

Innovative spatial FORest PLANning for supporting resilient multifunctional forest management (IFORPLAN)

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Uniwersytet Przyrodniczy w Poznaniu



Funded by
the European Union

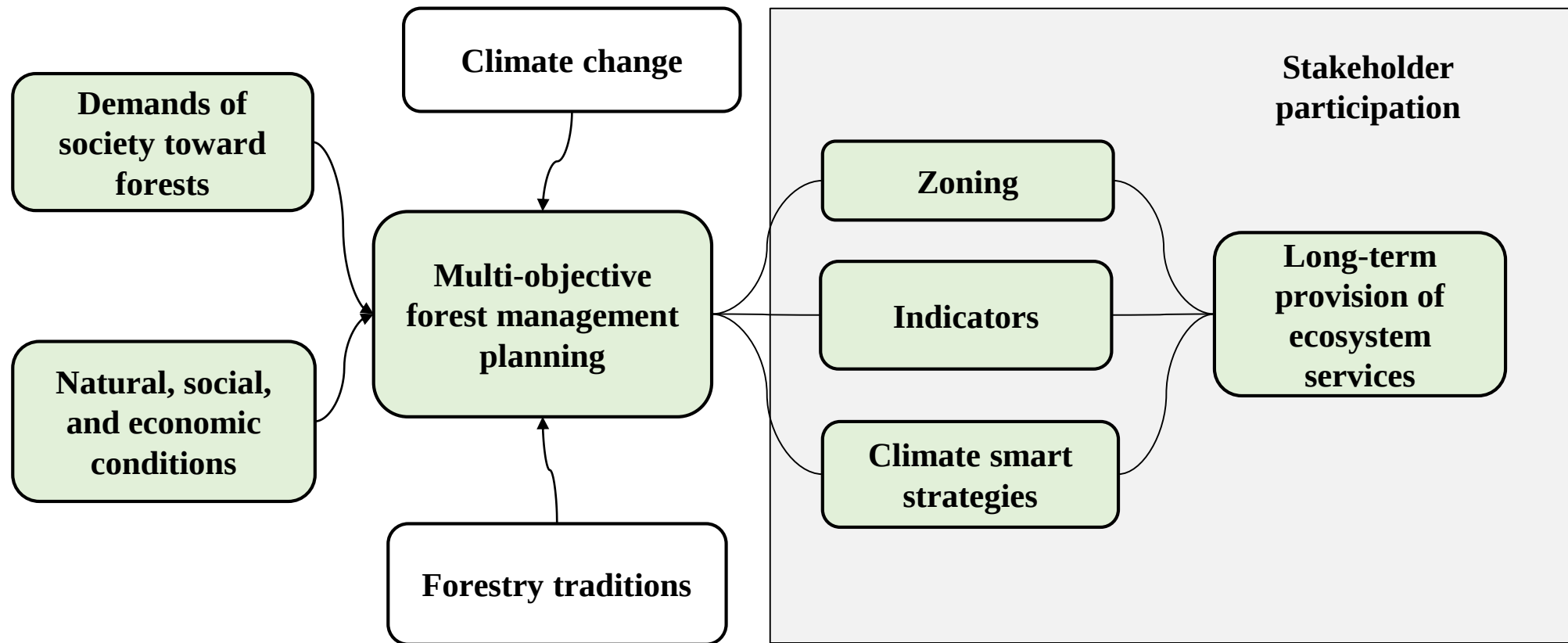
Grant agreement ID: 101094340

<https://forestvalue.org/>

IFORPLAN: background and main objectives

Background

Objectives



IFORPLAN partners and study areas

Partners

University of
Ljubljana

UL

Natural Resources
Institute Finland

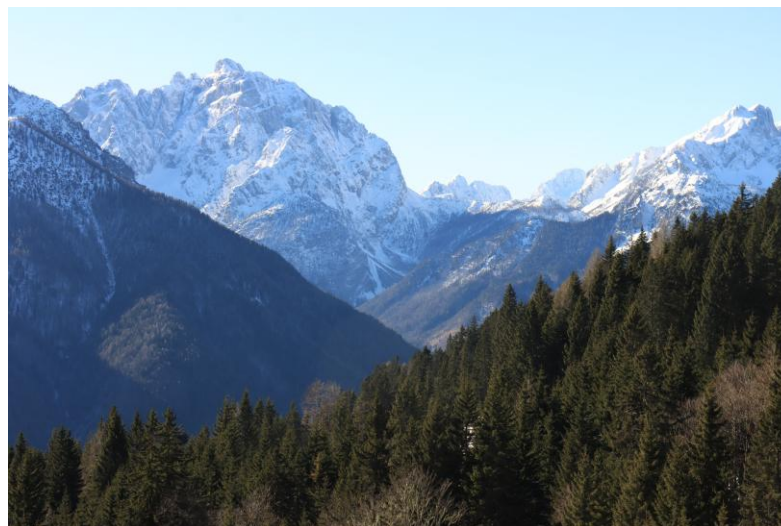
LUKE

Poznań University
of Life Sciences

PULS

Estonian
University of Life
Sciences

UT



Kranjska Gora, Slovenia



Evo, Finland



Zielonka, Poland



Koorküla, Estonia

Project structure and task implementation

WPs	Task implementation (%)									
	0.....100									
WP1 Data management										
WP2 Forest zoning										
WP3 ES provision: alternatives, assessment, optimisation										
WP4 Synthesis and management applications										
WP5 Coordination and dissemination										

IFORPLAN research questions (Q)

Q1. Is forest zonation through MCDA an effective method for improving multifunctional forest management?

