Circular Plastics NL

# Breakout session Roadmap introducing new materials and techniques

Roland ten Klooster
Program line manager Design
Circular PlasticsNL

29 October 2026

transition to circularity

impACT
Circular & biobased solutions

ACTivate
Market demand, value chains & financing



Rijksoverheid
Dit project wordt gesteund door het Nationaal Groeifonds

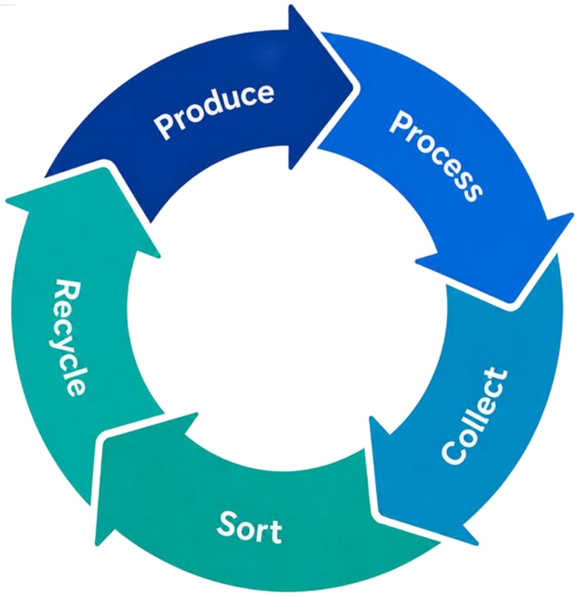
# Contents

## Program

- Bottlenecks
- 4 Presentations
- Finding solutions (interactive)
- Response of the speakers
- Conclusions

## Speakers

- Anne Traa – CEO Wittenburg Group
- Gerard Nijhoving – Managing Director - Senbis
- Joos Duvigneau – Managing Director - Demcon
- Rick Passenier – Program Director - Biobased Circular



# Bottlenecks

- Focus of entrepreneurs is on the innovative idea, material, technique, …
- A lot more must be understood and known to become successful
- Finance, legal, upscaling, operations etc.
- And sometimes ideas are too early, the market is not ready yet

- As CPNL we are looking at a community and (virtual) knowledge platform
- This session can also help us in topics to be taken up

- First, the experience of 4 entrepreneurial speakers/companies out of practice

# Anne Traa – CEO Wittenburg Group

WITTENBURG GROUP

# Introduction of new materials and techniques



# Wittenburg: Materials specialist and compounder

- Developing customized material solutions
- Using almost every type of thermoplastic
  - From **TPE**, **polyolefins**, towards **high temperature engineering plastics** and including **biobased** and **biodegradable**
- Specialized in critical applications and risk averse markets
- ISO 13485 certified medical production







# Applications and markets

- ✓ Healthcare
- ✓ Personal Care
- ✓ Medical Devices
- ✓ Automotive
- ✓ E & E
- ✓ Drinking water
- ✓ Packaging
- ✓ Fluid handling
- ✓ Consumer goods
- ✓ Food
- ✓ Furniture
- ✓ Building
- ✓ Lighting
- ✓ …



- Kink resistant **medical tubing**
- Self sealing **stoppers**
- Soft **seals** for face masks
- Chemical resistant **gaskets, O-rings, wipers** for cosmetics
- Nice touch soft **handles, grips, buttons**
- Thermoset Rubber replacements
- Interdental **brushes**
- **Orthopaedic inserts** in very soft (gels)
- Shock protection **edge profile**
- Toddlers **food utensils**, baby **teats**, infant **toys**
- **Container seals** for fatty food
- …




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# And many more....




## Engineering plastics applications

- Lubricated compounds (low friction, low wear, low noise, PTFE free)
- Electrically conductive compounds (conductive, antistatic, ATEX)
- Thermally conductive compounds
- Radar absorbing compounds
- EMI shielding compounds
- Detectable compounds (metal, X-Ray, dual detectable)
- Flame-retardant compounds (V0, UL-listed)
- Reinforced compounds (glass- or carbon fiber, minerals, high density)
- Compounds for 3D printing
- Coloured compounds
- Drinking-water contact compounds (water-meter parts, KTW, ACS)
- Food contact compounds
- Laser-markable compounds

# Bringing new developments to the market

- Balancing market-pull and technology-push

Our main challenges:

- (geopolitical) uncertainties, rapidly changing market dynamics
- Complexity of laws and regulations. Including conflicting policies.

