



Forest resources and energy utilities in Sweden, present state and challenges

The regional Energy agency of
southeast Sweden
(Energikontor Sydost)

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Content

- Introduction of Energikontor Sydost
- Energy utilities, present state
- Forest resources
- Challenges in Southeast Sweden

Småland – model region in Sweden



Area: 31 000 sq.km.

Number of inhabitants: 760 000

25 inhab. / sq.km.



Model
Municipality:

Uppvidinge

Area: 1 200 sq.km.

Number of
inhabitants: 9 300

7,9 inhab. / sq.km.



Energy Agency for Southeast Sweden

Riga 20170124

Around 20 energy experts in our company

- Works for a sustainable energy system
- In collaboration with both private operators and public bodies
- We are a non-profit company
- Owned by municipalities, county councils and regional councils in the southeast part of Sweden
- Our business is mainly financed by funds from Swedish authorities and the EU



Our objectives

- **Increase energy efficiency in all sectors of the society**
- **Increase the share of energy from renewable energy sources**



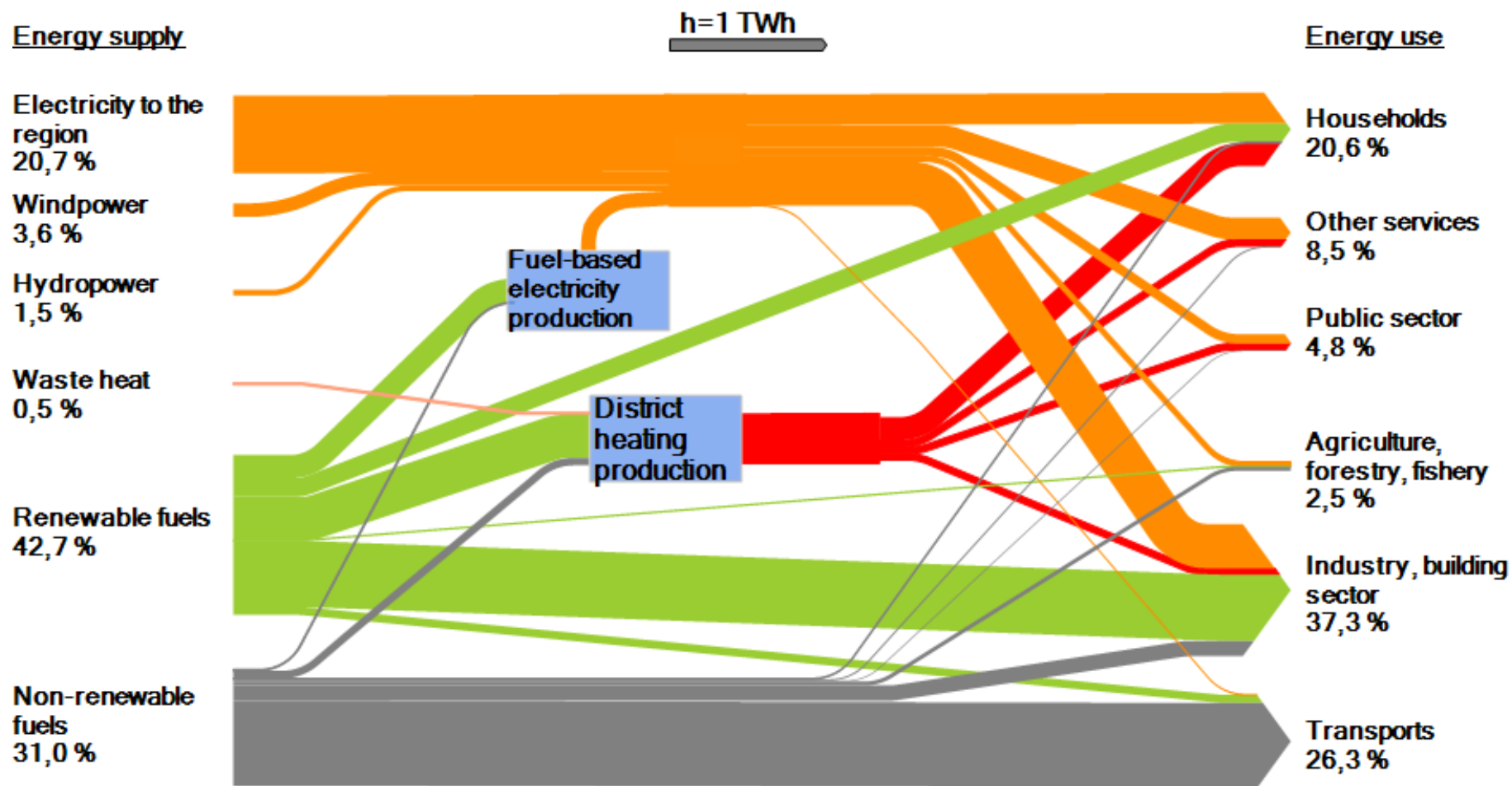
Energy utilities, present state

Share of renewable energy in Sweden, 2005–2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Totalt	41%	43%	44%	45%	48%	47%	49%	51%	52%	53%
Heating, cooling, industry et	52%	56%	59%	61%	64%	61%	62%	66%	67%	68%
Electricity	51%	52%	53%	54%	58%	56%	60%	60%	62%	63%
Transports	4%	5%	6%	6%	7%	7%	10%	13%	17%	19%

Source: The Swedish Energy Agency and Eurostat

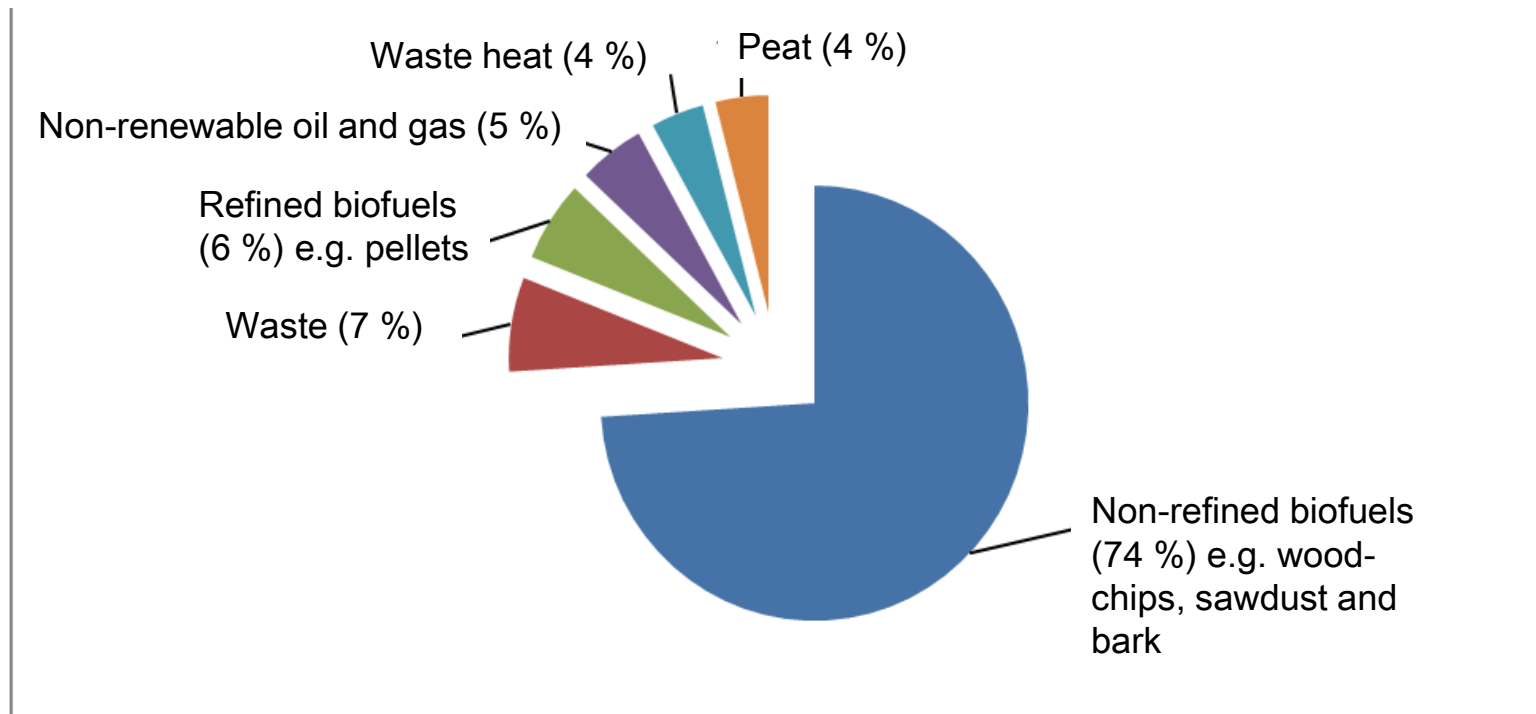
Energy use and renewable electricity and district heating production 2013 in 3 counties in Småland: Jönköping, Kalmar and Kronoberg (%)



