

National Energy and Climate Strategy 2030

- Energy transition and renewable energy

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Energy and climate targets (1/2)



Finland's long-term objective is to be a **carbon-neutral society**

- 80-95% reduction of greenhouse gas emissions from 1990 level by 2050

EU 2020 targets for Finland

- **renewable energy at least 38 % of final consumption**
- greenhouse gas emissions in the non-emission trading sector to be reduced by 16 % from 2005 level
- indicative energy efficiency target, final consumption not more than 310 TWh

EU 2030 targets for Finland (Commission's proposal for ESD)

- greenhouse gas emissions in **the non-emission trading sector to be reduced by 39 % from 2005 level by 2030**

Energy and climate targets (2/2)



Government Programme of Prime Minister Juha Sipilä

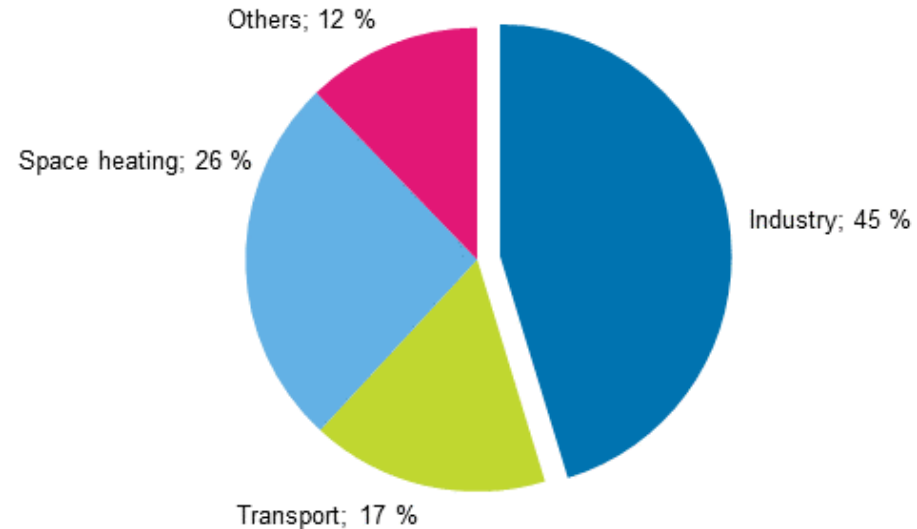
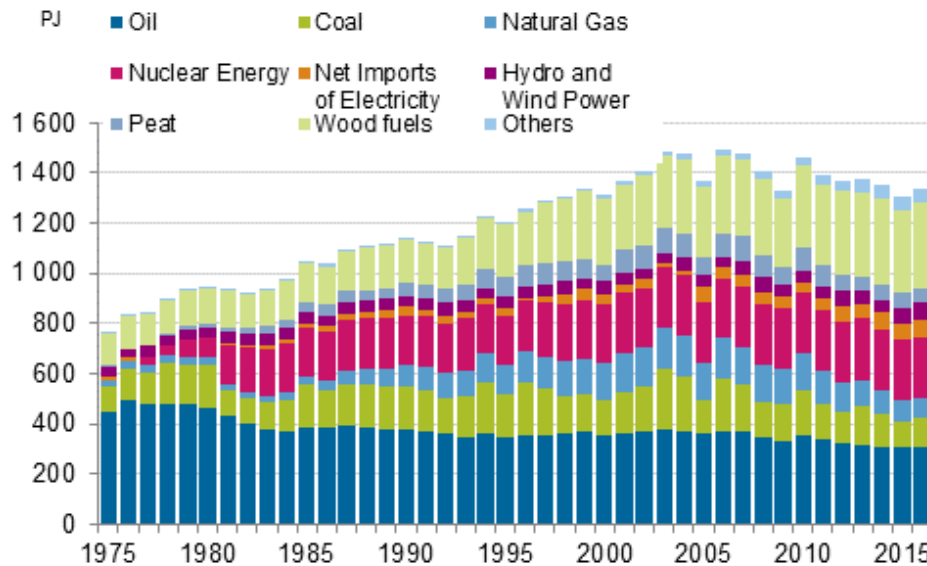
- Use of **renewable energy** will be increased in a sustainable way so that its share will rise to more than **50 per cent during the 2020s**.
- The use of imported **oil** for the domestic needs will be **cut by half during the 2020s**.
- **Coal** will no longer be used in energy production.

