



Integrated Ecological and Economic Evaluation of ValWood Land Use in South China

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Outline

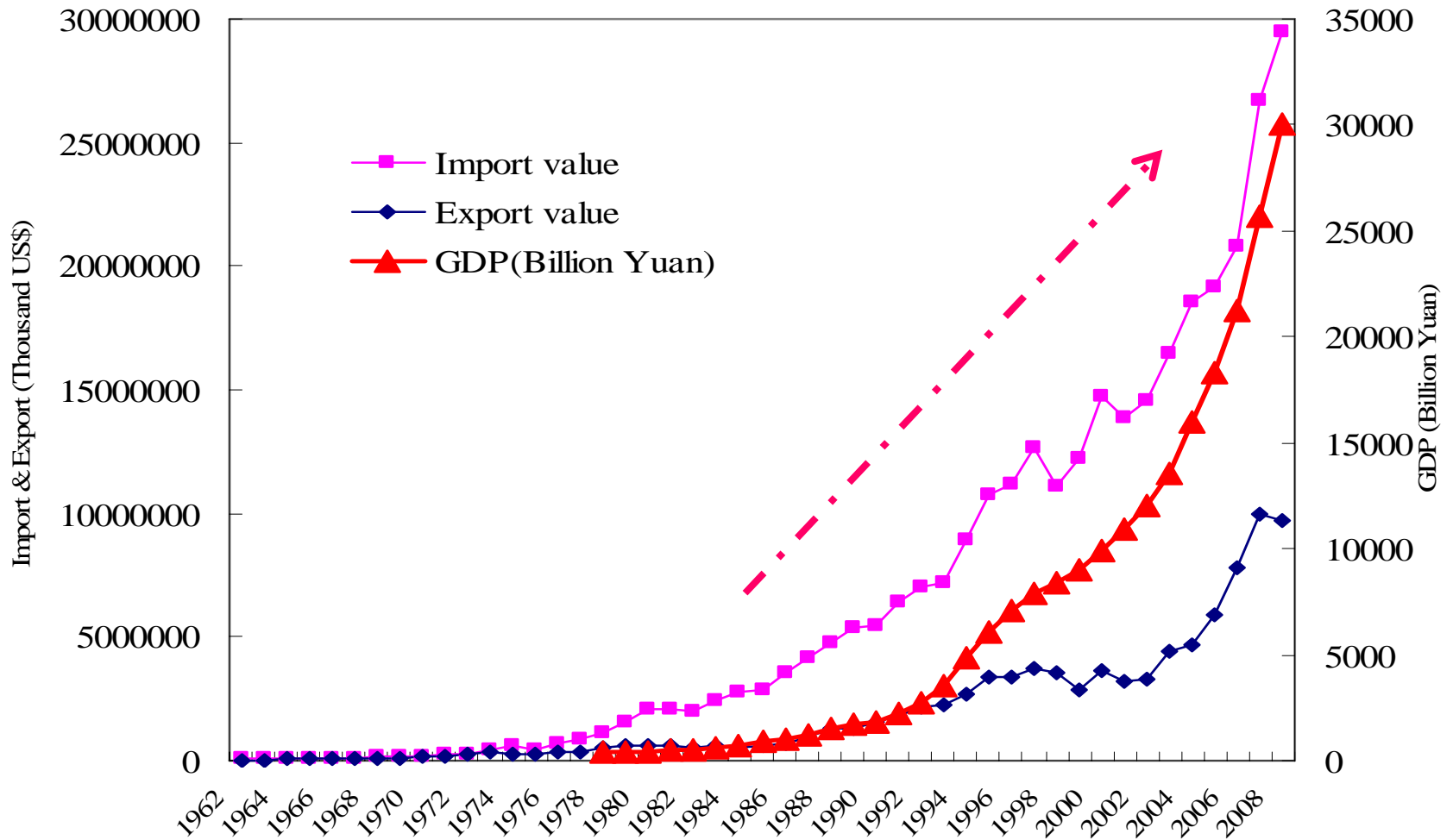
- Background – urgent need in multi-purpose forestry
- ValWood land use system
- Materials and Methods
- Main findings
- Discussion and conclusion



