

Forest areas potential for intensive sustainable forest management in Russia

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Methodology

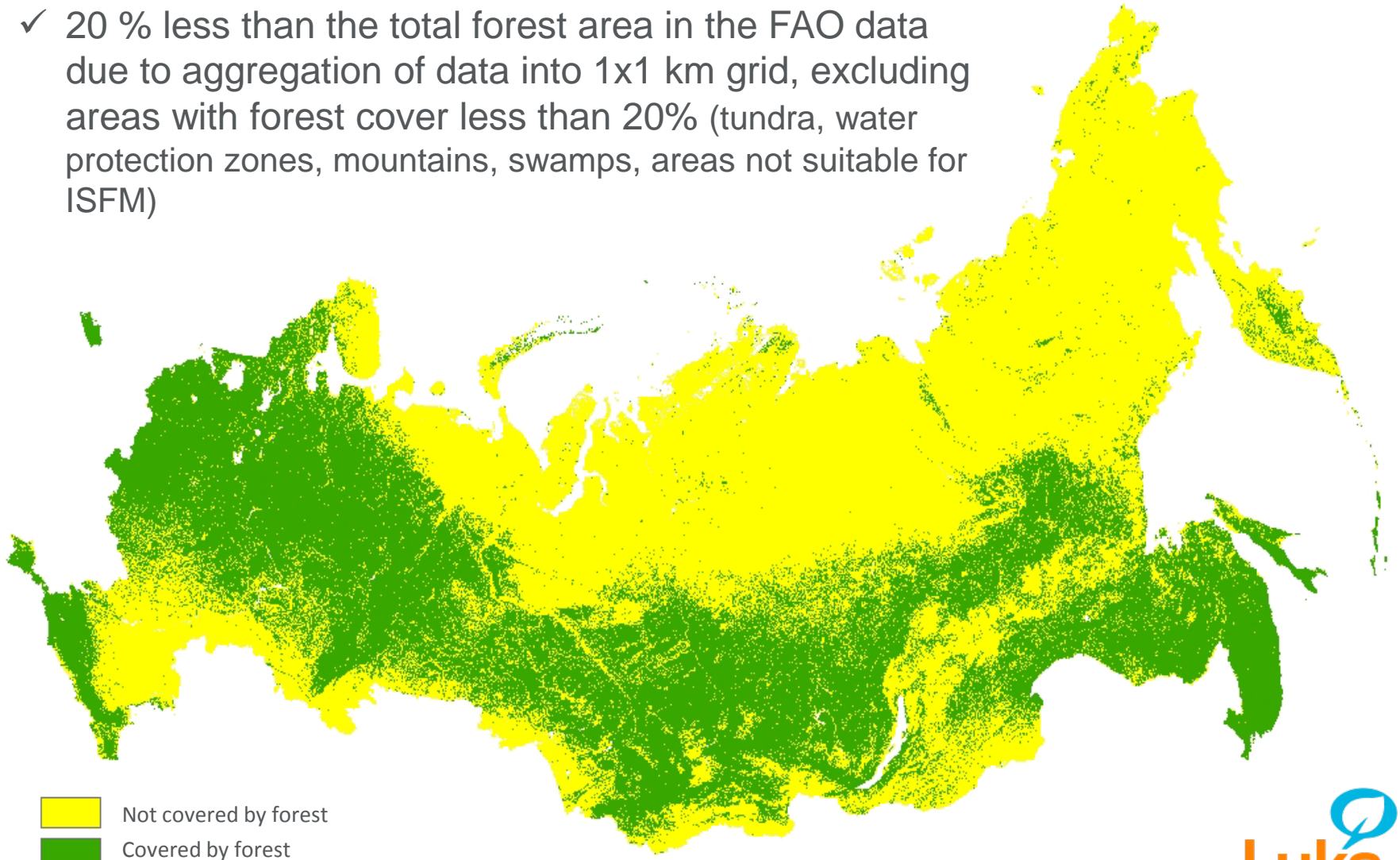
Forest areas suitable for intensive sustainable forest management (ISFM) were selected on the following criteria:

- stocked forest land ($\geq 20\%$) and potential regeneration areas (cutting areas, burnt areas, etc.), Landsat data, spatial resolution 30 m;
- potential productivity: defined as long-term average of primary productivity on the MODIS data, spatial resolution 1 km;
- potential demand for low quality wood: calculated according to wood consumers in 2016;
- accessibility for transport: calculated on the basis of existing road network in 2016;
- protection of high conservation value forests: excluded Intact Forest Landscapes (2013) and federal nature protection areas (2012).

