

Northern ToSIA

Assessing sustainability of forest based activities in rural areas of the Northern Periphery



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Case study in Finland

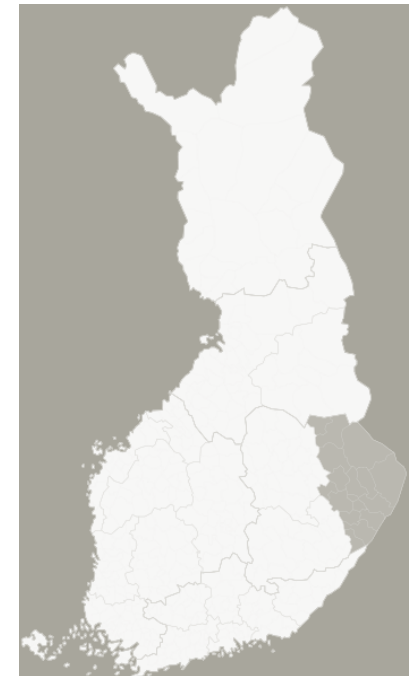
Forest use for bioenergy in North Karelia





Forest use for bioenergy in North Karelia

- The aim is to analyse future directions in forest resource use linked with a screening of sustainability issues in the region
- North Karelia is a pioneer in forest bioenergy utilization in Finland
- Specific focus: use of forest bioenergy, especially forest wood chips
- In 2004 the use of forest wood chips in energy generation was about 143 000 m³ and target for 2010 has been set at 375 000 m³
- Recently the Finnish government decided to support use of bioenergy significantly



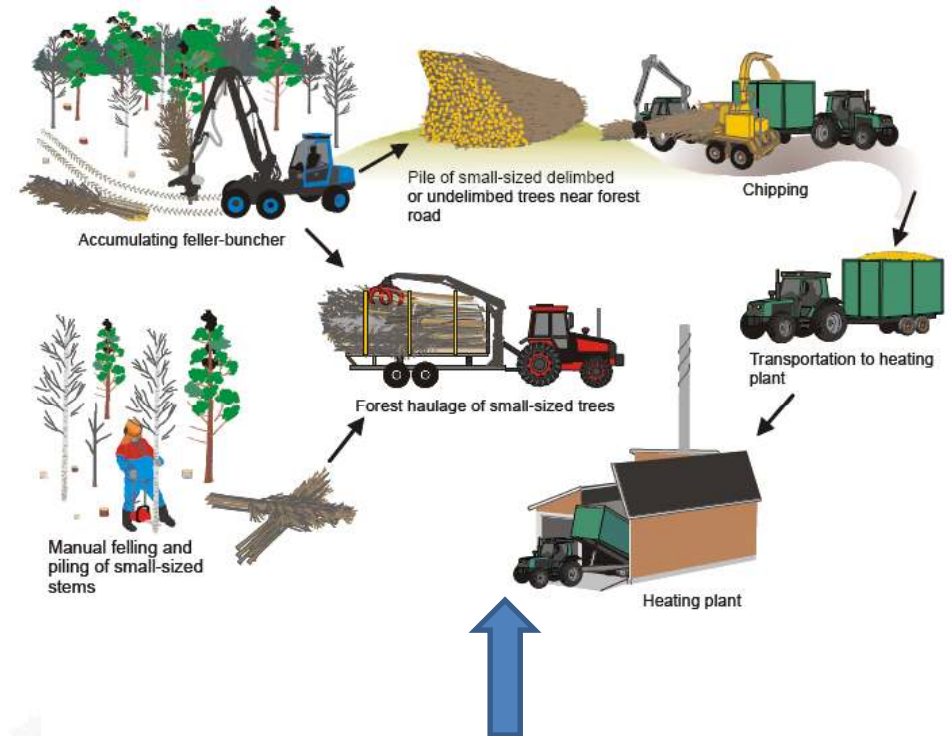
Use of forest wood chips

- Sustainability impact assessment of forest-wood chains in centralized and distributed forest bioenergy utilization
- Two example cases of forest bioenergy utilization for heating
 - Tuupovaara Energy Co-operative (small scale district heating plant)
 - Outokumpu Energy (medium scale district heating plant)
- WHAT IF the increase in forest bioenergy utilization takes place centrally or distributed



