Biorefinery feedstock assessment made easy

Luke’s tools to analyze harvesting potential, competition situation and transport distances for any given location

Perttu Anttila

NOFOBE and NB-NORD Meeting
14–16 June 2017 in Lappeenranta, Finland

@FORBIOproject
Harvesting potential and demand of forest chips in Finland

- **2015**: Technical harvesting potential = 20.6 mill. m³, Demand of domestic chips = 7.3 mill. m³
- **WEM2030**: Technical harvesting potential = 25.6 mill. m³, Demand of domestic chips = 12.4 mill. m³
- **WAM2030**: Technical harvesting potential = 25.6 mill. m³, Demand of domestic chips = 13.8 mill. m³
- **TEM2030**: Technical harvesting potential = 25.6 mill. m³, Demand of domestic chips = 13.4 mill. m³
Spatial disaggregation of potentials

Disaggregation to 1 km x 1 km raster
Spatial disaggregation of demand

Disaggregation to 1 km x 1 km raster
Potential – Demand = Balance
Balance of logging residues in TEM2030 scenario
Balance of small trees in 2015
Balance of small trees in WAM2030 scenario
Creation of supply point network
Definition of supply chains to be compared

- Felling, bunching & forwarding of stemwood
  - Truck transport of stemwood
    - Truck transport of stemwood (68 t)
    - Truck transport of stemwood (76 t)
  - Unloading of stemwood to train
    - Unloading of stemwood to ground
    - Loading of stemwood to train
    - Train transport of stemwood
      - Unloading of stemwood from train
      - Chipping & handling
  - Unloading of stemwood from truck
Calculation of transport distances
Forest chip potential and balance as function of transport distance
Cost-supply curves
Supply cost in map format
Sometimes not even careful planning helps with logistical challenges…
Literature

• Anttila, P., Nivala, V., Salminen, O., Hurskainen, M., Kärki, J., Lindroos, T.J. & Asikainen, A. 2017. Spatial mismatch between forest chip supply and demand in Finland in 2030. Submitted manuscript.
