



**avantium**

# Investor Presentation

April 2022

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# Today's speakers



**Tom van Aken**

CEO

 Since 2002

25y of industry experience

*Selected previous experience:*



**Bart Welten**

CFO

 Since 2020

30+y of industry experience

*Selected previous experience:*



# Transaction overview



## Term sheet overview



Issuer	
Listing Venue	<ul style="list-style-type: none"> <li>Euronext Amsterdam &amp; Euronext Brussels</li> </ul>
Size and Price	<ul style="list-style-type: none"> <li>Public offering and private placement of up to €45m</li> <li>Maximum subscription price set at €4.60 per new share.</li> <li>The maximum subscription price is indicative. The final offer price and the number of Offer Shares offered in the Offering will be determined following the Offering period on the basis of a book-building process</li> </ul>
Offering Structure	<p>The Offering consists of a:</p> <ul style="list-style-type: none"> <li>Priority Allocation Offering open only to eligible existing institutional and retail shareholders (which excludes those in Restricted Jurisdictions as defined in the Prospectus)</li> <li>Retail Offering in the Netherlands to retail investors</li> <li>Private Placement to qualified investors in the EU, institutional investors outside the European Union and a limited number of other investors in member states of the EU in reliance on exemptions from Regulation 2017/1129. Offer Shares will only be offered and sold in offshore transactions outside the United States in reliance on Regulation S under the US Securities Act of 1933.</li> </ul>
Existing Shareholders' Commitments	<ul style="list-style-type: none"> <li>Existing long-term shareholders of Avantium, funds managed by APG Asset Management N.V., investors represented by Wierda en Partners Vermogensbeheer B.V., Navitas B.V., Robeco Institutional Asset Management B.V. and other shareholders have irrevocably undertaken to subscribe for an aggregate amount of €12.2 million, or 27% of the Offering.</li> </ul>
Marketing Structure	<ul style="list-style-type: none"> <li>Mix of physical/virtual meetings</li> <li>Active approach towards both retail and institutional investors</li> </ul>
Lock-up & Standstill	<ul style="list-style-type: none"> <li>Company: 180 days</li> <li>Management: 180 days</li> </ul>
Timing	<ul style="list-style-type: none"> <li>6 April 2022: Launch</li> <li>13 April 2022: End of Retail &amp; Priority Allocation Offering Periods</li> <li>14 April 2022: End of Private Placement Offering Period</li> <li>15 April 2022: Announcement of the results of the Offering</li> <li>19 April 2022: First day of trading on Euronext Amsterdam and Euronext Brussels</li> <li>21 April 2022: Settlement</li> </ul>
Use of Proceeds	<ul style="list-style-type: none"> <li>60% to further develop plantMEG™ technology and scale-up towards further commercialization via technology licensing</li> <li>30% for general corporate purposes, working capital and overall funding</li> <li>10% to further develop biorefinery and CO<sub>2</sub> based chemicals and polymers technologies and assess economic feasibility and scale-up towards further commercialization</li> </ul>

# Introduction



# Avantium at a glance: a pioneer in renewable chemistry



Who  
we are

A pioneer in the emerging industry of renewable chemistry

Our  
mission

Create disruptive technologies to accelerate transition from fossil-based to renewable and circular plastics

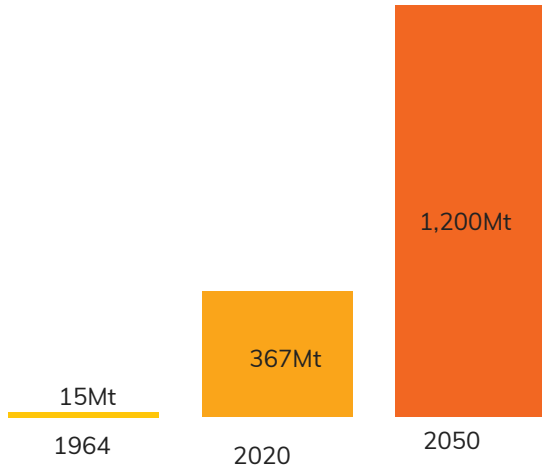
Our  
ambition

A fossil-free chemical industry by 2050

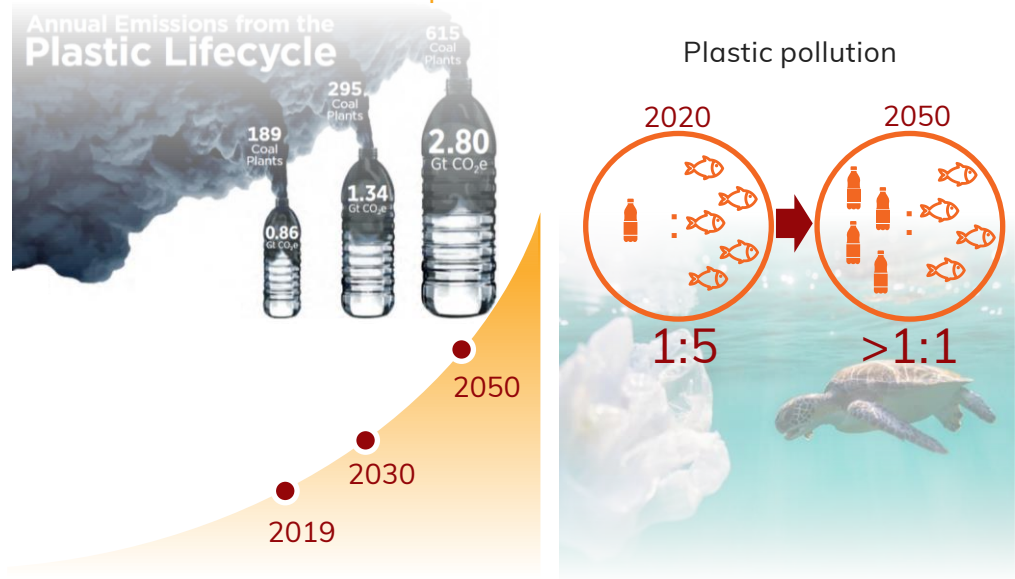


# Increasing worldwide use of plastics causes major environmental challenges

Global plastics production will triple by 2050



Plastic production and waste cause major environmental problems





# Next generation consumers calling for action



85% of global respondents among millennials feel strongly that companies should help improve the environment

Governments putting regulatory targets & frameworks in place



“Single-use plastics are now forbidden in the EU when an affordable alternative exists”



“By 2025, all plastic packaging is 100% reusable, recyclable or compostable”

Companies throughout the value chain are shifting towards sustainable and carbon neutral



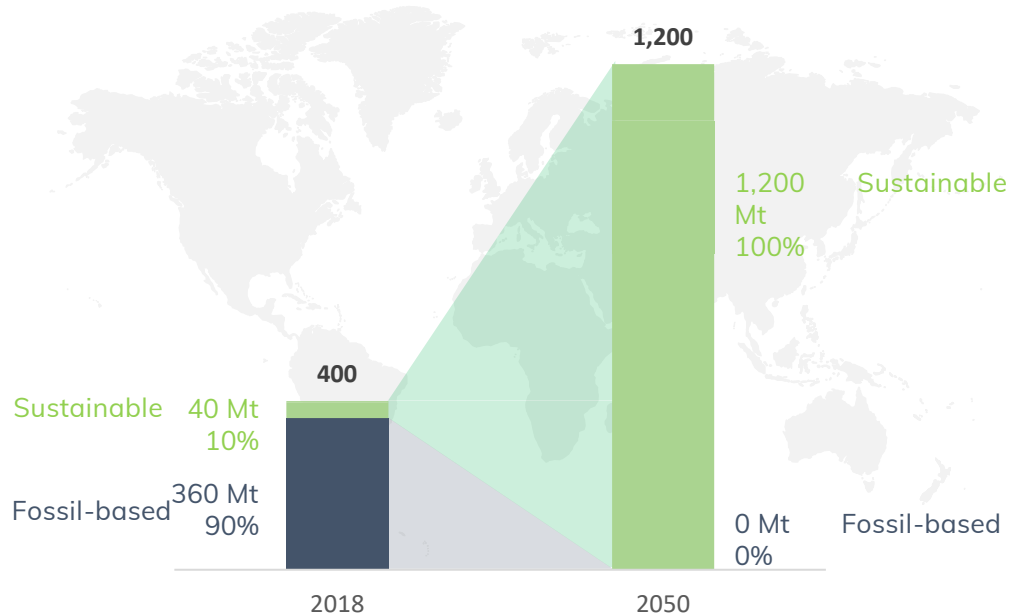
“By 2025, all of our plastic packaging will be 100% reusable, recyclable or compostable to help build a circular economy for plastic”





# Fossil-based products are expected to phase out

## World plastic and chemicals production (in Mt)



## Key market drivers



Demographic growth and increasing purchase power of a growing worldwide middle class



Tougher regulations geared towards recycling and/or bio-based feedstock, combined with neutral carbon footprint via CO2 taxation

