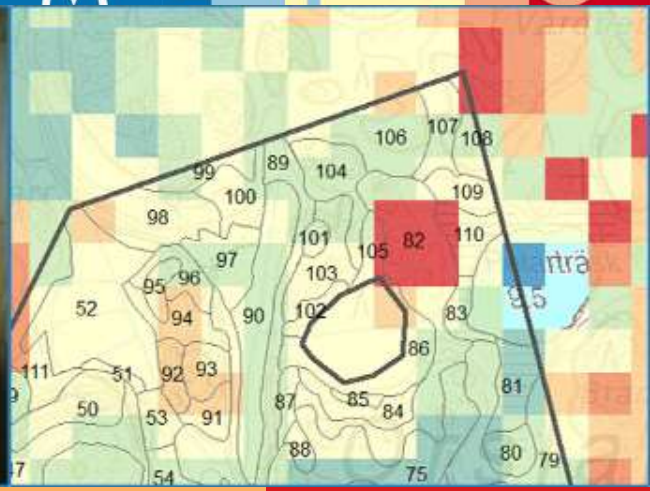
ECOLOGICAL DECISION ANALYISIS
IN SUPPORT OF SOCIETAL DECISION MAKING

METZO



Prioritizing forest areas for conserving biodiversity and mitigating climate change

Ninni Mikkonen (Finnish Environment Institute) 29.10.2019

Strategic Research Scientific Conference / Solution pathways for wicked problems in the management and governance of natural resources and climate change / Thematic session: Methods for analyzing wicked problems

The wicked problem: where to conserve?

Forest biodiversity decline

Areas important for forest biodiversity can be identified

- Years of expert knowledge
- Threats well known
- Good assessments of species and habitats
- Spatial help available

Climate change escalation

Areas important for climate change mitigation under survey

- Trees are one of the most effective carbon sequesters and storages
- Trees ≠ forest
- CO_2 Sequestration rate + amount of storage + rate of decomposition

