



### CROSS-REGIONAL ASSESSMENT WORKSHOP

Region:

Northern Sweden BioFuel Region





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Northern Sweden 97 % of the productive land is is covered with forest





## BRIEF OVERVIEW OF THE VALUE CHAIN 1 AND 2 Dioeconomy development

#### SAWDUST AND BARK

- Added value to forest industry byproducts today used for combustion
- Potential upgrading to bioplastics, biochemicals or biofuels







POTENTIAL UPGRADING TO BIOPLASTICS, BIOCHEMICALS OR BIOFUELS

Logging residues



LOCATION & **PROCUREMENT** 

RAW MATERIAL Logging residues: branches from fresh spruce

METHOD to find raw material **GUIDELINES** for procurement

**FRACTIONATION** 

Sort out needles, by grinding, sieving material to analyse

ANALYSIS & EXTRACTION

ANALYTICAL extractions

Chemical Composition

Bioactivties of samples

Reference/analytical/laboratory

Comparison

EXTRACTION optimisation in laboratory for pilot scale

Chemical

composition

can actually get out of samples industrially

Scaling up

and what we

Practical/scale-up/industrial

COMPOUNDS

Lipophilic compounds:

- Resin acids
- Fatty acids
- Waxes

Hydrophilic compounds:

- Phenolic compounds

Solid residue

Ash Heating value content

INTERMEDIATE **FURTHER TREATMENTS PRODUCTS** 

Separation/ b **Tannins** Purification

(Extraction)

Biological

processing

Flavonoids

Waxes

Resins

Growing media

FINAL **PRODUCTS** 

Leather treatment

Cosmetics

Waste-water treatment

Food and drinks

Food supplements & functional food

Packing surface material

Paint

Garden-soil



## AVAILABLE SKILLS AND CAPABILITIES IN THE REGION

- Long tradition of forest management and forest industry activities
- Entrepreneurship
- R & D
- Bio Clusters
- Innovation hubs
- Public awareness



# OPPORTUNITIES & LINKS WITH PREVIOUS COMMUNITY-driven bioeconomy development IMPLEMENTATIONS, STRATEGIES OR ROADMAPS

- Fossil free Sweden Strong political commitment and roadmaps
- National and regional forest programs
- Regional development strategies
- Smart specialization strategies
- Other strategies



BioFuel Region



### FORESEEABLE BARRIERS FOR DEPLOYMENT

The proposed EU legislation will make Sweden in general, and northern Sweden in particular, contribute less to climate mitigation!

- LULUCF land use land use change
- RED renewable energy directive
- Deforestation regulation
- Nature restoration
- The Forest strategy



