

IEA BIOENERGY

Business Forum on Sustainable Biomass Production for the World Market

30th November- 3rd December, 2005

Campinas, Brazil

International Biofuels Trade in Finland: Current status and future prospects

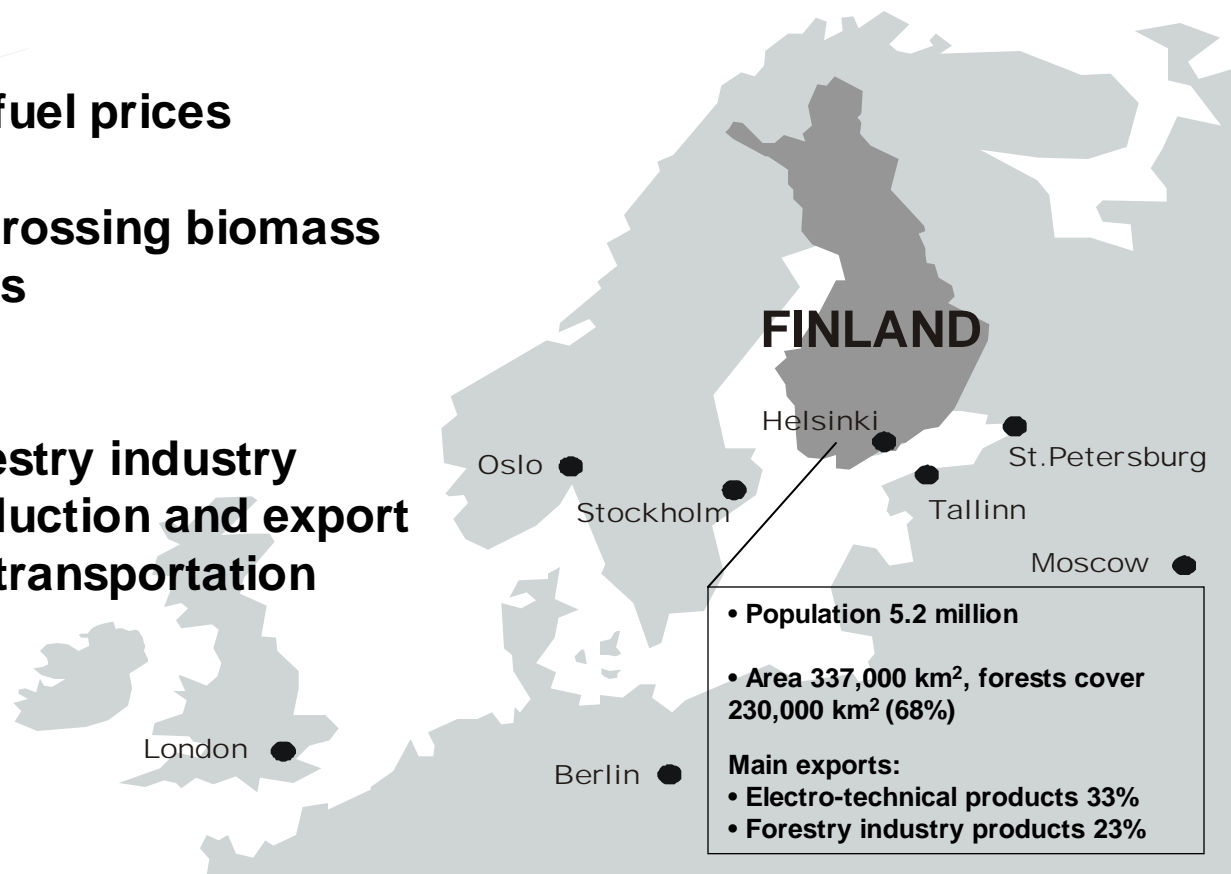
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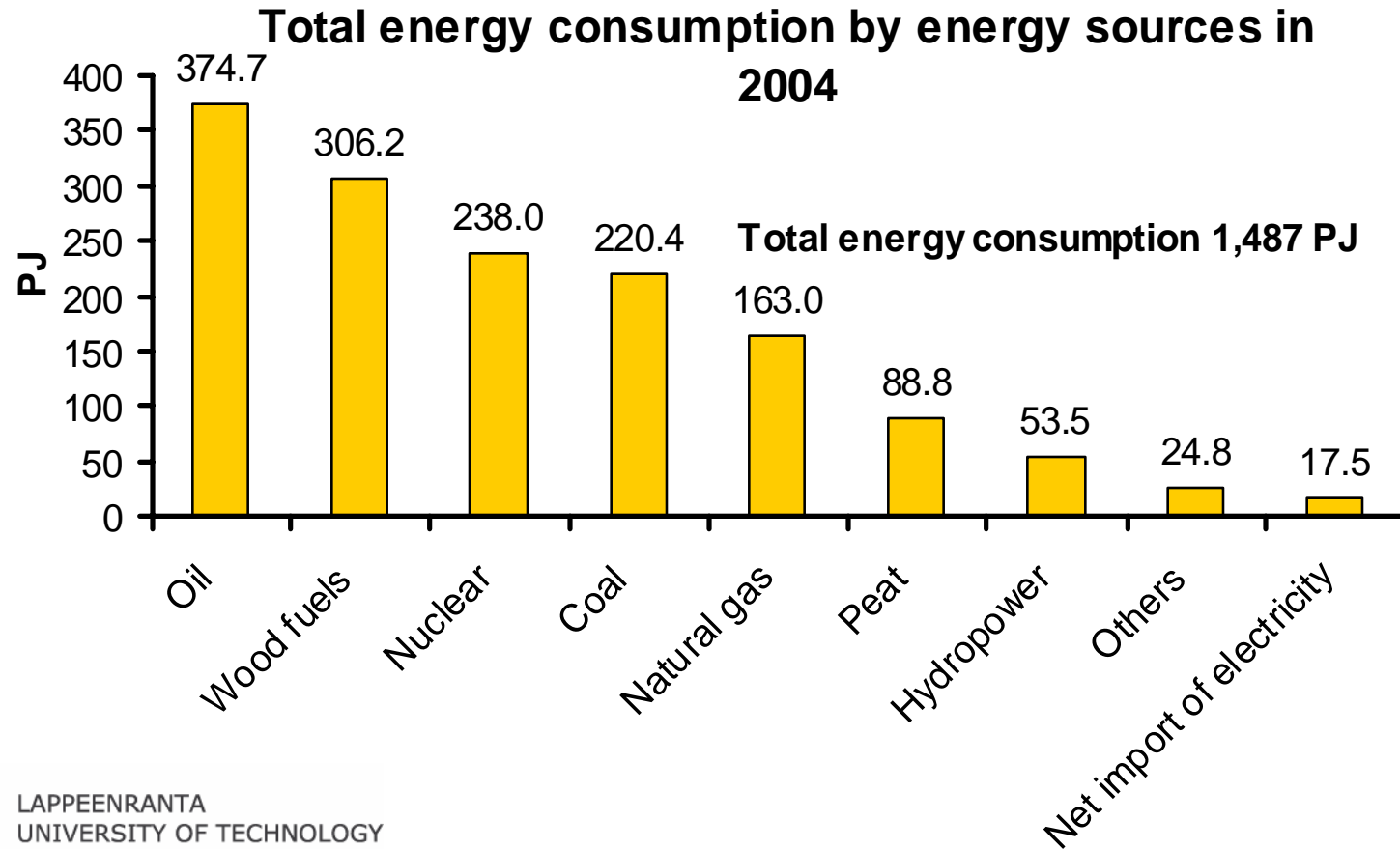


