

LONG-TERM PROGNOSIS OF ESTONIAN WOOD FUEL SUPPLY

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1. General data about forest resources

2. Long-term prognosis

- Long-term prognosis, if the age distribution is normal
- Long-term prognosis for the present age structure of forests

3. Supply-demand balance of wood fuel

1. General data about forest resources

- According to the latest forest surveys, the area of woodland in Estonia is **2,25 Mha** (51,5% of land area) and the calculated growing stock is **462 Mm³**.
- The distribution of forest land by ownership categories is following: the area of state forests districts 830 000 ha (37%), private forests 680 000 ha (30%), forests under land reform 710 000 ha (31%), other state forests 15 000 ha (1%) and other forests 15 000 ha (1%).

- The allowable level of utilization of forest resources has been fixed in forestry development programmes, which are composed usually for the 10 years periods. In the Forestry Development Programme 1997 – 2001 the allowable level of cuttings was fixed to be 7,81 Mm³ annually.
- For the Forestry Development Programme 2001-2010 the annual allowable cut was re-estimated. It was fixed on the level of 12,6 Mm³ of merchantable wood and 0,5 Mm³ of sanitary cuttings.

Re-estimated annual allowable cut for Estonia, Mm³

Tree species	Sawlogs	Small dimation logs	Pulpwood	Fuelwood	Residues	Total
<i>Pine</i>	0,867	0,388	0,395	0,119	0,336	2,104
Spruce	1,171	0,470	0,647	0,419	0,489	3,196
Birch	0,411	0,330	0,921	0,409	0,520	2,591
Aspen	0,203	0,085	0,642	0,594	0,321	1,844
Black alder	0,051	0,052	0,203	0,122	0,105	0,533
Grey alder etc.	0,022	0,091	0,927	0,794	0,496	2,330
Total	2,723	1,417	3,734	2,457	2,267	12,597
Sanitary and selection cutting 0,5 Mm ³						

Raiete maht *Volume of fellings*

Aasta Year	Raieliik	ESA*	SMI NFI (Eesti Metsakorralduskeskus)**				Type of felling
			1000 m ³	95% usalduspiirid <i>confidence limits</i>		Suhteline viga Relative error (±%)	
				1000 m ³	alumine <i>lower</i>		
1999	Lageraie	4280	6767	4162	9372	38,5	<i>Clear felling</i>
	Harvendusraie	1592	3340	2221	4459	33,5	<i>Thinning</i>
	Kokku raied	7049	12697	9916	15478	21,9	<i>Total fellings</i>
2000	Lageraie	4342	8208	5902	10514	28,1	<i>Clear felling</i>
	Harvendusraie	1448	3035	2073	3997	31,7	<i>Thinning</i>
	Kokku raied	6892	12748	10173	15323	20,2	<i>Total fellings</i>

2. Long-term prognosis

- * Long-term prognosis, if the age distribution is normal**
- * Long-term prognosis for the present age structure of forests**

Maturity	County	Volume, m ³ /year					
		Logs	Small dimension logs	Pulp-wood	Fuel wood	Total	Tops, branches*
Valid Forest Act	Total	2791429	1346117	2618877	745691	7502116	1366786
Project of the Forest Act	Total	2708446	1090704	2438215	888905	7126270	1243825

Conclusions:

- If the Estonian forests will be managed according to the valid Forest Act, the annual yield in long-run will be 7,50 Mm³. But if the project of the Forest Act will be enforced and the maturity ages of the forests increased, the annual yield in long-run will be 7,13 Mm³.
- Correspondingly the volumes of harvesting residues (tops and branches) will decrease also.
- Only the volume of traditional fuelwood will be bigger, as the share of the rotten trees and the volume of low quality assortments will increase.