Total and final energy consumption



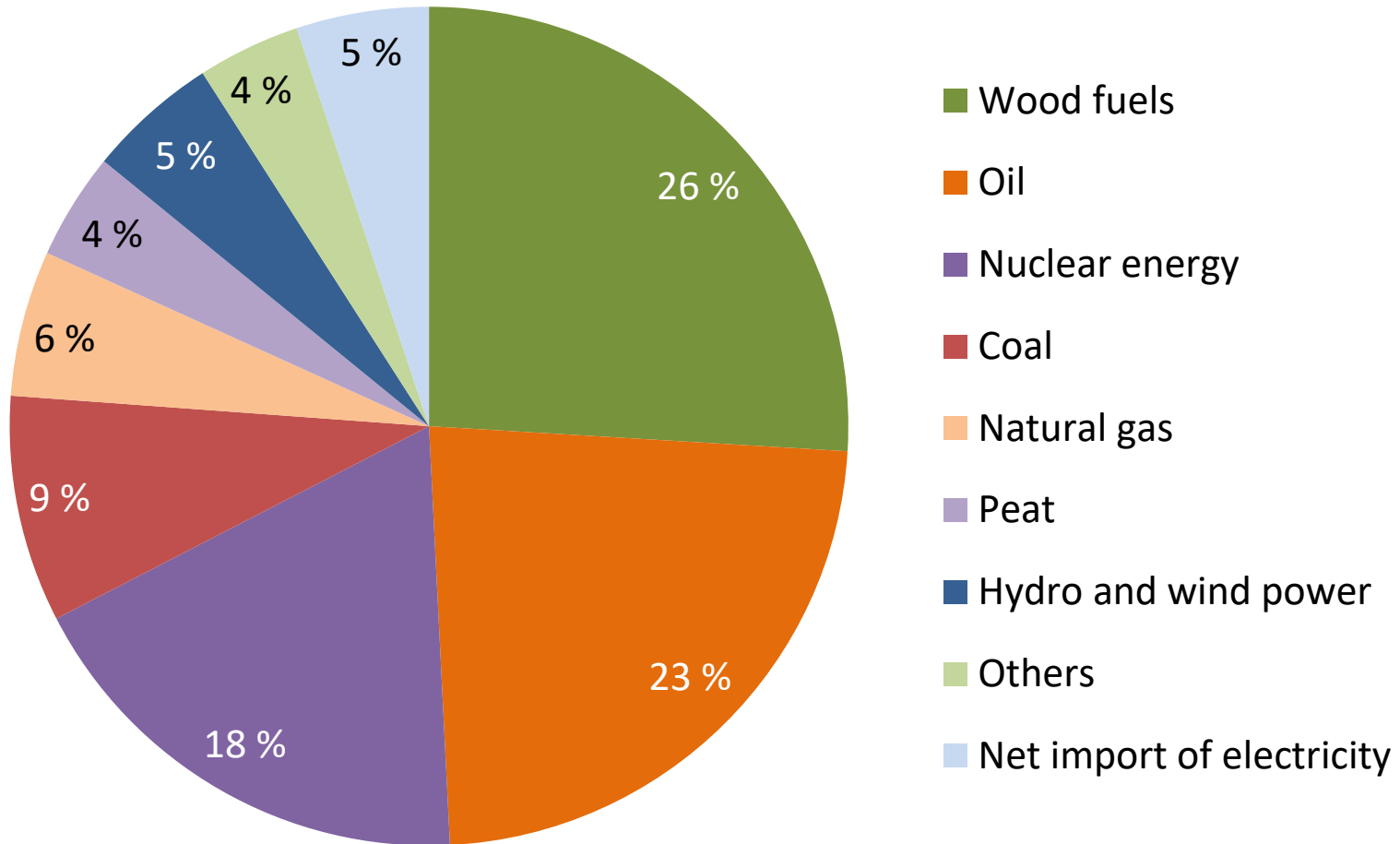
Total energy consumption 1975–2016

