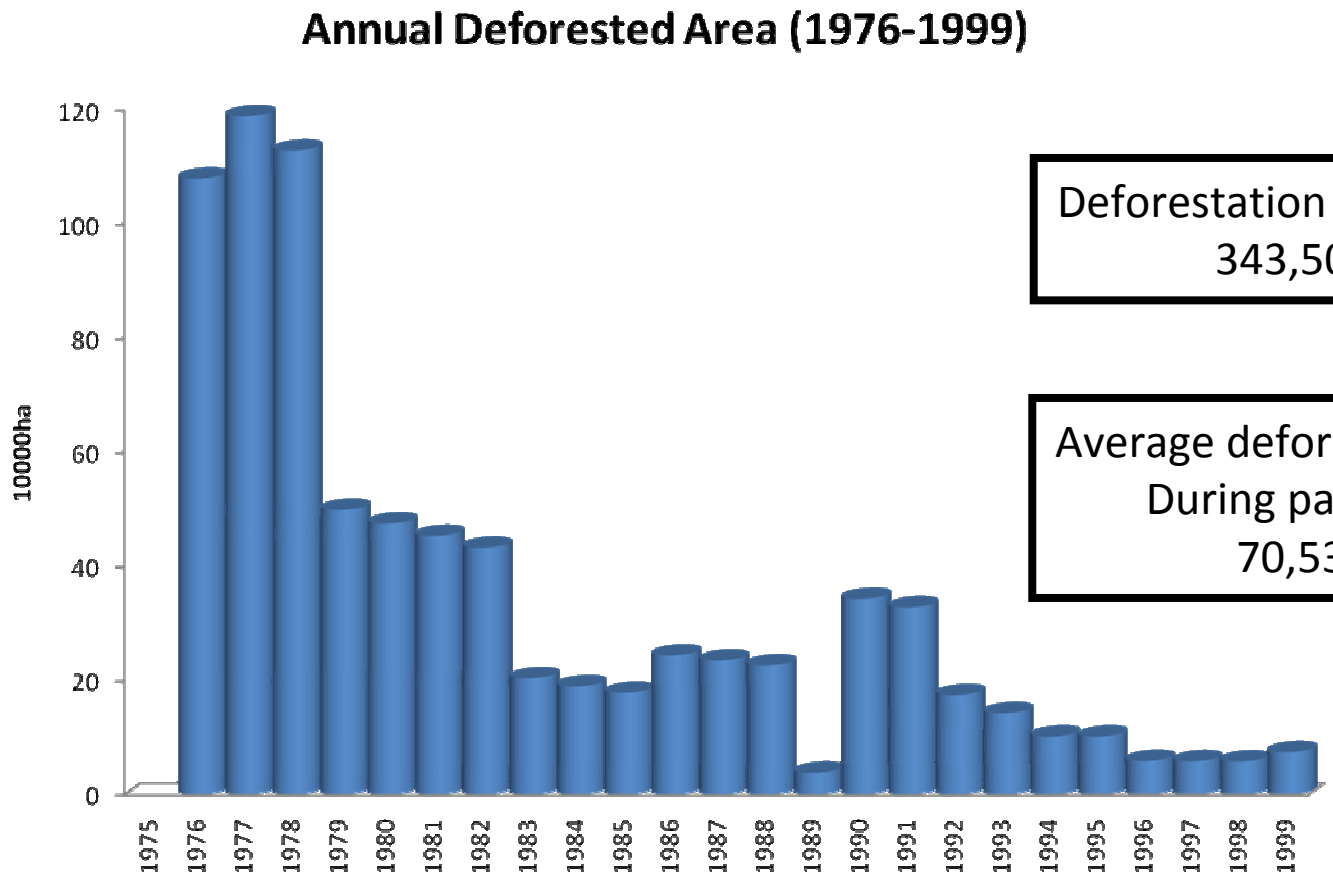
Discussion on a methodology of developing reference scenario for REDD - Possible Approaches -