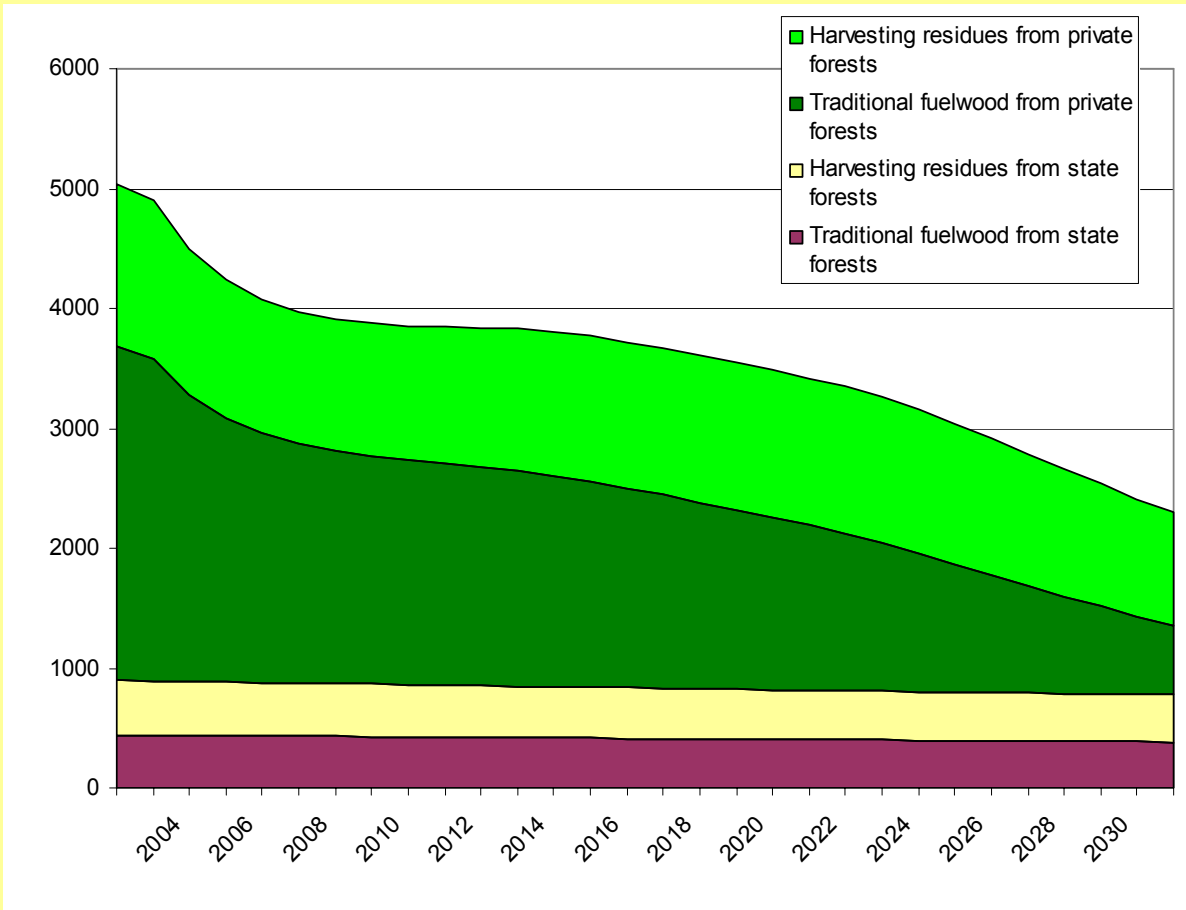
Maturation of Estonian forests by dominating tree species since 2002



The potential yield of fuelwood, thousand m3

	Ownership	Fuelwood	Branches and tops	Total	Energy content, TWh
Potential yield today	Private	2 795,3	1 349,6	4 144,9	8,29
	State	443,2	452,5	819,9	1,64
	Total	3 238,5	1 726,3	4 964,8	9,93
Prognosis for the year 2030	Private	582,6	937,6	1 520,2	3,04
	State	376,7	384,6	761,3	1,52
	Total	959,3	1 322,2	2 281,5	4,56

