

The role of forests as carbon sinks & climate smart forestry

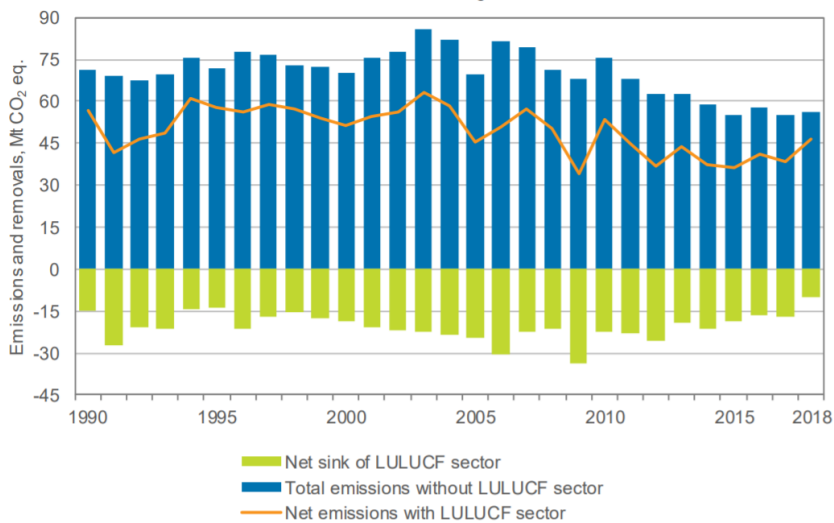
Antti Asikainen, EVP, research

Nordic-Irish Partnership Webinar:
Smart solutions for carbon capture, storage and sequestration
14.1.2021, Webinar



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Role of Landuse in GHG balance



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https://www.stat.fi/static/media/uploads/tup/khikin/fi_nir_un_2018_2020_04_09.pdf

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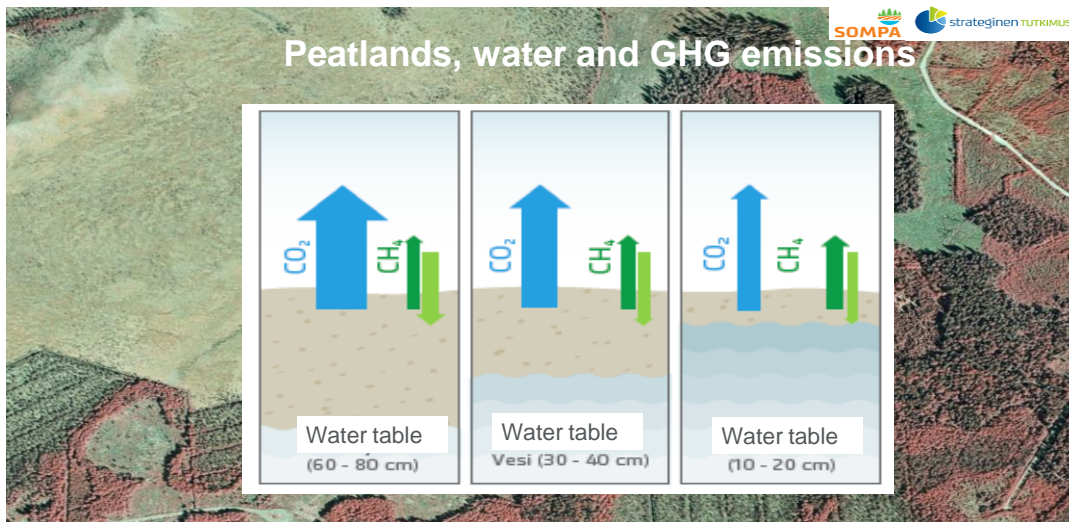
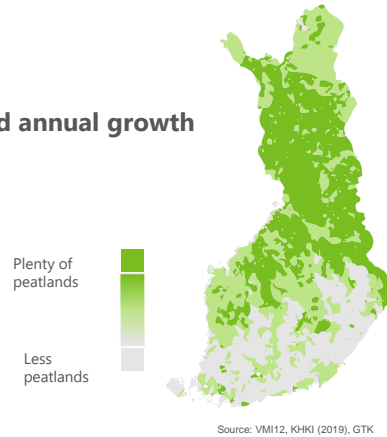
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Peatlands in focus

- About **quarter of forest resources and annual growth on peatlands** (and on organic soils).
- 10% of farmland on organic soils
- **Exit from peat in energy production**



Reforestation in Finland

- Overproduction of agricultural products in 1960's and 1970's
- Urbanization of population
- Shortage of wood in forest industries

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Abandoned farmland



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Kuva: Erkki Oksanen, Luonnonvarakeskus (Luke)