More details in the original article: [Ранжирование участков лесов России по возможности внедрения методов интенсивного устойчивого лесного хозяйства](#), Sustainable forest management №4 (52), 2017

Stocked forest land and potential regeneration areas

- ✓ Total potential forest area 680 million ha
- ✓ 20 % less than the total forest area in the FAO data due to aggregation of data into 1x1 km grid, excluding areas with forest cover less than 20% (tundra, water protection zones, mountains, swamps, areas not suitable for ISFM)



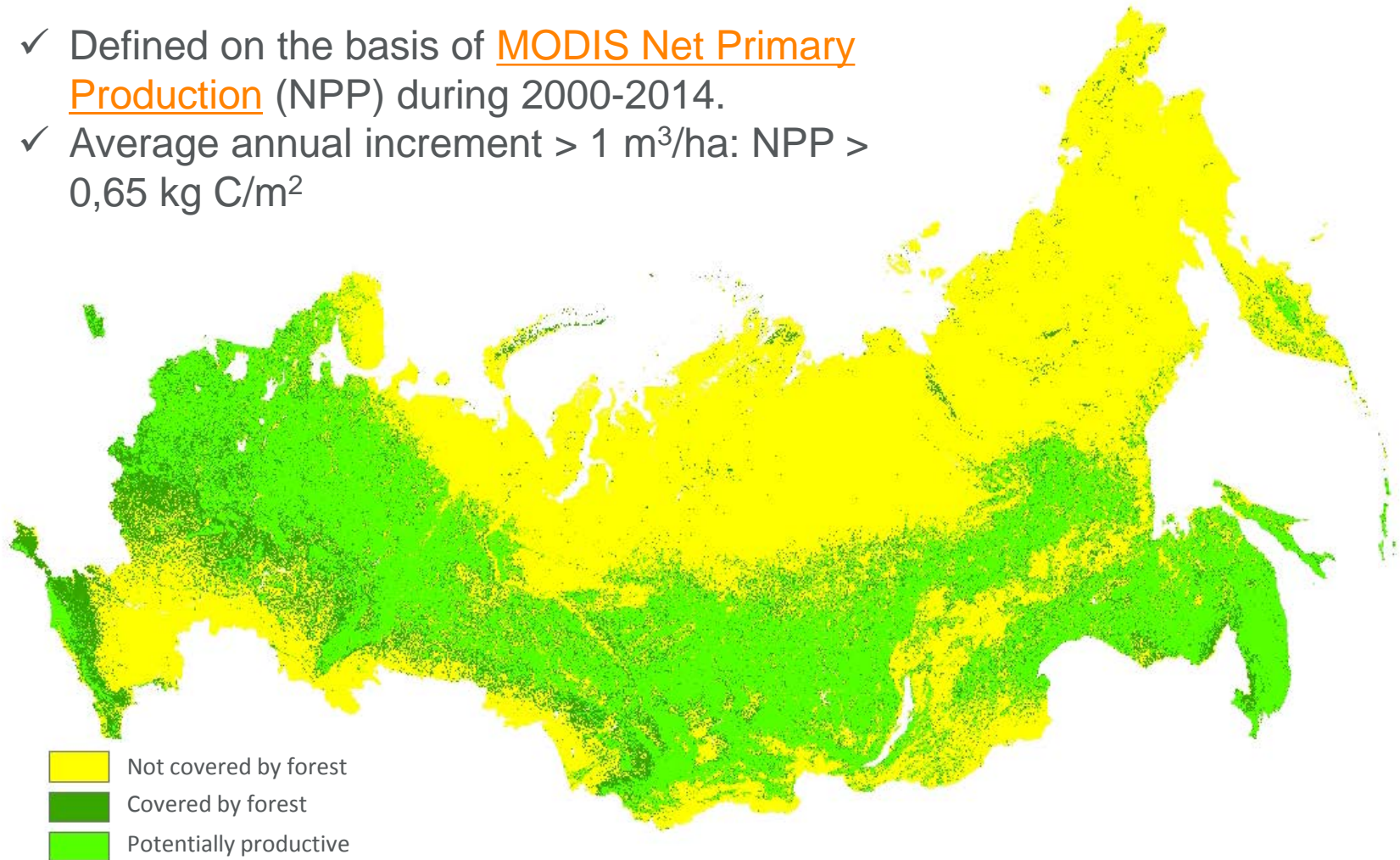
Division of forest area in the regions of Northwest Russia*

