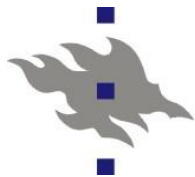


# Forest owners' views on storing carbon in their forests



Heimo Karppinen, Maria Hänninen &  
Lauri Valsta



Forest ownership changes in Europe: trends,  
issues and needs for action

FINAL CONFERENCE of the COST Action FP1201 FACESMAP

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University of Natural Resources and Life Sciences, Vienna



## Outline of the presentation

- ü about Finnish forestry
- ü increasing carbon storages in forests
- ü factors affecting participation in carbon sequestration programs:  
literature
- ü material and methods
- ü knowledge on climate change
- ü forest owner's role
- ü forest owner typology
- ü conclusions

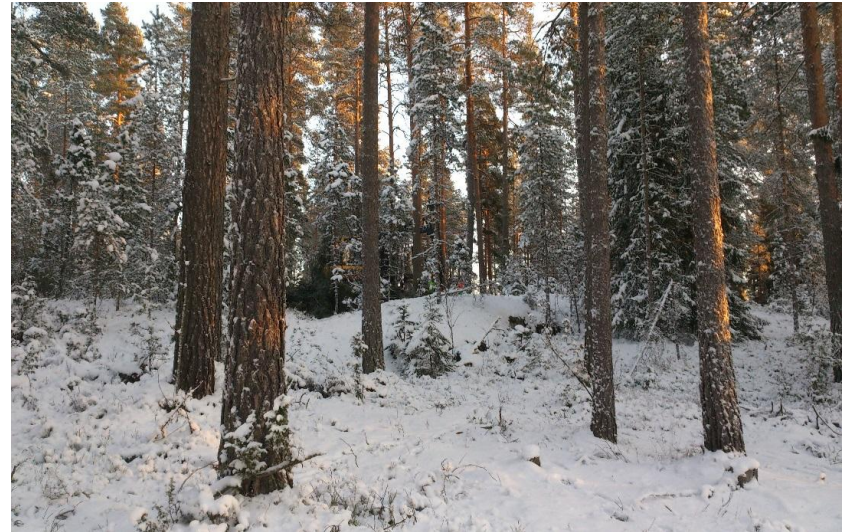
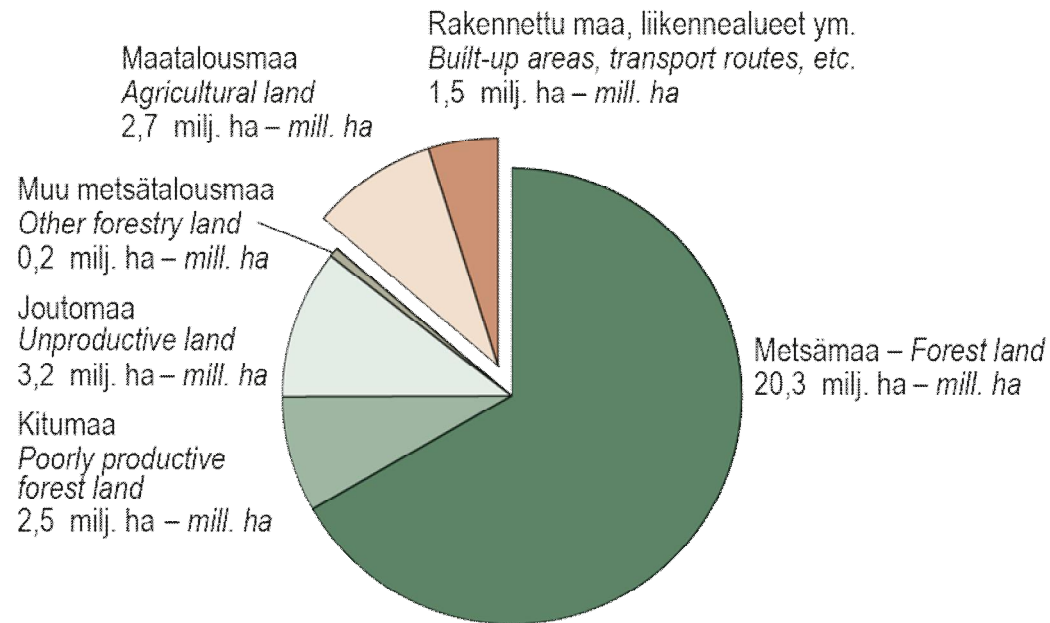


