

# SULAPAC<sup>®</sup> CHALLENGES PLASTIC



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CEO and Co-Founder

# THE GLOBAL PLASTIC WASTE PROBLEM NEEDS NEW SOLUTIONS



# SULAPAC® – #1 SUSTAINABLE MATERIAL REPLACING PLASTIC

All the plastic benefits without the  
plastic waste problem.



Europe's 100 Hottest  
Startups 2018



# Cellulose acetate biodegradation

Snack wrap



Infinited fiber company



Recyclable	OK!
Compostable	OK!
Biodegradable	OK!
Biobased	OK!



## PAPTIC® The Next Generation of Paper

PAPTIC® material is novel wood fibre based packaging material, which can replace plastics in several flexible packaging applications, such as carrier bags, e-commerce mailing bags and product packages that are typically in the highest risk of ending up in the nature

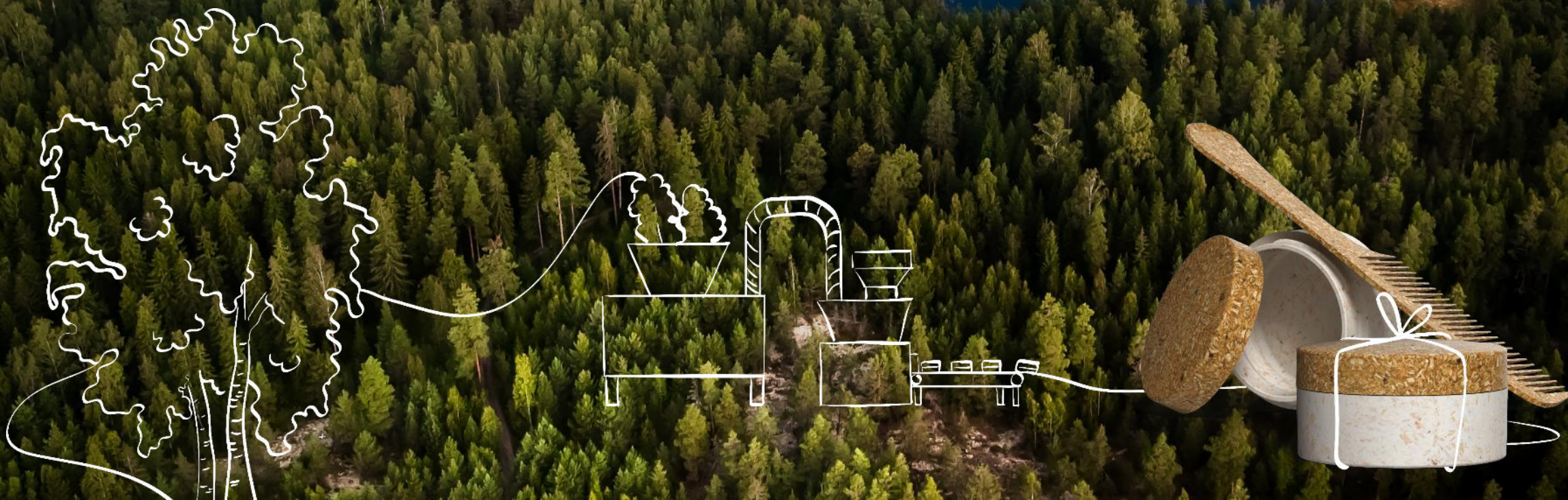
Paptic® material is developed to fit to the existing value chains of paper and plastics, and its recyclability and biodegradability are on par with paper

