

Submission of view on enabling mitigation solutions in the forest sector in relation to the Fifth Global Dialogue under the Mitigation Work Programme

AirClim is pleased to make a contribution to the subject of the Fifth Global Dialogue under the Mitigation Work Programme. AirClim strongly supports the proposed focus on the forest sector's role in climate mitigation.

Main message: Northern forests, which make up 40% of the world's forest and forest carbon stock, can and should play a greater role in climate mitigation. However the northern forest carbon sink is rapidly decreasing, with northern forests being less protected than tropical forests while forest degradation due to unsustainable forest management practices is reducing the carbon removal capacity of northern forests. This needs to be tackled by increased protection rates and shifting to ecosystem-based forest management.

AirClim wants to draw attention to the important role of northern forests in mitigating climate change. Northern forests are thereby defined as the boreal and temperate forests of industrialised countries in the northern hemisphere. They comprise about 40% of the global forest area, and an even greater share of the global forest carbon stock.

It is generally assumed that northern forests are not under threat or at least less threatened than tropical forests. This is a misconception. While it is correct to say that northern forests are less prone to deforestation (replacing forests for e.g. agriculture), they are heavily impacted by forest degradation leading to massive losses of ecosystem integrity, biodiversity and carbon storage capacity. The main driver behind this development is unsustainable forest management, including exploitation of the last remaining tracts of old-growth and primary forests, aggravated by climate-induced increases in natural disturbances.

An underlying, ultimate driver is the increasing demand for forest products. The consumption of industrial roundwood (for paper and wood products) almost doubled between 1960 and 2010, and is projected to increase at similar levels between now and 2050. About three quarters of the global sawn wood and pulpwood supply comes from northern forests.

Almost 75% of the northern forest area is managed for timber production. The prevailing management model, rotation forestry with clear-cut harvesting, is causing ecosystem degradation, threatening biodiversity and is unfit as a management model for climate mitigation. Additional areas are continuously being exploited and degraded. Less than 10% of the northern forest area is under some level of protection, which is way lower than for tropical forests (17–26%).

While the net global forest carbon sink increased between 1990 and 2020, the northern forest sink decreased by 23% in the same period, and the rate of decline is accelerating. Unless this trend is reversed, northern forests may shift from being an overall net carbon sink to a carbon source as

early as 2060. Passing this critical tipping point would start a process during which part of the huge carbon stock in biomass and soils is released into the atmosphere, causing further warming and further carbon losses in a self-reinforcing loop that results in runaway warming.

Solutions to prevent this from happening exist. And the focus for this should be on the potential for increasing the carbon sink of existing forests, and not so much on creating new forests through afforestation and reforestation, which can be additional but not replace the need to protect, restore and shift management practices in and of northern forests.

Action should be taken to protect and restore at least 30% of all northern forest ecosystems, including all remaining primary and old-growth forests. Safeguarding ecosystems and their roles in adaption and mitigation is fundamental to climate resilient development. In reaching the 30% target, protection of remaining primary and old-growth forests should be a first priority. In addition to the direct negative climate effects of timber extraction, exploitation of these forests will inevitably cause loss of resilience, making them more vulnerable to fire, pests and other disturbances, increasing the risks of further carbon losses. It will also increase the need for future restoration measures. To be effective, however, the 30% target must be met on a regional scale. A representative, interconnected network of protected, near-natural ecosystems – a green infrastructure – must be planned and implemented all over the northern forest region.

Furthermore, a shift is needed in current forest management practices in northern forests that halt ecosystem degradation and restores forests' resilience and ability to store carbon. Extending the stand volume of existing forests has greater positive short-term effects on the carbon balance than any other possible change in forest management. This can be done by extending the rotation periods, which might be feasible within the framework of rotation forestry and its focus on timber production. It will not, however, improve ecosystem resilience or release the pressure on forest biodiversity more than marginally. Abandoning rotation forestry and clear-cutting and shifting to forest ecosystem management, on the other hand, offers a viable pathway not only to increase the northern forest carbon sink, but also to simultaneously address the biodiversity crisis and strengthen ecosystem resilience. An overarching principle of ecosystem management is that forestry should minimise its impact on ecosystems. Harvesting is carried out selectively or in very small gaps. Tree species diversity, age distribution and structural diversity should, as far as possible, emulate natural conditions at every specific site. Forests are regenerated naturally. Since forest ecosystem management operates with considerably larger stand volumes than rotation forestry, the carbon stock per area unit is bigger, and a transition to ecosystem management thus utilises a bigger share of the natural carbon storage potential than does rotation forestry. Shifting from rotation forest management to ecosystem management is in fact a form of ecosystem restoration, conducted within the framework of timber-producing forestry. A rough estimate of the climate mitigation effect of such a transition over the entire managed northern forest area shows the potential to increase the annual carbon sink by about 0.8 Gt, which corresponds to 20% of the present global forest sink.

Further in depth information on this topic can be found in the following reports: [Climate impacts in northern forests](#) - [The role of northern forests in limiting warming to 1.5°C](#) - [Sink or Source? Northern forests at a crossroads](#)