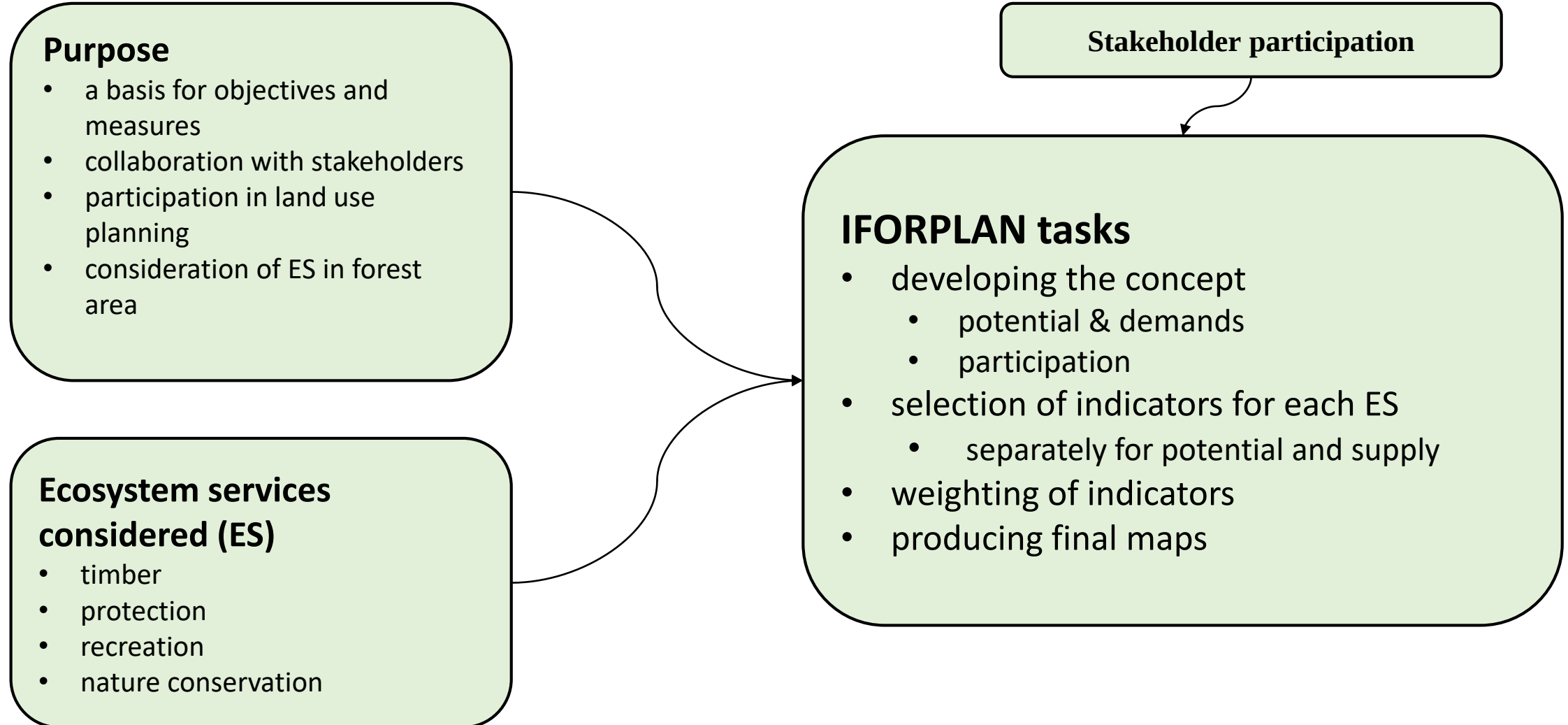
Q2. Do qualitative MCDA methods improve the definition and evaluation of ES indicators compared to classical purely quantitative approaches?

Q3. How can ES provision be linked with effective climate-smart management options?

Q4. Will spatial prioritization and climate-smart forest management be able to supply a sustainable flow of ES?

Q5. Will the integration of stakeholders in the process of forest planning improve the effectiveness of forest management?

WP2 Zoning of priority areas for ES



WP2 Selecting indicators for mapping priority areas

Examples: timber production and recreation

Timber production

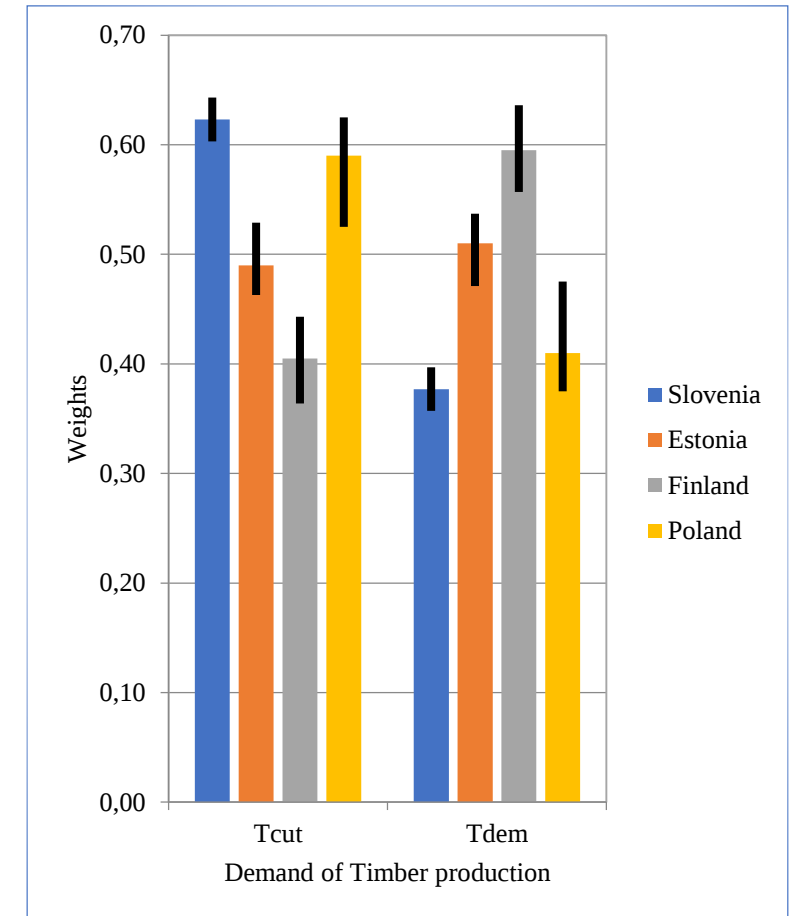
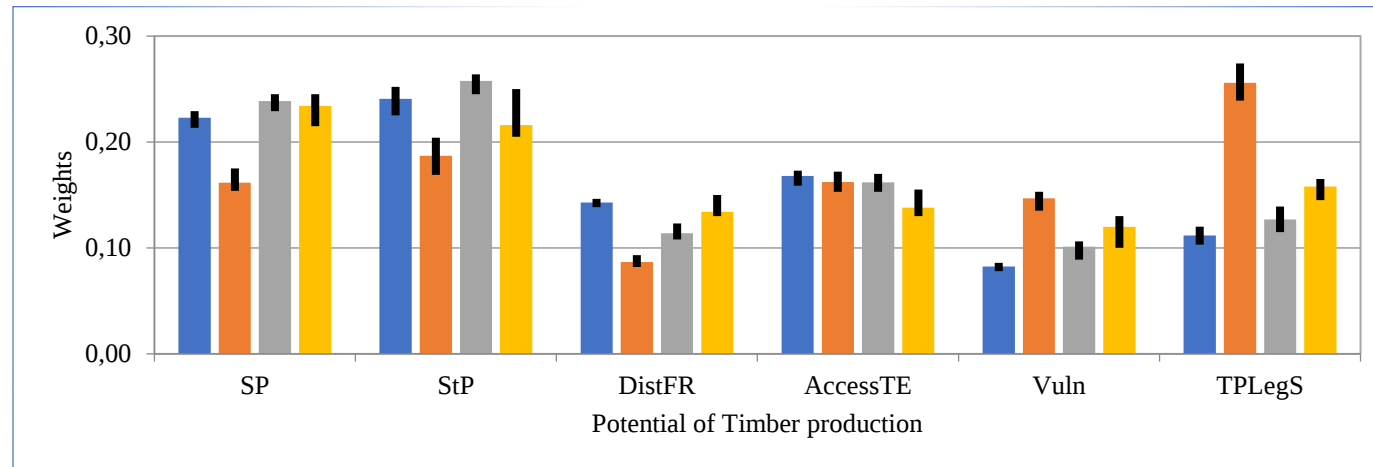
Indicator	Abbr.	Units
Potential		
Site productivity	SP	m ³ ha ⁻¹ y ⁻¹
Long-term stand productivity	StP	m ³ ha ⁻¹ y ⁻¹
Distance to forest roads	DistFR	m
Accessibility for timber extraction	AccessTE	m
Topography -inclination	Incl	°
Topography - rockiness	Rock	%
Vulnerability of forest community (site) for timber production	Vuln	category
Legal status of forest area for timber production	TPLegS	category
Demand		
Recent timber cut	TCut	m ³ ha ⁻¹ y ⁻¹
Timber demand assessment	Tdem	category