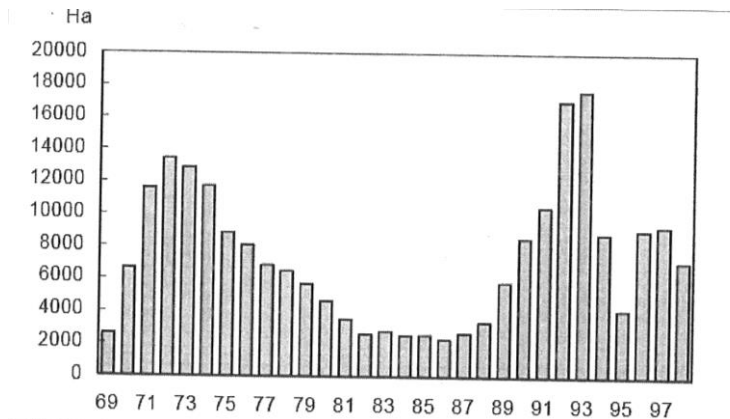
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Historic development of reforestation of farmland in Finland



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Domestic species in afforestation



- All broadleaved species threatened by moose and deer
- Pine also susceptible for animal damage
- Spruce is the dominant species for planting
- Birch is regenerated naturally, if there is birch growing in the nearby forests
- On peatlands, soil fertility analysis is essential
- Recycled wood ash is ideal fertilizer for peat soils

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Kuva: Erkki Oksanen. Luke. Hirvi syö mielellään lehtipuitten taimia, myös männyn taimet kelpaavat

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Exotic (imported) species in afforestation

- Hybrid aspen (*Populus tremula* x *P. tremuloides*)
 - Fastest growing tree species in Finland
 - Needs fertile mineral soils
 - Deer, moose and hare cause severe damages
- Douglas fir (*Pseudotsuka menziesii*)
 - Grows well, resistant to bark beetles
 - At experimental stage
 - Excellent construction timber
- Pinus contorta
 - Relatively good growth, but moose can cause damages
 - In Finland only experimental, in Sweden planted in a large scale

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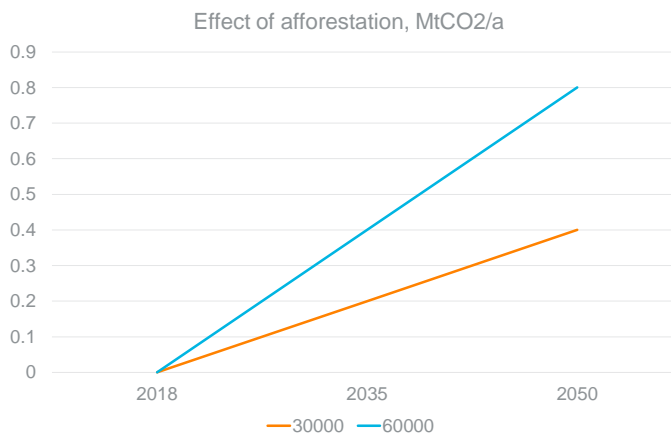
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Afforestation of low quality farmland, mineral soils, 30 000 vs 60 000 ha



https://www.mtk.fi/documents/20143/310288/MTK_Maatalouden_ilmas_totiekartta_net.pdf/4c06a97a-c683-1280-65ba-f4666132621f?_=1597055521915

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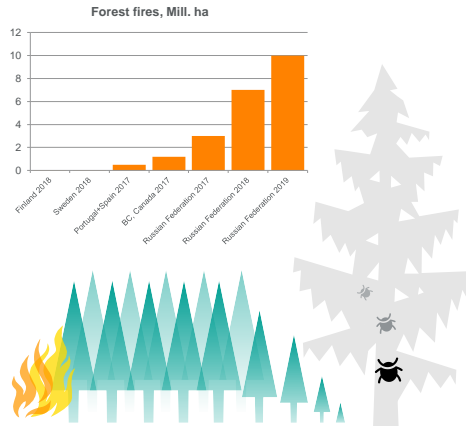
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Risks and climate smart forest management

- Limited number of valuable tree species in bioeconomy
 - Vulnerability of spruce to climate change
- Towards chemical free agriculture
- Forest damages - bark beetle
 - Central Europe – Southern Sweden
- Forest fires in general
 - USA, Canada, Russia, Mediterranean,
 - Sweden



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Photo Erkki Oksanen, Luke

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Climate smart forestry

- Select tree species so that it survives in current and future climate
- Keep forests forests
- Prioritize the use of wood for construction
- Remember that carbon circulates between atmosphere and vegetation – carbon sinks are always limited

<https://www.nationalgeographic.com/science/2020/01/skyscrapers-of-the-future-will-be-made-out-of-wood/>

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This university student housing in Joensuu, Finland, is made almost entirely of wood.
PHOTOGRAPH BY ANTTI AISKAINEN, NATURAL RESOURCES INSTITUTE FINLAND

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