

Energetic use of Forest Biomass in Finland

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Wood fuel cornerstones in Finland

1. Forest resources & forestry
2. Infrastructure
3. Knowledge & technology
4. Networking

Finland

- Population 5,3 mill.
- Area 337 000 km²





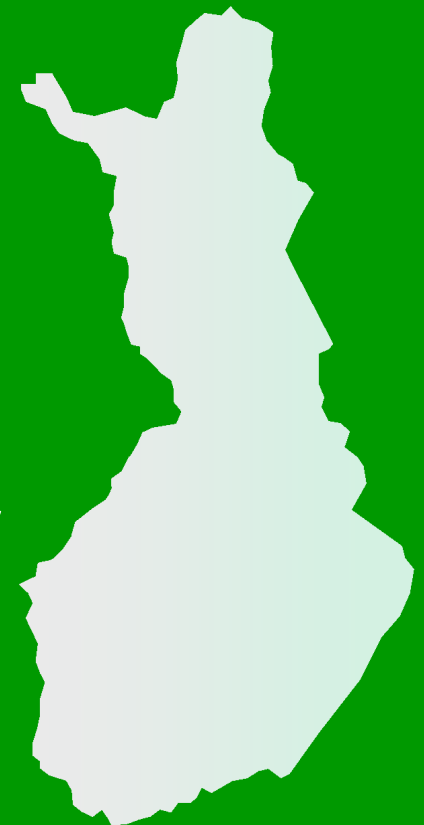
➤ **70 % of land
area covered by
forests**

