

## Terminal types – General description

A terminal handling forest biomass can be everything between a place where only one assortment is stored for a short time and reloaded for transportation to industries and a location where many assortments are handled, pre-processed and reloaded to a combination of transport means to several industries. This infosheet gives a general description about the four different possible terminal alternatives.

### STORAGE AND RELOADING TERMINALS

These type of terminals have only the function of storage and reloading. They are a buffer between the forest and the industry, and the material can eventually be reloaded to other transport means (train or boat). The assortments delivered to the terminal are also the assortments that are transported to the industries. Transportation to the terminal can be with truck, train or boat. The transportation from the terminal can be done with the same means of transportation, but also with wheel loaders if located directly outside an industry gate.

Handling at the terminal is done with cranes on trucks, with loading machines and or stationary cranes. Some kind of measuring of the assortments is needed to keep track of how much it is in storage. In its most simply form, this is only a manual estimation of the length and height of piles and stacks. A more structured measurement is done with a measuring bridge or a measuring house. This can also be done with optical sensors or other new kinds of sensor technique. Weighting is also a way of measuring, and in combination with equipment for measuring of the moist content, the dry mass can be estimated (Fig 1).

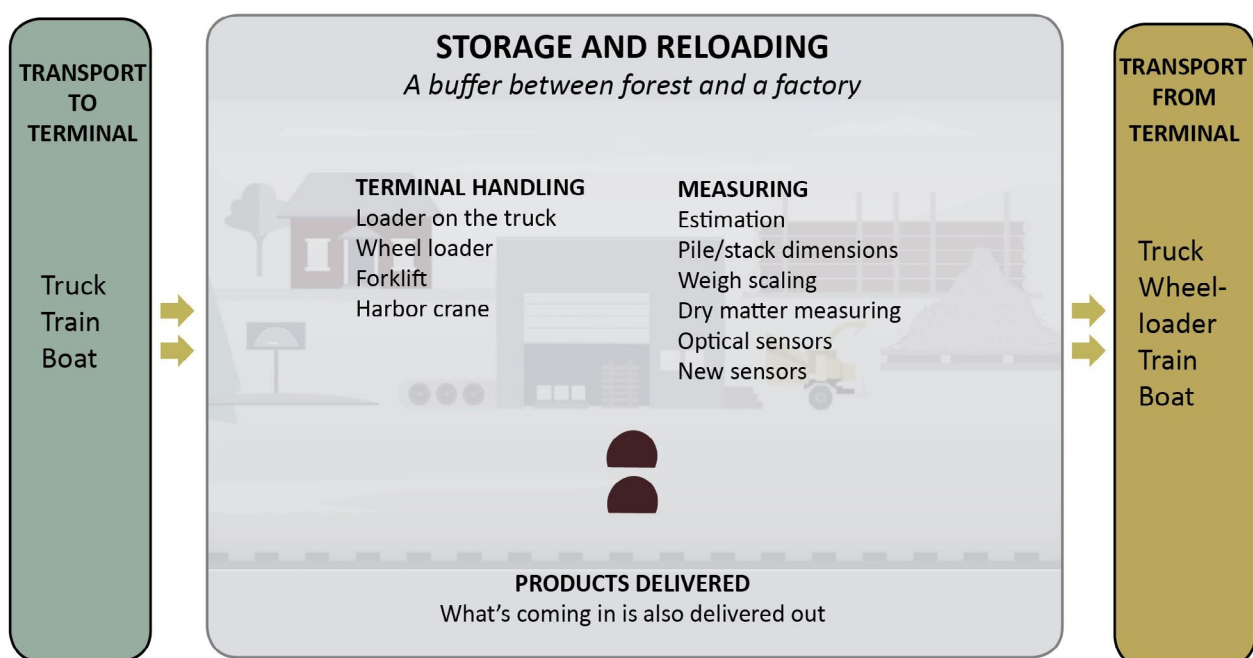


Figure 1. Storage and reloading terminal.

### STORAGE, SORTING AND RELOADING TERMINALS

In these terminals, a sorting function is added compared to the description under a). More valuable assortments are sorted out from a bulk of biomass delivered to the terminal. An example is sorting out of birch sawlogs from a bulk of birch pulpwood. The transportation from the terminal will then be directed to the industries of relevance for the different assortments.