Recreation

Indicators	Abbr.
Potential	
Accessibility - road infrastructure	DistFR
Accessibility - presence of parking lots	DistPA
Accessibility - availability of public transport	DistPT
Presence / vicinity of recreation infrastructure	DistRI
Presence / vicinity of recreational hotspots	DistRH
Visual attractiveness – expert assessment	VisA
Gathering non-wood forest products – expert assessment	NWFP
Demand	
Proximity to populated areas / settlements	DistS
Density of visitors	DensV
Recreational demand - expert assessment	RDes
Legal status - designated areas for recreation	LSdar

WP2 Weighting indicators for mapping the ES priority areas

Example: Timber production

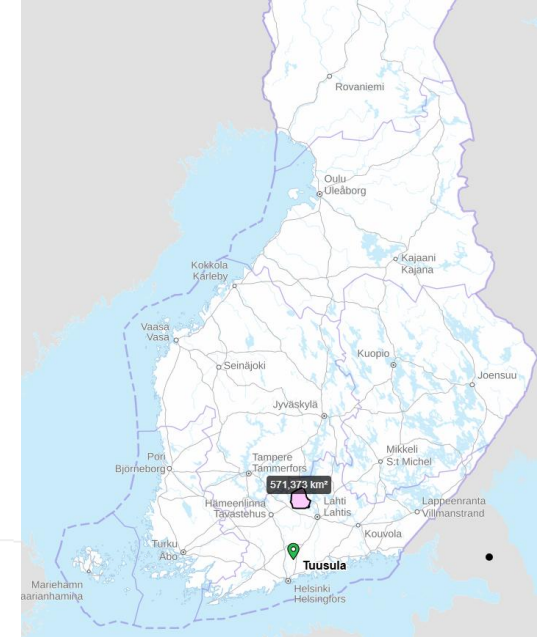
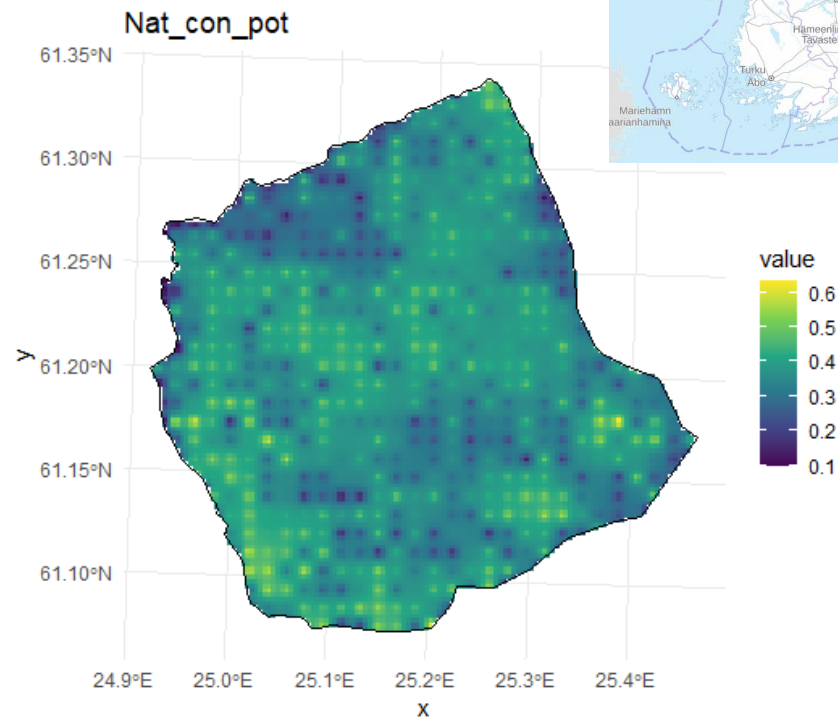
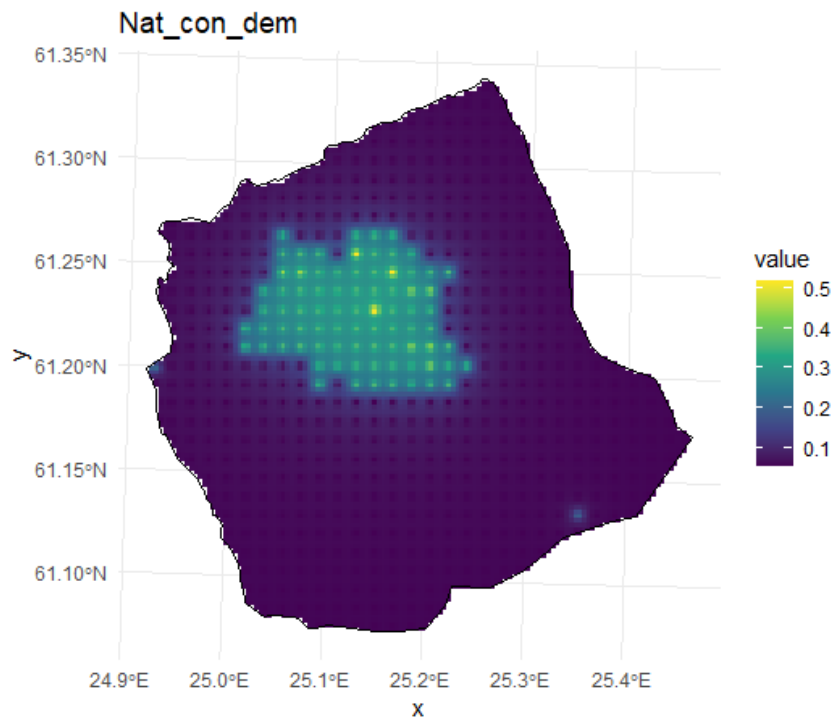


