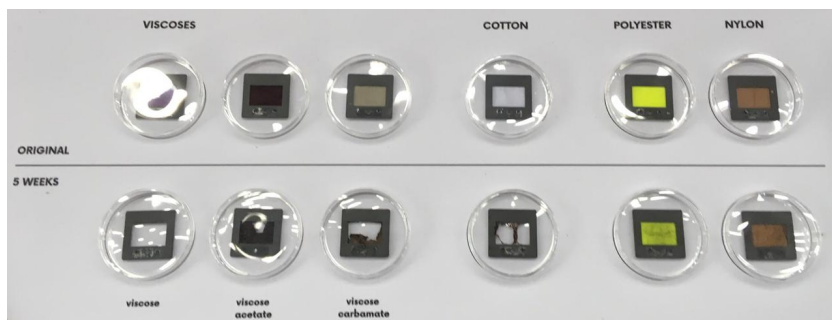


**TELAKETJU Seminar-  
Roadmap for recycled textiles  
in Finland in 2020's**

**Prof. Ali Harlin, 18.9.2018 Hanasaari**

# World textile fibre challenges

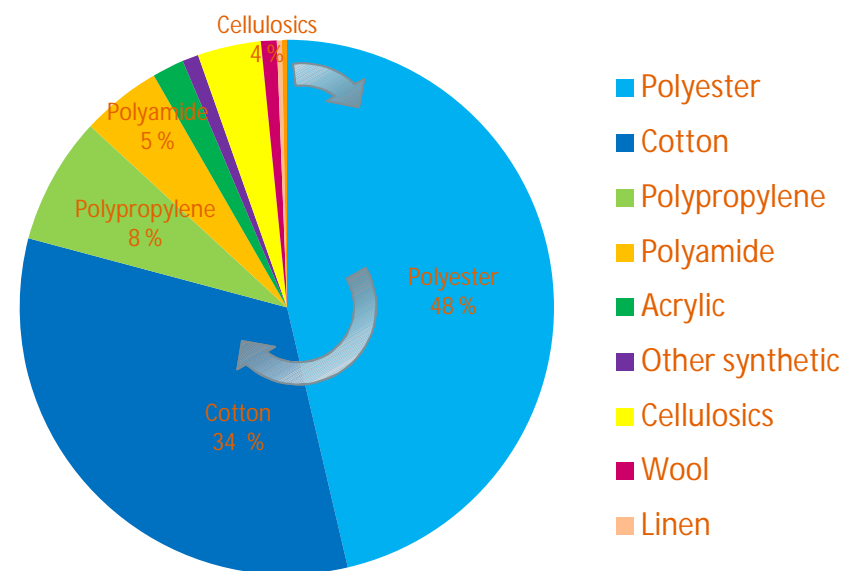


Textile waste



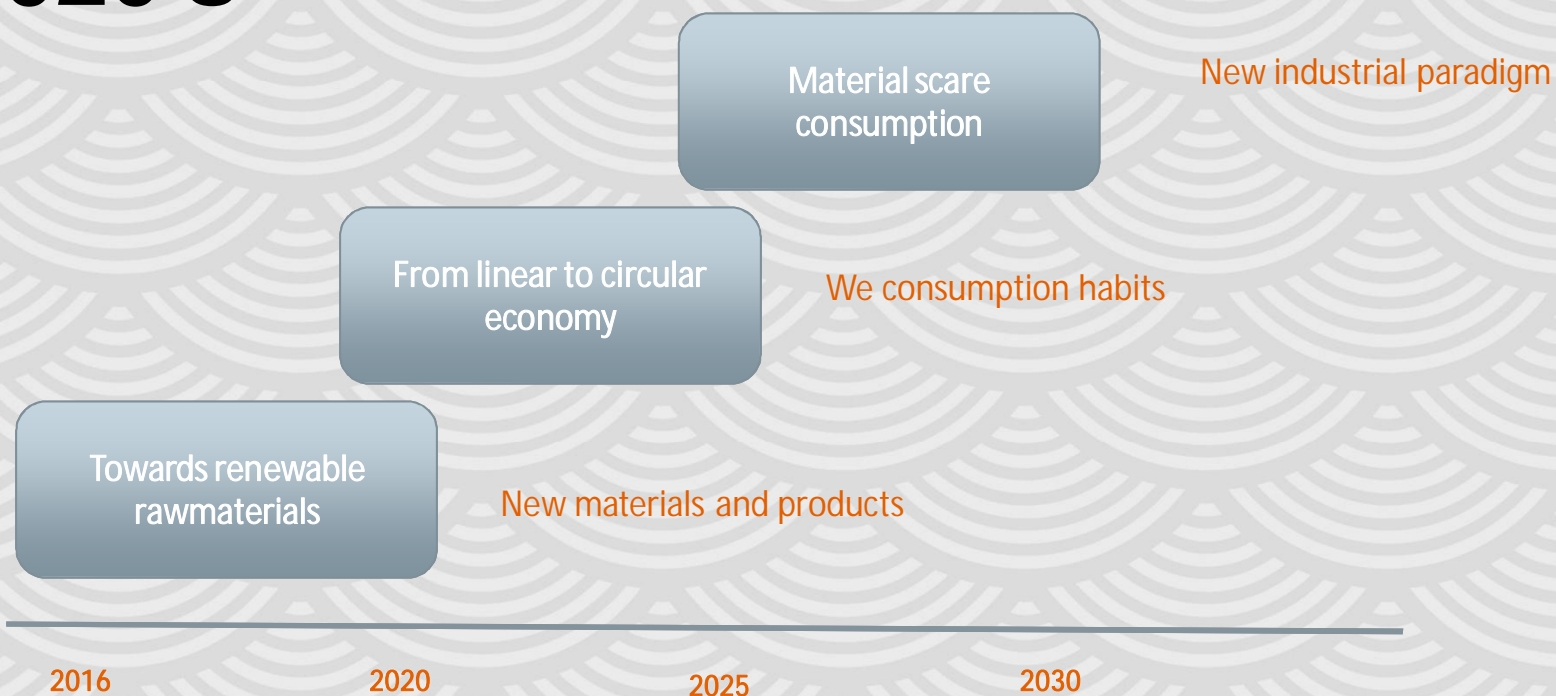
Micro plastics

Lack of sustainable fibres



Man-made cellulosic fibre growth should be 8-10%/a (from 6 to 17 Mtons) to fulfil the demand

