



# Redesigning Plastics

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Nordic Bioplastic Conference 2023

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Woodly Ltd

An aerial photograph of a dense, lush green forest. The trees are packed closely together, creating a textured canopy of various shades of green. The lighting is soft, highlighting the tops of the trees. Overlaid on the center of the image is the text 'World without plastics' in white, with a thin teal horizontal line striking through it.

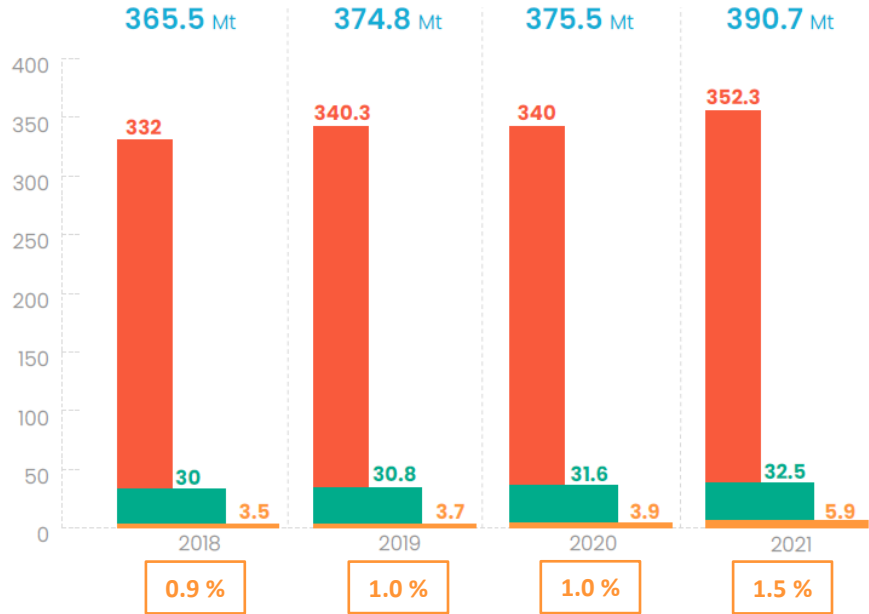
~~World without plastics~~

**Plastic without fossil origin**

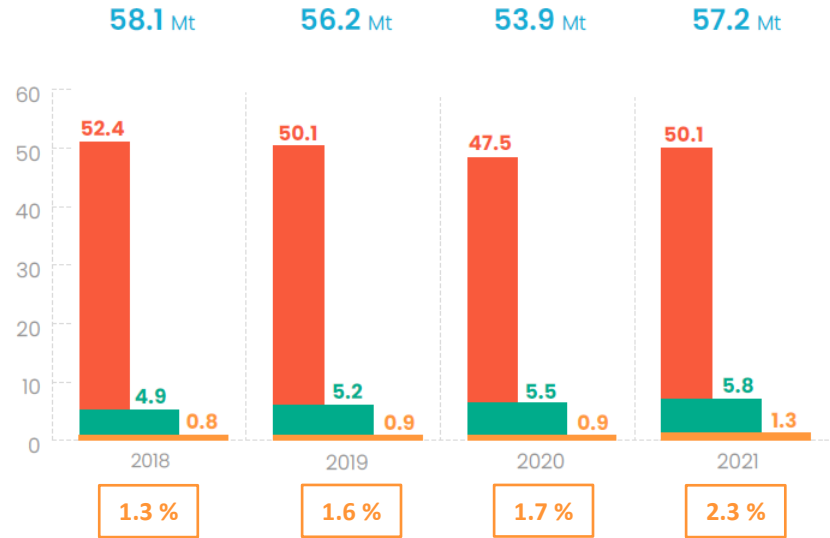
Woody is plastic – and that is a very good thing.

