Productivity in small tree thinning operations

Preliminary results from case studies in the SMALLWOOD project

Zoom Webinar, 7th of December 2020, 9.00 – 11.30 CET

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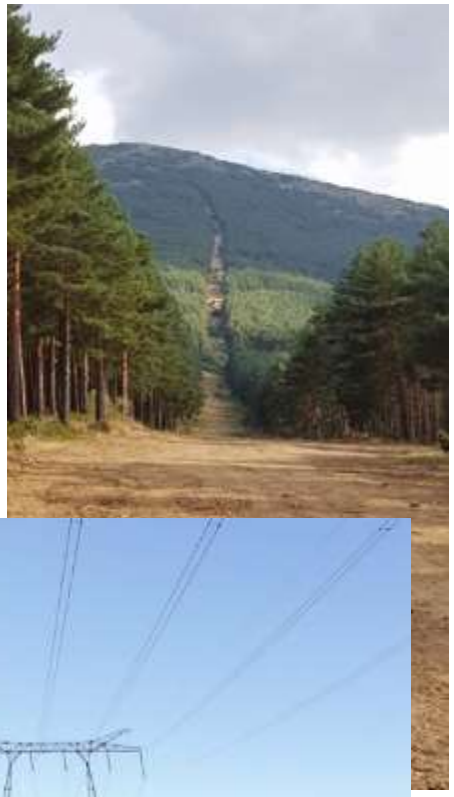
SMALLWOOD project

Overall objective

To develop and evaluate **new technologies and new business and operational models** that can support a sustainable management and utilization of **different types of small diameter wood.**

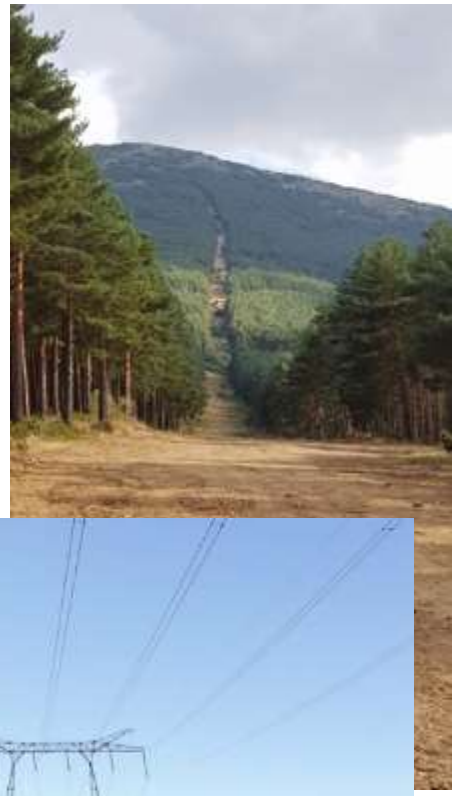


SMALLWOOD project

Overall objective

With other words:

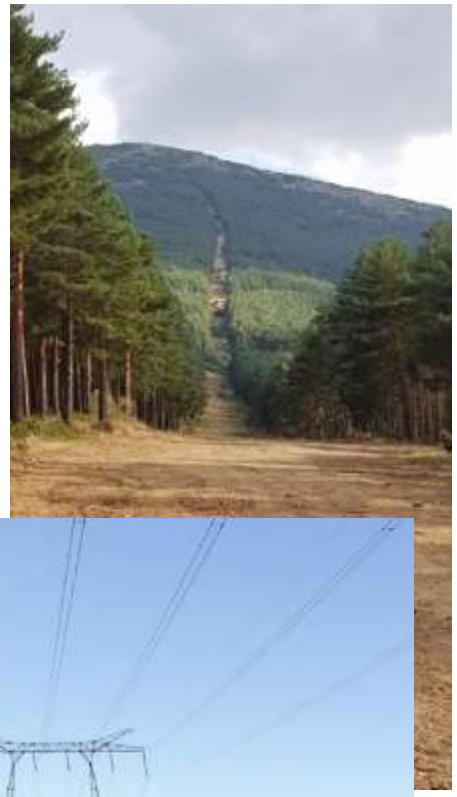
A project dealing with utilization of small trees from various types of stands



SMALLWOOD project

Relevance

In Europe there are at least 40 million ha of forest areas with this kind of stands (About 25% of the total forest area in Europe)



SMALLWOOD project partners

Partner	Country	Respective funding organization	Contact person
Swedish University of Agricultural Sciences (SLU)	**Sweden**	Vinnova/Formas/SWEA	Prof.dr. Tomas Nordfjell
Universidad Politécnica de Madrid (UPM)	**Spain**	ES/MINECO-AEI	Prof.dr. Eduardo Tolosana
Slovenian Forest Institute (SFI)	**Slovenia**	SI/MIZS	Dr. Nike Krajnc
University of eastern Finland, School of Forest Sciences (UEF)	**Finland**	FI/MMM and FI/AKA	Prof.dr Teppo Hujala
Faculty of Economics and Business, University of Maribor (FEB)	**Slovenia**	SI/MIZS	Prof.dr. Zdenka Ženko
Bracke Forest	**Sweden**	Vinnova/Formas/SWEA	CEO Klas-Håkan Ljungberg

