

Contribution 170 in session “Wood supply chain management and decision support tools“

## LIFE CYCLE ANALYSIS FOR TECHNOLOGY SELECTION IN TIMBER HARVESTING

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Life cycle analysis (LCA) states that the assessment of the environmental impacts associated with a process, a product, and/or operation by identifying and quantifying energy and material uses and results. LCAs can help comprehensive outlook on environmental concerns by compiling an inventory of system inputs and environmental releases, evaluating the potential impacts, and interpreting the results to make a more informed decision. One of four main phases is a life cycle inventory which means a flow model of the technical system by using of data on inputs and outputs. The aim of the study was to generate a life cycle inventory analysis on timber harvesting operation system for procurement of one cubic meter wood raw material. In this concept, timber harvesting operations for clear cutting in brutian pine forest of Turkey was analyzed and a flow chart model was developed to typically illustrate the activities that were going to be assessed in the wood supply chain and to appreciate a clear picture of the technical system boundaries. The relevant input data (time, material, and energy) within the techno-sphere from cutting to unloading operations were calculated per cubic meter wood raw material. As well, the outputs were identifying for all activities within the system concept. At the end of the analysis, it was obtained the results about operation time consumption, energy expenditure, and emissions to assess the environmentally impacts of the activities. It also defined that the results could help decision makers to select which operation technology is the most suitable for environmentally soundly timber harvesting operations.