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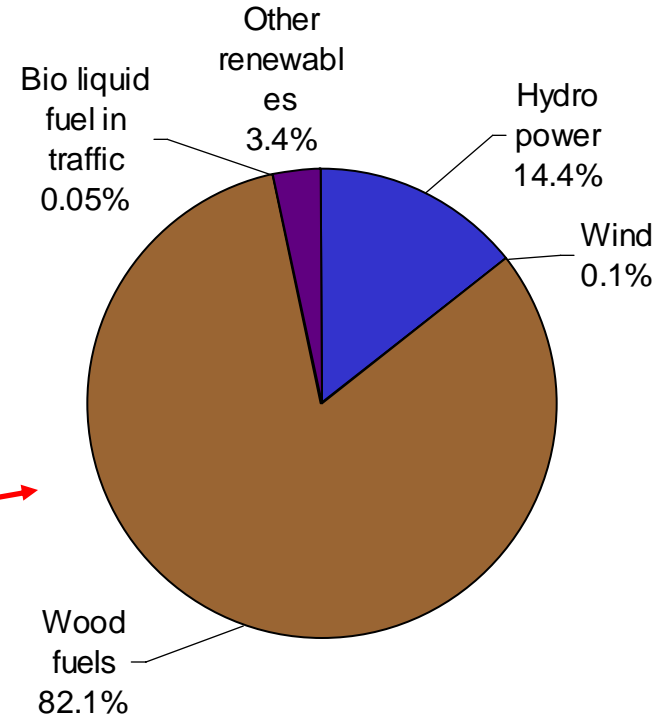
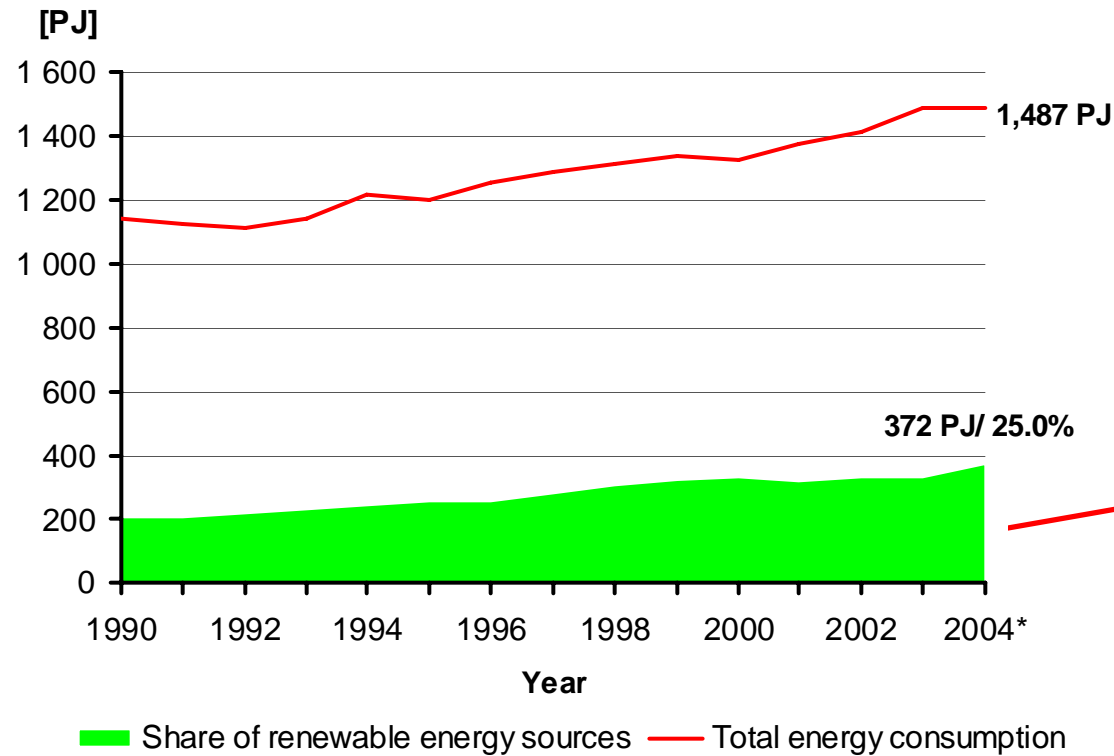
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 - Biofuels in road transportation sector



