RAFL Recreational and Aesthetic Value of Forested Landscapes

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RAFL methodology

- RAFL cookbook:
  - RAFL > Concepts > Dimensions > Attributes (indicator)
  - Indicator = unit of measurement of attribute, with a value function
  - Attributes scores are averaged within a dimension
  - Dimension scores are averaged within a concept
  - Concept scores are averaged to obtain the RAFL-index

CASE COMPARISON / Methodology

- Most LCCs used a locally adapted RAFL approach
- Germany designed their own fuzzy logic system tailored to the key variables available in their DSS.
- Lithuania & Sweden used different attributes and deemed translation into one single index as unrealistic

Relative development of RAFL score from start to year 2100

Country	CSA	Reference	EU Bioenergy	Global Bioenergy
DE	Augsburg Western Forests	Small increase	Large increase	Moderate increase
	Lieberose Schlaubetal	Large increase	Moderate increase	Stable
IE	Barony of Moycullen	Stable	Stable	Stable
IT	Veneto	Moderate increase	Moderate increase	Moderate increase
LT	Telsiai	*No single index used*		
NL	Netherlands	Large increase	Large increase	Large increase
PT	Vale do Sousa	Large decrease	Large decrease	Large decrease
SE	Kronoberg	*No single index used*		
SK	Podpoľanie	Stable	Stable	Stable

- Stable: change in index between -5% and +5%
- Small increase (decrease): change in index between (-)5 and (-)10%
- Moderate increase (decrease): change in index between (-)10% and (-)25%
- Large increase (decrease): change in index >= 25%.

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SK	Podpoľanie	Stable	Stable	Stable

OBSERVATIONS:

- LARGER VARIATION BETWEEN CASES THAN BETWEEN SCENARIOS (EXCEPT DE)
- MOSTLY STABLE TO INCREASE (EXCL. PT)

Final RAFL scores

Country	CSA	Reference scenario	EU Bioenergy	Global Bioenergy
DE	Augsburg Western forests	Low	Low	Moderate
	Lieberose Schlaubetal	Moderate	Moderate	Moderate
IE	Barony of Moycullen	Moderate	Moderate	Moderate
IT	Veneto	High	High	High
LT	Telsiai	*no single index used*		
NL	Netherlands	High	High	High
PT	Vale do Sousa	Low	Low	Low
SE	Kronoberg	*no single index used*		
SK	Podpoľanie	High	High	High

Very low = 0 – 0,2
Low = 0,2 – 0,4
Moderate = 0,4 – 0,6
High = 0,6 – 0,8
Very high = 0,8 – 1,0

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CASE COMPARISON / RESULTS

Country	CSA	Reference scenario	EU Bioenergy	Global Bioenergy
DE	Augsburg Western forests	Low	Low	Moderate
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IT	Veneto	High	High	High
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NL	Netherlands	High	High	High
PT	Vale do Sousa	Low	Low	Low
SE	Kronoberg	*no single index used*		
SK	Podpoľanie	High	High	High

FINAL RAFL SCORE PER CASE PER SCENARIO

OBSERVATIONS:

- LARGE VARIATIONS BETWEEN CASES BUT NOT AMONG SCENARIOS
- NO HIGHEST OR LOWEST SCORE ACHIEVED
- HIGH RELATIVE IMPROVEMENTS DOESN'T = A HIGH SCORE

CASE COMPARISON / RESULTS

- Underlying causes of RAFL score developments varies per case/country
- E.g.
  - PT: Large change (decrease) in stewardship score
  - SK: Large decrease in visual scale
  - IE: decrease in wilderness score, compensated by small increases in other attribute scores
  - IT: large increase in historicity as forest get older
  - NL: combination of increases in stewardship, visual scale and historicity

END

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Table 1: Overview of operationalization of attributes for all dimensions and concepts of the biodiversity index

Concepts	Dimensions	Attribute (following template)	Nr	Indicator (units)	Direction of attribute	Value-function	Source
Composition	Composition	TreeSpeciesDiversity	2.1.1.1	0,max	+	0.5 = 0; 3 = 1	
Composition	Composition	Exotics	2.1.1.2	%, between 0 and 1	-	0 = 1; 0.2 = 0	SNL-guidance
Structure	DW	Dwall	2.2.1.1	m3/ha	+	10 = 0; 20 = 1	
Structure	DW	Dwlarge	2.2.1.2	m3/ha	+	5 = 0; 15 = 1	
Structure	LargeTrees	LargeVolume	2.2.2.1	m3/ha	+	50 = 0; 300 = 1	
Structure	StructuralDiversity	Evenness of tree sizes on landscape level (dbh)	2.2.3.1	0 - 1	+	0.25 = 0; 0.75 = 1	
Disturbance	Disturbance	% of area harvested (final felling area)	2.3.1.1	0 - 1	-	0.01 = 1; 0.017 = 0	1/100 yrs vs 1/60 yrs
Disturbance	Disturbance	HarvestRatio	2.3.1.2	0 - 1	-	0.01 = 1; 0.1 = 0	