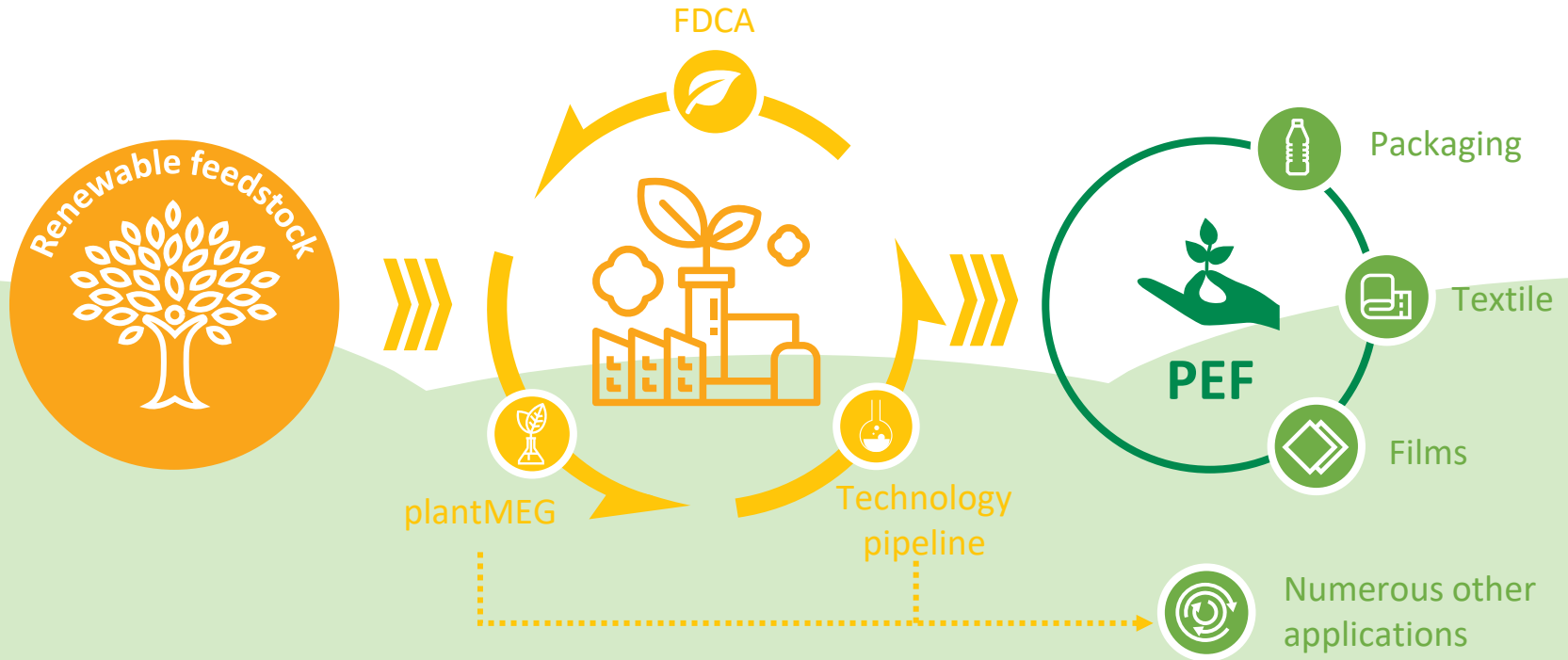


Increasing industry commitment towards sustainable products




Product performance determines size of market, speeds of adoption and price level

# Avantium offers disruptive technologies for the production of PEF




# Avantium's cutting-edge PEF led to numerous strategic collaborations & recent offtake agreements


avantium

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High performance

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Fully sustainable

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Cost competitive



R&D collaborations



Long-term offtake agreements

Development of PEF for beverage applications



“We highly value the many performance and sustainability features of PEF”



PEference aims to establish an innovative supply chain for FDCA & PEF



“We strongly believe that PEF improves the barrier properties of packaging materials and extends shelf life”

“PEF will allow us to offer sustainable solutions in special, high-end applications”



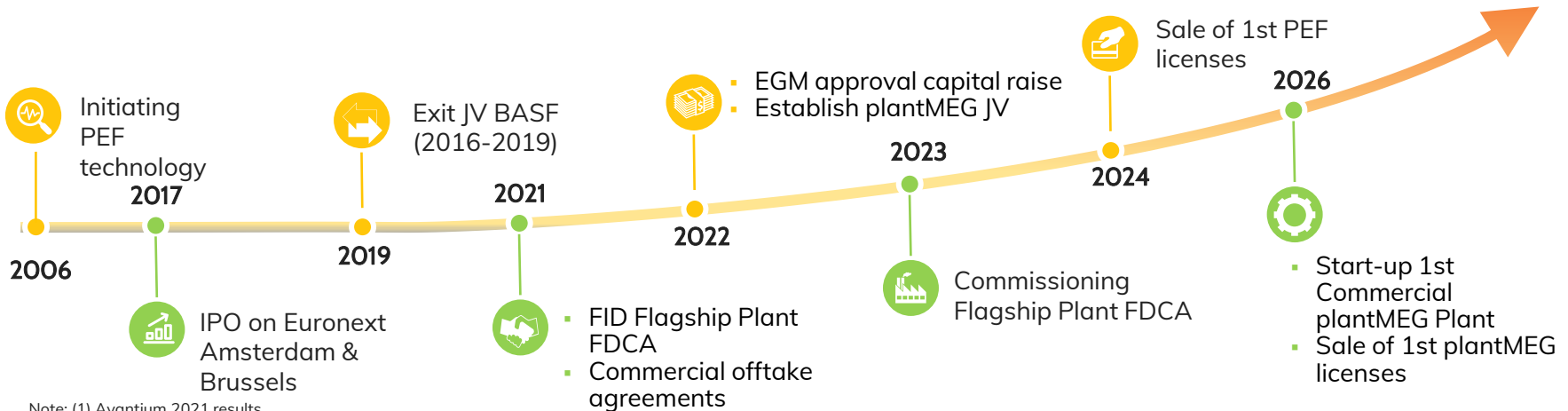
“With PEF, we will be able to offer another sustainable and renewable packaging solution”

“Toyobo believes PEF is the only bio-based polymer which has superior properties compared to its closest fossil-based equivalent”



Major food & beverage brand owner

# Avantium's successful trajectory towards growth



Note: (1) Avantium 2021 results



# Key investment highlights





# Part 1:

## CUTTING-EDGE PRODUCTS & TECHNOLOGIES

# PEF is a 100% plant-based plastic made from FDCA and plantMEG

Feedstock flexible



Agri & forestry residue



Forest residues:  
softwood and hardwood  
chips



Corn  
stover



Bagasse

Unique technological platform centered around catalysis process

Plant-based sugar



FDCA



plantMEG



Broad range of applications

Packaging



Film



Textile



PEF

Furniture



Textile



Automotiv



Packaging

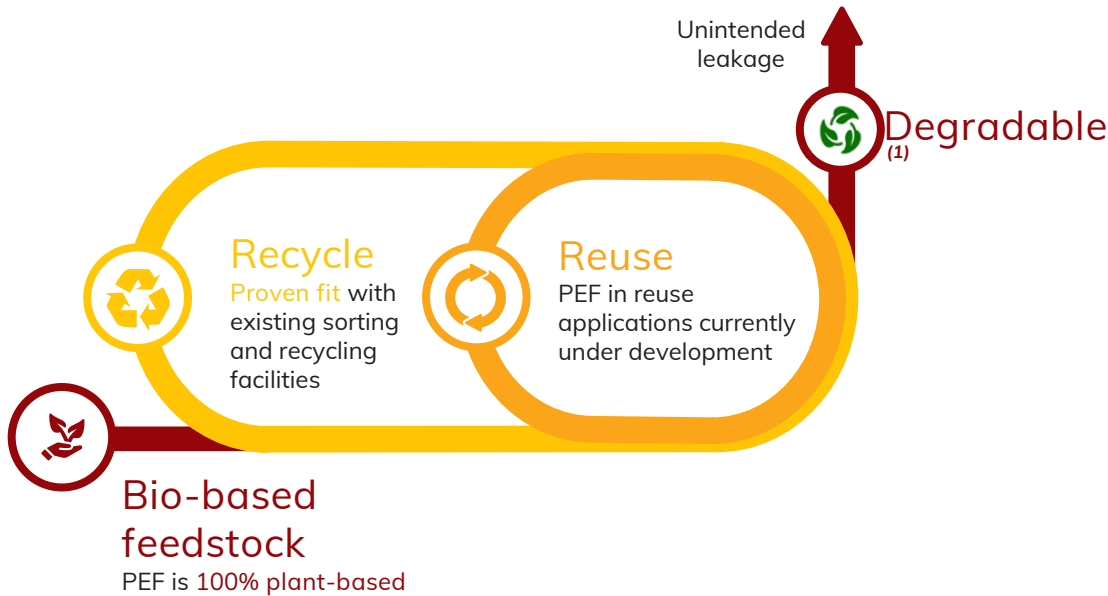


Solvent & Coolants



# Avantium's PEF addresses the need for a circular new plastics economy

PEF solves the challenges of today's conventional plastics



Challenges cannot be solved by recycling only

“ America simply **does not have enough recycled PET** supply or processing capacity to satisfy commitments being made by brand owners to increase recaptured resin content in their bottles. ”

NAPCOR<sup>(2)</sup>

“ We won't recycle or dispose our way out of plastic pollution... Future scenarios focused on collection, recycling, and disposal alone have been shown to fall short, with high ocean leakage and GHG emissions... Upstream innovation offers opportunities to rethink how products can be delivered to users without the need for single-use packaging. ”

