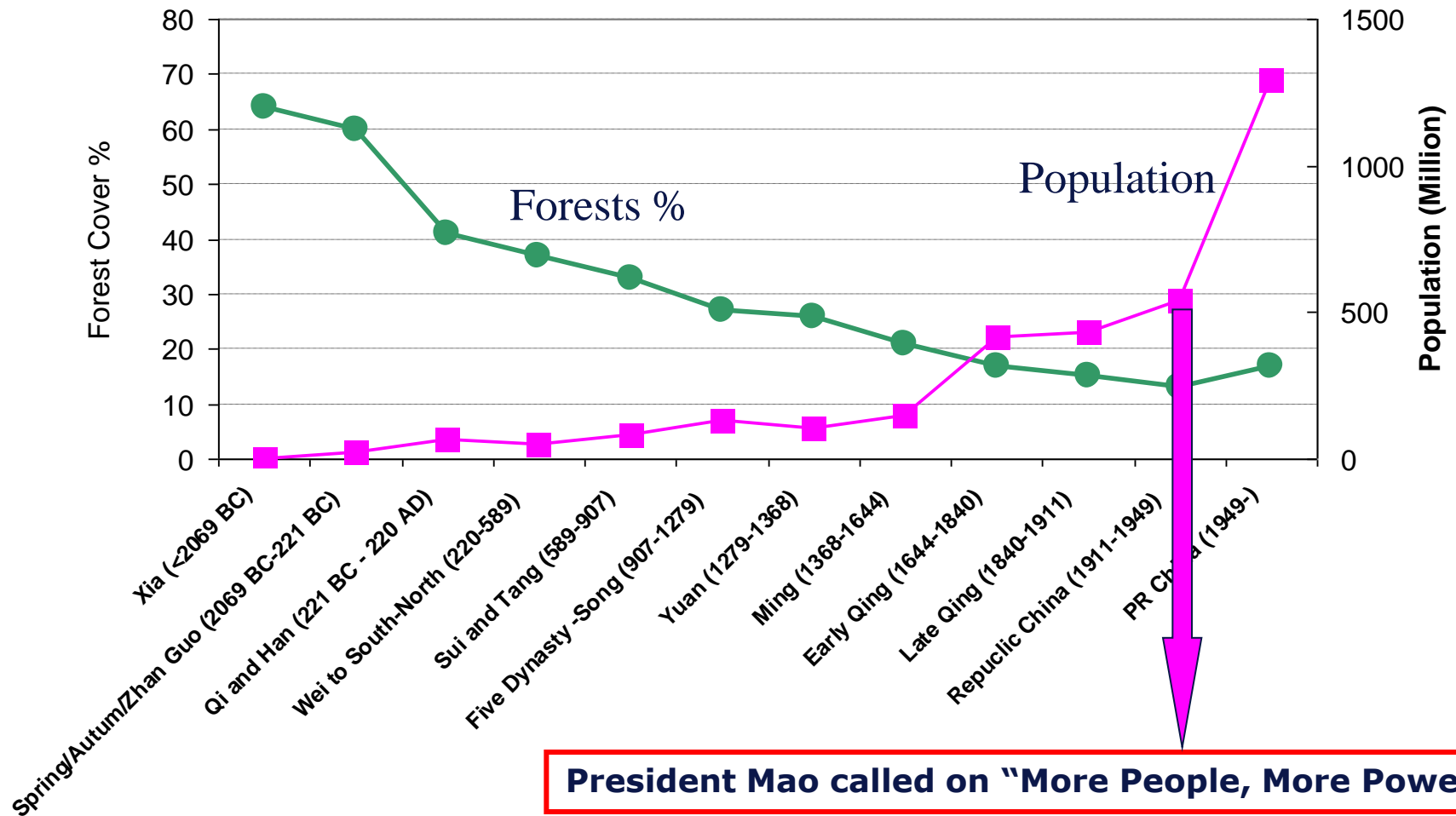


- Didn't care much about the source of seeds and seedlings
- Most of forests are not managed timely.
- There are large area of non-thinned young and middle aged forest.

