

Wood chips and pellets utilization tendency in bioenergy production in Finland, Sweden and some other European countries 2000-2016

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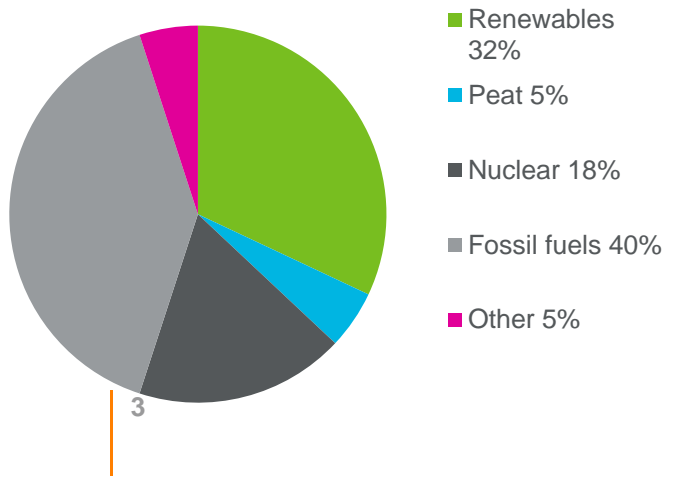
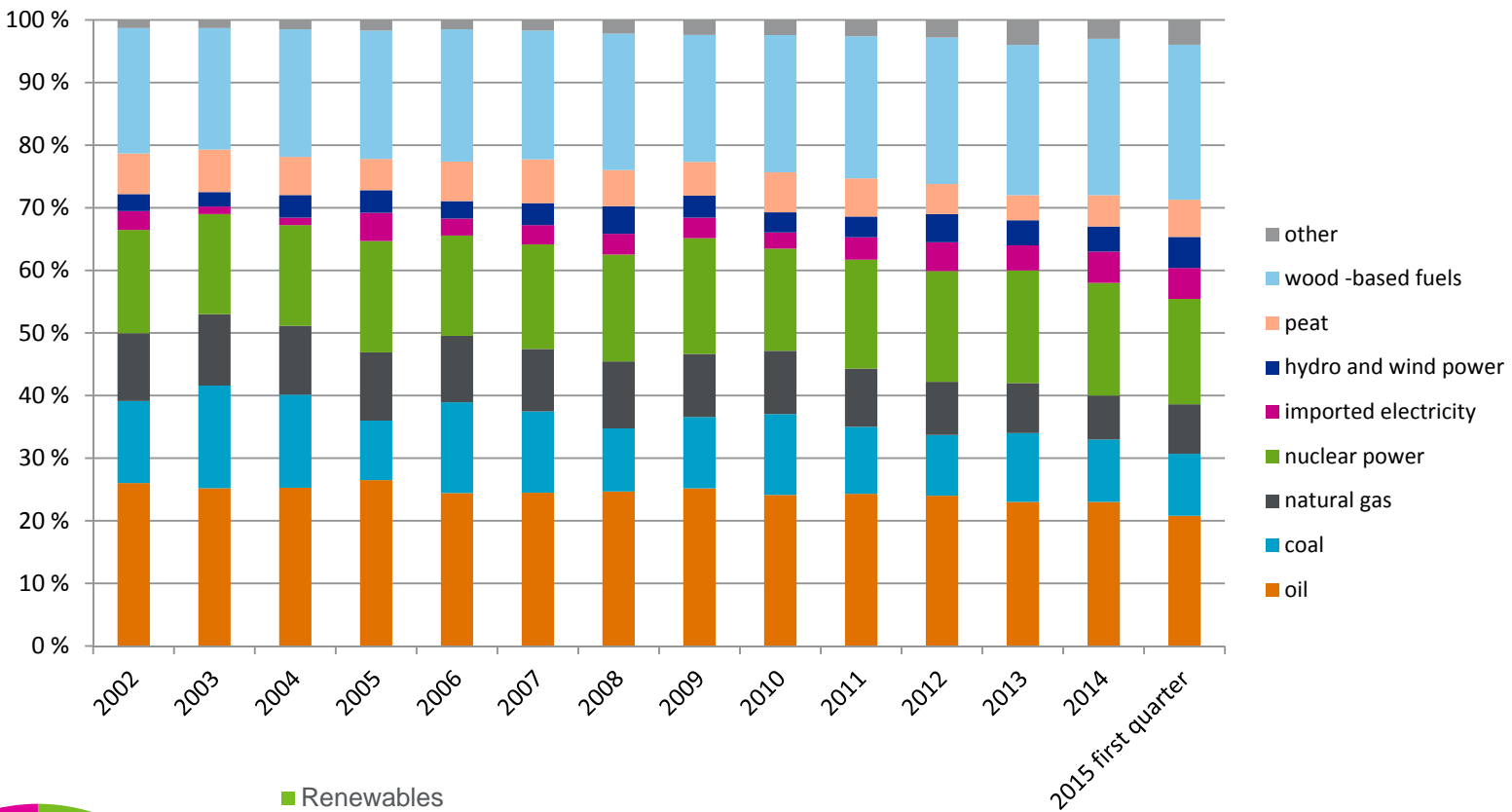
Barents Forest Forum, September 17-18, 2015, Joensuu Science Park, Joensuu, Finland

