An Assessment of the Logistics, Cost and Life Cycle of Supplying Wood Products in Tennessee

Dalia Abbas

1 Assistant Professor of Forest Operations and Management, Department of Agricultural and Environmental Science, Tennessee State University

The presentation focuses on a study developed in Tennessee from 2011 – 2015, that focuses on developing an integrated analysis of forest harvesting machine operations, cost and life cycle assessment of supplying wood in Tennessee, from site to end use. Key production factors are identified that have not been looked into before in the state. The study also highlights work conditions and operational factors that need to be considered to improve the workforce operating conditions and promote a more sustainable and growing forest products industry. Factors analyzed in this study have not been investigated before in Tennessee. Results presented are being compiled into a final report to the funding agency and peer reviewed publications. The three sections of the study include: i) The logistics of forest operations in Tennessee. This section investigates the following questions: What are the work force characteristics and conditions? (location, owner or operator, annual number of employees on the crew, and production in acres and tons). What is the logging capacity? (equipment owned or subcontracted, type of equipment used, logging configuration and percentage and potential production capacity of the state), and What are the production rates per harvest conditions and prescriptions? (% of operations per cut types, skidding distances, operations per terrain types, shift hours, time of repairs and stand size), ii) The cost of the supply of timber in Tennessee. This section investigates the total cost of harvesting wood. It researched available stumpage prices, hauling, harvesting, and delivery variables. This section compares and contrasts operations in relation to their cost effectiveness, and iii) A life cycle assessment of the supply of wood in Tennessee. Life cycle assessment is used to quantify environmental impacts of the supply of lumber. System boundaries of the study start at the stand and end at points of delivery of variable distances. The study analyses, using SimaPro, Greenhouse Gas emissions and the Fossil Energy Demand per extracted tonne of green wood, harvesting and transportation. It also offers a sensitivity analysis to identify areas and supply chains of greatest environmental impact.