Renewable energy in Finland



Renewable energy in Finland



End-use of wood fuels in 2004

Fuel / PJ

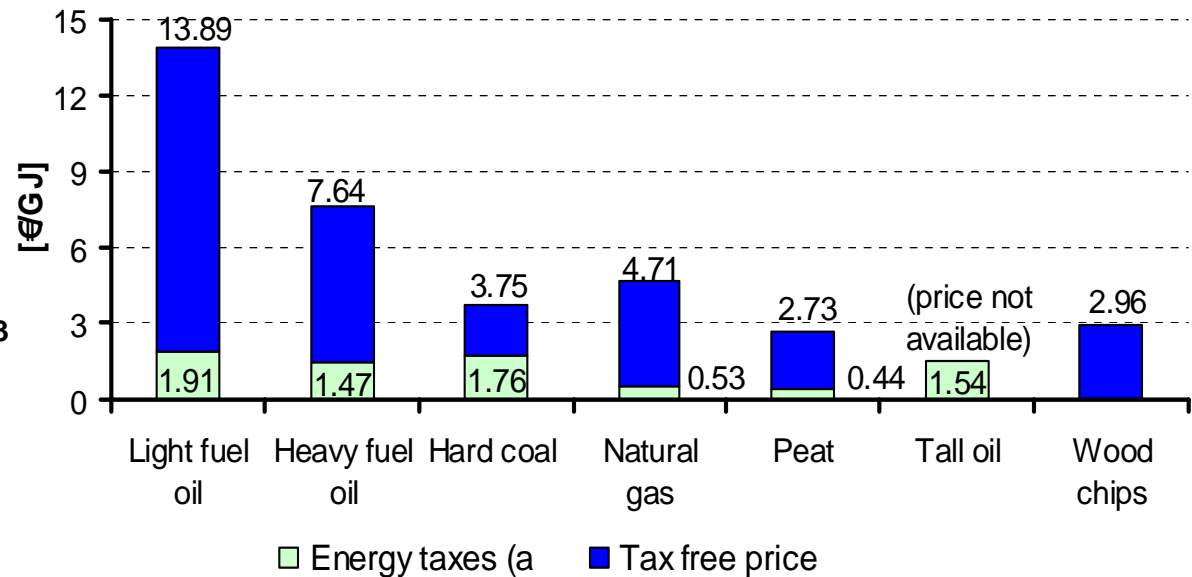
	Forestry industry	District heating	Small-scale private use	Other industry & users	Total
Wood fuels:					
- Forest chips	6.5	5.9	2.8	3.7	18.9
- By-products	47.3	13.4	0	23.7	84.4
- Firewood	0	0	45.7	0	45.7
- Black liquor	157.1	0	0	0	157.1
Total wood	210.9	19.3	48.5	27.4	306.0
Peat	17.2	36.2	0	35.4	88.8