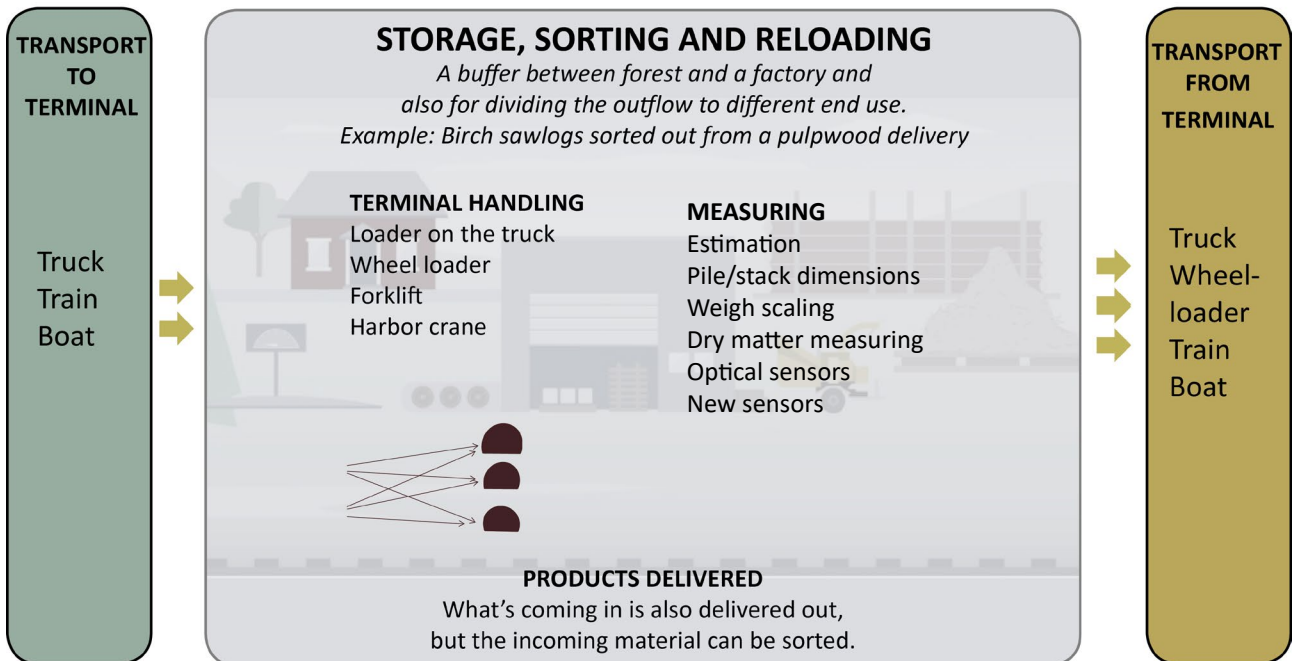


Figure 2. Storage, sorting and reloading terminal.

### STORAGE, SORTING UPGRADING AND RELOADING TERMINALS

In these terminals, one or several upgrading functions are added compared to the description under a). One type of upgrading is comminution of the material (chipping or crushing). Also debarking is a type of material upgrading. Drying is an upgrading that might be of interest for energy assortments. The different kinds of comminute materials can be mixed in an upgrading process in order to meet specific requirements. The transport from the terminal will normally go to several different industries (Fig 3).