Background

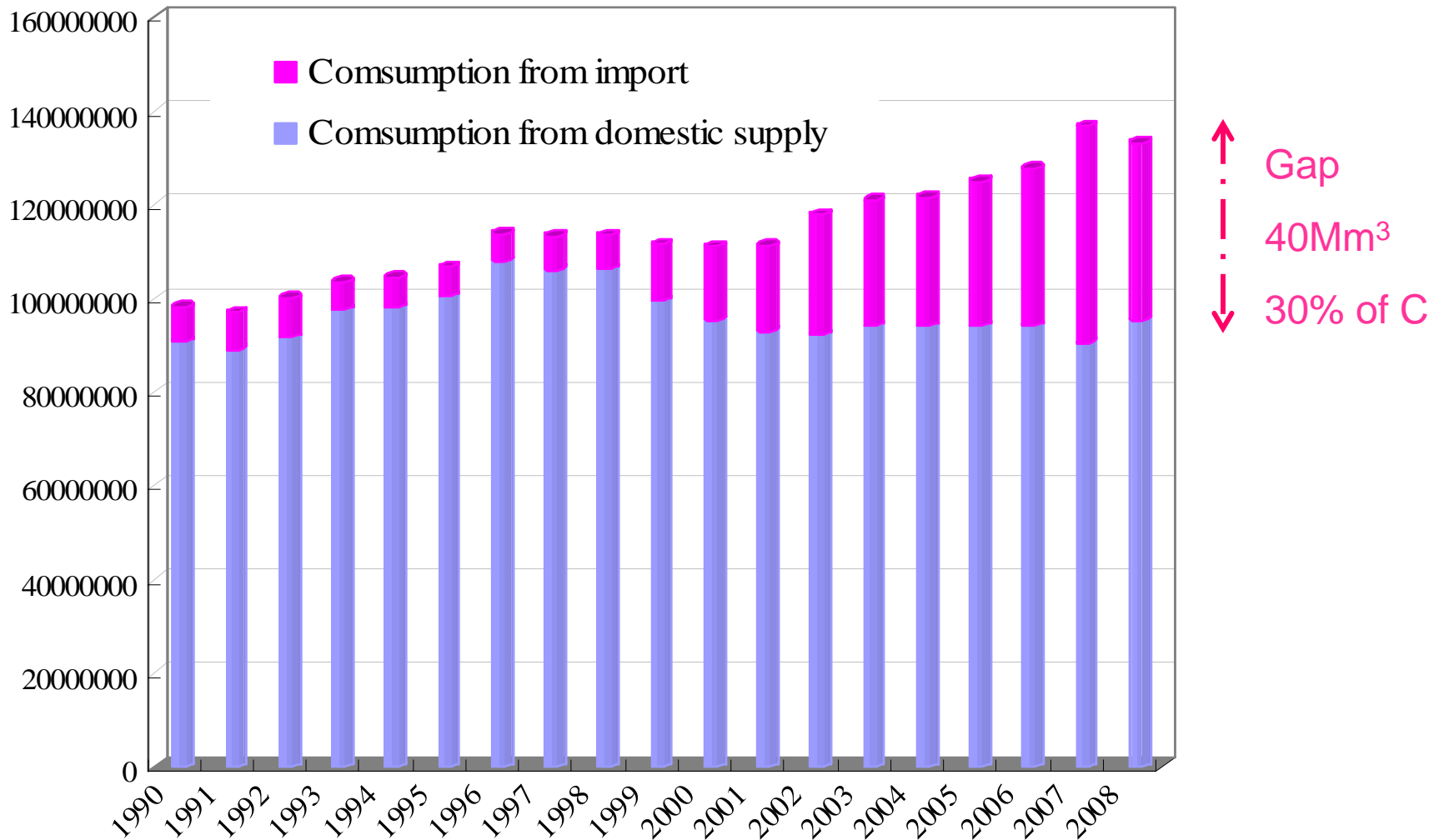
- urgent need in multi-purpose forestry?

China's import & export of industrial round-wood with economic development



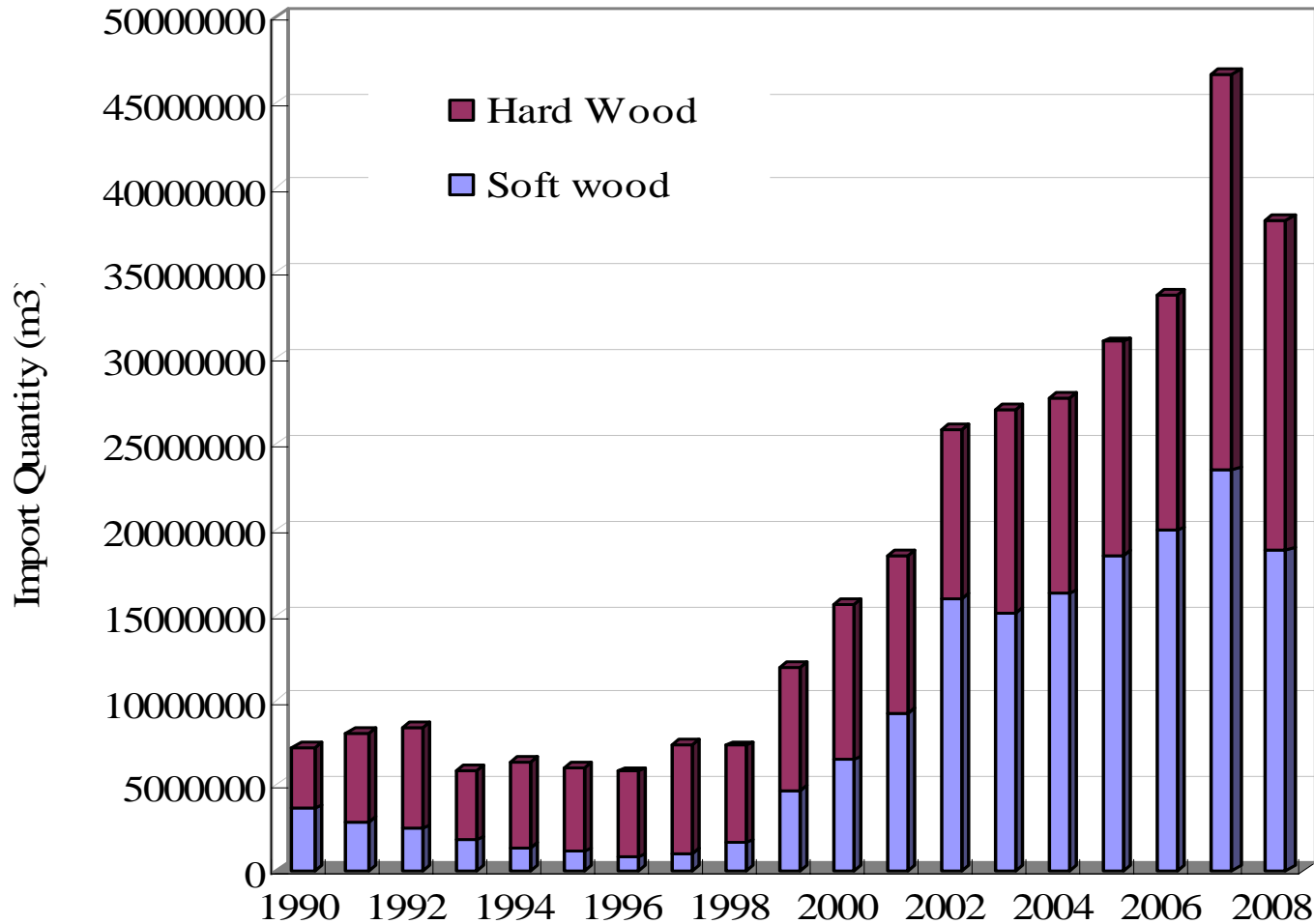
Source: FAO database, China's Statistics Yearbook 2009

The gap between supply and demand of industrial round-wood (Unit: m³)