SMALLWOOD, a ForestValue ERA-NET

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Academy of Finland,
Ministry of Education, Science and Sport (MIZS),
Ministry of Economy, Industry and Competitiveness (MINECO).
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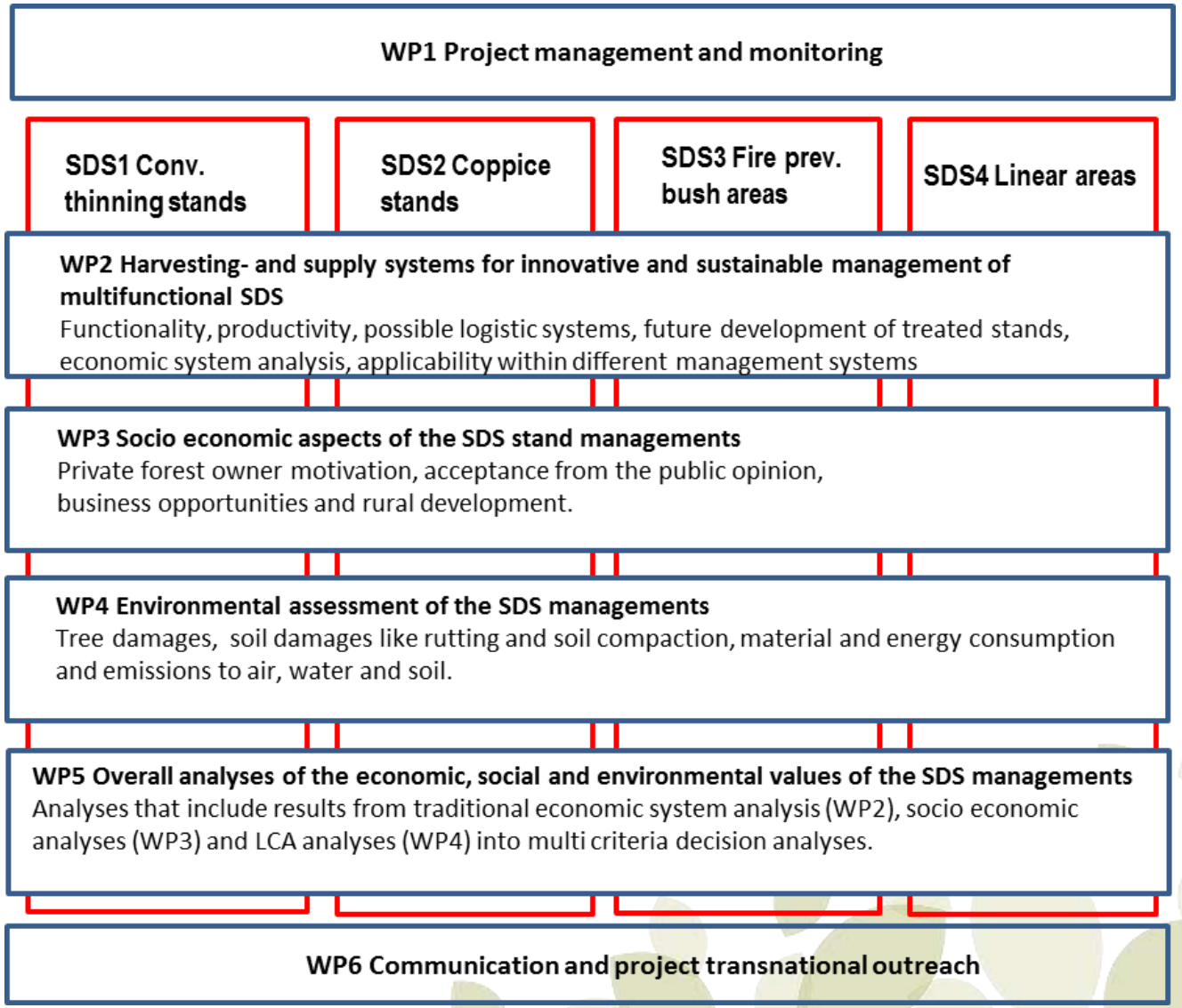
SMALLWOOD project

Work packages

Productivity, socio economic aspects, environmental assessment and synthesis are the main parts of the project