Strictly protect past, not care about future

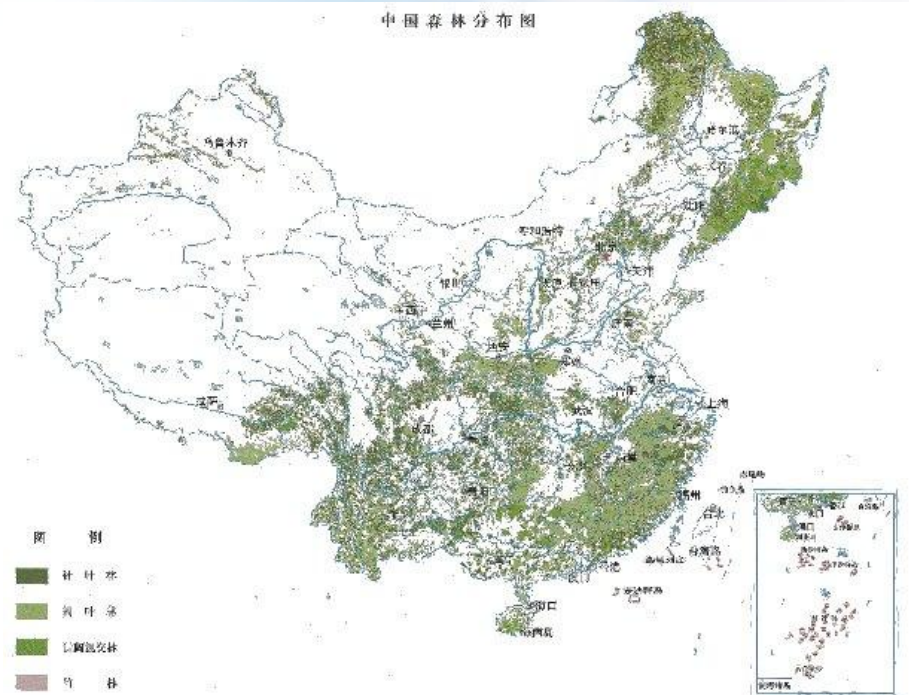
Challenge 5: Huge Population

Forest Cover and Population Change in China





Population Density Map



Forest Distribution Map

Eco-compensation policies issued in 1998

China Will Completely Ban of Logging of Natural Forest in Yangtze River and Yellow River Catchments



中国将全面停止采伐 长江黄河流域天然林

本报北京8月28日讯
国家林业局负责人今天宣布，
中国将全面停止长江、黄河流域
天然林资源的采伐，加强

“封山植树、退耕还林”工作，把林业生态建设作为首要的任务，并安排31.2亿元的基本建设投资、30亿元的专项贷款和财政资金用于重点国有林区天然林资源保护。

今年6月以来，中国长江及松花江流域相继发生了特大洪涝灾害。国家林业局副局长李育才说，大江大河源头及上游森林植被的严重破坏，江河湖泊严重淤积，是造成水灾的

根本原因之一。

在今天结束的重点国有林区天然林资源保护工程工作座谈会上，李育才说，天然林保护工程是新组建的国家林业局接受的第一项“重于泰山”的任务。各级林业部门和有关地区要充分认识天然林保护工程的重要性、紧迫性、战略性，坚决贯彻落实党中央、国务院指示精神，加紧做好全面启动天然林保护工程的一切准备工作。（杨建斌）

**Natural Forest
Protection Program
initiated in response
to 1998 Floods**

Aug 28, 1998
*People's Daily
Oversea Edition*

-40%

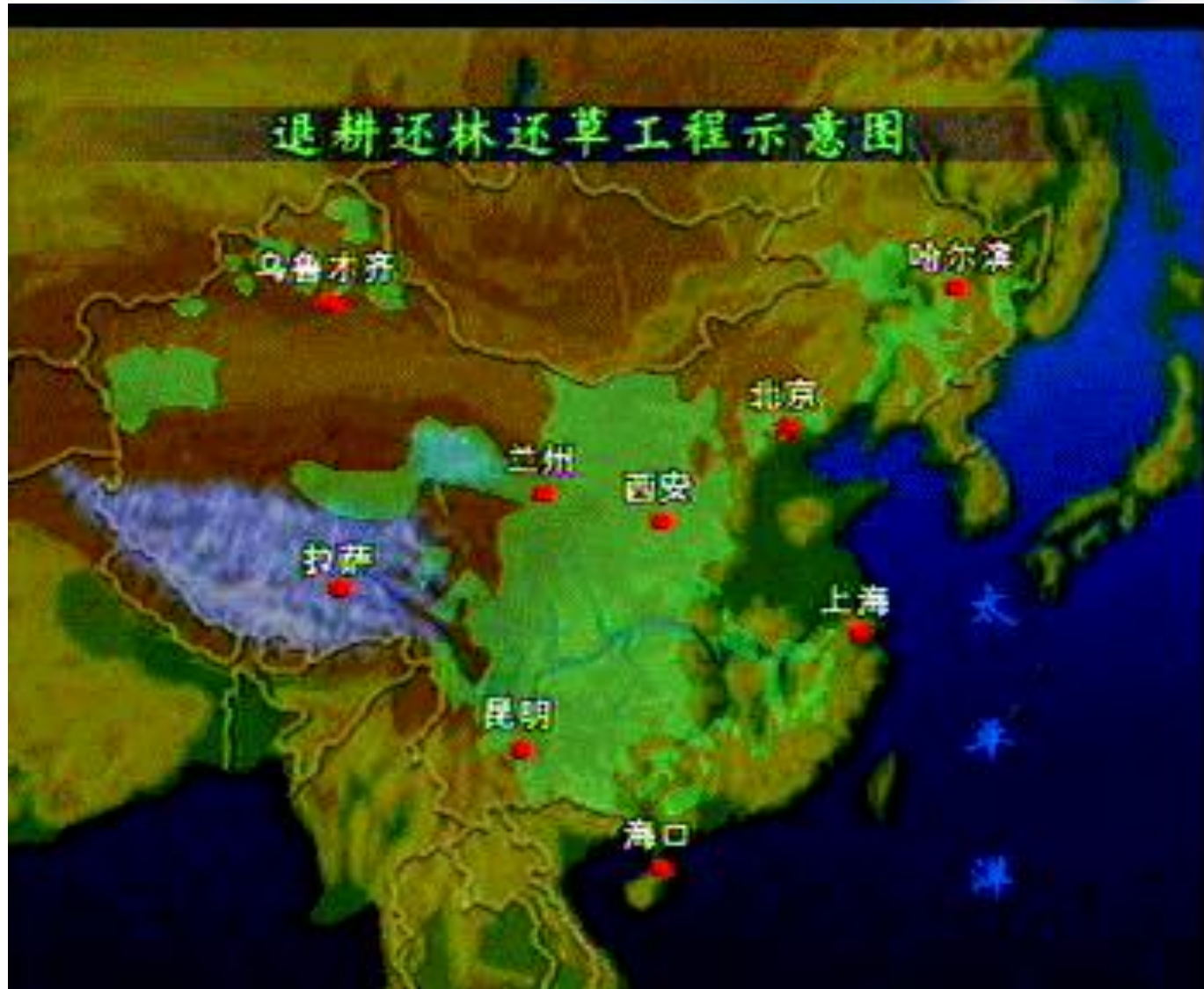
Areas of Natural Forest Protection Program