Source: FAO database

Type of the industrial round-wood imported to China



Import price:

1560 Yuan/m³

Soft wood:

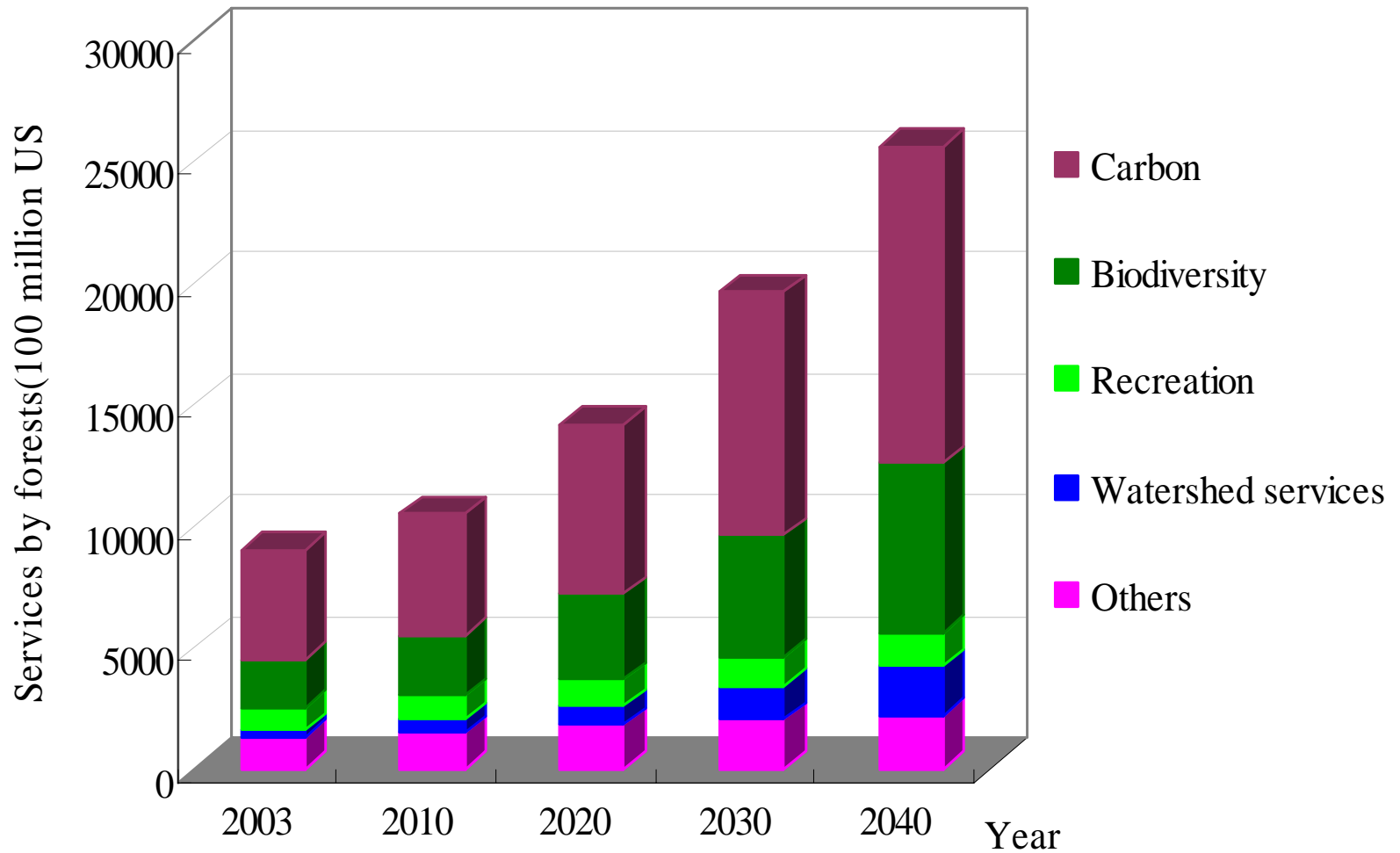
1115 Yuan/m³

Hard wood:

2130 Yuan/m³

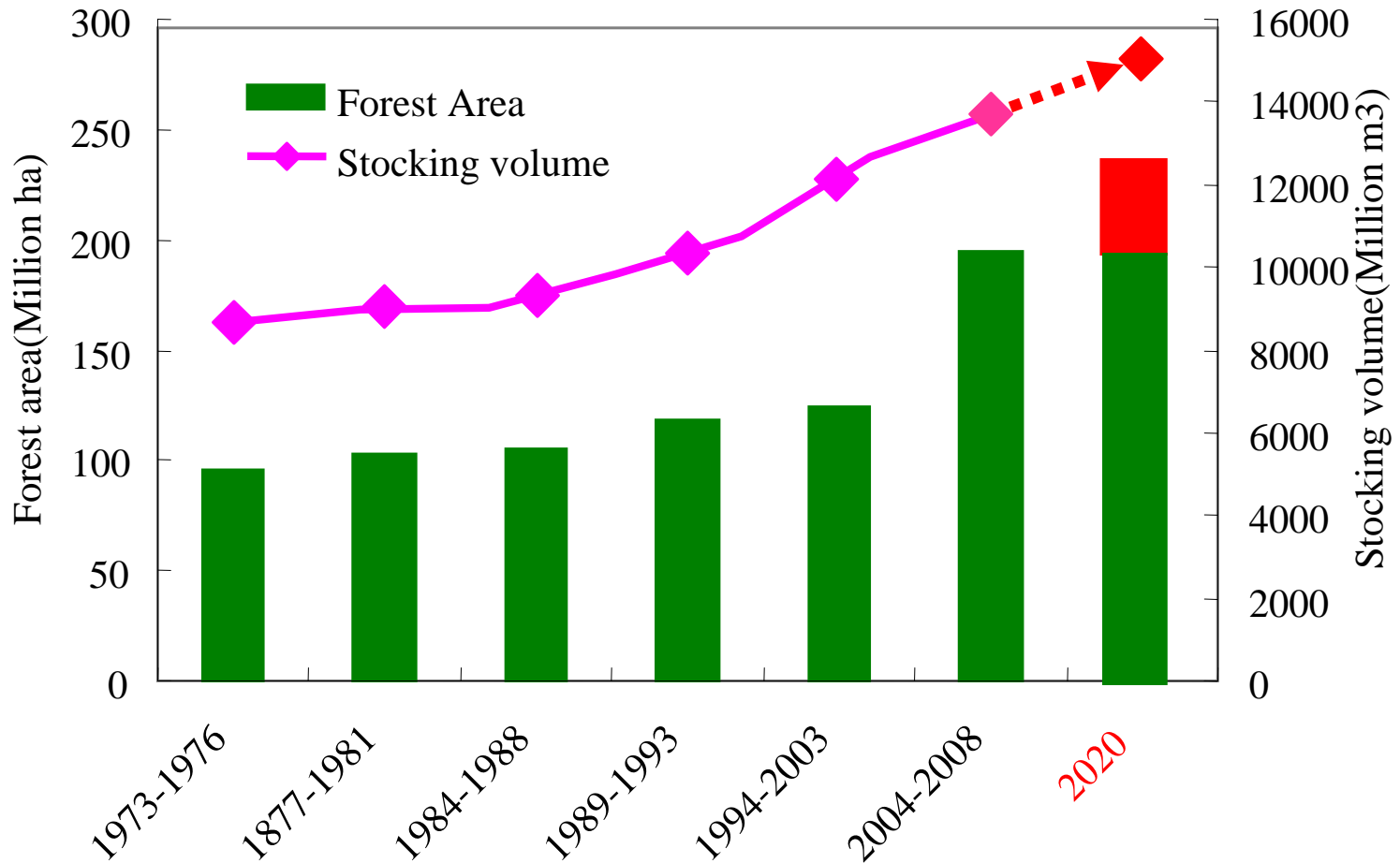
Source: FAO database

Trends of demand on forest ecosystem services in the globe



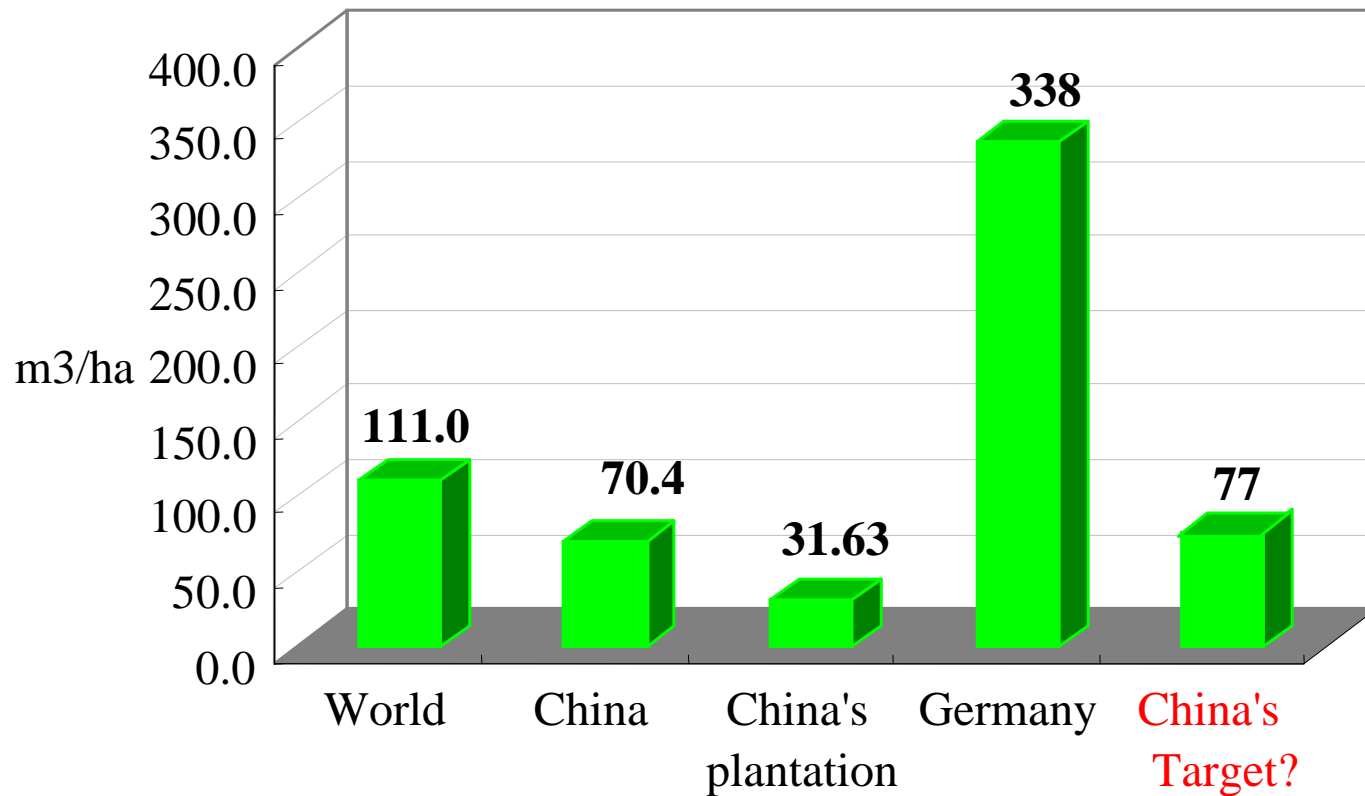
Source: Leslie (2005)