Weights of the indicators and the results of the robustness analysis for potential and demand of timber production

WP2 Zoning of ES priority areas

Evo hiking area, Finland

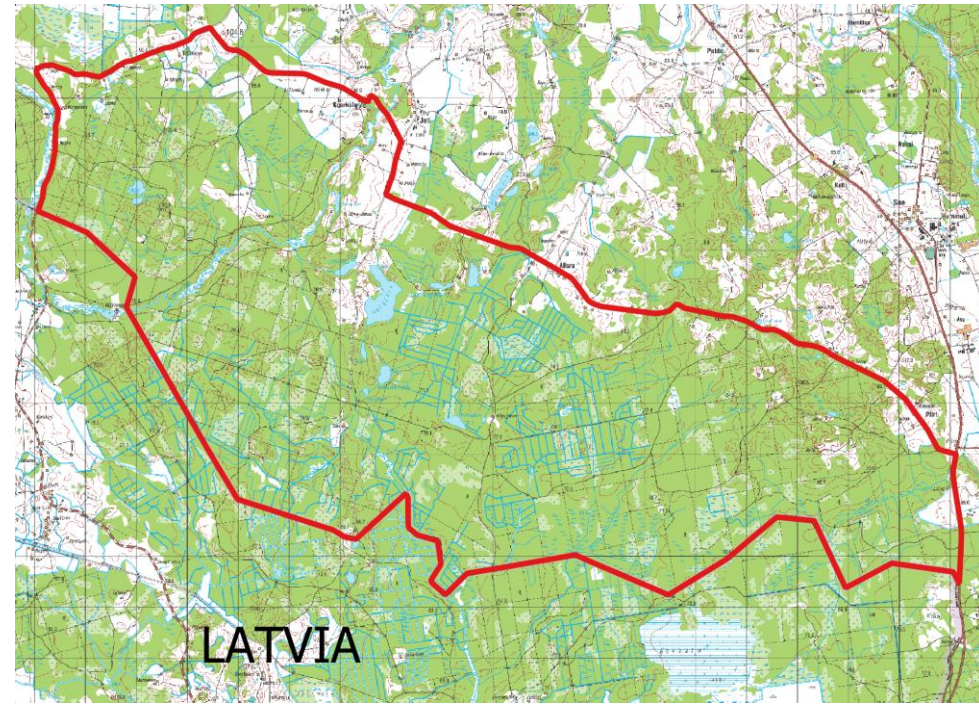
Nature conservation: potential and demand



- Forest type: Southern-boreal (Norway spruce & Scots pine).
- Landscape type: Rare old growth forest patches in a mosaic of forest, peatlands and lakes.
- Use: Includes conservation areas (Natura2000), hiking/teaching areas, active forest management.
- Ownership: government, municipalities, private companies and private forest owners.

WP2 Zoning of ES priority areas

Koorküla area, Estonia



Total area: 10,120 hectares

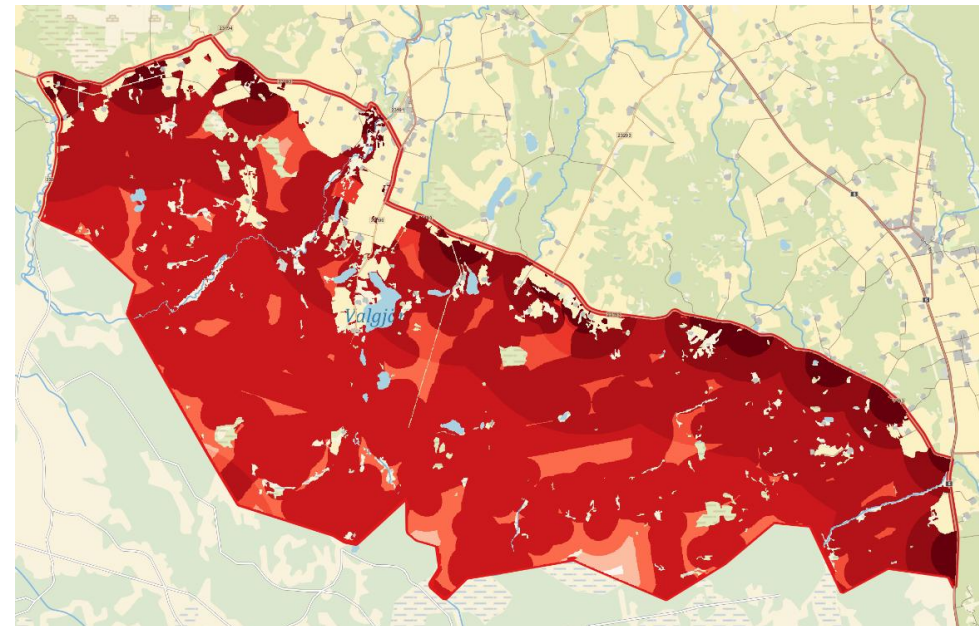
Southern border is Estonia – Latvia borderline

