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Forestry intensification as climate mitigation: how is surface water safeguarded?

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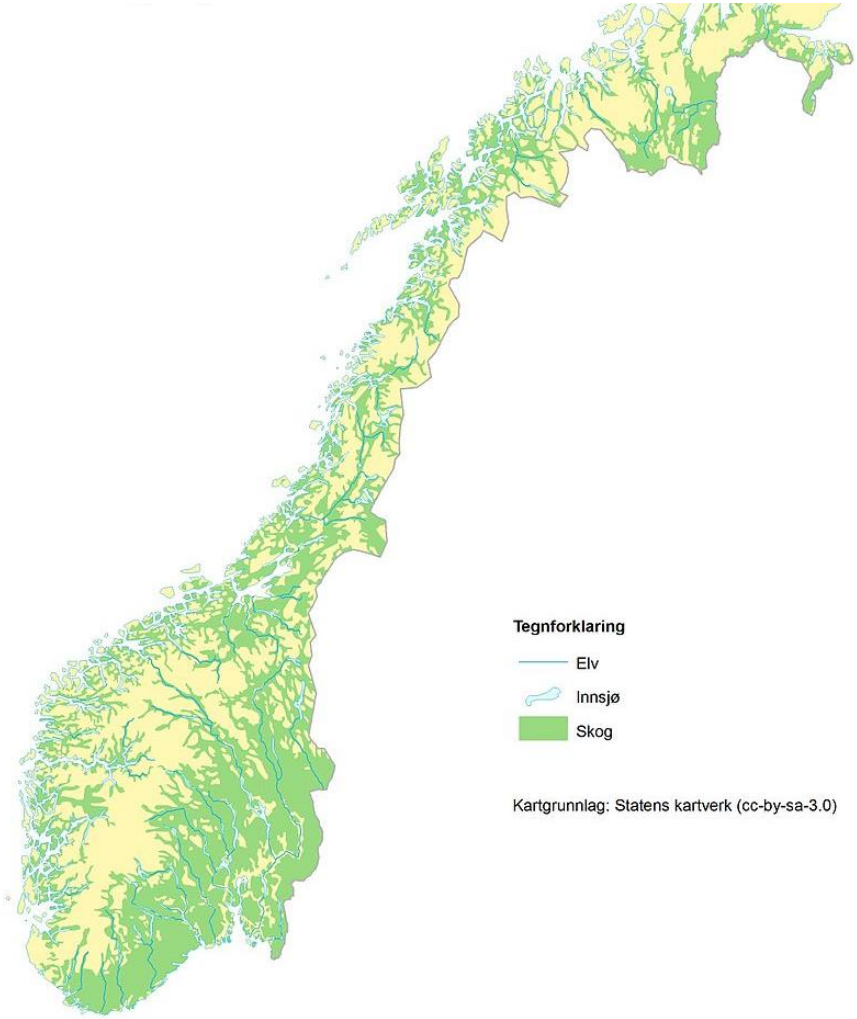
About 37% of Norway is covered by forests, representing a large C stock

In 2015, the Norwegian government launched a series of measures to intensify forestry for mitigation of climate change



These measures involved:

(1) government support to afforestation of new areas in selected regions

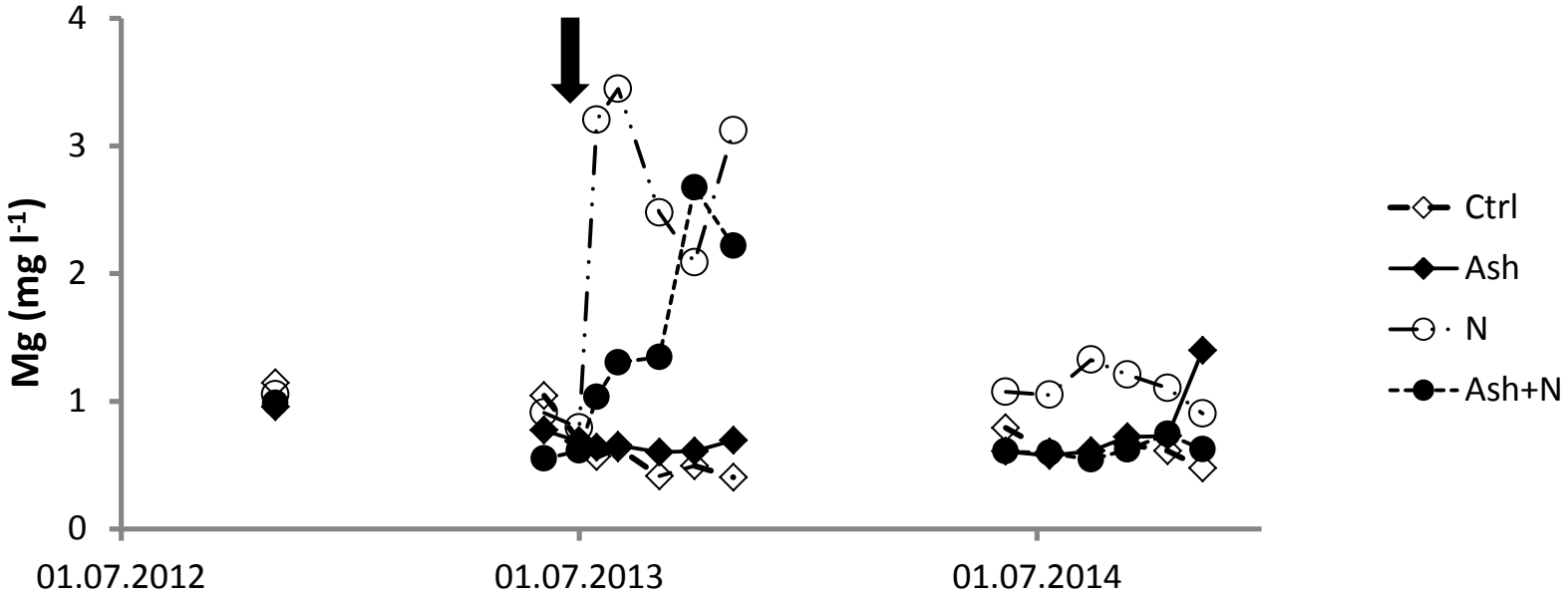
Risk for increase in sea salt acidification events

Afforestation in Vesterålen, Norway (photo: Arne Steffenrem, NIBIO)

(2) Densification of existing forests by increasing planting density

Photo: Dan Aamlid, NIBIO

(3) Fertilisation in selected areas



Effects of fertilisation with wood ash and nitrogen on dissolved Mg concentrations at 40 cm depth. Source: Clarke et al. 2018

Is water satisfactorily safeguarded in these climate mitigation measures?

Forestry and surface waters have been to some extent treated as separate domains in policies and regulations, both nationally and internationally (in Norway, different ministries responsible)

This has changed in recent years (e.g. Forest Europe's Warsaw Resolution 2 on Forests and Water, 2030 Agenda for Sustainable Development)

Considering the current extent of forest intensification in Norway, there seems to be a higher degree of uncertainty with regard to the climate effects of the forestry intensification measures than there is with regard to immediate impacts on water quality.

Can (should) the impacts of climate mitigation measures in forestry be separated from the impacts of the forestry industry in general?

There are a number of safeguards in place to minimize the effects of forestry measures on water resources, e.g. regulations, certification systems, standards and policy documents

Most Norwegian forest is PEFC certified, some is FSC certified

The PEFC standard has specific requirements on water protection, e.g. on buffer zones, ground preparation, and minimisation of nutrient leakage

Example: during fertilisation, a fertiliser-free zone of 25 metres is required around lakes, rivers and streams

Mapping important for the fertilisation scheme and how it safeguards environmental values. Environmental values such as surface waters and sensitive or protected nature types considered through official mapping tools

After validation by the forest cooperative - sometimes including field visits – the maps are used for the application of fertiliser by helicopter

Essential that the quality of existing maps and datasets for environmental values is good enough

Forest cooperatives have a strong role in making sure that the industry standard is adhered to, but there are indications that existing arrangements for reporting and control are inadequate (e.g. erosion risk)

There is a need for clarity on sanctions against forest owners, cooperatives and municipalities when regulations are not complied with

Photo: Kjersti Holt Hanssen

Conclusions

There are safeguards in place to minimize the effects of forestry measures on water resources, but also weaknesses in the existing regulations and approach taken:

- Forest cooperatives have a strong role in making sure that the industry standard is adhered to, but there are indications that existing arrangements for reporting and control are inadequate.
- Need for clarity on sanctions against forest owners, cooperatives and municipalities when regulations are not complied with.
- Separation of impacts of the climate mitigation measures in forestry from the impact of the forestry industry in general?
- Further research on the longer term impacts of such intensification measures is called for.


Thank you for your attention
Photo: Nicholas Clarke