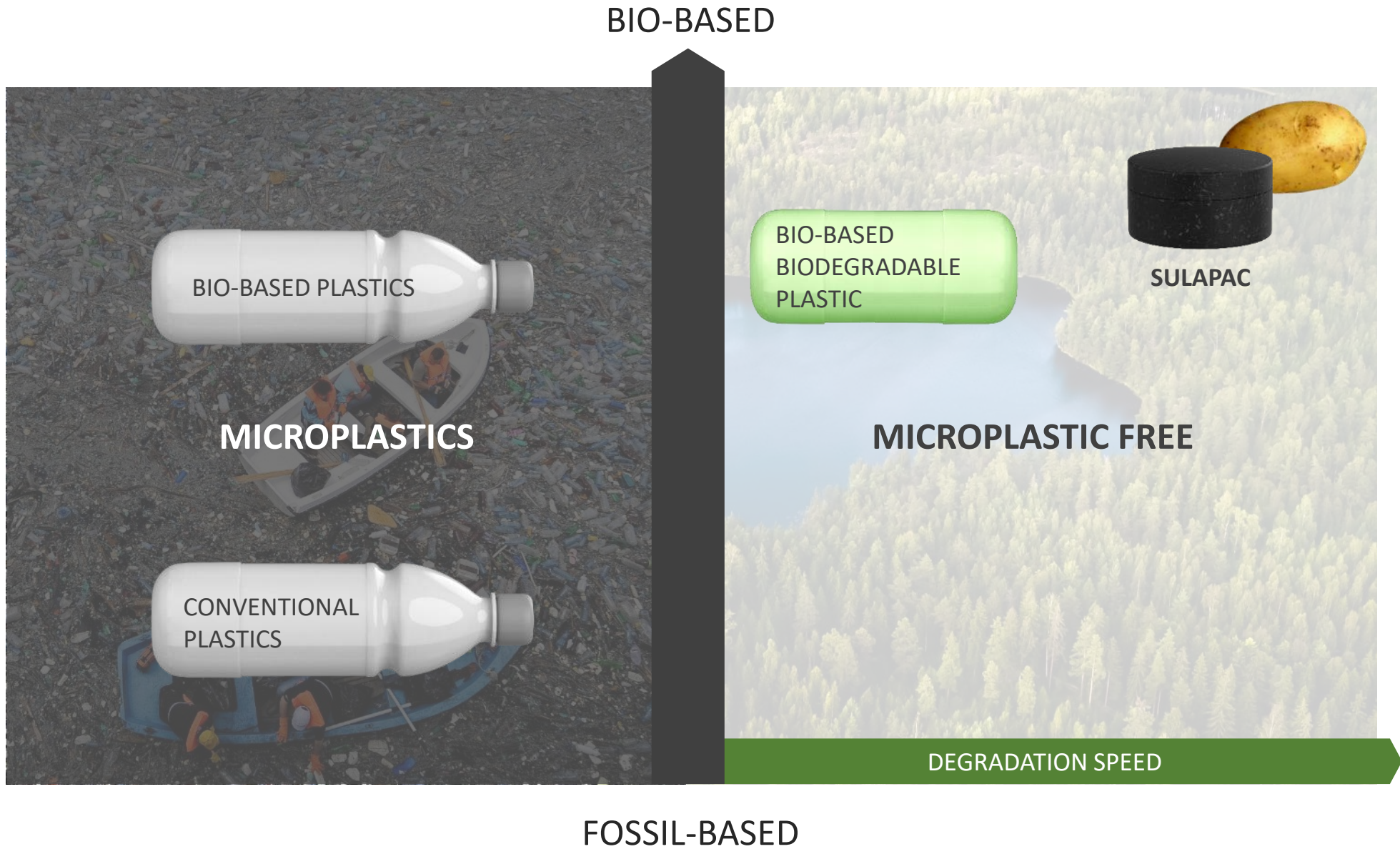
The main end-of-life option for PAPTIC® products is recycling in cardboard recycling streams. The high quality wood fibre in PAPTIC® can therefore be recycled into other packaging products

When recycling systems are not available PAPTIC® products will fully biodegrade in industrial compost according to EN 13432, and so the products comply with the requirements of the EU Packaging Directive (94/62/EC)

In the case that cardboard recycling streams or industrial composting are not available, PAPTIC® products will go with municipal solid waste to waste-to-energy plants to be burned into energy

# SAVE THE WORLD FROM THE PLASTIC WASTE





FOSSIL-BASED

# BIODEGRADABILITY

## Biodegradable materials

Materials (either plastics, fibre materials or composites) which are decomposed into carbon dioxide, methane and biomass by naturally occurring microbes.

Biodegradability depends on the surrounding conditions; a material can be e.g. biodegradable in industrial compost but when placed in sea water it can take longer time to degrade. Therefore, there is a need for separate certificates to guarantee e.g. marine biodegradation.

## Marine biodegradation

Can be assessed according to e.g. ASTM D7081 and ASTM D6691. As an example OK Biodegradable Marine certification scheme of TÜV AUSTRIA Belgium –certificate.

# DEFINITIONS FOR MATERIALS

## **Microplastics**

5mm plastic materials that can't be digested by naturally occurring micro-organisms. They remain permanently in the nature for hundreds of years.

## **Microplastic releasing materials**

Materials that disintegrate due mechanical, chemical or other degradation mechanism and leave microplastics behind.

## **Microplastic-free**

Materials that can be digested by naturally occurring micro-organisms and biodegrade in CO<sub>2</sub>, H<sub>2</sub>O and biomass.

## MICROPLASTIC RELEASING MATERIALS

Can't be digested by micro-organisms.

Remain permanently in the nature for  
hundreds of years.

## MICROPLASTIC-FREE MATERIALS

Materials that can be digested by  
naturally occurring micro-organisms.