Forest resources development and target in China



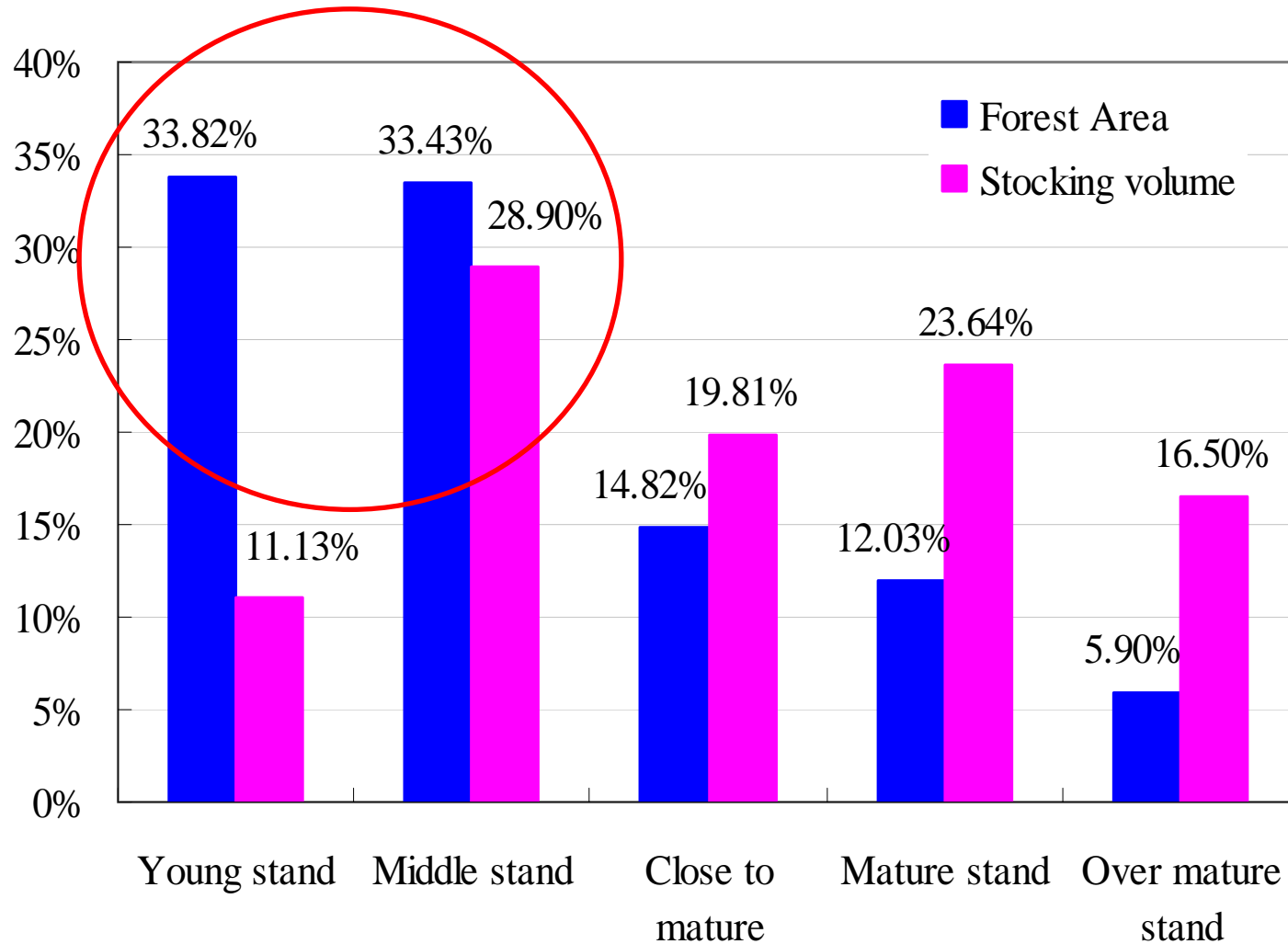
Source: forest inventory data

Forest quality in China: m³/ha



Source: FAO, 2009; Forest inventory of China 2004-2008

Most stands are at young age and middle age stage



Source: forest inventory data 2004-2008



ValWood land use system

- What is ValWood?

Traditional agroforestry



***Paulownia (Paulownia elongate) -
Wheat Intercropping (Yanzhou,
Shandong)***



***Rubber tree (Hevea
brasiliensis) - Tea (Camellia
sinensis) Interplanting***

Traditional agroforestry (Cont...)