➤ **188 000 lakes**

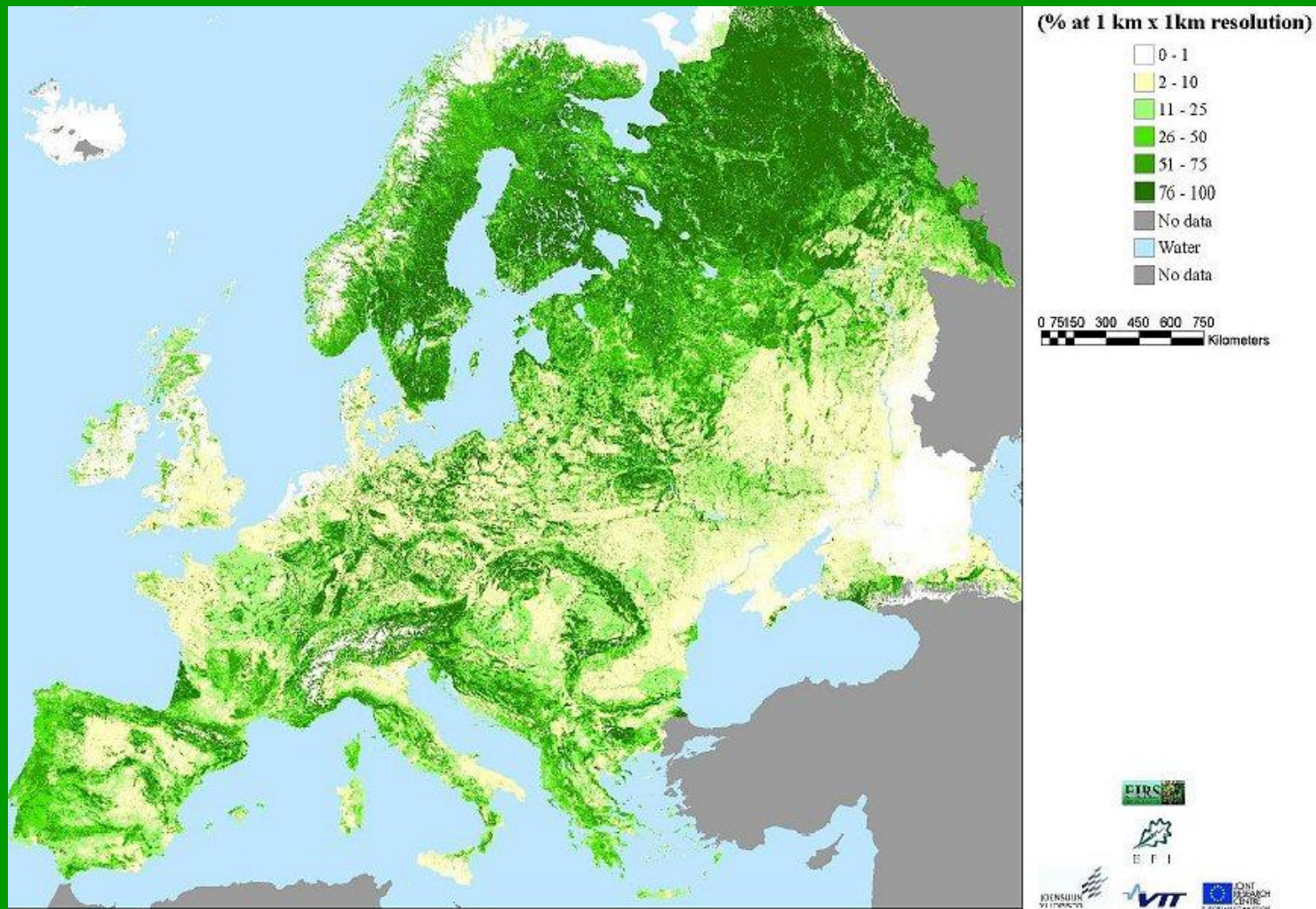


Finland – land of forests & forestry

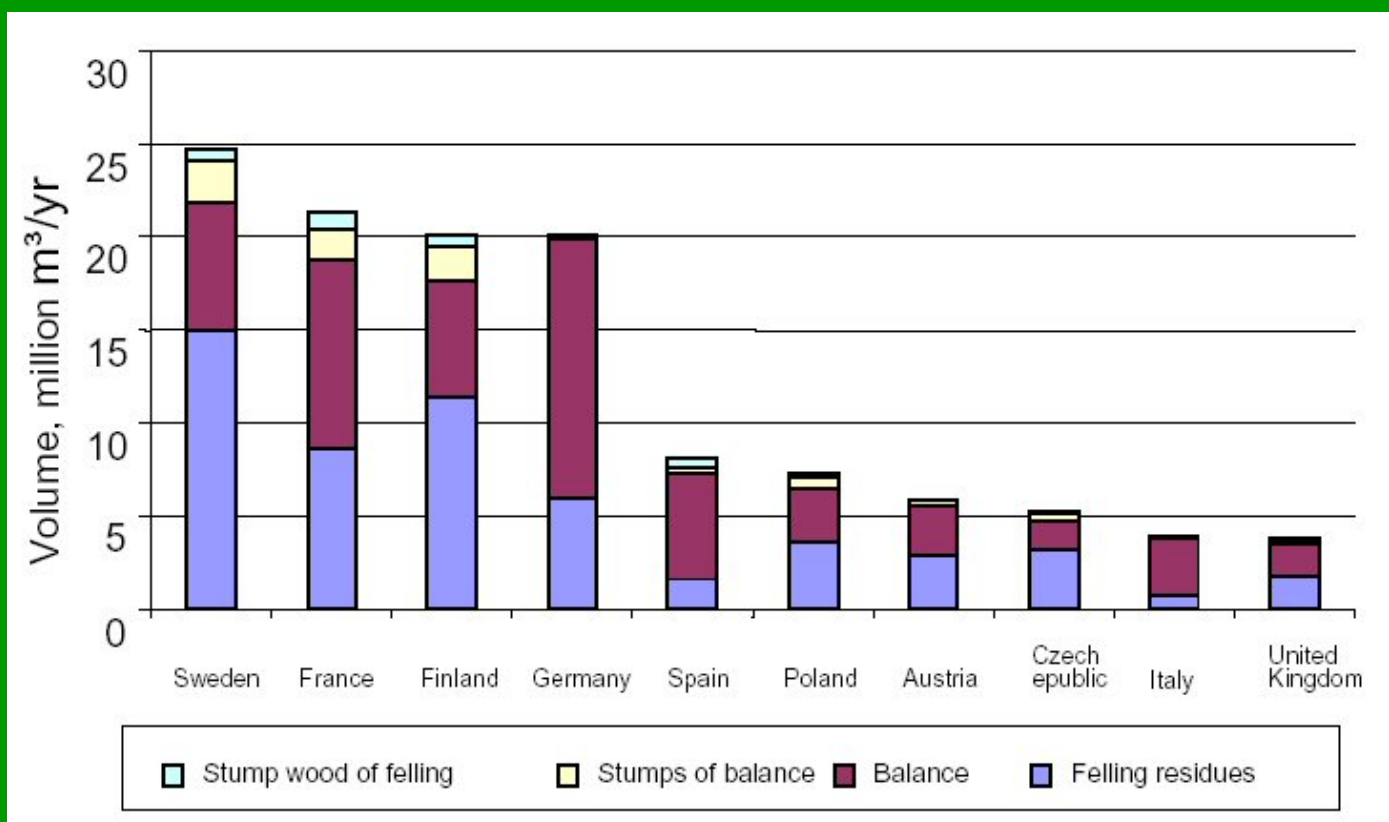
- Over 20 mill ha of forests
- 300 000 private forest owners
- 50 mill solid-m³ timber procured annually
 - of which 70 % from private forests
- Over 1 500 mill euros annual timber selling income for forest owners