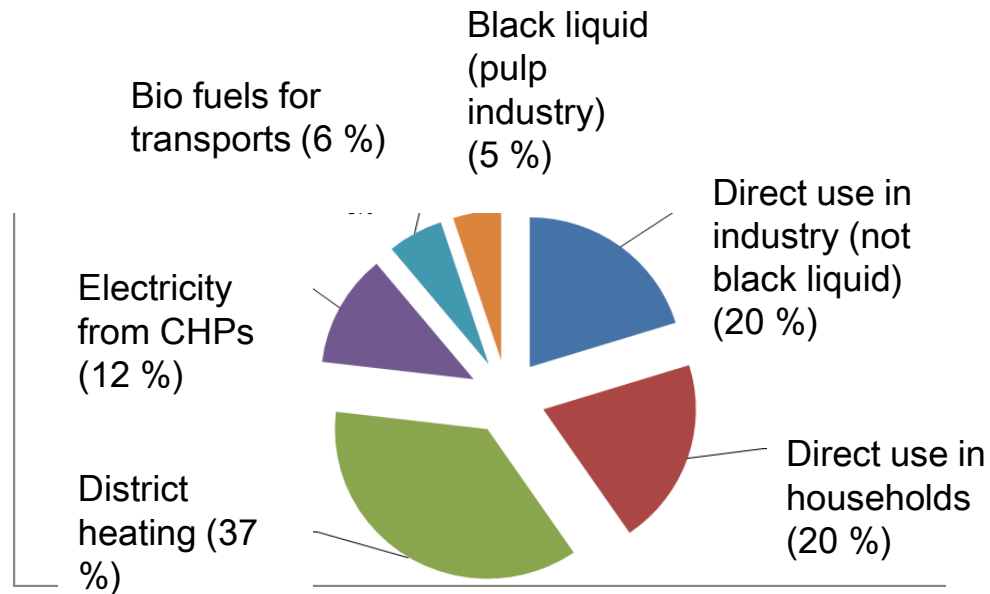
Nearby District Heating plants in Kronoberg