Waseda University
&
Kasetsart University

Simplified reference level 1

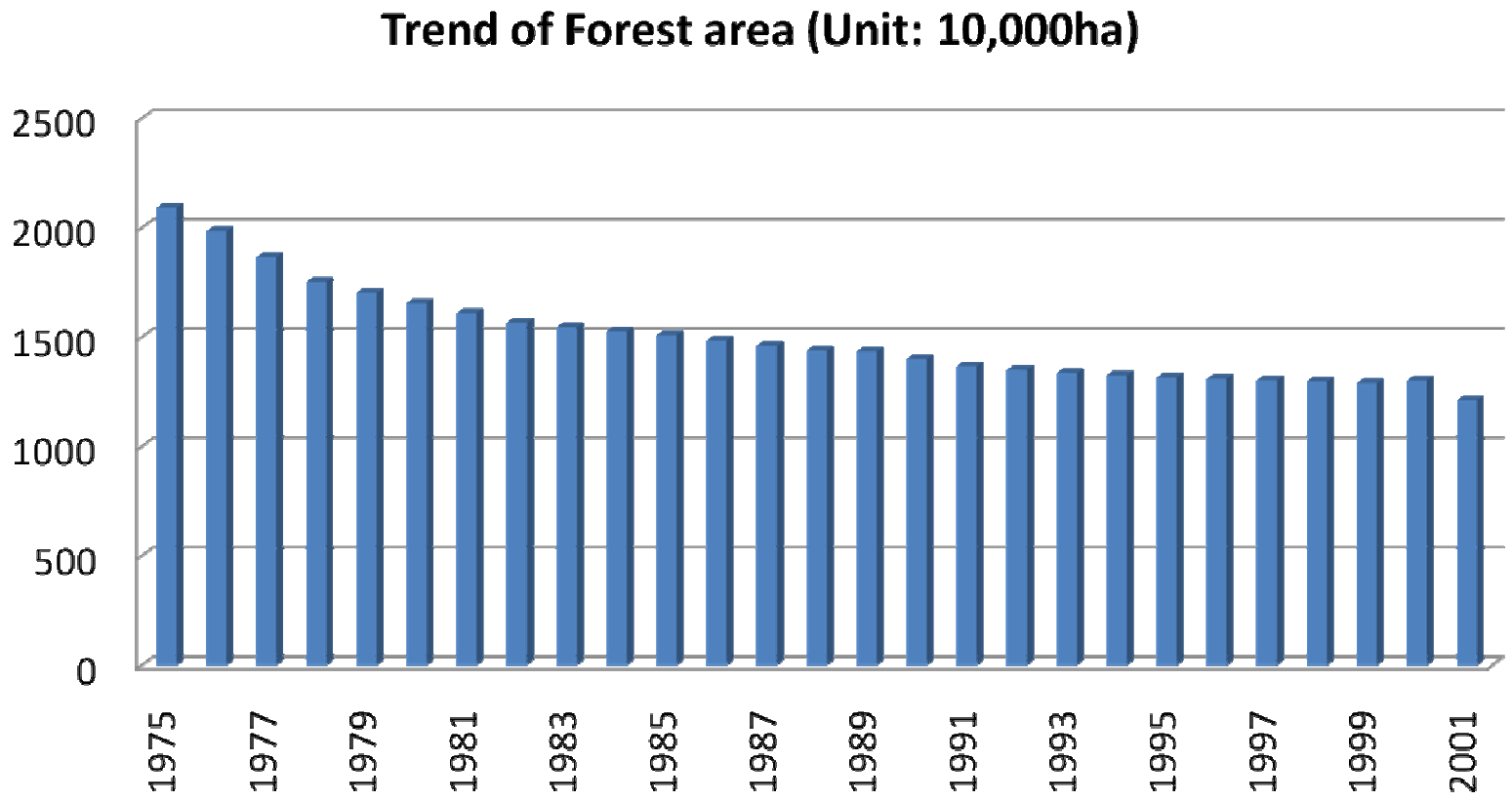


Deforestation area in 1990
343,500ha

Average deforestation area
During past 5years
70,530ha

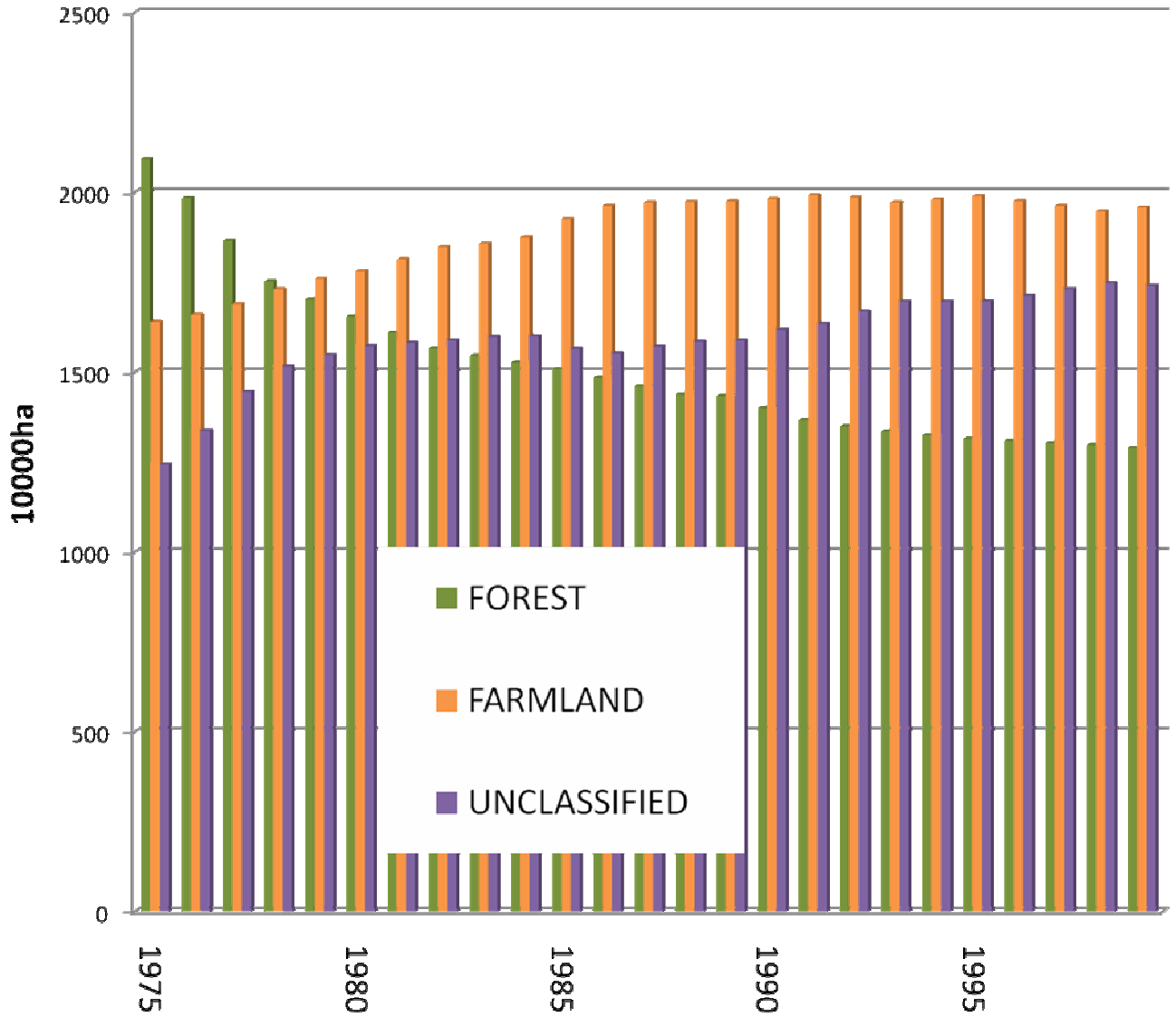
Apparent high annual variability

Simplified reference level 2



Estimation by a quadratic equation.
Adjusted R2 : 0.96
Forest_area＝5255236+1.316Xyear-5259.41 X Year**2
t Value (8.41) (-8.36) (8.32)
Unit: 10,000ha