Biodegrade in CO<sub>2</sub>, H<sub>2</sub>O and biomass.

# END-LIFE SCENARIOS WITH SULAPAC MATERIAL

## MISUSE



### SOIL

Biodegradable  
Soil Certificate

Q4/2019



### MARINE

Marine  
Certificate

Q4/2019



## GENERAL WASTE



### LANDFILL

In-house  
Testing

Q3/2019



### BURN

In-house  
Testing

Q1/2019

## BIOWASTE



### INDUSTRIAL COMPOSTING\*

Seedling  
Certificate

Q3/2019



### HOME COMPOSTING

Home Compost  
Certificate

Q3/2019



## FUTURE



### BIOMETHANE PRODUCTION VIA BIOGASIFICATION\*\*

Qvidja  
in-house testing

Testing ongoing

\* Today's defined recycling streams with infrastructure in place \*\* Future recycling stream

# SULAPAC<sup>®</sup>

## BIODEGRADES FAST

























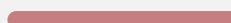






























Sulapac after 21 days in  
industrial composting



Compostability according to ISO – 13432 standard

# SULAPAC LEADS THE WAY

	 <b>CARBON FOOTPRINT</b> CO <sub>2</sub> eq.*	 <b>RENEWABLE RAW MATERIALS</b>	 <b>BIODEGRADATION SPEED</b>	 <b>MICROPLASTIC-FREE</b>	 <b>PROCESSABILITY</b>
 SULAPAC	0,77 				
 GLASS	0,87 				
 ALUMINIUM	3,23 				
 PP (PLASTIC)	2,00 				
 HD-PE (PLASTIC)	1,86 				
 BIO-PE (PLASTIC)	0,76 				
 R-PET (PLASTIC)	1,52 				
 PLA (PLASTIC)	1,01 				

\*ILCD 2011 LCIA method and normalization factors according to Product Environmental Footprint Category Rules Guidance were used in the cradle-to-grave LCA analysis.