Forecast of the wood fuel supply for the coming 30 years



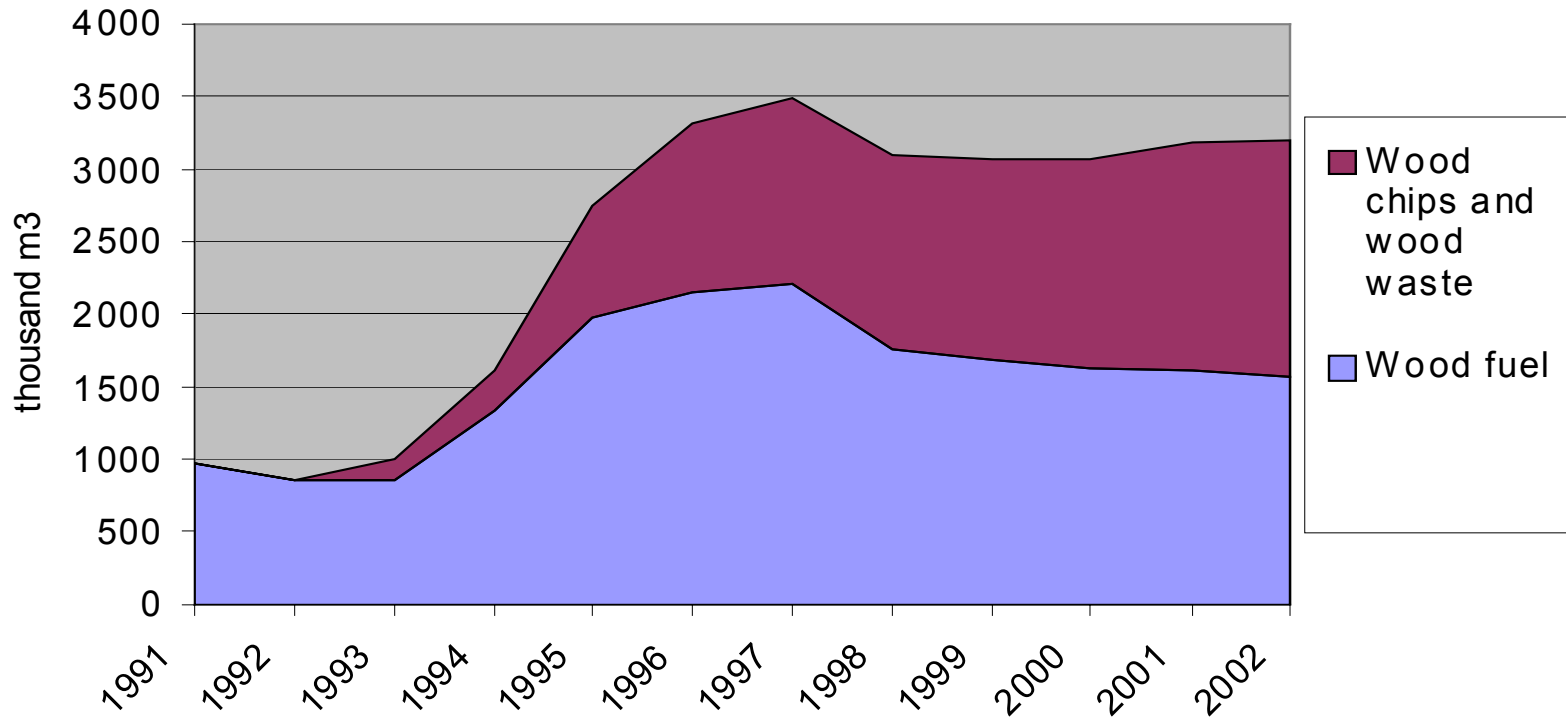
- Due to the big share of mature aspen and grey alder stands, in private forests the dominating assortment is fuelwood. But if the private forest owners start to harvest besides merchantable assortments the low quality wood, the available quantities of wood fuel will decrease step by step.

- The data indicates that today we can use for energy production about 5 Mm³ of fuelwood and forest residues, after 30 years about 2.3 Mm³.