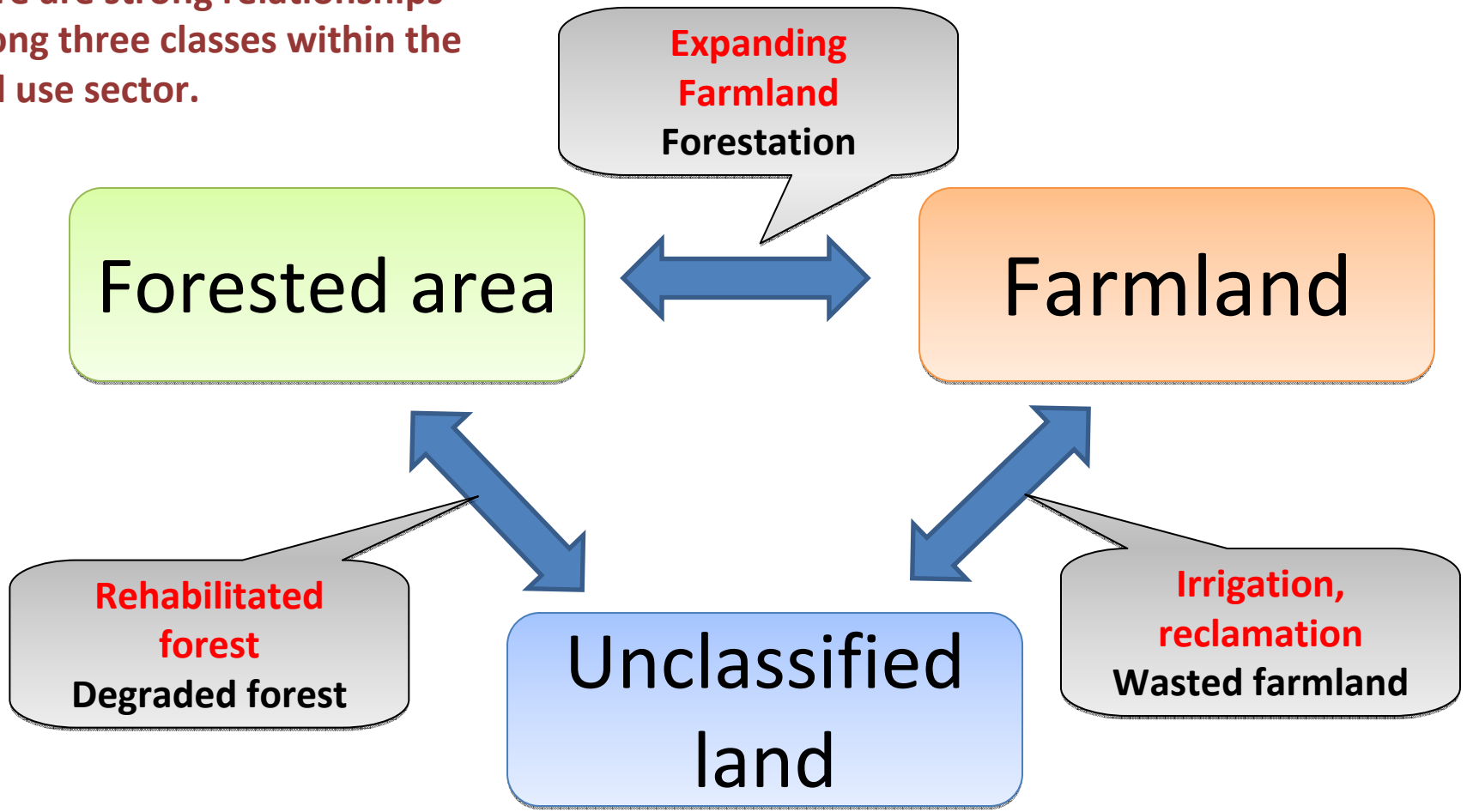
Land use changes 1975-1999



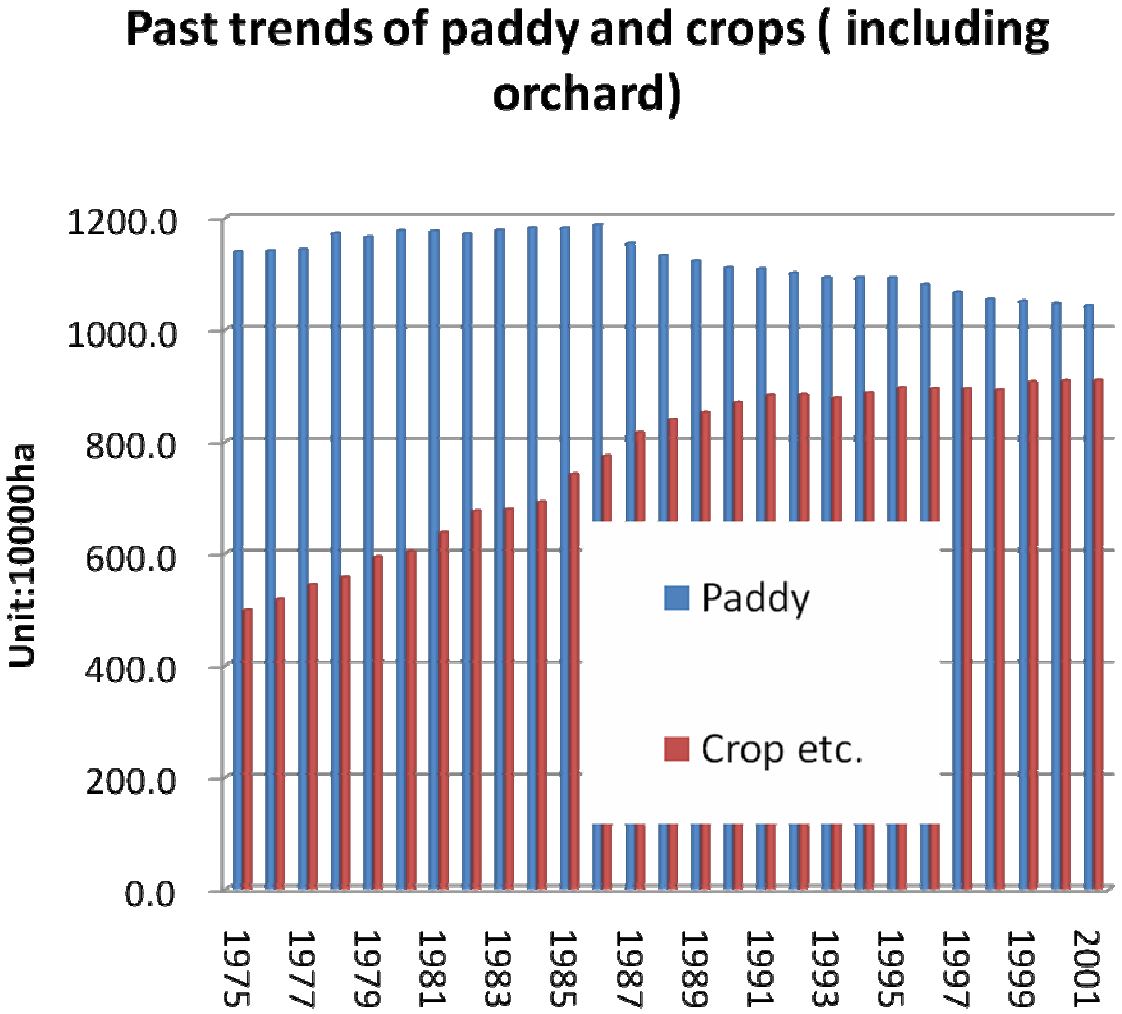
Relationships among land use sector

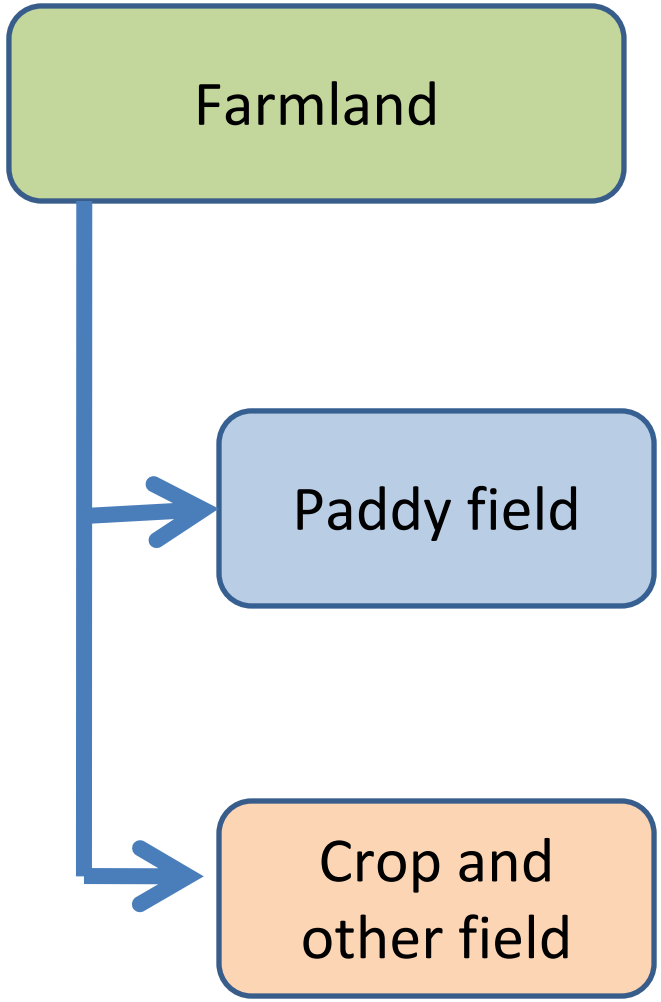
Forest area＝4962.0－1.016*Farmland－0.959＊Unclassified land (unit:10,000ha)
t value (204.0) (-45.3) (-44.0)
Adjusted R2: 0.999

There are strong relationships among three classes within the land use sector.