Forests: 88% of area, both state-owned and private

Less than 100 local inhabitants

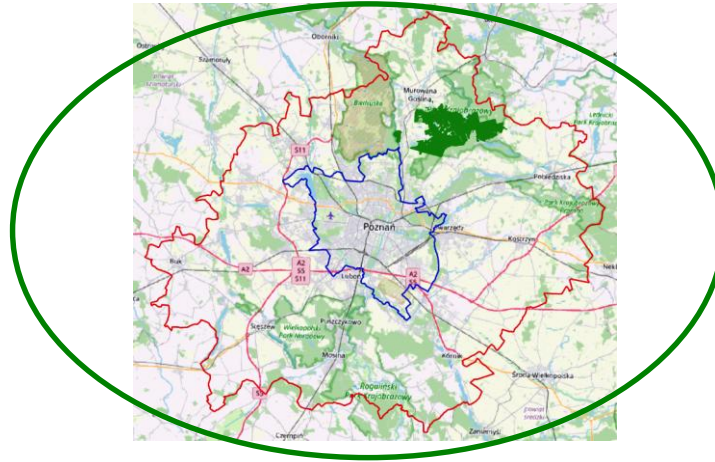
Two NATURA2000 areas and many other conservation sites

One tourist farm and two small recreation sites

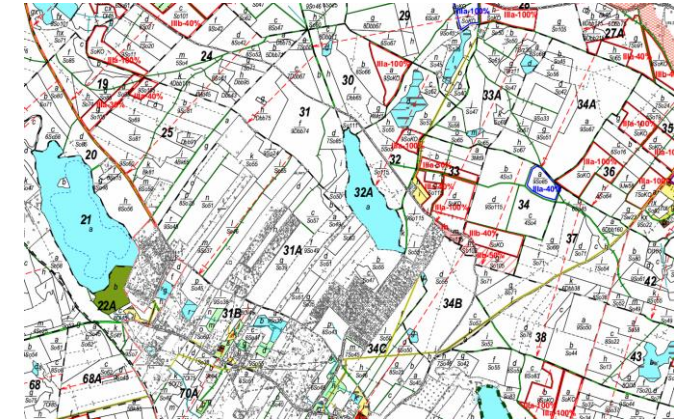


Preliminary
results for
recreation

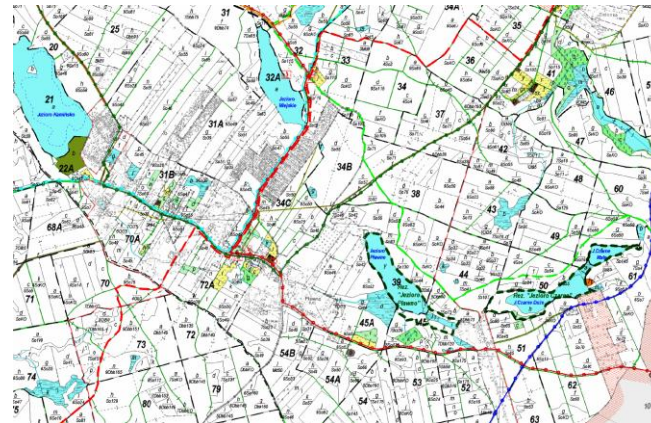
WP2 Zoning of ES priority areas Zielonka, Poland



TIMBER PRODUCTION



RECREATION



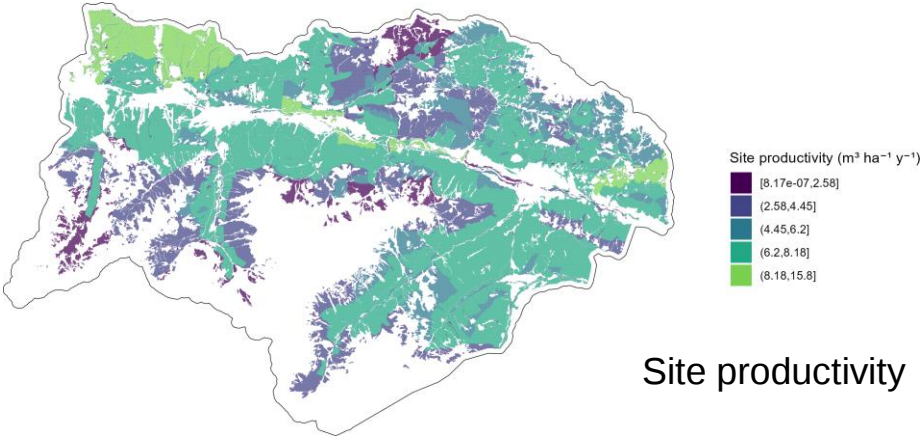
NATURE CONSERVATION



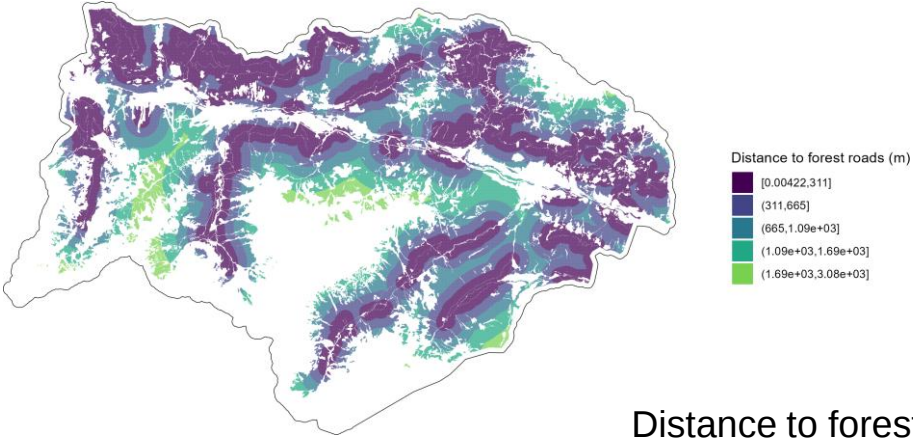
WP2 Zoning of ES priority areas

Kranjska Gora, Slovenia

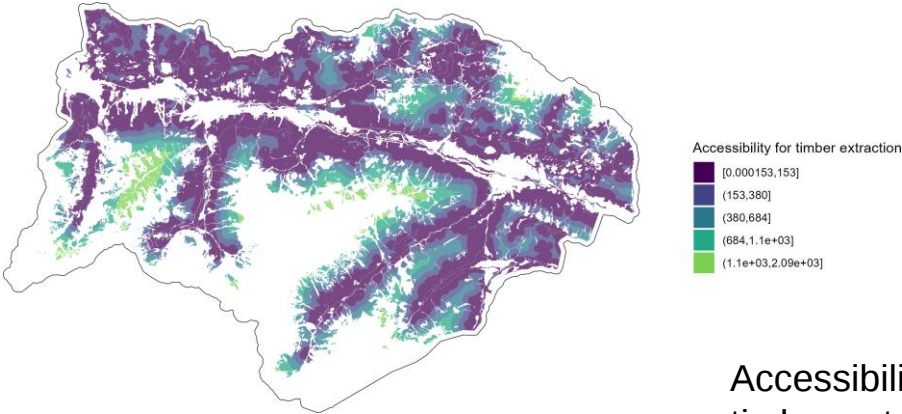
Examples of indicator maps (timber production)