The global commitment 2021 Progress Report



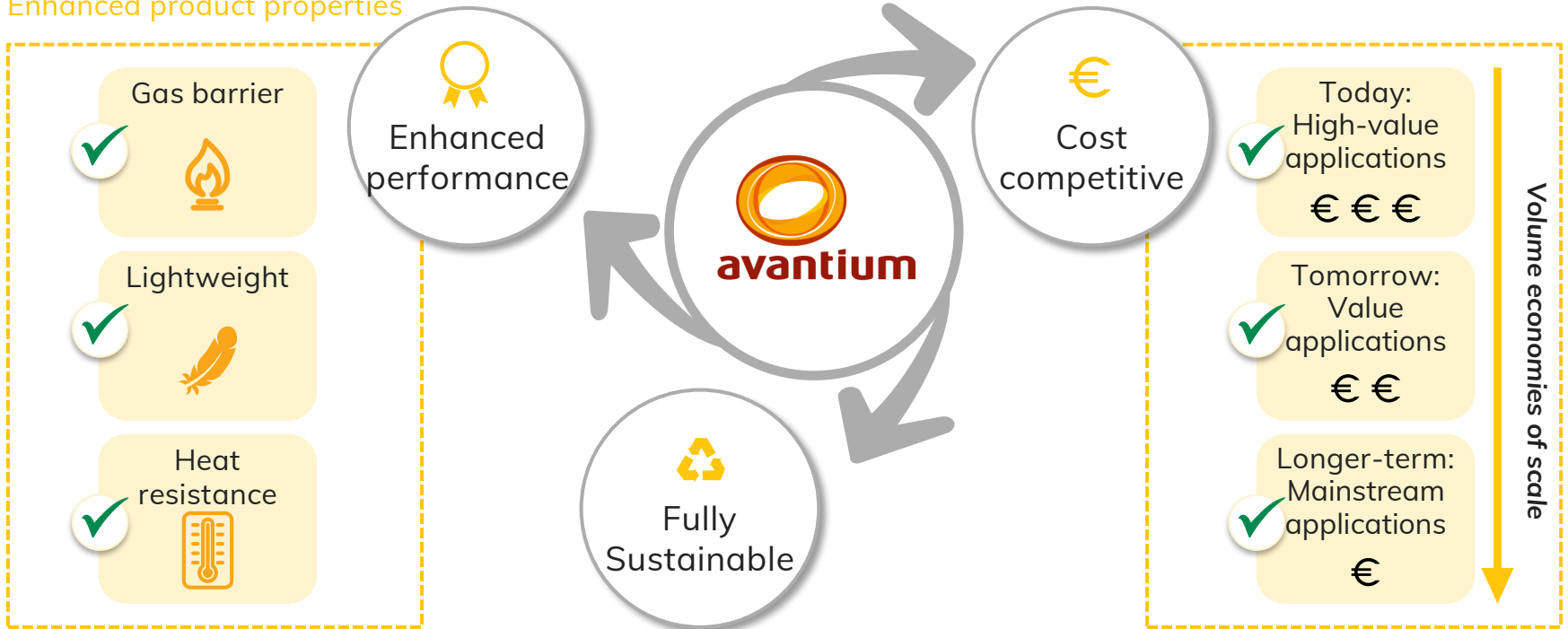
Notes: (1) Trial by Avantium and University of Amsterdam; (2) National Association for PET Container Resources





