AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

SCANDINAVIAN FOREST ECONOMICS
No. 40, 2004

Proceedings
of the Biennial Meeting of the
Scandinavian Society of Forest Economics
Vantaa, Finland, 12th-15th May, 2004

Heikki Pajuoja and Heimo Karppinen (eds.)

Vantaa

This on-line version differs from the printed Proceedings 2004.
Ragnar Jonsson's paper is included in this version, but is missing from the paper copy.

Avoided Greenhouse Gas Emissions when Forest Products substitute Competing Materials – Effect on Carbon Account and Optimal Forest Management
A Case Study of Hedmark County in Norway

Ann Kristin Petersen
Terje Gobakken
Hans Fredrik Hoen
Birger Solberg

Abstract

In the discussion of how forests can contribute to reducing the content of greenhouse gases in the atmosphere, most focus has been given to sequestration of carbon dioxide in forests. Few studies have analysed the additional impact wood-based products has as a substitute for other materials. This effect comes in addition to fixation and release of carbon and can contribute to a long-term solution. The aim of this article is to provide an empirical study on how wood products contribute to reduction of greenhouse gas emissions on a regional level. The case study is of Hedmark county in Norway, and is done with the dynamic forest management optimisation model GAYA-J/C. This model includes costs, revenues, and all the main carbon flows related to forests (living trees, dead trees, litter, soil, materials substitution, and energy substitution).

The paper has three main objectives. The first is to find the effect of including substitution in a carbon account of Hedmark county. The second objective is to find how optimal forest management will change with various prices on CO_2, and also study how the optimal forest management changes when substitution is included. The third objective is to find the frontier between net present value in monetary terms and net present value of carbon benefit, and see how it will change when substitution is included.

Key words: dynamic forest management optimisation model, GAYA-J/C, greenhouse gases, living trees, dead trees, litter, soil, harvest residues, materials substitution, energy substitution.