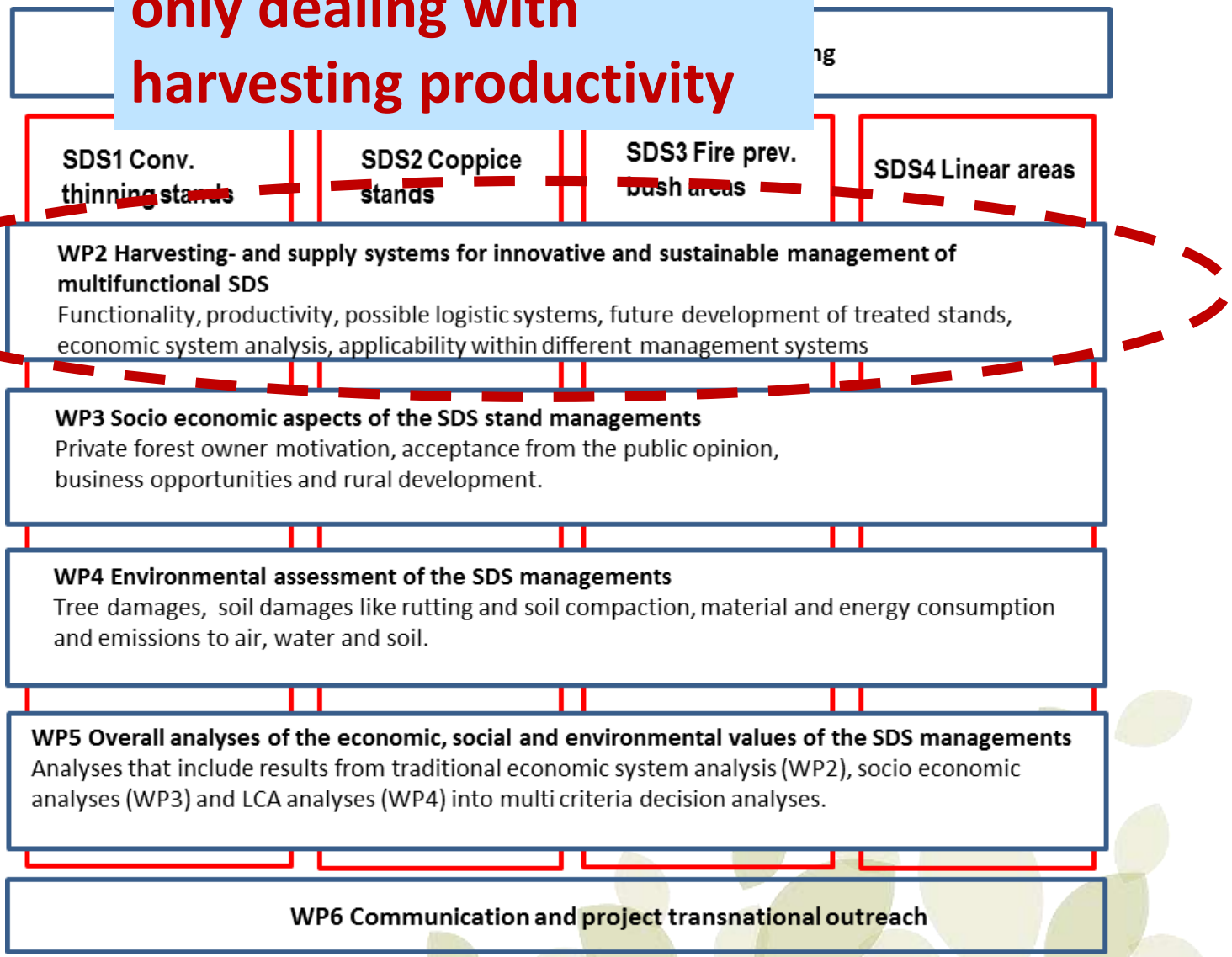


SMALLWOOD project

Work packages

Todays presentation is only dealing with harvesting productivity

Productivity, socio economic aspects, environmental assessment and synthesis are the main parts of the project



The focus of todays presentations

1) Thinning operations with an upgraded accumulating felling head on a standard harvester base machine

2) Harvesting of brush vegetation and dense pine natural regeneration for reducing the risk of forest fire

The focus of todays presentations

In both cases, the meaning with the treatments as such is to create stands with remaining trees that will grow well and be profitable

The focus of todays presentations

We start with the upgraded accumulating felling head, Bracke C16c SMALLWOOD version

Evaluation of Bracke C16c SMALLWOOD version

Materials and Methods

The technical upgrading was rather simple, but important. **A "horn-shaped" support was mounted between the head and the rotator, aiming to stabilize the handling of long trees during the movement of the crane**.

A standard Komatsu 901.4 harvester was used as base machine.

Standard version

SMALLWOOD version

Evaluation of Bracke C16c SMALLWOOD version

Materials and Methods

Field trials were performed in Sweden, Finland and Slovenia during the Fall-Spring 2019/2020, using **the same head, base-machine and operator**. (Postponed in Spain due to the Covid-19 pandemic).