Results

- ◆ Reduce timber production 86 million m³ totally (2000-2007)
- ◆ 740,000 workers unemployed
 - One-time compensate to 278,000 workers
 - provide basic subsidy for others
- ◆ Total investment:
 - 1998- 2010: 16 billion USD
 - 68 million ha

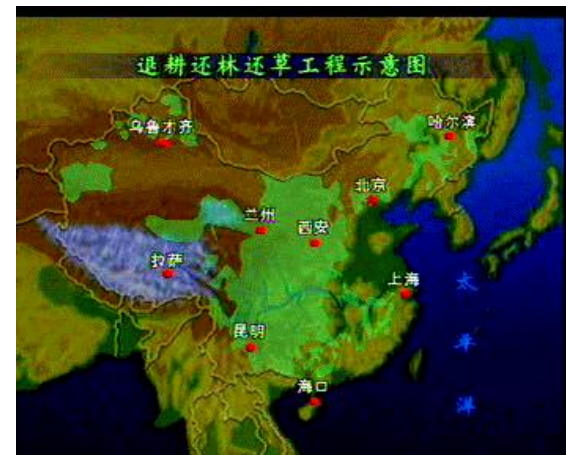
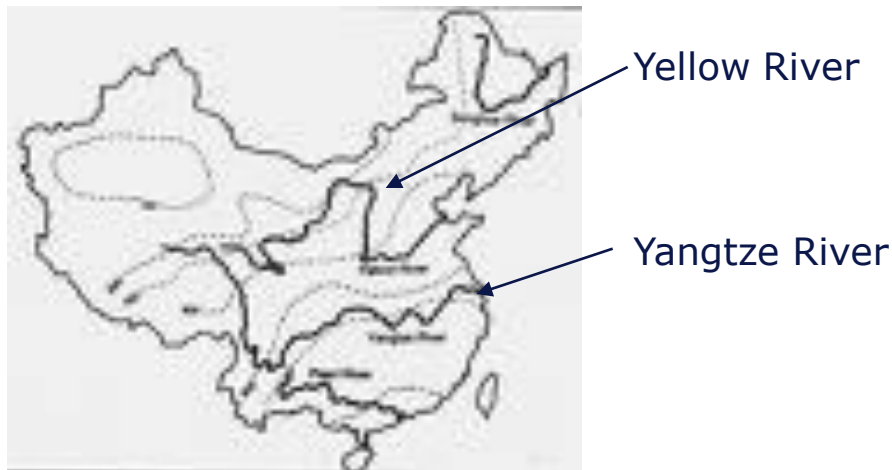
Conversion of Farmland to Forests



> 25 degree

Conversion of Farmland to Forests

- ✓ One time reimbursement for reforestation: \$110/ha
- ✓ Annual cash subsidy: \$44/ha
- ✓ **Only 0.09 ha/farmer**
- ✓ North China: 1500 kg grain/ha/year (or \$154/ha/year)
- ✓ South China: 2250 kg grain/ha/year (or \$230/ha/year)
- ✓ One time reimbursement for reforestation: \$10/person
- ✓ Annual cash subsidy: \$4/person
- ✓ North China: 140 kg grain/person (or \$29/person/year)
- ✓ South China: 210 kg grain/person (or \$43/person/year)



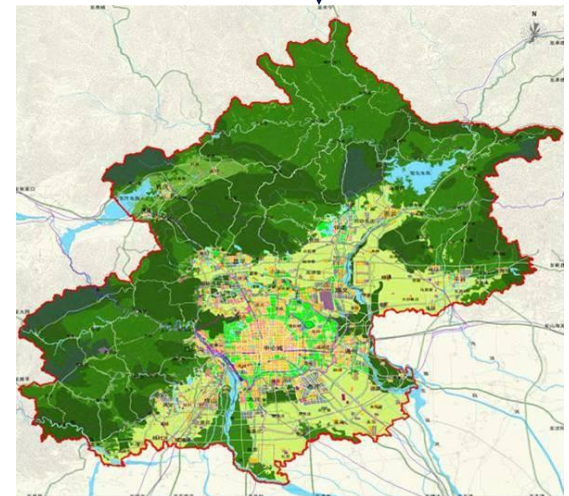
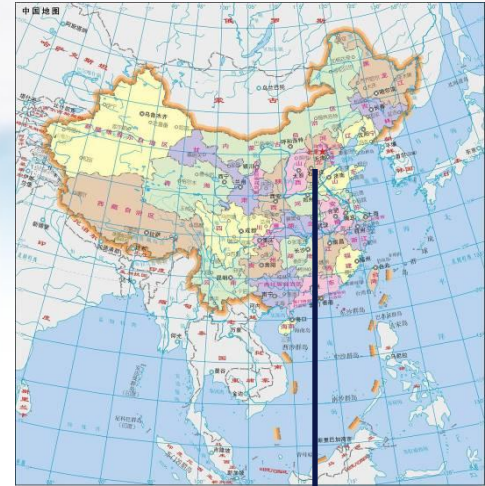
Results