Photo: Henna Hurttala

# Forestry in Finland



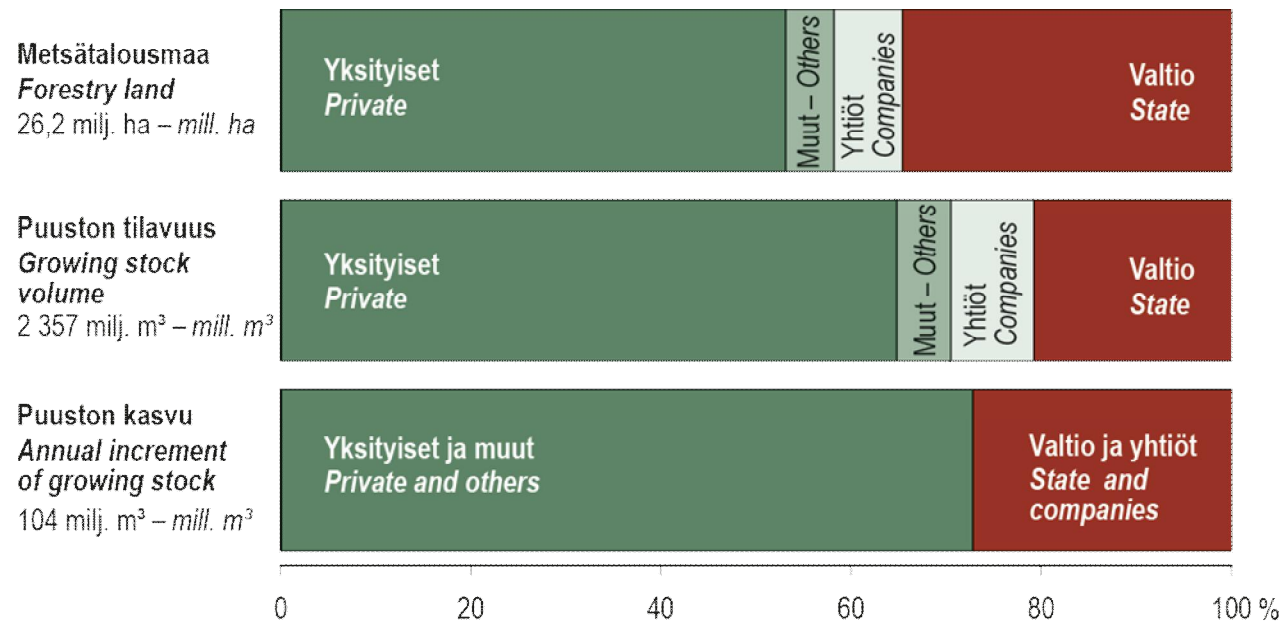
Metsätalousmaa (26,2 milj. ha) = Metsämaa + kitumaa + joutomaa + muu metsätalousmaa  
*Forestry land (26.2 mill. ha) = Forest land + poorly productive forest land + unproductive land + other forestry land*

Lähde: Metsäntutkimuslaitos, valtakunnan metsien inventointi – *Source: Finnish Forest Research Institute*

