Northern ToSIA

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

Case in Finland, North Karelia

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Northern Periphery Programme 2007–2013

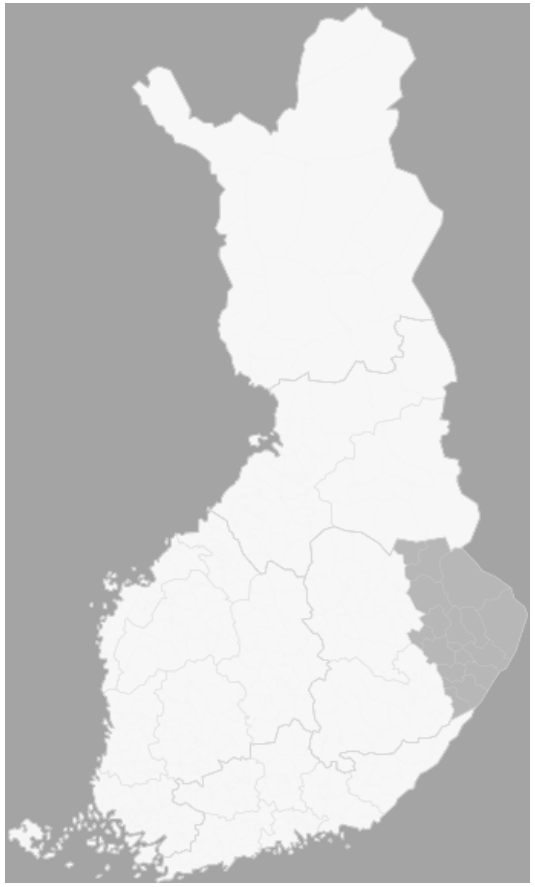
Innovatively investing in Europe's Northern Periphery for a sustainable and prosperous future

European Union
European Regional Development Fund

Forest bioenergy utilization in North Karelia

- Region as a pioneer in forest bioenergy utilization in Finland
- Traditionally strong status of forest industry → Experience in using forest industry by products in energy production
- Structural change in forest industries & national/international climate policies

  → Transition towards increased use of primary forest fuels



Background elements of Case North Karelia

National Forest Programme

METSO-programme

Regional Forest Programme

North Karelian Regional Development Programme

Bioenergy Programme of North Karelia

Heat production

Increasing use of forest wood chips?

Regional Forestry Programme
- some objectives -

- The average commercial removals of round wood could rise in North Karelian commercial forests to above 5 mill. m^3 by 2010 (average in years 2001-2004: 4,44 mill. m^3 /yr)
- METSO – Forest biodiversity programme continues
- Taking advantage of local forestry expertise in the future

Source: Regional Forest Programme 2006-2010

Regional Bioenergy Programme
- some objectives -

- In 2004 the use of forest wood chips in energy generation was about 143 000 m^3 ~ 283 000 MWh
- Potential for technically-economically feasible increase at the current plants is about 170 000 MWh
- The production target for forest wood chips in North Karelia for 2010 has been set at 750.000 MWh or about 375.000 m^3

Source: North Karelian Bioenergy Programme 2015

The ToSIA approach – Case North Karelia

- ToSIA approach as a part of regional development
- The aim is to analyse future directions in forest resource use linked with a screening of sustainability issues in the target region
- Screening the regional sustainability issues related to increased use of forest chips
- Are the recent policy decisions directing the forest biomass utilization towards more sustainable solutions?

The ToSIA approach – Case North Karelia

Regional Forest Programme (RFP)

- ✓ Define strategy for forestry, utilisation and protection of forests in the Forestry Centre territory
- ✓ Current RFP for years 2006-2010; new RFP will be prepared during years 2009-2010
- ✓ Assessment of impacts on sustainability included, but different aspects are evaluated separately

The ToSIA approach – Case North Karelia

Regional Forestry Council

- ✓ Developing sustainable forestry in the region; making initiatives in this direction
- ✓ 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