- ◆ Program covers 25 provinces
 - converted: 9.3 million ha farm land
 - planted: 14 million ha barren land
- ◆ 124 million farmers involved (total 850 million farmer)
- ◆ Total investment:
 - 63 billion USD



Overview of Beijing

- Total area: **16,400** km² , mountainous area:61.4%
- 2008, registered residents: **17** million.
- Average annual rainfall: 585mm (~23 inches)
- Primary vegetation is mixed deciduous forest of the warm temperate zone.
- 2007, forest coverage, 36% , 1949, forest coverage, 1.3%



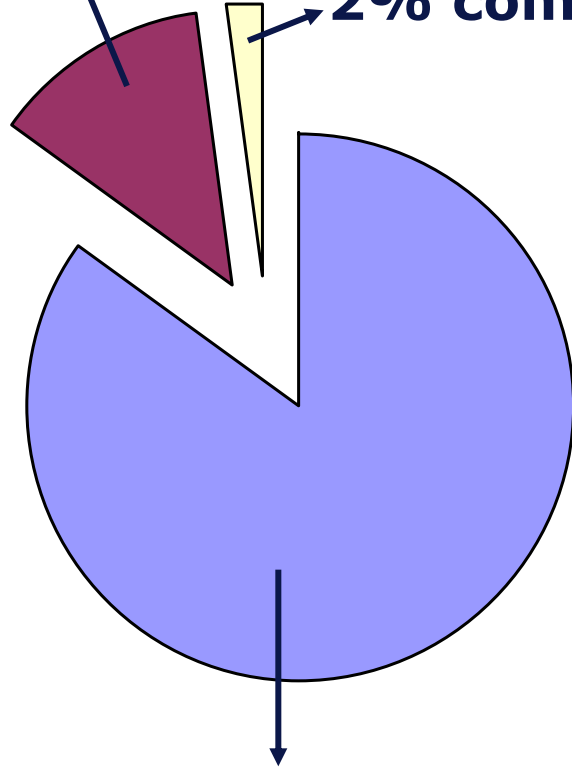
Beijing

Forest Classification

13% economic forest

2% commercial forest

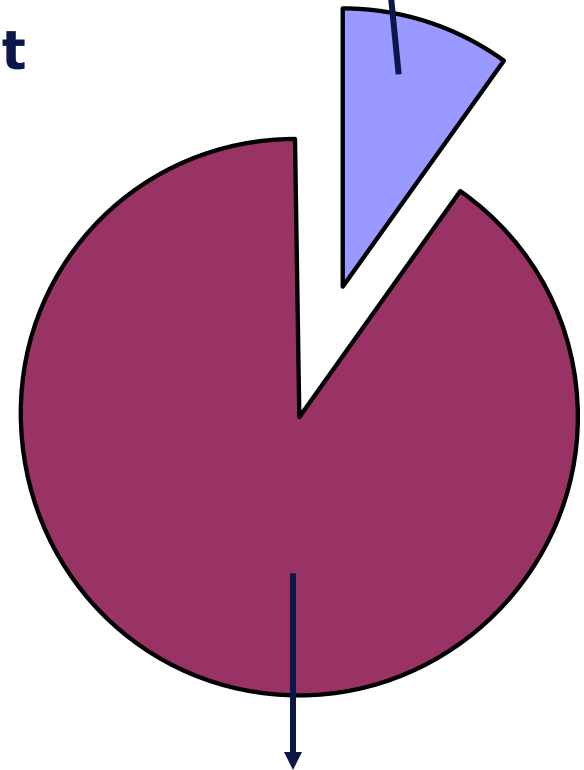
85% ecological forest



Forest Ownership

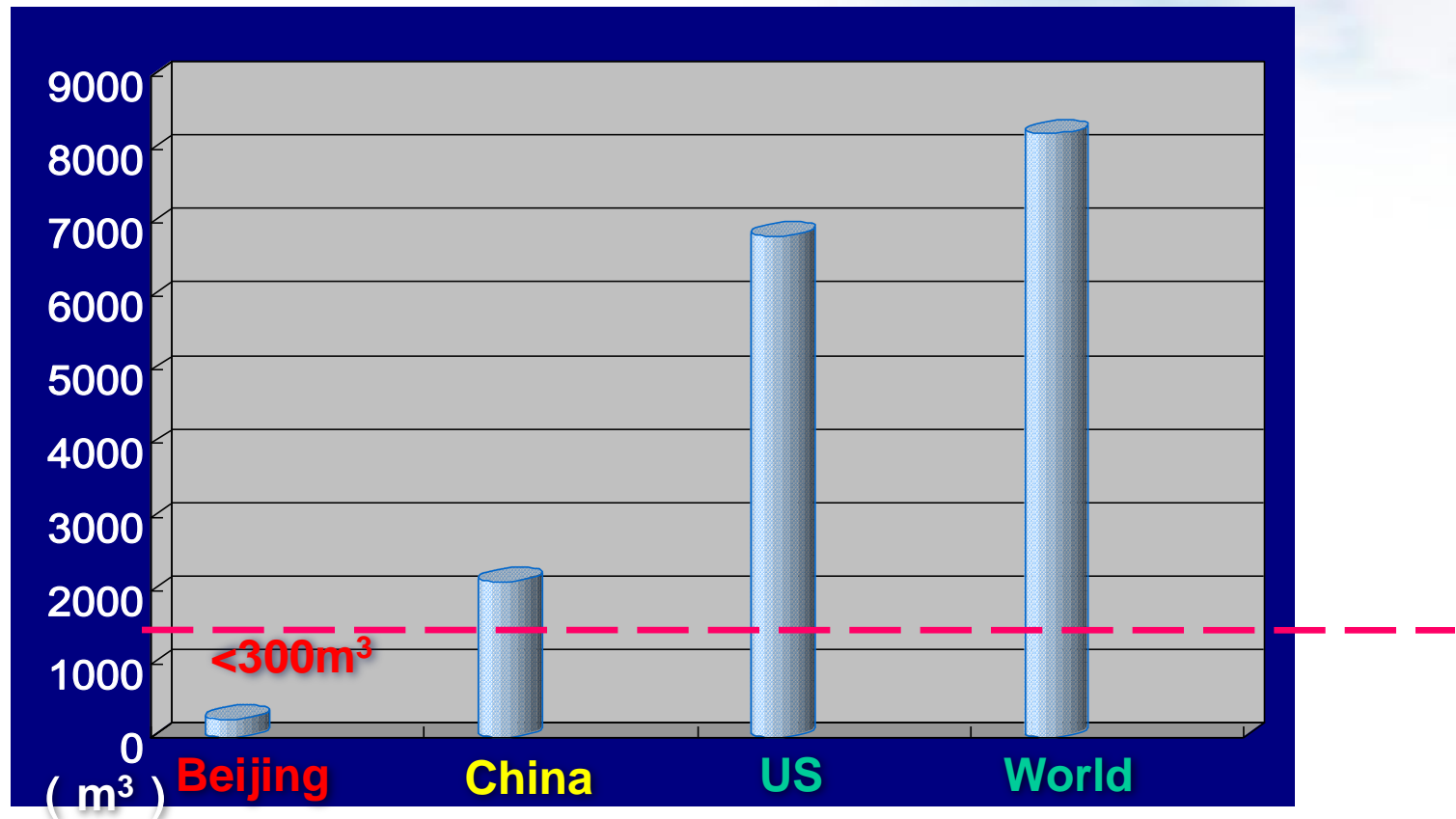
10% state-owned

90% collective-owned



Water Resources in Beijing

Beijing is a large city, suffering from serious water shortage, with water resource share below 300m^3 per capita.