**Maankäyttö Suomessa**  
*Land use in Finland*

Metsätilastollinen vuosikirja 2014

# Forestry in Finland

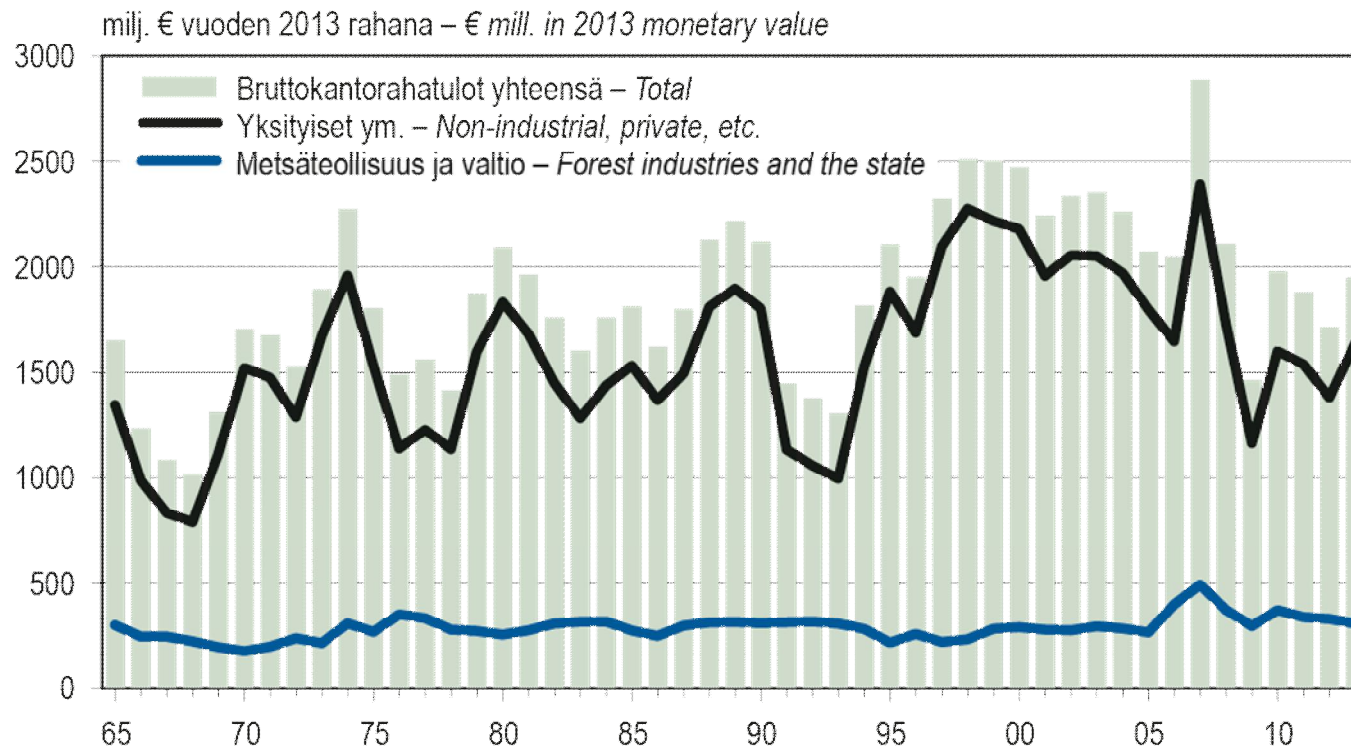


Lähde: Metsäntutkimuslaitos, valtakunnan metsien inventointi – Source: Finnish Forest Research Institute

## Omistajaryhmien osuudet metsätalousmaasta, puuston tilavuudesta ja kasvusta

Forestry land, growing stock volume and annual increment of growing stock by forest ownership category