Region of the Russian Federation	Area by the methodology, km ²						Share of forest area, %
	Covered by forest	Productive forests	Productive forests excluding federal nature protection areas	Productive forests excluding federal nature protection areas and Intact Forest Landscapes	Productive forests accessible for transport for ISFM	Productive forests accessible for transport for ISFM, with demand for wood	
Arkhangelsk	249 196	218 647	215 592	170 036	79 126	37 026	15
Karelia Republic	121 767	104 091	101 470	98 876	48 944	37 516	31
Komi Republic	239 143	220 159	212 596	175 105	38 347	8 695	4
Leningrad	70 558	59 808	59 251	59 251	38 547	35 145	50
Murmansk	17 760	15 452	15 045	10 794	4 292	0	0
Novgorod	52 365	44 552	42 753	42 741	20 983	20 381	39
Pskov	51 579	43 473	42 453	42 448	26 050	797	2
Vologda	133 410	116 713	115 007	114 931	41 908	36 470	27
<i>Russia total</i>	6 852 820	5 410 893	5 258 572	4 256 615	1 089 874	537 016	8
<i>Total, % of area covered by forest</i>	100	78,96	76,74	62,11	15,90	7,84	

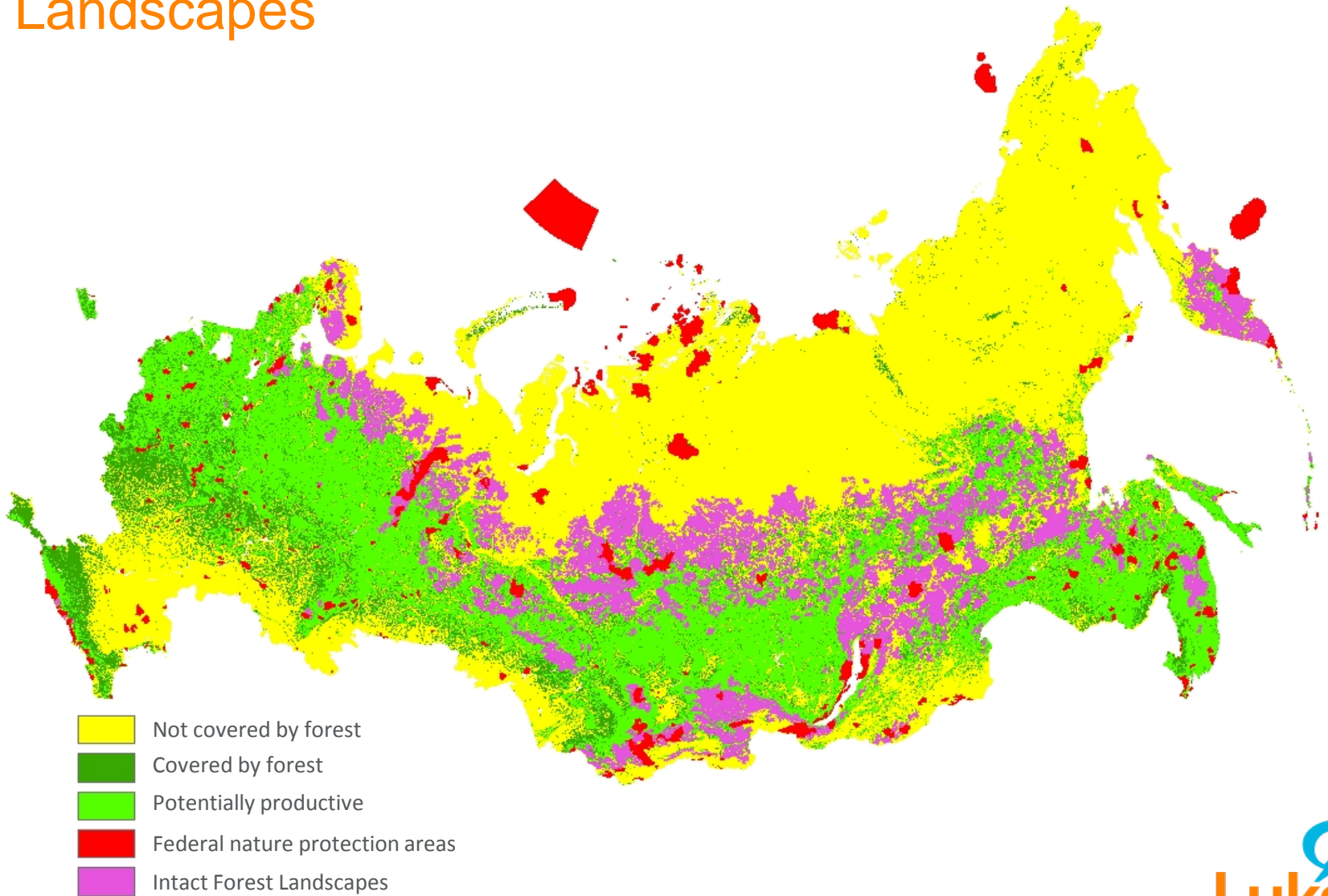
* Data for all regions of Russia available in the original article.