Fuels' taxation and prices in heat production

Fuel taxes in heat production 1.7.2005^(a)

- Light fuel oil 7.102 €/l
- Heavy fuel oil 6.01 €/l
- Hard coal 44.7 €/t
- Natural gas 1.904 €/nm³
- Peat tax free
- Tall oil 5.68 €/kg
- Biofuels tax free

Fuel prices in heat production in 6/2005



^(a) includes energy tax, precautionary stock fee and oil pollution fee

Since 1 July 2005 peat has been exempted from energy tax

Subsidies for electricity production

Tax subsidies for electricity production (since 1 July 2005)

- Wind power, and electricity generated by forest chips 6.9 €/MWh_e
- Recycled fuels 2.5 €/MWh_e
- Other biofuels 4.2 €/MWh_e
- Volume of the electricity production subsidies ~40 million €/yr
- Peat doesn't receive tax subsidies in electricity production

Electricity taxes including precautionary stock fee (since 1 January 2003)

- Industry 4.53 €/MWh
- Other consumers 7.43 €/MWh

Emission trading improves biofuels competitiveness against fossil fuels

Income from emission allowances when fossil fuel is replaced by biofuel

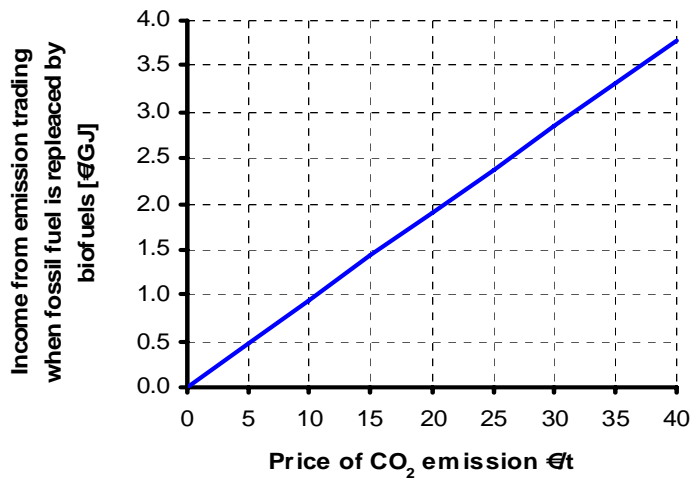
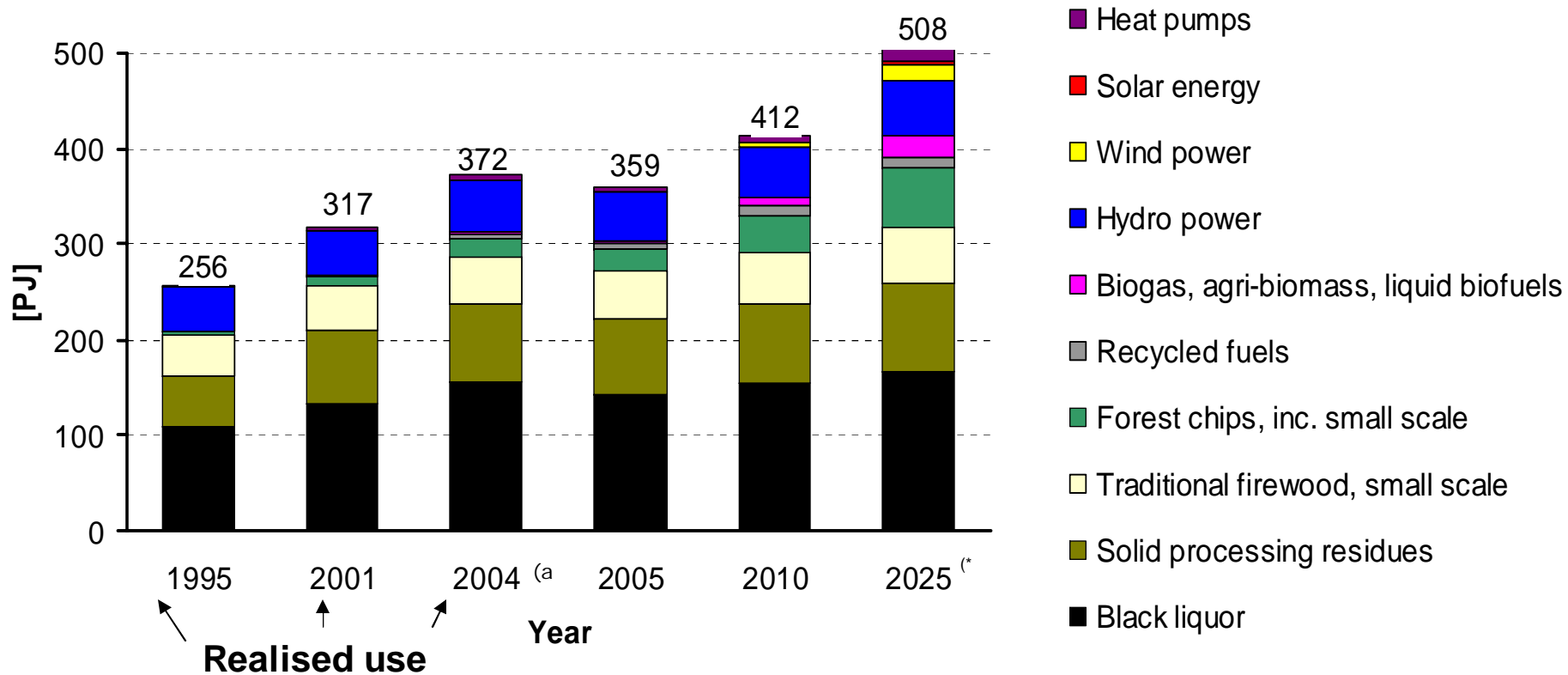