# Showing enhanced performance while being cost competitive

## Enhanced product properties



# plantMEG is a key drop-in ingredient for large end-markets

## Avantium value proposition

plantMEG will provide brands with a sustainable & innovative ingredient



## Part 2:

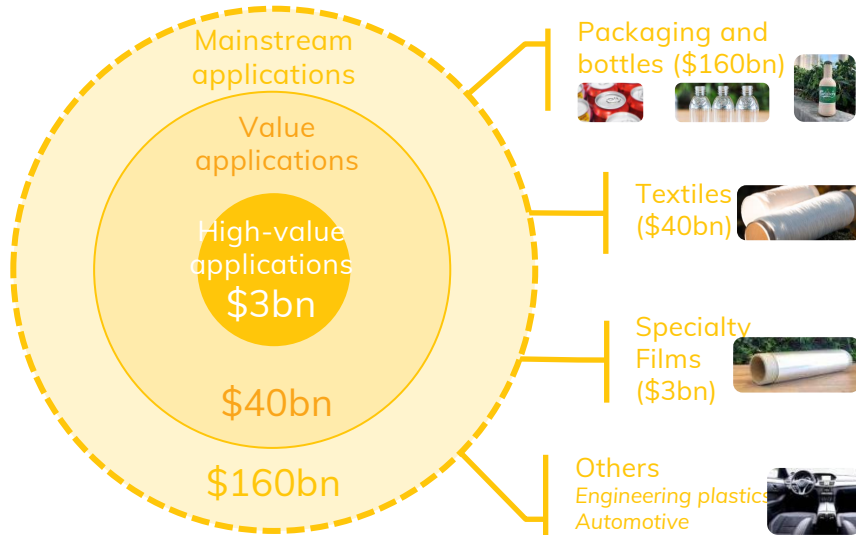
### ATTRACTIVE ADDRESSABLE MARKETS



# Avantium targets large and diverse PEF and MEG markets

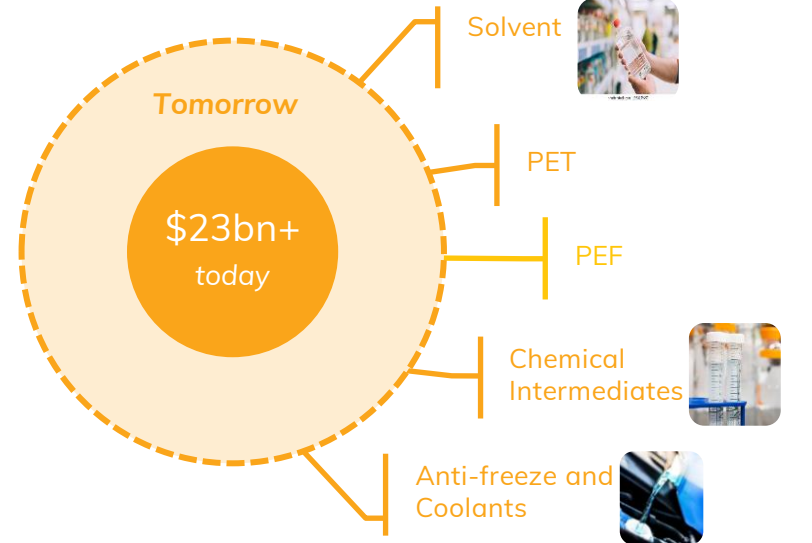
PEF addressable market –  
100mt+

Total expected  
value **\$200bn+**

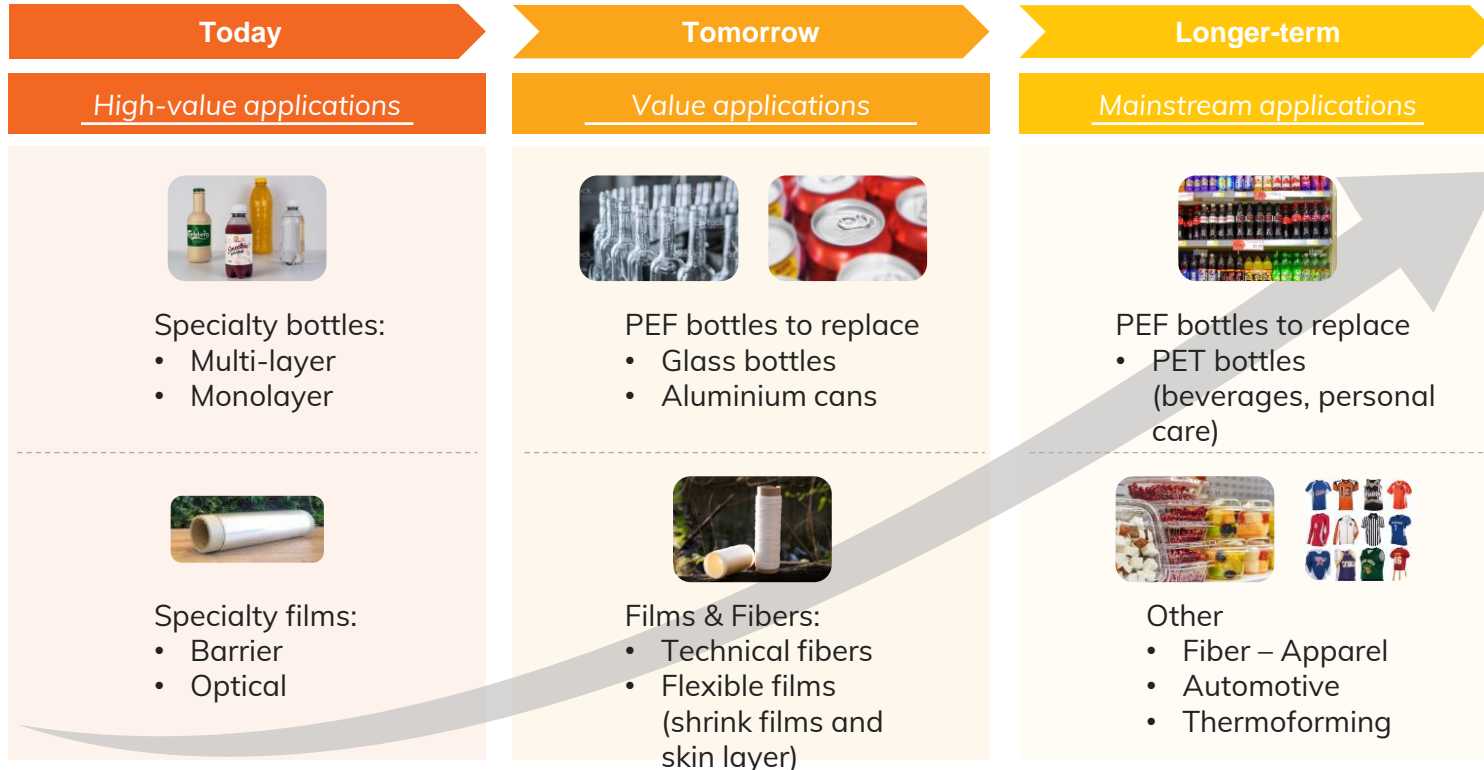


MEG addressable market –  
35mt+

Total value today  
**\$23bn+**

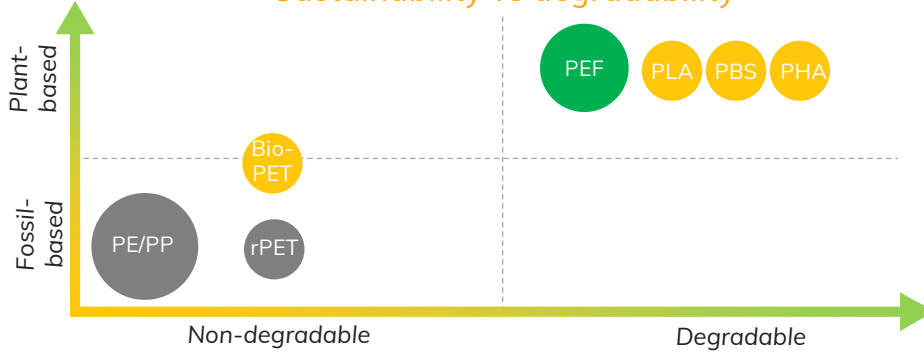


# Addressing an extensive number of end-markets over time

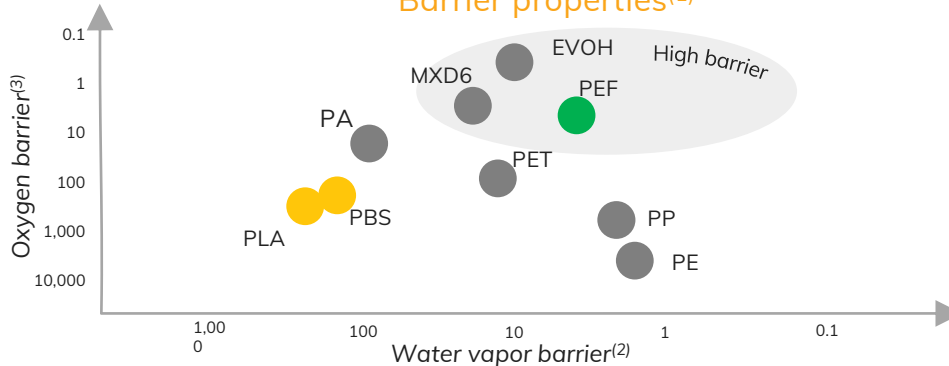


# PEF has enhanced product performance

## Sustainability vs degradability



## Barrier properties<sup>(1)</sup>



## Selected companies

PEF	 Most mature PEF player	  
PLA	 	
PHA	 	
PBS	 Obtaining the best of nature	
BioPET		
rPET		

Source: European Bioplastics; Company Assessment based on: Markus Schmidt et al, Properties of Whey-Protein-Coated Films and Laminates as Novel Recyclable Food Packaging Materials with Excellent Barrier Properties (International Journal of Polymer Science, Volume 2012), <https://www.mgc.co.jp/eng/products/ac/nmx66/barrier.html>, <http://asuka-platech.com/wp/wp-content/uploads/2013/12/BIOPBS.pdf>

Note: (1) Barrier properties for 50µm film; (2) Water vapor barrier: WTR at (39 dC 85 %RH) [mL/(m<sup>2</sup> · day)]; (3) Oxygen barrier: OTR (23, 0%RH) [mL/(m<sup>2</sup> · day · atm)]

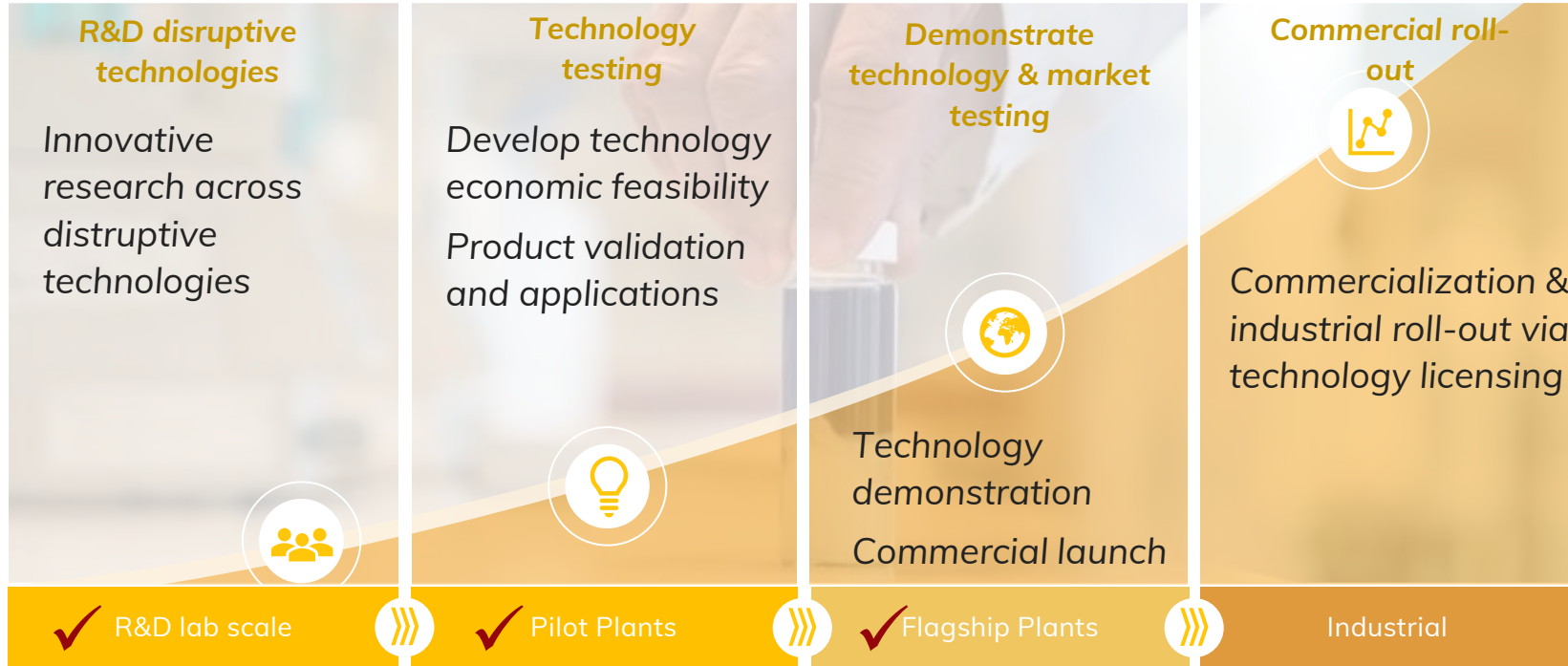


## Part 3:

### SUCCESSFUL EXECUTION OF STRATEGY



# From technology development to commercialization



Mission: create & commercialize disruptive technologies & products to accelerate the transition to renewable & circular plastics





# The world's first plant producing FDCA on a commercial scale



**Location**  
Chemie Park  
Delfzijl (NL)



**Timing**  
Construction  
completion 2023  
& operational  
2024



**Scale**  
5 kilotonnes of  
FDCA p/a



**Objective**  
Prove technology  
at scale:  
Sales PEF &  
Unlock licensing  
business



**Commercialisation**  
Over 50% offtake capacity committed



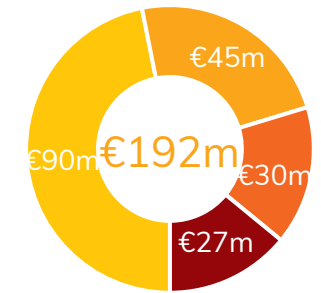
**Funding**  
Plant financing secured








# FDCA Flagship Plant secured financing breakdown

## Funding sources



## Funding uses

-  CAPEX: €115m
-  Running cost (OPEX): €65m
-  Interest, other: €12m

### Grants (€27m):

- €20m PEFerence grant<sup>(1)</sup>
- €7.5m grant from the National Programme Groningen



### Third Party Equity (€30m):

- €20m equity from Groningen consortium
- €10 million equity from Worley
- Represents 22.6% of the Renewable Business equity



### Avantium Equity (€45m):

- €45m investment by Avantium (increased from €35m)
- Represents 77.4% of the Renewable Business equity



