



**Montinutra**

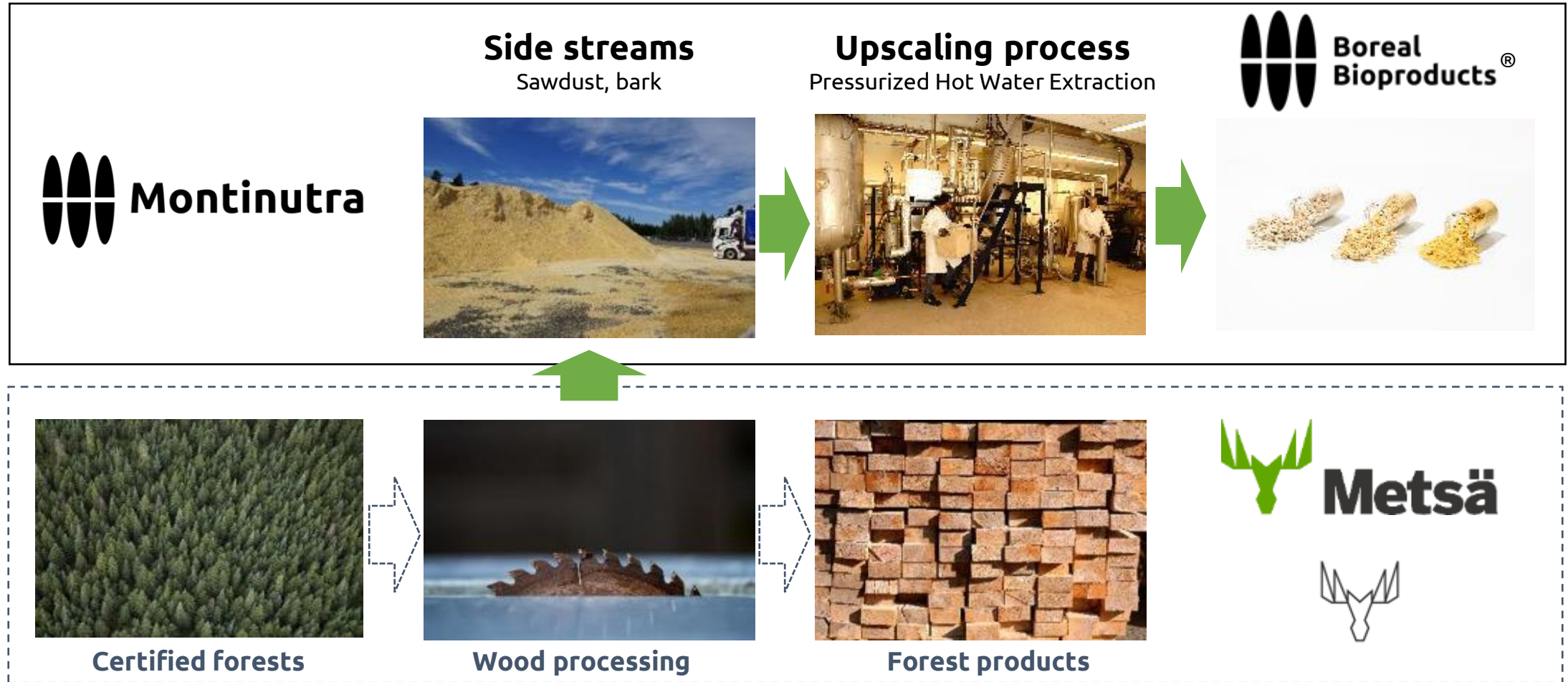
PMA53

May 2023



**Ingredients of the future  
from residues of today.**

Our mission is to valorize side streams to enable bioeconomy



# Spruce sugars, lignins and fibers as Boreal Bioproducts™

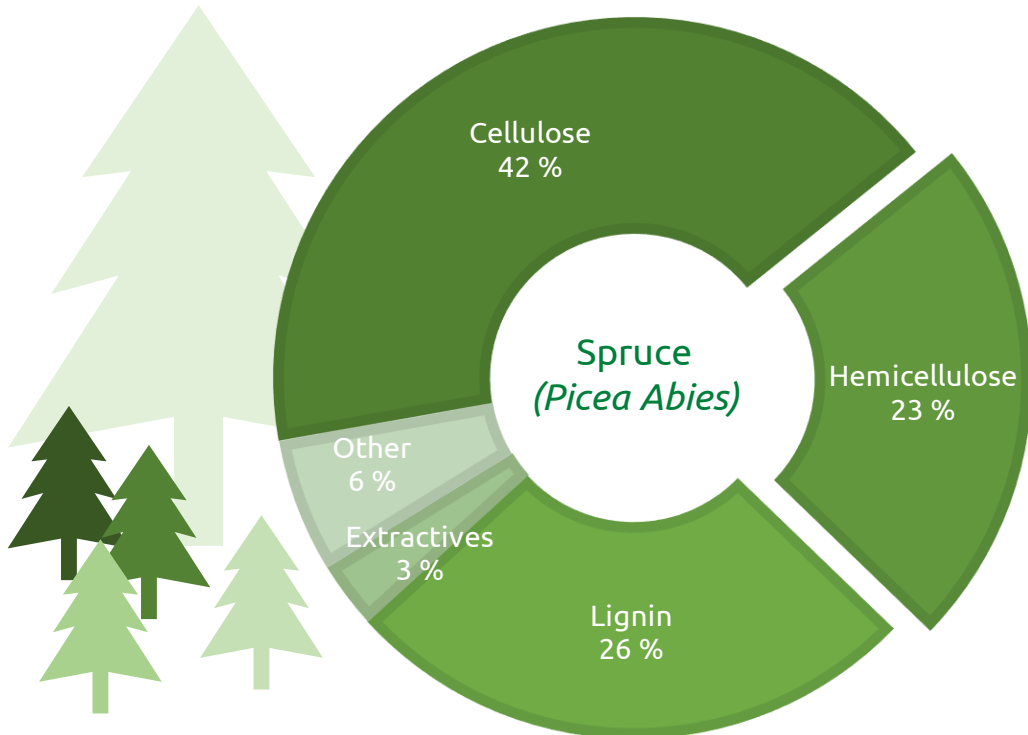


	SpruceSugar™	SpruceLigno™	SpruceFiber™
<b>Description</b>	Polysaccharide compound, galactoglucomannan (GGM)*	Phenolic lignin compound	Thermally treated fibre
<b>Key value drivers</b>	Natural, non-food origin Multifunctional	Sulfur free Natural form	Lowered migration risks Hygroscopic fibre
<b>Molecular mass</b>	8000 g/mol Mw	<1000 g/mol Mw	N/A, solid particles
<b>Particle size</b>	<20 µm	<300 µm	20 µm ... 5 mm, adjustable
<b>Lignin content</b>	<10% ... 20%-w	>85%-w	>30%
<b>Functions</b>	Biopolymer Film-former Co-emulsifier	Phenolic raw material Antioxidant UV-absorbant	Fiber for compounds, insulation Filler, softener
<b>Available</b>	Powder Concentrate in water	Ground particles Semisolid	Powder Fiber

\* Polysaccharide typical to softwoods

# Spruce extracts have several applications

Hemicellulose extract made from abundant side stream available from spruce sawmilling




