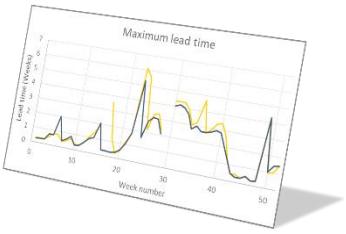
GreenLane
– fast-tracking value and resilience for industrial wood supply

GreenLane stakeholder workshops - approaches for testing, development and dissemination

Managing logistics in wood supply is complex because of interactions between production, transport and external factors. For such a context, interactive testing in virtual supply chain environments helps to capture stakeholder challenges and accelerate testing, development and dissemination of new insights and solutions. GreenLane tested three different workshop approaches (below) to find development paths towards reduced lead times and log value loss. These approaches represent a gradient of participant involvement in decision-making according to the regional challenges and solutions in focus.

How to use Virtual supply chain laboratories in stakeholder workshops?



1. In the **sub-artic region** (Northern Sweden) seasonal accessibility is a primary driver for long lead-times. Weekly accessibility scenarios were developed, and a hybrid simulation/optimization approach was used to manage flows and track lead-times and log value loss. The wood flows in the simulation model were initiated by a monthly production plan optimized according to mill demand, weather and road (landing) accessibility. As production volumes accumulated at roadside, user-specified rules determined transport planning decisions. Stakeholder workshops were used for testing as well as discussion of the effects of weather and alternative transport decision rules on simulated lead times and value loss.

2.In the **continental-montane region** (Austria) windthrow and large-scale salvage operations are drivers for long lead times. A simulation model was created with a focus on contingency planning with multimodal (rail) solutions to reduce lead-times and log value loss. The *GreenLane IBM value-tracking model* was developed specifically for this region and was implemented for three climate zones (based on altitude). The wood flows in the simulation model start with pre-planned harvesting production to test the effects of user-specified alternatives for truck and rail transport capacity. The simulation model was designed such that it could be run independently by stakeholders. The workshops were designed to give the stakeholders the opportunity to experiment and experience the effect of their own decisions on lead-times and value loss.

3. In the **oceanic region** (Norway) seasonal accessibility is a primary driver for long lead-times. Weather-based accessibility scenarios were implemented in a simulated training environment for weekly coordination of purchase, production and transport between participants. Participants collaborate in selecting stands for purchase, allocating these to harvesting teams for production, before allocating flows to fulfil mill demand within the restrictions of truck capacity and lead-time limits. The *GreenLane RBC availability model* was developed specifically for this region and was implemented in the model to determine availability for harvesting and transport within three climate zones (based on distance from the coast). The training was run as a team competition for maximum net forest value, based on bonus points for high delivery fulfilment with penalties for value loss.

Workshop approaches - The respective approaches vary with respect to mathematical sophistication and workshop duration. Simulation approaches 1 and 2 enable rapid comparison of decisions and system capacity alternatives within workshops of a few hours duration. The training environment (3) requires a minimum of one day of training for development of team collaborative routines.

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The goal of Forest value GreenLane is to develop virtual supply chain laboratory environments enabling value-tracking and interactive testing of harvesting and transport responses to challenging climate scenarios. Its focus is on implementing weather-driven models for wood quality and availability.