This is especially true for new (circular) materials



WITTENBURG GROUP



# As a result…

- Projects and investments at customers are delayed
- Products of suppliers are discontinued
- Demonstrating compliance takes a very long time
- Prices and supply are uncertain

# Transition to Circularity

## How to overcome these challenges?



# Gerard Nijhoving – Managing Director - Senbis




# Bottlenecks when introducing sustainable materials

## Interactive discussion based on Senbis experience

Gerard Nijhoving

SENBIS GROUP

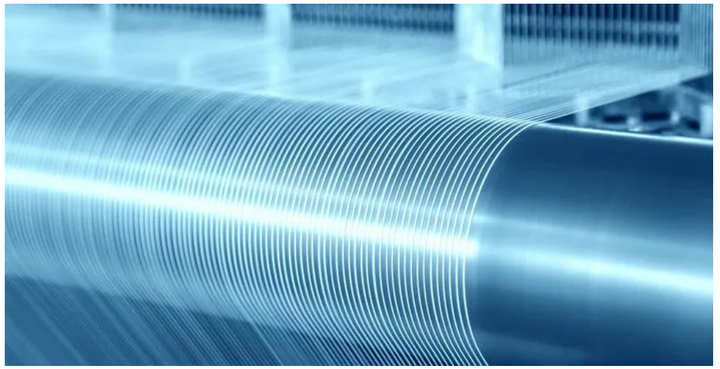
# Senbis Group

## Business activities



SENBIS POLYMER INNOVATIONS

Contract R&D with experts and lab- and pilot-scale facilities. Polymerization & SSP, compounding and melt spinning of fibers.



SENBIS SUSTAINABLE PRODUCTS

Biobased and biodegradable compounds for melt spinning of technical yarns, staple fibers and nonwovens.

## Venture



MARIVA

Scaling a new performance biopolyester and bringing it to market with partners.

# Market creation for sustainability

**Ambition is not yet a purchase order**

Strong interest in sustainability, but little certainty about volumes.

**Price premiums are difficult**

Who pays the extra costs along the value chain?

**Everything at once?**

Biobased and biodegradable, virgin-plastic performance and price parity.



*“eierlegende Wollmilchsau”*
*(schaap met 5 poten…)*

**What turns sustainability ambitions into firm orders and willingness to pay?**

# Sustainability claims

## Marketing value helps build the first market

Our experience: without secure demand, communicating sustainability benefits is a key reason for brands to innovate.

### Credible claims

Stricter rules help innovators stand out from greenwashing.

### But brands are becoming cautious

Evidence and nuance make a compelling marketing message harder to deliver.

**How can we make proven environmental benefits understandable and commercially valuable?**

# The early-stage funding gap

Our experience as an innovative SME (with radical innovation vs incremental steps)

## Low TRL

At TRL 1–3, we struggle to find suitable grants for early R&D.

## Proof comes first

Investors already want technical evidence. Generating it is costly and risky.

## Often a venture

Even early-stage VC often requires a separate start-up. That does not suit every innovation within an SME.

**Who funds the research that makes a technology investable, within established SMEs?**

# Scaling up in Europe

## Developed here. Produced where?

Public investment in innovation should also support European jobs and strategic resilience.

### Pioneers bear the initial costs

Developing technology and building a new market takes years and capital.

### Production follows other priorities

Costs and secure demand help determine where industrial production takes place.

**How can we reward pioneers and make European production competitive and less dependent on imports?**

SENBIS GROUP

# Questions for discussion

| | |
|---|---|
| **Market & Marketing** | What creates real demand for plastics with proven sustainability benefits? |
| **Financing** | What bridges early R&D to an investable technology, including within established SMEs? |
| **Europe** | What helps pioneers bring their technology into production in Europe? |

**Which bottleneck matters most, what solution do you propose, and who needs to act?**

# Joost Duvigneau – Managing Director - Demcon



# DEMCON QL Polymers


Joost Duvigneau

Managing Director

joost.duvigneau@demcon.com


October 29th 2026

DEMCON | QL POLYMERS

INTRODUCTION

# DEMCON QL Polymers

## Who We Are

- Specialists in polymer chemistry, technology, and processing

## Our Focus

- Tailored polymers and additives
  - From polymer synthesis and chemical modification to compounding and material characterization
  - Broad application expertise: consumer product, medical devices, packaging, high-tech devices and components
  - Versatile material formats: resins, granulates, films, coatings, and finished plastic components
  - Contract R&D and small-scale production