# Plastic Production Evolution

## Global



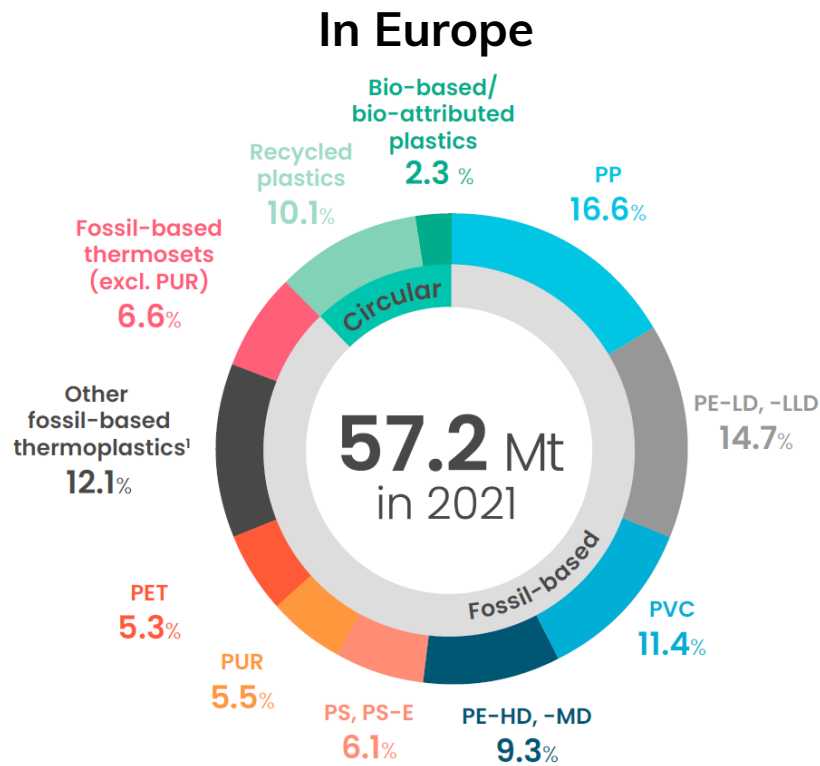
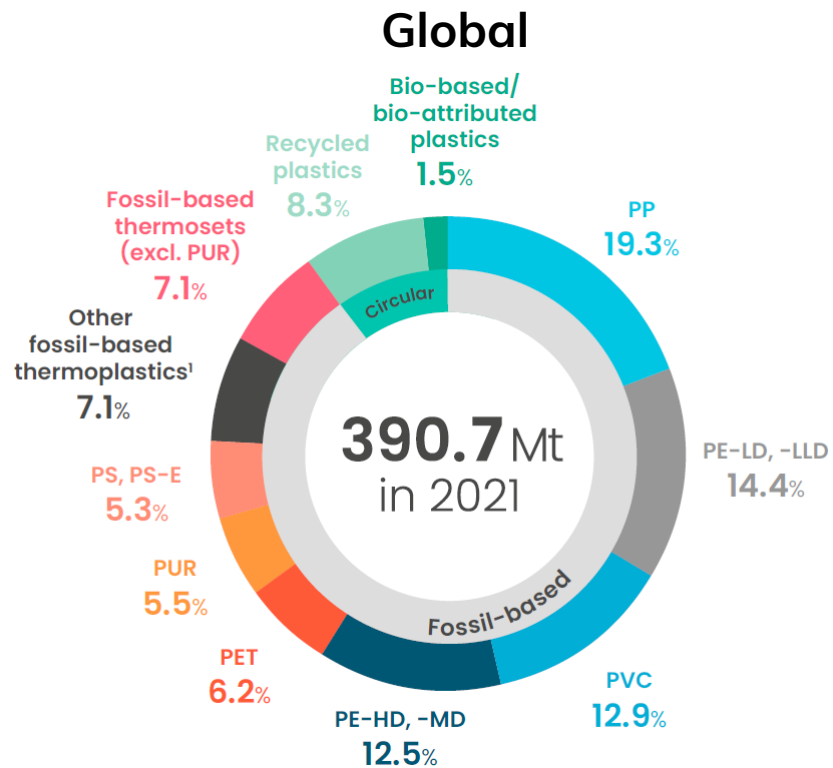
## In Europe



In million tonnes

- Fossil-based plastics<sup>1</sup>
- Post-consumer recycled plastics<sup>2</sup>
- Bio-based plastics (including bio-attributed plastics in 2021 data)<sup>3</sup>

# Plastic Production in 2021





Plastic cannot be replaced,  
nor does it need to be replaced. We will  
never live in a world without plastic.

We can **redesign plastic** to  
retain the benefits it provides while  
reducing its environmental impact.

Plastic waste problem is hard to be solved,  
but we believe there is a future without  
waste by increasing **recycling**.

# Woodly Ltd

Finland based material technology company  
developing wood-based bioplastic called  
Woodly® material

Team of 10 persons

First commercial packaging application based  
on Woodly® material launched in 2020

Business model is based on selling Woodly®  
granulate and licensing IPR



REDESIGNING PLASTICS

A close-up photograph of a person's hand holding a large quantity of small, white, irregularly shaped granules. The granules appear to be made of a wood-cellulose based plastic. The background is dark and out of focus, showing a metallic rim of a bowl or tray.

