



Climate Smart Forestry

in the Finnish State Forests

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- To identify the importance of forestry areas in carbon sequestration and storage as a whole.
 - To examine how carbon sequestration and storage can be enhanced through forestry measures.
 - To create a carbon-based classification method as a practical tool for forest planning.
- To improve Metsähallitus' ability to make climate-friendly decisions in its forestry activities.

Climate change mitigation

Forests can be utilised to mitigate climate change in three ways:

A carbon **sink** that sequesters carbon dioxide

Continued action as a carbon sink requires renewal of the tree stock (growing forest).

As a carbon **storage**

Carbon storages do not last forever - an ageing forest releases carbon slowly (trees, long-lasting wooden products and soil).

Using wood as a **raw material**

Stores carbon and replaces the use of fossil and other high-emission materials.

Recommended measures for

- the most effective carbon sequestration:
 - › fertilisation, ditching, regeneration using selectively bred seeds and seedlings, regeneration of underproductive forests, and afforestation.
- the most effective carbon storage:
 - › improving forest density, prolonging the rotation period, restricting forestry due to other forms of use, forest management to enhance coverage, and restoration of low-productivity mires with drainage systems.

Carbon classification in forests

- The classification was conducted for all forest compartments in state owned forestry areas (total 10.1 million compartments).
- It was based on forest inventory, soil information, land use information and landscape-ecological data.
- Comparable to forest site type classification as a framework for operational planning.
- The work resulted in seven categories.

Carbon classification in forests



Minor carbon sink/storage

Understocked, low-productivity land, non-productive land, built-up land and other areas.

- › The trees have no significance as carbon sinks or storages



Developing carbon sink

Young growing stands and open areas. Developing into a good carbon sink.

- › Small significance as a carbon sink and storage.



Carbon sink to be developed

Multiple-use forest where the number and/or condition of trees is not ideal.

- › Need for actions to develop carbon dioxide sequestration in the growing trees.



Increasing carbon sink

Multiple-use forest in good condition, a sufficient number of growing trees and timely forestry actions.

- › [The best sites for effective carbon dioxide sequestration.](#)



Increasing carbon storage

Areas with young forests where forestry use is restricted for landscape, recreation or game management reasons, such as wood grouse mating displays.

- › A good site for storing sequestered carbon in the tree stock. The trees in the area already contain a certain amount of carbon and their ability to sequester more is good in light of local conditions.



Significant carbon storage

Areas with mature forests where forestry use is restricted for landscape, recreation or game management reasons, such as wood grouse mating displays.

- › [The best site for storing sequestered carbon in trees.](#) The trees already contain a lot of carbon. Their ability to sequester more carbon has decreased.



