
Title: **Making more out of our wood**

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Curriculum:

Dirk den Ouden is the Global Technology Scouting Director for the Stora Enso Biomaterials division. Based in the Innovation Centre for biomaterials in Stockholm, Dirk is looking for new products and processes which will benefit Stora Enso in its transition to a renewable materials company. Before joining Stora Enso, Dirk worked in the bio-based industry as a new business developer for Avantium and Photanol and as an investment banker for Fortis (now ABN AMRO) and Kempen&Co. Dirk is a biomedical engineer by training, from Eindhoven Technical University.

Abstract:

Renewable materials company Stora Enso is transforming from a traditional pulp and paper company. Aiming to replace non-renewable materials, the company is developing new, innovative products and services based on wood and other biomass which does not compete with food.

To create new, bio-based products and solutions, the company has invested in extraction and separation technology, as part of its strategy to transition into a renewable materials company offering bio-based solutions and making more out of our valuable raw material. One example is the acquisition of Virdia in 2014, which brings us technology to extract high quality sugars from wood and agricultural waste. We are also transforming existing pulp mills, including the Sunila Mill in Finland. We decided to start recovering lignin from the pulping process. Lignin is now widely available and has a high functional versatility. This makes it an ideal candidate for producing new materials and intermediates.

In our presentation, we will zoom in on the Sunilla investment and lignin application development. Lignin extraction brings benefits to the mill, as well as challenges. Lignin being a new product, we need to work diligently on developing applications together with partners and customers. Phenol replacement in resins is just one the first step, and we are working with carbon fibre and carbon black applications for the future.

With 100% of Stora Enso's wood traceable to its forest of origin, and planting more than we consume, Lignin made out of this sustainably managed raw material has good potential to become a major component in the bio-based economy.



storaenso

Stora Enso

More out of our wood

Dirk den Ouden

Global Technology Scouting Director

Stora Enso, Biomaterials division

As the world is changing, Stora Enso is transforming



From a traditional paper and board producer to a global renewable materials growth company