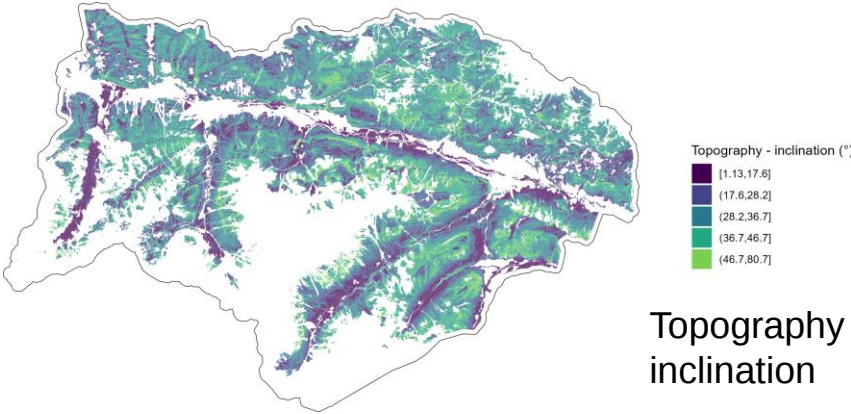
Site productivity



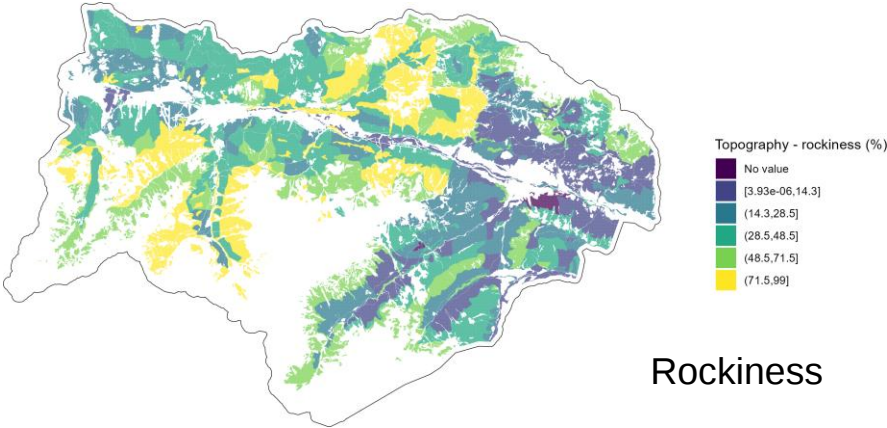
Distance to forest roads



Accessibility for
timber extraction



Topography -
inclination

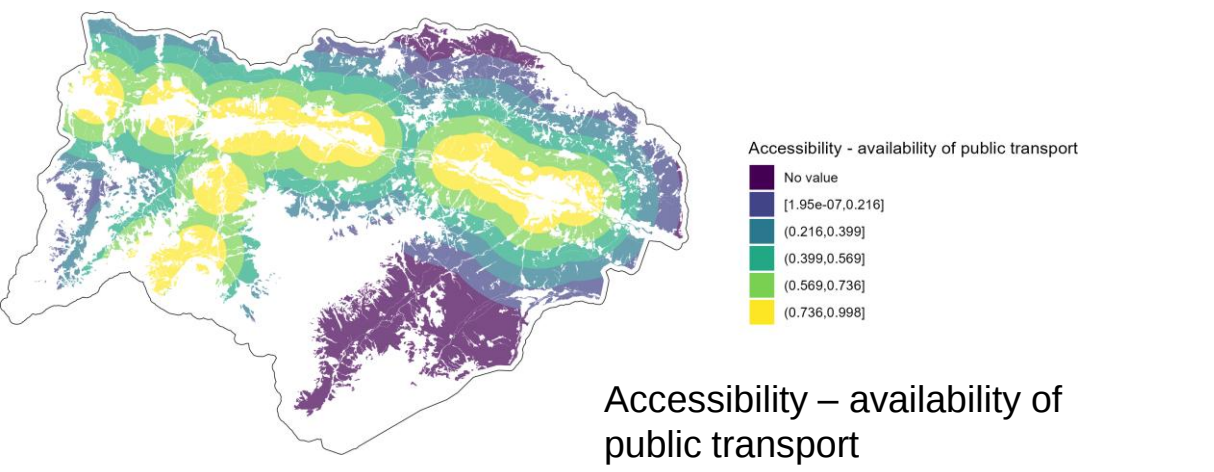