Figure: Nordpool 24.11.2005

Assumption: replaced fuel = coal, emission factor 94,6 kg CO₂/GJ_{fuel}

Action Plan (2002) for Renewable Energy Sources in Finland



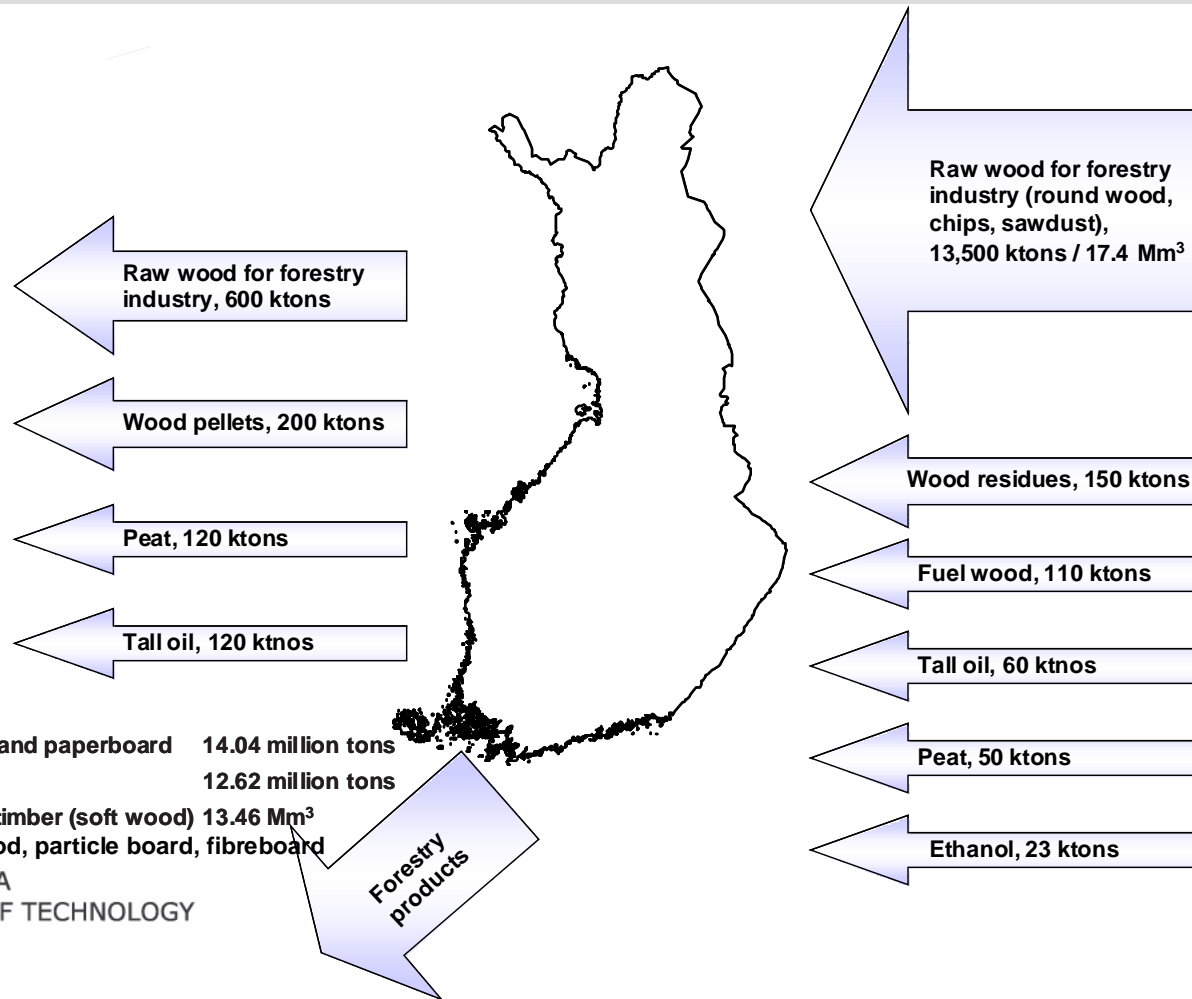
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(* =Vision)