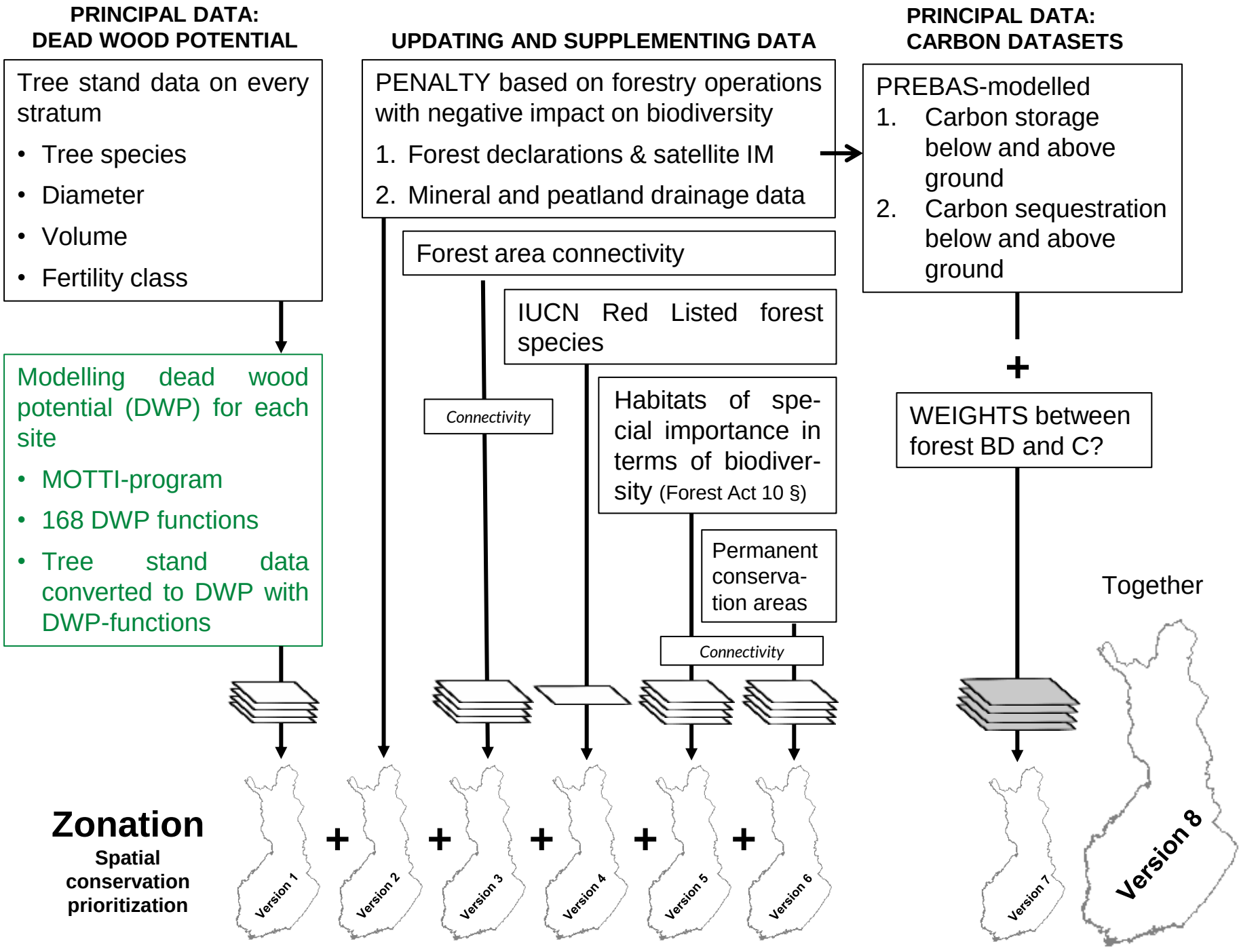
Land owner values

Conserving areas is a question of values

- Voluntary
- Political
- Need for compensation
- METSO program & C permium
- Too little, too late or enough, just in time?

In short:

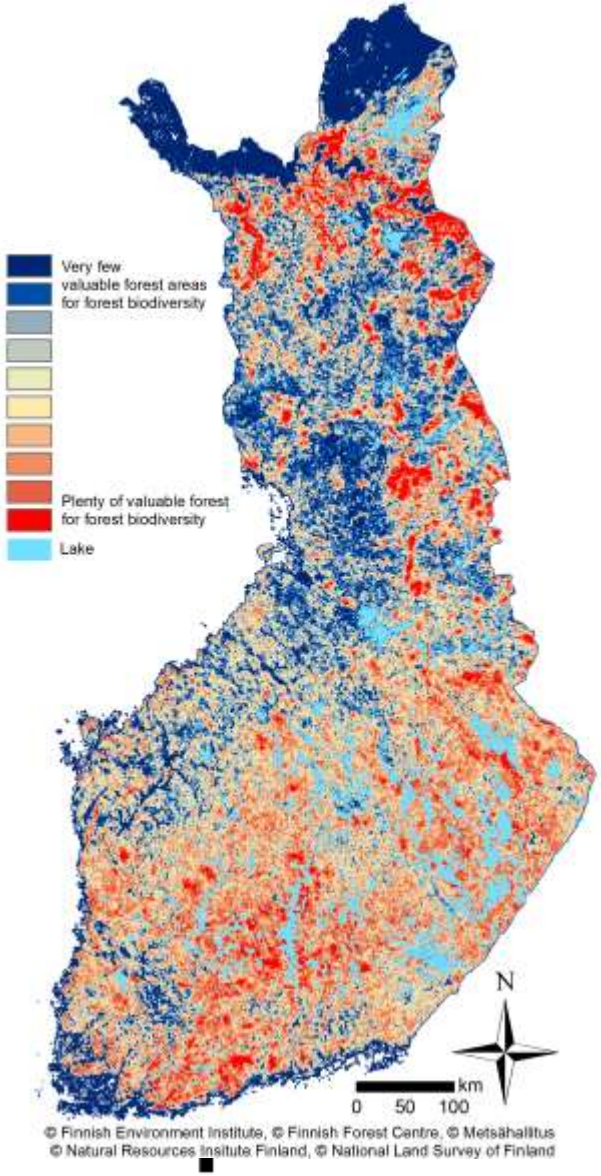
- Conservation prioritization analyses with Zonation-software
- Where are forest areas important for forest biodiveristy, carbon sequestration and storages, or both?
- IBC-Carbon = Integrated Biodiversity Conservation and Carbon Sequestration in the Changing Environment


