Trials with an upgraded C16c felling head in Slovenia

Productivity in small tree thinning operations - 7 December 2020 (Zoom webinar)

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Slovenian trials

Unused wood biomass potential

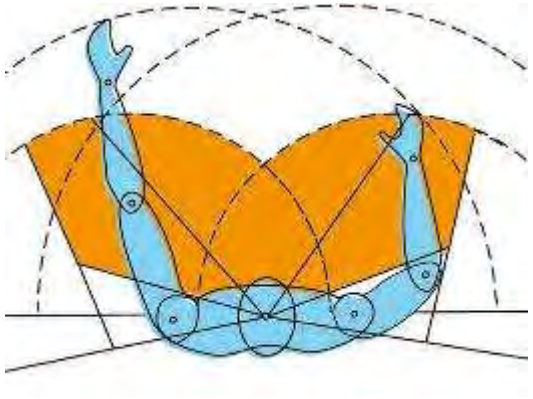
- The total growing stock of small diameter trees in Slovenia is estimated to be up to 8 million m3 (Slovenian forestry institute, 2017).
- According to data from forest management plans thinning operations are planned on nearly 10 000 ha of SDS yearly, but the realization of planned thinning operations in private forests was only 22 % (Slovenian forest service, 2017).
- The main reasons for low realization are high costs of harvesting and no income since the felled trees are left on the ground.

Material and methods

Slovenian addition to study objectives

Motor manual thinning

Additional plots will be studied to compare HEI vs. traditionally used SDS thinning method



Ergonomics

Ergonomic aspects of HEI was studied.

Abandoned agriculture areas

Additional SDS type, which is recently very common in Slovenia

Expert assessment

During demonstration event the expert were asked to evaluate HEI

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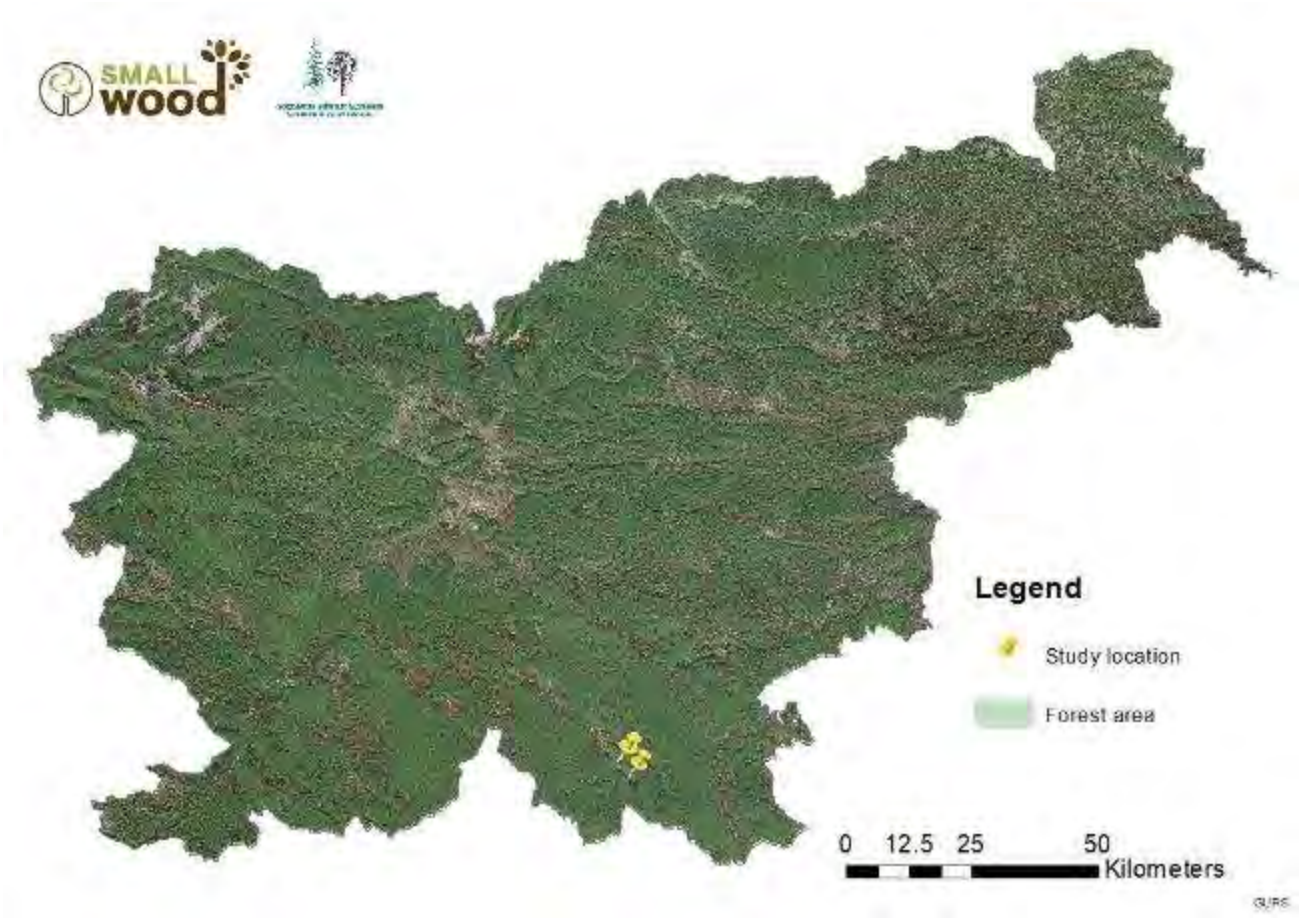
Location