Metsätilastollinen vuosikirja 2014



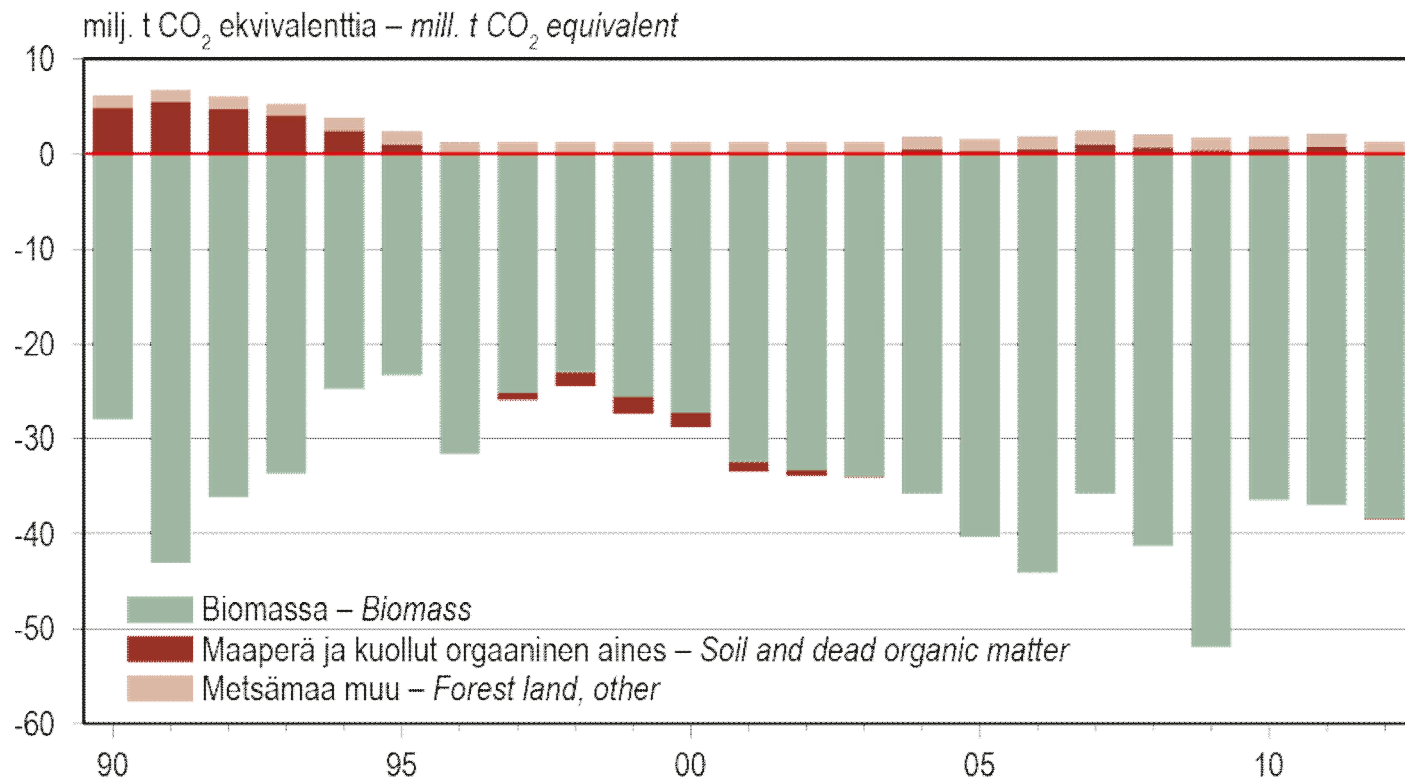
Rahanarvot on muunnettu tukkuhintaindeksillä (1949=100). – Monetary values are deflated using wholesale price index (1949=100).

Lähteet: SVT: Metsäntutkimuslaitos; SVT: Tilastokeskus – Sources: OSF: Finnish Forest Research Institute; OSF: Statistics Finland

### Reaaliset bruttokantorahatulat 1965–2013

Real gross stumpage earnings, 1965–2013

Metsätilastollinen vuosikirja 2014



Positiivinen luku tarkoittaa päästöä ja negatiivinen poistumaa (hiilidioksidinielu).

Metsämaa muu sisältää metsien typpilannoituksesta, ojituksen ei-CO<sub>2</sub>-päästöistä ja biomassan poltosta metsämaalla aiheutuneet päästöt.