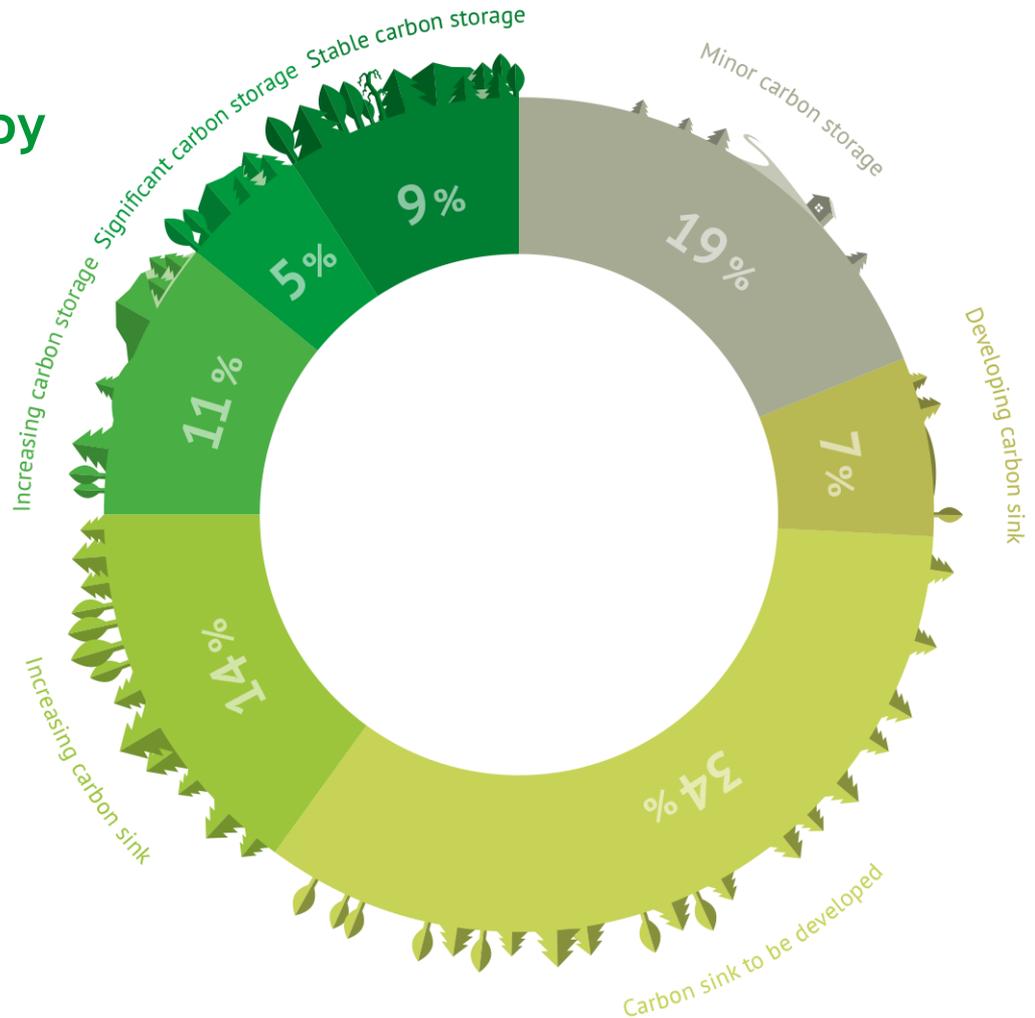
Stable carbon storage

Areas completely excluded from forestry operations. Mainly various nature sites and other areas outside the scope of forestry operations.

- › A carbon storage that develops via natural processes, storage may also decrease due to rot. No forestry measures.

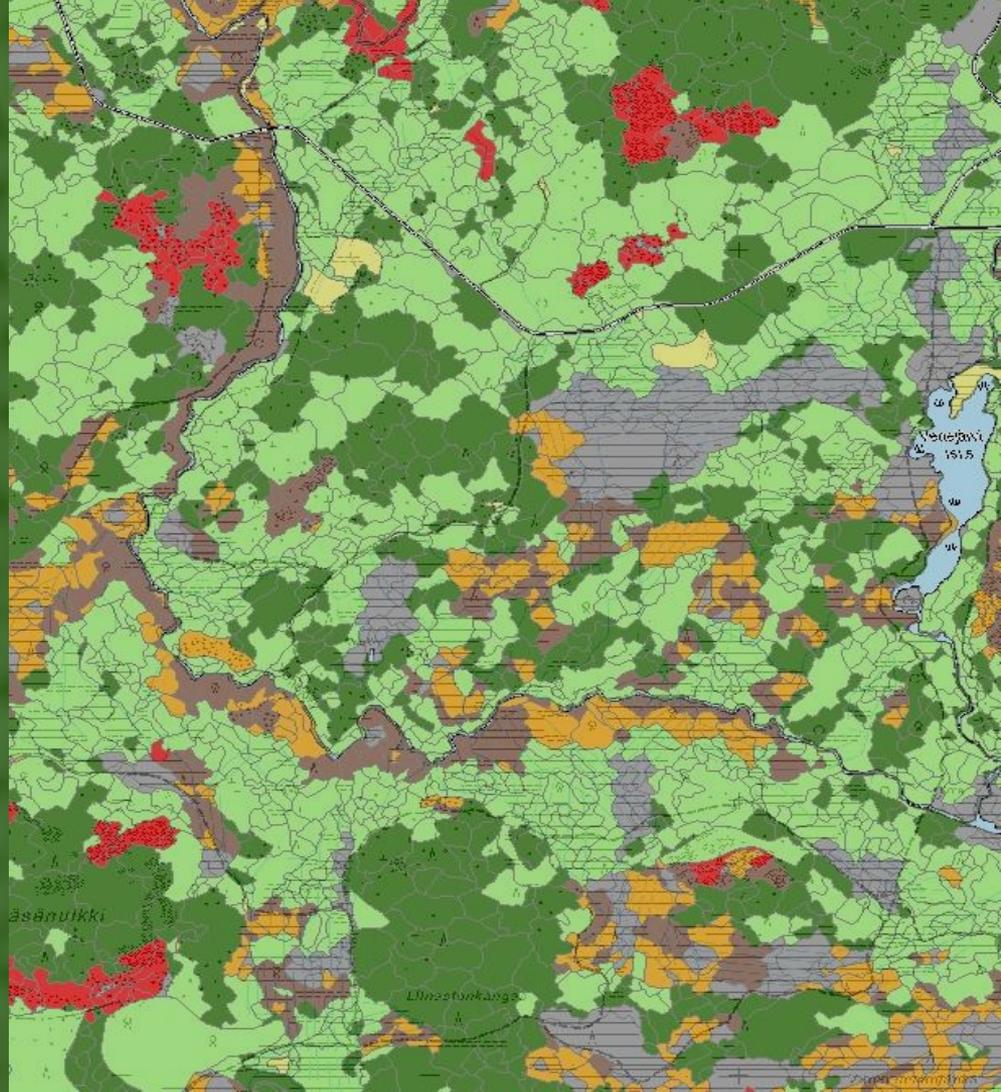
Number of forestry areas by category

- One third of Finland's land and water areas is administered by Metsähallitus.
- Forestry land, total 5.1 million ha.
- Includes forest land, low-productivity land, non-productive land, restricted forestry sites and nature sites.



Carbon classification by forest compartment

- Minor carbon storage
- Developing carbon sink
- Carbon sink to be developed
- Increasing carbon sink
- Increasing carbon storage
- Significant carbon storage
- Stable carbon storage



Conclusions

- The current Metsähallitus forest management instructions already take carbon sequestration and storing into account in an outstanding manner.
- Focusing increasingly on carbon sequestration is not in conflict with a good economic result.
- A strong increase in carbon storing is likely to reduce forestry revenue in multiple-use forests.
- Increasing carbon sequestration by means of fertilisation is a worthwhile option.
- More effort must be put into restoring low-productivity mires with drainage.
- Development of carbon classification is to be continued (e.g., soil carbon will be taken into account).





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