Source: Action plan for renewable energy sources

^(a) Sources: Statistics Finland & Finnish Forest Research Institute

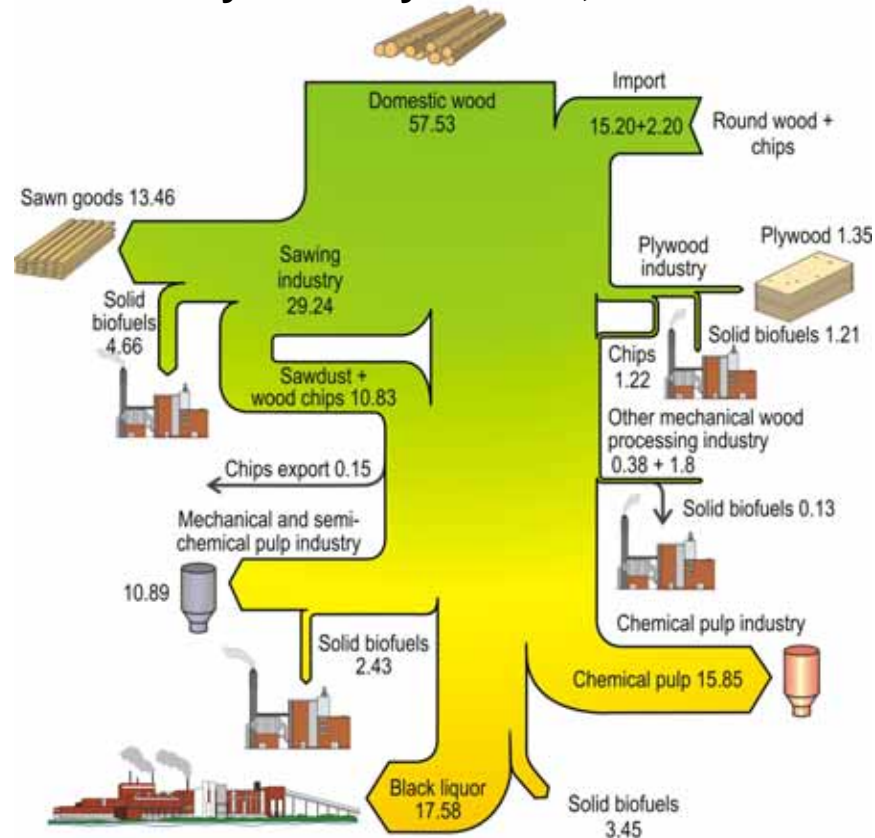
Cross-border biomass flows in Finland in 2004



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Indirect importation of wood fuels

Wood flows in Finnish forestry industry in 2004, million m³



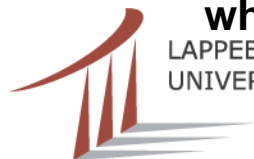
Balance of international biomass trade in 2004

Export and import balance of biofuels in 2004, [PJ]