The ToSIA approach – Case North Karelia

Use of forest wood chips

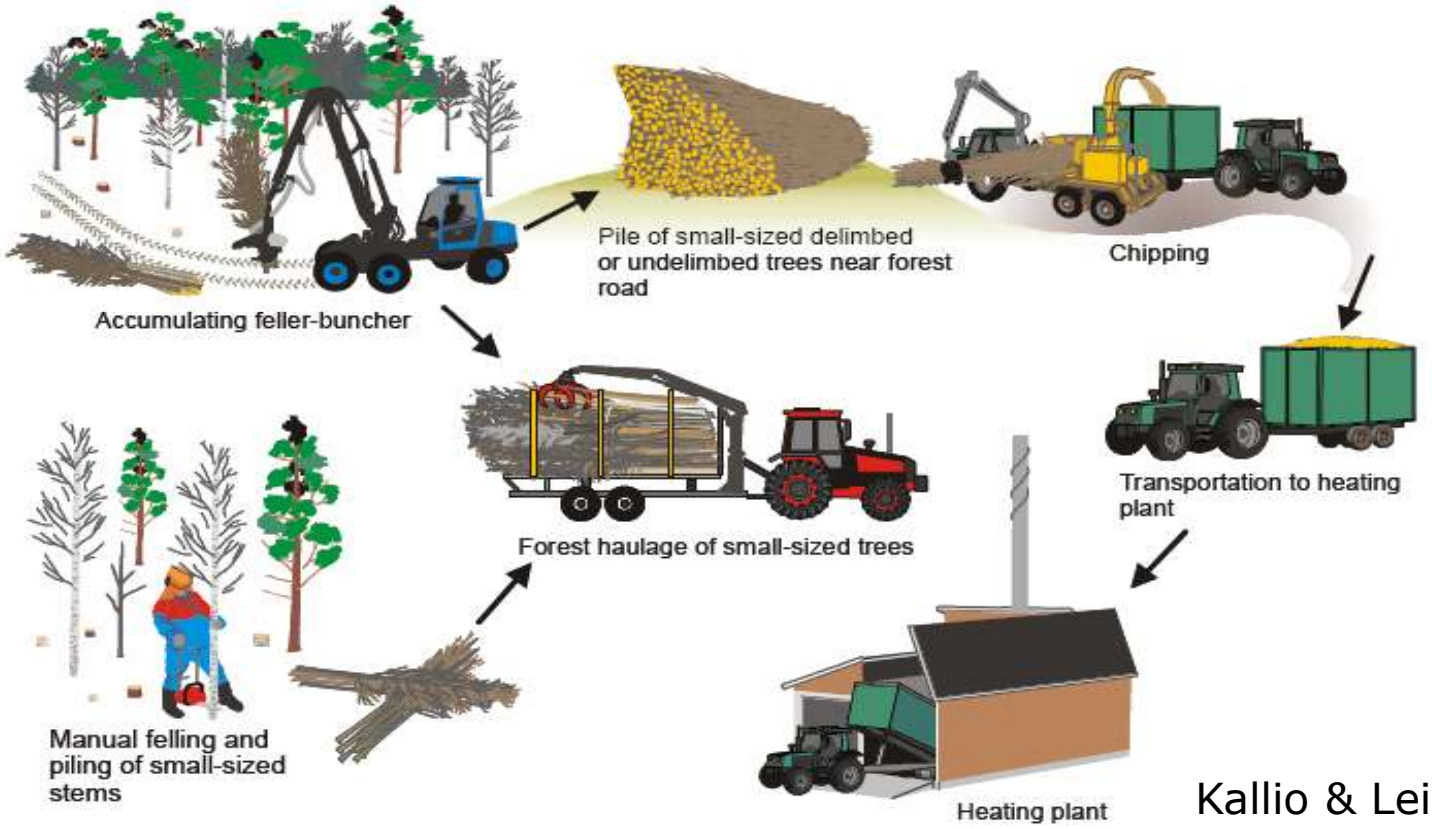
- Sustainability impact assessment of FWC's in centralized and distributed forest bioenergy utilization

- Two example cases of forest bioenergy utilization
  - Tuupovaara Energy Co-operative
  - Outokumpu Energy

Tuupovaara Energy Co-operative

- Small scale DHP in the village of Tuupovaara
- Two separate boilers 0,5 MW and 0,6 MW
- Fuels: forest chips and sawmilling residues
- Co-operative is responsible of fuel procurement and operating the DHP
- Annual heat production ca. 3300 MWh
- In fuel procurement co-operative makes contracts with local forest owners and chipping entrepreneurs

