FOREST REFINE PARTNER – SLU

Forest Refine is a cross-border research project between Sweden and Finland about the raw material supply to biorefineries. This presentation of the participating organizations is about SLU and the department of Forest Biomaterial and Technology in Sweden.

SWEDISH UNIVERSITY OF AGRICULTURAL SCIENCES – SLU

SLU is a university with a clearly defined role in society: to take responsibility for the development of learning and expertise in areas concerning biological resources and biological production. This responsibility stretches over the wide-ranging fields of agriculture, forestry and food industry to environmental questions, veterinary medicine and biotechnology.

FACULTY OF FOREST SCIENCES – FOREST BIOMATERIALS AND TECHNOLOGY

In Umeå you can find the faculty of Forest Sciences and the new department **Forest Biomaterials and Technology (FBT).** The former departments: Department of Forest Resource Management and Unit of Biomass Technology and Chemistry have been merged. This initiative is in line with the strategy to focus on training and research on innovative use of biomass to replace fossil fuels. The department has about 40 employees, including nearly 20 scientists, 4 professors, 3 associate professors and 15 graduate students.

EDUCATION

The undergraduate education has a clear focus on the biomaterial value chains from forest to industry. It is primarily connected to the forest science programme at SLU.

RESEARCH

The research at FBT is focused on the biomaterial value chains from forest to industry, and is performed in collaboration with international and national universities, corporations, and government agencies.

BTC- BIOFUEL TECHNOLOGY CENTRE

BTC is research pilot plant is designed for refining solid biomass and is also used as resource for education. They are working with wide spectra of solid biomass dealing with handling, upgrading and combustion.

INTERNATIONAL JOURNAL OF FOREST ENGINEERING

Ola Lindroos from FTB is the editor of the International Journal of Forest Engineering that is a journal dedicated to the dissemination of scholarly writings in all aspects of forest operations. The aim of the journal is to promote environmentally sound forestry practices and contribute to sustainable forest management. The journal has been published since 1989 and there are three issues per year.

DEPARTMENT OF FOREST BIOMATERIAL AND TECHNOLOGY IN FOREST REFINE

Several researchers from FTB are involed in Forest Refine: Prof. Tomas Nordfjell, Dr. Dan Bergström, Dr. Dimitris Athanassiadis, Dr. Gunnar Eriksson, Dr. Fulvio di Fulvio, Kalvis Kons, PhD student, Håkan Örberg, research assistant, Gunnar Kalén, research engineer, Raul Fernandez Lacruz, Björn Hedman.

The researchers are working together with partners in Finland with sub-projects number 1, 2 and 4

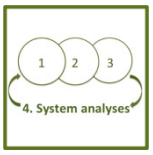
1. CHEMICAL BALANCES AND AVAILABLE POTENTIALS OF FOREST BIOMASS FOR BIOREFINERIES

The sub-project one aims at investigating the chemical balances and concentrations of all biomass components of the major tree species growing in the project region. Instead of evaluating the forest reserves in terms of e.g. volume or energy content, the chemical composition of the forest biomass need to be determined in order to provide a comprehensive view of the regional raw material potential for various biorefinery processes. Tree-specific information on the chemical compositions will be compiled.

2. EFFECTIVE RAW MATERIAL SUPPLY FROM THE FOREST TO BIOREFINERIES

The whole supply chain from the forest to delivery to a biorefinery, includes harvest, terrain transport and storage at landing, terminal handling, fractioning and storage of different types of fractionized biomass. Different biomass fractions will be characterized according to their physical and chemical properties. Possibilities to upgrade the biomass already at stump and at landing will be studied. A comprehensive review of techniques and principles for comminution and mechanical fractioning of forest biomasses will be carried out. The effects of storage of different types of fractionized biomass on their chemical and physical characteristics will be studied.

4. SYSTEM ANALYSES AND ENERGY BALANCES FOR BIOREFINERY SUPPLY CHAIN.



The result from the system analysis will give the cost - and energy demands of the different systems for delivering the right qualities and quantities of raw materials at right time to current and possibly future biorefinery industries in the BA region. The system analysis is to compare supply chain improvement options to conventional supply chain practices.

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