	Import	Export	Net flow ^(a)
Direct trade:			
- Wood pellets	0.0	3.4	-3.4
- Peat pellets	0	0.4	-0.4
- Energy peat	0.2	0.2	0.0
- Fuel wood	0.9	0.1	0.9
- Wood residues	1.2	0	1.2
- Tall oil	2.1	4.4	- 2.3
Indirect trade: ^(a)			
- Round wood	50.7	2.0	48.7
- Chips	5.2	0.4	4.8
- Sawdust	0.1	0.0	0.1
Total	60.4	10.9	49.5

^(a) Heat content was determined based on the state the flows cross the border

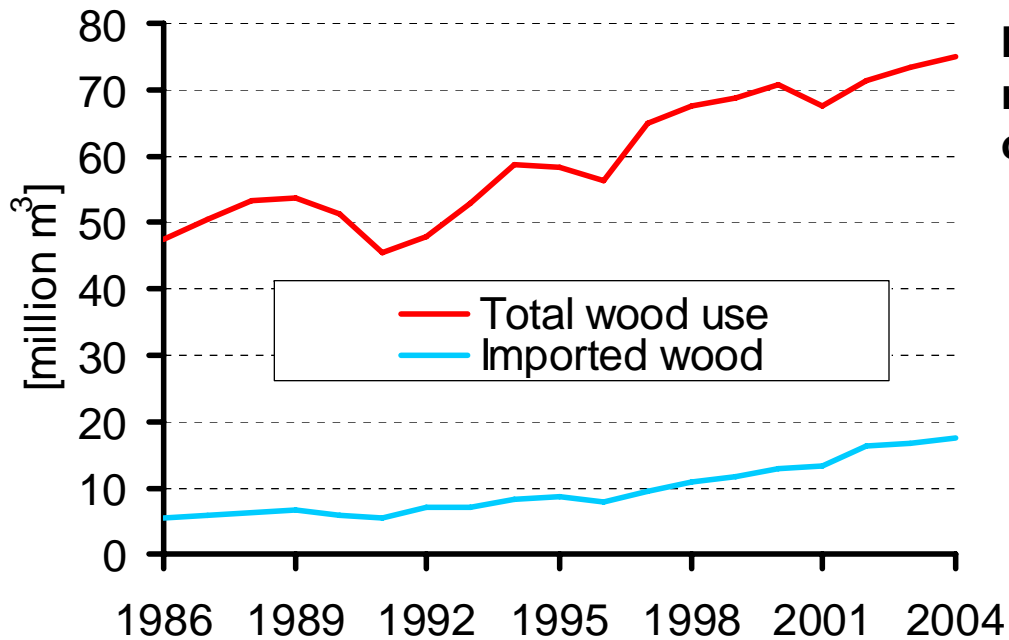
The heating value of indirectly imported wood fuels in primary energy consumption was 64.1 PJ in 2004, totally imported wood fuels 66.2 PJ, which equals 21.6% of wood fuels consumption



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Forestry industry's raw material import