# Development stages in 2020's



# Entering to 2020's

Waste crisis  
Cotton concern  
Microplastics



2016

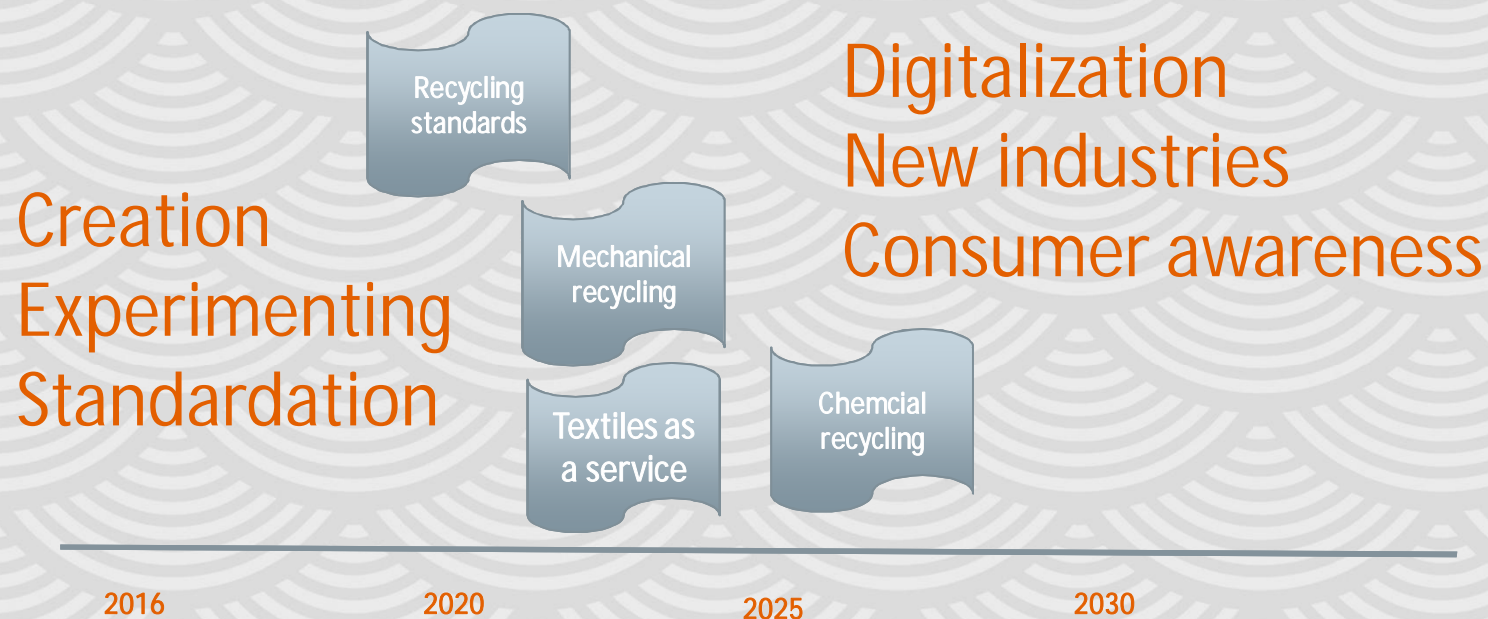
2020

2025

2030



# Early years in 2020's



Second half of 2020's

Carbon dioxide  
Resource sufficiency

Total  
collection of  
textile waste

Combustion  
to chemical  
recovery

Productions  
of recycled  
materials

Industry 4.0