*Positive values indicate carbon dioxide emissions, negative values indicate removals.*

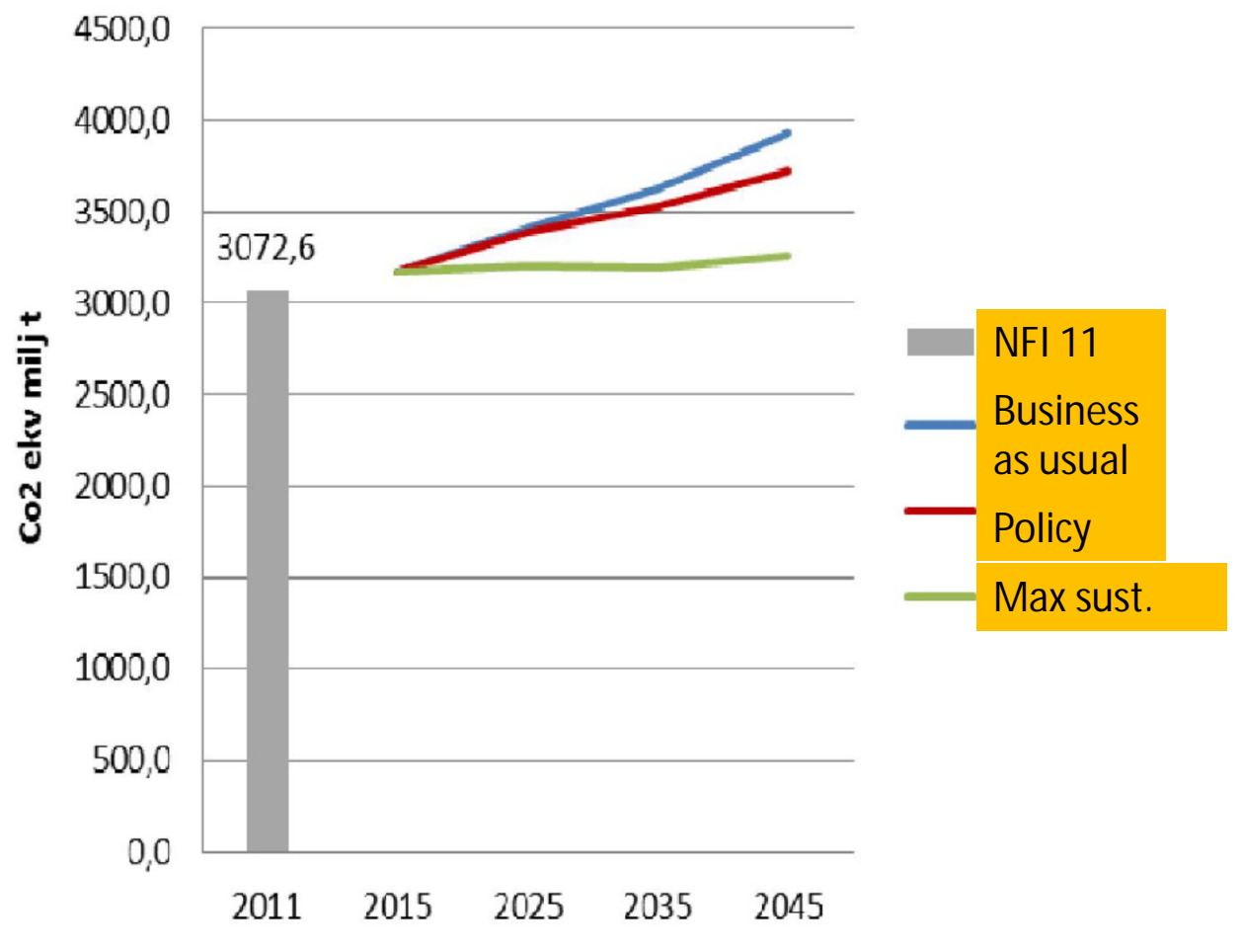
*'Forest land, other' includes emissions caused by nitrogen fertilization of forests, drainage (non-CO<sub>2</sub> emissions) and biomass burning on forest land.*

