

Climate change adaptation to wildfires in the Nordic countries



Key recommendations

The following recommendations are informed by a research project, which for the past three years has investigated the how a community in the southeast of Sweden cope with present wildfires, effectiveness of mitigating activities and capacity building as well as what triggers adaptive or preventive actions.

The recommendations are:

- That homeowners keep the area next to facades free from flammable fuel.
- That adequate suppression tools (in particular hoses) are readily available when burning in or around your garden.
- That forest managers reduces precommercial thinning of deciduous species to reach a ~10 % deciduous component in the mature coniferous stand.
- That rescue services continue to seriously regard every ignition as potentially hazardous and work to minimize detection and response times.

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Climate change and wildfires

The Nordic countries are often described as a region in which a whole new fire regime is expected due to climate change. However, the boreal parts of the region is well accustomed to wildfires and not all regions are expected to exhibit the same change in wildfire exposure. Projections vary spatially from no increase in parts of the north to increased occurrence of droughts and higher weather-driven fire danger in the already dry regions of the south-east.

While most wildfires in the Nordic region occur close to densely populated areas, the largest and most intense ones occur in rural areas. Municipalities with low populations densities usually suffer from fiscal constraints for prevention and suppression, leading to resource scarcity and low preparedness levels. Remoteness is also associated to long detection- and response times, key factors for fires that grow large and intense.



Responsibilities for wildfires

The responsibility for preventing, preparing and responding to wildfires is, according to the Swedish Civil Protection Act, distributed among the forest owner, the individual, the municipality and the state. A forest owner has primary responsibility for his or her forest. But if

an individual cannot prevent a wildfire, municipal fire and rescue services are obliged to respond to the immediate threat. Once the fire is controlled, the landowner is responsible for mop-up and surveillance, making sure that the fire does not reignite.

Municipalities also work to strengthen individuals to fulfill their obligations. This is primarily done through e.g. information, fire bans or use of equipment after incidents.

Key Findings

- Homeowners express low commitment in preventive or adaptive measures regarding their house and garden.
- Forest owners express low commitment in preventive or adaptive measures. However, those with previous wildfire experience are more inclined to take measures aiming to simplify rescue service suppression activities for future incidents.
- The fire and rescue service is considered responsible for both preventing and suppressing fire. They also regard themselves as responsible for managing wildfires and work actively to build the capacity of the fire and rescue service.
- Simple mitigating actions for both landowners and residents can significantly decrease the risks losses or injuries associated to wildfires

Homeowners' adaption to wildfires

Homeowners express low commitment in preventive or adaptive measures regarding their house and garden. Residents usually do not manage gardens for fire prevention.

In the studied area wildfires are not seen as a threat to the future well-being of the community. Other consequences of a drier climate such as irrigation bans are spoken of with more emphasis.

Forest owner's climate adaption

Despite their legal responsibility, forest owners express low commitment for preventive or adaptive actions for mitigating increasing wildfire risks in a changing climate.

Forest owners with previous experience of wildfires highlight a need for preventive measures. These measures aim to aid the rescue service in suppression, such as water accessibility and wayfinding.

The rescue service and future wildfires

All actors in the study consider the municipal rescue service to be responsible for both preventing and suppressing wildfire. This includes the rescue service themselves which actively work to build capacity. Capacity building stems from large incidents further north in 2014 and 2018 and effectively dictates a large organizations for central command and control.

Homeowner recommendations

We have shown that the most important actions for improving passive wildfire protection are related to the close proximity of buildings. These actions include the removal of flammable fuel loads growing or stored against the façade, to cut the lawn and to increase the broadleave-conifer ratio at the garden perimeter. People most vulnerable to wildfire related property loss or fatalities are: elderly people, people who actively use fire for yard maintenance and people in remote or isolated areas. We therefore recommend homeowners to (1) remove debris, dead

grass, wood piles and coniferous plants adjacent to buildings, (2) ensure adequate suppression tools before burning, and (3) be more than one person on-site when burning.

Land management recommendations

Remote areas are particularly vulnerable to large forest fires as the likelihood of early intervention decreases with less population density. To reduce large fires in the predominantly coniferous forests in there are simple but effective management strategies that can be adopted by forest managers.

First, less aggressive precommercial thinning of broadleaves will increase the deciduous (mostly birch) component of the grown forest. Saving a small portion of the naturally pioneering broadleaves, such that every 10th in a coniferous forest is birch, will significantly reduce the forest fuel's ability for rapid flame spread and high intensity fires. Second, enabling access to water resources for the rescue service to use in their suppression work can save valuable time in the early and critical part of the initial attack.

Managers of landscapes around buildings or settlements should be aware that light spring fuel is the main conveyer of flames eventually igniting buildings in Sweden. Cutting standing grass next to buildings in the autumn to avoid large fuel accumulation after springtime snowmelt significantly reduces the risk of building ignition. This will not interfere with goals of flowering meadows during summers.





The CliCNord Research Project

The research, which has informed this brief, is part of the project Climate Change Resilience in Small Communities in the Nordic Countries (CliCNord). The project investigates how places far from the larger cities in the Nordic countries can adapt to and withstand future challenges related to climate change. In doing so, the project explores the following questions:

- How do small Nordic communities understand their own situation regarding climate change?
- How do they currently handle adverse events?
- How can they build resilience towards climate-related hazards?

Read more at: <https://www.clicnord.org>

Conclusion

The fire and rescue services are building capacity to face a possible increasing fire danger in a changing Nordic climate. However, Few preventive or adaptive measures are taken by homeowners or land managers, who instead rely on suppression by rescue services. This attitude is attributed to the lack of severe implications from the generally well-managed fires in the region.

References

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