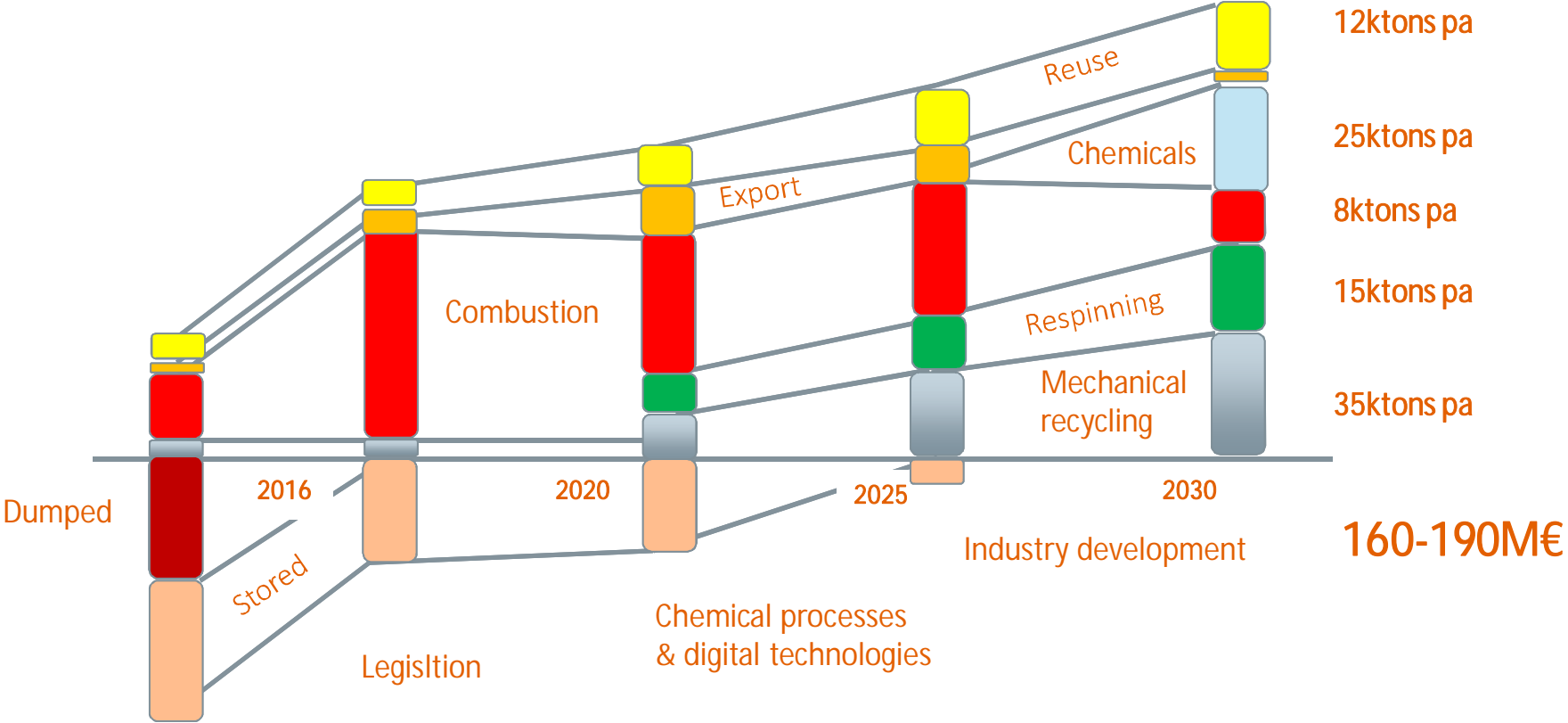
2016

2020

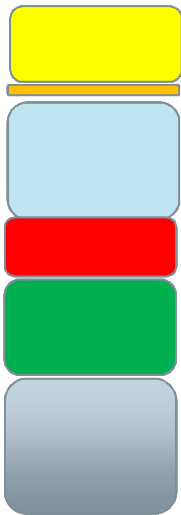
2025

2030

# Textile recycling in 2020's



## Where textiles go in future



- Reuse as a textiles – *textiles as a service*
- Charity & Export
- *Raw material for chemicals and fuels*
- Energy recovery
- Respun to textile fibers: clothing and hygienic applications
- Mechanically recycled: technical, construction, composites



