# Catch the Carbon programme supporting science based policy making

Heikki Granholm, Head of Unit, Ministry of Agriculture and Forestry of Finland Contact: heikki.granholm@gov.fi Catch the the carbon CLIMATE SOLUTIONS IN THE LAND USE SECTOR



# Catch the Carbon programme

- Finland aims to be climate neutral already by 2035
- To support this we have laid down a target in our national Climate Plan for Land Use Sector an additional annual net impact of over 3 million tons carbon dioxide equivalent by 2035 in the land use sector.
  - The aim is to reduce greenhouse gas emissions and enhance carbon sinks and reservoirs.
- All of this needs to be done in a sustainable way taking into account environmental, social, and economical sustainability, and biodiversity.
- The Government's **Catch the Carbon programme** contains a good number of climate measures concerning agriculture, forestry and land use changes.





# Aligned with the EU level policies

- Climate measures for the land use sector are implemented across the different sectors building interlinkage with several other EU initiatives
  - Fit for 55 package
  - LULUCF Regulation
  - Common agricultural policy
  - Climate adaptation strategy
  - EU Soil Strategy
  - EU Forest strategy
  - Carbon farming
  - Etc.



# What do we do? Who is involved?



- Climate measures are implemented across the different sectors building interlinkages
- To build better and strong implementation of climate-smart forestry and agriculture practices, we have been putting emphasis on communication, interaction, knowledge and competence.
- We unite practitioners in a positive way and we also enhance co-operation between public and private actors: Farmers, forest owners, businesses, NGO's, cities and communities, citizens.
- Close stakeholder cooperation already during the project will ensure that the information will be effectively transmitted to serve as the basis for decision-making and to practical actions





## **Description of the impact pathway**

1. Applied research and modelling	2. Studies and development reviews	3. Methodology development	4. Evaluation of methods	5. Experiments and piloting	6. Indirect influencing of decision-making	7. Direct influence on decision-making
<b>Objective:</b> To apply basic research to a specific object/ subject for the production of new knowledge, using the methods of academic research. Produces fuel for further studies. <b>Characteristics:</b> Scientific publications and articles	Objective: To answer specific questions or aggregate information. A report, not a new scientific study. Characteristics: Study reports, preliminary studies, development reports. Studies based mainly on existing data.	Objective: To produce a concrete possible way to achieve emission reductions / carbon removal / adaptation. The development of a new method, e.g. on the basis of research data. Characteristics: Developing a new methodology that can be used to achieve Catch the Carbon goals.	Objective: To evaluate the methodology and the corresponding impacts and feasibility. Characteristics: Not developing a new methodology, but evaluating or comparing existing methods and/or their effectiveness.	Objective: Planning and testing the implementation (of the new methodology), possibly disseminating results and demonstrating information. Characteristics: Concrete pilots, experiments and demonstrations, e.g. on pilot farms where a new method is being tested.	Objective: To prepare for implementation: advisory services, training organisations, indirect communication. Characteristics: The aim is to indirectly influence, for example, the decision- making of land/forest owners through organisations and advisory services. Also education of service providers.	Objective: To communicate with land/forest owners and other decision- makers, or to influence central/city government decision- making, e.g. to inform the state preparation of support policies, or preparation of normative guidance Characteristics: Direct communication to reach the decision- maker.
Prerequisites for impact: Relevant topic, utilising the results on the impact path.	Relevant topic, utilising the results on the impact path.	The method actually has enough desired effects, no (negative) side effects and is cost-effective.	Broad-based assessment of which the best methods are selected to proceed.	Appropriate testing, adequate demonstration, sufficiently low- threshold experiments (enough interested forward-takers).	Reaching the right parties, influencing those with sufficient ability to influence the implementing parties (especially land-/forest owners).	Reaching the implementers (especially land-/forest owners), influencing with the means that bring about change, creating change.

## Climate-smart agriculture, forestry and land use



- In agriculture, cultivation methods, techniques, products and services are promoted that contribute to carbon sequestration and storage and reduce emissions.
- Ensuring the growth potential and health of forests and promoting diverse forest cultivation and management practices.
- Focus on climate-smart management of peatland forests.
- Best practices for sustainable forest management in Finland.
- Reducing negative land use changes.
- Promoting the use of wood in long-lived wood products; research and development and the utilization of by-products.
- Enabling conditions, progressive policies, and new approaches.



#### **Long-term Effects of Ash Fertilization on Carbon Sinks** and Biodiversity of Peatland Forests

24.-25.4.2023 Dr. Päivi Väänänen Natural Resources Institute Finland

Contact: paivi.vaananen@luke.fi







Ministry of Agriculture and Forestry of Finland



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#### Pristine peatlands



Drained peatland forests



Energy production

Agriculture

### Ash is an ideal fertilizer for drained peatland forests

- Rich in P and K, no nitrogen
- Sidestream from energy production
- Not for agriculture
- No negative short-term effects on water bodies
- Provides a profound and durable growth effect



#### Ash fertilization increases tree growth...



Estimation: By increasing annual ash fertilization area from 14 000 ha to 77 000 ha -> 1.2 Mt CO<sup>2</sup> ekv/annually

## ...and changes ecosystem function



## **Questions to answer**

- What is the net effect of ash fertilization on ecosystem greenhouse gas balance?
- Which sites are ideal for ash fertilization?
- How does ash fertilization affect biodiversity?
- Are there negative effects on the water quality of lakes and rivers long term?