Share of various fuels for production of district heating in Kronoberg



The use of bioenergy in Kronoberg



Trends for the energy mix in Sweden

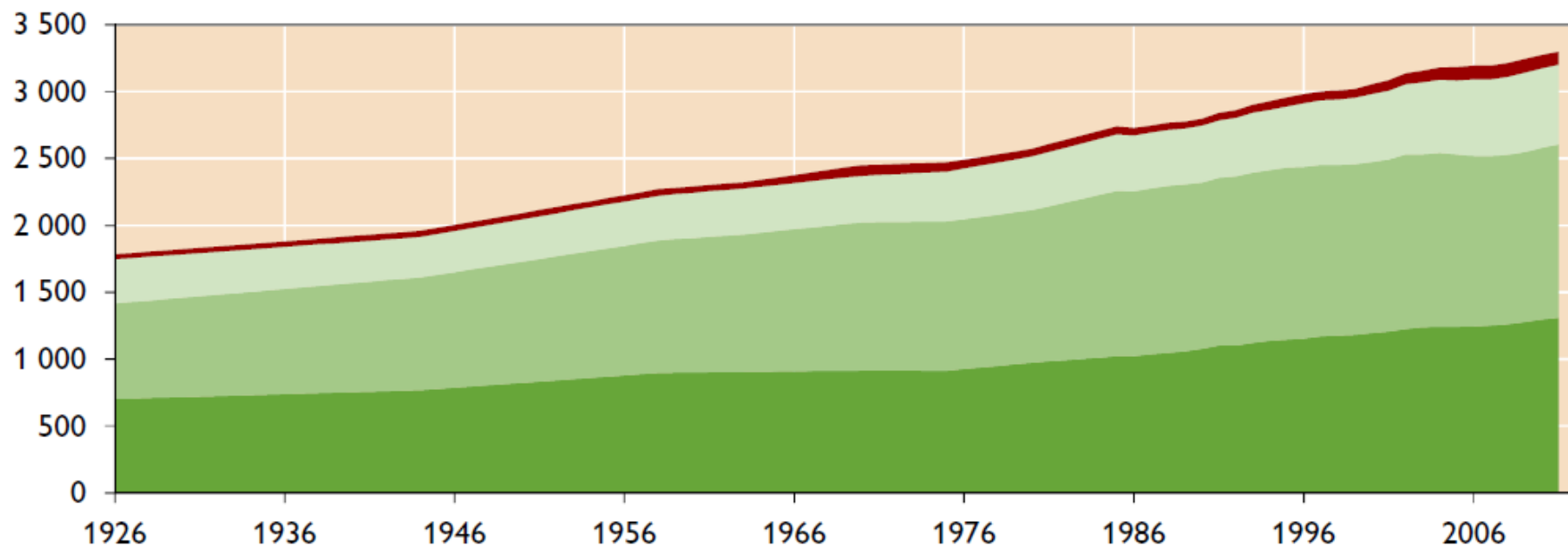
- The amount of energy in the energy system is fairly constant, small tendency to decrease, but the share of renewable fuels increases.
- Coal and oil are almost gone from the fuel mix for district heating, but combustion of household waste is increasing.
- The number of conversions from fossil fuels to biofuel in the industry sector increases.
- Renewable fuels increases in the transport sector.


Forest resources

- *Total standing volume on productive forest land is about 3.0 billion cubic metres, of which 39 % is Scots pine, 42 % Norway spruce and 12 % birch.*
- *Average standing volume per hectare on productive forest land is 135 cubic metres.*
- *The total standing volume of Swedish forests has increased by over 80 % since the 1920s.*
- *Total annual growth is approx. 116 million cubic meters (productive forest land) and approx. 123 million cubic metres (all land use classes).*

Trend for total standing volume since 1920. Moving 5-years average. All land use categories¹

Milj. m³sk Mill. m³ standing volume



 Döda träd
Dead or windthrown trees

 Lövträd
Broad-leaved

 Gran
Norway spruce

 Tall
Scots pine



Some facts of Småland

- **Non-industrial private individual or family owners owns 80 % of the forests**
- **75 % of the owners live at their own forest estate or in the same municipality. 25 % live in another municipality compared to where their forest estate is located**
- **Mean age of forest owner: 58 years**
- **90 % softwood, 10 % hardwood**
- **15 millions cubic-meter yearly growth**

