STUDY DESIGN FOR MODELING AND ANALYSIS OF FUTURE BIOMASS TERMINALS LOGISTICS AND COST

There are a great number of variables to considerate in the designing of the future forest biomass terminals. In order to get gain in knowledge about biomass terminals, series of four studies are planned to be executed in the coming four years. The focus of study one is on the current terminals properties, e.g. size and number of assortments being process at site. The second study places more attention on machinery and its productivity used at terminals. While the first two studies are more related to data collection and understanding existing biomass terminals, the last two studies are focusing on the designing of models and to analyze terminal logistics.

Today forest biomass terminals has multiple tasks, they serve as a storage and buffer of biomass as well as part of biomass production systems. Forest biomass terminals can be seen as separate unit in the biomass supply systems with its own internal logistics and production systems. In order to better understand the role of forest biomass terminals a series of studies are intended to be carry out (Figure 1).

The objectives in this series of studies are to characterize present biomass terminals. The aim is to collect crucial information describing biomass terminals as terminal size, number of assortments, raw material flow, equipment and other relevant information. The study 1 will give common information about terminal design and activities which are carried out at terminals. The most important data from the study 1 will pass to the study 2, Machine Productivity and Operational Costs of Biomass Terminals.

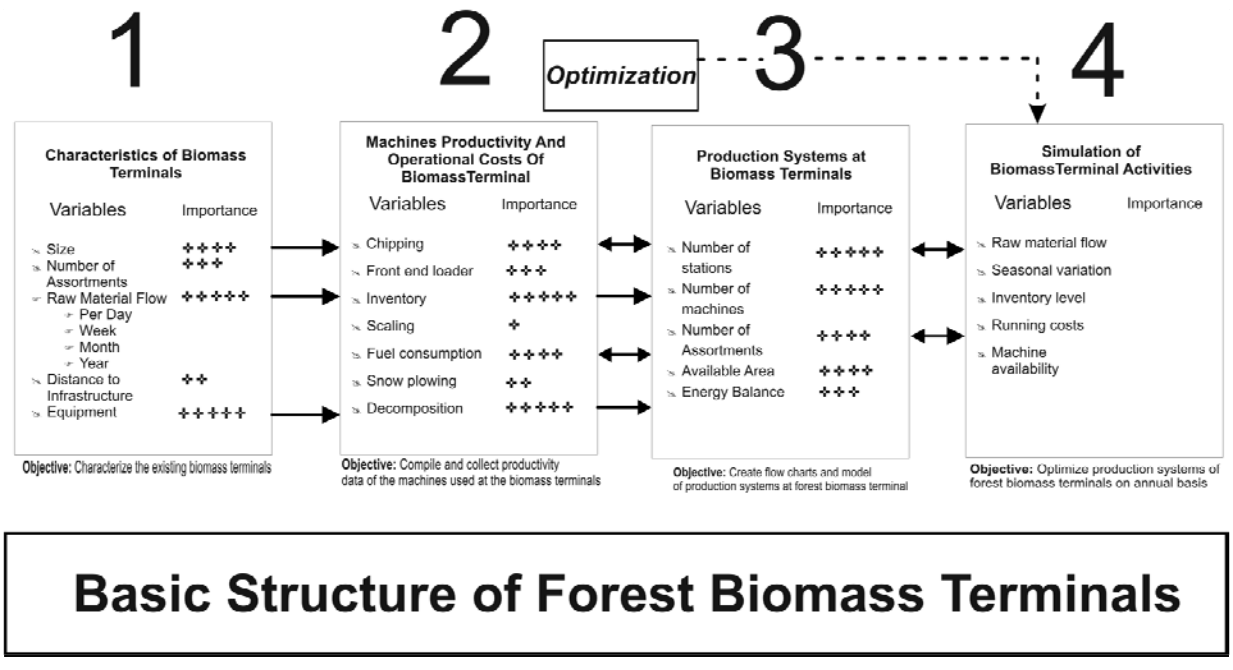

Figure 1. Structure of forest biomass terminals studies.

The main focus in study 2 is on machine productivities and their operational costs. This study will investigate not only operations directly related to biomass processing but also other operations related to terminal management as snow plowing, keeping inventories at the proper levels etc. At the end of study 2 the most relevant machine systems and terminal operation will then be used in study 3, Production Systems at Biomass terminal.

Figure 2. Stump crushing at a terminal with crane loader and front-end lodader.

Objective of study 3 is to create flow charts and models describing whole production systems at forest biomass terminals. In this study the information from first and second studies will be used to model several production systems according to terminal properties as terminal size, volumes and number of assortments at a terminal.

Created terminal models then will be run through simulations at the forth study in order to optimize terminal properties and available equipment at each terminal model.

By simulating different production and management scenarios at the forest biomass terminals not only the most productive model can be found but also other considerations at a terminal can be optimized as for instance energy balance.

Study 4 is using the most relevant and important data from all previous three studies in order to create optimally best terminal. Parts of study 1 & 2 will be performed within the Forest Refine project.

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