## Our Journey

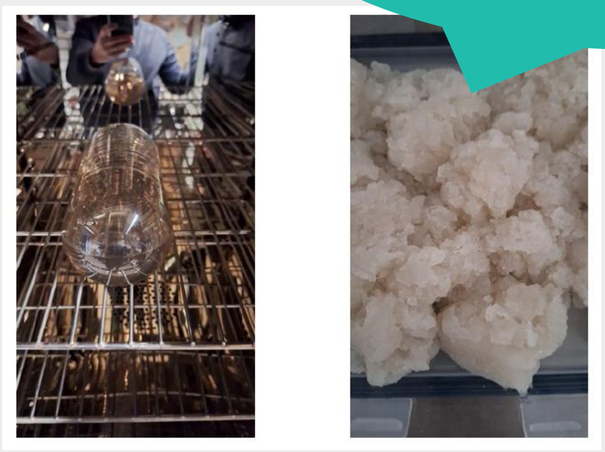
- Founded in March 2021
- Joined DEMCON in October 2024

# Vision and Mission

- **QL Polymers:** Quality for Life
  - Quality during use
  - Proper end-of-life management
- **Vision**
  - Contribute to a more sustainable economy
  - Safeguard the **quality of life** for future generations
- **Mission**
  - Design and fabricate **high-value** polymers and plastic products that contribute to a **sustainable** future
  - Focus on **biobased** materials wherever possible
  - Core values: collaboration, sustainability, performance, focus, and health
  - Build lasting relationships with our customers and deliver **innovative** solutions

# DEMCON QL Polymers

Great job. Now we want >1000 kg/month



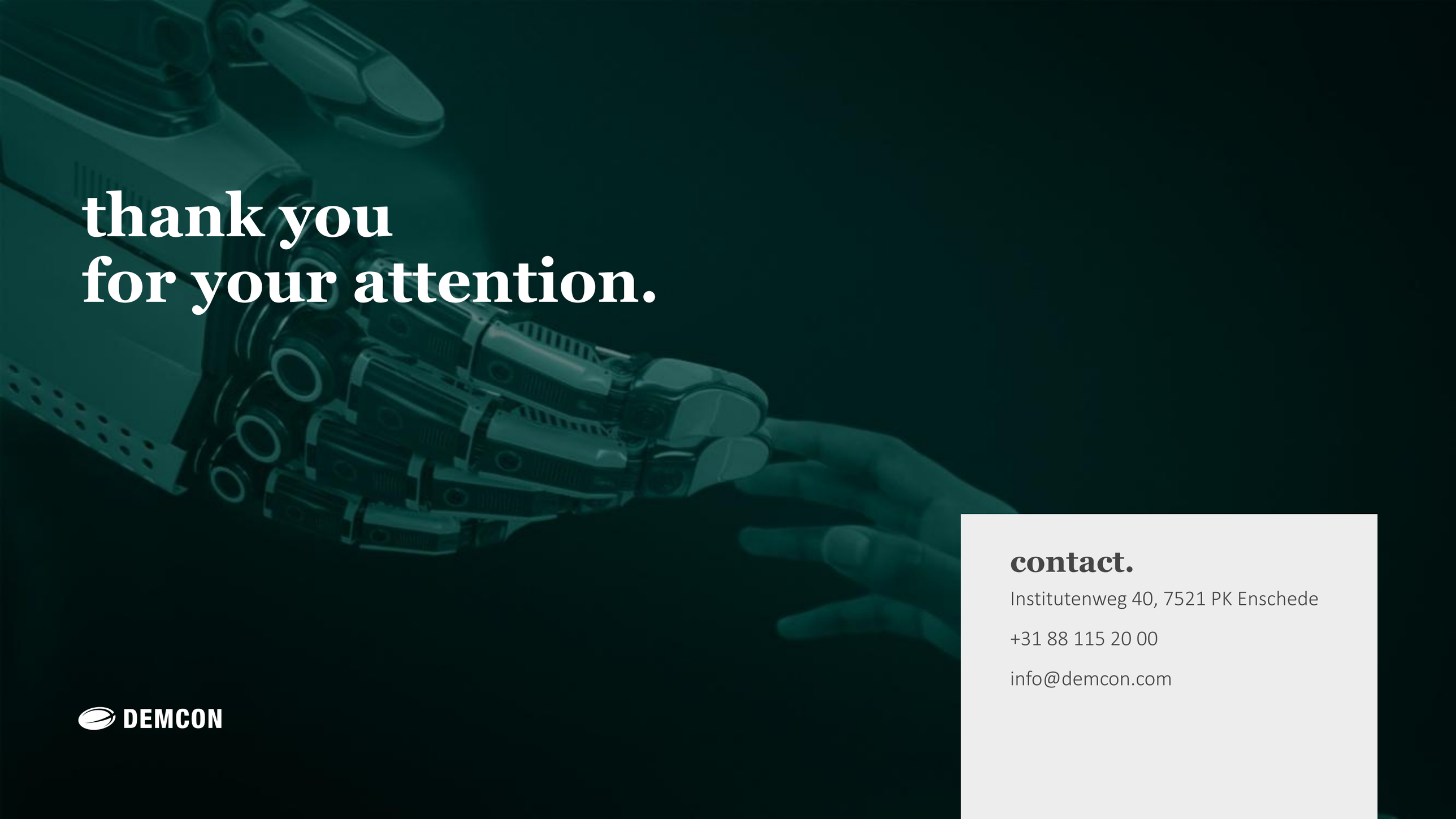
- Most clients come to us to (co)develop new materials at laboratory scale:
  - Few grams to 10 kg scale
  - Establish IP/know how
  - Often (bigger) clients take it from there.

