

## Life Cycle Analysis (LCA) for Transportation of Cross-Laminated Timber (CLT) Panels Comparing Two Origin Points of Supply

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**Abstract :** This overall research is targeted at the assessment of the new CLT-built Adohi Hall residential building located on the campus of the University of Arkansas in Fayetteville, Arkansas. The purpose of the Life Cycle Assessment (LCA) study is to analyze the environmental impacts resulting from the transportation route of the Austrian imported CLT to the construction site with those of the CLT assumed to be originating from Conway, Arkansas. The Global Warming Potential (GWP) of CLT from Europe (Styria-Graz in Austria) to the site was first investigated. The results were then compared with the GWP of the CLT produced in Conway, Arkansas. The impacts of each scenario, using the Ecoinvent database, are then calculated and compared against each other to find the most environmentally efficient scenario in terms of global warming impacts. The quantification of GWP is associated with different transportation systems, water, road, and rail. Obtained through comparison, the findings reveal that the use of local materials is more efficient. In addition, transportation by water produces less Greenhouse Gas (GHG) emission in comparison to freight transportation by rail and road. Thus, besides the travel distance, the utilized transportation system is still a significant factor and should be seriously considered in making decisions for moving materials.

**Keywords :** comparative analysis, GWP, LCA, transportation

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