

LOGGING PROCESSES IN THE EUROPEAN FORESTRY WOOD CHAIN - EFFORTS, GAINS AND COSTS FOR SUSTAINABILITY

Fischbach Janine¹, Berg Staffan², Becker Gero¹

¹Institute of forest utilization and work science, University Freiburg
Werthmannstraße 6 in 79085 Freiburg
Freiburg, Germany
e-mail: janine.fischbach@fobawi.uni-freiburg.de

²Skogforsk, The Forestry Research Institute of Sweden
Uppsala Science Park, Glunten
Uppsala, Sweden
e-mail: staffan.berg@skogforsk.se

Keywords: sustainability impact assessment; social-LCA; supply chain; forest wood chain; sustainable indicators, LCA.

Abstract: *In the EU-project Eforwood, which was launched in the 6th framework programme, logging processes in Europe were assessed as part of a case study with European Forest Wood Chains (EU FWC). 2005 was chosen as the starting reference year.*

In this concept a FWC is modelled as a number of interconnected processes between forest, industry and consumers. For each process sustainability is expressed as values for a common set of sustainability indicators.

This paper includes data of harvesting and logging processes for 27 European countries in the Eforwood project, however the results are then aggregated to the principal areas in Europe: Eastern-, Northern-, Central- and Southern Europe.

The performance of different FWCs in the project has been evaluated with a set of 27 indicators, of which a selected set of economic, ecological and social indicators is used as an example for more extensive analysis. Results of key indicators (e.g. gross value added, costs, energy use and related emissions) will be shown. The values are analysed with the aid of the decision support software package ToSIA (Tool for Sustainability Impact Assessment), which was developed within the Eforwood project.

Data and results are still undergoing extensive test and validation processes. Preliminary results so far are that i) there is a great variation between country groups and machine systems in terms of costs, reflecting differences in competitiveness ii) energy use for logging seems to show a much smaller range of variance iii) the variation in cost and environmental impact of roundwood transport to mill is considerable, depending on distance, mode and technology increase .

The Sustainability Impact Assessment also demonstrates weak points in the different FWCs and thus suggest areas for improvement.

Background

In the EU-funded project EFORWOOD, a comprehensive software package tool for Sustainability Impact Assessment (ToSIA) (Lindner et al. 2009) was developed to support analysis of the complete Forest Wood Chain (FWC) from the forest to the end use of wood based products. With regard to sustainability a large effort was undertaken to collect data for ToSIA's parameterisation for the forest sector throughout Europe. The first analysis showed the existence of a multitude of different Forest Wood Chains (FWCs) in Europe. To reduce complexity, the researchers identified a set of relevant and typical chains which may be used in each country, if they were relevant to be used in each country. The objective was to design FWCs which represented at least 60-80% of the respective material flows (volume).

The poster shows the methodology of the data collection, the selected forest operations such as harvesting and hauling of timber to roadside and the results of the study. The identification of processes, system boundaries, data collection and calculation were pursued by partners in the Eforwood project.

More information about the project EFORWOOD and sustainability impact assessment of Forest Wood Chains can be found under Fischbach (2010): “Sustainability Impact Assessment in the Forestry-Wood-Chain- Impact of road transport compared to rail transport of wood in Baden-Württemberg” in this book as well as under the articles named in the references.

References

- Berg et al. (2010). Assessing the sustainability of European logging operations. In: European Journal of Forest Research, Special issue (in review).
- Bürzle, B. (2009). Analysis of European Forestry-Wood-Chains using the example of Poland and Lithuania based on Process-Oriented Modelling of value chains and collecting data of approved sustainability Indicators for all chain-related processes in order to support the Sustainability Impact Assessment within Eforwood. Diploma- thesis. Albert-Ludwigs-Universität Freiburg im Breisgau.
- Fischbach, J.; Becker, G (2009). Sustainability Impact Assessment in the Forestry-Wood Chain. Presentation at Formec Symposium in June 2009; Kostelec n. È.I. / Prague – Czech Republic.
- Fundel, V. (2009). Analysis of European Forestry-Wood-Chains using the example of Czech Republic and Hungary based on Process-Oriented Modelling of value chains and collecting data of approved sustainability Indicators for all chain-related processes in order to support the Sustainability Impact Assessment within Eforwood. Diploma- thesis. Albert-Ludwigs-Universität Freiburg im Breisgau.
- Lindner et al. (2009). ToSIA - A tool for sustainability impact assessment of forest-wood-chains. Ecol. Model. Doi:10.1016/j.ecolmodel.2009.08.006.
- Vötter D. (2009). Sustainability Impact Assessment of the Forest-Wood-Supply-Chain based on a Process Modelling Approach. - Comparison of Northern and Central Europe as an Example. PhD-thesis: Albert-Ludwigs-Universität Freiburg im Breisgau.