Content:

- Total Energy use
- Forest chips
- Solid wood fuel
- Pellets
- Energy Peat
- Conclusions



Total energy use in Finland (source: Statistics Finland)



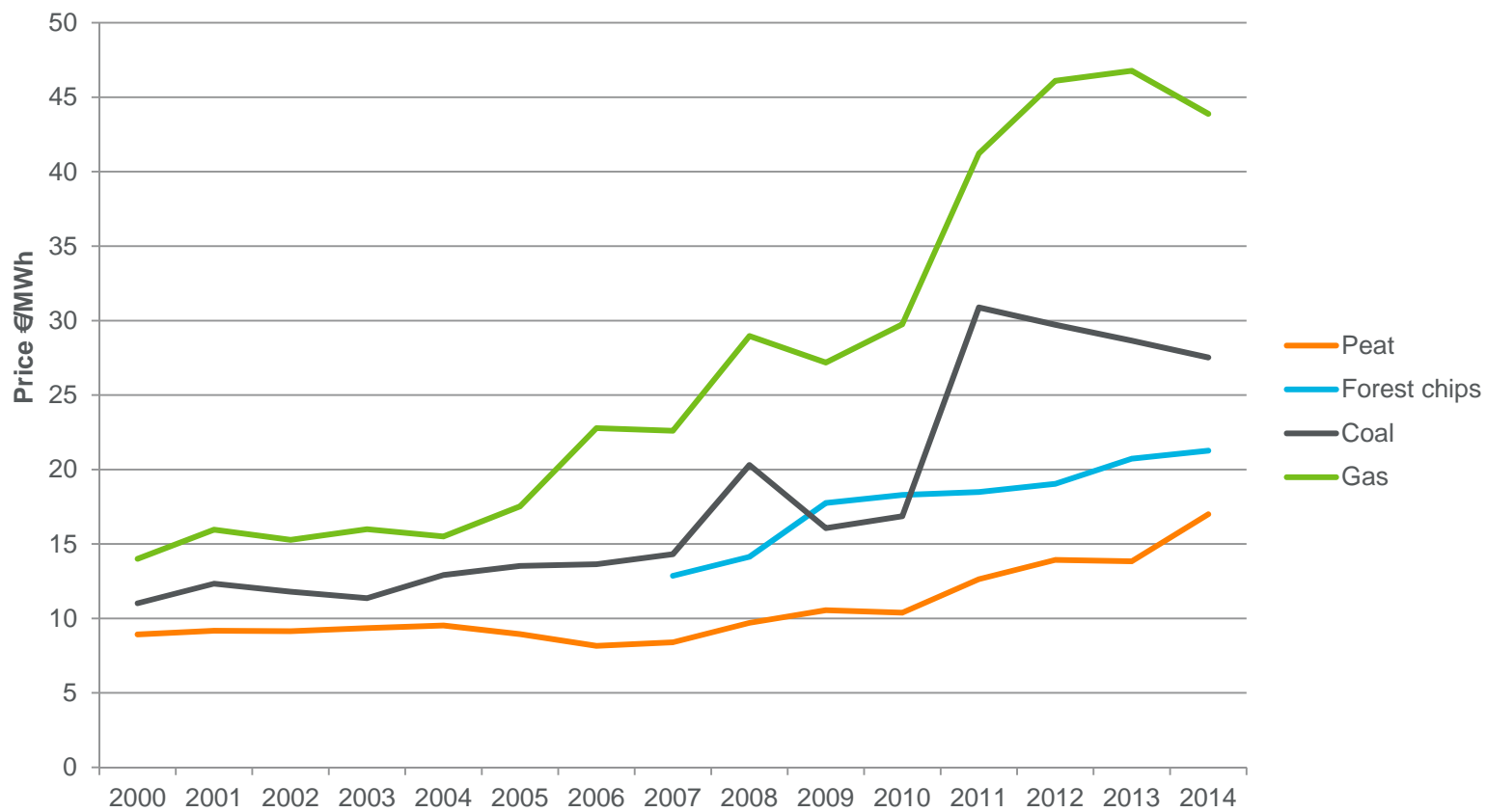
Source: Statistics Finland