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-> Suohitu-project

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# 1. Ash is a cost effective and powerful fertilizer for drained peatland forests

# 2. Peatland management is rocket science



#### Helena Soinne

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- Mineral soils are considered to have a high potential for CO<sub>2</sub> removal from the atmosphere
- Soil organic carbon is essential for functioning of soil
  - Higher yields and lower risk for erosion
- Soils are different! How much organic carbon fits into mineral soils?



 $CO_2$ 

- Soil organic carbon is protected by mineral particles in soil
   capacity is limited and depends on soil type
- Easier to increase carbon content in low organic carbon soils - these soils also benefit the most
- Soil organic carbon content is high in the Northern Europe
  climate and age of the fields
- Can we sequester carbon into mineral agricultural soils in Finland?
  - Remaining C sequestration capacity = total capacity current carbon stocks





Share of soil samples (%) with carbon sequestration capacity in each municipality of Finland

- In Norther Finland, carbon content is high in relation to the capacity of soil to protect the carbon
  - Risk for carbon losses in changing climate
- In Southwest Finland, potential to sequester carbon



Helena Soinne

Share of soil samples (%) with carbon sequestration capacity in each municipality of Finland

- In Norther Finland, carbon content is high in relation to the capacity of soil to protect the carbon
  - Risk for carbon losses in changing climate
- In Southwest Finland, potential to sequester carbon
- In Southwest Finland, risk for soil erosion is high
  - Increasing soil carbon content would also contribute to water protection

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Räsänen, T.A., Tähtikarhu, M., Uusi-Kämppä, J., Piirainen, S. and Turtola, E., 2023. Evaluation of RUSLE and spatial assessment of agricultural soil erosion in Finland. *Geoderma Regional*, p.e00610.

#### Summary

- Organic carbon is essential for functioning of soil
- Fields with carbon sequestration potential are in Southwest Finland
  - Increasing carbon is beneficial for soil productivity and erosion control
- In Finland, mineral soils have relatively high organic carbon content risk for carbon losses!
  - Important to aim at maintaining the current carbon content
  - Low potential for acting as carbon sinks

Part of the field area can potentially be carbon sink – In part of the mineral soils, even maintaining the current level of carbon is challenging in warming climate



#### Thank you!

HiiletIn:, Soil processes as a basis for targeting carbon sequestration measures in mineral agricultural soils











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Creating the guide to good practices for voluntary carbon markets



Collated good practices for producing carbon credits and for using credits to make climate claims, as well as summarizing these for consumers.



First time the international good practices were compiled and published in Finnish, and common terms defined e.g. for the word carbon credit.



#### Creating trust in climate claims and the quality of carbon credits



Carbon credit minimum criteria from 15 international and 8 national guidelines.

Distinguishing between **offsetting and contribution claims**, and more tightly defining carbon neutrality.

The work continues, as international guidelines and regulation are moving fast.

# LEADING THE WAY IN THE GREEN TRANSITION





#### DEVELOPMENT PATHS OF THE VOLUNTARY CARBON MARKET - KOLKOM

Jani Laturi Senior Forest Economist Pellervo Economic Research Contact: jani.laturi@ptt.fi





#### Pellervo Economic Research

- ✓ 25 economists
- $\checkmark$   $\frac{3}{4}$  Professional on Climate change, bioeconomy, voluntary carbon market...



#### **Reliable economic research is** vital for a renewing Finland

Pellervo economic research PTT is a research institute that produces objective research about the economy for political decision-makers, companies and organizations. Our main research topics are national economy and housing, agricultural and food economy, forestry and environmental economics.



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PTT produces voluntary carbon market statistics in Finland

#### Ongoing projects:

- 4 Projects related to voluntary carbon markets (also technology-based solutions)
- II Projects related to Climate change mitigation on LULUCF sector





#### DEVELOPMENT PATHS OF THE VOLUNTARY CARBON MARKET - KOLKOM

- Duration: 3/2022-12/2023
- In Funding 402 000€ (Catch the carbon)
- Objective:
  - 1) Improves society's view of the effects of carbon compensation
  - 2) Promotes the knowledge of landowners, advisors, carbon market companies and state administrations about voluntary carbon markets
- ✤ How:
  - Creating development paths
  - □ Analyses of the effects of development paths
  - □ Recommendations for the use of voluntary carbon

markets as part of climate policy





#### **FOOD VALUE CHAIN:**

- ✤ Agriculture is GHG emission source in Finland
- Main food industry companies has net zero goals
- Food sector is highly vertically integrated in Finland
  mission reductions to own climate goals
- Difficult to produce high-quality carbon credits
  - Permanent
  - □ Additional (subsidies)

✤ Joint production for the voluntary carbon market unlikely





#### FOREST VALUE CHAIN:

- Forests are carbon sink in Finland
- Forest product are carbon storage
- Forest industry invest in emissions reductions
- Difficult to produce high-quality carbon credits

**D** Permanent

- □ Additional (profitability)
- □ Suitable implementation time
- □ Forest owners see earning opportunities <u>on joint</u> <u>production</u>
- □ Forest sector produces carbon credit to voluntary

market :		Produced (tCO <sub>2</sub> ekv.)	Sold (tCO <sub>2</sub> ekv.)	Price (€/tCO <sub>2</sub> ekv.)	
	2022 H2	2 108	47 516	11,76	
	2022 H1	41 312	25 400	10,64	







## Find out more

Read the guide: good practices for voluntary carbon markets

Join online: 1st Northern European "4 per 1000" regional meeting: More carbon in the soil for multiple benefits (6.–8.6.)

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CLIMATE SOLUTIONS IN THE LAND USE SECTOR

**#CatchTheCarbon** 

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