

# **MCDA (Heureka): a digital tool to collect forest management preferences with forest actors in Gothenburg**

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OBJECTIVES

Recreation

Nature  
conservation

Berries and mushroom

# FACTS AND

FACTS: Information about the consequences different management alternatives for each objective. VALUES: The importance of different objectives

# VALUES!!

Even aged  
forestry

Uneven aged  
forestry

Promoting  
broadleaves

Unmanaged

Prolonged  
rotation ages

ALTERNATIVES

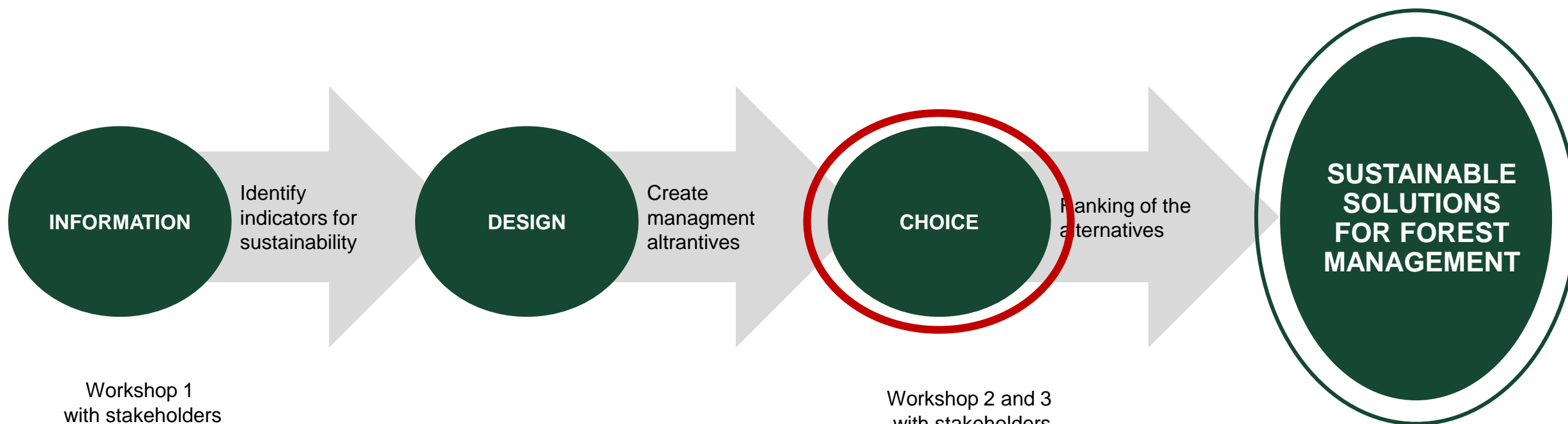


# Multi Criteria Decion Anlysis (MCDA)

- Umbrella term for different approaches and mathematical methods for finding solutions to decision problems with multiple objectives.
  - Can include considerations to both facts and values.
  - Can include many decision makers and/or stakeholders.
- It can be used to rank alternatives together with stakeholders!

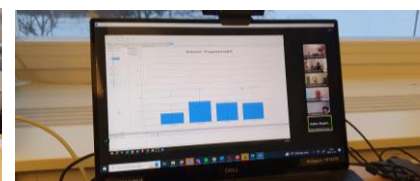


# MCDCA model

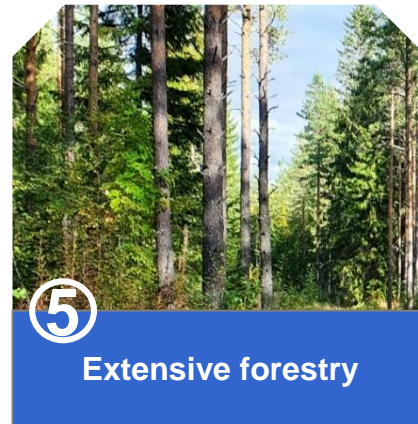


		Management alternative			
		Uneven aged forestry	Even aged forestry	Promoting broadleaves	Extensive forestry
Timber production	Harvest volume				
	Growth				
	Net income				
Biodiversity	Old Forest				
	Dead wood				
	Large trees				
Climate	Unmanaged forest				
	Carbon storage				
	Biodiversity				
Recreation	Sparse forest				
	Wooded area				
	Young forest				
Forest damage	Forest damage				
	Forest damage				
	Forest damage				

Relative weighting: The darker the color, the higher the value. The lighter the color, the lower the value.