- In some cases, we take care of upscaling
  - Set up infrastructure or via tolling

Challenge accepted, limitations to successfully reach the market:

- Current open infrastructure for established chemistries does not always match the requirements set by developments in circular materials and processes. (smaller volumes, variation in starting materials, …)
- Reasonable initial prices with steep increases for subsequent runs due to “unforeseen” difficulties in handling the new materials/processes.

*Scale-up is key: NL/EU infrastructure must be tailored towards new material developments and made available for innovations if we want to succeed and compete globally.*



# thank you
# for your attention.

DEMCON

## contact.

Institutenweg 40, 7521 PK Enschede

+31 88 115 20 00

info@demcon.com

# Rick Passenier – Biobased Circular

# Doorbraak door systemische acties

Roadmap naar introductie van nieuwe materialen en technieken

Transition to Circularity, 2026

Rick Passenier - R.Passenier@biobasedcircular.com

BioBased Circular

# A Dutch national growth fund that supports a new circular industry for biopolyesters and its applications based on carbohydrate feedstocks

**Ambition**

Demonstrate economic and industrial feasibility by establishing five full-scale ‘value circles’

**Focus**

- Carbohydrate-based and waste-derived feedstocks
- PLA, PHA, PEF, Coatings, Resins
- Packaging, Textiles, Building materials, Other impactful markets

**PROGRAM**

**5 YEARS**

2024–2028

**€102M**

subsidy fund

**≈300**

innovation projects funded to date

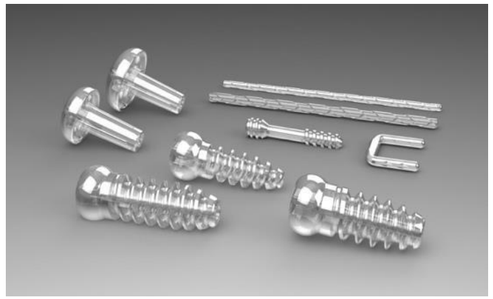
# Application examples























BioBased Circular

# From niche to mainstream categories

GEOTEXTILES

## 20 million m²

Geotextiles applied annually
in the Netherlands

DRAINAGE PIPES

## 20.000 km

Drainage pipes installed annually
In Dutch soil

TREE PLANTING

## 2M+

Trees planted per year in the Netherlands
Staatsbosbeheer ambition

MULCH FILMS

## 83 kT

Mulch films used annually in EU
In 722 kT agricultural plastics market

DIAPERS AND INCONTINENCE

## 200–400 kT

Annual Dutch diaper and incontinence
waste. Recycling capacity: 15 kT/year

FISHING GEAR

## 11 kT

Fishing gear lost or discarded annually
In EU waters

*Sources: European Commission, Agricultural Plastics Final Report (2021), approximately 2019 data; agricultural plastics exclude packaging. Staatsbosbeheer ambition reported by NOS (2020); not verified annual planting or tree-protector sales. VANG-HHA, Wegwijzer Luiers; NVRD: approximately 200 kT household waste, approximately 400 kT including institutional/business waste; wet waste, not plastic mass. European Commission estimate on fishing gear loss, cited by Dansk Producentansvar.*

# Integrated innovation model focused on ecosystem build scale

## Fundamental knowledge

**Testing and characterisation**
Materials, performance and degradation

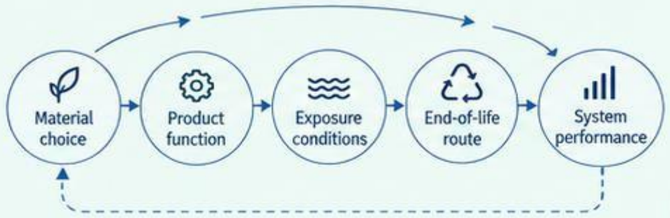
**System understanding and modelling**
Biobased materials and biopolyester value circles

