

Contribution 153 in session "Looking for efficient bioenergy supply chains"

Evaluation of terminal strategies by flow optimization

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Forest fuels are the most important bio energy source in Sweden, but the competition with other material such as waste and recycled building materials is tough. To keep forest fuels competitive cost reduction in the supply chain is essential. Forest fuels are therefore sensitive for long transport distances and high transport cost. With multi modal transport systems, typically truck and train, the transport distance can be increased. In the multi modal supply chain the geographical allocation of terminals plays an important role in reducing transport cost. Terminals also plays an important role for storing and chipping. The allocation of terminals are dependent of several factors, i.e. transport capacity, chipping capacity and distance from supply nodes to demand nodes.

In this study , optimization has been tested as a method to evaluate different terminal structures and terminal strategies for a Swedish forest company. The focus in the optimization model, developed by Skogforsk, is minimizing the transport cost. When proposing a terminal strategy the risk in the supply chain has to be considered, terminals can be used to buffer materials and therefore reduce the effects of a broken chipper or a broken truck. However, storing forest fuels at a terminal costs lot of money.

Two case studies have been made on two different Swedish forest companies. The results show that the placements of terminals have an impact on the transport cost for forest fuels. The most cost-efficient terminals were placed in areas with surplus of forest fuels.