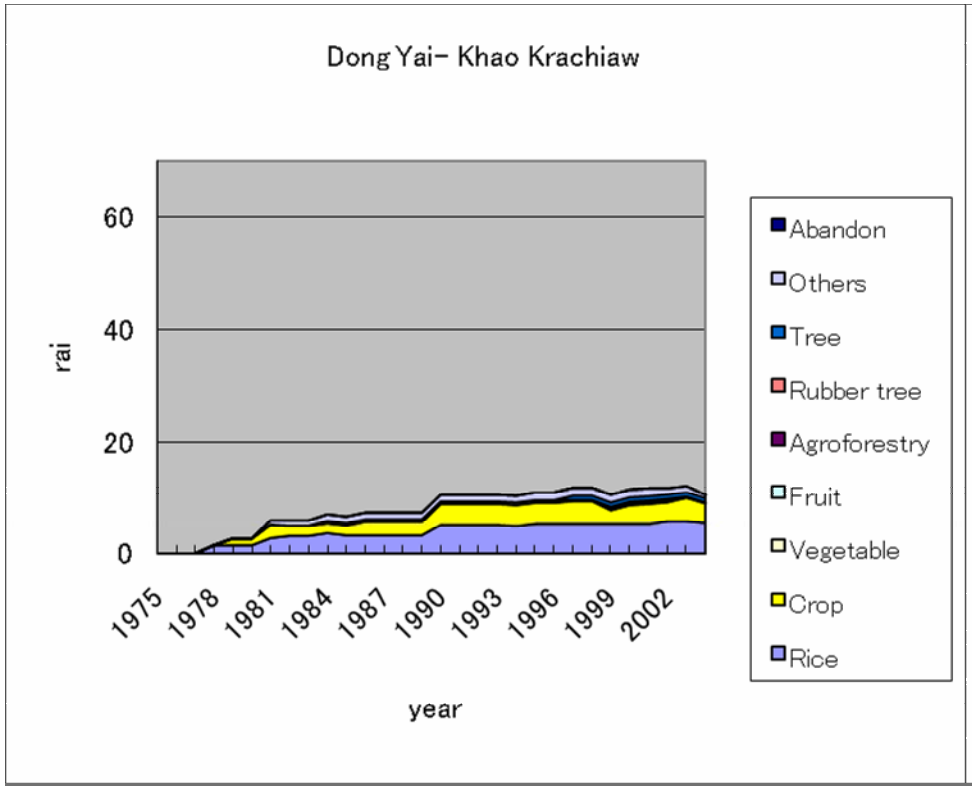
Paddy has not affected deforestation in the past.



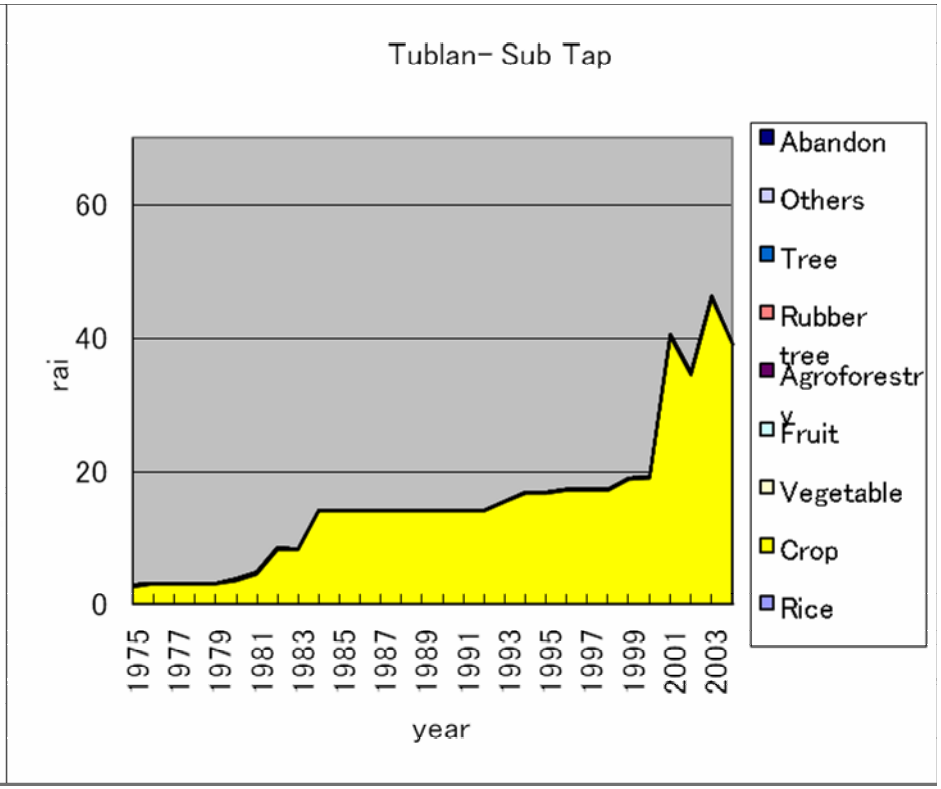


Land use changes within farmland at village level
(6.25 rai=1 hectare)