Lähteet: SVT: Tilastokeskus; Metsäntutkimuslaitos – *Sources: OSF: Statistics Finland; Finnish Forest Research Institute*

## Kasvihuonekaasujen päästöt ja poistumat Suomen metsissä 1990–2012

*Greenhouse gas emissions and removals from forest land carbon pools in Finland, 1990–2012*

## CO<sub>2</sub> in living trees



## Increasing carbon storages in forests

- ü refraining from timber harvesting completely
- ü postponing thinnings or final harvests
- ü enhancing forest growth by fertilizing forest soil
- ü by selection of tree species
- ü varying replanting and growing density
- ü using selective cutting methods



Photo: Lauri Valsta



# Four types of factors affecting participation in carbon sequestration programs

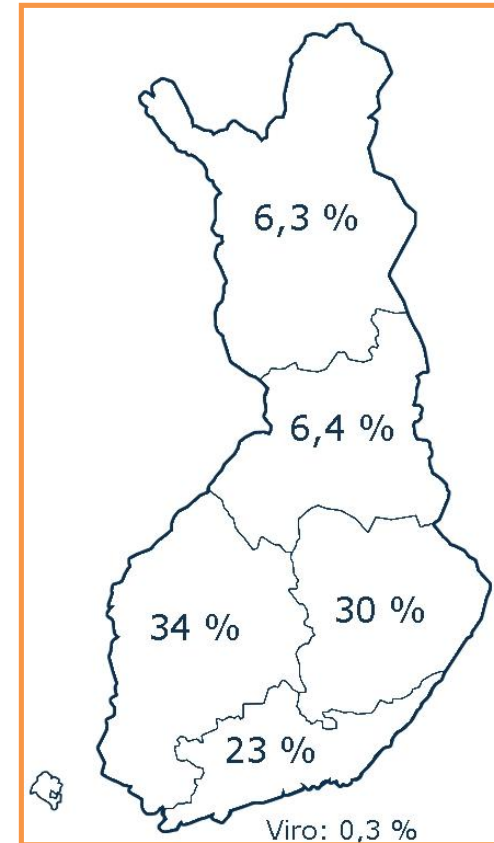
- ü general economic factors such as the underdevelopment of carbon markets and low price of carbon
- ü owner and holding characteristics
- ü objectives of forest ownership
- ü factors related to policy instruments

Ahtikoski et al. 2009, Fletcher et al. 2009, Markowski-Lindsay et al. 2011, Wade and Mosley 2011, Dickinson et al. 2012, Miller et al. 2012, Thompson and Hansen 2012, Urquhart et al. 2012, Rämö et al. 2013, Tian et al. 2015

The study aims to describe Finnish family forest owners' perceptions on climate change and their opinions on increasing carbon storages in their forests by new kinds of management activities and policy instruments.

# Material and methods 1

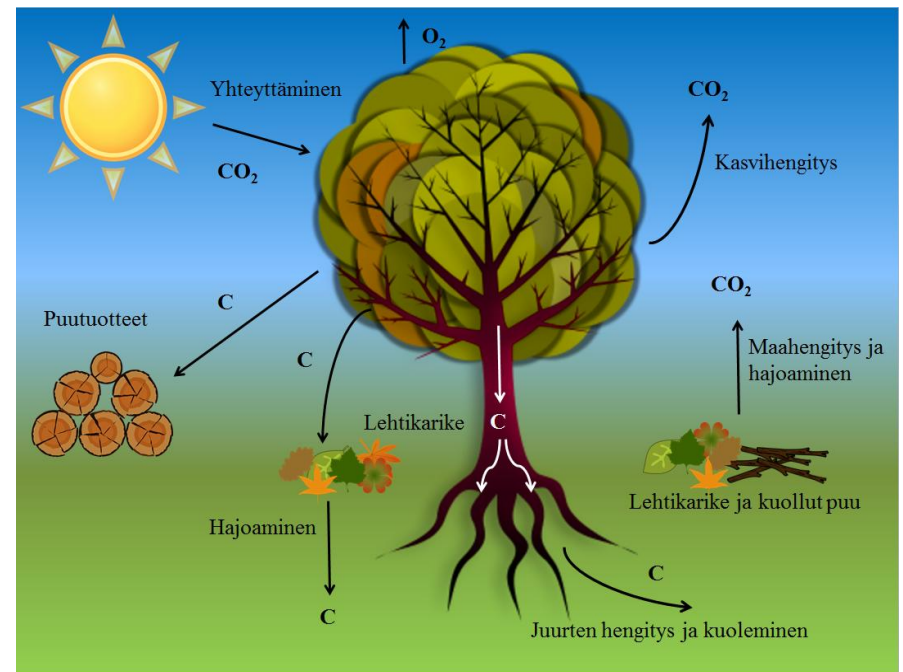
- ü the data were collected by thematic face-to-face interviews among Helsinki Metropolitan area forest owners (n=15) in 2015
- ü these city-dwellers were expected to represent new kinds of forest owners with more education, the mean age rather high though (72% of members > 60 years old)
- ü their forests were spread throughout the country (see fig.) and represented different size classes and various landowner objectives (variation in the sample)