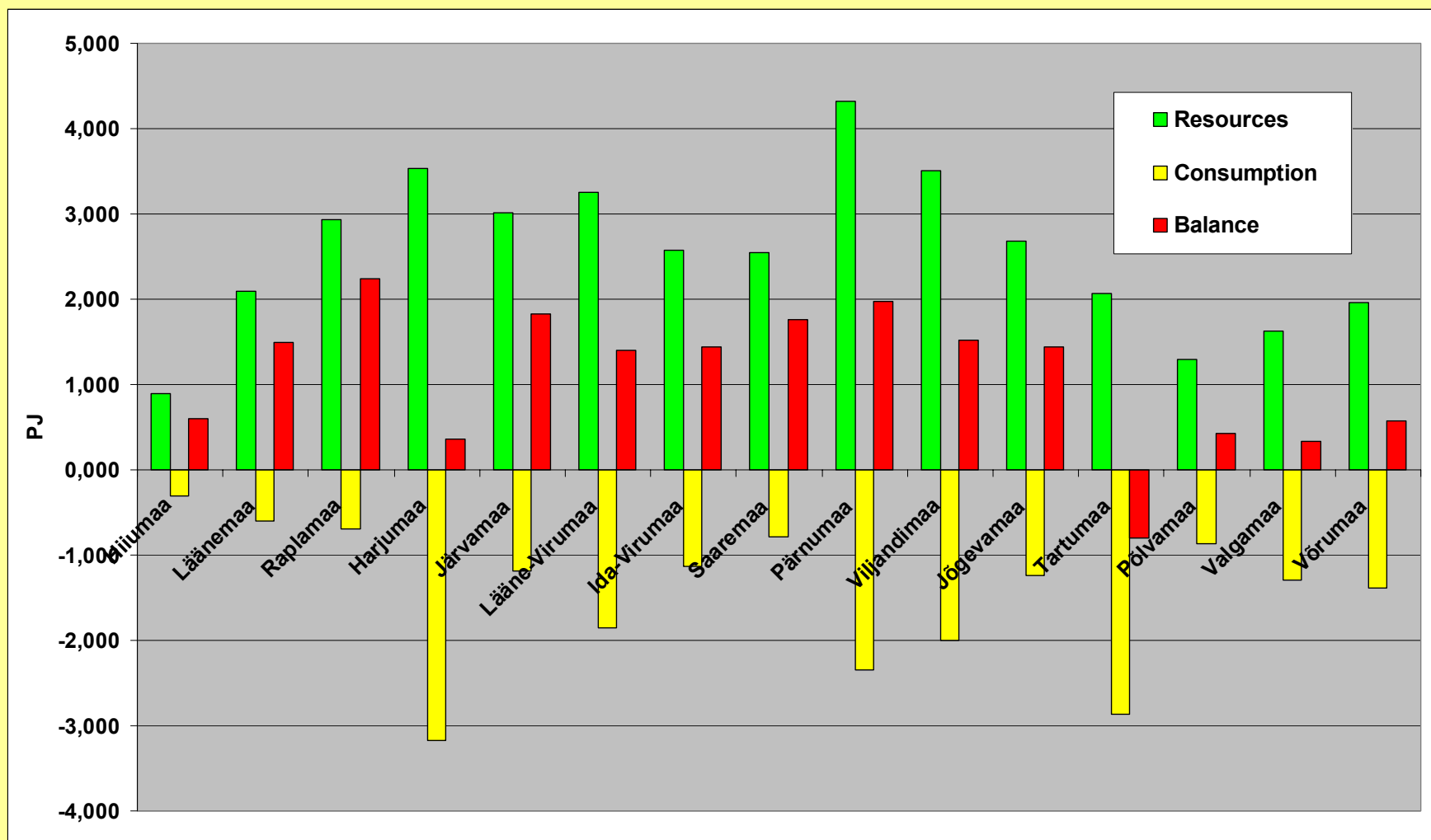
- After 35-40 years the harvesting volumes are expected to stabilize and then a slight increase will follow.