**Design principles**
Circular and biodegradable polyester applications

**System performance indicators**
Circularity, environmental performance and microplastic accumulation

**Controlled end-of-life routes**
Mechanical, chemical and organic recycling

**Input for implementation**
Test methods, certification criteria and procurement criteria




## Innovation and feasibility

### Industrial feasibility

- Technical feasibility
- Economic feasibility
- Market potential
- Industrial business case
- Risk reduction before scale-up

### Market-driven challenges

- Define practical needs
- Bring value-chain partners together
- Identify application conditions
- Develop real-world cases
- Feed experience back into research and design

### Practical case

Biobased geotextiles and drainage pipes



## Adoption and scale

### Demonstration and scale-up

DEI+

- Pilot and demonstration facilities
- Production scale-up
- Process validation
- Industrial implementation
- Demonstration under relevant conditions

### Sustainable procurement

MVOI criteria

- Evidence-based sustainability criteria
- Functional requirements
- Comparable performance information
- Guidance for public clients
- Market demand for verified solutions

### Standards

NTA

- Terms and definitions
- Requirements by application
- Test and verification methods
- Basis for certification
- Input for further standardisation



BioBased Circular

# Various biodegradation situations

*Intentional use in nature*
*Controlled EOL*
*Unintentional release, loss or contamination*




**Factors: Intended usage and functional life. EOL options and scenarios. Unintentional release.**

# Fundamental studies and platform technologies







## Van Wijhe en partners bundelen krachten voor innovatie in verfoplossingen

24-04-2025

Zeven organisaties, waaronder Koninklijke Van Wijhe Verf, werken samen in het nieuwe project Biodegradeerbare Coatings. Met financiële ondersteuning via de MOOI-regeling binnen het groeifondsprogramma Biobased Circular gaat het consortium innovatieve en circulaire verfoplossingen ontwikkelen.



De Europese Green Deal stelt de verfindustrie voor grote uitdagingen: minder uitstoot, hergebruik van afval als grondstof en beperking van microplastics. Dit betekent een ingrijpende grondstoffentransitie. Het aanbod van duurzame verfgrondstoffen is nog veruit onvoldoende en veel basismaterialen zijn afkomstig uit landen met minder strenge milieu- en arbeidsnormen.

**Samenwerken aan alternatieven**

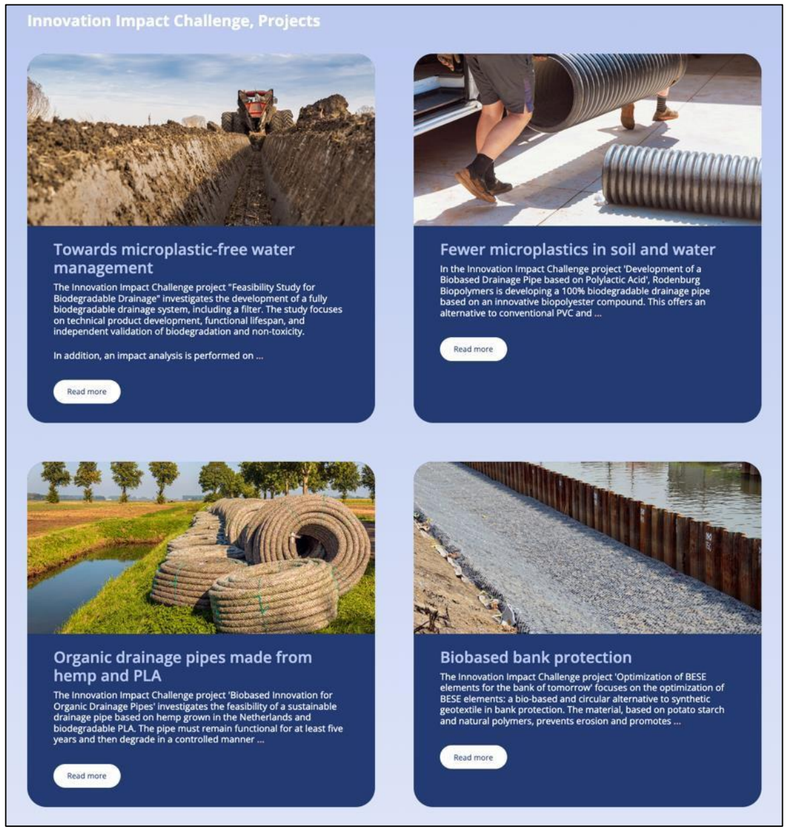
Om deze transitie te versnellen, hebben Koninklijke Van Wijhe Verf, Wydo, CliQ, Ecoat, ChainCraft, de Hanzehogeschool en Rijksuniversiteit Groningen de handen ineengeslagen. In dit consortium werken de partijen aan biobased alternatieven voor conventionele verfingrediënten. De nieuwe grondstoffen zullen grotendeels worden ontwikkeld uit reststromen van de biobased economie.