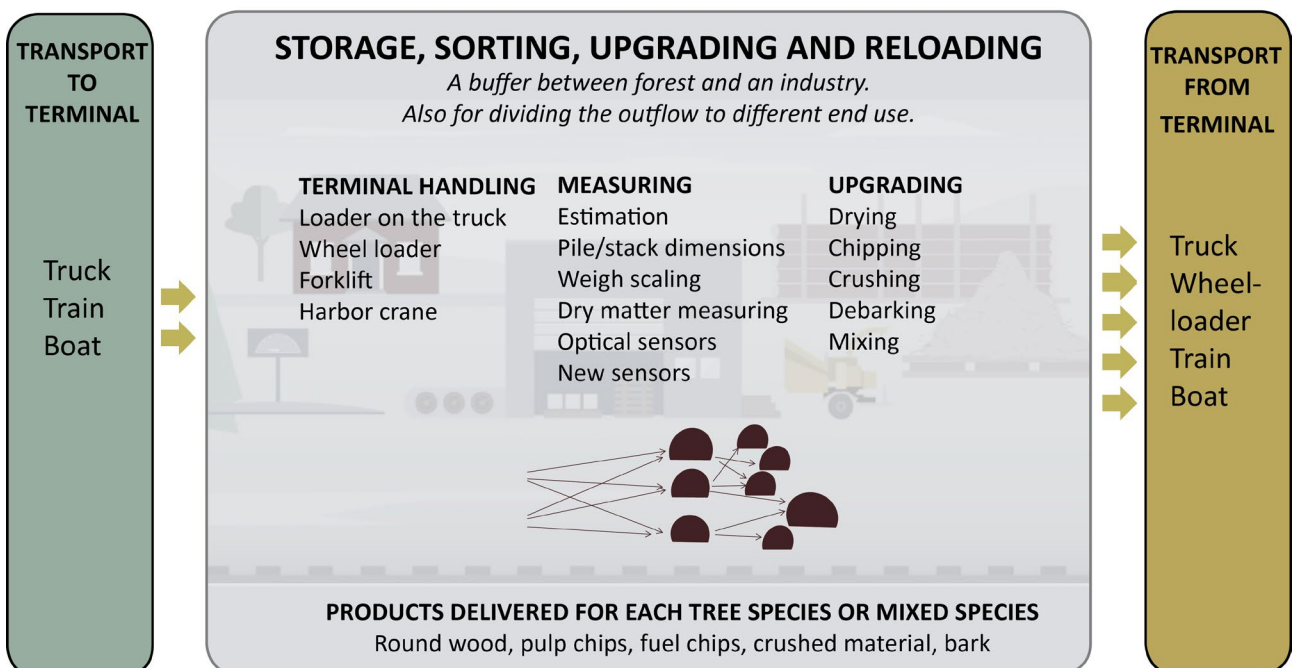


Figure 3. Storage, sorting upgrading and reloading terminals.

## STORAGE, SORTING UPGRADING/PROCESSING AND RELOADING TERMINALS

In these terminals, one or several processing functions are added compared with the description under c). This also makes the terminal to become a combination of a terminal and an industry. Examples of processing can be pelletizing or firewood processing. The transport from the terminal will normally go to even more industries compared with the terminal described under c) (Fig 4).

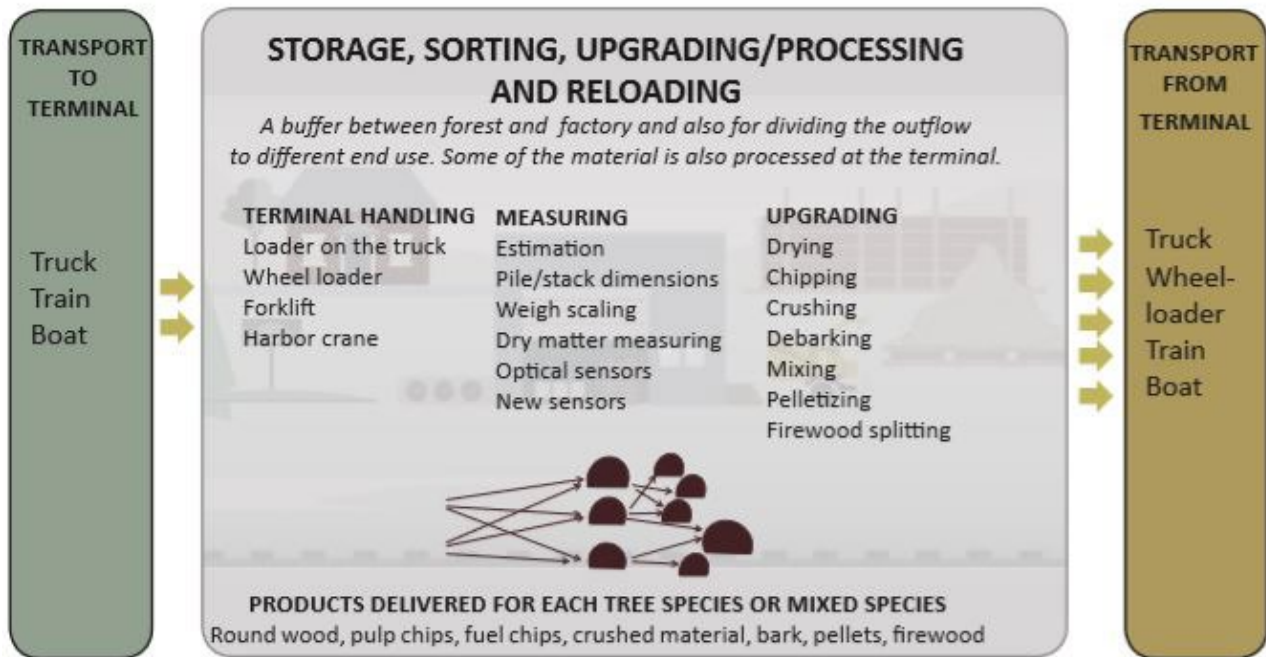


Figure 4. Storage, sorting upgrading/processing and reloading terminals.

AUTHOR

Tomas Nordfjell

Swedish University of Agricultural Sciences  
Department of Forest Biomaterials and Technology

tomas.nordfjell@slu.se