Evaluation of Bracke C16c SMALLWOOD version

Materials and Methods

Field trials were performed in Sweden, Finland and Slovenia during the Fall-Spring 2019/2020, using **the same head, base-machine and operator**. (Postponed in Spain due to the Covid-19 pandemic).

This with equipment and operator as constant variables in this kind of studies in many stands and several countries is something very unique!

Evaluation of Bracke C16c SMALLWOOD version

Materials and Methods

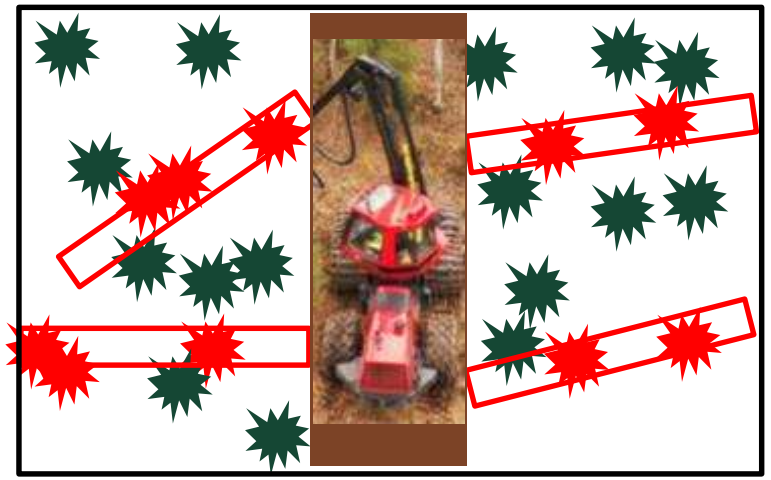
Two **working methods** was compared in all stands:

The novel, boom-corridor (BC) thinning and the conventional, selective **(S)** thinning from bellow as reference

harvested

remaining

Boom-corridor thinning (BC)



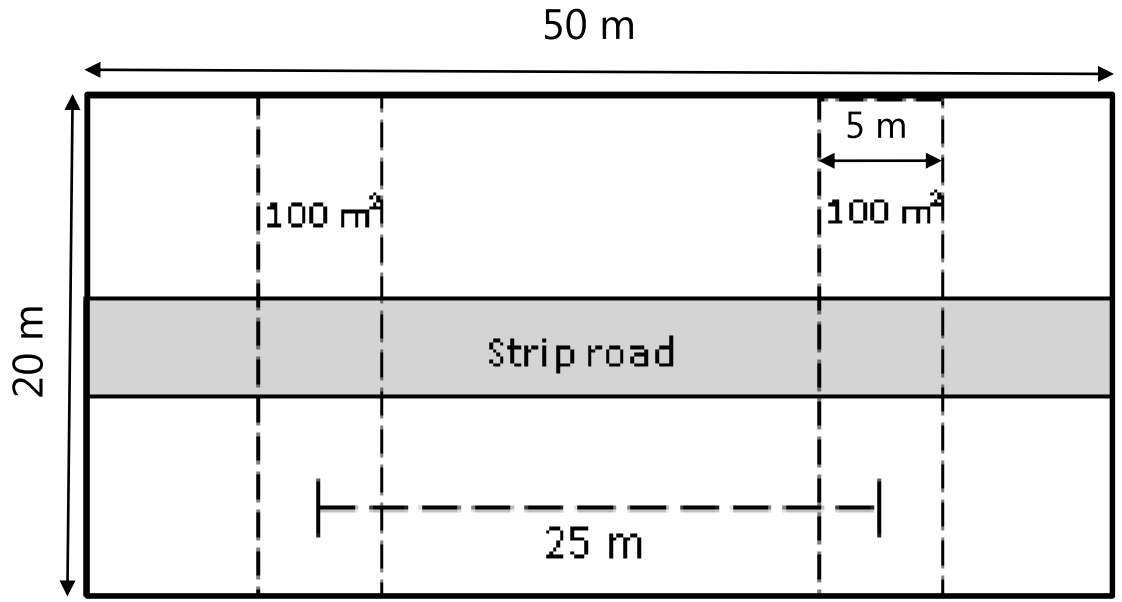
Reference:

Conventional selective thinning (S)

Evaluation of Bracke C16c SMALLWOOD version

Materials and Methods

1. Marking and pre-inventory of 1000 m^2 study units within all stands;
2. Time study of the Bracke C16c SMALLWOOD version;
3. Forwarding and scaling of biomass;
4. Post-inventory of study units



Evaluation of Bracke C16c SMALLWOOD version

Materials and Methods

And, now leaving the floor for Dan, Yrjö and Matevz to describe the stands included in the study!