



# SOIL HEALTH FROM A FOREST LAND-USE PERSPECTIVE

Thematic event 25th Jan, 2024

10:00-12:00

Online



Funded by  
the European Union

# AGENDA: Soil health from a forest land-use perspective



## Introduction

- 10:00-10:20 Welcome and introduction to the theme and Nati00ns  
[Hjalmar Laudon & Johan Stendahl](#), Swedish University of Agricultural Sciences
- 10:20-10:40 Keynote speech: Soil health and forest climate change mitigation potential  
[Raisa Mäkipää](#), Natural Resources Insitute Finland

## Panel Discussion: Soil health from a forest land-use perspective across Europe

- 10:40-11:10 [Liisa Pietola](#), [The Finnish Innovation Fund Sitra](#)  
[José Ramón Olarieta](#), [Universidad de Lleida Spain](#)  
[Raisa Mäkipää](#), [Natural Resources Insitute Finland](#)

## Networking through break-out rooms

- 11:10-11:30 Break-out rooms
- 11:30-11:40 Wrap up
- 11:40- **Match-making session (Elevator pitch) *OPTIONAL***

## Meet the Panel



Liisa Pietola,  
Senior Lead, Sustainable  
Solutions, The Finnish  
Innovation Fund Sitra



José Ramón Olarieta  
Lecturer of Forest Soils and  
Land Evaluation at  
University of Lleida