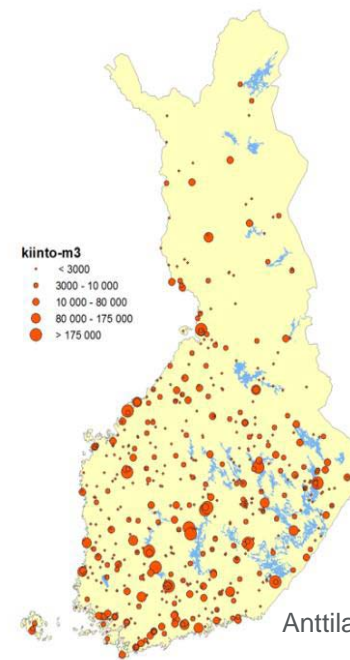
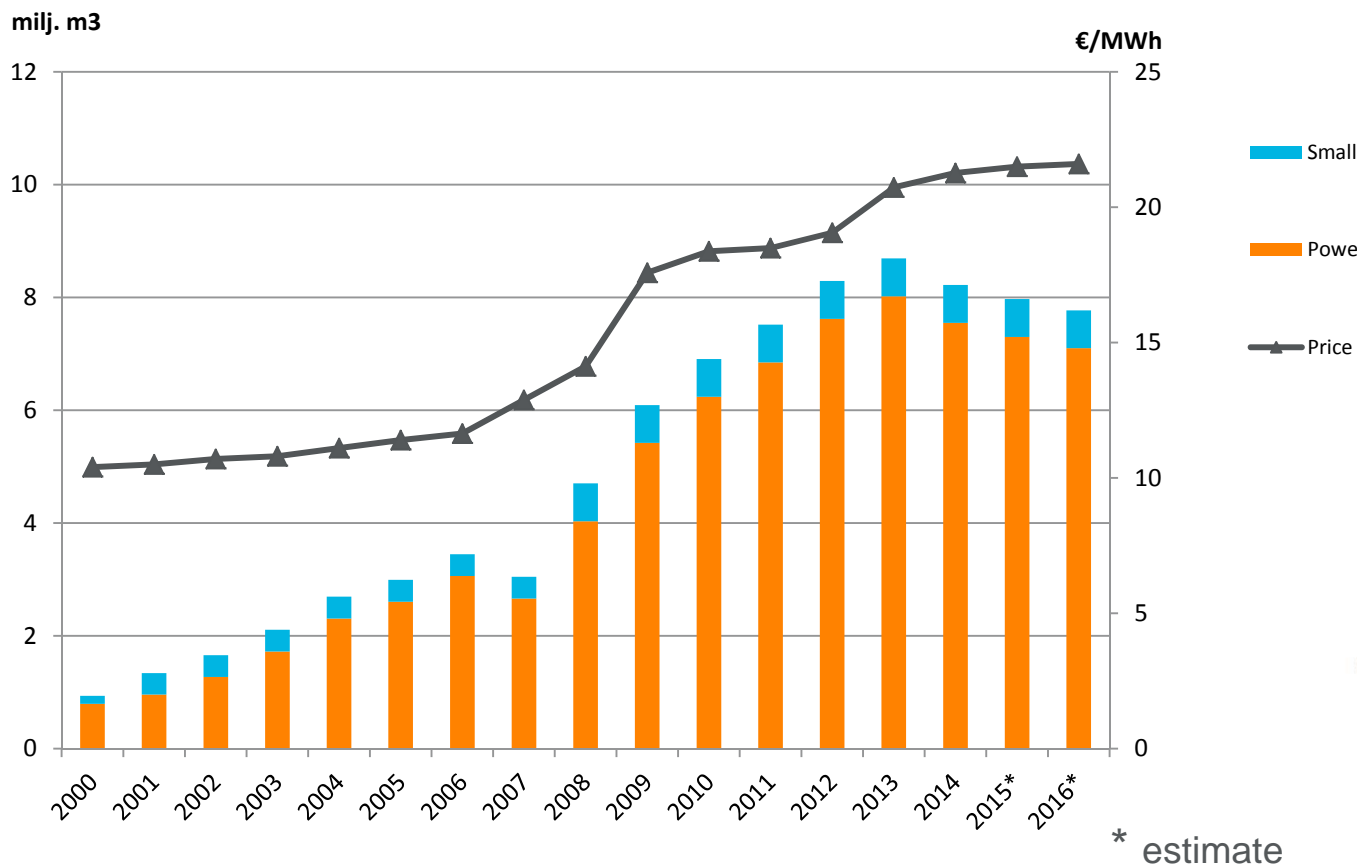
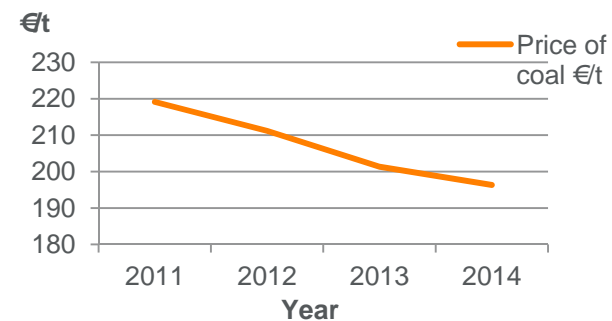
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Energy prices in Finland (source: Statistics Finland)