Paddy oriented village



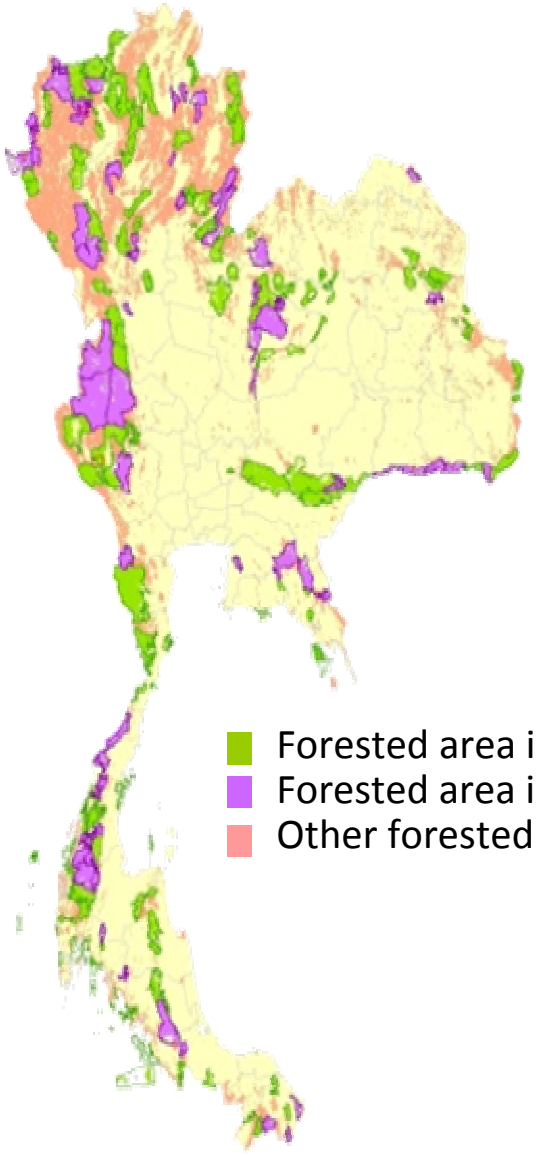
Crop oriented village



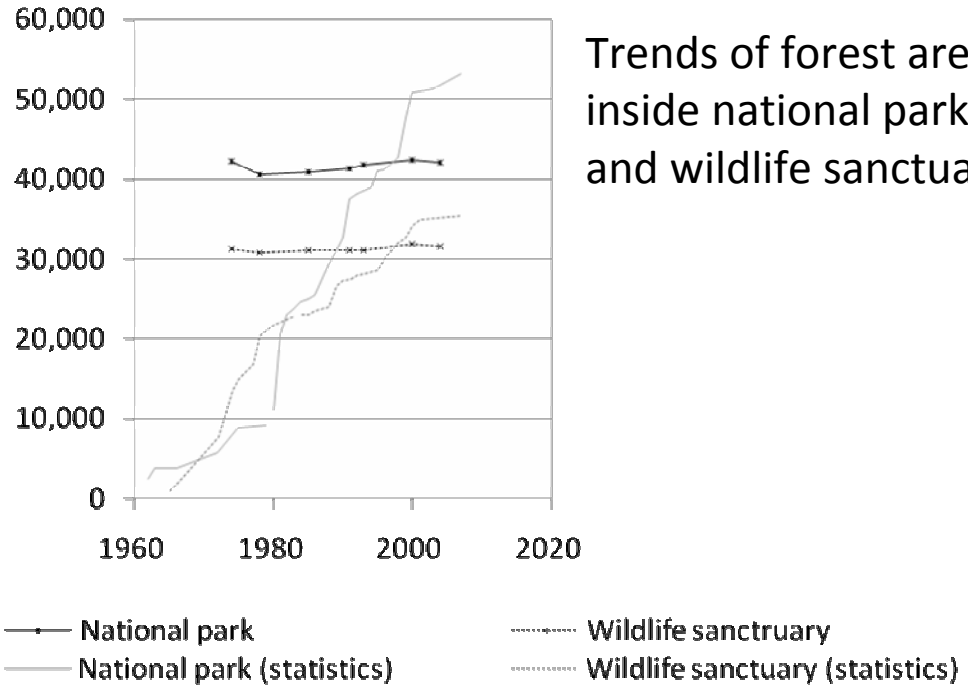
Legal/administrative effects to protect forests in case study area

Khuean Srinagarindra National Park
From 1981

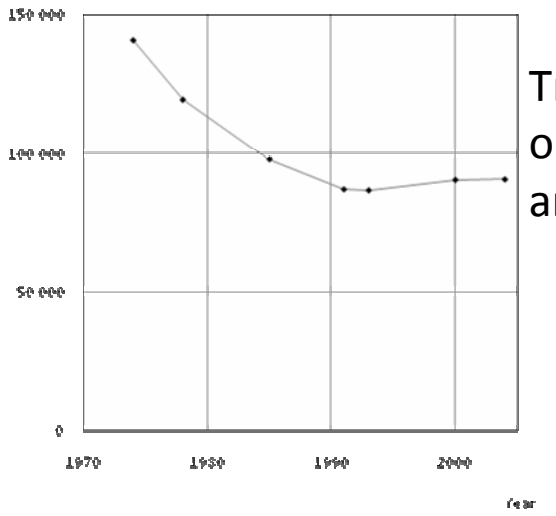
National regulations to protect forests



Forested area in national park
Forested area in wildlife sanctuary
Other forested area