Raisa Mäkipää  
Research Professor  
Natural Resources  
Institute Finland, LUKE



Hjalmar Laudon  
Professor  
SLU



Johan Stendal  
Associate Professor  
SLU



Tejshree Tiwari  
Coordinator  
SLU



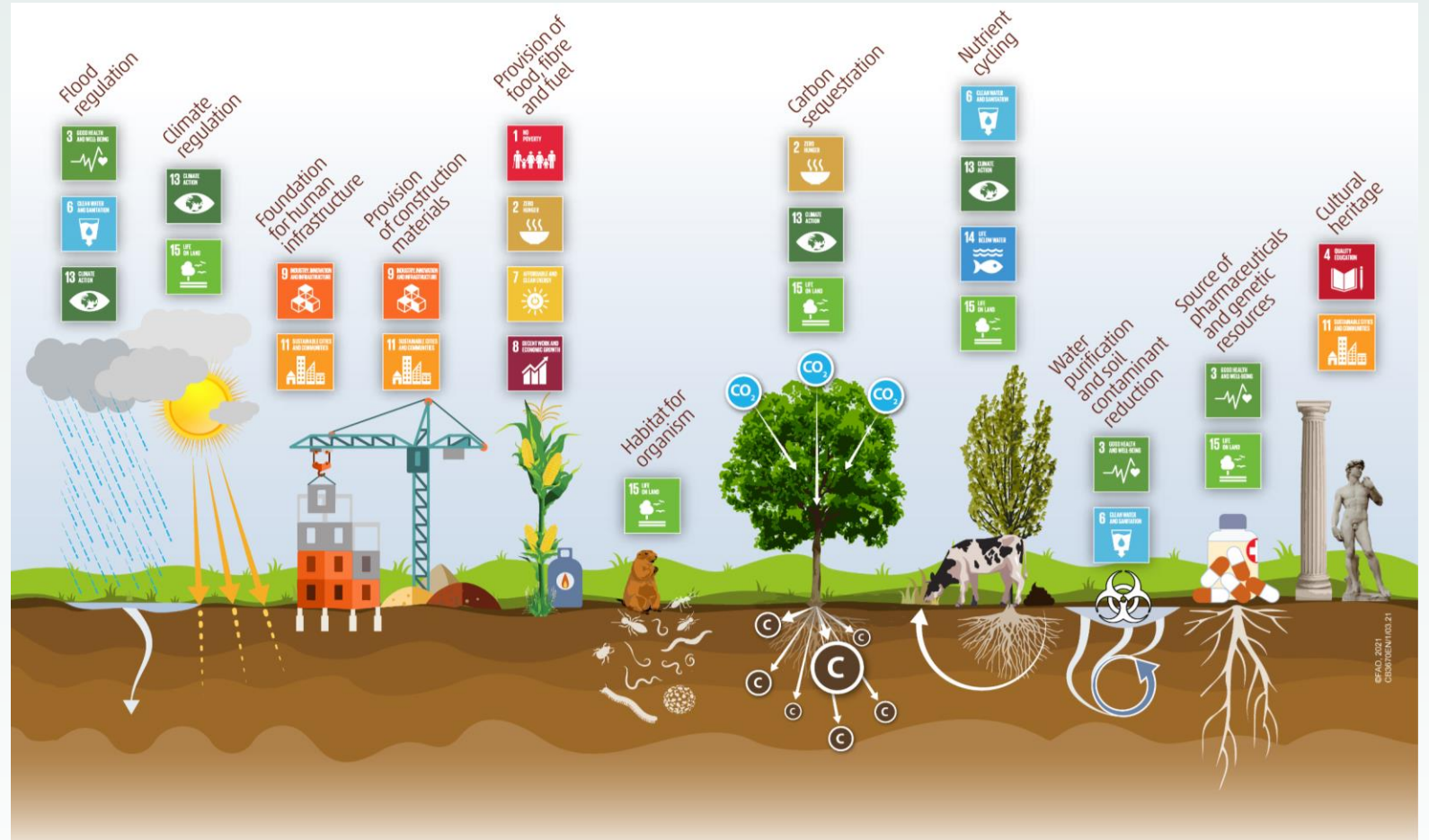
Elin Wärm  
Communicator  
SLU

41 countries



# Healthy soils

- are essential for all life-sustaining processes on Earth
- have the continued capacity to support ecosystem services.



Healthy soils, a prerequisite to achieve the SDGs. Source: fao.org

1. Reduce desertification

2. Conserve and increase soil organic carbon stocks

3. Stop soil sealing and increase re-use of urban soils

4. Reduce soil pollution and enhance restoration

5. Prevent erosion

6. Improve soil structure to enhance soil biodiversity

7. Reduce the EU global footprint on soils

8. Improve soil literacy in society



## The NATI00NS project 2023-2024

- Supports the Soil Mission by promoting the formation of (100) Living Labs
- National events to engage national applicants for Living Labs
- Thematic events to promote contacts between EU countries within focus areas (this event!)

- Mission Open Calls for Living Labs

- 2023
  - Co-creating solutions for soil health in Living Labs
  - Carbon farming in Living Labs
- 2024
  - Expected call later this year

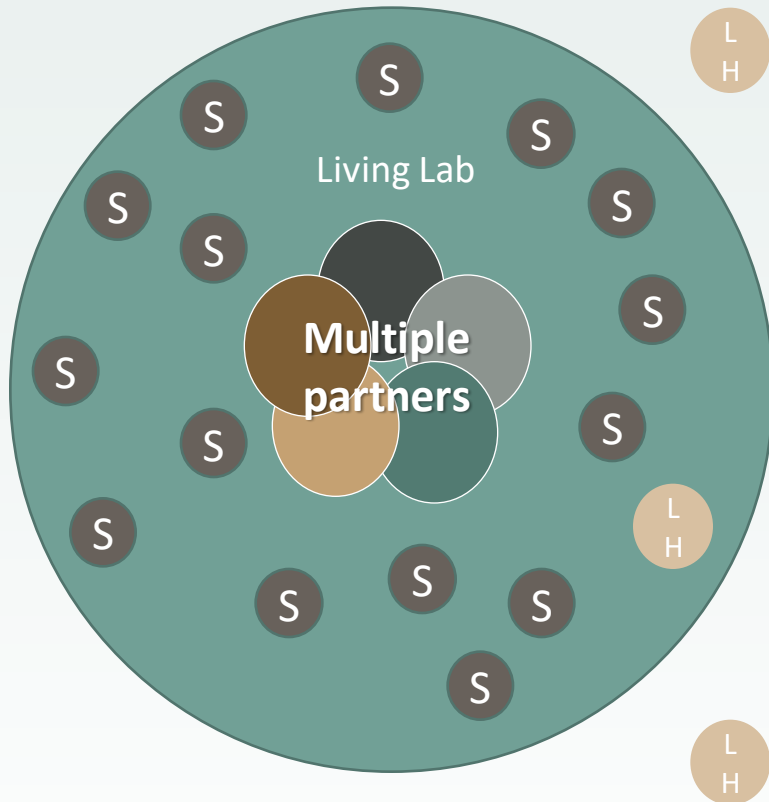
14 partners





**Living Labs (LLs)** are open innovation ecosystems in **real-life environments** using **iterative feedback processes** throughout a **lifecycle approach** of an innovation to create **sustainable impact**. They focus on **co-creation, rapid prototyping & testing** and **scaling-up** innovations & businesses, providing (different types of) **joint-value** to the involved stakeholders.

**Lighthouses** are defined as **places for demonstration** of solutions, training and communication that are exemplary in their performance in terms of soil health improvement. They are local sites (one farm, one forest exploitation, one industrial site, one urban city green area, etc.) that **can be included in a living lab** area or be situated outside a living lab area.