Northern Coniferous forests



European forest energy resources



Volumes of available felling residues and stump biomass in top 10 EU countries having highest available potential.

New targets for the EU

- To decrease CO₂ emissions by 20/30 % in 2020
- To 3-fold the use of RES in 2020
- 20 % of primary energy production
 - **Bioenergy plays a dominant role!**

Use of wood fuels in Finland

- Wood fuels cover over 20 % of primary energy production
 - Additionally, the part of peat is 6 %
 - Hydropower 2 %, other RES less than 1 %
- Target in 2020: 30–40 %
 - >80 % will be supplied by wood fuels

Use of wood fuels in scales

Large
50–500MW

Municipal
1–50 MW

Small 20–
1000 kW

Fire places
5–20 kW



70%



10%



5%



15%

Infrastructure

- Communication & transport
 - Good road net covers the whole country
 - Water ways and harbours



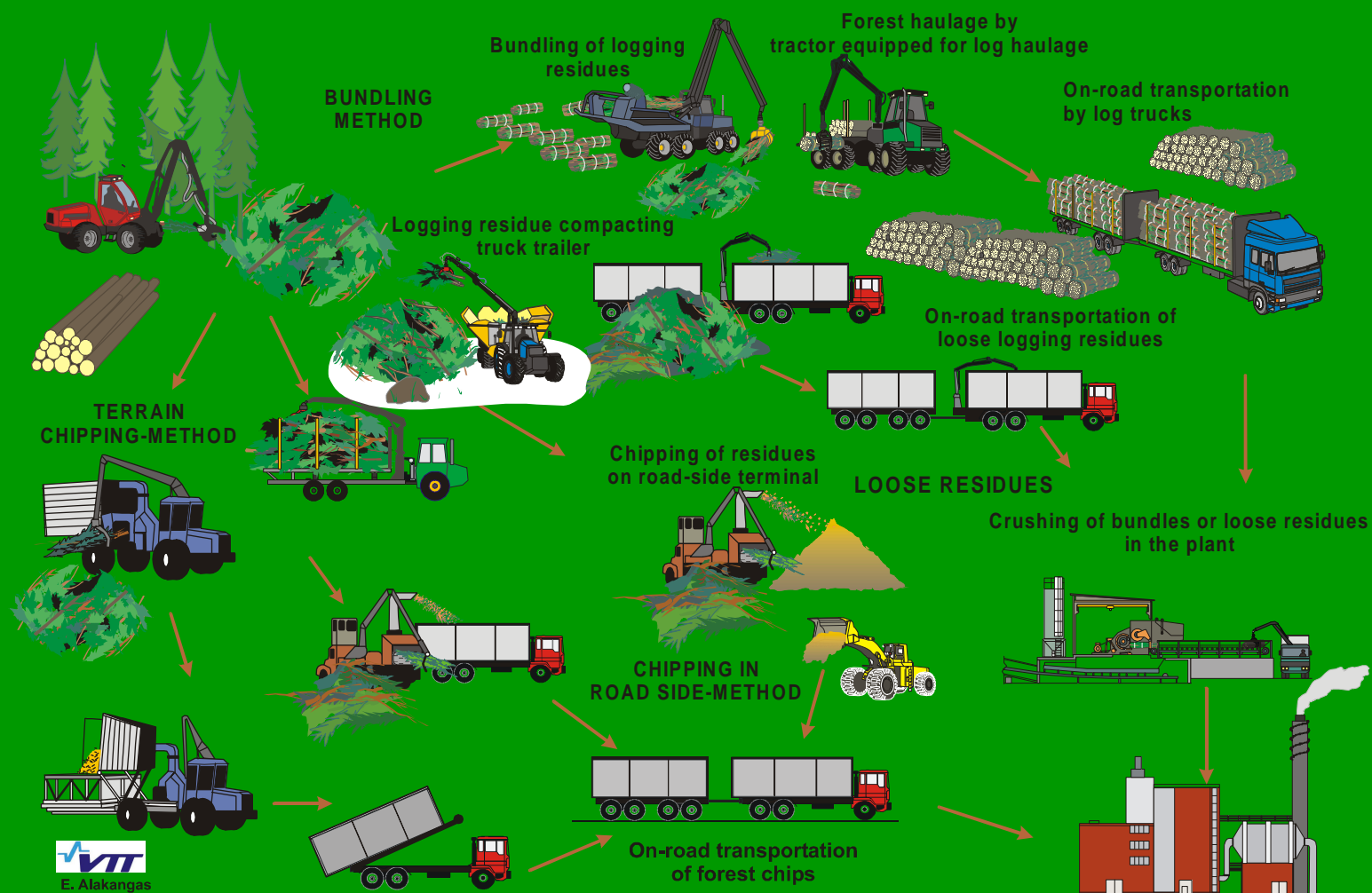
Knowledge and technology 1.