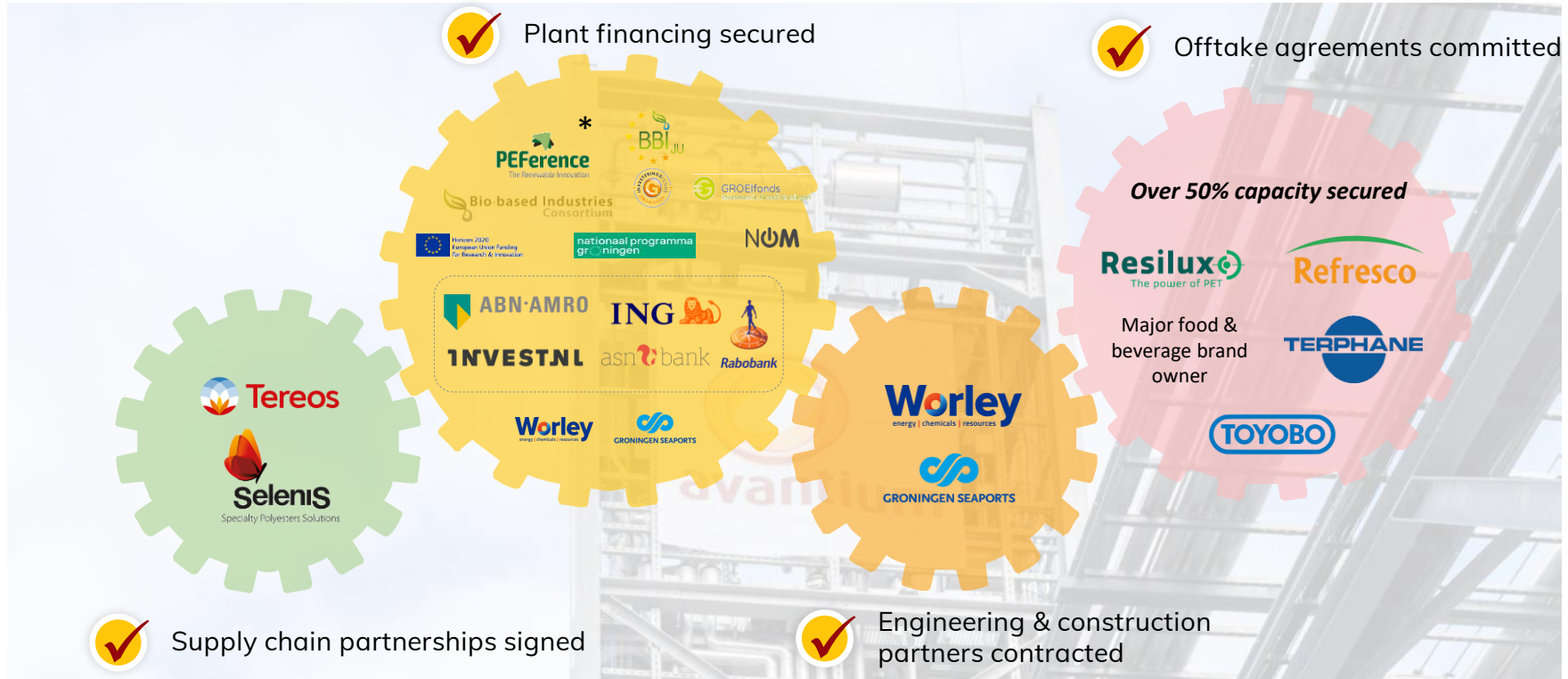
### Debt Financing (€90m):

- Each bank has committed €15m
- Invest-NL, government backed Dutch impact investment fund, has committed €30m
- Interest consists of three components: cash interest, accrued interest and warrants



Note: (1) This project has received funding from the Bio-based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation program under grant agreement No7444409. The JU receives support from the European Union's Horizon 2020 research and innovation program and the Bio-based Industries Consortium.

# Successfully de-risked a cross the entire value chain

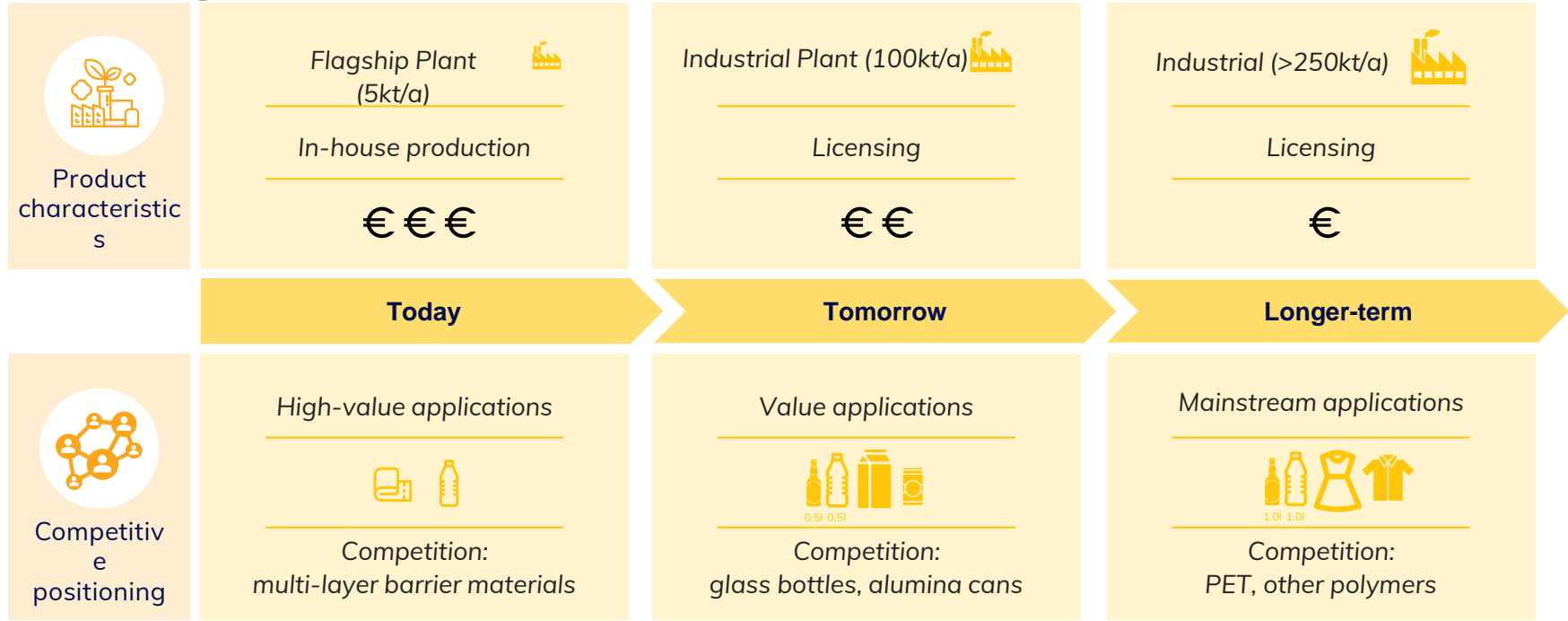


Note: (\*) This project has received funding from the Bio-based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation program under grant agreement No744409. The JU receives support from the European Union's Horizon 2020 research and innovation program and the Bio-based Industries Consortium.





# Avantium has a well-defined and scalable go-to-market strategy for PEF/FDCA



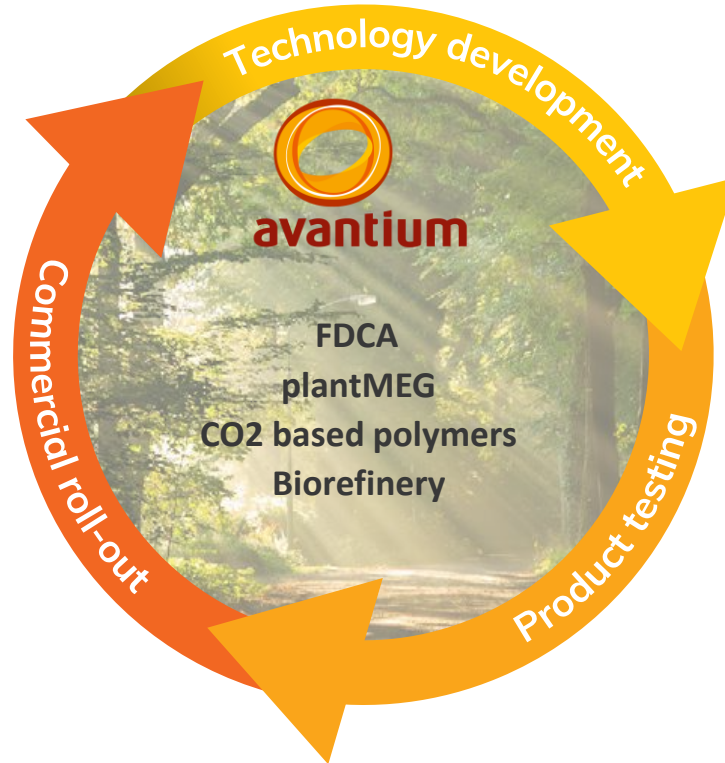
Initial focus on high-value applications with further volume growth to result in cost reduction, leading to a competitive offering across high volume end-markets

## Part 4:

CLEAR PATH TO GROWTH



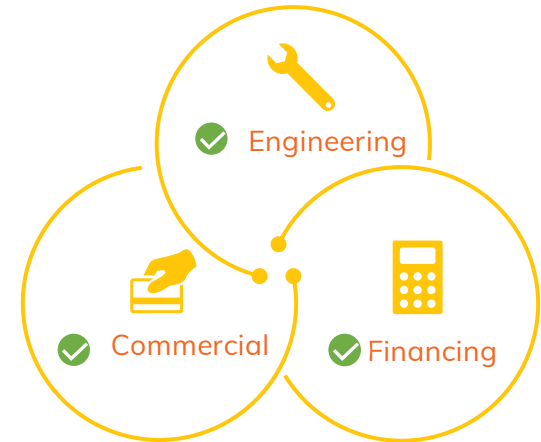
# Avantium tomorrow: further develop & commercialize its innovative technologies