- Field measurements were carried out in Slovenia (Kočevje) in January and February this year.
- Measurements were carried out to check the applicability of machine felling in case of thinning in Slovenia.

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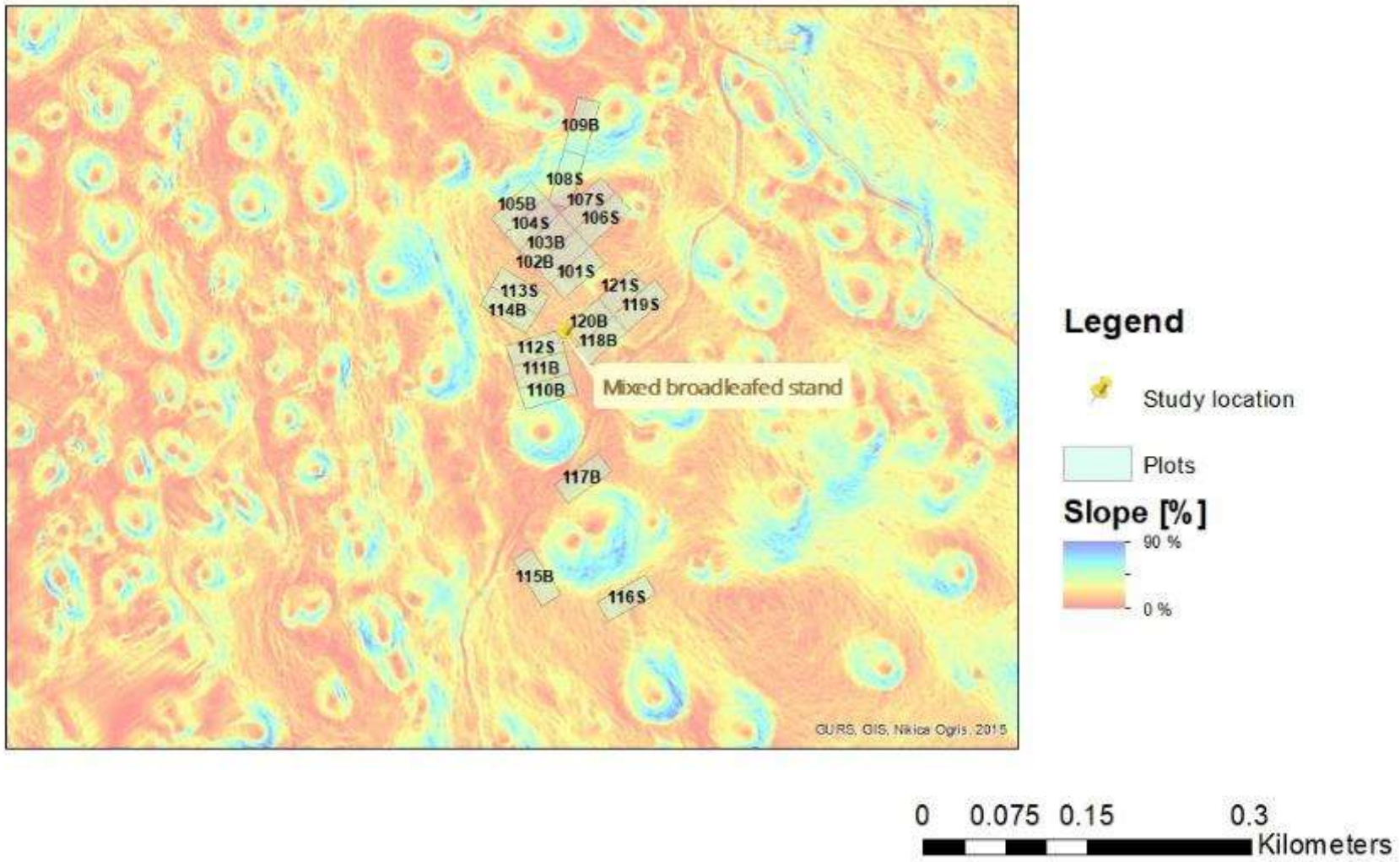