# PRODUCTION WITH EXISTING MACHINERY



Easy mass-  
manufacturing



Custom  
design

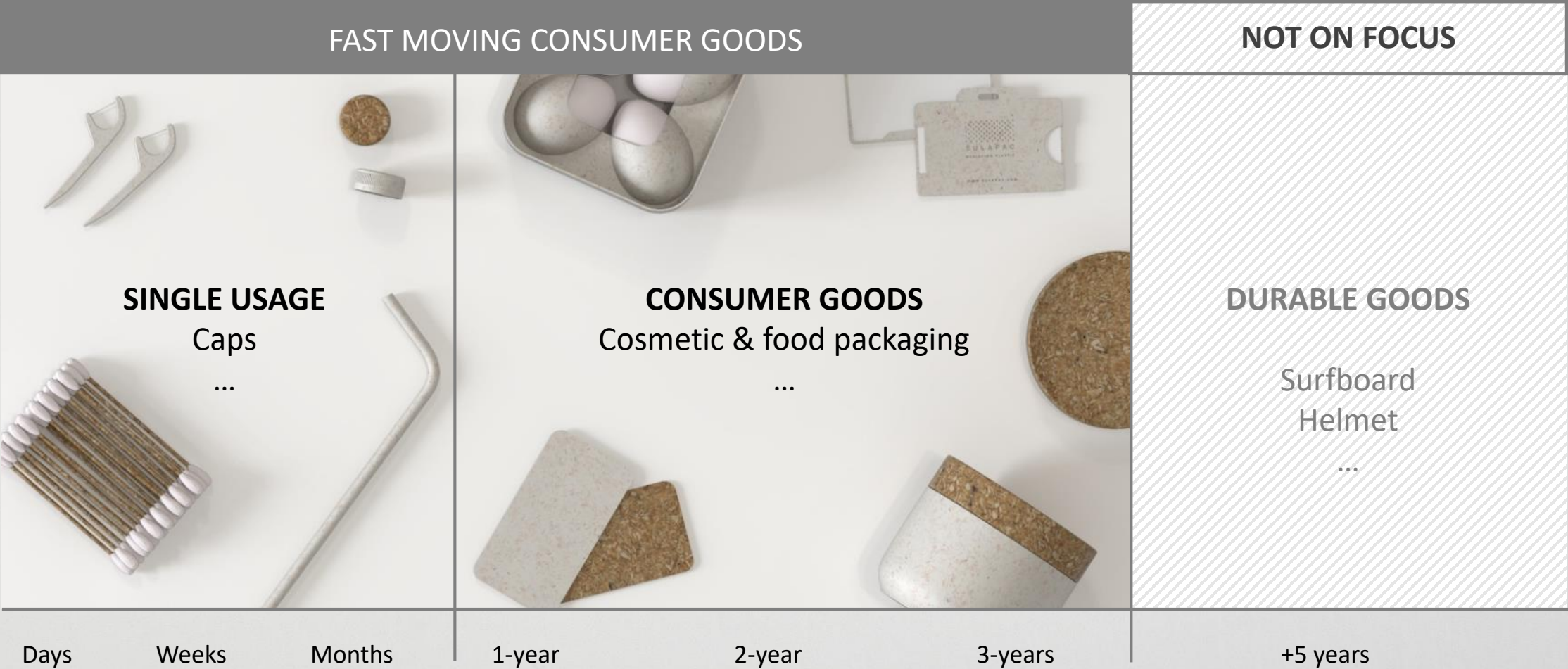


Sustainably sourced,  
Local materials &  
production

# SULAPAC AS A LICENSE



# SULAPAC MATERIAL FIT & FOCUS



# SUP PROPOSAL BY THE COMMISSION

Natural polymers that have not been chemically modified are excluded.

Other than that, bio-based, biodegradable, or modified natural polymers are in scope.

## Article 3.1 Definition of plastic:

“a material consisting of a polymer within the meaning of Art. 3(5) of Regulation (EC) No 1907/2006, to which additives or other substances may have been

Added, and which can function as a main structural component of final products, with the exception of natural polymers that have not been chemically modified”

## Recital 8:

“Plastics manufactured with modified natural polymers, or plastics manufactured from bio-based, fossil or synthetic starting substances are not naturally occurring and should therefore be addressed by this Directive. The adapted definition of plastics should therefore cover polymer-based rubber items and bio-based and biodegradable plastics regardless of whether they are derived from biomass and/or intended to biodegrade over time.”

# THE PROBLEM

1. Plastic is defined too broadly in the SUP Directive.
2. There is no differentiation between microplastic releasing and microplastic-free biodegrading materials in the Directive.

# NOTE

*"About biodegradable products: Excluding them from the scope of this Directive would completely undermine the effectiveness and credibility of the proposal. The Commission is open to explore the potential of biodegradability, however, **there are as yet no plastics that biodegrade fully in the marine environment**. Once science progresses, and standards for marine biodegradability are developed, the issue will be revisited. The proposal foresees this as part of the evaluation six years after the proposal's adoption."*

Environment Commissioner Karmenu Vella, 9 October 2018,  
Environment Council debate on single-use plastics

# OUR AMENDMENT PROPOSAL

## Amendment 1, Article 3 (1):

'plastic' means a material consisting of a polymer within the meaning of Article 3(5) of Regulation (EC) No 1907/2006, to which additives or other substances may have been added, and which can function as a main structural component of final products, with the exception of natural polymers that have not been chemically modified. **Recyclable microplastic-free materials that are biodegradable in aquatic environments and are derived from biodegradable modified natural polymers and biodegradable synthetic polymers are not considered as plastic for the purposes of this Directive and are thus excluded from the scope of the Directive;**

## Amendment 2, Recital 8:

Plastics manufactured with modified natural polymers, or plastics manufactured from bio-based, fossil or synthetic starting substances are not naturally occurring and should therefore be addressed by this Directive. ~~The adapted definition of plastics should therefore cover polymer-based rubber items and bio-based and biodegradable plastics regardless of whether they are derived from biomass and/or intended to biodegrade over time.~~ **Recyclable microplastic-free materials that are biodegradable in aquatic environments and are derived from biodegradable modified natural polymers and biodegradable synthetic polymers are not considered as plastic for the purposes of this Directive and are thus excluded from the scope of the Directive;**

# AMENDMENT HAS BEEN SIGNED BY

Suvi Haimi, CEO, Sulapac

Tuomas Mustonen, CEO, Paptic

Jaakko Kaminen, CEO, Welmu

Janne Poranen, CEO, Spinnova

Ali Harlin, Professor, VTT, Technical Research Center of Finland

Maija Pohjakallio, Research Team Leader, VTT, Technical Research Center of Finland

Mika Ihamuotila, Marimekko & Rovio, Chairman

Ilkka Herlin, Chairman, Cargotec

Saara Kankaanrinta, Chairman, Baltic Sea Action Group

Tomi Kyöstilä, Board member, Planmeca

Janne Kyöstilä, Planmeca

Eerik Paasikivi, Chairman of the Owners Board, Oras Invest

Juha Lindfors, Partner, Lifeline Ventures

# OUR HERITAGE

“The choices we make today are our heritage for our children to live in a clean, sustainable world of tomorrow “