Raw wood consumption in Finnish forestry industry in 1986-2004

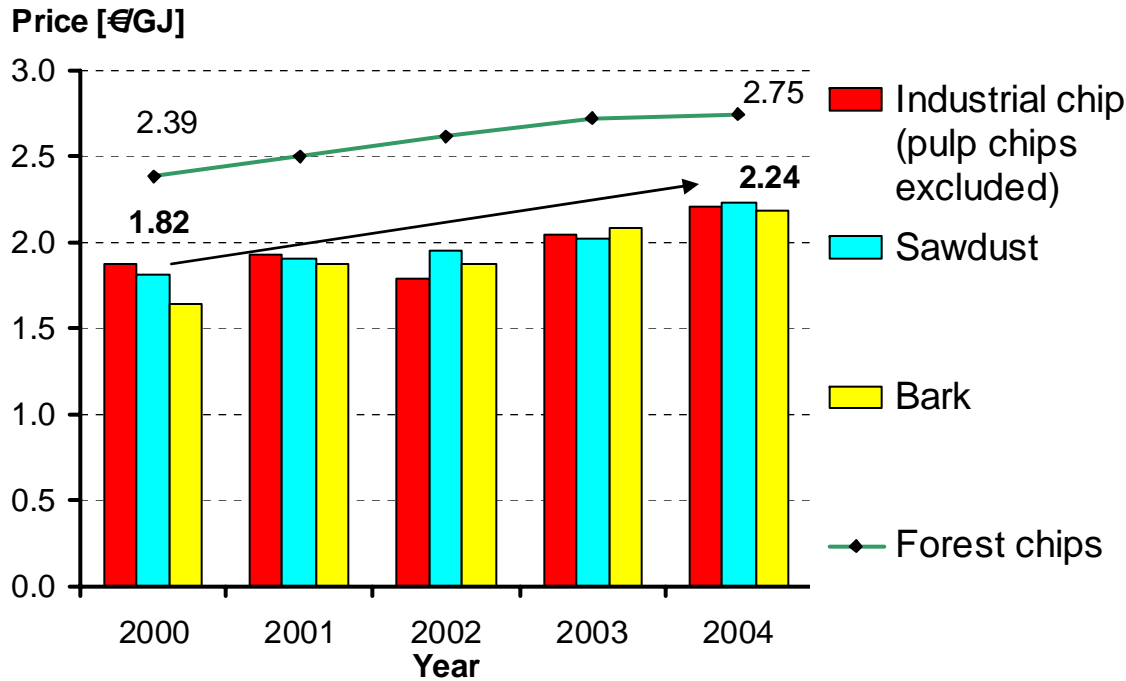


In 2004 raw wood import was 17.4 million m³ in total. Raw wood was originated from:

- Russia 80 %
- Estonia 7 %
- Latvia 6 %
- UK 2 %
- Others 5 %

Competition between energy and raw material use of wood

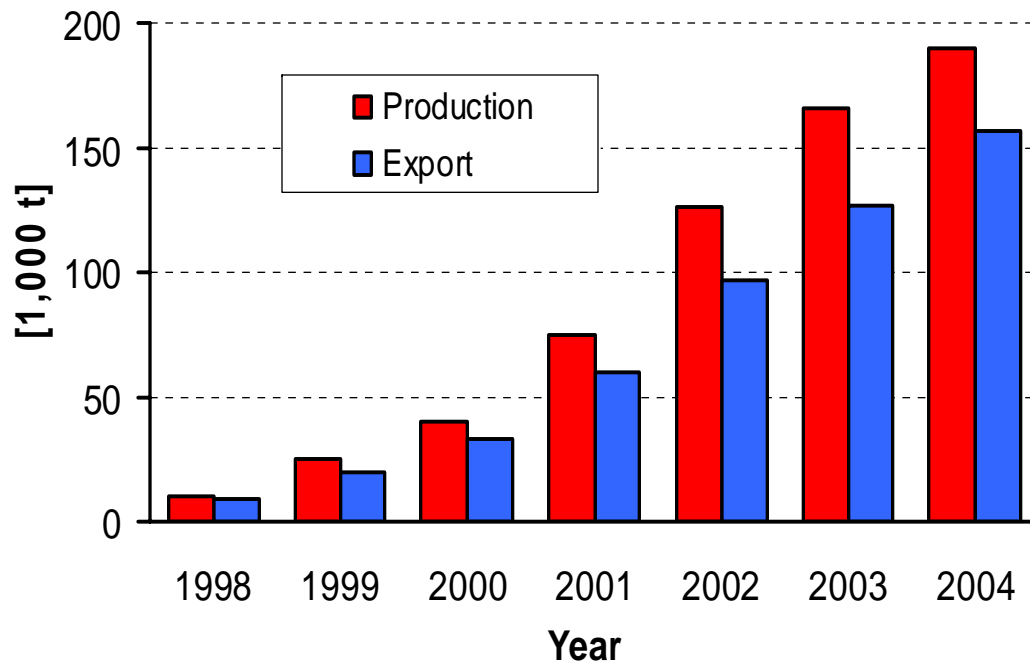
Prices of solid wood fuels delivered at plant in 2000-2004



In 2004 average road side prices of pulp wood were:

- Pine 23.6 €/m³ (3.3 €/GJ)
- Birch 29.1 €/m³ (4.0 €/GJ)
- Spruce 23.3 €/m³ (3.2 €/GJ)

Wood pellet production and export



In 2004 :

- Production 3.2 PJ
- 17 pellet mills in operation
- Domestic use 0.8 PJ
- Use of light fuel oil in the heating of dwelling ~60 PJ/yr



Biofuels in road transportation sector

- **EU directive 2003/30/EC sets 5.75% target proportion for biofuels in road transportation sector for the year 2010**
- **In Finland fuels consumption in road transport sector annually 160 PJ**
- **In 2003 the share of biofuels was 0.165 PJ / 0.1%**
- **Temporary tax relief for bioethanol blended to petrol**
- **Several small-scale trials on the production of biogas and biodiesel for use as transportation fuels**
- **Meeting the target 5.75% EU directive will mean ~9 PJ/yr biofuels use as traffic fuel**



Biofuels in road transportation sector

Biofuels production in Finland:

- Production of bio-ETBE started in 2004, imported ethanol is used as raw material, production currently exported (Neste Oil Corporation)
- A new biodiesel plant under construction in Porvoo at the Neste Oil's refinery



- Annual production 170,000 t (~7 PJ) next generation biodiesel, 2007=>
- Vegetable oils and animal fats will be used as feedstock