- One of the forerunners in developing
 - District heating (DH) networks in urban areas since 1960's
 - Combined heat and power (CHP) technology



- Technology for the use of wood energy since 1980's
- Over 80 M€ used for the R&D projects

Wood energy production chains



Knowledge and technology 2.

- **One of the forerunners in developing**
 - Forest harvesting technology (CTL)
 - Bundling technology
 - Technology for young forest harvesting or thinnings (felling heads) and chipping
 - Logistics
 - Business models
 - Education and training















Case: North Karelia

- One the European forerunners in the use of wood fuel
- Wood accounts for over 70 % of all fuels used for heat & power generation
- Joensuu is regarded as a forestry capital of Europe





North Karelia

Area 21 500 km²

Population 170 000

León

Area 15 500 km²

Population 495 000

Home of harvesting machines

- Two thirds of the harvesting machines sold in Europe are manufactured in Eastern Finland
- John Deere, Ponsse, Kesla, Pentin Paja



Networking



Why networking?

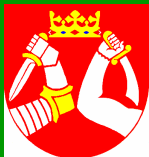
- One man company hardly survive
- Many operators have to be involved
- New concepts have to be created
- Transfer of knowledge and technology is needed
 - Education and training
 - New applications or technologies

Networking is a tool

- To promote and develop the use of bioenergy at each level
 - Local (municipal)
 - Regional/national
 - International (Cooperation with organisations or within projects)

Wenet

- **Started as a project in 2004**
 - Expertise since 1980's
- **Coordinated by**
 - Joensuu Regional Development Company
JOSEK Ltd
- **Financed also by**
 - Regional Council of North Karelia
 - ERDF and Government of Finland



Wenet

- **Wenet is a network of**
 - Experts
 - Organisations
 - Companies
- **Mainly from Eastern Finland**
 - In cooperation with other Finnish partners and partners abroad

Wenet partners

- Finnish Forest Research Institute (Metla)
- North Karelia University of Applied Sciences
- University of Joensuu
- Forest Centre of North Karelia
- European Forest Institute (EFI)
- Lappeenranta University of Technology
- Mikkeli and Savonia Polytechnics
- VTT
- Companies within wood energy business
- Power plant and boiler manufactures