PRINCIPAL DATA:
DEAD WOOD POTENTIAL
Tree stand data on every stratum
• Tree species
• Diameter
• Volume
• Fertility class
Modelling dead wood potential (DWP) for each site
• MOTTI-program
• 168 DWP functions
• Tree stand data converted to DWP with DWP-functions
UPDATING AND SUPPLEMENTING DATA
PENALTY based on forestry operations with negative impact on biodiversity
1. Forest declarations & satellite IM
2. Mineral and peatland drainage data
Forest area connectivity
IUCN Red Listed forest species
Connectivity
Habitats of special importance in terms of biodiversity (Forest Act 10 §)
Permanent conservation areas
Connectivity
PRINCIPAL DATA:
CARBON DATASETS
PREBAS-modelled
1. Carbon storage below and above ground
2. Carbon sequestration below and above ground
+
WEIGHTS between forest BD and C?
Together
Zonation
Spatial conservation prioritization
Version 1
Version 2
Version 3
Version 4
Version 5
Version 6
Version 7
Version 8

Thank you!

Ninni Mikkonen
Anu Akujärvi
Risto Heikkinen
Heini Kujala
Francesco Minunno
Mikko Peltoniemi
Sakari Tuominen
Annikki Mäkelä
Atte Moilanen

METSO Forest Biodiversity



IBC-CARBON

strategicRESEARCH

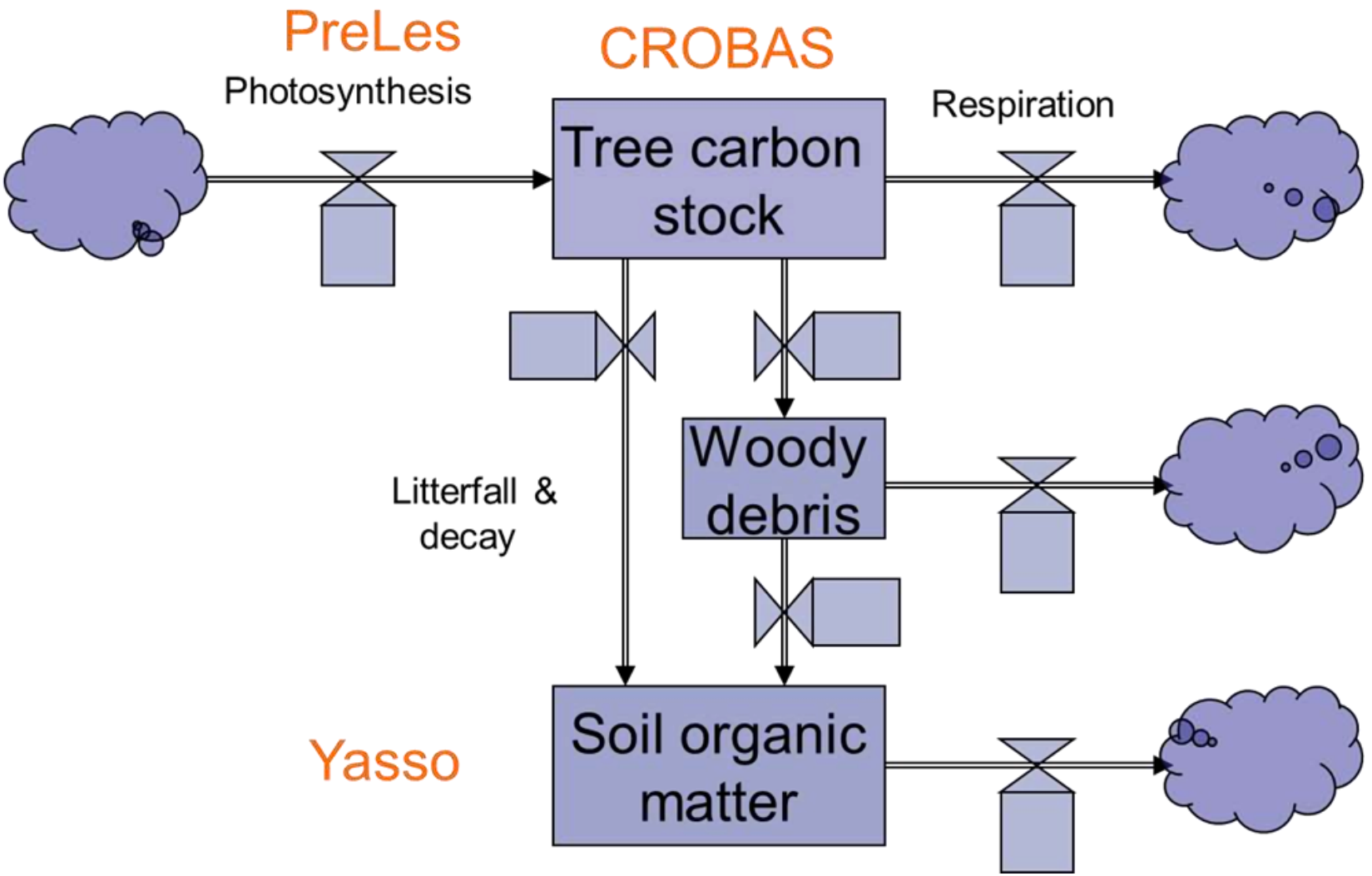
Ympäristöministeriö
Miljöministeriet
Ministry of the Environment