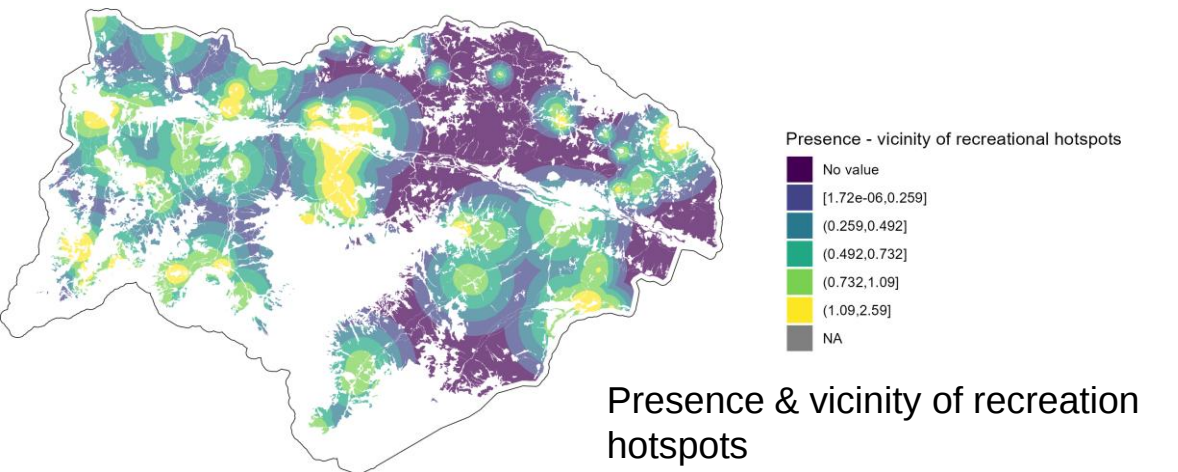
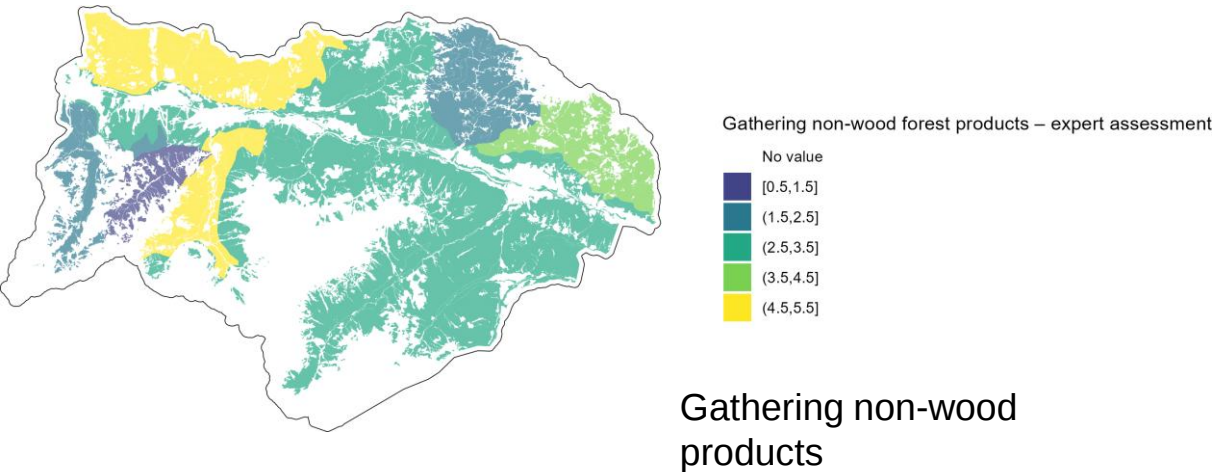
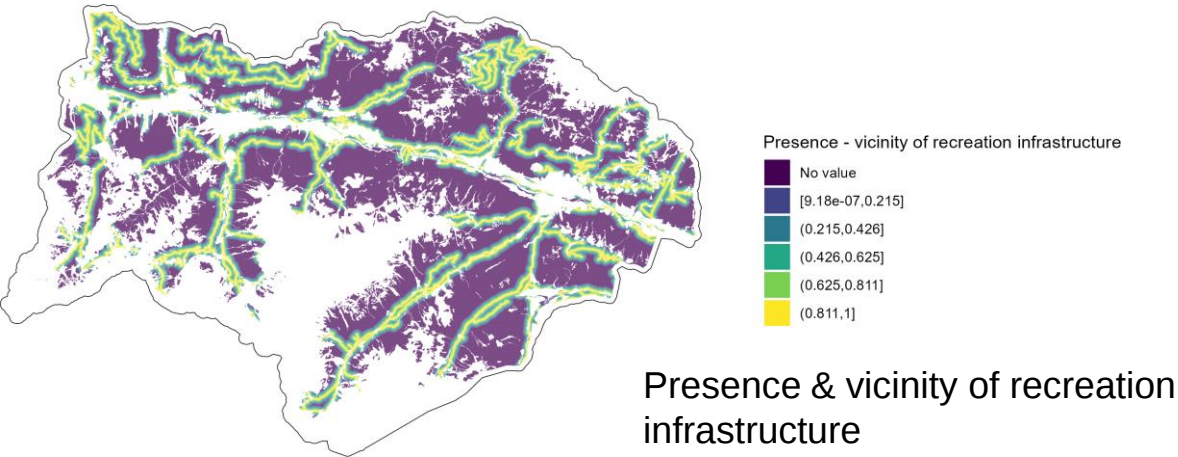


Rockiness

WP2 Zoning of ES priority areas

Kranjska Gora, Slovenia

Examples of indicator maps (recreation)