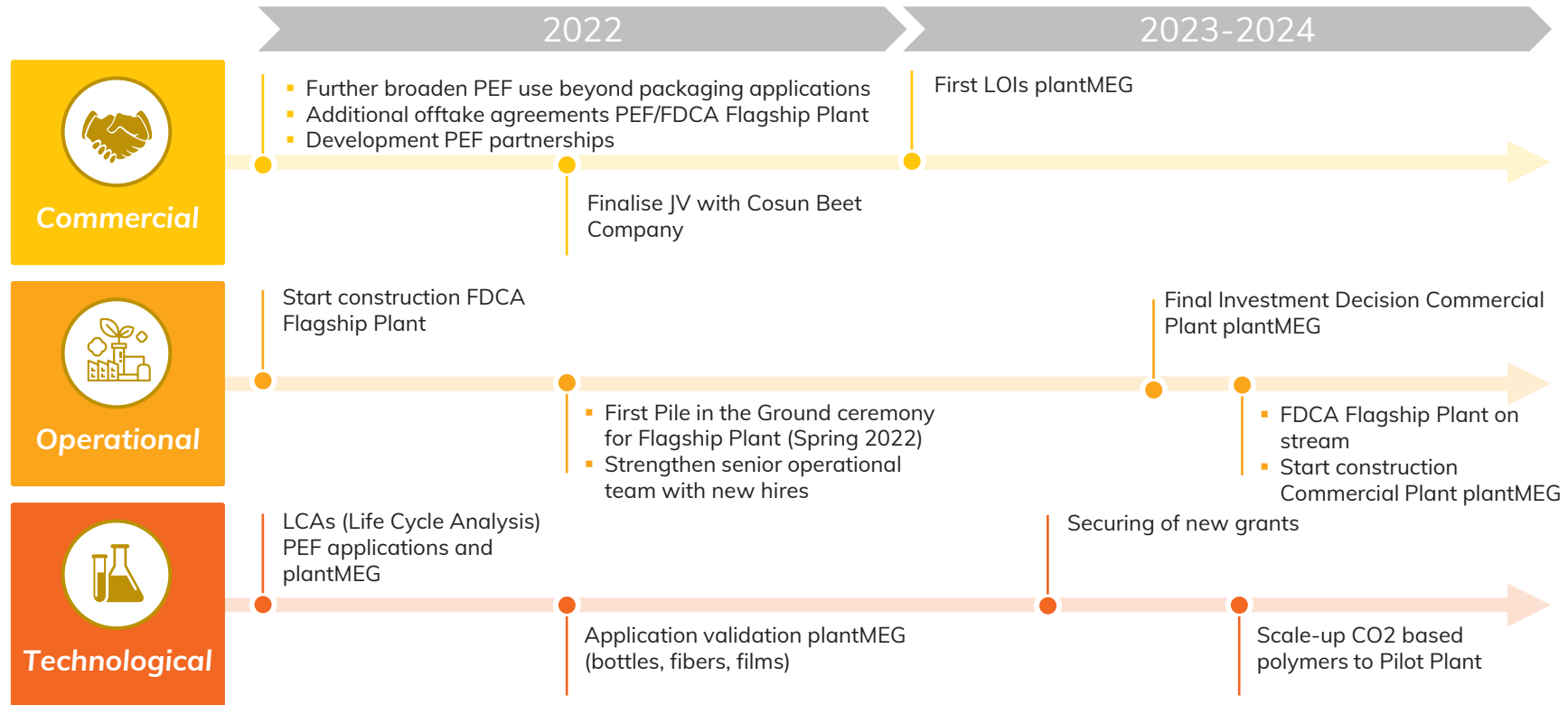
# Construction of its plantMEG Commercial Plant, leveraging on the successful experience in FDCA

 <p><b>Location</b> Northwestern Europe</p>	 <p><b>Joint venture</b> Jointly owned by Cosun Beet Co &amp; Avantium</p>	 <p><b>Size</b> &gt;100kt per annum (expected)</p>
 <p><b>Applications</b> Wide range: packaging, fibers &amp; other</p>		 <p><b>Timing</b> FID 2023/2024 Operational in 2026</p>
 <p><b>Technology</b> plantMEG license sale from Avantium to JV</p>	 <p><b>Feedstock</b> Beet sugar from Cosun Beet Co.</p>	 <p><b>Objective</b> Commercial launch plantMEG</p>

Success of FDCA strategy execution will accelerate plantMEG execution



# Momentum to accelerate in 2022 driven by increasing PEF adoption



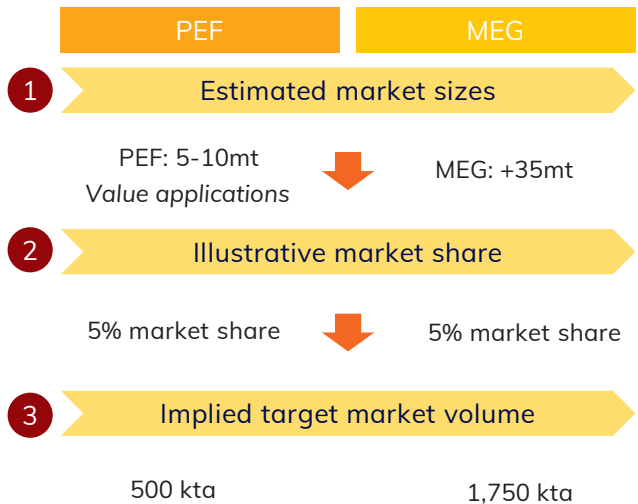


# Key drivers supporting Avantium's market potential



# Illustrative revenue and profitability model showcasing the large financial opportunity

## Illustrative market targeting



## Revenue & profitability mechanics

**Catalysis**  
Continued organic growth in line with historical levels

### FDCA Flagship

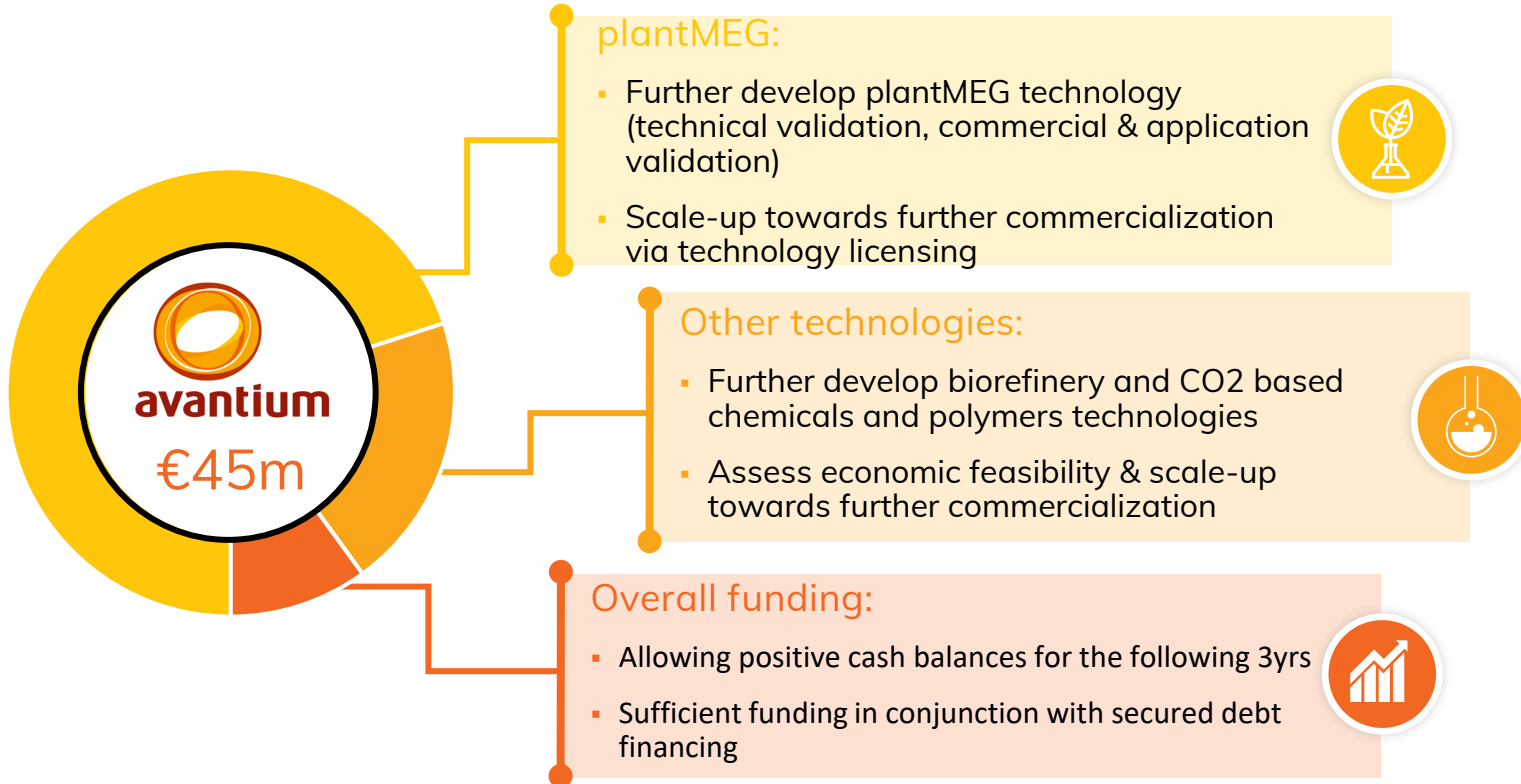
Capacity	Average selling price	Turnover
5kta	× ~€9/kg	= ~€45m

### Illustrative licensing revenues

	FDCA	PlantMEG
<b>Implied capacity</b>	500 kta	1,750 kta
×	×	×
<b>Average selling price</b>	~€4.5/kg	~€1.2/kg
=	=	=
<b>Illustrative gross sales</b>	€2.25bn	€2.1bn
×	×	×
<b>Illustrative royalty range</b>	3%-6%	3%-6%
=	=	=
<b>Illustrative annual turnover</b>	€67.5m- €135m	€63m- €126m