Final energy consumption by sector 2016



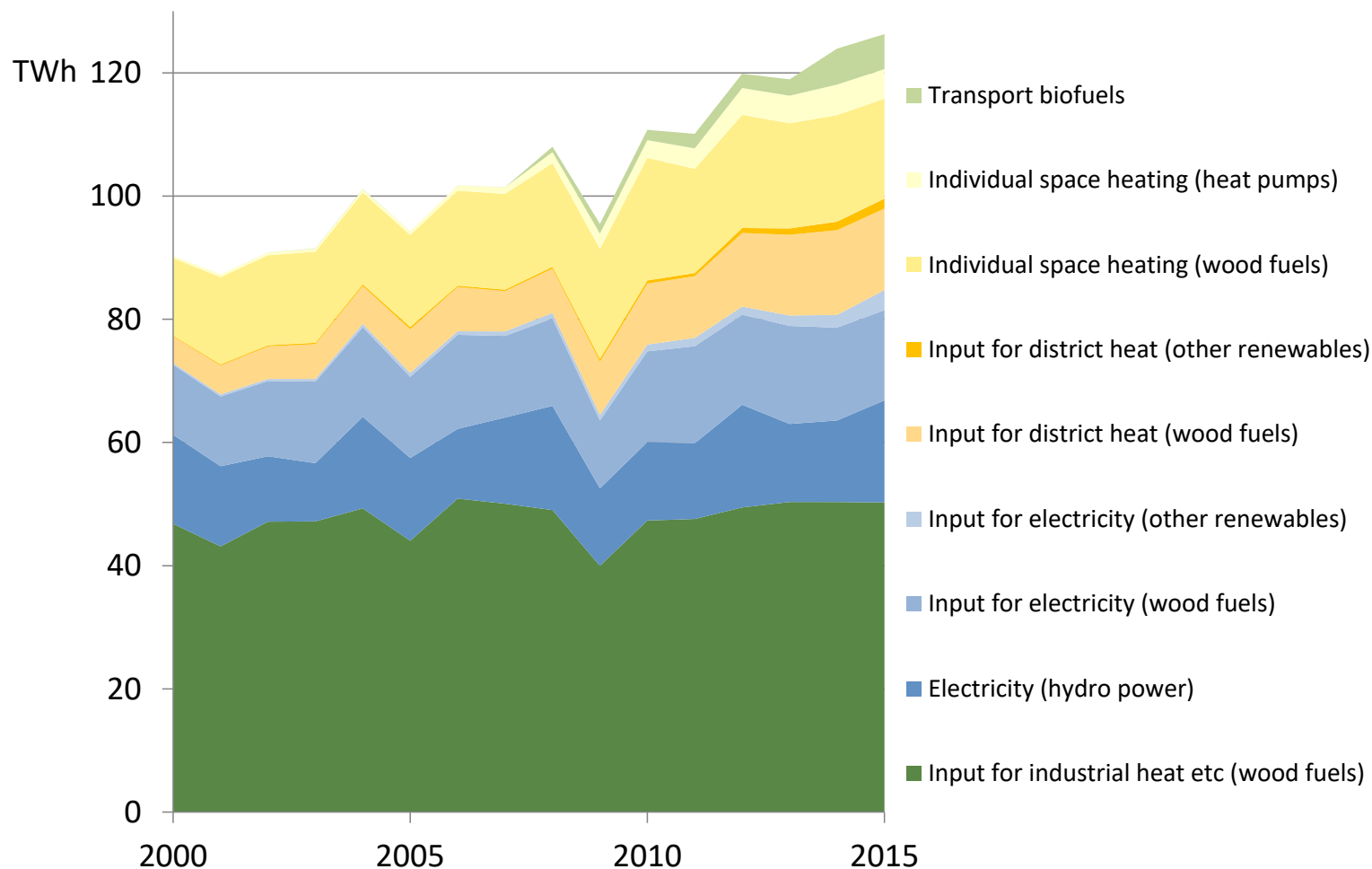
Big picture: Renewables progressing nicely