SYKE

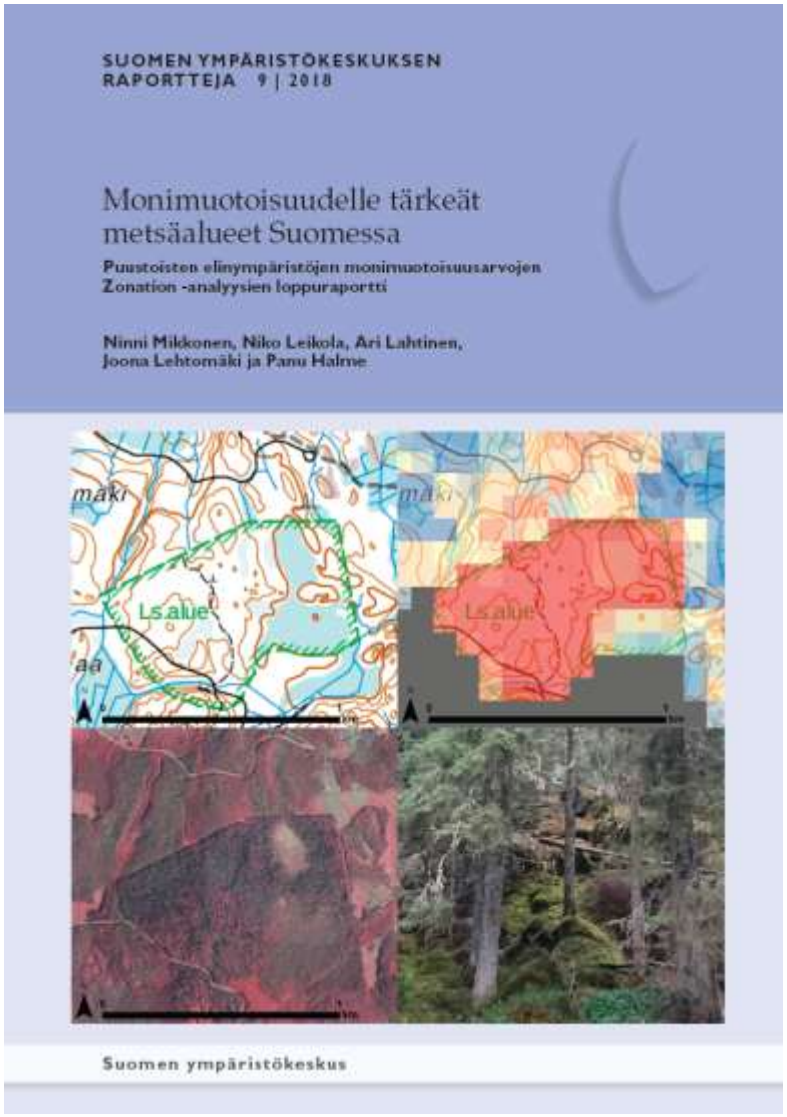
HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

Luke

METSO


PreLes
Photosynthesis
CROBAS
Respiration
Tree carbon stock
Litterfall & decay
Woody debris
Yasso
Soil organic matter

Report of forests in Finnish



- http://hdl.handle.net/10138/234359