A Pilot Study on Sawnwood Conversion Efficiency in Selected Sawmills in Ghana

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The timber industry plays an important role in the Ghanaian economy. However, the industry is beset with raw material scarcity. In the face of the shortage of logs, sawnwood recovery has been reported to be low in many tropical countries.

In order for Ghanaian industry to establish credible Chain of custody claims in a certification process or legal timber regime under the Voluntary Partnership Agreement of EU Forest Law Enforcement, Governance and Trade (FLEGT), there is a need to establish conversion ratios for the various timber product types from the sawmills. Percent Lumber recovery is a measure of the conversion efficiency of sawmills and in simple terms, it is a ratio (expressed in percentage) between material quantity entering and leaving a given transformation process. When conversion ratios are known, product yields can be predicted. The objective of this study was to quantify the relationship between lumber (sawnwood) recovery and lumber contract specification and log characteristics (i.e. species, log diameter and length, and log grade) for the large-scale enterprise.

In this study sampled input log quantity and quality were measured using the batch method in four selected sawmills. Two large-scale enterprises (LSE) and two small-scale enterprises (SSE) were studied.

The LSEs had better percent average export lumber (all species combined) yield (38.0 ± 2.4 %) than SSEs (32.5 ± 2.4 %). As expected it followed that average percent waste generated (all species combined) by LSEs (46.7 ± 2.7 %) were lower than those generated by SSEs (60.3 ± 4.4 %). As sawing variation and sawnwood over-sizing increased there was a trend of decreasing percent sawnwood recovery. A regression model was established between lumber (sawnwood) recovery and lumber contract specification and log characteristics.

Knowledge of conversion ratios (hence sawmill efficiency) can also serve to inform policy decisions on industry re-tooling for effective utilization of timber resources in order to maximize wood value and volume gains.