2016 total primary consumption 371 TWh



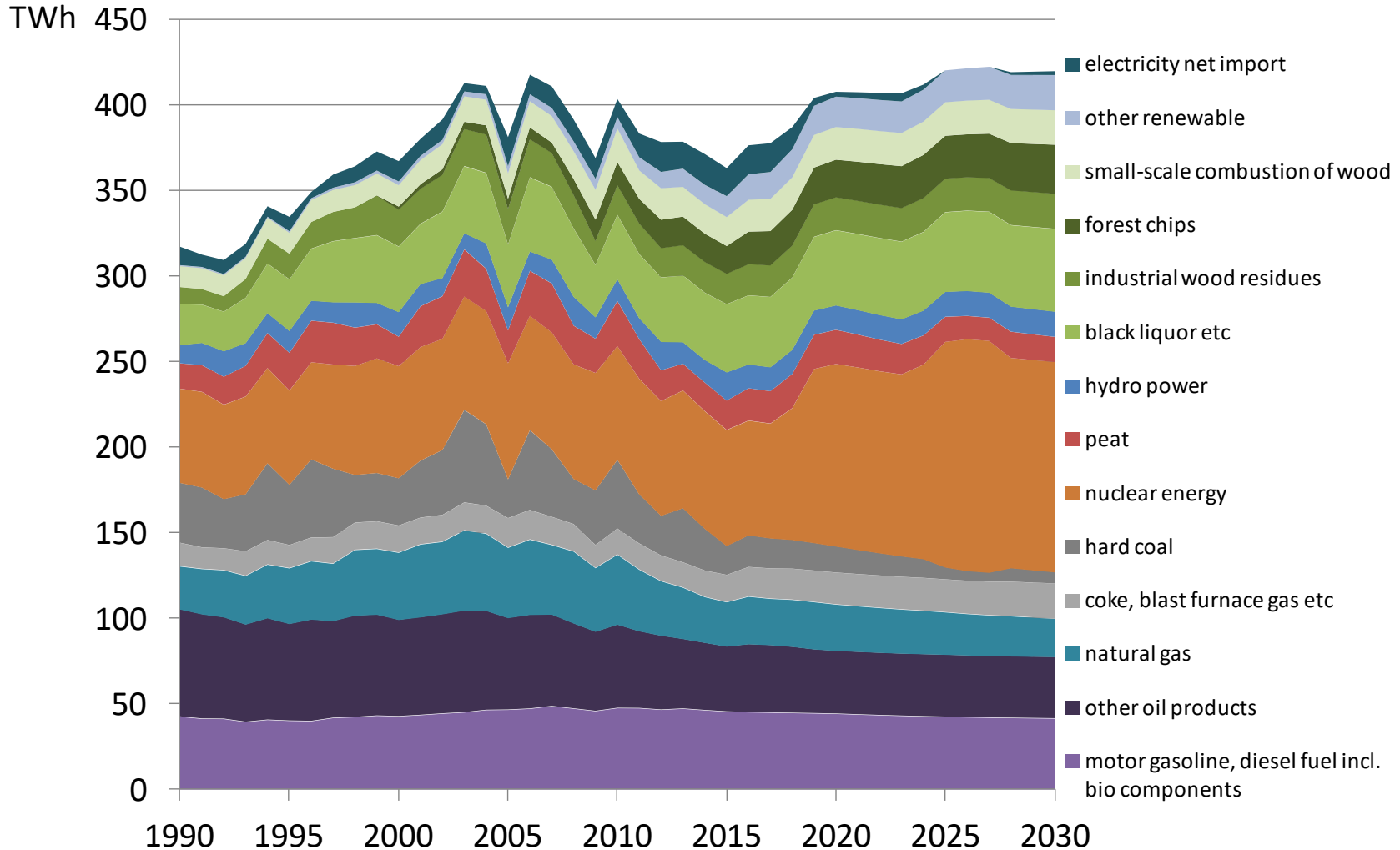
Source: Statistics Finland

Renewable primary energy by end use 2000 - 2015

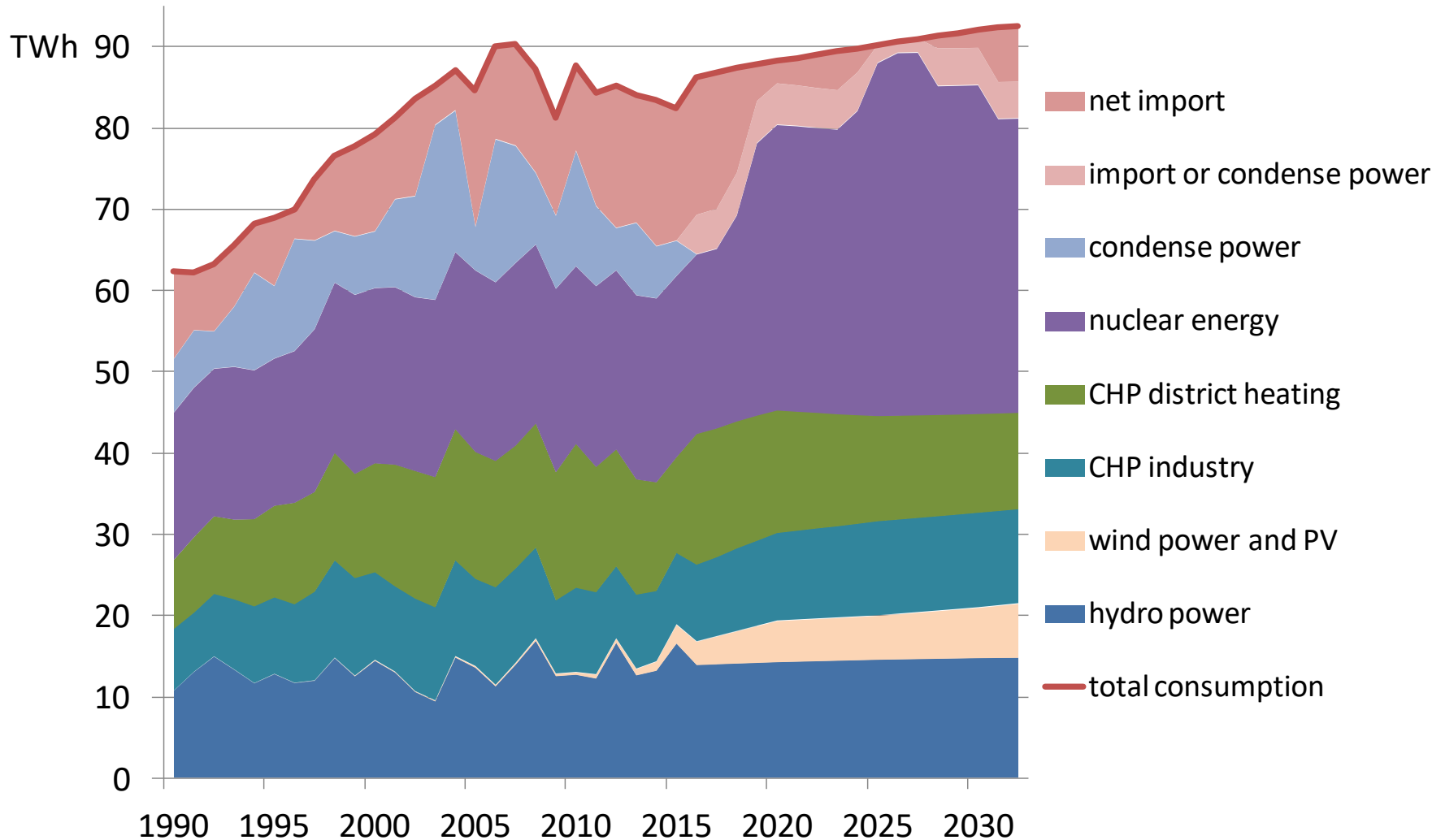


Source: Statistics Finland

Primary energy supply, reference scenario



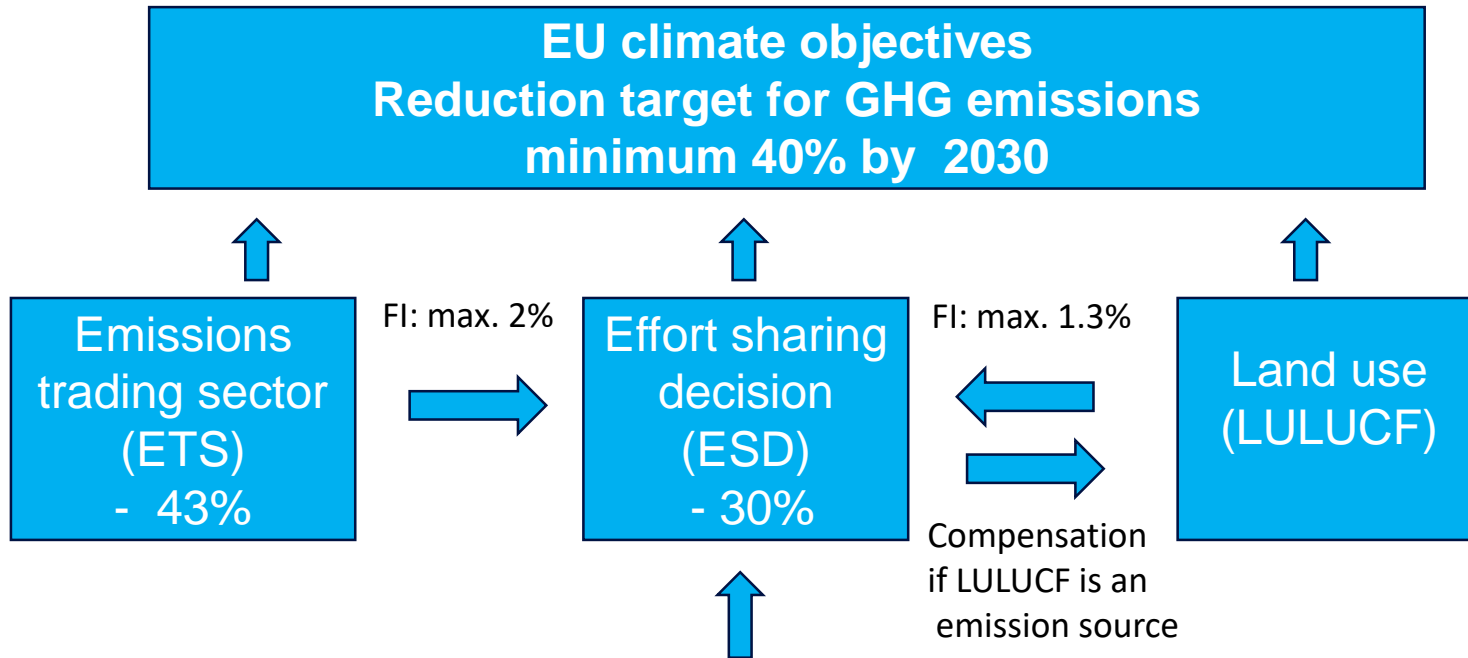
Electricity supply, reference scenario



National Energy and Climate Strategy towards 2030

- Approved by the Government on 24 **November 2016** as a Report to the Parliament
- The aim is to reach Government and EU **2030 targets**
 - Increase renewable energy (50 % of all)
 - Reduce the use of imported oil by 50 %
 - Abandon coal by 2030
 - Achieve the required reduction in emissions in the effort-sharing sector (the non-ETS sector)
- The Government submitted the **medium-term Climate Change Policy Plan for 2030** to the Parliament in **September 2017**
 - The plan contains policy measures needed to achieve the emission reduction target for 2030 set by the EU for the effort-sharing sector
 - The plan and the Energy and Climate Strategy is based on the same data

Emission reduction targets from EU legislation



The target for Finland in the Commission Proposal for the Effort Sharing Regulation is **-39% from the 2005 emissions**