**100% of our wood is
traceable to its forest
of origin**



THE RENEWABLE MATERIALS COMPANY

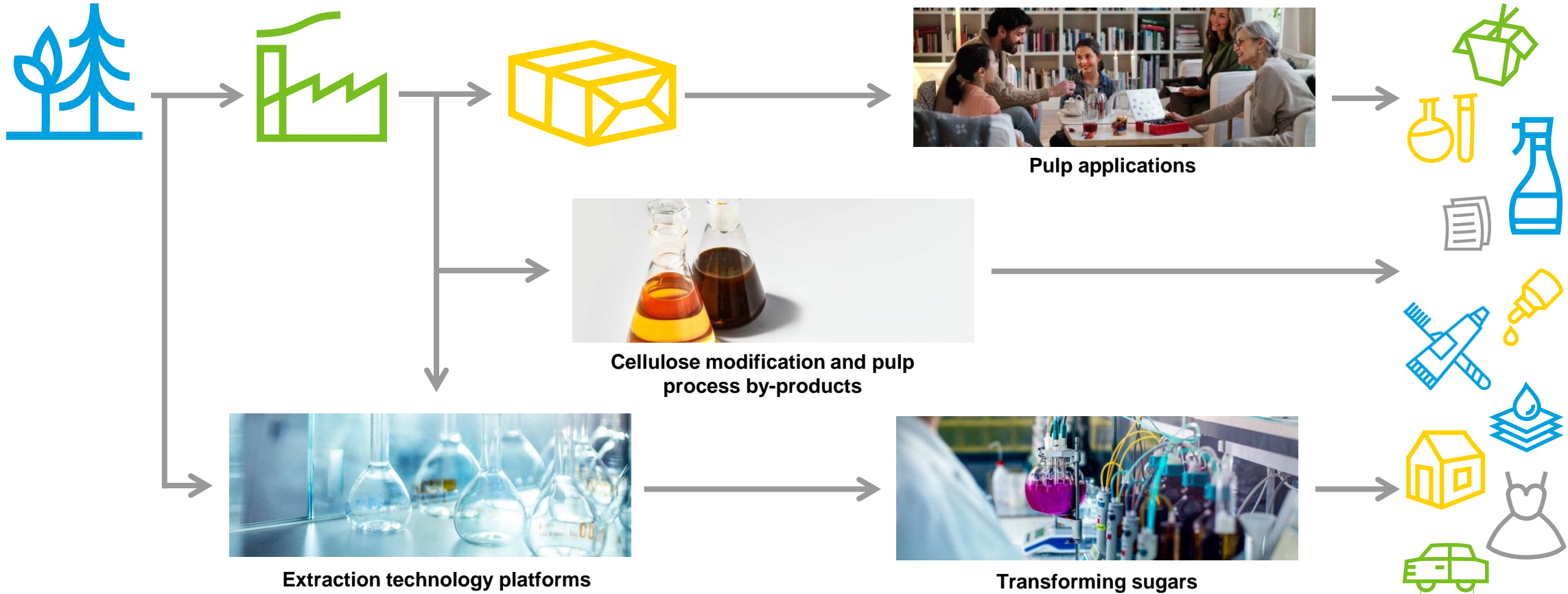
More out of our wood



Extraction
and
separation
technologies



Stora Enso's Biomaterials division has four innovation clusters





A centre to stimulate innovation



Sunila mill, Finland



THE RENEWABLE MATERIALS COMPANY

Raceland, Louisiana, USA



Danville, Virginia



THE RENEWABLE MATERIALS COMPANY

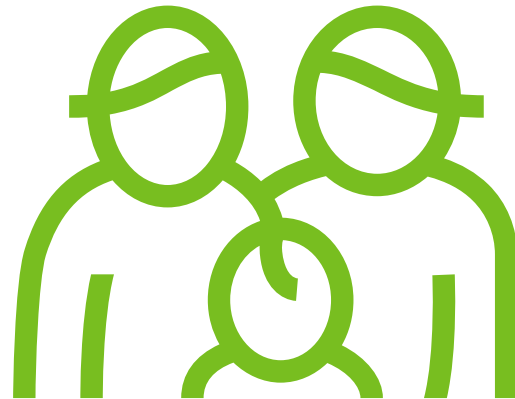
Kraft Lignin



Replacing phenol with lignin brings clear benefits



Improved environmental footprint



A safer alternative

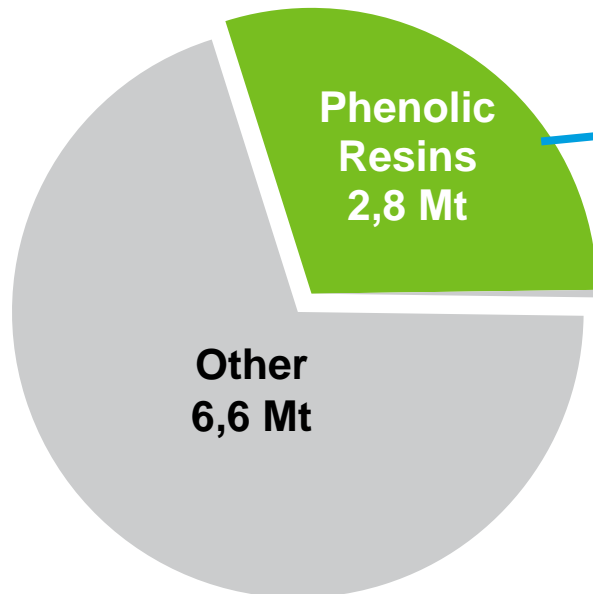


Cost efficiency and cost stability

Phenol replacement has big potential with attractive margins



**Total market for phenols:
9,4 Mt**



Potential Market Value
for Lignin: **~1,7 B EUR**

4% CAGR

Stora Enso lignin
production **40Kt**

Scouting for technology



THE RENEWABLE MATERIALS COMPANY

Thank you!