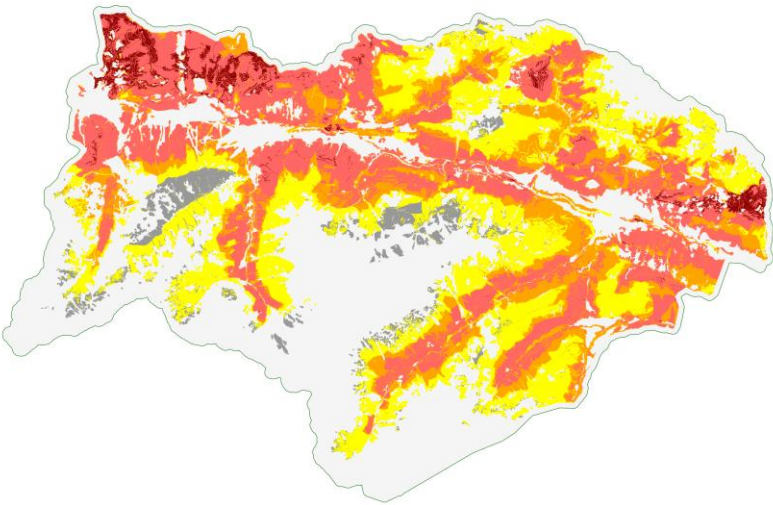
WP2 Zoning of ES priority areas

Kranjska Gora, Slovenia

Example of ES map: Timber production

Potential

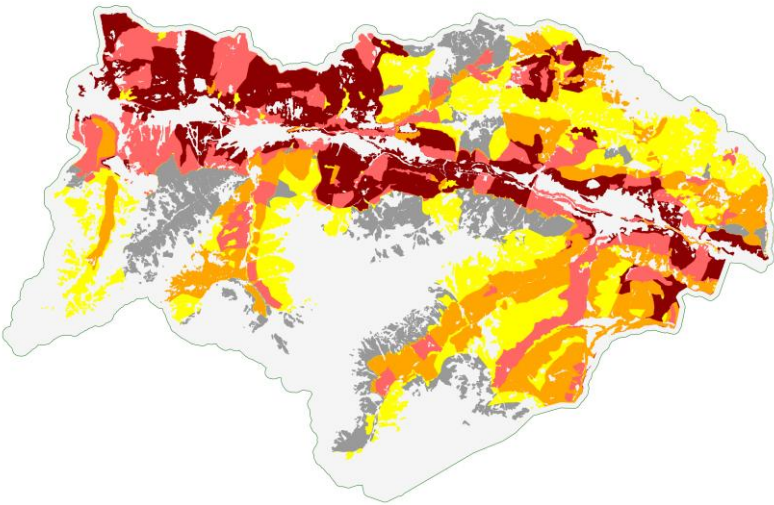
Potential Categories



Potential 0 - No Relevant 1 - Low 2 - Medium 3 - High 4 - Very High

Demands

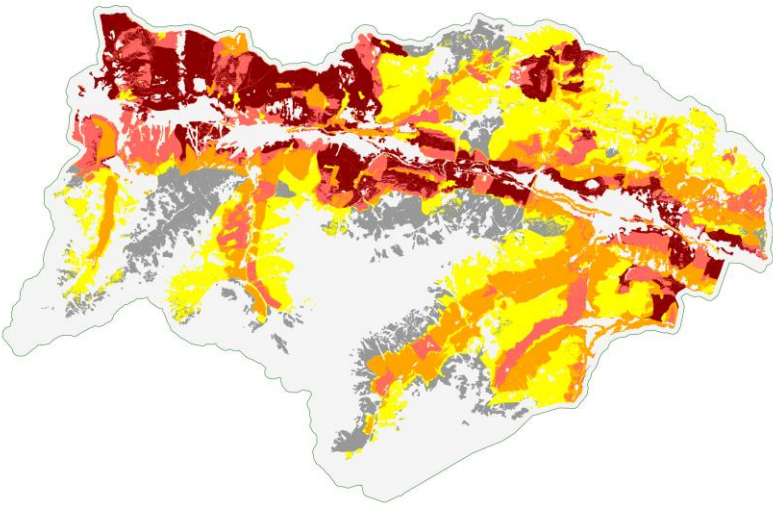
Demand Categories



Demand 0 - No Relevant 1 - Low 2 - Medium 3 - High 4 - Very High

Potential & Demands

Potential-Demand (Matrix Method)



PDMatrix 0 - No Relevant 1 - Low 2 - Medium 3 - High 4 - Very High

Papers from WP2

- Grošelj P. & Simončič T. et al: Developing a framework of indicators for assessing potential and supply of forest ecosystem services in four European countries
- Simončič T. et al. Mapping the potential and demand for forest ecosystem services to identify priority areas: experiences from four European countries

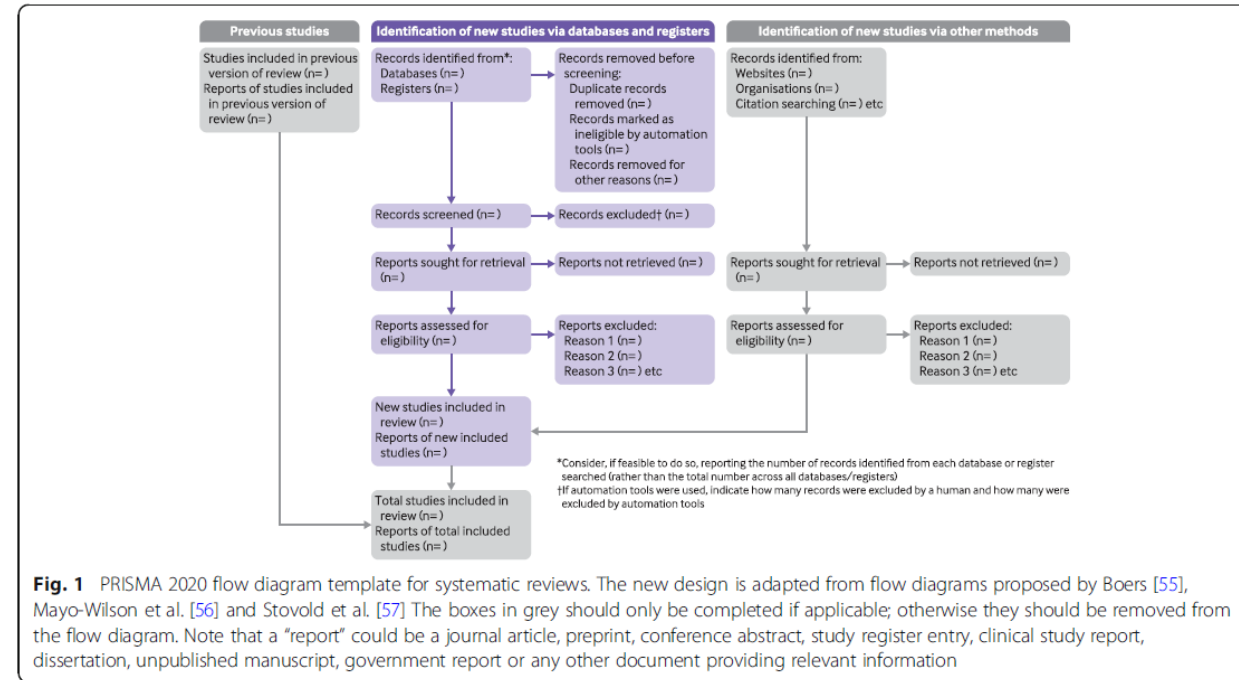
WP3 Evaluation of the effect of forest zoning and climate-smart management

D3.1. "A Review of Multi-Criteria Decision Analysis (MCDA) Applications in Assessing Ecosystem Services and Biodiversity in Forests" (lead by Dr. Anna Repo, Luke, *in progress*)

- **Goal and scope of the manuscript:** Provide a review and a synthesis on the use of MCDA methods in studies on forest ecosystem services and biodiversity.
- **Objectives:**
 - i) Which MCDA methods to assess ES & BD?
 - ii) Which indicators to assess ES & BD?
 - iii) How spatial & temporal planning aspects are included in MCDA?
 - iv) what type of data sources are employed (remote sensing, field data, expert judgements)?
 - v) how current approaches to MCDA integrate decision maker preferences (e.g., type of ownership, stakeholder identity)?



Review Method: Based on the PRISMA* guidelines



Article Screening Method:

AI model based on Gemini applied the PRISMA inclusion/exclusion criteria to 301 articles.



IFORPLAN main challenges

- working with people from very different environments
- contributing to novelties in forest planning
 - integrating different data from available sources
 - zoning approach
 - combining qualitative and quantitative methods in decision making
 - effective communication with stakeholders

iForplan

Thank you for your attention