Forest fuel supply chain – Tuupovaara Energy Co-operative

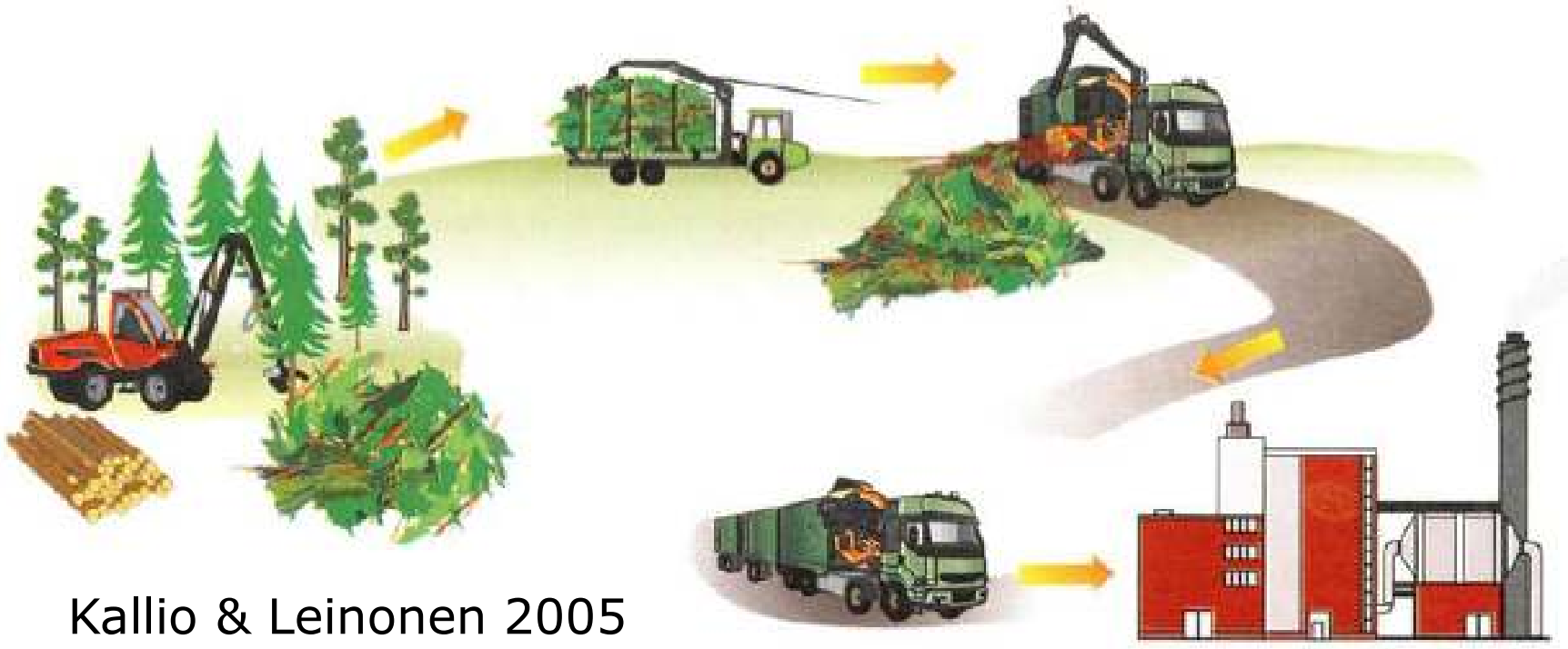


Kallio & Leinonen 2005

Outokumpu Energy Inc.

- Medium scale DHP
- 10 MW and 7 MW boilers for solid fuels
- Activity almost fully automated
- Provides heat for over 200 customers in the area
- Main fuels forest chips and sawmilling by-products
- Energy sales in 2008: 53 000 MWh

Forest fuel supply chain: road side chipping – Outokumpu Energy



Kallio & Leinonen 2005

Economic indicators

- Subsidies on forest fuel production, €/m^3 (harvest)
  - ✓State subsidies for harvesting energywood & chipping
- Local value added, € m^3 (overall)
- Trade balance (overall)
- Enterprise structure (overall)
- Prices paid by heating and power plants using solid wood fuels (combustion, heat distribution)

Environmental indicators

- Biodiversity (harvest, transport)
  - The effect of energywood harvesting
    - ✓Volume of decaying wood
    - ✓Valuable biotopes
    - ✓Area of burned forests

- Energy generation and use in the forest fuel supply chain (overall)
    - ✓Harvest – transport – combustion – heat distribution

Social indicators

- Recreational use of forests (harvest, transport)
  - The effect of energywood harvesting on e.g.
    - ✓Hunting, hiking, fishing
    - ✓Picking berries and mushrooms
- Activity of regional development (overall)
  - Regional development projects related to bioenergy and heat production

General attentions about the indicators

- The indicators are chosen in co-operation with research, administration, companies and other stakeholders

→ Differences in the assessment of sustainability come from the stakeholders various aspects

- Reliability and validity of indicator data → effect on the results and conclusions

- Politicians and decision makers could participate in commenting and testing the indicators

...and the work continues...

Thank you for your attention!