	Scale	Activities	Performance in soil health improvement
<b>Living Lab</b>	<b>Regional/ subregional landscape</b>	Coordinate experimentations & partners	In progress at landscape scale
<b>Living Lab experimentation site</b>	<b>Local</b> (one farm/forest, one urban site, etc)	Co-create knowledge and innovations	In progress on the site
<b>Lighthouse</b>	<b>Local</b> (one farm/forest, one urban site)	Experiment and/or demonstrate	<b>Demonstrated high performance</b>

# Map of Living Labs and Lighthouses on Forest | Prepoil



All

Living Lab

Lighthouse

- Agriculture
- Forest
- Urban
- Other
- Infrastructure
- Protected

All

Prepoil

SMS



# Soil health in a forestry perspective is a little different



Rotation period – **every year**  
Heavy machinery – **several times per year**  
Fertilizers – **lots**  
Pesticides – **commonly**



Rotation period – **50-100 years**  
Heavy machinery – **once every second decade**  
Fertilizers – **Very seldom**  
Pesticides – **No**

## Potential soil health issues in forestry

- Soil Scarification/erosion
- Soil biodiversity losses
- Organic matter content/carbon sequestration
- Drought/water shortage and insect infestation
- Peatland drainage and rewetting
- Nutrient Leakage
- Forest fires

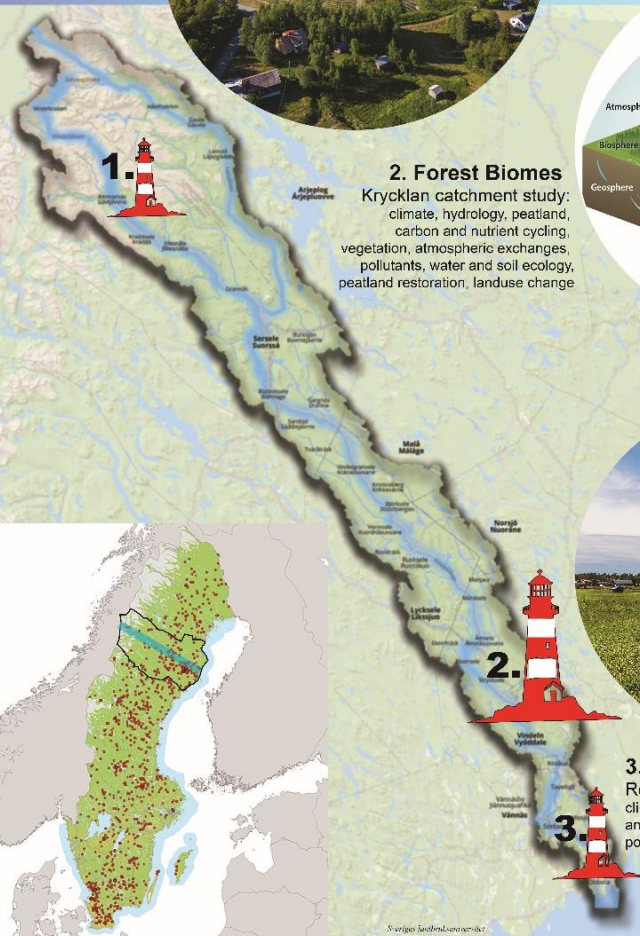
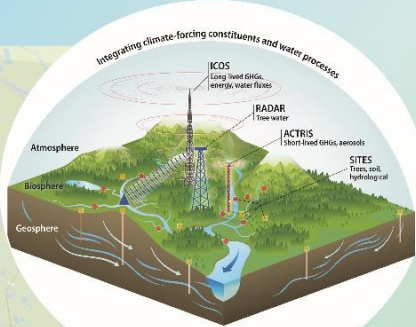
# Boreal Living Lab and Lighthouses

Hjalmar Laudon, Tejshree Tiwari  
2023



## 1. Mountain Biomes

Vindelfjällen Research center: climate, biodiversity, population dynamics, vegetation, hydrology



## 2. Forest Biomes

Krycklan catchment study: climate, hydrology, peatland, carbon and nutrient cycling, vegetation, atmospheric exchanges, pollutants, water and soil ecology, peatland restoration, landuse change