- The felling head was used in three different types of stands (younger small diameter beech stands, younger small diameter spruce stands, and younger small diameter stands in abandoned farmland comprised of mostly hazel and birch).
- 40 units were planned.

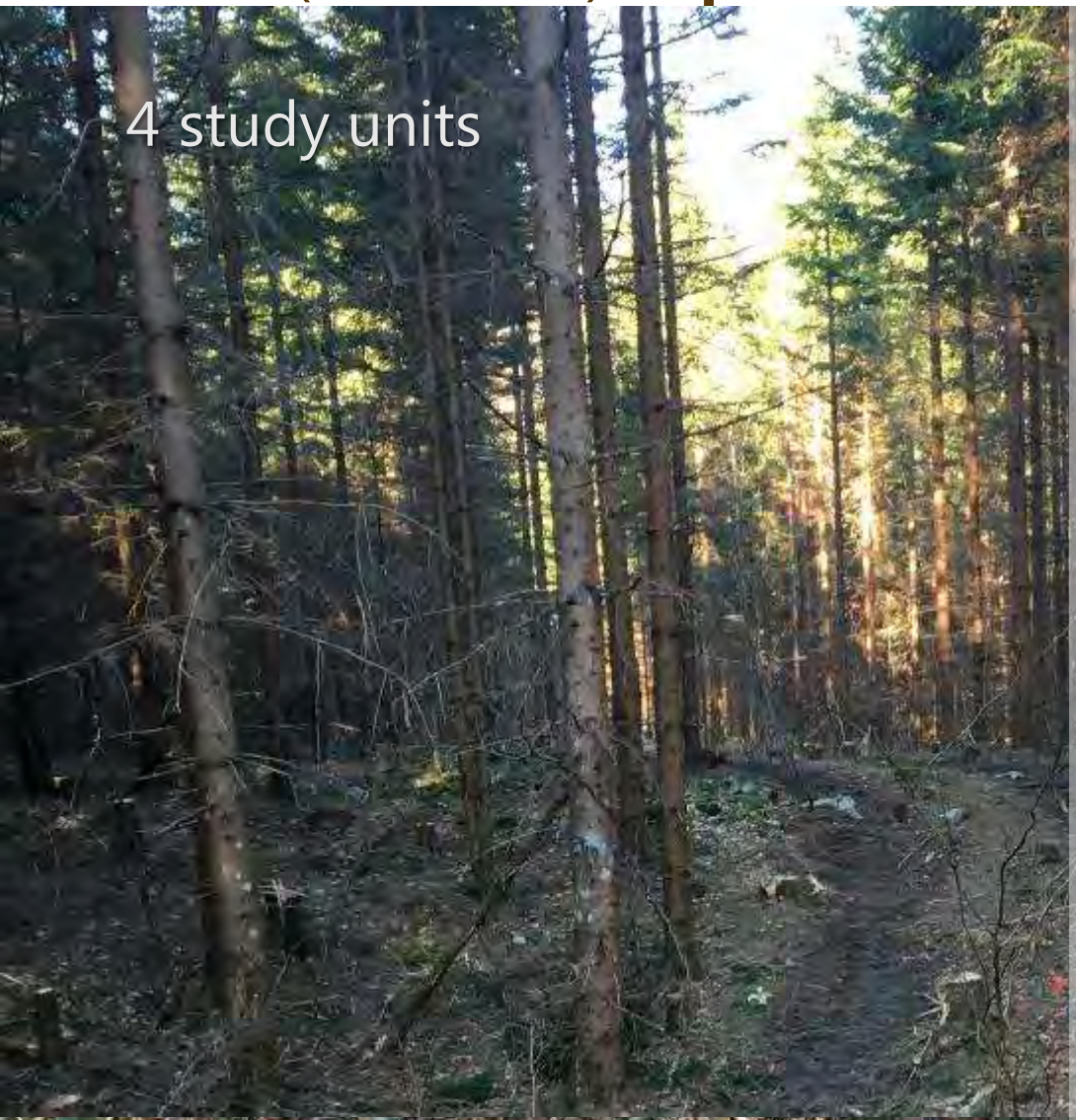
Materials and Methods

Onek (location 1) – **beech stand**

Age of the stand	20 years
Species	99% beech, 1% other broadleaves
Mean DBH / BA-weighted	3.6 cm / 8.8 cm
Mean height / BA-weighted	6.2 m / 9.8 m
Mean density (trees ≥1 cm)	11 565 trees ha^{-1} (8 000–14 900)
Mean density (trees ≥4 cm)	3 430 trees ha^{-1} (2 000– 5 400)
Mean standing volume (stem+branches)	110 m^3 ha^{-1}

