

# The Sustainability of Bioenergy in Finland and Globally – Fact Check

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## Background

Finland is aiming for carbon-neutral energy production, where an essential part is increased use of forest biomass. This is a part of the bioeconomy strategy of Finland, as well as agreed at EU-level, as part of measures for carbon neutrality and increasing the use of renewable energy.

The carbon neutrality or sustainability of forest biomass in energy use has been under critical review. The discussion has increased after the release of the IPCC report 8.10.2018

Different stakeholders have used materials and data, from research of different scientific disciplines. These either favour the increased use of forest biomass or are critically against it. The materials are used for decision-making in Finnish governmental organizations, as well as different institutions in the European Union.

## Methods and evaluated publications

This presentation examines six international publications dealing with the use of bioenergy and collects systematically the allegations of bioenergy, as well as arguments for defending and restricting bioenergy use in the publications. Some of the most controversial arguments are analyzed more thoroughly and they are subjected to fact checking by comparing the arguments with sources in scientific literature. At the same time, the preconditions, restrictions, and assumptions that can be used to modify the claims to favor desired arguments are identified.

The evaluated publications were the following:

- Yle news "Goodbye kuukkelimetsä: Hakkuukiistat palasivat Suomeen, kun biotalous jauhtaa puuta rahaksi" (Toivonen 2017). In Finnish.

- MustRead –net publication article "'Kauko-partiomiehiä ja maanpetteureita' – Miksi metsien käytöstä taistellaan nyt Euroopassa ja kotona" (Säntti 2017). In Finnish.

- Aalto et al. 2016: Europa and Asia BirdLife with Transport & Environment "The Black Book of Bioenergy-Good Intentions Gone Bad"

- Brack 2017: Chatham House report "Woody Biomass for Power and Heat – Impacts on the Global Climate"

Responses to Chatham House by:

- IEA Bioenergy (Cowie et al. 2017)

- World Bioenergy Association (2017)

The overall principle was to follow objectivity according to the scientific method, based on the logicity and truth value of the arguments, with no need to comment which was the direction giving the argument or whether the direction is right or wrong.

## Arguments for and against forest bioenergy

The study finds that the authenticity of several bioenergy arguments is dependent on the source data and the restrictions. The arguments therefore only take place in certain situations.

### Adequacy of forests

Forest use to bioenergy does not reduce forests	VS.	Forest use to bioenergy reduces forests
<ul style="list-style-type: none"> <li>Focus on long term change (~permanent change)</li> <li>View on large areas, <b>national/regional focus</b></li> <li>Active forest management improves forest growth</li> <li>Focus on sustainable forests</li> </ul>		<ul style="list-style-type: none"> <li>Focus on short term (~now)</li> <li><b>Using examples only from Northern coniferous forests</b></li> <li>View on single tree/small cut area</li> <li>Short time scale; stress on need to look maximize carbon sinks fast</li> <li>Target is fast growth of carbon sinks</li> </ul>

### Forest carbon sinks

Use of forests for bioenergy can occur while the forests are used as carbon sinks	VS.	Use of forests for bioenergy will always reduce the carbon sinks
<ul style="list-style-type: none"> <li>Long term view</li> <li>When we look at large areas, <b>national/regional view</b></li> <li>Active forestry increases positively to wood growth</li> <li>Aim to have sustainable forest use</li> </ul>		<ul style="list-style-type: none"> <li>Short term view</li> <li><b>If one looks at northern coniferous forests</b></li> <li>If we look at small area or single tree</li> <li>Short time view to maximize short term carbon sink</li> <li>Aim to increase carbon sinks fast</li> </ul>

### Role of climate change in bioenergy

Use of Bioenergy reduces greenhouse gases	VS.	Use of Bioenergy increases greenhouse gases
<ul style="list-style-type: none"> <li>When forest growth is larger than cuts</li> <li>Long term carbon balance</li> <li>Carbon in biomass is part of the natural cycle of carbon between atmosphere, plants and soil</li> </ul>		<ul style="list-style-type: none"> <li>Carbon emissions from combustion are larger than from fossil fuels</li> <li>Carbon emissions should be reduced fast</li> <li>All emissions from use of bioenergy are not currently reported nor counted</li> </ul>

## Arguments

Arguments can be justified, among others, by looking at the situation over different time periods or by emphasizing the maximization of short-term or long-term climate benefits. Different values can be selected from initial data, whereupon their own argument can be confirmed.

The critical arguments against the use of bioenergy may state the bioenergy usage as separate from other industries or the arguments might simplify, for example, the bioenergy feedstocks or end usages.

The arguments of bioenergy defenders often rely on the fact that the use of bioenergy will replace the use of fossil fuels in the future.

## What is left out from discussion

- Role of agriculture, role of forest industry, role of other forest use on forest carbon sink, biodiversity and sustainability

- Can we farm forest like we farm land?

- International agreements on forest protection and extent of nature preservation areas.

## Comments from media/public discussion

Claim: "Combustion kills people"

Is a serious problem in small scale poorly controlled combustion, such as in stoves and ovens. Especially in the developing countries where wood is burned for cooking.

## Comments from public discussion

Claim: "Combustion kills people"

The health risk from combustion particulates should absolutely not be underrated. But when it comes to the deadly effect, it becomes possible from incomplete combustion, causing shortage of human life for a couple of years. After extended exposure for those who already have a weaker health condition.

Claim: "Forests are cut down for energy production"

The income to the forest owners come from the forest industries. Forest is not planted for energy. In Finland it has been planned to use internal wood for energy

Claim: "The idea of biofuels from wood can now be forgotten"

Waste wood or forest residues can be used as feedstocks, which are not suitable for other higher added value products. The so called first generation biofuels generate lots of emissions. There might be some confusion or misunderstanding between different raw materials.

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