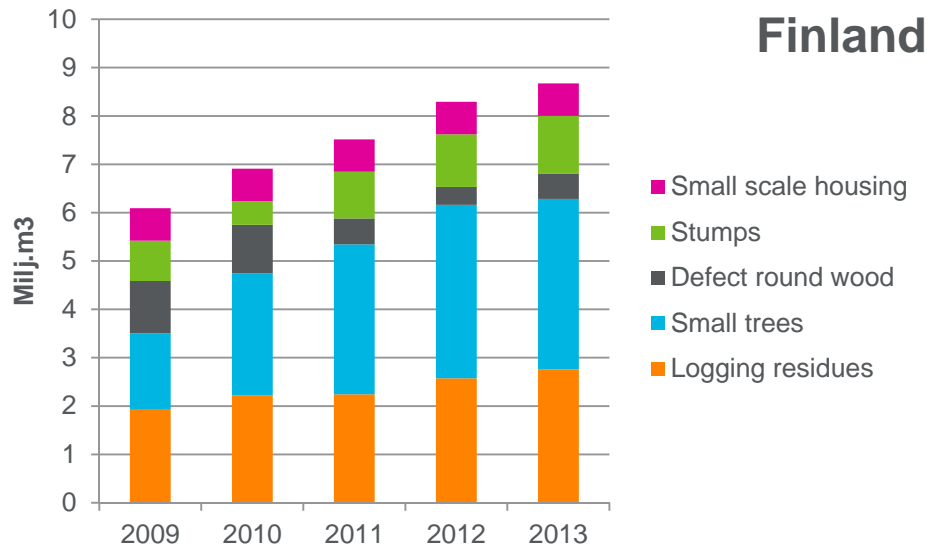


Use of forest chips in Finland

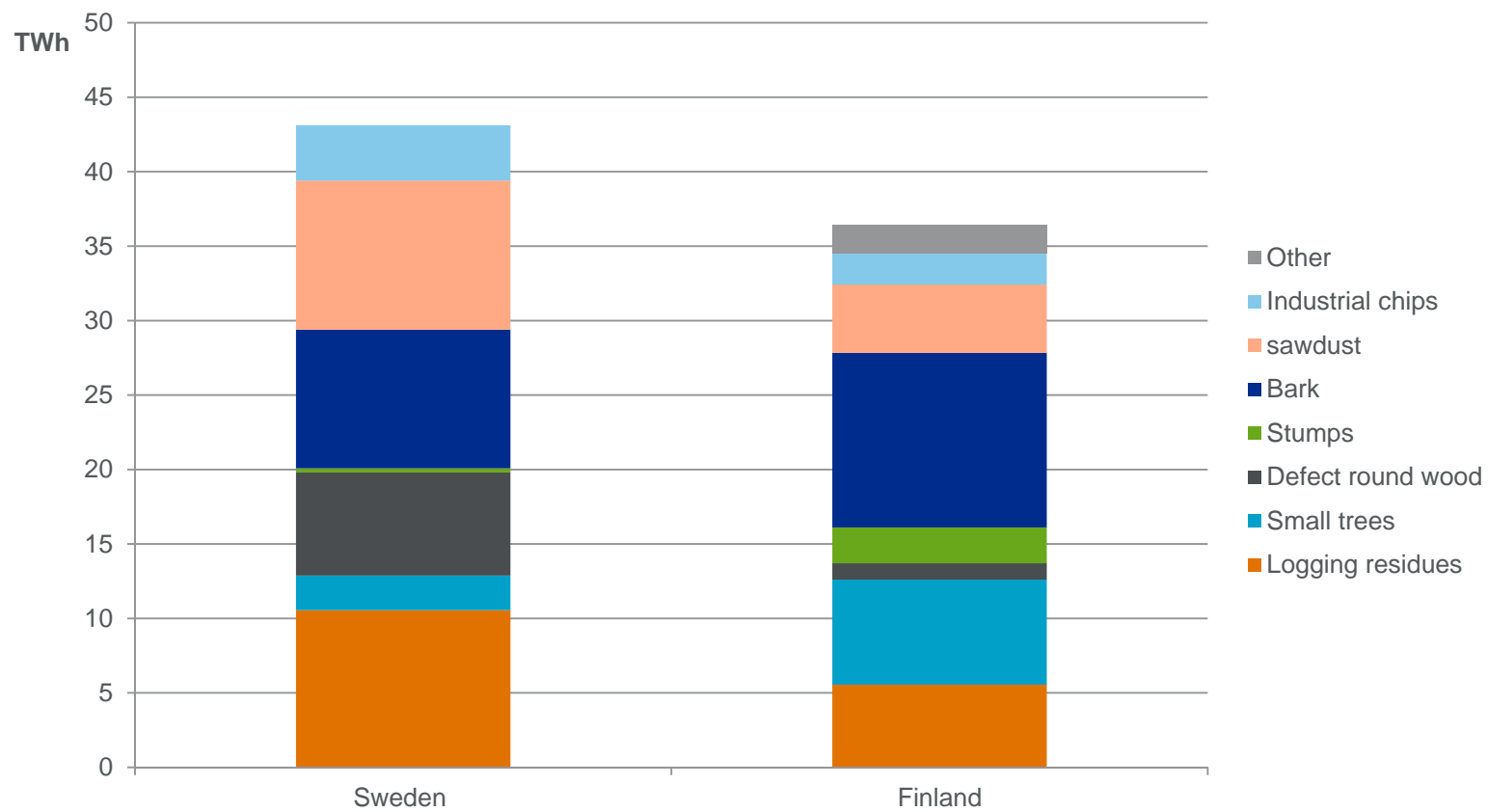


* estimate

- In EU-area Finland and Sweden are the biggest users of Forest chips.
- In Sweden the use of forest chips was around 7 million cubic meters in 2014
- In Sweden the same problems occurs than in Finland , price of coal...
- Competitiveness of forest chips has to increase, that use of forest chips can continue increasing
- The raw material base is different between Finland and Sweden