Woodly® material is entirely new kind of carbon neutral plastic based on wood-cellulose

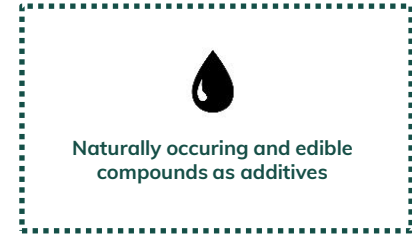
Does not contain conventional plastic

Food contact approved and safe to use

Not biodegradable or compostable

Designed to be recyclable

# Woody Technology



Food contact approved

LCA study follows the regulations and guidelines of **ISO 14040 and ISO 14044**

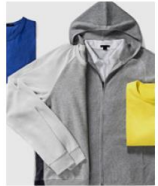


# Woody portfolio

## Current focus areas

<b>Product lines</b>	Woody 100	Woody 200	Woody 300	Woody 400	Woody 500	Woody 600	Woody 700
<b>Manufacturing technology</b>	Blown film, cast film extrusion	Injection molding	Composites	Extrusion coating	3D printing	Blow molding	Textiles
<b>Market segment by industry</b>	Food & beverage, toys, electronics, cosmetics, textiles & fashion	Automotive, electronics, toys, medical	Automotive, electronics, cosmetics, household products	Food & beverage	Automotive, electronics, toys, medical	Beverages, household products	Fashion, sports & apparel
<b>Developmental status</b>	Market ready	Market ready	In development	Potential	In development	Potential	Potential

Examples of the end products made of Woody



# Product launches



HKScan



K Group, Pirkka label



VihreäKeiju



St1 HelmiSimpukka, R-kioski, AVECRA (VR Group)



Treston

# Product pilots



ELPLAST (zipper)



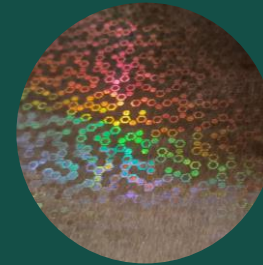
Black Moda (textile packs)



Orthex (storage boxes)



Anonymous (3D printing)



Anonymous (optical hologram)

# Circular economy concepts are essential part of Woodyly's value chain

## Reuse

Durable consumer goods made from Woodyly suitable for decades of use

## Mechanical recycling

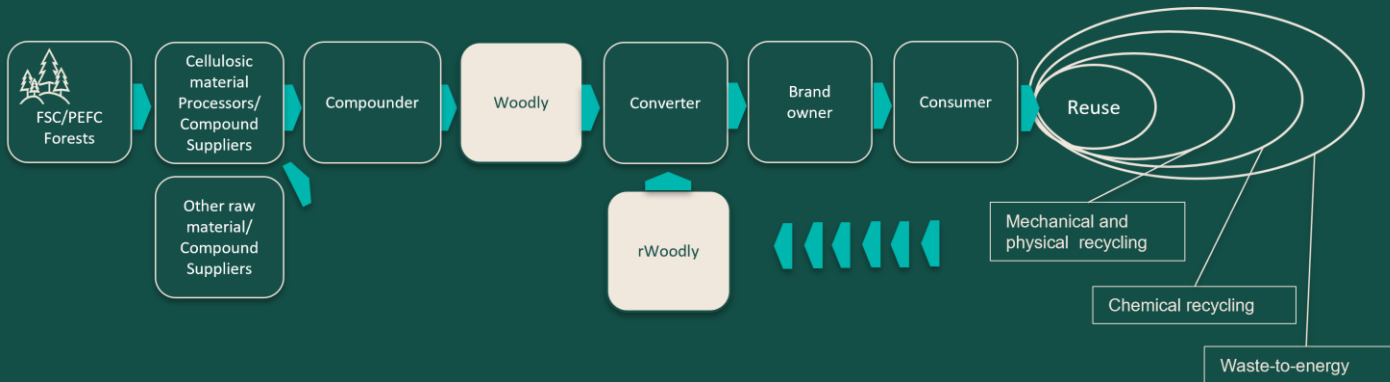
Woodyly can be easily separated using NIR sensors and endures several cycles of recycling very well and new products can be made from recycled Woodyly. Includes collection, separation, grinding, melting, washing, regranulation.

## Chemical recycling

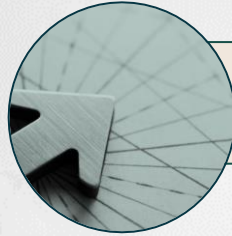
Via gasification mixed plastics and Woodyly can be turned into syngas that then is used to make methanol or hydrocarbons and further to produce feedstock for petrochemicals.

## Waste-to-energy

When incinerated for energy, the emissions from burning are 70 % lower compared to conventional fossil plastics.



NIR = near infrared  
Woodyly is not biodegradable or compostable



**Net Positive  
Strategy**

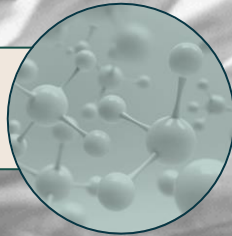


**Renewal of  
LCA**

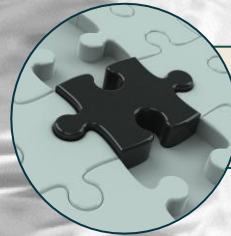


**Sustainable  
Supply Chain**

**Sustainability  
Areas for  
Development**



**Increase  
Bio-Content**



**Collaboration  
with Partners**



Thank You!

*www.woodly.com*