Materials and Methods

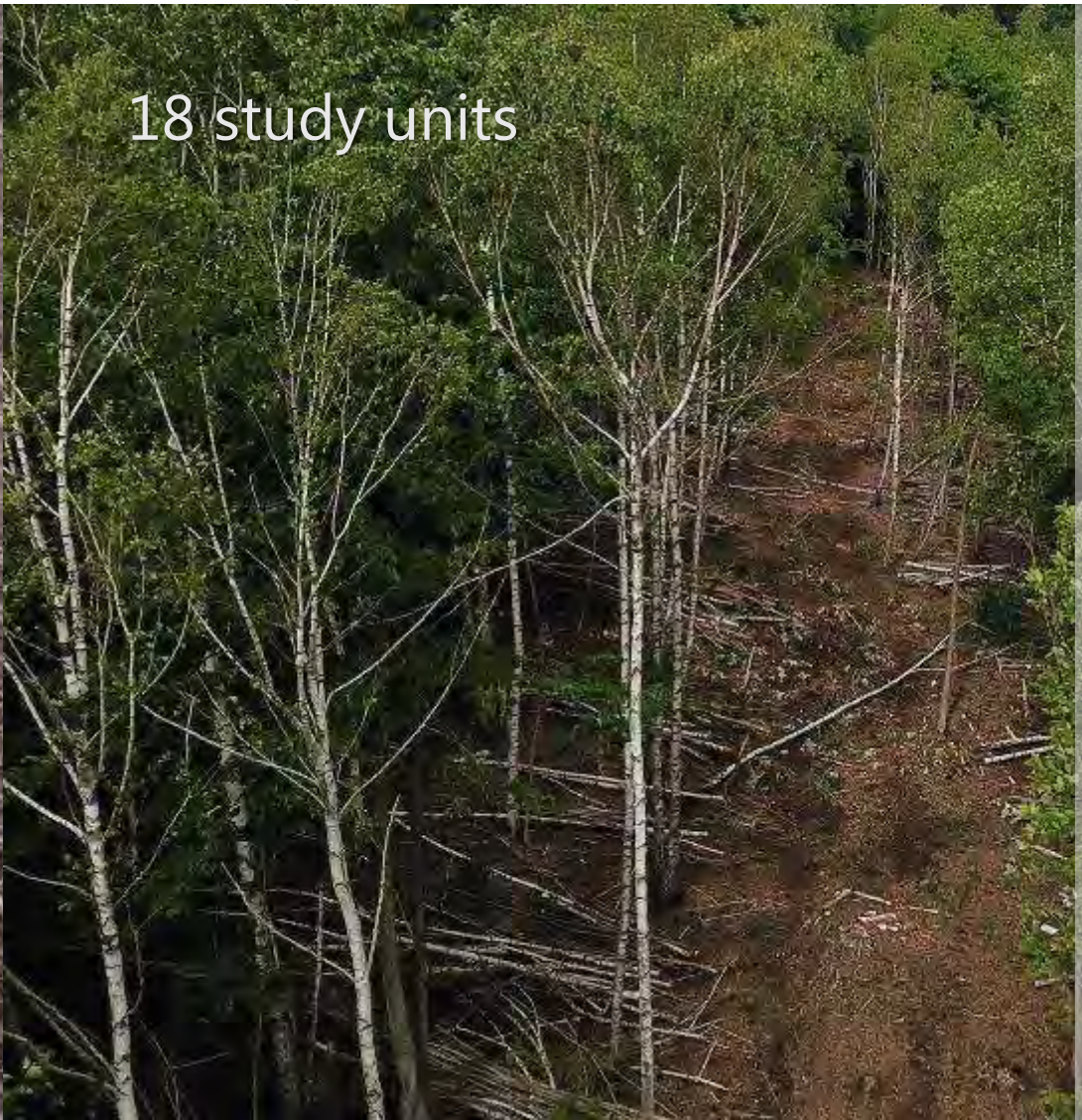
Onek (location 1) – **spruce stand**



Age of the stand	40 years
Species	94% spruce, 6% broadleaves
Mean DBH / BA-weighted	8.7 cm / 14.8 cm
Mean height / BA-weighted	9.6 m / 13.9 m
Mean density (trees ≥1 cm)	4 475 trees ha-1 (2 650 – 7 400)
Mean density (trees ≥4 cm)	2 838 trees ha-1 (1 950 – 3 600)
Mean standing volume (stem+branches)	255 m3 ha-1