Solid wood fuel consumption in heating and power plants in Finland and Sweden

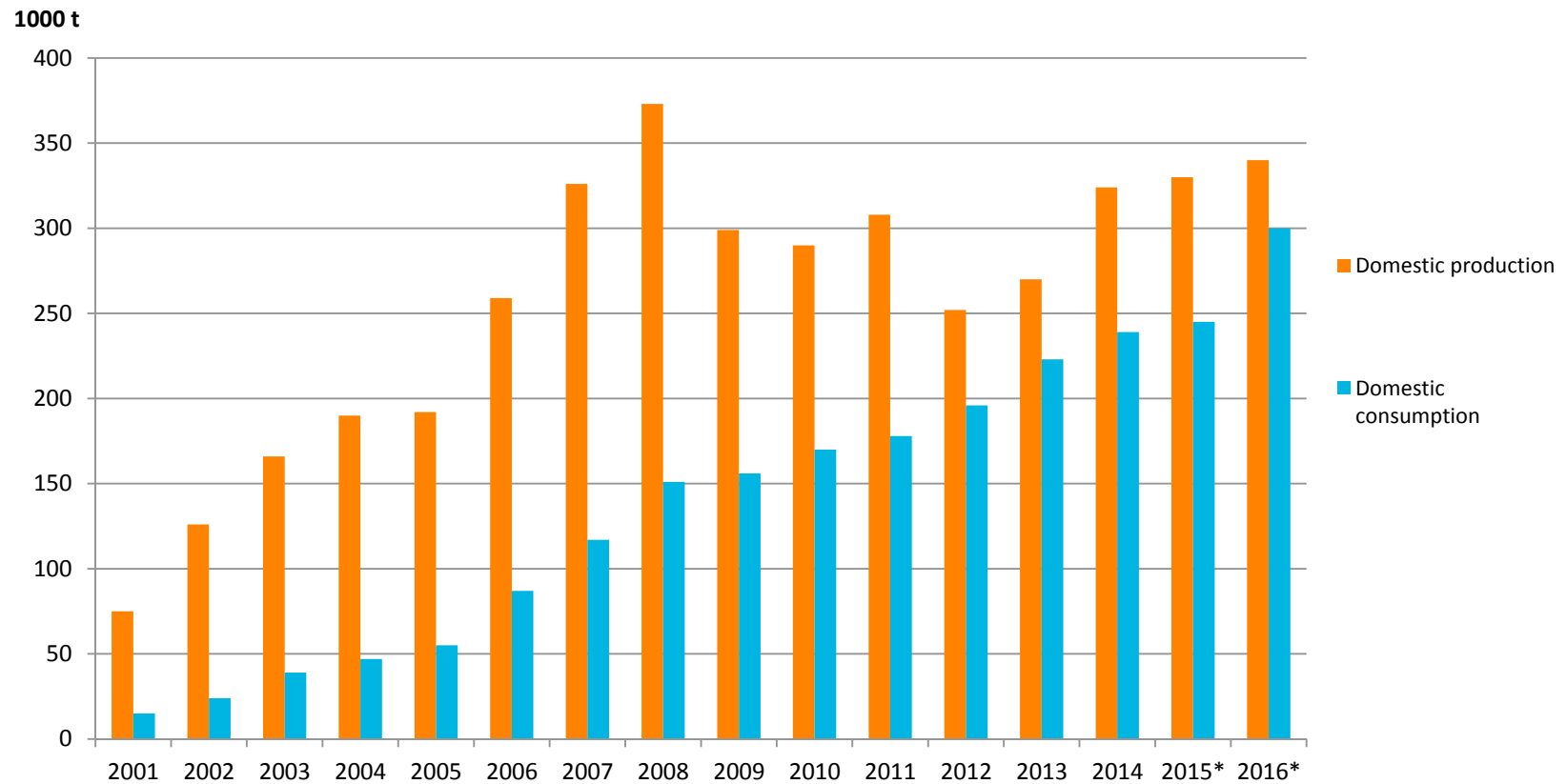


Source: Luke, & Skogforsk

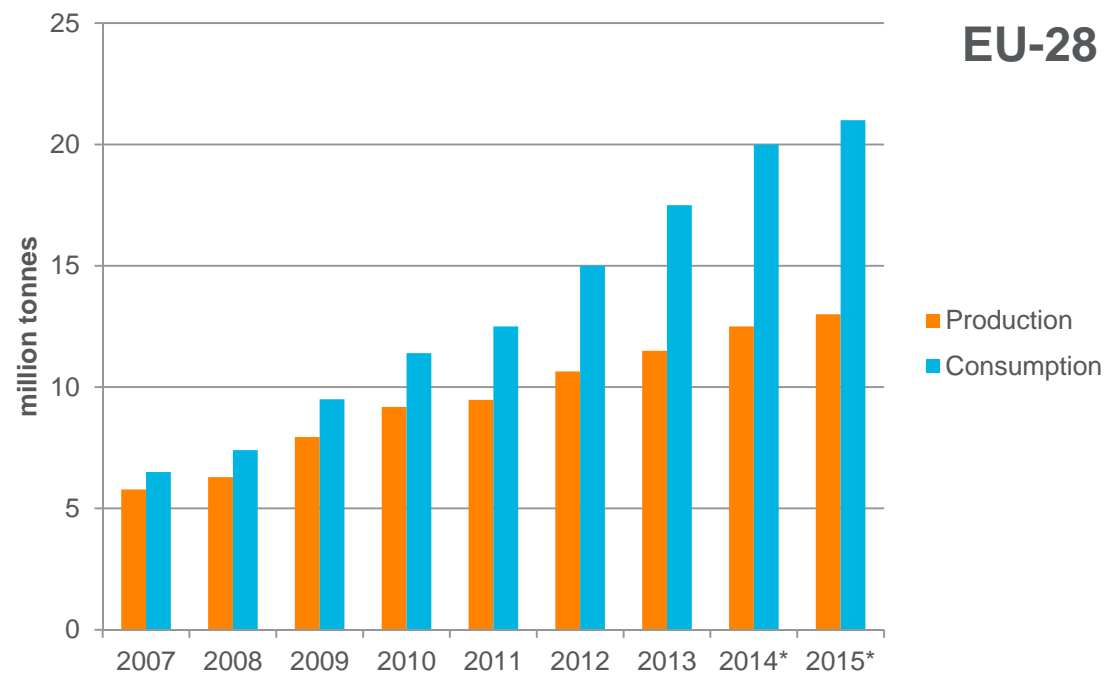
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Use of Pellets in Finland



- With a consumption of about 17.5 million tonnes of pellets in 2013, the EU is already the world's largest wood pellets market.
- The EU-28 is the large global producer of wood pellets; 13.3 million tonnes in 2014
- It is also a net importer of wood pellets import from non-EU Member States was 6.55 million tonnes



- Germany produced 2.4 million tonnes of pellets 2014, and Sweden 1.4 million tonnes.