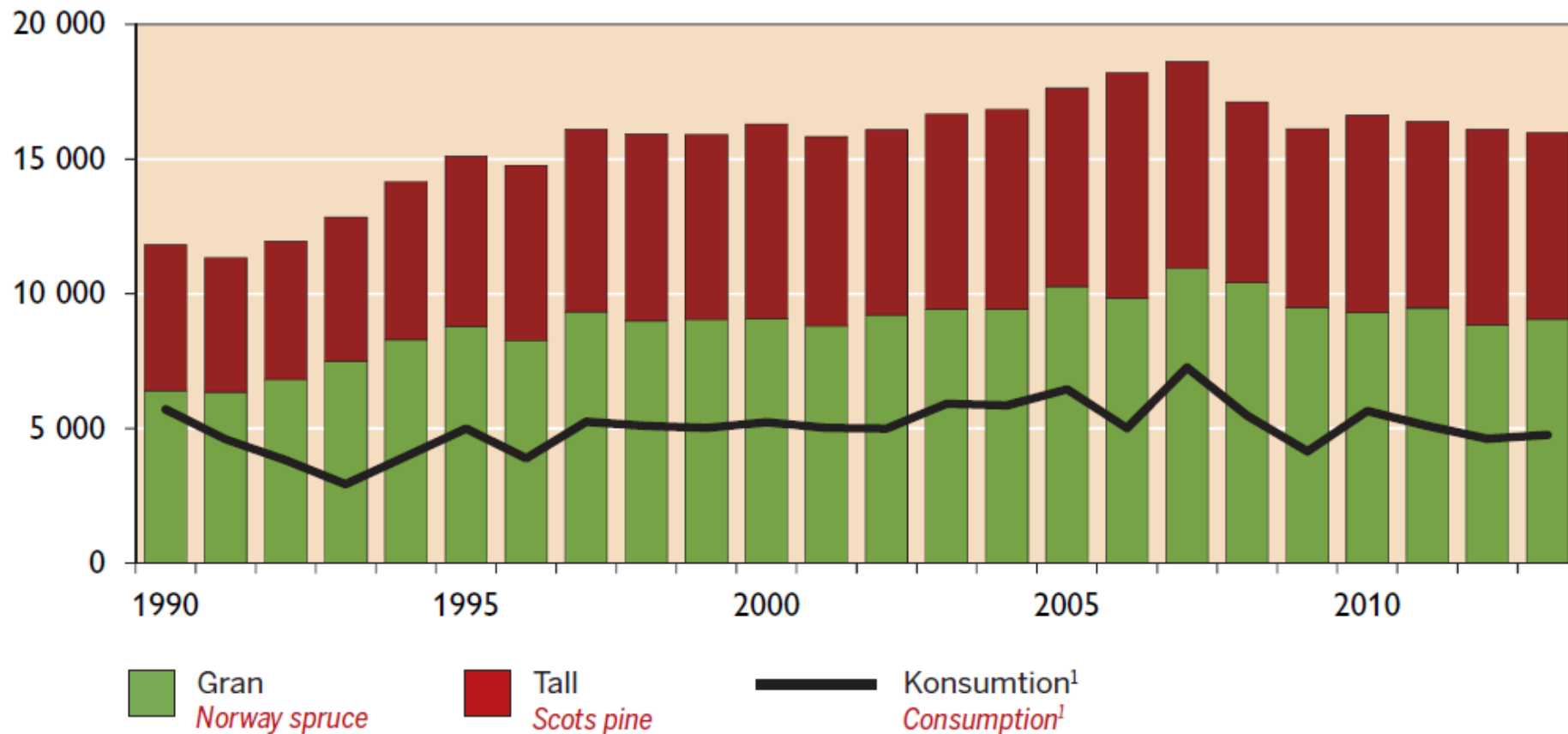
Felling volumes and products

The net felling volume was 70.1 million cubic metres solid volume excluding bark, of which

- 32.3 million m³ sawlogs,
- 31.3 million m³ pulpwood,
- 5.9 million m³ fuelwood, and other roundwood accounted for 0.5 million m³.
- The house combustion units used fire wood for approx. 6.7 million m³. The use of wood fuel in non-residential premises, in multi dwelling buildings, in agriculture and holiday homes was estimated to another 2 million m³ fire wood.
- 16.0 million m³ sawn and planed softwood.