Source: Helsinki Metropolitan Area Forest Owners' Association member survey

## Material and methods 2

- the gender representativeness was considered: six female owners and nine male owners
- the age bracket was from 40 to 83 years
- the level of education was rather high
- the holding size varied between 11 and 250 hectares
- the tape-recorded data were transcribed word for word, and themes and typologies were created based on these talks



## Knowledge on climate change

ü forest owners had general knowledge on global climate change taking place in a very long run but did not often connect these changes to their own forests

*"I have never thought about it [climate change] here in Finland, but all they show in tv, you know, about the cuttings in rain forests (Female, 66 years)*

*"I am rather old, so long-term worries, they are the worries of the next generation" (Male, 83 years)*

## Forest owner's role

ü forest owners also felt that they had only minor possibilities to affect climate change individually

***“My role through my forest ownership is so small, what I do in my forest does not save the earth or [affect] climate change, the greater change should happen when forest owners’ willingness would change” (Male, 40 years)***

ü fertilization was accepted generally as a means to increase carbon storage in the forests

## Four views on storing carbon in the forests: a forest owner typology

Pioneers utilize their land versatilely and have already adopted practices to mitigate climate change (selection of tree species or maximizing biomass).

Potentials *emphasizing recreational objectives are concerned about climate change such as more frequent storms. They are willing to take actions to mitigate global warming but this interest has not yet realized into forestry practices.*

Deniers are investors who are mainly interested in timber incomes but could be interested in increasing carbon storages when sufficiently subsidized.

*Indifferent owners* have no specific ownership objectives and their forests have remained unmanaged. Subsidies would be needed in order to encourage them to manage their forests.

## Forest owners' views on storing carbon: owner typology

	Pioneer	Potential	Denier	Indifferent
Owner and holding characteristics	High level of education		Large forest acreage	
Forest ownership: meaning and objectives	Forest functions as a bank but has also recreational function  Multiple objectives  Inherent value of forest ownership	Forest important for recreation but also because of economic security for the future  Recreation and leisure  Inherent value of forest ownership	Forest provides with additional income and is an object of investment  Timber production and sales income	Forest just "exists" and the level of knowledge on own forest and its potential almost non-existent  No specified objectives
Nature conservation	Safeguarding nature conservation combined with other objectives	Positive attitude	No voluntary actions for maintaining nature conservation	No opinion
Views on climate change	Facts on climate change based on e.g. study results	Concerned about climate change and associates it with changed weather conditions	Views on climate change based on media but does not believe that climate change is taking place	Believes that climate change is a fact and is worried about it to some extent but does not see it as a global phenomenon