<i>Main pellet producers</i>	<i>Million tonnes</i>					
	2009	2010	2011	2012	2013	2014*
Germany	1.6	1.8	1.9	2.2	2.3	2.4
Sweden	1.6	1.7	1.3	1.3	1.4	1.4
France	0.3	0.5	0.5	0.7	0.9	1.2
Latvia	0.5	0.6	0.7	1.0	1.0	1.0
Austria	0.7	0.9	0.9	0.9	0.9	0.9
Portugal	0.3	0.6	0.7	0.7	0.7	0.7
Poland	0.4	0.5	0.6	0.6	0.6	0.6

* Estimation

- Production capacity of eastern European pellet industry is raising by almost 2 million tonnes per year by the beginning of next year

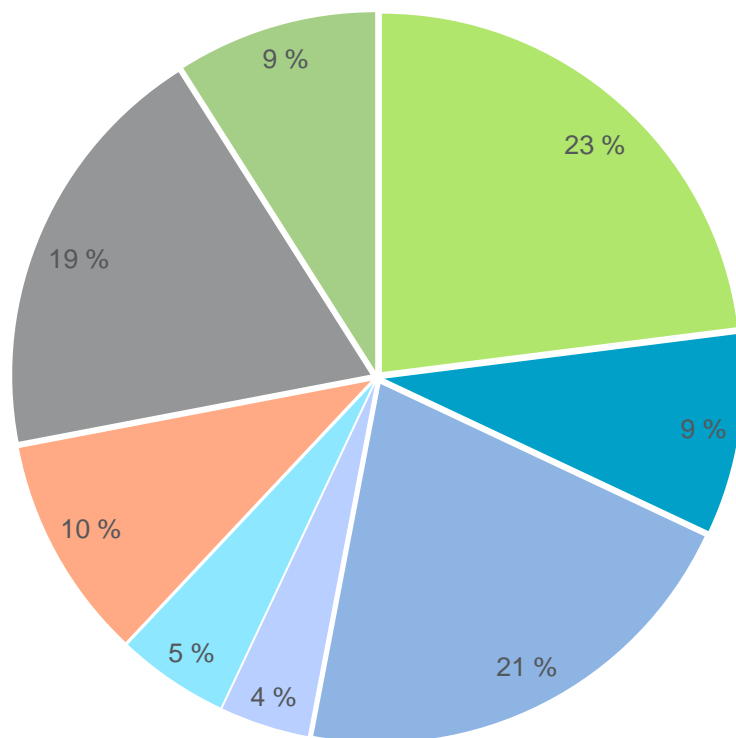
Main pellet consumers			Million tonnes			