**Microplastics release inventory for greenhouse agriculture, Plastic pollution inventory and mitigation options for composting sector, platform technology project for microplastic-free paints**

*https://www.biobasedcircular.com/glastuinbouw/*
*https://research.wur.nl/en/publications/verkenning-kansen-composteerbare-verpakkingen-binnen-de-ppwr-orie/*
*https://wydonbd.com/projecten/*

# Market-driven innovation challenge







## Innovation Impact Challenge, Market-driven adoption cases, feasibility study, on-site piloting, 10 unique product innovations

https://en.biobasedcircular.com/projecten/duurzame-verticale-drains-zonder-microplastics/

# Market-driven innovation challenge



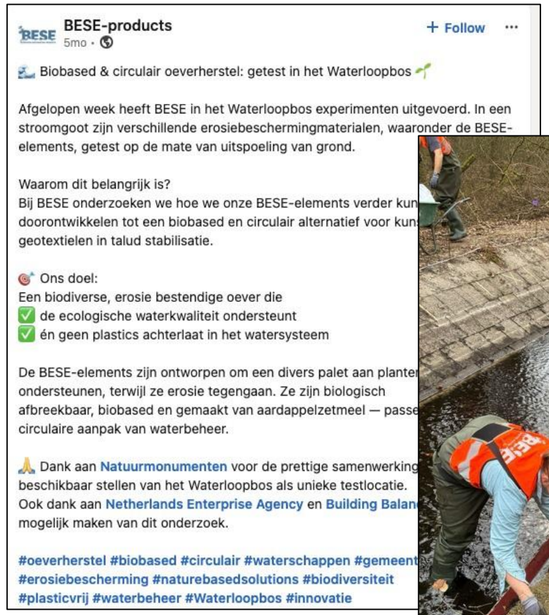
JSTN Jogetex HV is opgebouwd uit 100% natuurlijke grondstoffen en is ontwikkeld voor tijdelijke toepassingen

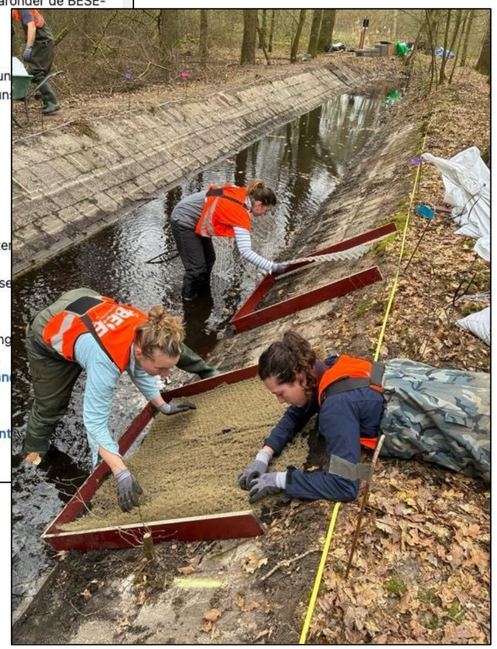


verdere ontwikkeling van JSTN Jogetex HV



JSTN Jogetex HV wordt aangebracht onder een tijdelijke bouwweg bij de dijkversterking Neder-Betuwe



## Scenario and performance testing in real world conditions

*https://www.linkedin.com/pulse/biobased-geotextiel-voor-tijdelijke-toepassingen-joosten-groep-6orbe/*
*https://www.linkedin.com/posts/oeverherstel-biobased-circulair-ugcPost-7445379862237880320-wuKd/?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAHc8NkBUyTOTDU2Z74XFXqQrKfIhpCbpFY*

# On-site validation tree shelters with Dutch Forre Organization








**Product range, field testing, design criteria, purchase conditions, total cost of ownership**

# Market-driven industrial feasibility projects

## Sustainable vertical drains without microplastics

The EKOO project PROPHAX is developing biobased and biodegradable prefabricated vertical drains (PVDs) for construction applications. This prevents long-term microplastic contamination in the soil.

PHA-X-based materials are optimized for profile extrusion and scaled up for field testing at a 200 kg scale. The result is an initial demonstration product and validated knowledge about processing and degradation in soil.

Project partners: Wageningen Research, Paques Biomaterials, Wicks BV



## Biodegradable growing trays for horticulture

The EKOO project PHAntastic Cress is developing a biobased and biodegradable growing tray for microgreens as an alternative to fossil-based PET trays. This reduces plastic pollution in horticulture and enables multiple end-of-life scenarios, such as composting.