Trends of forest area inside national parks and wildlife sanctuary

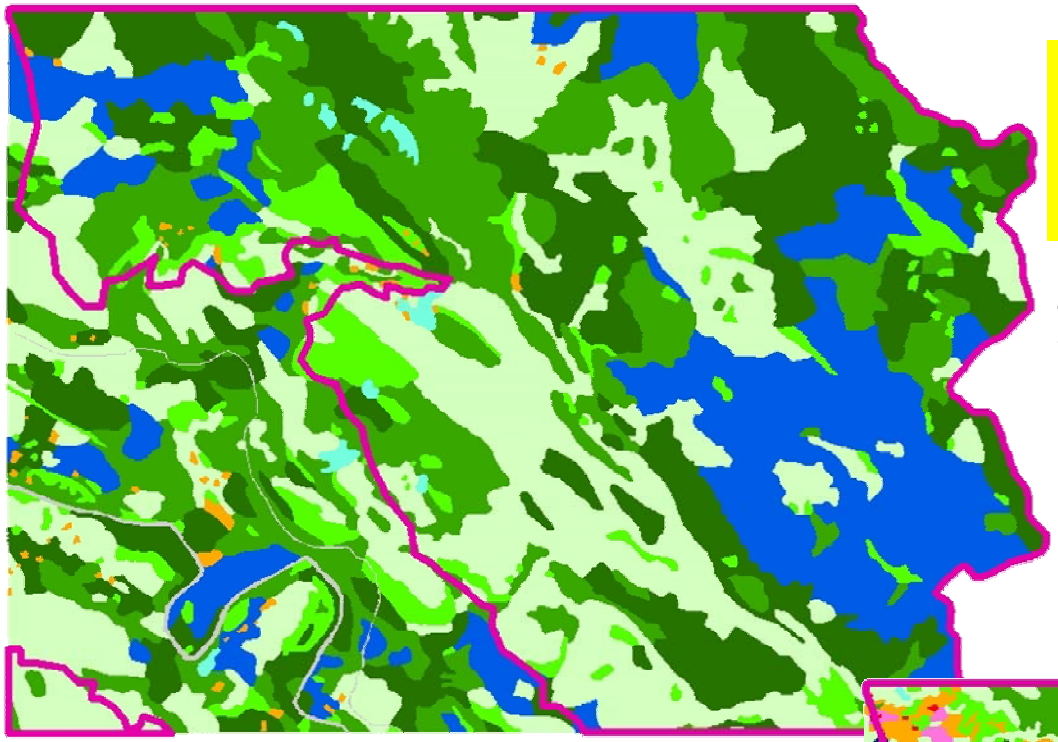


Trends of forest area outside national parks and wildlife sanctuary

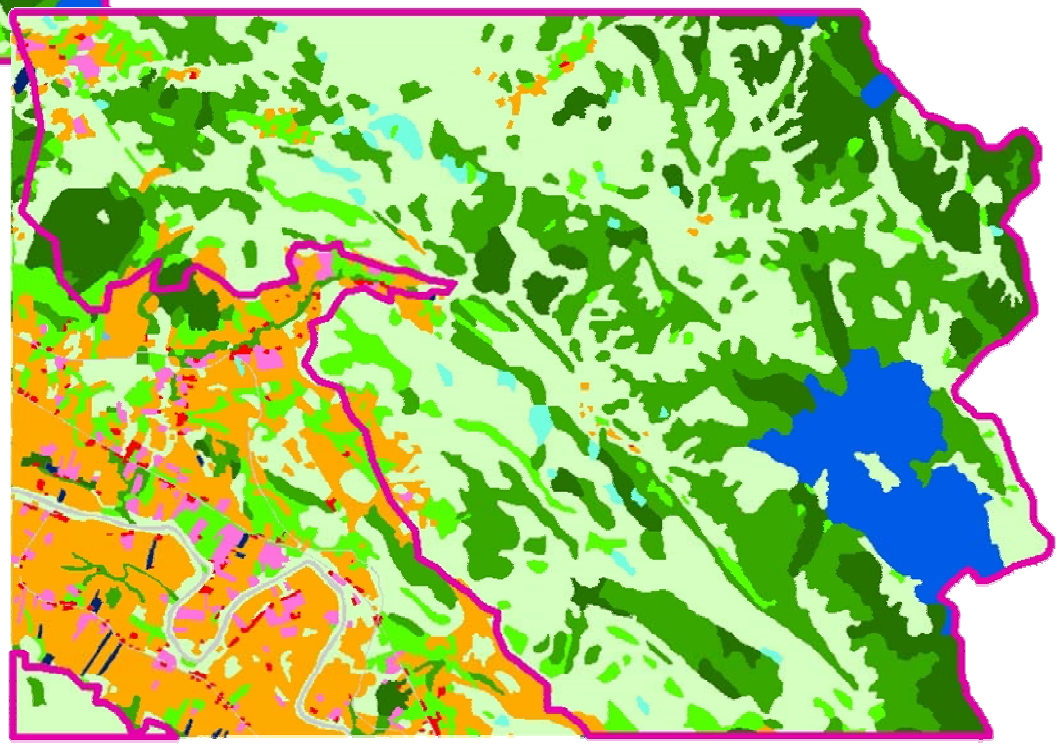
Mae krong watershed, Kanchanburi

1950

Sai Yok National Park
From 1980



1990



Legend

Protected area

Landuse type

- B:bamboo
- C:Agriculture land
- D:high density forest
- F:Orchard
- G:glass and bush land
- L:secondary forest
- M: middle density forest
- P: plantation
- S: low density forest
- SB: forest with bamboo
- V: community
- W: water

A Projection Model to estimate deforestation

- Direct factors to project deforestation
  - Agricultural activities
  - Legal and administrative control to protect forests
  - Past commercial logging
- Indirect factors to project deforestation
  - GDP in each sector
  - Agricultural and Forestry raw material export/import