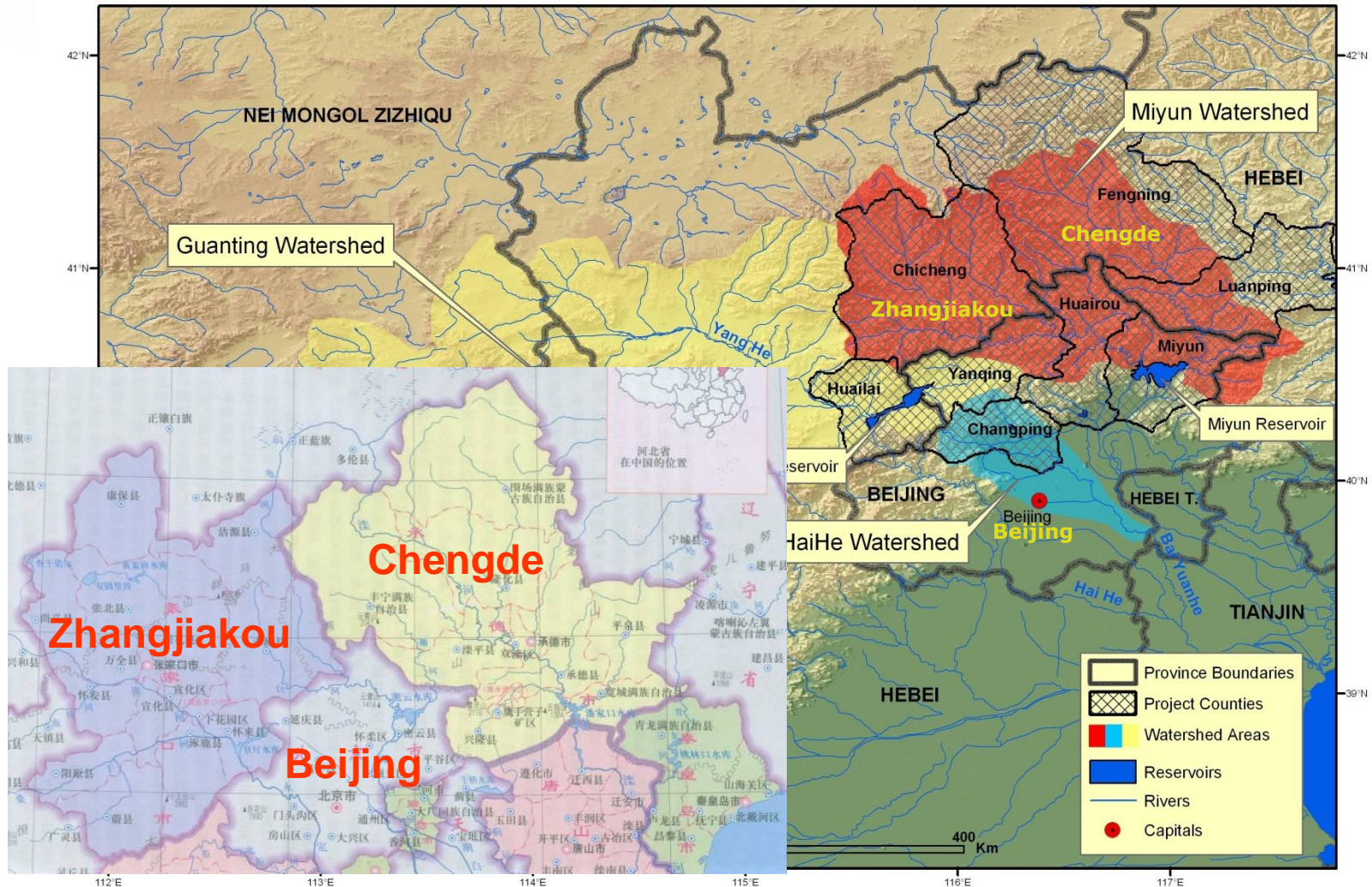


Miyun Reservoir

- ❖ Responsible for 70% of the water supply for Beijing's 17 million residents.
- ❖ Established in 1960, capacity: 4400 million m³
- ❖ Since 2000, only have about 1000 million m³



Desertification Control Programme North China: "Watershed Management on Forest Land", Beijing



- ❖ The total watershed area is 13,800 km²
- ❖ 1/3 in Beijing, 2/3 in Hebei

Policies to Protect Watershed