Wenet expertise

Covers the whole chain of wood energy from a forest to a power/heating plant, as well as research, education & training

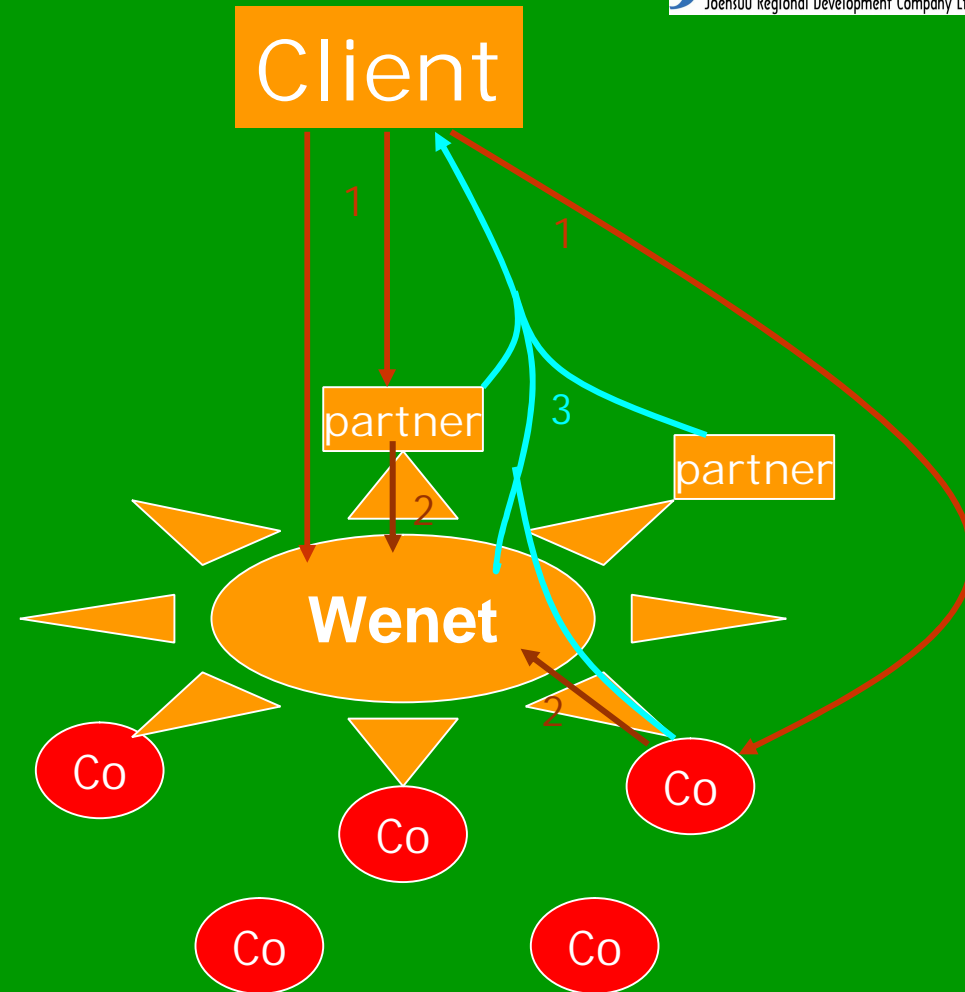


Wenet products

- Tailor-made solutions at one-stop-shop
- Feasibility studies, wood fuel supply chains
- Transfer of know how and technology
- Business models & contract making advice
- Study tours and show hows



How does it work? Wenet connections



Next step: Wenet Centre

- **A European centre for service, know how and technology within wood energy**
 - R&D projects
 - Training and education
 - Change of expertise
 - Show hows

Welcome to Joensuu August 2008

Wood Energy Business Solution

- Seminar
- B to B
- Exhibition
- Demonstrations
- Study tours
- Social events



A photograph of a winter landscape. In the foreground, there are several tall, snow-covered evergreen trees. The ground is covered in a thick layer of snow. In the background, there is a large, frozen body of water, possibly a lake or a wide river, with some small islands or peninsulas visible. The sky is a clear, pale blue.

Gracias por su atencion!
www.wenet.fi

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