***Pineapple Intercropped
in Eucalyptus Plantation
(Eucalyptus Leizhou No.
1) (Hainan)***

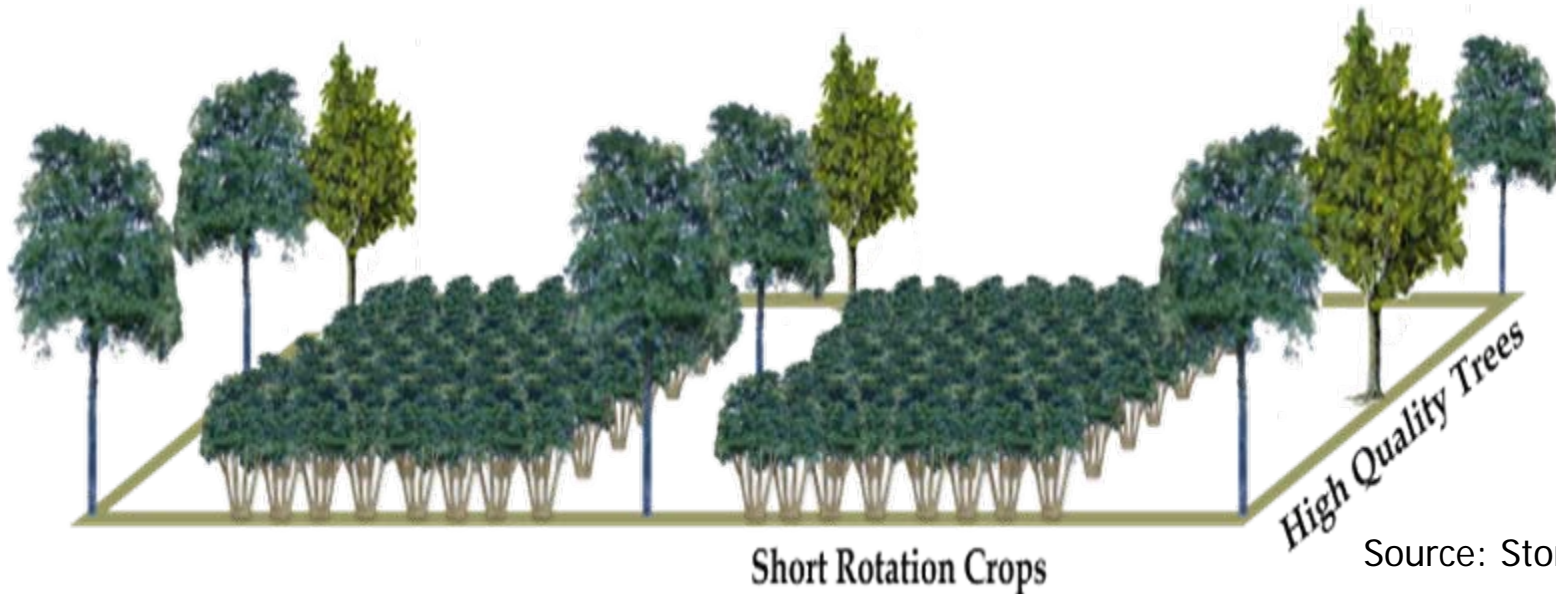


***Forest, Network of Farmland
in Zhujiang River Delta
(Guangdong)***

Traditional agroforestry (Cont...)

- Agro-forestry or farm forestry is a production technique or method that combines agriculture and forestry on same piece of land to fully utilizing the natural resources of sunlight, water and nutrition. (Zhonglun Wu, 1991)
- The most commonly used method in China is agro-silviculture or the silvarable practice, which combines the growth of crops and trees into one harmonious system.
- Until 1990s, the major agro-forestry systems are estimated to cover 45 M ha, which has been playing an integral and vital role for more than one billion subsistence farmers.

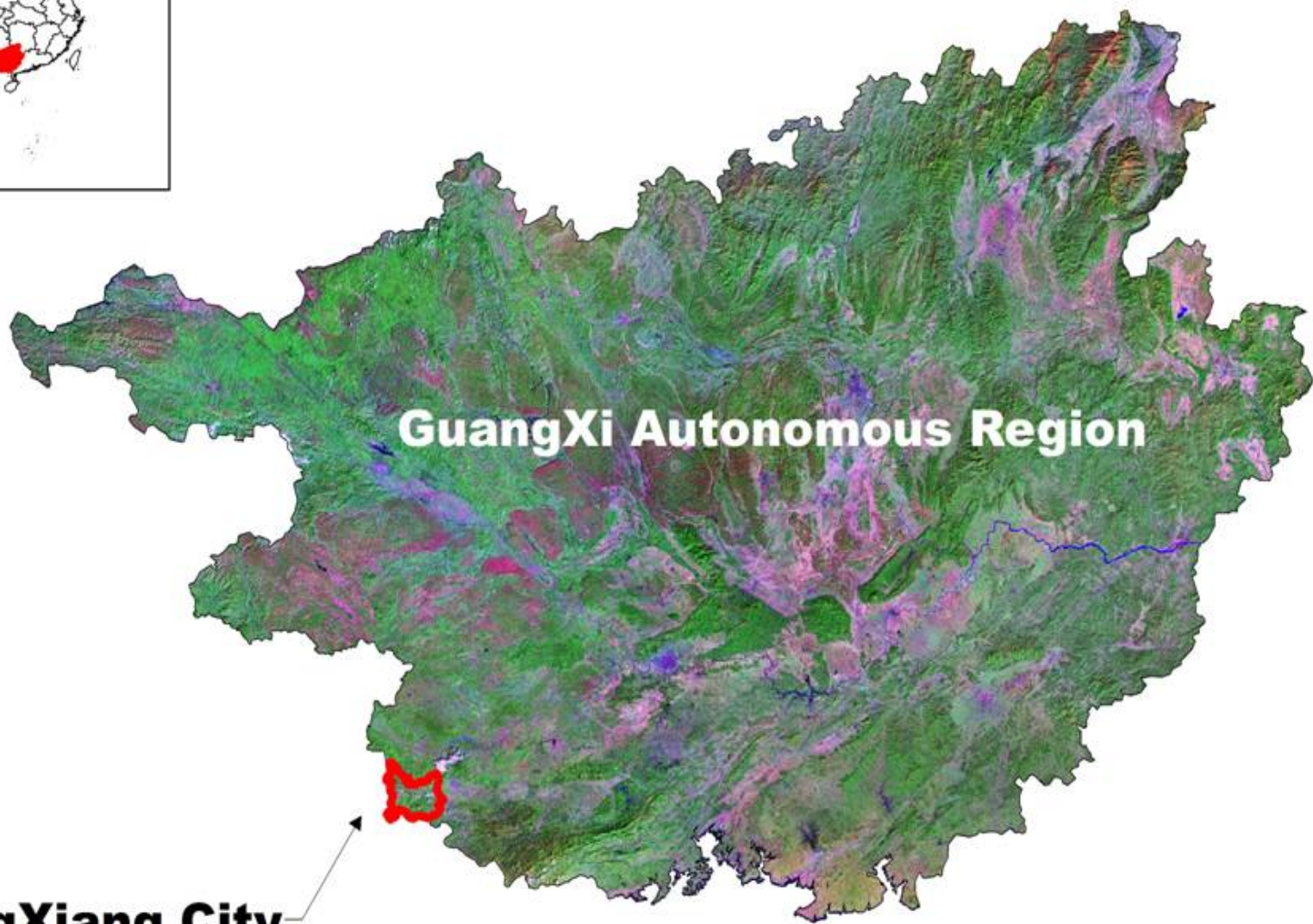
ValWood land use system



Source: Storch et al (2009)

Long rotation valuable wood production + short rotation crops

Is ValWood system attractive in economic, ecological and social perspectives?





Materials and Methods

- Four options to be compared
 - Pure short rotation crop stand (e.g., Eucalyptus)
 - Pure valuable tree species stand (one species)
 - Pure valuable tree species stand (several species)
 - valuable tree species + short rotation crop
- Two types of products to be considered
 - wood (economic aspect)
 - above-ground biomass carbon (ecological aspect)



Materials and Methods (Cont...)

