



Ministry of Agriculture and Forestry of Finland



ACADEMY OF FINLAND ForestValue



# Assessing the multi-dimensional sustainability and value creation of Small diameter stands harvesting

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# Small-diameter wood harvesting operations as part of sustainable European forest bioeconomy



Photo: Satu Helenius



Photo: Satu Helenius

I enjoy forest walks very much



Picture: Storyset.com

# Creating a holistic multicriteria point of view



**SMALLWOOD-project**



Objective: to determine and compare the overall sustainability impacts and value-creation effects of the studied harvesting and extracting innovations



# Multi-criteria Analysis Framework

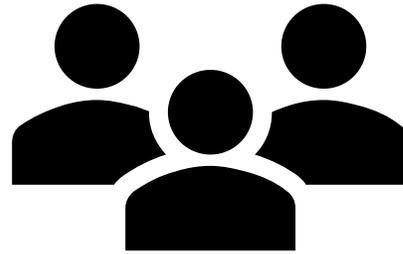


## Criteria and indicators...

Economic	Ecological	Socio-cultural	Value creation
Operational efficiency (WP2 results)	Fire risk (WP4 results)	Attractive to forest owners (WP3 results)	Business model renewal (value-innovation opportunity)
Investment payoff (system cost/benefit estimation)	Climate benefits (estimation)	Attractive to contractors (WP3 results)	National upscaling potential (innovation diffusion estimation)
Harvesting damages (WP2 results)	Biodiversity benefits (estimation)	Recreational benefits (estimation)	European upscaling potential (transferability potential)
	Ground water (estimation)	Rural jobs (estimation)	

## Participatory Multi-Criteria Analysis (MCA) supports young forest management by creating a holistic view of sustainability & value-creation impacts

ratings and weightings from invited expert and stakeholders



- Ratings were done for Bracke C16.c in Finland, Slovenia, Spain, and Sweden
- Moreover, ratings were done in Spain for BIOBALER and RETRABIO



# Multi-criteria Rating Exercises



## Expert rating

(Weight and Rating: 100 points to highest/best; others groupwise in relation to that)

Dimension	Criterion	Weight	Rating	Uncertainty	My expertise
Economic	Operational efficiency	Write	Write	Select 1-7	Select 1-7
	Investment payoff	Write	Write	Select 1-7	Select 1-7
	Harvesting damages	Write	Write	Select 1-7	Select 1-7
Ecological	Fire risk	Write	Write	Select 1-7	Select 1-7
	Climate benefits	Write	Write	Select 1-7	Select 1-7
	Biodiversity	Write	Write	Select 1-7	Select 1-7
	Ground water	Write	Write	Select 1-7	Select 1-7
Socio-cultural	Attractive to forest owners	Write	Write	Select 1-7	Select 1-7
	Attractive to contractors	Write	Write	Select 1-7	Select 1-7
	Recreational benefits	Write	Write	Select 1-7	Select 1-7
	Rural jobs	Write	Write	Select 1-7	Select 1-7
Value creation	Business model renewal	Write	Write	Select 1-7	Select 1-7
	National upscaling	Write	Write	Select 1-7	Select 1-7
	European upscaling	Write	Write	Select 1-7	Select 1-7

+ Brief summarizing text comment on economic, ecological and socio-cultural sustainability and the value creation potential of the innovation at hand

# Multi-criteria Rating Exercises

## Stakeholder rating

Dimension	Criterion	Rating	Uncertainty	My expertise
Economic	Operational efficiency	Write	Select 1-7	Select 1-7
	Investment payoff	Write	Select 1-7	Select 1-7
	Harvesting damages	Write	Select 1-7	Select 1-7
Ecological	Fire risk	Write	Select 1-7	Select 1-7
	Climate benefits	Write	Select 1-7	Select 1-7
	Biodiversity	Write	Select 1-7	Select 1-7
	Ground water	Write	Select 1-7	Select 1-7
Socio-cultural	Attractive to forest owners	Write	Select 1-7	Select 1-7
	Attractive to contractors	Write	Select 1-7	Select 1-7
	Recreational benefits	Write	Select 1-7	Select 1-7
	Rural jobs	Write	Select 1-7	Select 1-7
Value creation	Business model renewal	Write	Select 1-7	Select 1-7
	National upscaling	Write	Select 1-7	Select 1-7
	European upscaling	Write	Select 1-7	Select 1-7

+ Brief summarizing text comment on economic, ecological and socio-cultural sustainability and the value creation potential of the innovation at hand

# This sustainability evaluation is relative and not absolute



- Ratings were done by experts and professionals → knowledge of country conditions and current practices
- In each country, the suggested innovations were compared to currently used technology → evaluation is fit to a context
- Results tell about: by summarising Smallwood-results
  - What are the sustainability impacts of the studied innovations?
  - Where are the specific improvements?
  - Where are the possible weaknesses?
- In addition, this evaluation was taking into consideration the potential for expansion and change from a broader than the local perspective.



Picture: Storyset.com

## Take home message



### Value of the analysis:

the essential sustainability dimensions come through consideration and comprehensive comparison through concrete impacts

→ providing a basis for further development and operationalization of balanced sustainability impacts.



Picture: Storyset.com

# Question for the audience



**In your country, which of the following do you consider the most relevant bottleneck of value creation in small-diameter wood management?**

- a) Economic sustainability (profitability of operations, return of investments etc.)
- b) Ecological sustainability (climate, biodiversity, fire risk etc.)
- c) Socio-cultural sustainability (forest owners, contractors, local communities etc.)
- d) Weak upscaling of good practices within and between countries



Any questions? Please do not hesitate to contact!



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