Forest fuel supply chains

Medium scale heating plant
Outokumpu

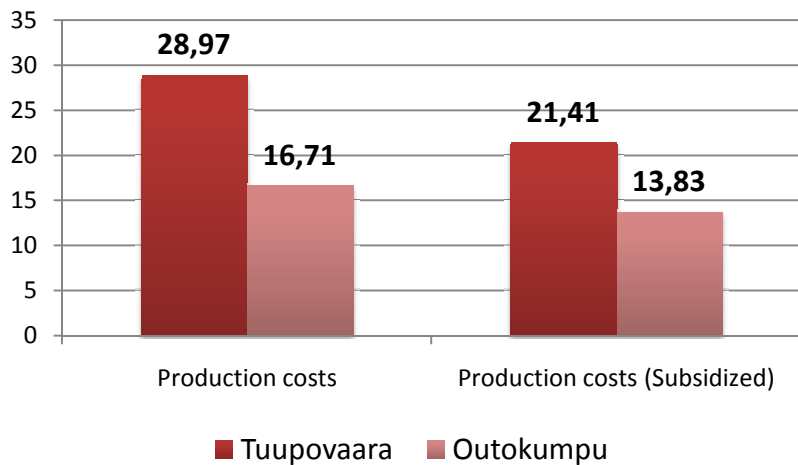


Small scale heating plant
Tuupovaara

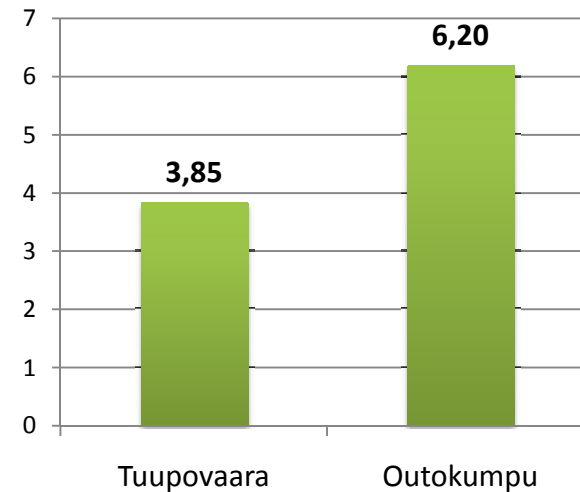
Kallio & Leinonen 2005

First results

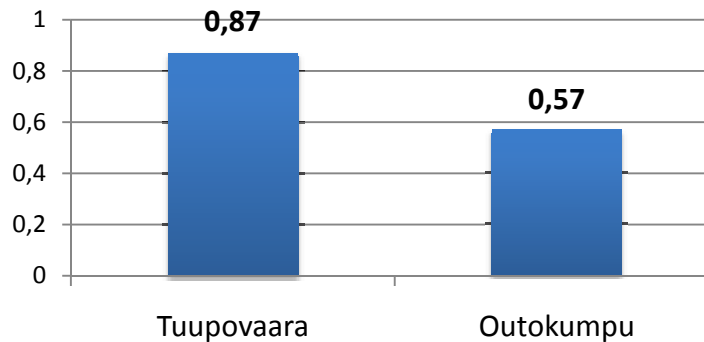
Production costs, €/MWh



GHG emissions from machinery, kg CO₂ eq./MWh



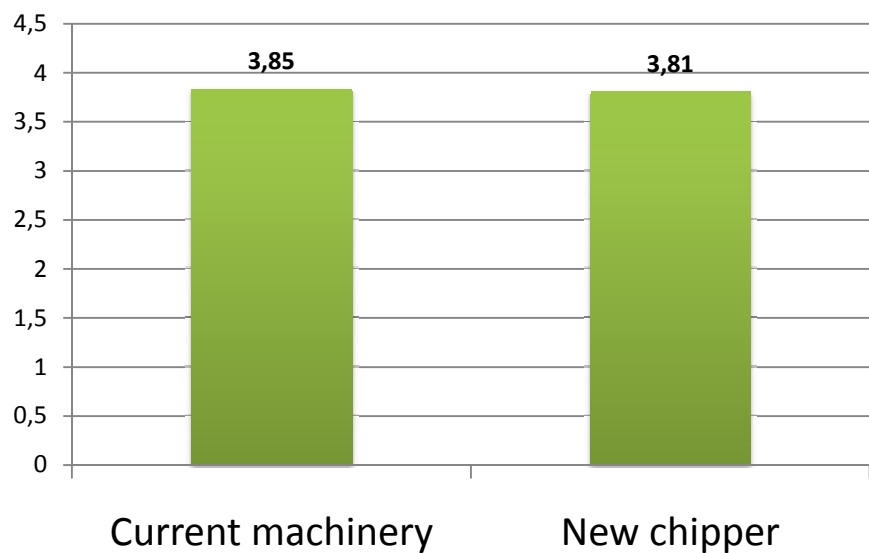
Employment, person a/1000 MWh



Scenarios of the heating plants

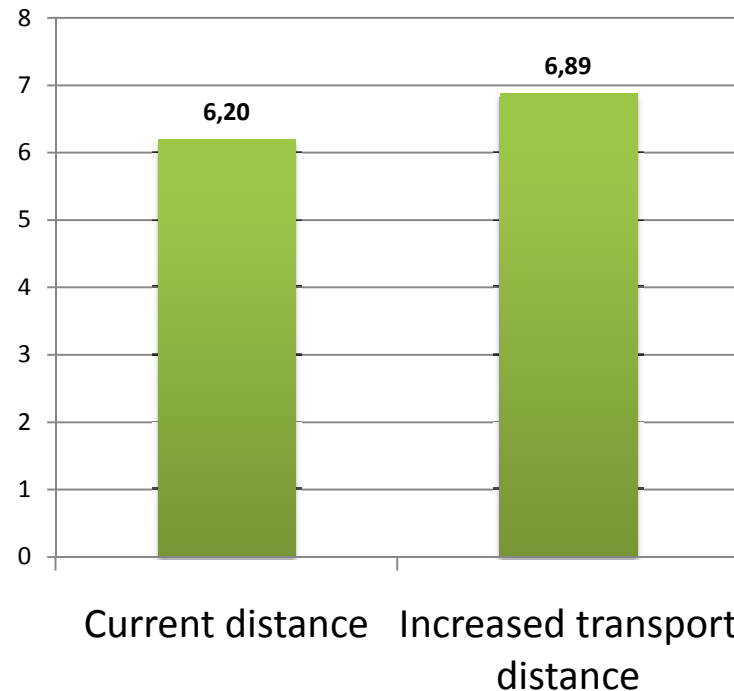
Tuupovaara: more efficient chipper

Greenhouse gas emissions from machinery, kg CO₂ eq./MWh

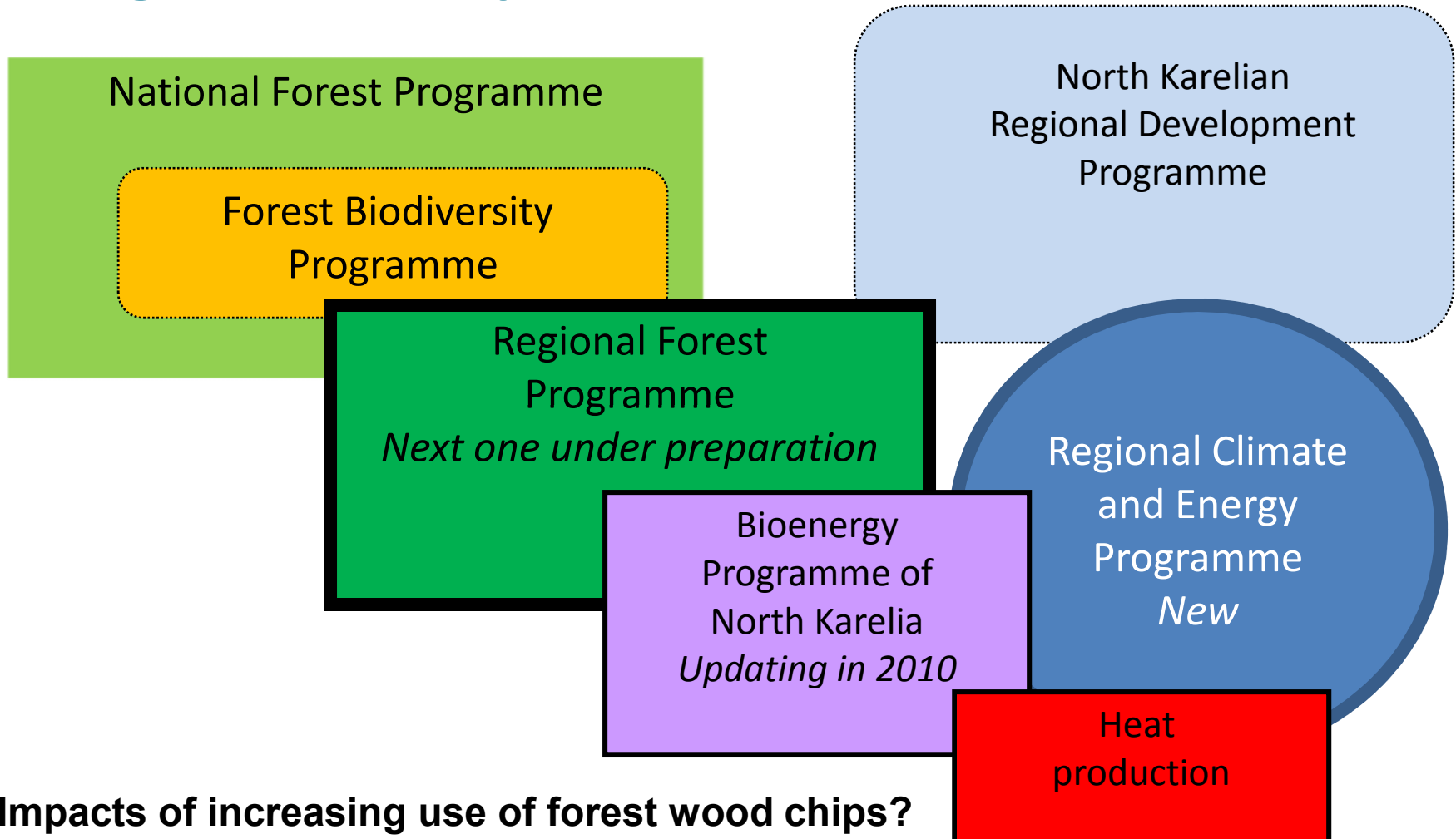


Outokumpu: increased transport distance

GHG emissions from machinery, kg CO₂ eq./MWh



Regional development and case North Karelia



Challenges with regional development programmes

- Comprehensive analysis of sustainable impacts is needed
- How to compare and combine different kind of values of goods and services (forest industry vs. nature based tourism)
- More discussion among stakeholders and decision makers
- Complex task for regional actors and decision makers
 - appropriate tools are needed

Regional Forest Programme

- Define strategy for forestry, utilisation and protection of forests in the Forestry Centre territory
- Preparing process is on-going

Regional Forestry Council

- Developing sustainable forestry in the region
- Participating in the preparation of the regional forest programme and monitoring its implementation
- Consist of key forest sector actors and stakeholders – fine possibility for multi-stakeholder dialogue

Regional Forestry Programme and ToSIA

Preparation process of the programme

1. Status quo
2. Choose of activity option
 - Options and impacts
3. Design measurements
4. Compose the programme and approval
5. Monitoring

ToSIA can be used to

- Choose of activity option (autumn 2010)
- Sustainable impact assessment of chosen measurements (in the beginning 2011)



Regional Climate and Energy Programme

- Preparing process is starting spring 2010
- ToSIA is a tool for a working group of topic Forest Energy and Heat Production
- Calculations of small and medium scale heating plants can be utilized
- In addition calculations of a large scale heating plant is needed

Thank you for your interest!



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