The project focuses on the industrial processing of PHBH via extrusion and thermoforming. Technical challenges related to processability and decomposition will be addressed, followed by practical testing and market validation. The result is an industrially manufacturable tray with an improved $CO_2$ footprint and proven functionality.

Project partners: Division Q BV, Wageningen Food & Biobased Research



**Projects validating proven concepts on larger / pre-commercial scale, demonstration product, EOL validation, processing optimization**

*https://en.biobasedcircular.com/projecten/duurzame-verticale-drains-zonder-microplastics/*
*https://en.biobasedcircular.com/projecten/biologisch-afbreekbare-kweektrays-voor-de-tuinbouw/*

# Removing Adoption Barriers in procurement



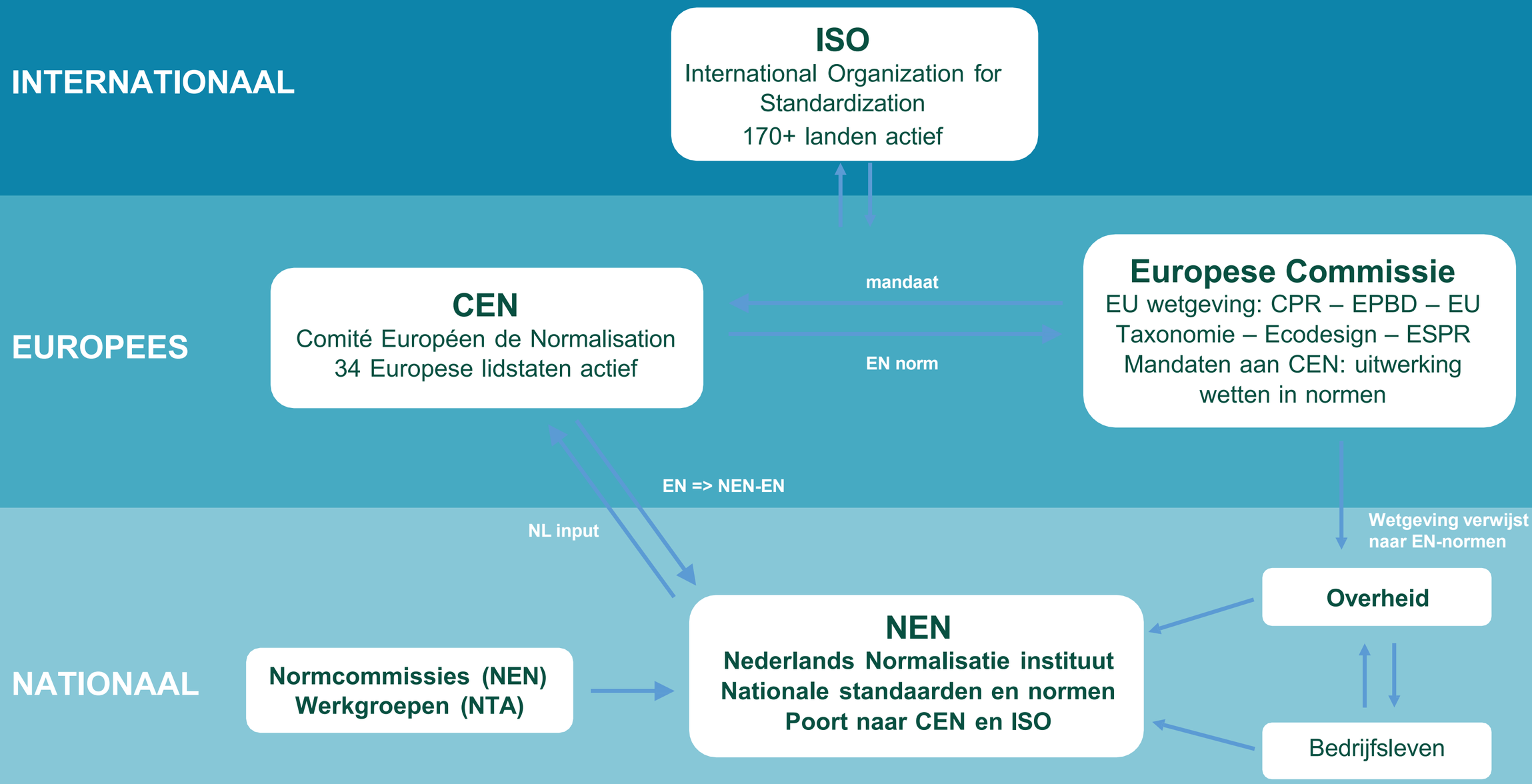




**Projects aiming to set shared definitions, procurement guidelines, quantification of unintended release and loss of plastics in nature**