# Use of proceeds from future capital raise



# Key takeaways

## Key milestones successfully achieved...

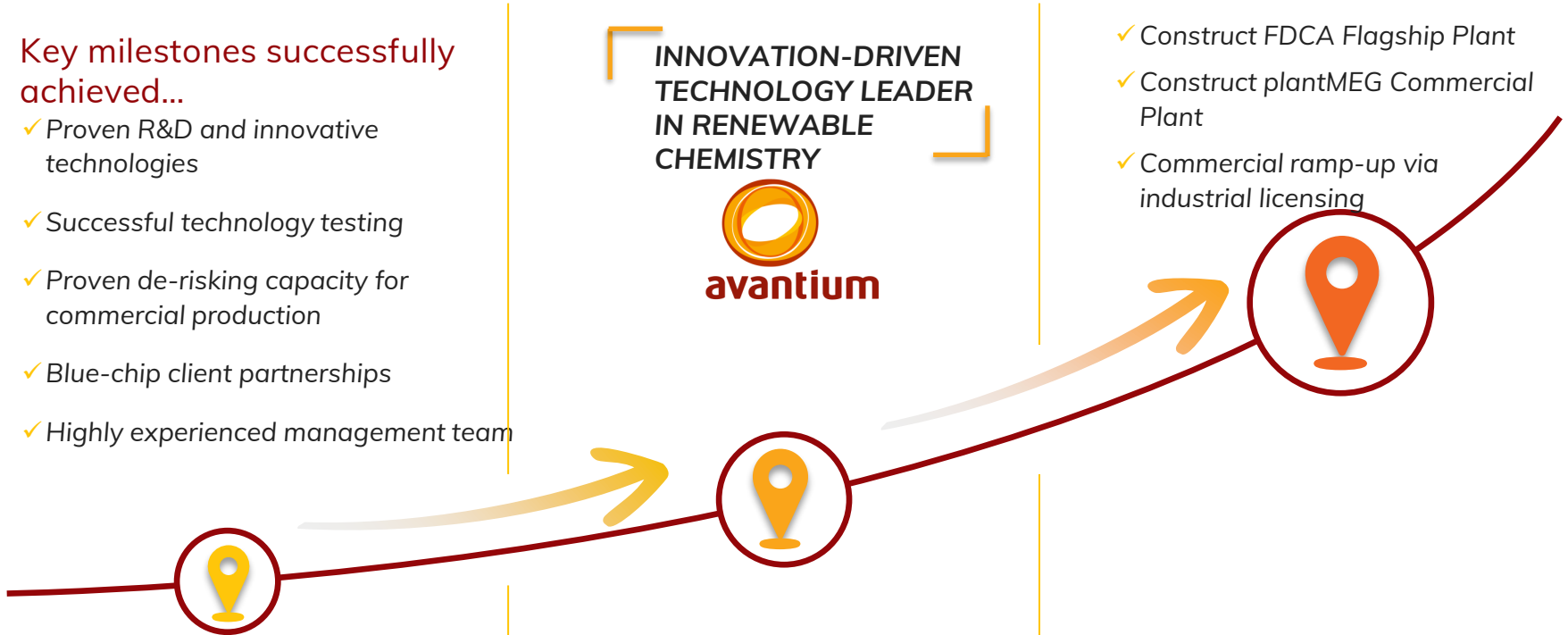
- ✓ Proven R&D and innovative technologies
- ✓ Successful technology testing
- ✓ Proven de-risking capacity for commercial production
- ✓ Blue-chip client partnerships
- ✓ Highly experienced management team

INNOVATION-DRIVEN  
TECHNOLOGY LEADER  
IN RENEWABLE  
CHEMISTRY

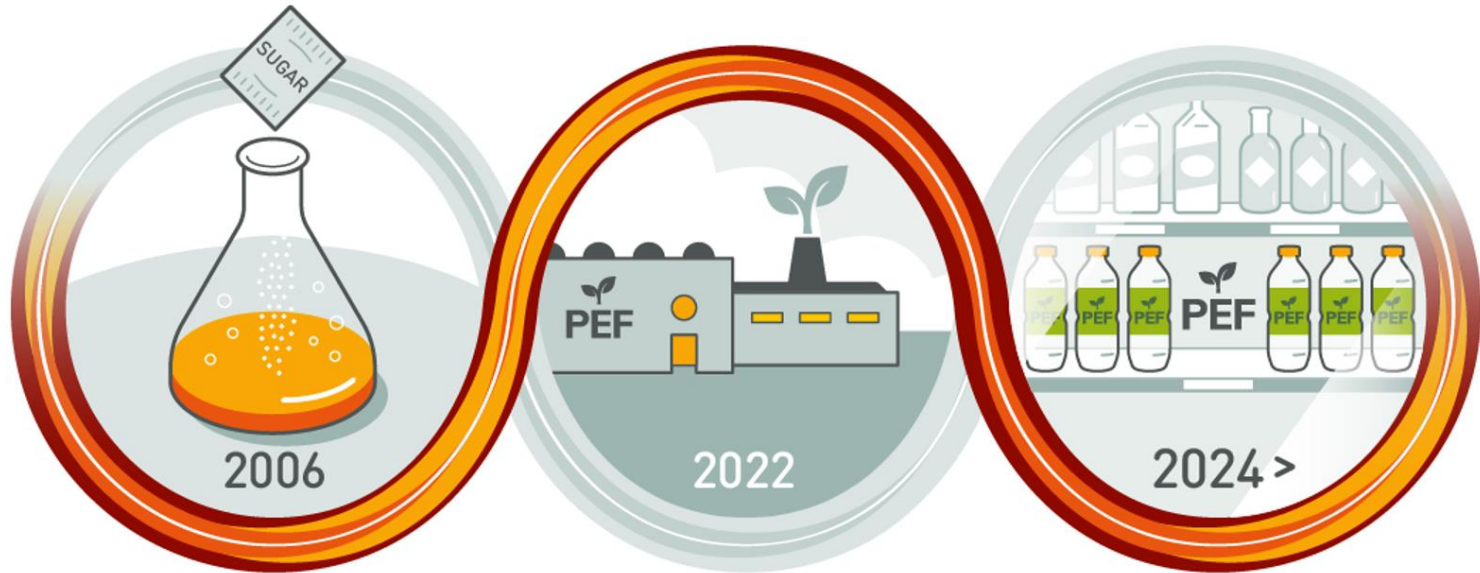


## ...Forming the foundation for commercialization

- ✓ Construct FDCA Flagship Plant
- ✓ Construct plantMEG Commercial Plant
- ✓ Commercial ramp-up via industrial licensing



# Q&A



A photograph of a sunlit forest path with a yellow overlay box. The path is paved and leads into a dense forest of tall trees. Sunlight filters through the leaves, creating a dappled light effect on the path. A large yellow rectangular box is overlaid on the left side of the image, containing the word "Appendix" in black text.

# Appendix



# Avantium: experienced leadership team

## Management Team



Tom van Aken  
CEO  
(@Avantium since 2002)

Education:  
Chemistry (Utrecht) and Economics  
(Amsterdam)

Selected previous / other positions:

- Now: several advisory positions, such as Top Team Chemie
- 1999-2002: Director Business development at DSM
- 1997-1999: Sales manager at DSM



Bart Welten  
CFO  
(@Avantium since 2020)

Education:  
Law (Leiden) and MBA (Boston)

Selected previous / other positions:

- Now: Supervisory Board Sanquin
- 2012-2019: CFO at Centrient Pharmaceuticals
- 2003-2012: CFO at DSM Resins
- 2002-2003: CFO at Kiadis Pharma



Gert-Jan Gruter  
CTO  
(@Avantium since 2000)



Carmen Portocarero  
General Counsel  
(@Avantium since 2012)



Bas Blom  
Managing Director Renewable  
Polymers  
(@Avantium since 2021)



Eelco Blum  
Managing Director  
Renewable Chemistries a.i.  
(@Avantium since 2017)



Steven Olivier  
Managing Director  
Catalysis  
(@Avantium since 2015)

## Supervisory Board

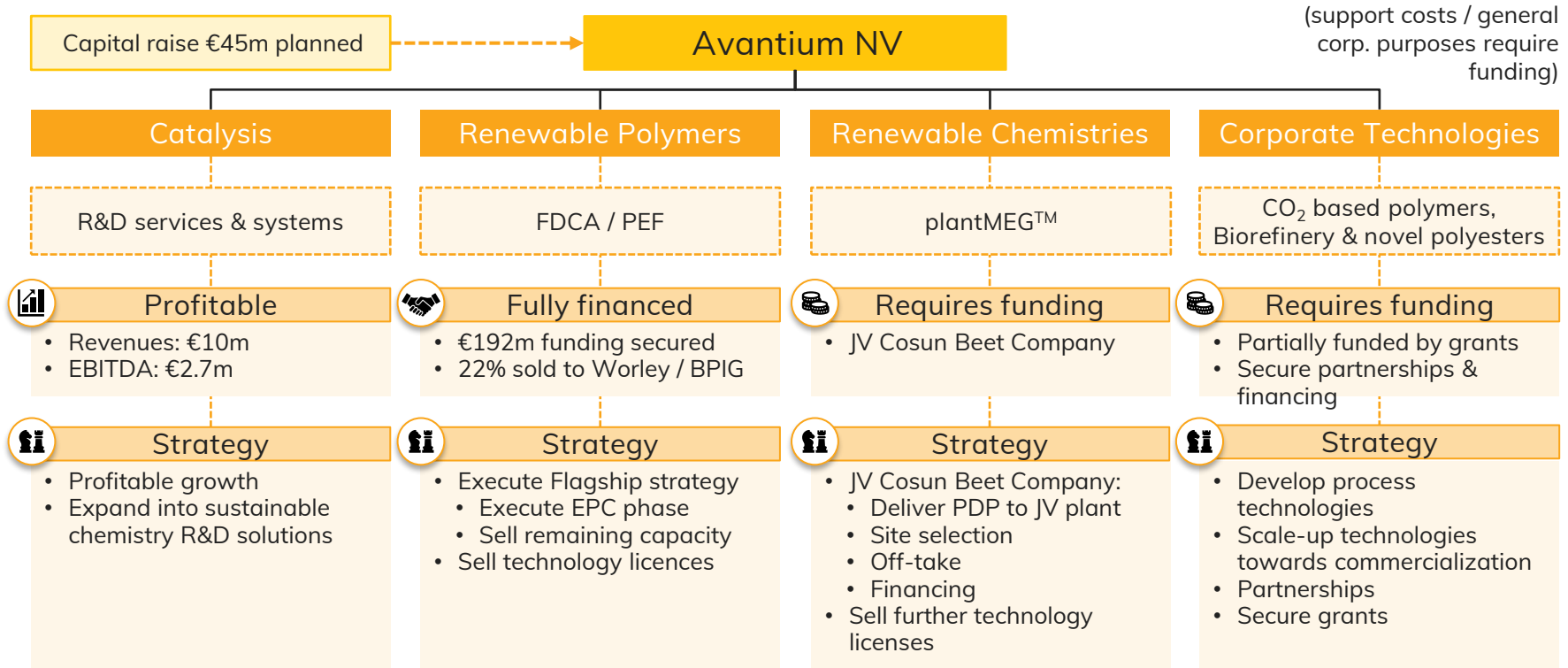
- Edwin Moses, Chairman Former CEO Ablynx NV and Oxford Asymmetry International
- Margret Kleinsman CFO Agrifirm
- Michelle Jou President Covestro Polycarbonates Business