Extract



Apply

 **Cosmetics**      SPF-boosters, antioxidants, surfactants

 **Chemicals**      Binders, coatings, antioxidants, phenolics

 **Composites**      Fillers, absorbers, structural fibres

 **Food & Beverage**      Powdered lipids, prebiotic fibres

INCI Picea Abies Wood Extract 25752

Actual wood contents vary based on the age and part of the wood.

Certificates PEFC ST 2002:2013, PEFC ST 2001:2008 v2 Certificate #2343-10, FSC Licence Code FSC-C014476

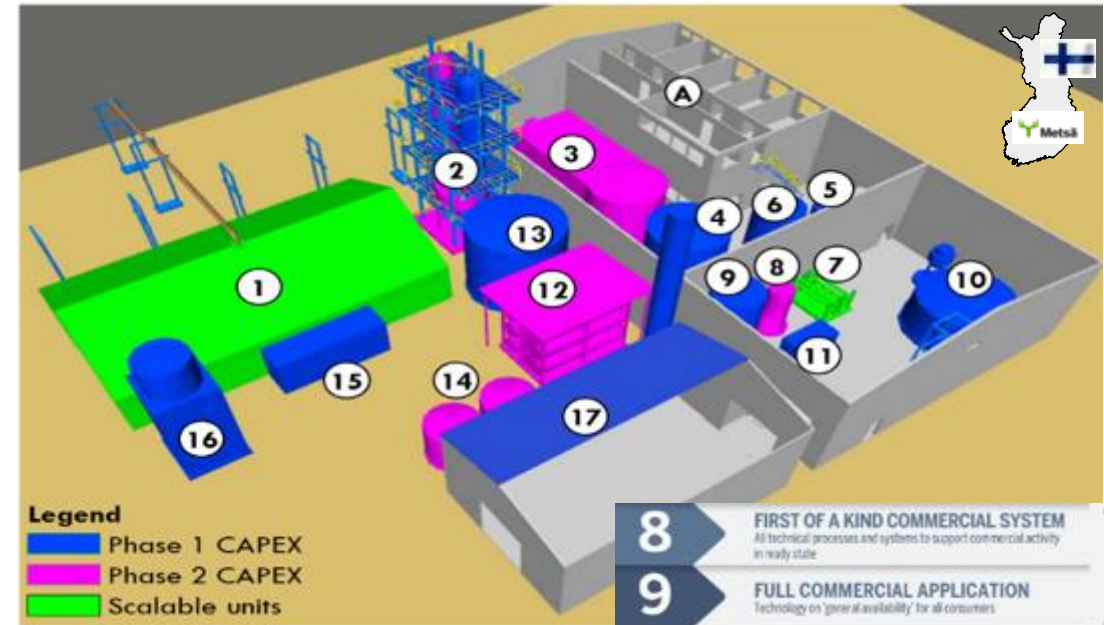
# Proven extraction and fractioning technology

Pilot Plant 2021



Technology proven and validated at a level of 10 ton/a capacity.  
Pressurized hot water extraction, separation, filtration, drying.  
Applicable for industrial pilots and small commercial applications.

Commercial Plant at Metsä Fibre Vilppula sawmill



Viable commercial operation at 10 kton/a process capacity.  
Phased implementation de-risks and for scaling up capacity.  
Pre-planning completed, proceeding in pre-engineering.

# We are on a mission



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