Land Valuation in Land Consolidation

experiences from Sweden

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The role of valuation
- voluntary Land Consolidation
- compulsory Land Consolidation

- Voluntary Land Consolidation
  - Values agreed by parties – no valuation needed
- Compulsory Land Consolidation
  - Valuation necessary for the compensation order
  - The compensation order has also to be in accordance with the property formation act
Importance of valuation for the participating landowners

Land Consolidation often affects a major part of a landowner's fortune – regardless of if it is a voluntary or compulsory Land Consolidation.

Requirements of valuation
- Accurate, reliable and trust-worthy

The influence of land use on valuation

Fundamental precondition
- The land use which gives the highest value has to be applied.
Which factors influence the value of arable land?

- Type of crop and market prices
- Fertility/yield
- Drainage
- Access to roads
- Size and design of parcels
- Agricultural properties – market situation

Field inventory of arable land

Factors which need field inventory

- Type and condition of soil – sand, moraine
- Fertility
- Drainage
- Possible obstacles e.g. electric transmission poles, big rocks, ditches
- Size/design of parcel
- Access to roads
Valuation in Forest Land Consolidation

Valuation of forest land

- Photo-interpretation and laser scanning
- Supplementary field inventory
- Inspection by the owners
- Calculation of the value by the BM-method
- Forest properties – market situation

Which factors affect the value of forest land

- Amount of growing stock
- Diameter at breast height
- Tree species
- Long-term yield
- Age
- Timber quality
- Timber market
- Access to truck roads
- Topography
- Logging conditions
- Size and design of parcels
- Market situation for forest properties
**Why laser scanning?**

- Lower cost for inventory
- Larger areas accomplished with the same staff
- Avoid subjective valuations and variation between valuators
- Better accuracy for forest data

Data are produced for three levels - trees, squares (15*15 m) or aggregates to stands.

**Laser scanning - Single Tree® method**

Every tree is enumerated!

- Single Tree® is a registered trade mark for FORAN
- The method was established in co-operation between SLU and FOI
- Further development of research-algorithms for application to commercial volumes
- Collects position and properties for the individual trees by pulse intensive laser
Aerial photo interpretation

Forest Grid

Red squares = volume below the average
Green squares = volume higher than the average
Adjusted boundary for stand nr 6817

**Result** – more homogenous stands nr 6817 and 68171

Factors which need supplementary field inventory

- Age
- Long-term yield
- Timber quality
- Topography (occurrence of slopes)
- Logging conditions (drainage, occurrence of swamps and rocks)
Calculation of forest values

Valuation with the BM–method all relevant data are used

- Calculation of the yield value of each stand
- Aggregation of the values of stands to parcels and properties
- Comparison and possible adjustment to the current market values of forest properties with similar qualities or characteristics, mainly amount of growing stock per hectare

Swedish GIS application

Overlay technique in forest valuation

The value of figure 8, 9 och 10 is the value of property 4:2
Characteristics of market information

Market values depend on
- Geographical region
- Length of vegetation period
- Possible crops, tree species
- Average yield value
- Available forest industries
- Demand of
  - Agricultural products
  - Meat
  - Forest products