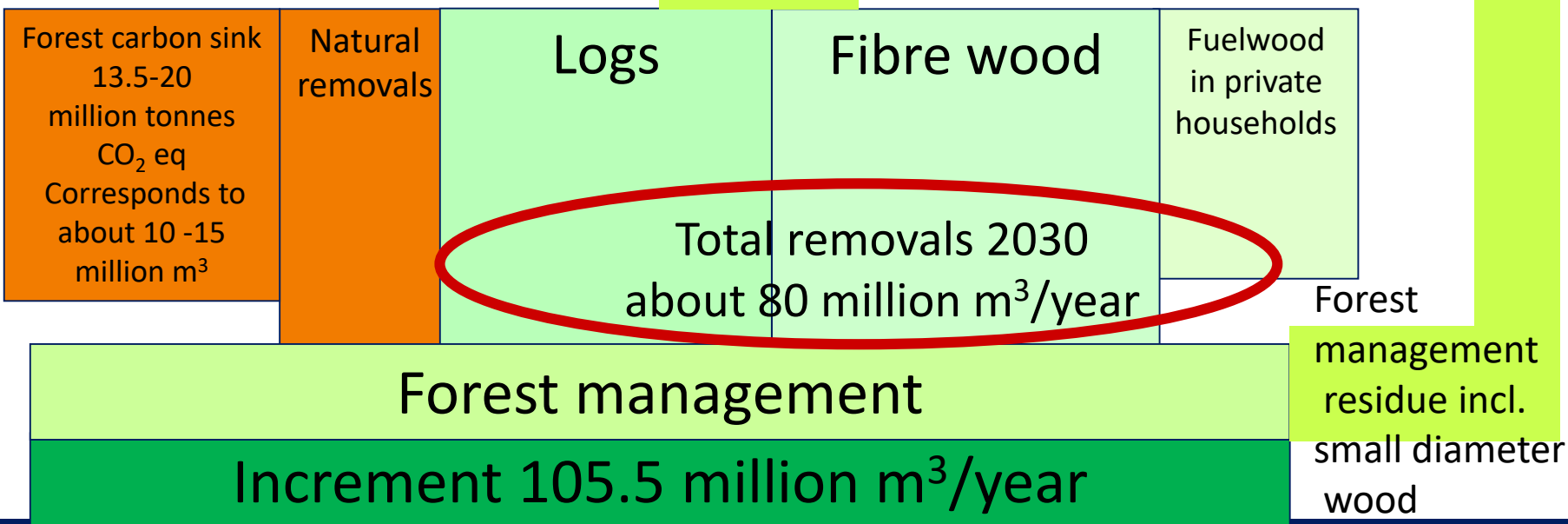
Use of wood for energy consists of side-streams - scenario for 2030

About 120-130 TWh energy

- Black liquor from forest industry 48 TWh
- Solid wood fuels about 70 TWh, including sawdust, bark and other residue from industry 21 TWh, forest chips for electricity and heat production 30 TWh and use of small diameter wood 20 TWh
- Solid wood fuels also used as raw material for transport biofuels and other bioliquids

Industry side streams

Felling residue





Policies for wood-based energy

- **Energy taxation** will provide an incentive for the use of forest chips and forest industry by-product in CHP-production and heat production (industry, space heating)
- Taxation will be used to **ensure that peat**, while **not being more competitive than forest chips or forest industry by-products**, will be more cost effective than **coal and other fossil fuels**.
- The use of wood-based fuels will not be promoted by means of an aid scheme if the use of these fuels is profitable without any aid.
- When developing policies, **the availability of forest biomass and added value in different uses of forest biomass** will be taken into account.

