



# Profitability of forest land consolidation – a Finnish case study

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**1. Background**

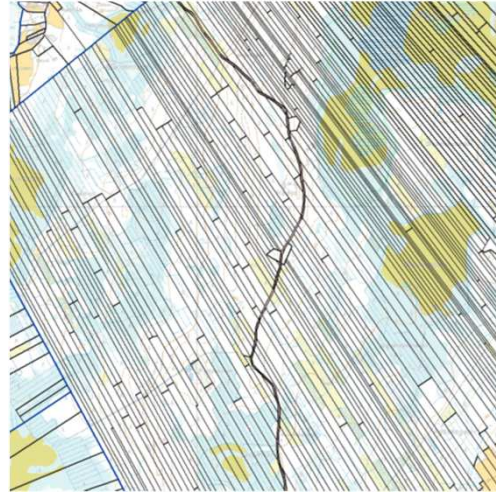
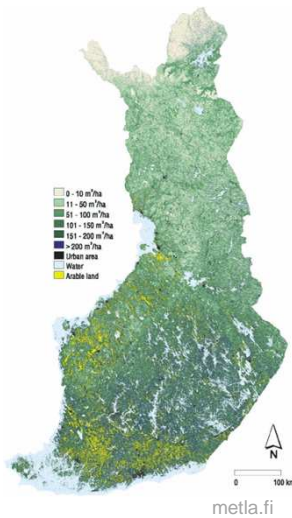
**2. Case study and methodology**

**3. Results**

**4. Conclusions**

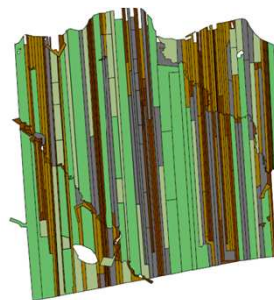


## Forest land consolidation in Finland



## Case: Pahkakoski land consolidation project (1990-1997)

- 4892 hectares (49 km<sup>2</sup>)
- **Comprehensive land consolidation**
  - Improve shape of properties
  - Create larger units
    - *jointly owned forests*
  - Road construction, drainage



Before

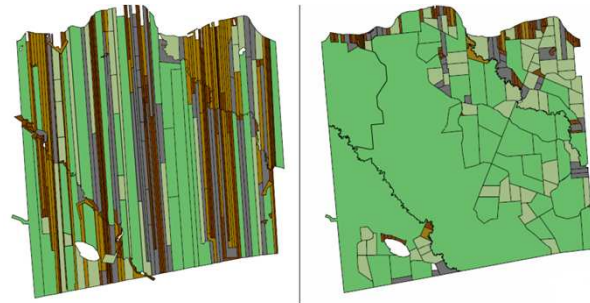


After

# Methodology

## Cost-Benefit Analysis

$$\text{Profitability} = (\text{Present value of benefits} - \text{Project costs})$$



Before

After

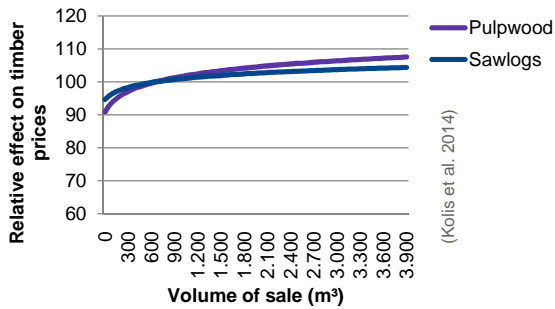
# Who benefits?



# Benefits of the project

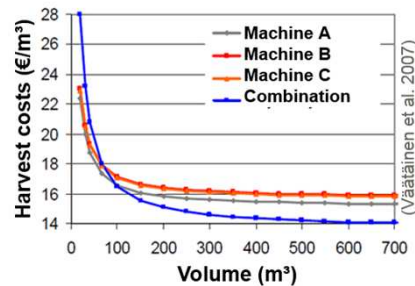
## Forest owners

- More timber to sell
- Higher prices



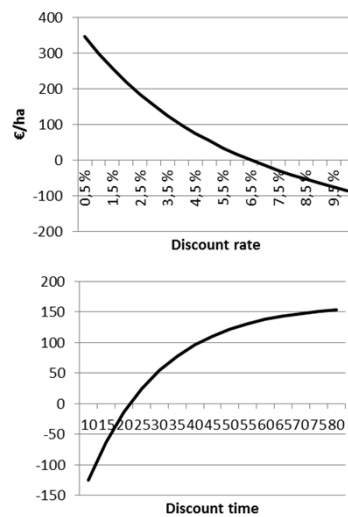
## Business operators

- More timber to buy
- Lower costs



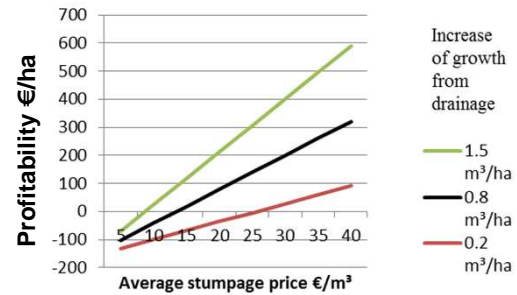
# Costs and benefits

- Benefits discounted: 5 % discount rate, 30 years
- Costs **305 €/ha**
- Benefits **358 €/ha**
- Profitability of project **53 €/ha**



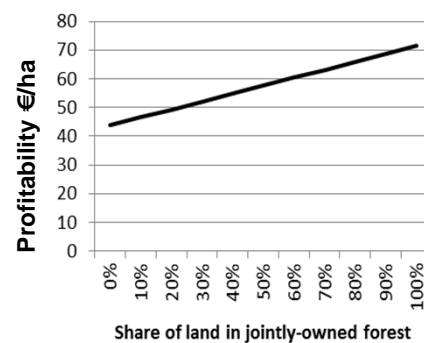
## Combining measures – remedial drainage

- Study area in wet lowland
- Drainage increases the growth of forest
- This project not profitable without remedial drainage
  - or with low increase in growth



## Jointly owned forests – essential for forest land consolidation?

- Creating jointly owned forests seen as central in Finnish projects
- Results show that project would be profitable also without



# Conclusions

- **Combining measures increased profitability**
  - Land rearrangement, road construction, drainage
- **Other factors may increase profitability further**
  - Local economy, society
  - Environment, public projects