Climate change and own forest	Climate change affects forest ownership and carbon sequestration taken into account in forest management <b>Pioneer</b>	Is aware of the role of forests in mitigating climate change but this is not connected to own forest ownership <b>Potential</b>	Does not believe that climate change affects own forest ownership <b>Denier</b>	Does not see any connection between climate change and own forest ownership <b>Indifferent</b>
Attitude towards potential programs on carbon storing	Very positive  Able to critically assess pros and cons of different alternative means	Wants to follow how the program functions and is interested in the preconditions of participating  Interested in various means and wants to combine carbon sequestration into Best Practice Guidelines for Sustainable Forest Management	Negative attitude due to conflict with other objectives of forest ownership  Fertilization the means to increase carbon storage in own forest	No distinct opinion on participating into a program and no real understanding of its preconditions  Unable to assess the optimal alternative way of increasing carbon storage in own forest
Compensation	Compensation additional benefit for participating in the programs but pure guidance motivates to action	Compensation is important to some extent, but the most important aspect is to allow recreational use	Compensation the most important criterion if considered participating	Compensation the most important criterion although own forest has not created income in years



## Conclusions

- ü forest owners appear to have positive attitudes towards storing carbon in their forests
- ü economic factors are important for many owners when they consider their participation in potential carbon sequestration programs
- ü for many owners the pecuniary compensation is the primary motivation participate in storing carbon
- ü the absence of value-driven willingness to mitigate climate change makes this instrument vulnerable for changes in the amount of compensation or other mechanisms
- ü informational guidance on the role of forests and tailored forest management for reducing carbon emissions along with flexible terms of the agreement should be key elements in the cost-share programs
- ü the most challenging forest owner type are naturally *Indifferent owners*



Photo: Erkki Oksanen

## Literature

- Ahtikoski, A., Melkas, E., Horne, P., Kokko, K. 2009. Policy Instruments in Integrating Biodiversity Conservation and Carbon as a Part of Forest Management. University of Helsinki, Department of Forest Economics. Reports 56. 14 p
- Dickinson, B.J., Stevens, T.H., Markowski-Lindsay, M., Kittredge, D.B. 2012. Estimated participation in U.S. carbon sequestration programs: A study of NIPF landowners in Massachusetts. *Journal of Forest Economics* ,18, 36–46.
- Fletcher, L.S., Kittredge, D., Stevens, T. 2009. Forest Landowners' Willingness to Sell Carbon Credits: A Pilot Study. *Northern Journal of Applied Forestry*, 26(1), 35–37.
- Markowski-Lindsay, M., Stevens, T., Kittredge, D.B., Butler, B.J., Catanzaro, P., Dickinson, B.J. 2011. Barriers to Massachusetts forest landowner participation in carbon markets. *Ecological Economics*, 71, 180–190.
- Miller, K.A., Snyder, S.A., Kilgore, M.A. 2012. An assessment of forest landowner interest in selling forest carbon credits in the Lake States, USA. *Forest Policy and Economics*, 25, 113–122.
- Rämö, A-K., Horne, P., Primmer, E. 2013. Yksityismetsänomistajien näkemykset metsistä saatavista hyödyistä. Abstract: Finnish private forest owners' perceptions of forest ecosystem services. PTT raportteja/Reports ,241. 107 p.
- Thompson, D.W., Hansen E.N. 2012. Factors Affecting the Attitudes of Nonindustrial Private Forest Landowners Regarding Carbon Sequestration and Trading. *Journal of Forestry*, April/May, 129–137.
- Tian, N., Poudyal, N.C., Hodges, D.G., Young, T.N., Hoyt, K.P. 2015. Understanding the Factors Influencing Nonindustrial Private Forest Landowner Interest in Supplying Ecosystem Services in Cumberland Plateau, Tennessee. *Forests*, 6, 3985–4000.
- Urquhart, J., Courtney, P., Slee, B. 2012. Private woodland owners' perspectives on multifunctionality in English woodlands. *Journal of Rural Studies*, 28, 95–106.
- Wade, D., Moseley, C. 2011. Foresters' Perceptions of Family Forest Owner Willingness to Participate in Forest Carbon Markets. *Northern Journal of Applied Forestry*, 28(4), 199–203.