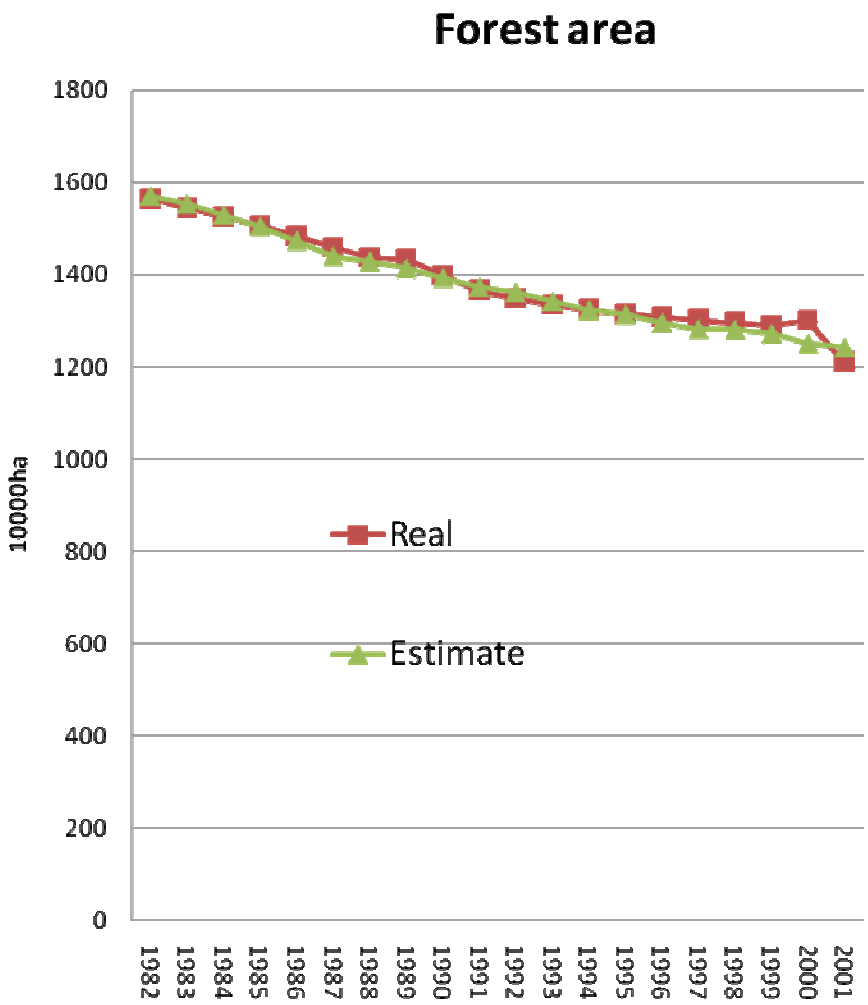
Model Equation(1)

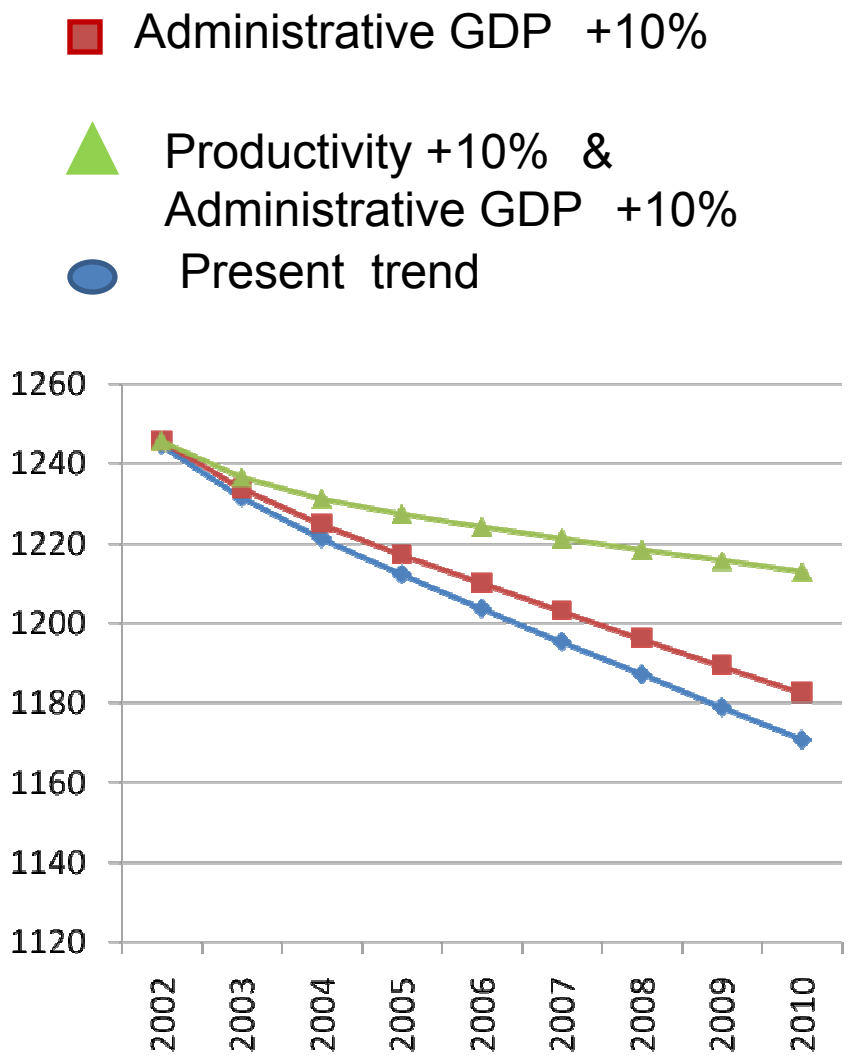
- (1)Forest= 1769.7 + 0.652*Forest(-1) - 1.02*Farmland + 0.684*Farmland(-1) - 0.99*Unclassified land + 0.613*Unclassified land(-1)
- (2)Farmland = 632.9 + 0.349*Farmland(-1) + 0.0162*Population -0.000780*Administration GDP -0.000846*(National Park+Wildlife Sanctuary) -28.6*Agriculture Productivity

Model Equation(2)

- (3)Unclassified land= 930.3 + 0.431*Unclassified land(-1) + 0.0000576*Crop Production-0.000013*Cattle Population

A future trend projected by a detail model





Conclusion

- There are several approaches to project reference levels according to available data.
- Basic information is the past trends of forest and farmland derived from remote sensing data.
- It is necessary to develop a detail model, if a model is required to factor out specific program's effect from other BAU socio-economic effects.