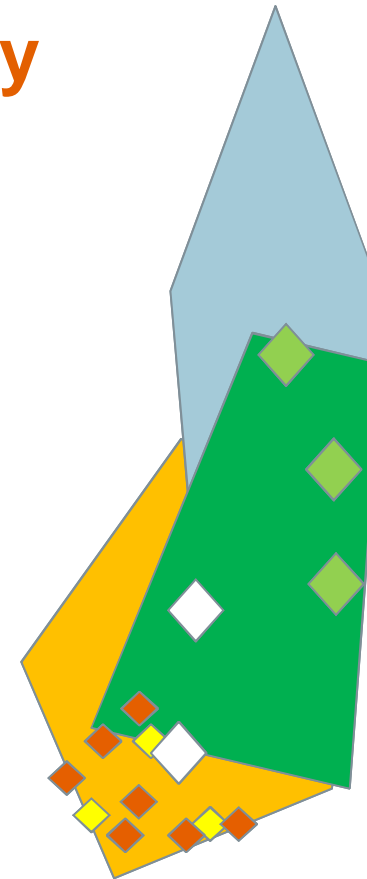
## Finland as a future textile country

■ By 2030 Finland may have

◆ 2-3 dissolving pulp units	900M€
◆ 2-3 recycling units	150M€
◇ 1-2 spinning units	100M€
◆ 5-10 users of the fibers	250M€

Total (without pull through) 1400M€

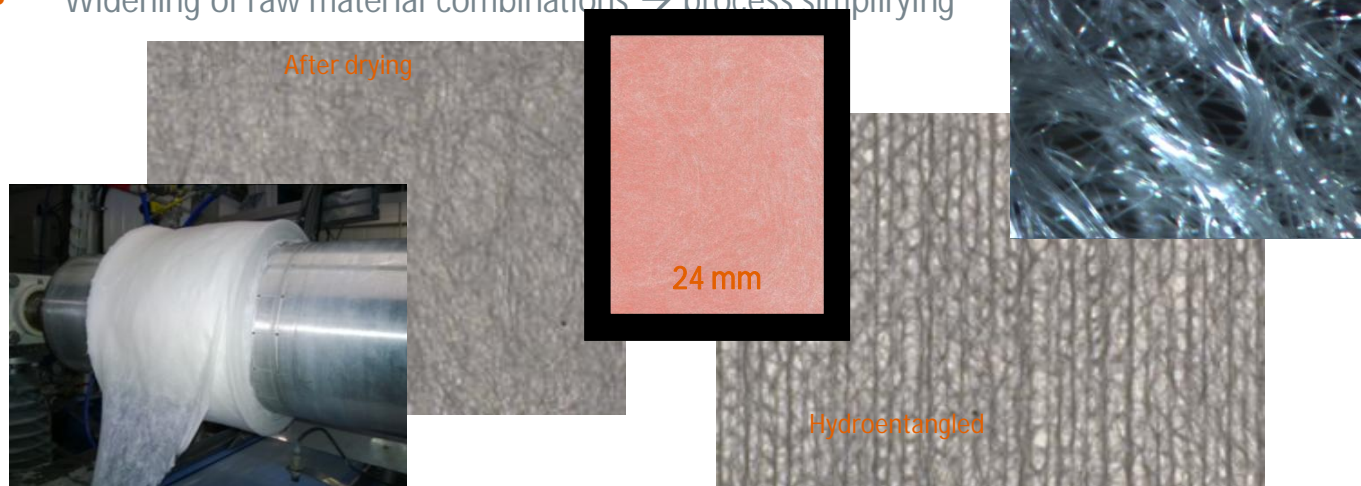
Net total 2000-3000 M€ pa



# Solutions for hygienic products

## Foam-laid nonwovens from cellulosic fibres

- Brilliant formation in the case of long fibres, even though high forming consistency applied
- Mechanical bonding instead of chemical bonding → aspect for sustainability
- Widening of raw material combinations → process simplifying



Mechanical bonding of foam laid nonwovens (MECBO), VTT internal project, 2014

# Cellulose carbamate – from R&D project to pilot and startup

## The Relooping Fashion Initiative



**CLIMATE SOLVER 2016 HONOREE**  
Creating new ways to produce cellulose fibers  
Developed by: THE INFINITED FIBER COMPANY



The Relooping Fashion Initiative received a Highly Commended status in the Awards Program's public sector category in The Circulans 2016 Awards Ceremony held at the WEF Meeting in Davos on 19 January. The Circulans is the world's premier circular economy award programme, whose judging panel includes the circular economy pioneers such as Ellen MacArthur and William McDonough, as well as representatives from global business and university sector.





## New normal collection

Helsinki Fashion Week 2018

New Normal Collection

Fabriks: Infinited Fiber Company





Thank You!