❖ **Ban of logging:**

- 85% ecological forest + 13% economic forest

❖ **Ban of grazing:**

- Since 2003, ban of 120,000 households raising livestock

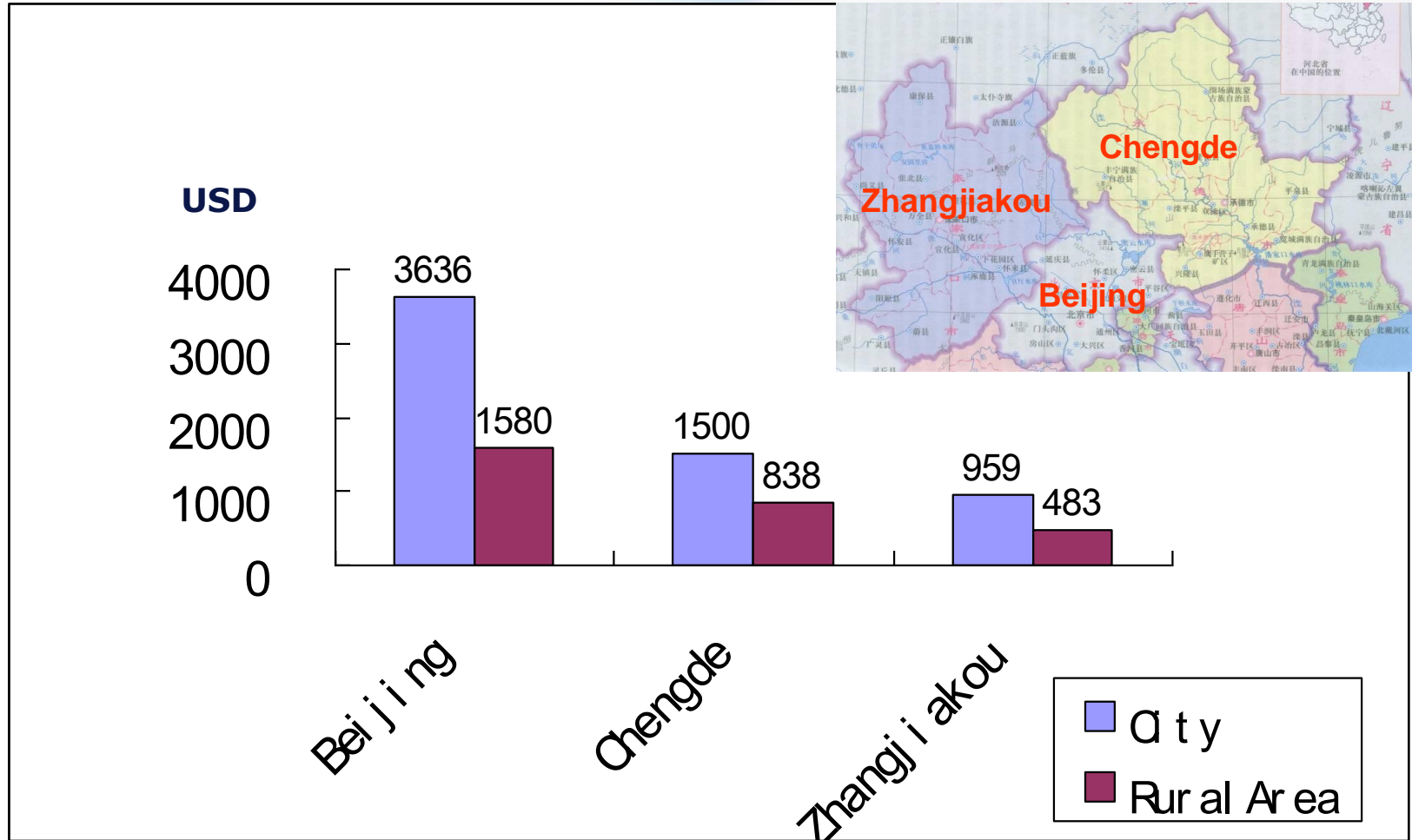
❖ **Ban of mining**

- By 2007, only 15% companies left of 851 mining companies

❖ **Move the big industry company**

- 2007, Beijing Steel Corporation moved to Hebei, 60,000 workers were laid off

Annual Income of Residence in Miyun Watershed in 2008 (USD)