- Data source

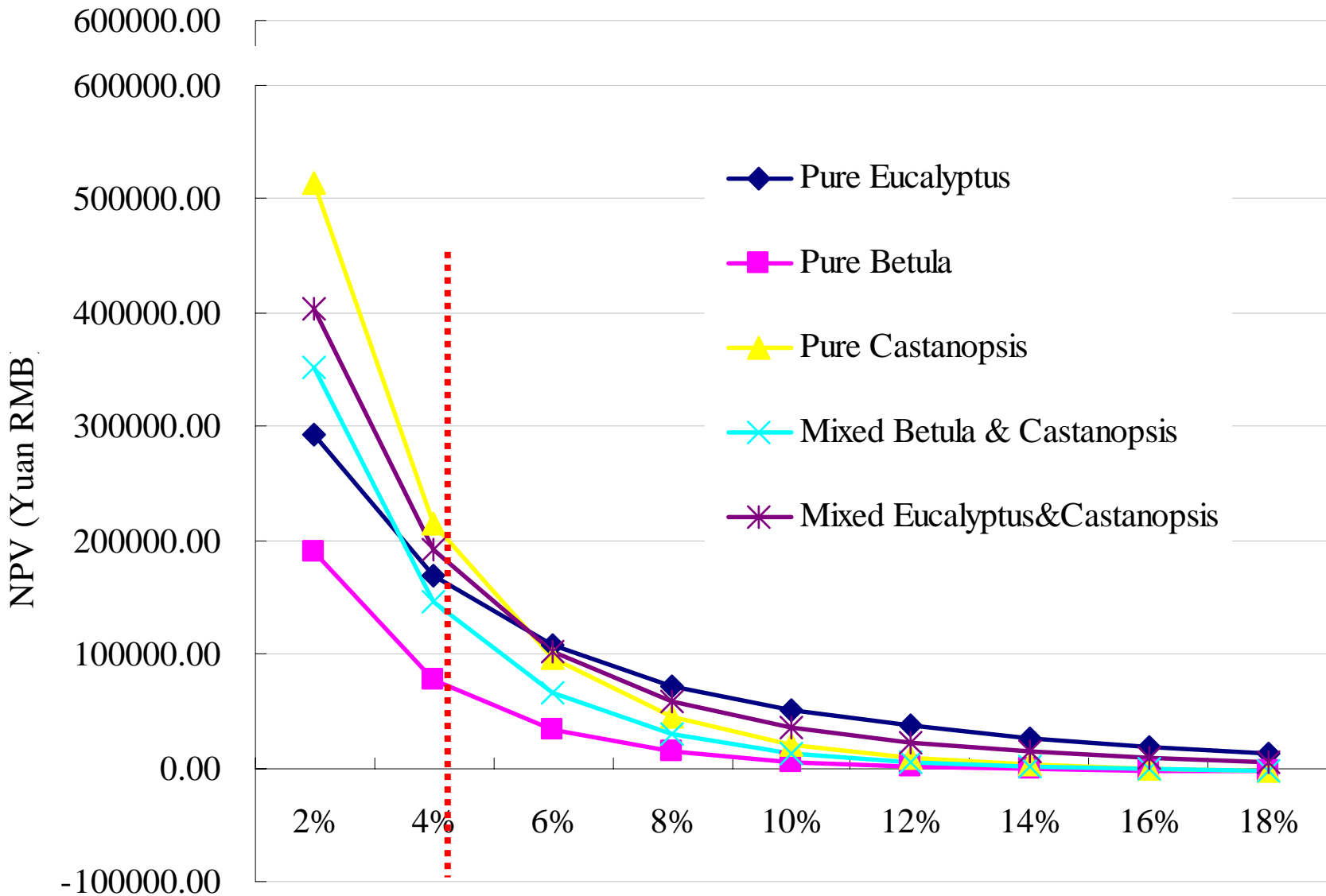
- valuable tree species and growth data
- Short Rotation crop and growth data