	2009	2010	2011	2012	2013	2014*
UK	0.2	0.176	1	1.4	3.8	5
Italy	0.85	0.58	1.5	2.1	2.5	2.6
Denmark	1.4	1.6	1.6	1.6	2.3	2.4
Germany	1.1	1.2	1.4	1.7	2	2.2
Sweden	1.92	2.28	1.88	1.7	1.9	2
France	0.3	0.4	0.55	0.6	0.89	1.1
Austria	0.55	0.66	0.72	0.785	0.9	1
Belgium	0.92	0.92	1.2	1.7	0.8	0.5
Netherlands	0.9	0.913	1	1.25	0.5	0.5

* Estimation

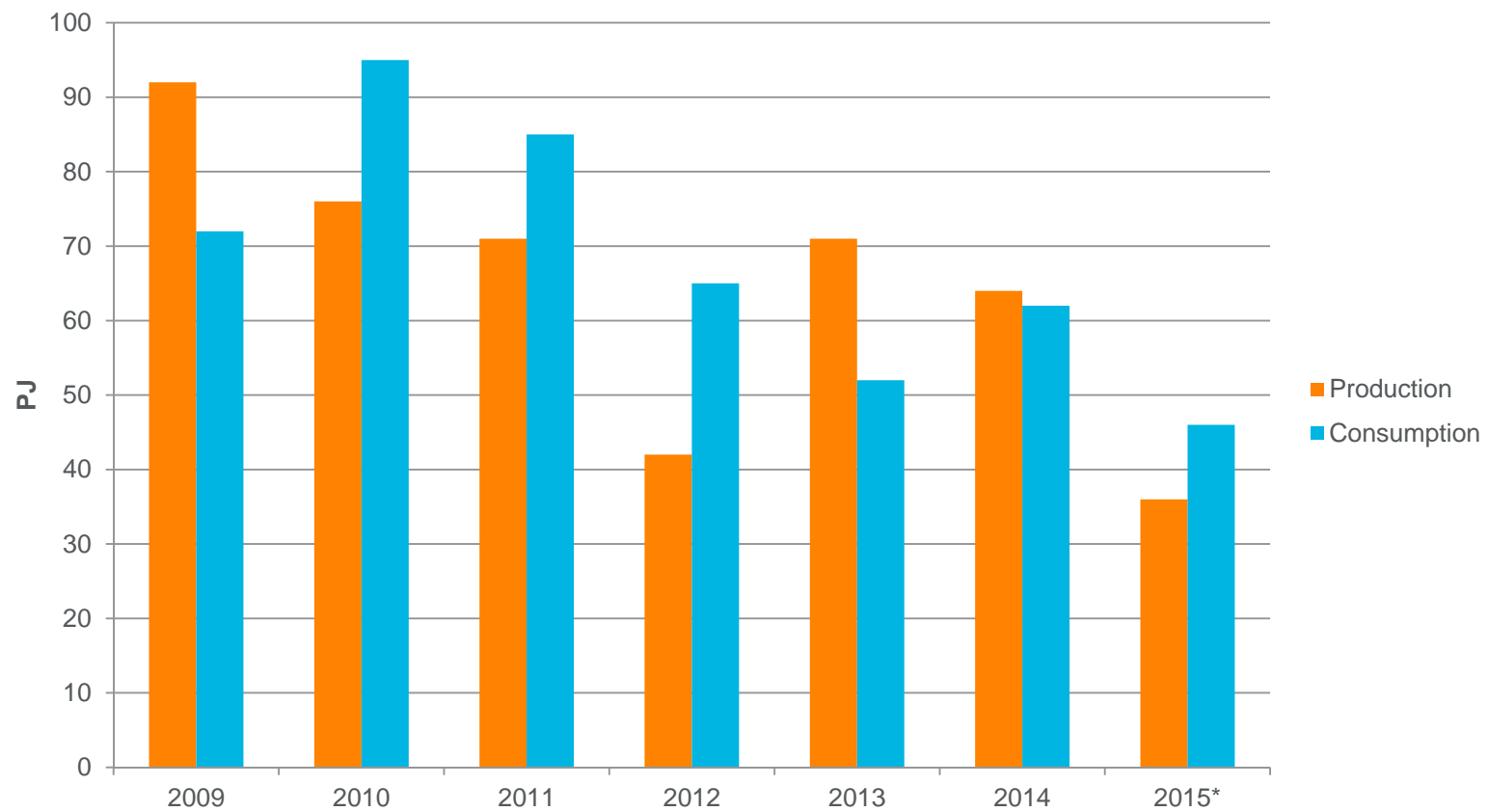
- The United Kingdom had the highest level of wood pellet imports
- Imported pellets to EU-28 comes mainly from North America