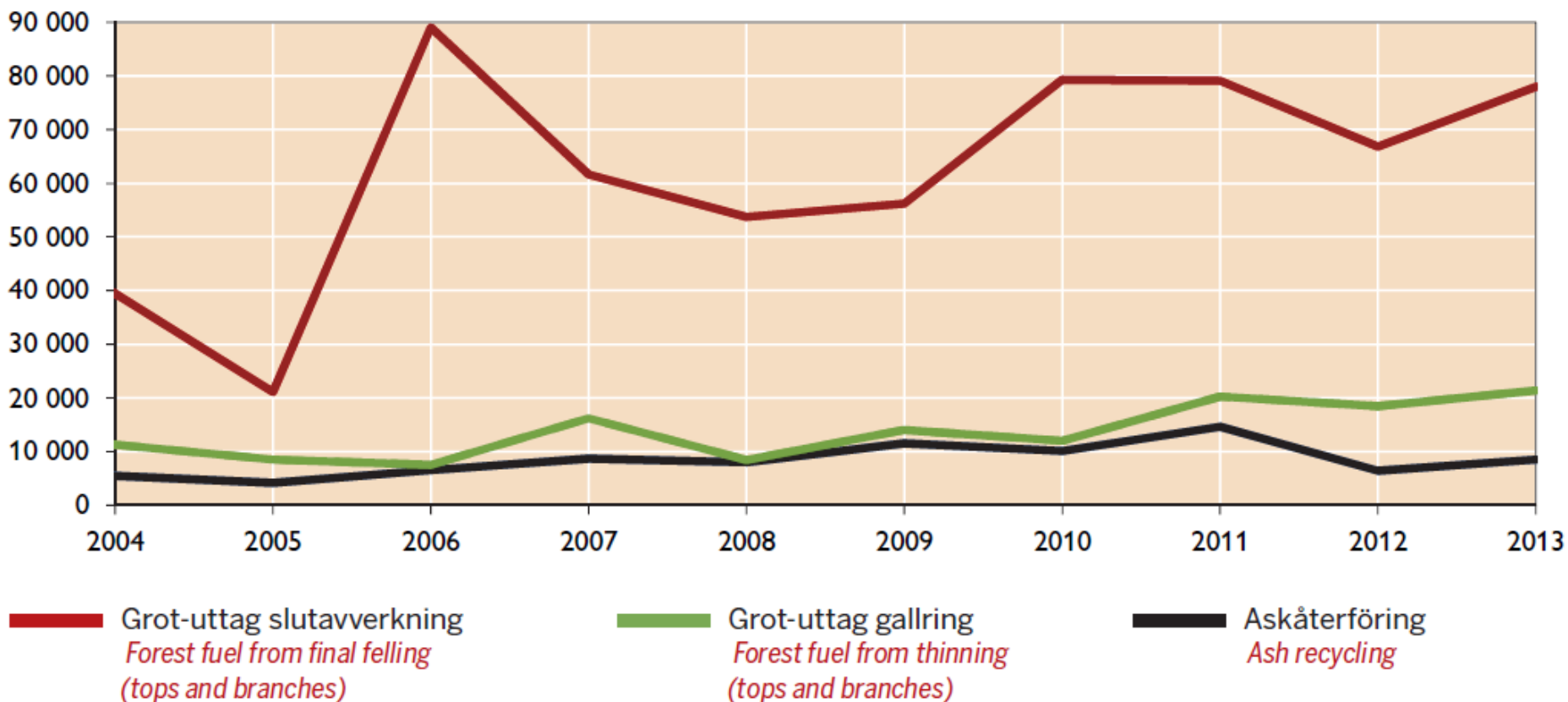
Production and consumption¹ of sawn and planed softwood

1 000 m³ 1,000 m³



Ash recycling and forest fuel removal (tops and branches) by hectares and year

Hektar Hectares



Challenges for increased mobilization of forest residuals from harvestings

- We succeed to bring only 50 % of the branches and tops from the clear cutting areas to the heat plants. The stumps is not included.



- The import of waste from households to Sweden has increased and many of the heat plants are using this as fuel.



- The damages in the soil and the loss of fertilizer are too important factors in relation to the low income of extraction of forest fuel.



Pilot project in Småland, SE

Background:

Value-chains for pulpwood and timber are highly developed, as well as forestry actions. For that reason we choose to focus on extraction of branches and tops for bioenergy.

Purpose:

Development of a more efficient and sustainable system for extraction of forest residuals from clear cutting areas, for fuel purposes.





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Thank you for your attention

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