Policy instruments for increasing renewable energy; heating and electricity



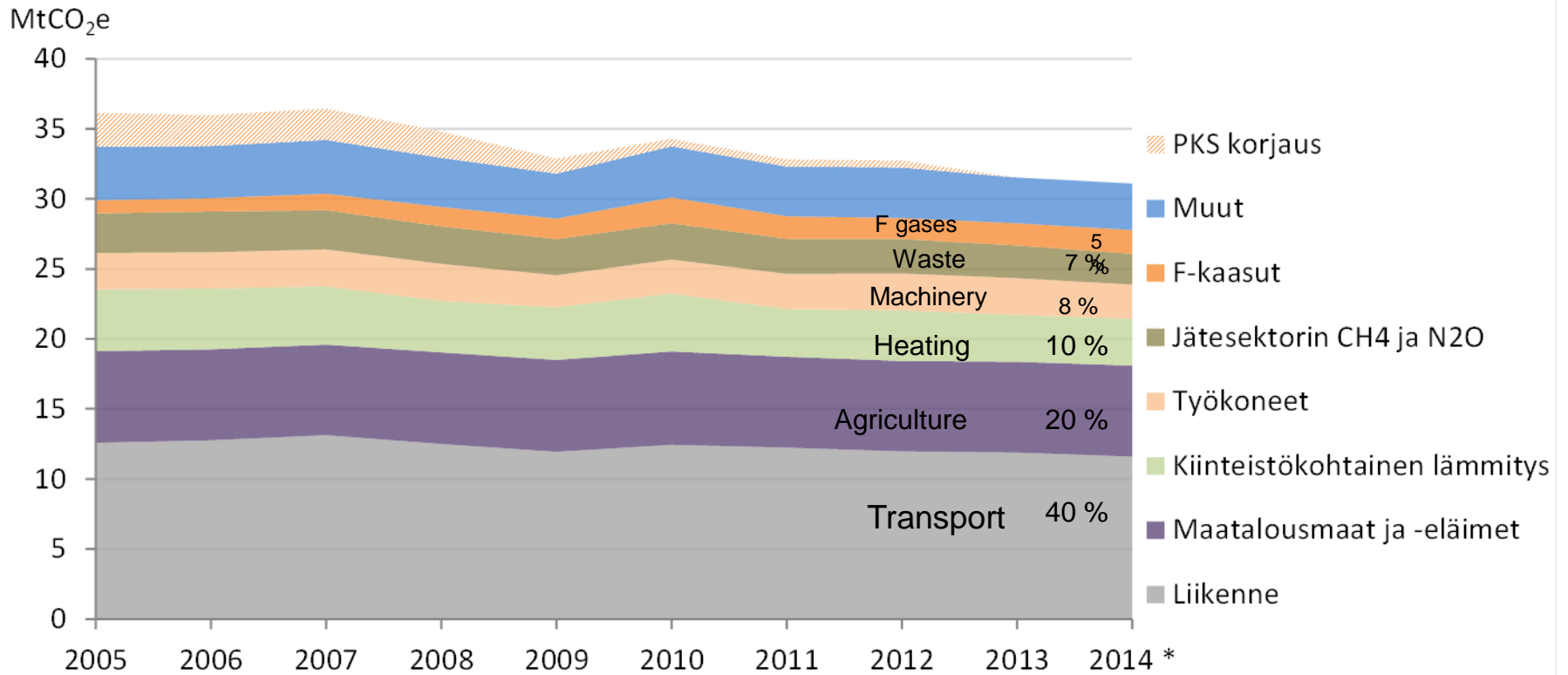
• Heating

- **taxes** for fossil fuels and peat in heat production, no tax for solid biomass
- **investment aid** for small installations in the non-EU ETS sector (e.g. enterprises, farms, municipalities)
- investment aid for innovative and new technology demonstration
- the EU ETS

• Electricity and CHP

- 2010: **Sliding premium**
 - Premium for new wind, biogas and wood fuel installations: target price – electricity market price
 - premium for the use of forest chips in existing and new installations
- A new support scheme: the bill has been submitted to the Parliament
 - 2 TWh, sliding premium based on competitive bidding process
 - Includes wind, solar, CHP-plants (restrictions regarding biomass feedstock)
- **Micro-production** (e.g. solar panels, small biogas-CHP): tax exemptions for self-consumers, investment aid
- **Investment aid** for innovative and new technology
- The EU ETS

ESD sector emissions in Finland 2005-2014



Emission reduction about 9 % according to preliminary figures

Estimated sector specific emission reductions

Source: Government Report on Medium-term Climate Change Policy Plan 2030
Towards Climate-Smart Day-to-Day Living



Sector	Estimated emission reduction 2030 (Mt CO ₂ e/year)
Transport, total	3.1
○ Renewable / low emission fuels and power sources	1.5
○ Energy efficiency of vehicles	0.6
○ Energy efficiency of the transport system	1
Increased use of biogas	0.3
Agriculture	0.5
Building-specific heating, total	0.2
○ Blending obligation	0.1
○ Phasing out oil in the public sector	0.13
Industrial oil use	0.1
Waste management	0.6
F-gases	0.3
Machinery, total	0.5
○ Blending obligation	0.2
○ Other measures	0.3
Total	5.6

Measures in the transport sector



- improved **energy efficiency** of the transport system (e.g. developing new transport services, influencing modes of travel and transport, utilising intelligent transport methods)
- **vehicle stock renewal** will be accelerated considerably
- a minimum of 250,000 **electric vehicles** and 50,000 **gas fuelled vehicles** in 2030
- share of **biofuels** of all fuels sold to road transport to be increased to **30 per cent by 2030**

Policy instruments for increasing renewables; transport



• Regulation

- Distribution obligation for transport biofuels (30 % by 2030)

• Taxation

- Energy taxation (taxes for fossil fuels in transport, lower taxes for biofuels, no tax for biogas)

• Investment aid

- Biogas installations producing biomethane from waste and residues
- New technology biorefineries

The EU regulatory framework beyond 2020 (RED II)?

- Incentives and restrictions, implementation

Renewable energy share of final consumption