Landscapes & Livelihoods

- **Natural resources use limit the locals' livelihood**
- **Widening the income gap between urban and rural areas**



2008, Beijing, Bird Nest



2008, Beijing Shower room

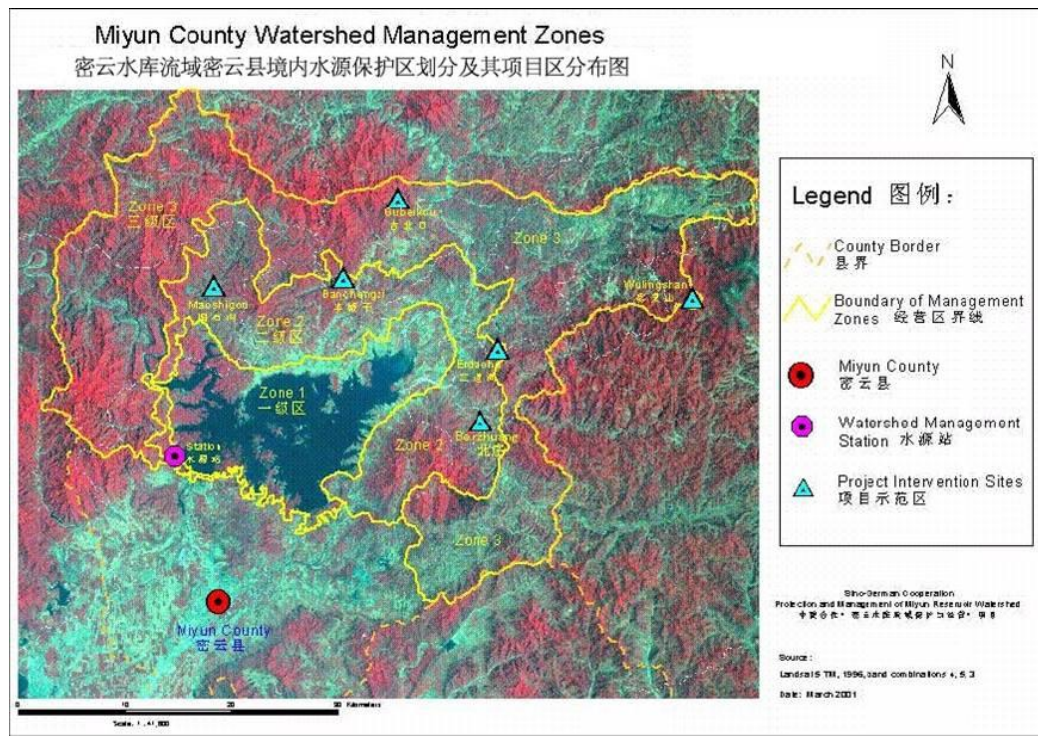
Measure 1: Farmland Conversion Program

- ❖ **294,000 farmers of 207,000 households.**
- ❖ **70,000 hectares**
- ❖ **Compensation**
(1st phase 2000-2008, 2nd phase 2008-2016)
 - Grain: 1500 kg/ha/year
 - Cash: 300 Yuan/ha/year (\$45)
 - Total investment: 420 million RMB (62 million USD)



Measure 2: Ecological Migration

- ❖ 2000 ~ 2004: 2480 people
10,000 Yuan/person (\$ 1470/person)
- ❖ 2005 ~ 2007: 11,340 people
14500 Yuan/person (\$2130/person)
- ❖ Still have 100,000 people in the protection zones



Measure 3: Job Opportunities: Forest Warden

- ❖ 46,908 farmers were hired as forest warden till 2007
- ❖ 400 Yuan/month (\$60/month)
- ❖ Patrol the forest land of 674,000 ha
 - Forest fire control
 - Pest and disease control



Measure 3: Job Opportunities: Water Warden

❖ Forest warden

❖ Water warden

- In 2006, 10,800 water warden were hired
- 500 Yuan/month (\$74/month)
- Patrol of riparian zone and water bodies
- Manage wells

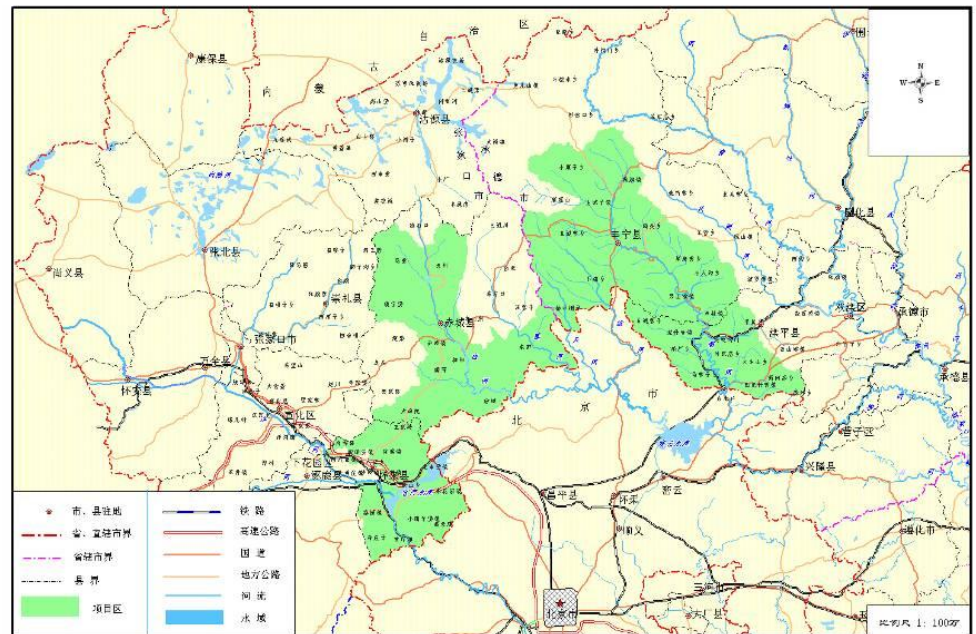


Measure 4: Cross Border Cooperation

- ❖ On October 11th, 2006, governments of Beijing and Hebei signed MOU in Beijing