3. Supply-demand balance of wood fuel

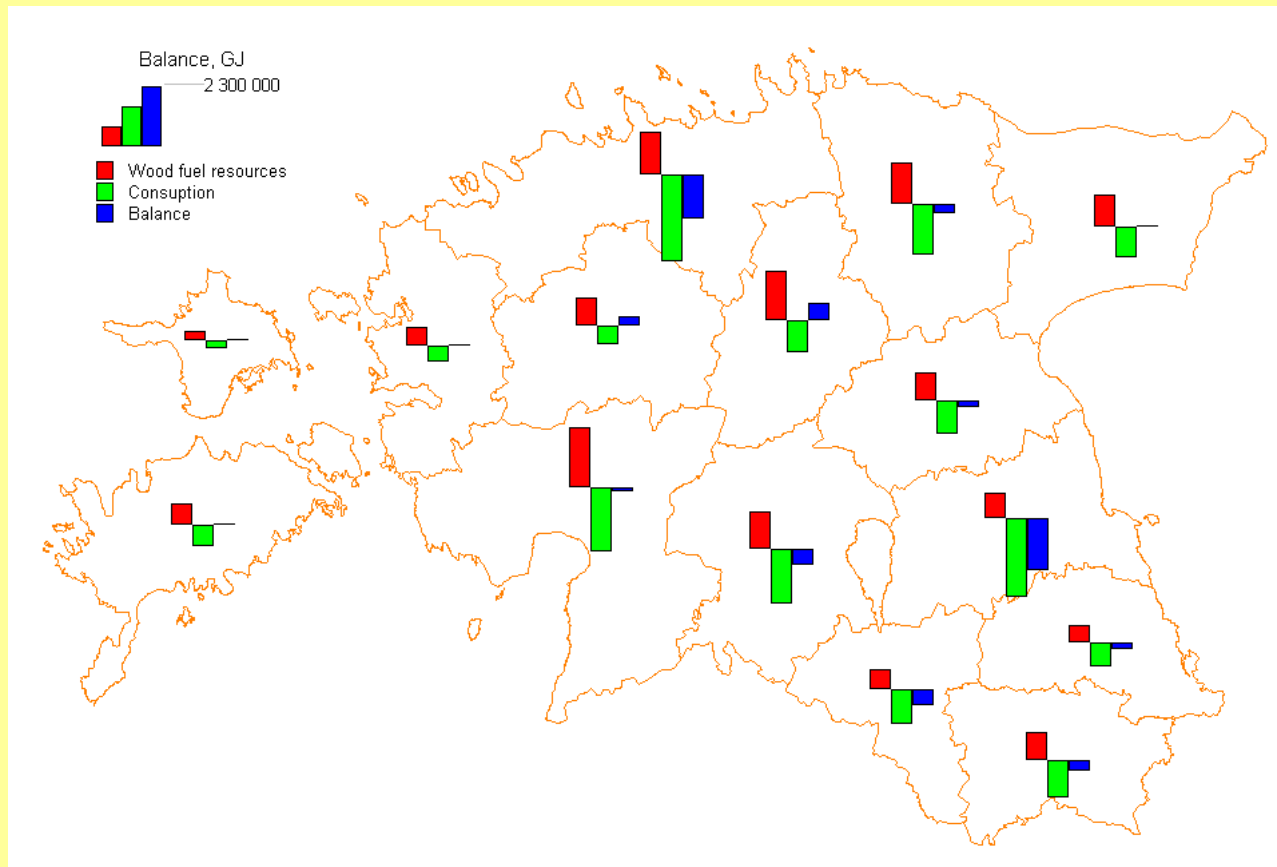
Supply of wood fuel in Estonia



The demand-supply balance of wood fuel by counties (today)



The demand-supply balance of wood fuel by counties (long-term prognosis)



- The data confirms, that in long-run the supply with wood fuels will not be sufficient to keep the consumption on the present level.
- The biggest shortage of fuel is expected in Tartumaa and Harjumaa counties. The conclusion is, that though in the near future there are sufficient resources of wood fuel available, in long-run the situation is not promising.