Potentially productive forests

- ✓ Defined on the basis of MODIS Net Primary Production (NPP) during 2000-2014.
- ✓ Average annual increment $> 1 \text{ m}^3/\text{ha}$: $\text{NPP} > 0,65 \text{ kg C}/\text{m}^2$




Excluded nature protection areas and Intact Forest Landscapes



Accessibility for transport



- ✓ All-season roads included with 1 km buffer (maximum optimal forest transport distance)



 Potentially productive forests accessible for transport

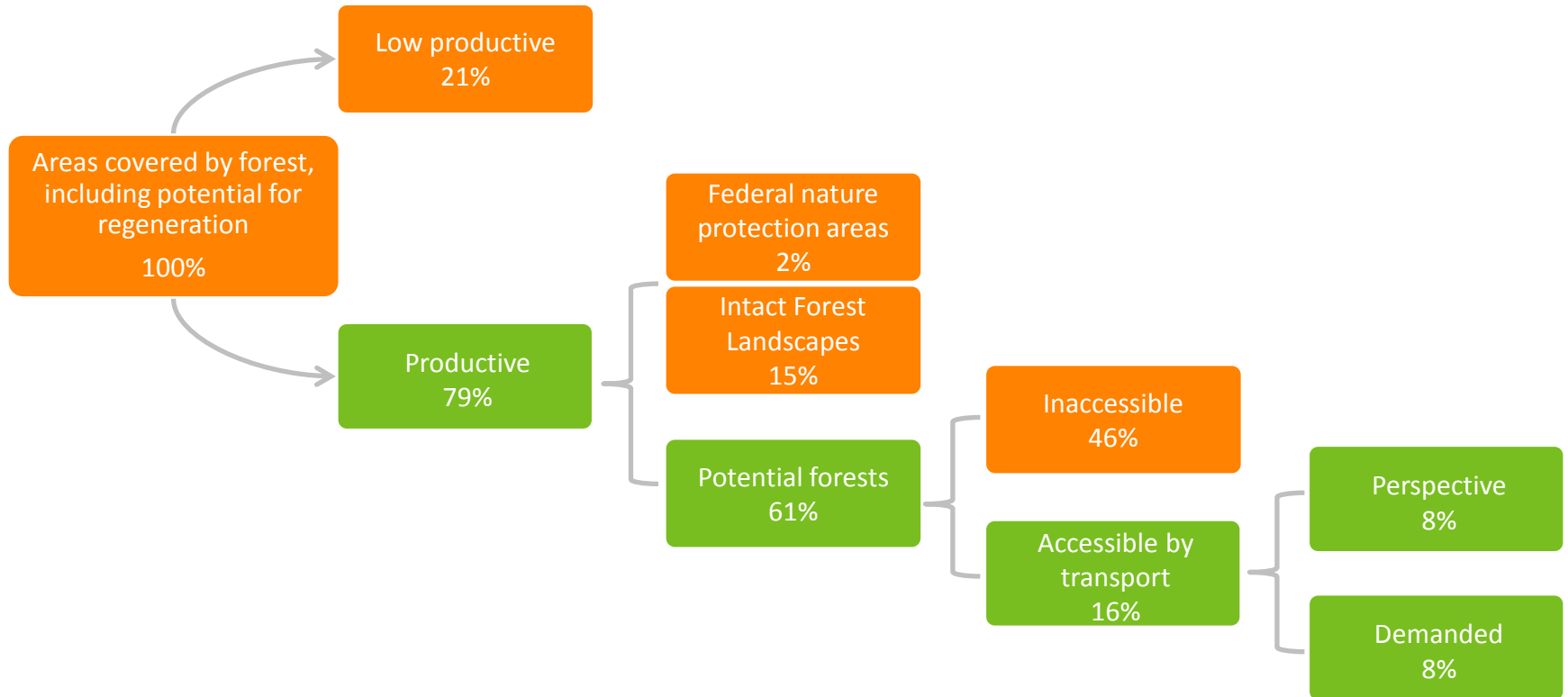
Demanded and perspective forests for ISFM

- ✓ Demand, 174 wood consumption points in 2016 (pulp and paper mills, sawmills and other wood processing factories, railway stations and ports exporting roundwood > 20 000 m³/a).
- ✓ Potential wood consumption zone 100 km on the existing road network and 1 km forest transportation.
- ✓ Demanded: Potential forest areas for ISFM within the zone of potential wood consumption, i.e. demand existing
- ✓ Perspective: Potential forest areas for ISFM, but without demand for wood.

 Demanded
 Perspective



Russian forests potential for ISFM



Conclusions

- ✓ Main obstacle for intensive forest management in Russia is inaccessibility for transport
- ✓ For sustainability and biodiversity protection 17% of productive forests is necessary to exclude from potential areas
- ✓ Intensive forest management practices are possible to adapt in 16% of forests, about 100 million ha. Demand for roundwood exists in half of this area.
- ✓ Mainly high quality wood is demanded for the industry ⇒ the development of forest bioenergy and thus demand for low quality small-diameter wood is a prerequisite for intensive forest management.



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