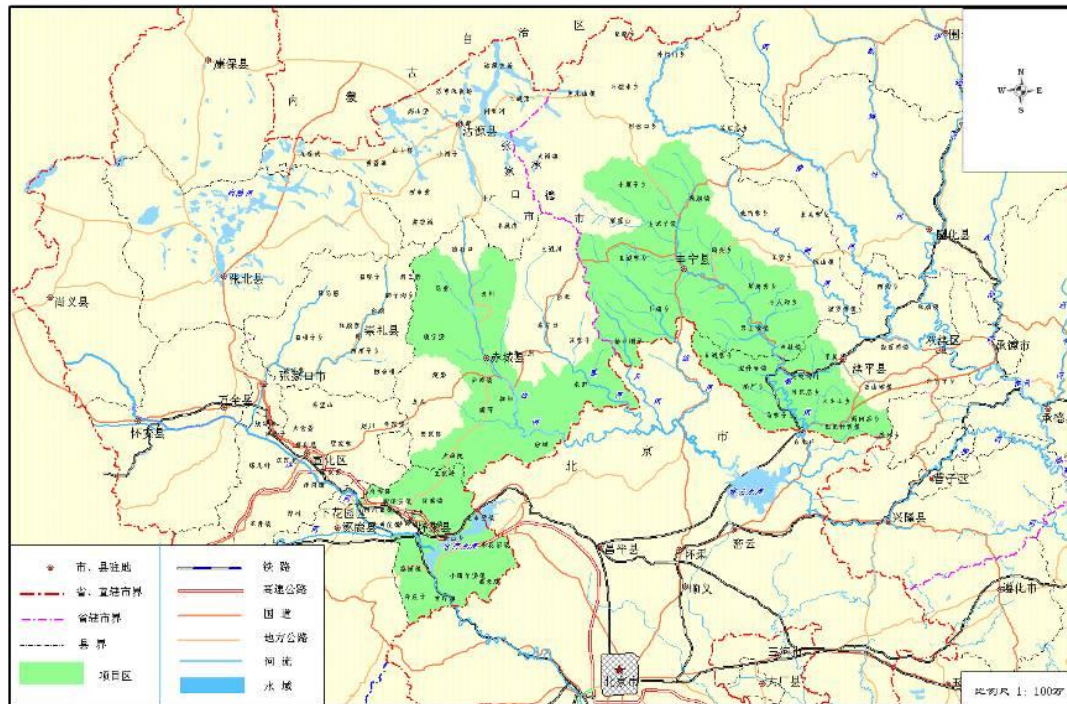


京冀生态水源林建设项目区位置图



Measure 4: Cross Border Cooperation

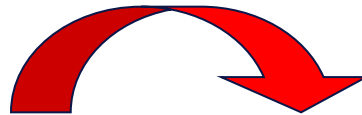
京冀生态水源林建设项目区位置图



- ❖ Restore 59,700 ha watershed
- ❖ Beijing government will invest 7500 Yuan/ha (\$1100/ha)
- ❖ total investment: 100 Million Yuan (\$15 million)

Measure 4: Cross Border Cooperation

- ❖ Convert 12,200 ha rice plantation to corn in Hebei
- ❖ Beijing government will compensate Hebei farmers by 550 yuan/mu/year (\$1200/ha/year)
 - Saved water = $900 \text{ m}^3/\text{mu}$ ($13500 \text{ m}^3/\text{ha}$)
 - Totally saved water = 64 million m^3
 - Reduce fertilizer use = 11,000 tons
 - Reduce pesticide use = 71 tons
 - Reduce herbicide use = 18 tons



The main problems of current eco-compensation Policy and Practice

- Compensation standard lacks scientific basis and flexibility.
- Eco-compensation mechanism mainly relies on the projects, lacks stability.
- Stakeholders didn't have enough chance to be involved
- Funding channel was single, and there was a lack of using marketing measures
- Lack of monitoring and evaluating system for the ecological function of the restoration
- Vulnerable groups are involved in the programs

Common Challenges in China and the US

- Lack of cooperation among different agencies
- Lack of trans-boundary cooperation
- It is difficult to monetize ecosystem services
- It is difficult to identify buyers
- The evaluation is complex, and make the transaction cost high
- It takes time to set up a market to trade ecosystem services

Advantages in China

- Chinese government has taken the leading role to organize the Payment for Ecosystem Services
- Government has lots of resources
- It is more efficient to rescue threatened ecosystems



Advantages in the US

- Less population, less pressure on the ecosystem services
- Non-profit organizations are more active
e.g. Ecotrust, Willamette Partnership
- Tax system encourages donors to contribute to conservation
- Market-based system
- More public and stakeholder participation,
e.g conservation easement



Portland Naked Bike Ride

Harmonious Society!





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Thank you for your attention !



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