# Forest management alternatives and sustainability indicators



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Harvest volume

Growth

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Net income

Old Forest

Dead wood

Large trees

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Unmanaged forest

Carbon storage

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Biofuel

Sparse forest

Blueberries

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Young forest

Wind

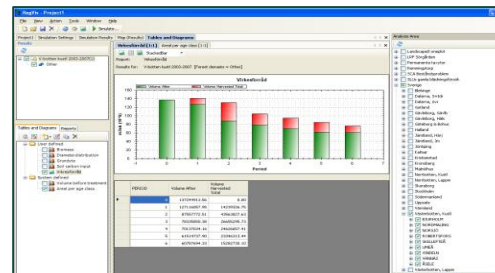
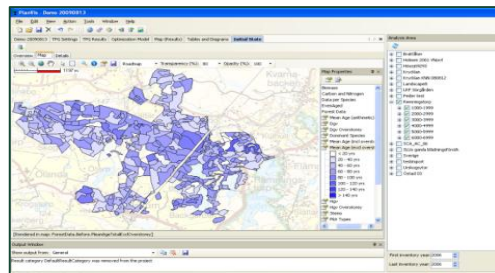
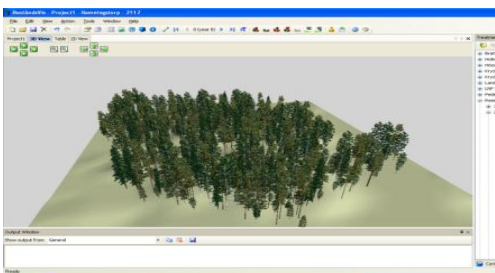
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Spruce bark beetle

# Heureka

Decision support system for Swedish forests

- projections of forest conditions and consequences for ecosystem services and biodiversity indicators on the basis that the forest is managed in different ways



Decision support system = Computer based system that, with help of models to describe the forest's future management and development, support decision-making.

# Why is this "SMART"?

- 100 p to the most important indicator for each level and each 'branch
- Proportional score for the other indicators, 0-100
- Several indicators can score 100 points
- The process is repeated for the alternatives. 100 p to the best alternative for each indicator....

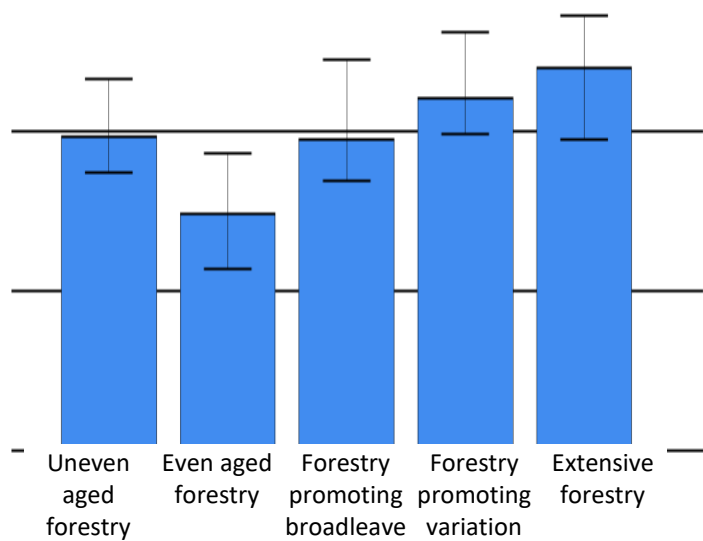
		Management alternative				
		Uneven aged forestry	Even aged forestry	Forestry promoting broadleaves	Forestry promoting variation	Extensive forestry
Timber production	Harvest volume					
	Growth					
	Net income					
Biodiversity	Old Forest					
	Dead wood					
	Large trees					
	Unmanaged forest					
Climate	Carbon storage					
	Biofuel					
Recreation	Sparse forest					
	Blueberries					
	Young forest					
Susceptibility to Forest damage	Wind					
	Spruce bark beetle					