- Methods

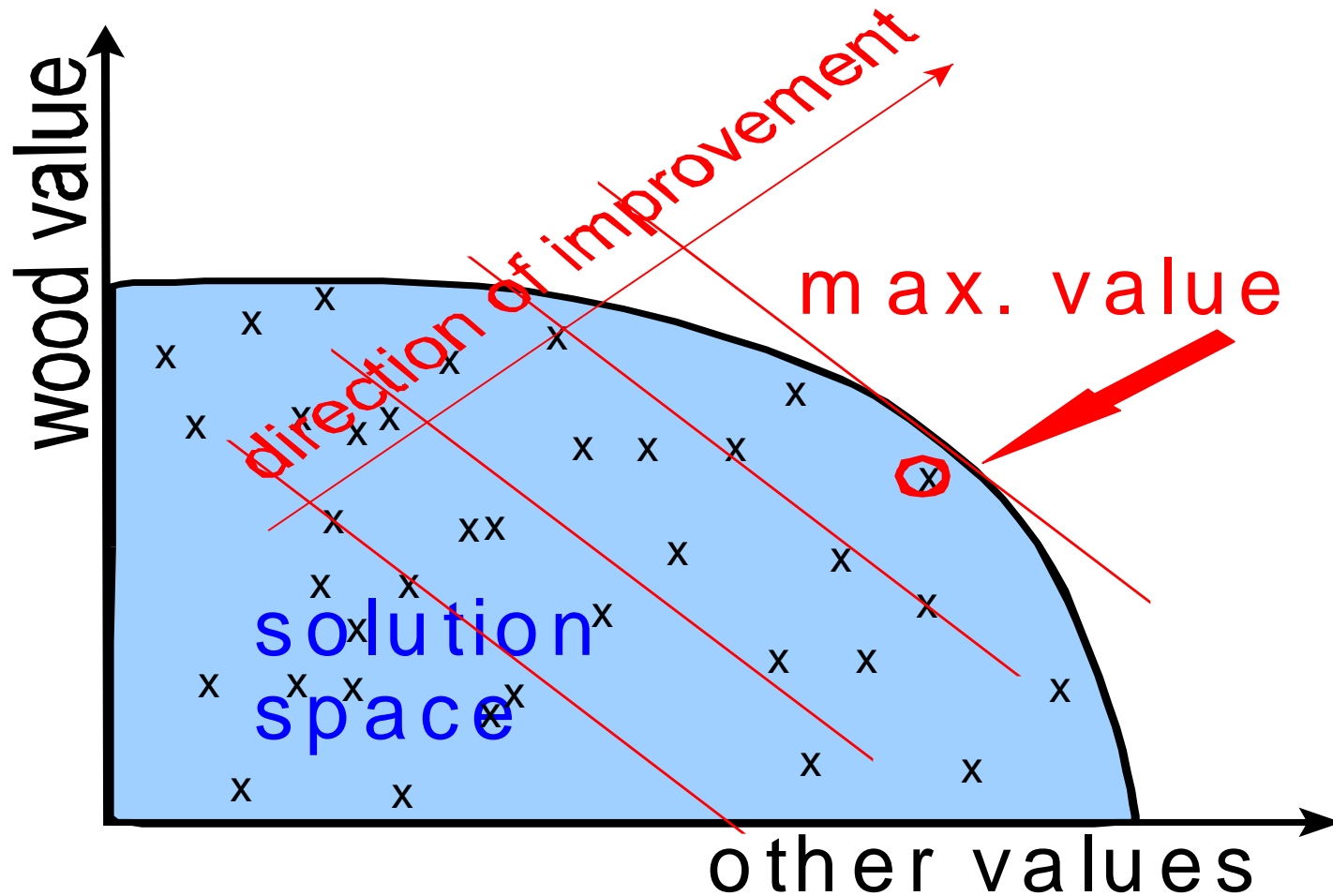
- Cost-benefit analysis

Main findings:

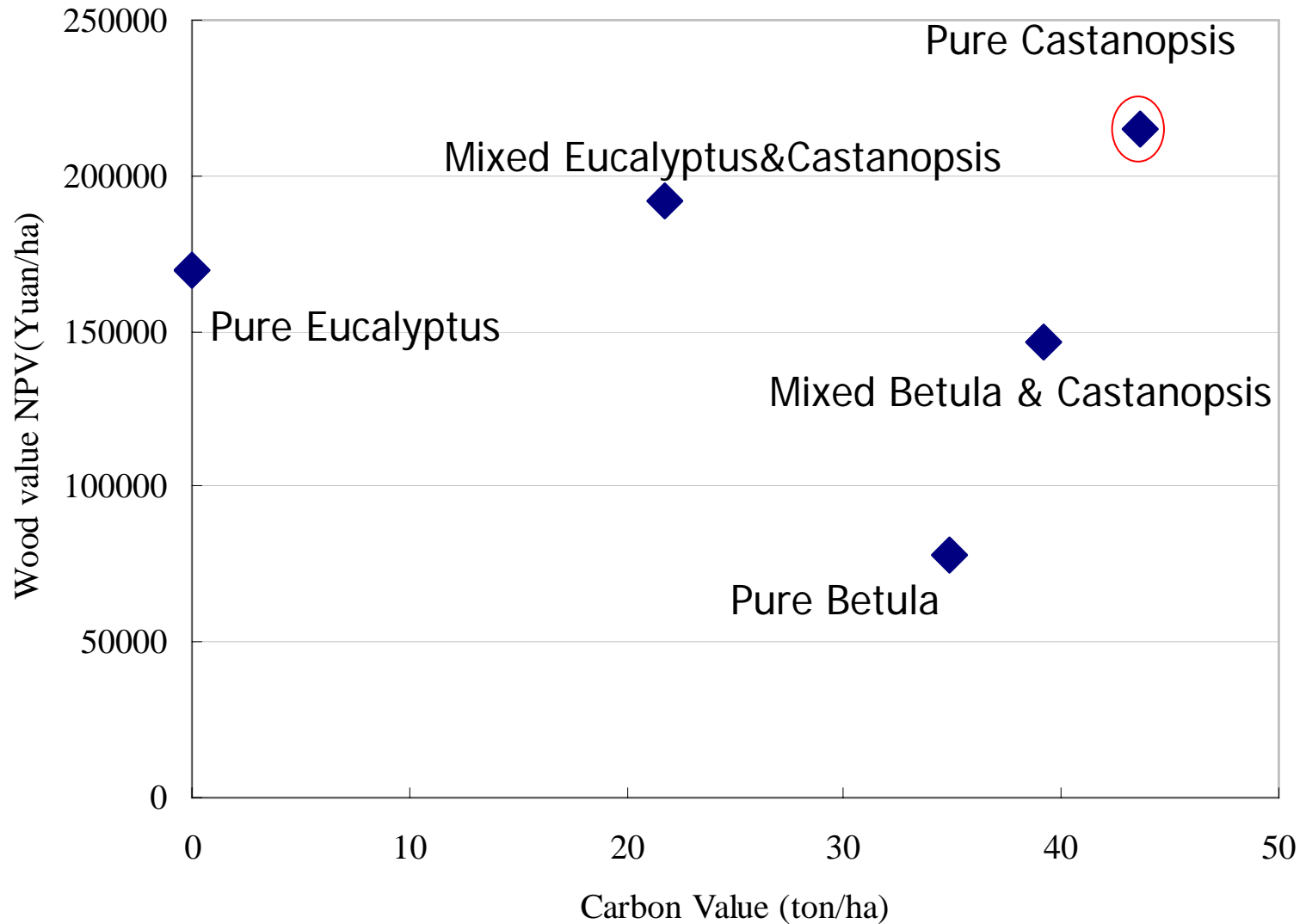
NPV comparison at different discount rate



Combination of Products



Wood value + Carbon value





Discussion and conclusion

- ValWood system provides many options
- The decision depends on:
 - adaptation to site conditions
 - adaptation to markets
 - adaptation to multiple social demands
 -

Thank you for your attention!

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