International production of energy peat 2013

■ Finland ■ Denmark ■ Ireland ■ Estonia ■ Latvia ■ Russia ■ Sweden ■ Ukraina ■ Others ■ Belarus



Energy peat in Finland

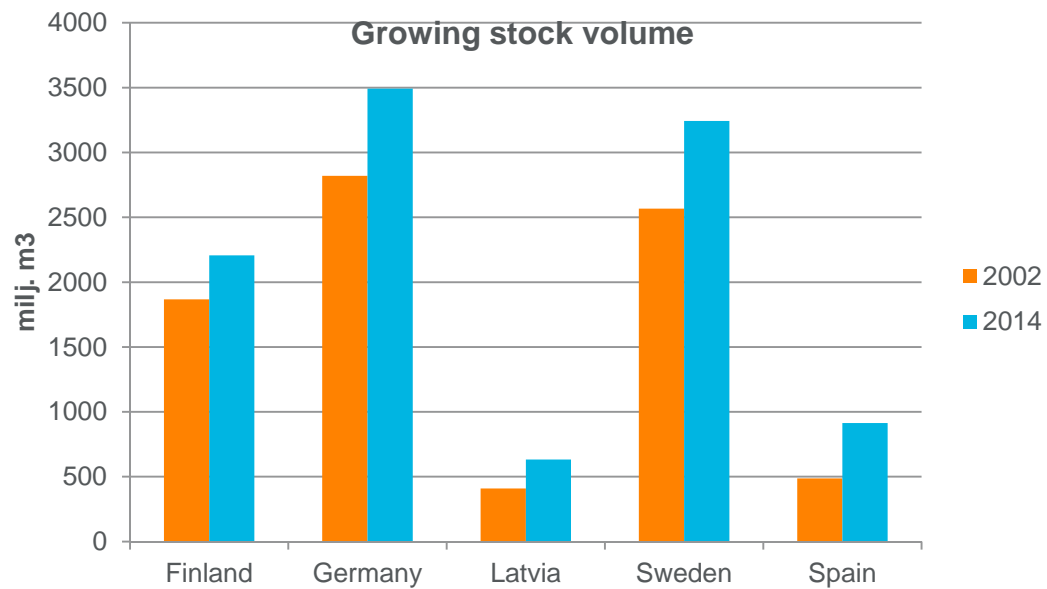


Conclusions:

- Finnish targets (2020) to use of renewables will be achieved, use of industrial by-products will increase
- In Finland the target of using forest chips has been set to 25 TWh = 13.5milj.m³ wood
- It is possible to achieve, we have enough potential, but..
- The price competitiveness of forest chips will be the determining issue of utilization level
 - efficiency in supply chains has to improved
 - quality issues should be adressed
- Use of pellets will increase in Finland



- Growing stock volume in European countries are increasing



Kiitos!