Relative starting position      The redder - the worse  
The greener the better

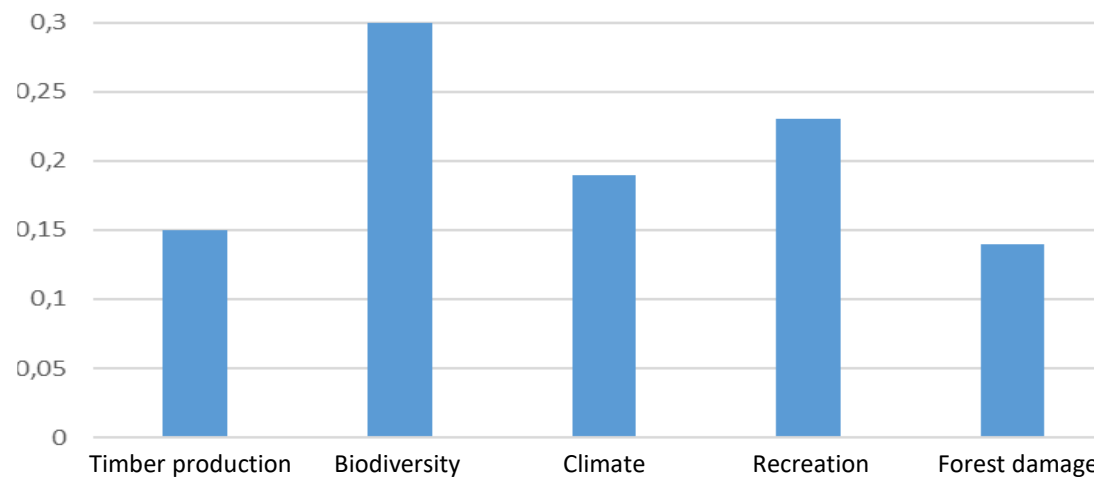


# Results

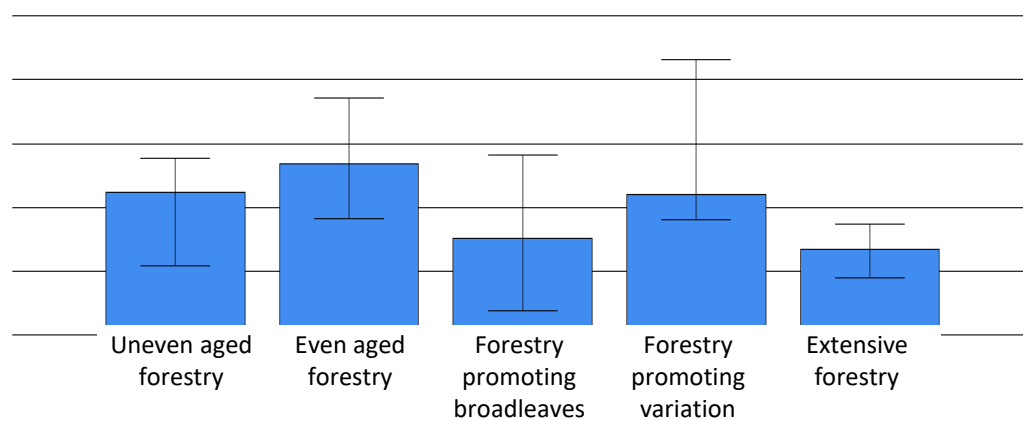
## OVERALL RANKING



## IMPORTANCE OF OBJECTIVES



## TIMBERPRODUCTION





# Lessons learnt!

- SMART works well to weight the indicators but..
- Difficult for stakeholders to score how good the alternatives were for each indicator →
- Important to explain methods and give a lot of time for discussion
- MCDA allows everyone to make their voice heard
- MCDA contributes to transparent decision-making process





# Thanks!

## Contact information

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