RESULTS AND RECOMMENDATIONS 04/2022

Forest-based bioenergy in Norway's green transition – balancing production and other societal interests

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Purpose of the study

This study examines the potential of bioenergy from forests to contribute to Norway's green transition. The forest is the largest potential resource for producing bioenergy in Norway, in the form of wood, pellets, and biofuels. The study maps forest resources that are relevant for bioenergy and assesses how this may be balanced against other societal interests, such as the production of materials, nature conservation and outdoor recreation, with a focus on Viken County and the City of Oslo.

Research questions

1. What is the biological, physical and economic potential for bioenergy from Norwegian forests?
2. What are the interests of different societal groups when it comes to bioenergy, materials for industry and ecological services?
3. What is the perspective on the use of the forest among the owners of forested land, industry, environmental organisations and authorities in Viken and Oslo?
4. How can balance be achieved between different societal interests in the use of forests and in the green transition?

The analysis is based on a review of reports and data sources about Norwegian forest resources, as well as interviews with representatives from forestry companies, industry, environmental organisations and public administration in Viken and Oslo.

Who has been part of the research group?

Asbjørn Torvanger (CICERO)

What have we found out?

Bioenergy can play an important role in the green transition but should not be overestimated. We should prioritise using green carbon where it is most difficult to remove fossil carbon, such as biofuel for aircrafts. Bioenergy can compensate for variable power generation from wind and solar power.

The production of bioenergy must compete with other uses of forest materials, primarily timber and fibre for industry, and these are valued higher than bioenergy. The production of biofuels requires wood pulp of higher quality than wood pulp for heat. Some forest resources are mostly unused, such as logging residue and a sizeable share of the deciduous forest - such as birch, but this timber has the lowest value. This type of biomass is suited for the production of firewood and pellets, and for use in district heating plants.

Increased production of biofuels (bioethanol and bio-oil) will require large investments in production and will therefore depend on higher prices and increased carbon prices. Firewood and pellets can be produced locally and on a small scale, while biofuels must be produced on a large and industrial scale, and therefore result in larger-scale logging operations. Local logging and production of firewood is an important industry for farmers and small forest owners, and this is easier to combine with nature conservation and outdoor recreation than industrial logging for biofuels, timber, or fibre. Forests also need to provide ecological resources such as nature conservation and biodiversity, carbon storage as a climate change mitigation measure, and outdoor recreation.

Implications

In this decade, bioheat, primarily based on firewood and district heating, will play a more important role than biofuels. In the future, biofuels may become more important for reducing greenhouse gas emissions in Norway, but this will depend on the climate policy and carbon pricing. Large-scale production of biodiesel in Norway is unlikely due to a lack of sufficient raw materials from the forest and suitable waste from other sectors. There will be less conflict with other societal interests if larger forest areas are protected, especially near cities, while other forest areas are open for logging.

Report

The results of this research project are published in the report:

> Torvanger, A. (2021), Forest-based bioenergy in Norway's green transition: Balancing production and other societal interests. CICERO, Report No. 9.