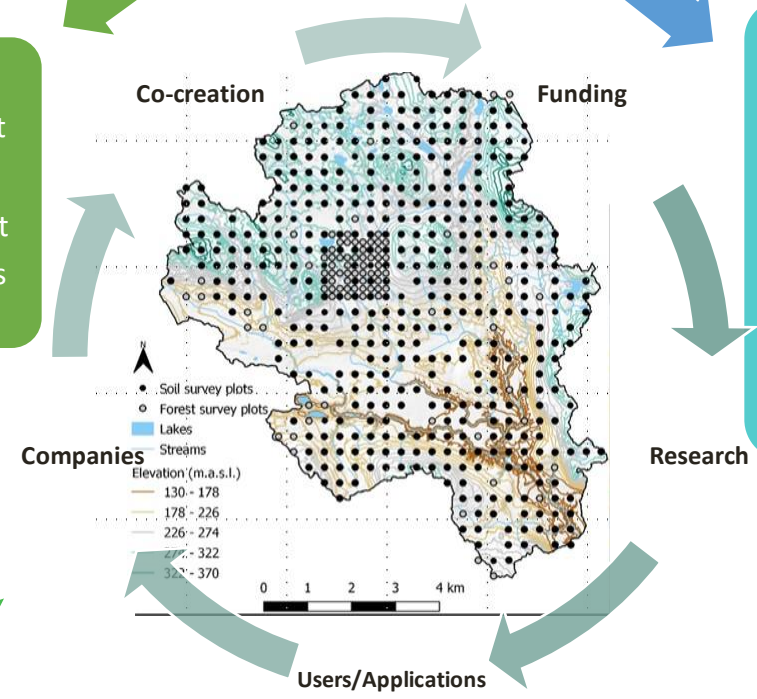


## 3. Agriculture and Urban studies:

Röbäcksdalen Field Research Station: climate, soil science, agroecology, ecology, food science, animal science, geochemistry, phenology, hydrology, pollutant

**Purpose**  
Better forest management  
Improved productivity  
Less environmental impact  
Improved financial returns  
Better trained staff

0.2 mEuros/yr in forest land set aside + direct funding  
Forest soil research



**Key soil health questions**  
Carbon balance  
Soil biodiversity  
Water retention  
Wetland restoration  
Driving damages (rutting)

Local and regional politicians EPA, national government and forest agency

Forest industry, private landowners, SME, NGO, Nature conservation organisations, Indigenous Sami people



Financial contribution

EPA planning

Forest Companies

Nature conservationist

Forest Agencies

Politicians / funding agencies

Citizens

Sami

Local Kommun

SME



# Forest Catchment

The Krycklan catchment - **Lighthouse** for soil moisture research

## Maps

- Improve forest planning for regrowth
- Reduce impact on vulnerable areas
- Identification of biogeochemical hotspots
- Identification of biomes for biodiversity
- Information for assessing soil productivity

## Scientific Data

- Novel techniques for assessing soils
- Improve understanding of boreal forest
- Publications in high ranked journal
- Baseline for climate assessments effects on soils
- Masters and Phd level courses

## Carbon stock assessment

- Quantify soil carbon in the landscape
- Improved modeling capacities
- Improved climate resilience assessment



Improve productivity of tree growth

Improve conservation of sensitive areas

Reduce impacts on vulnerable areas during forest harvesting

Habitation restoration for biotopes and biomes

Refine questions for improved techniques

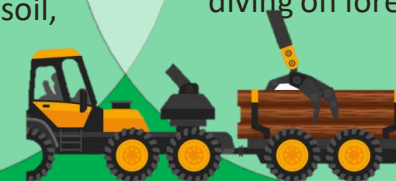
Finer scale modeling

Upscaling

Interdisciplinary research (climate, soil, tree response)

Improved policies of forest management &

Better guidelines for diving on forest soils



- What sector do you work in?
  - Academia
  - Forest Company
  - NGO
  - Government
  - Student
  - Other



- What forest soil health issue is most relevant for EU Soil mission?
- Are you working on a Living Lab or lighthouse with soil health focus in forest land-use?
- Are you interested in preparing a consortium for the Mission soil call?

# Break-out rooms: Soil health from a forest land-use perspective



## Networking session

Please give us an idea on your perspective on below questions:

**First**, decide on a note taker in each room

**Second**, once done, email the document to [elin.warm@slu.se](mailto:elin.warm@slu.se).

**Third**, be ready afterwards with two points for the discussion.

### Questions

1. What are the main soil health challenges in forest land use across Europe?
2. How can living lab help in improving the soil health challenge?
3. What are the main barriers preventing you from attempting the establishment of a Living Lab?

### Optional

1. What are useful indicators of soil health from a forest land-use perspective?
2. How are these indicators useful to stakeholders? Give examples.
3. What technologies are useful in monitoring these indicators for soil erosion, soil carbon and biodiversity loss?

# Match-Making Session

## Elevator Pitch

1. What's your name?
2. What organisation do you work with?
3. What country are you from?
4. What area of soil health from a forest land-use perspective are you interested in?

*Please add your contact information to the chat if you would like find collaborators.*

*Check out the match-making website : <https://nati00ns-soil-living-lab-matching.b2match.io/>*

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# Join the Community

