Assessment method for biomass feedstock availability and transport costs enhances sustainable wood mobilization at regional level

Brussels 26th April 2018

Vesa Nivala, GIS Expert* Perttu Anttila, Ph.D*



*Natural Resources Institute Finland

vesa.nivala(a)luke.fi perttu.anttila@luke.fi Arctic Smart Forest Network Leverage from the EU 2014–2020



European Regiona Development Fund

Decision support to investors

Luke's collection of tools and methods analyze the biomass feedstock availability and use (competion) at regional level. Features:

- Can utilize publicly available GIS data - e.g. MS-NFI & Biomass Atlas Database
- Scenarios of sustainable biomass feedstock potential
- Estimation of local competition
- Calculation of transport distances to any given location
- Estimation of supply costs
- Spatially explicit



2014–2020



Spatial disaggregation of biomass potential



THP = Technical Harvesting Potential (Maximum Sustainable) FAWS = Forestland Available for Wood Supply MS-NFI = Multi-Source National Forest Inventory (of Finland)



Programme for Sustainable Growth and Jobs 2014-2020



Spatial supply model for the plants



Spatial aggregation of demand



Demand scenarios at national level





NATURAL RESOURCES

INSTITUTE FINLAND

ρ 2014-2020



Balance



Regional level: Procurement area and supply point network



New plant can be placed to any given location



Forest chip potential and balance as a function of transport distance





Transport costs



Further reading

- Anttila, P., Sikanen, L., Röser, D., Laitila, J., Tahvanainen, T. & Parikka, H. 2010. Modeling biomass transportation costs in North Karelia, Finland. In: Eredics, P. (ed.). Mapping forestry. ESRI Press, Redlands, California. p. 9-12.
- Anttila, P., Asikainen, A., Laitila, J., Broto, M., Campanero, I., Lizarralde, I. & Rodríguez, F. 2011. Potential and supply costs of wood chips from forests in Soria, Spain. Forest Systems 20(2): 245-254.
- Muinonen E., Anttila P., Heinonen J. & Mustonen J. 2013. Estimating the bioenergy potential of forest chips from final fellings in Central Finland based on biomass maps and spatially explicit constraints. Silva Fennica 47(4). 22 p.
- Nivala, Mikko; Anttila, Perttu; Laitila, Juha. 2015. A GIS-based comparison of long-distance supply of energy wood for future needs from young forests to the coast of Finland. International Journal of Forest Engineering 26: 185-202
- Tahvanainen, T. & Anttila, P. 2011. Supply chain cost analysis of long-distance transportation of energy wood in Finland. Biomass & Bioenergy 35(8): 3360-3375.
- Anttila P.; Nivala V.; Salminen O.; Hurskainen M.; Kärki J.; Lindroos T. J.; Asikainen A. 2018. Regional balance of forest chip supply and demand in Finland in 2030. Accepted in Silva Fennica.



Thank You!





Leverage from theE 2014-2020



European Union European Regional Development Fund