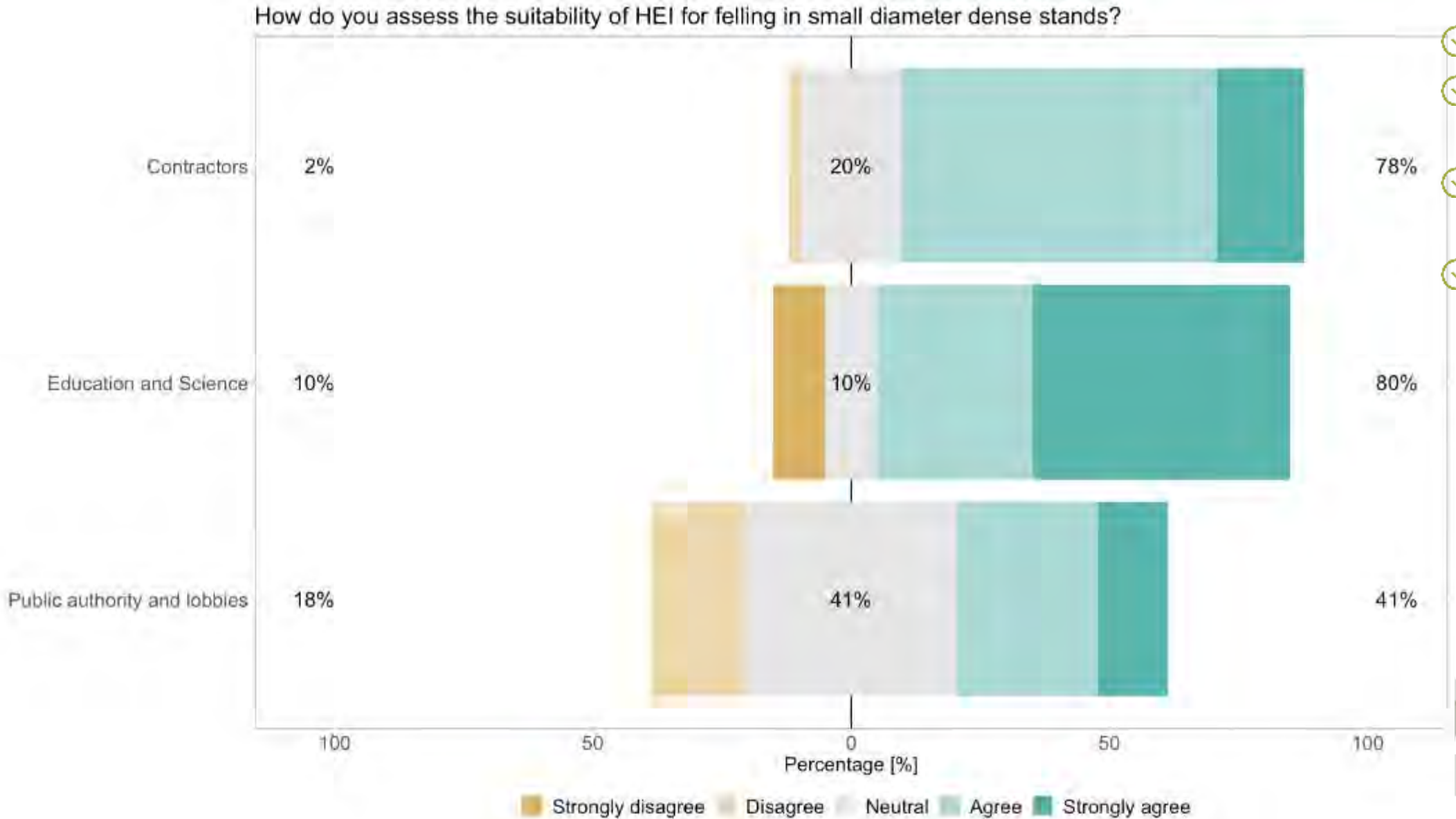
Materials and Methods

Mozelj (location 2) – **mixed boardleafed stand**



Age of the stand	30 years
Species	38% birch, 25% linden, 13% hazel, 9% sycamore, 15% other broadleaves
Mean DBH / BA-weighted	5.2 cm / 11.1 cm
Mean height / BA-weighted	7.8 m / 11.4 m
Mean density (trees ≥1 cm)	11 083 trees ha-1 (7 850–15 450)
Mean density (trees ≥4 cm)	5 725 trees ha-1 (4 250 – 8 100)
Mean standing volume (stem+branches)	231 m3 ha-1

HEI demonstration – Slovenia



- 29th January 2020
- More than 100 participants
- 56% forestry contractors
- 24% Public authorities

Forwarding

Scaling of biomass

- First part was done from 14th till 17th March 2020 (COVID-19)
- Second part in May 2020 :
  - Scaling of biomass
  - Moisture content analysis
- Long trees/bunches
  - Additional process of top felling
  - Grapple forwarding head

SMALL wood

THANK YOU