*https://www.nen.nl/en/nieuws/actueel/nen-verkent-afspraken-voor-biobased-geotextielen-en-drainagebuizen-in-grond--weg--en-waterbouw/*

# > Hoe is normalisatie georganiseerd?



# > Alle vormen van normproducten

**ISO / IEC / EN**
Internationale en Europese normen met brede consensus (+/- 3 tot 5 jaar)

**NEN**
Nationale norm met brede consensus (+/- 2 tot 3 jaar), eisen stellend, commentaarperiode, evaluatie na 5 j.

**NVN**
Nederlandse VoorNorm, inhoudelijk nog niet volledig, consensus (+/- 2 tot 3 jaar), commentaarperiode, eval. na 3 j.

**NTA**
Nederlandse Technische Afspraak, innovaties / inhoudelijk nog niet uitontwikkeld, beperkt aantal partijen, meerderheid v
evaluatie na 3 j. (of eerder)

**NPR**
Nederlandse Praktijk Richtlijn, geen norm maar aanbevelingen en richtlijn, consensus (+/- 1 tot 2 jaar), commentaarperi

# > Strategisch kiezen

## Snel nodig?

- **nationaal: NTA**

Snelle methode, beperkt aantal partijen, meerderheid van stemmen

Nationaal werk kan worden ‘opgetild’ naar Europees niveau en zo blauwdruk vormen voor latere Europese standaarden

## Over paar jaar?

- **nationaal: NEN of NVN**

Consensus, breder draagvlak

- **Europees: actief worden in CEN-werk en meewerken aan Europese standaarden**

**NEN is poort naar Europa**
**Strategische positie NL via NEN**

## Doorontwikkelen NTA

**NTA in de toekomst:**

- Herziening NTA
- Inhoud verankeren in bestaande normen
- Doorontwikkelen naar eigen NEN norm
- Inhoud ‘inpluggen’ in CEN normen: NL werkt zo mee aan basis toekomstige Europese wetgeving via Europese standaarden

# > NTA 8230-serie Biobased bouwen

**Reeds verschenen (2026):**

- Deel 1 ‘Termen, definities en bepalingsmethode biobased gehalte’
- Deel 3 ‘Overzicht normen en richtlijnen biobased plaatmaterialen
- Deel 4 ‘Biocomposieten bouwdelen

**Bijna gereed:**

- Deel 2 ‘Brandveiligheidsaspecten van biobased producten’

**Beoogd:**

- Deel 5 ‘Biobased én biologisch afbreekbare geotextielen
- Deel 6 ‘Biobased én biologisch afbreekbare drainagebuizen’

**Uitgangspunt: alle delen zijn afzonderlijk leesbaar**

**Eind 2027: vervolgstappen bepalen!**

# BioBased Circular

Developing BioBased Value Circles at scale

# Bottlenecks in development

## Main category barriers

### Economical

### Institutional and legal

### Technological

### Social

# Response of the speakers

# Bottlenecks

- We will make a report to be shared

- A great thanks for the speakers
- No gift for you, but:
- For all of you, a tree will be planted

- Any other input welcome:
- roland.tenklooster@circularplasticsnl.org



# Bottlenecks

- There is a lot of research in the field
  - Business model innovation in circular start-ups: Overcoming barriers in the circular plastics economy; Fernando C Lit, Josephina CCM Huijben, Myriam MAH Cloodt, and Erik Paredis (2024); DOI: 10.1177/0266242623121795 4
  - Advanced manufacturing technology adoption and innovation: A systematic literature review on barriers, enablers, and innovation types Aldo Stornelli, Sercan Ozcan, Christopher Simms (2021); DOI: 10.1016/j.respol.2021.104229
  - Barriers and drivers for technology commercialization by SMEs in the Dutch sustainable energy sector; L.L.J. Meijer, J.C.C.M. Huijben, A. van Boxstael, A.G.L. Romme (2019); DOI: 10.1016/j.rser.2019.05.050
  - Decoding the barriers for a circular plastics industry: An equation framework; Jonas Grafström (2025); DOI: 10.1016/j.spc.2025.01.010
  - Scaling up technology startups; Europese Commissie (2021); https://monitor-industrial-ecosystems.ec.europa.eu/reports/policy-briefs/scaling-technology-startups
  - The scale-up gap: Financial market constraints holding back innovative firms in the European Union (2024); DOI: 10.2867/382579

Circular Plastics NL

# Thanks for joining
# Let's make plastics circular

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info@circularplasticsnl.org

Rijksoverheid | Dit project wordt gesteund door het Nationaal Groeifonds