- Cynthia Arnold
- Trudy Schoonenberg
- Nils Björkman Pak Group

Former CTO Sun Chemical and Valspar  
Held various senior management positions at Shell and AkzoNobel  
Worked for 33 years in various senior management positions at Tetra

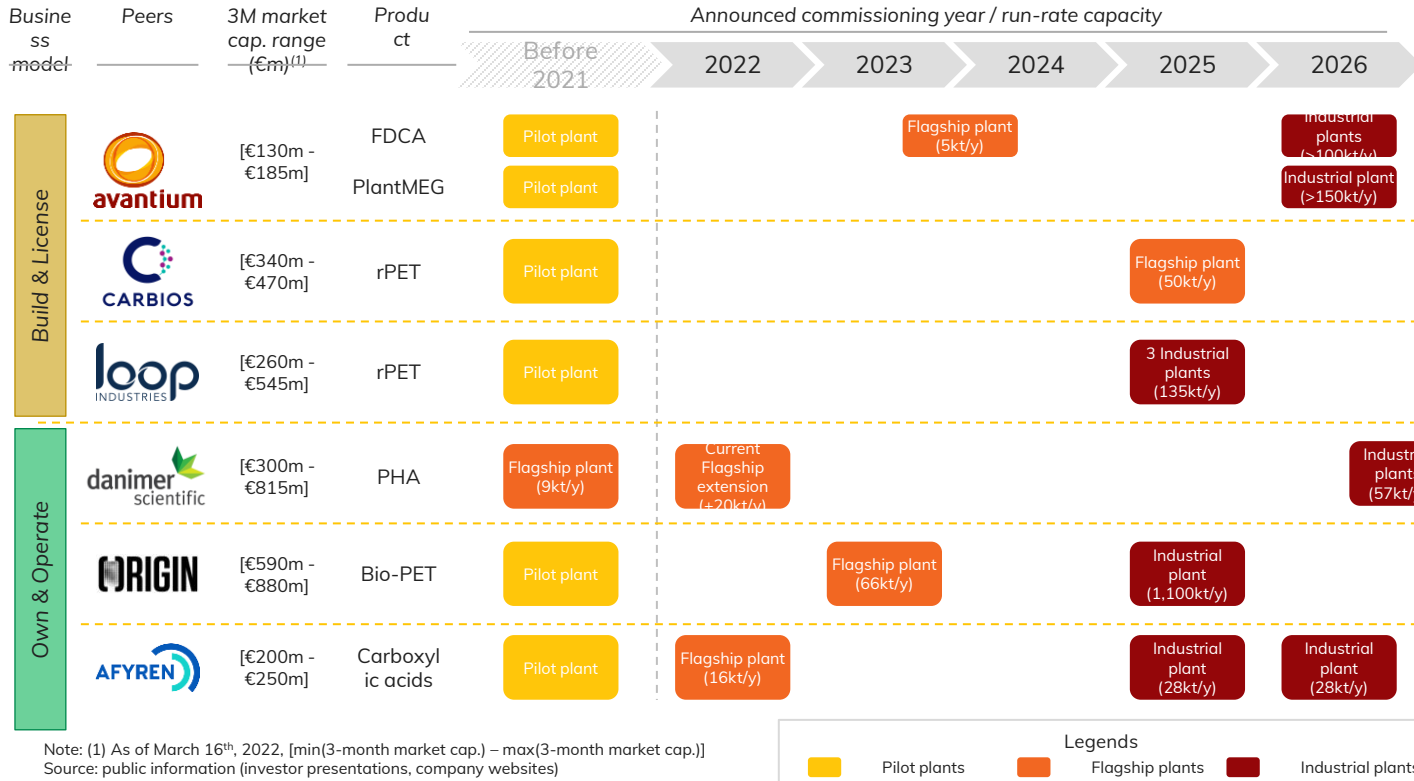


# Company strategy by business line





# Avantium's industrial strategy compares favorably to its core peers



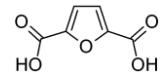
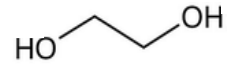


- ✓ Avantium's industrial strategy is not an exception - Exact same industrial scale-up pattern observed across all innovative industrial peers (Pilot / Flagship / Industrial)
- ✓ Avantium is actually benefiting from an industrial maturity that compares favorably to other Build & License models
- ✓ Avantium industrial phasing designed to mitigate scale-up risks by building a first 5kt FDCA capacity unit as a blueprint for further capacity increase (no scale-up risk associated with larger catalysis units)

Note: (1) As of March 16<sup>th</sup>, 2022, [min(3-month market cap.) – max(3-month market cap.)]  
 Source: public information (investor presentations, company websites)



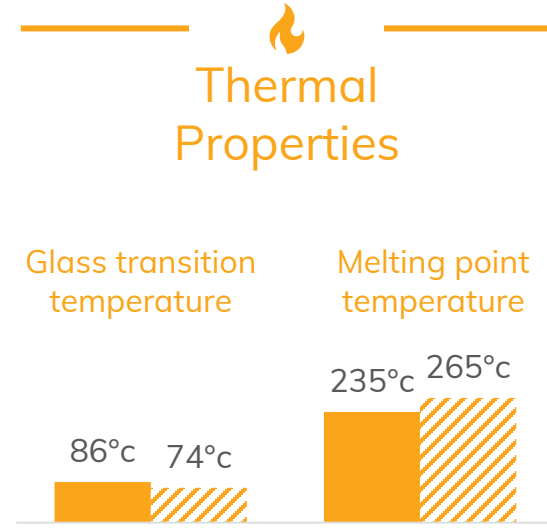
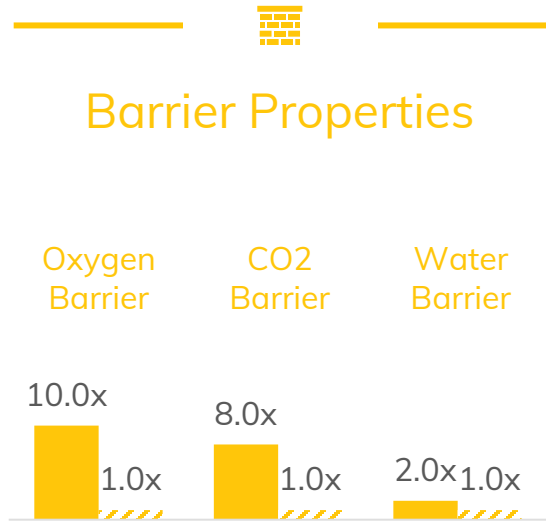


# Avantium tomorrow: Successfully delivering the next biochemicals from disruptive technologies

	Today	Tomorrow		
	PEF Building blocks			
	<p><b>FDCA</b></p>  <p>Catalytic conversion of plant-based sugars into FDCA</p>	<p><b>plantMEG</b></p>  <p>Conversion of sugars into plantMEG</p>	<p><b>CO2 based polymers</b></p>  <p>Conversion of CO2 into high-value chemicals &amp; polymers</p>	<p><b>Biorefinery</b></p>  <p>Conversion of biomass via a biorefinery into industrial sugars</p>
<b>Avantium value proposition</b>	<ul style="list-style-type: none"> <li>✓ 100% renewable &amp; recyclable</li> <li>✓ Superior performance</li> <li>✓ Feedstock flexibility</li> <li>✓ Initially serving value applications then volume</li> </ul>	<ul style="list-style-type: none"> <li>✓ Improved sustainability credentials</li> <li>✓ Market competitive</li> <li>✓ Drop-in</li> </ul>	<ul style="list-style-type: none"> <li>✓ Valorizes waste carbon</li> <li>✓ Clean conversion process using renewable energy</li> <li>✓ Proprietary electro-chemistry platform for carbon capture and utilization</li> </ul>	<ul style="list-style-type: none"> <li>✓ Valorizes biomass into valuable feedstock</li> <li>✓ Clean and efficient conversion technology</li> <li>✓ Significantly lower energy</li> </ul>
<b>Status</b>	Operational Pilot Plant Flagship Plant operational by 2024	Operational Pilot Plant Commercial Plant expected to be operational by 2026	Prepilot units being tested	Operational Pilot Plant

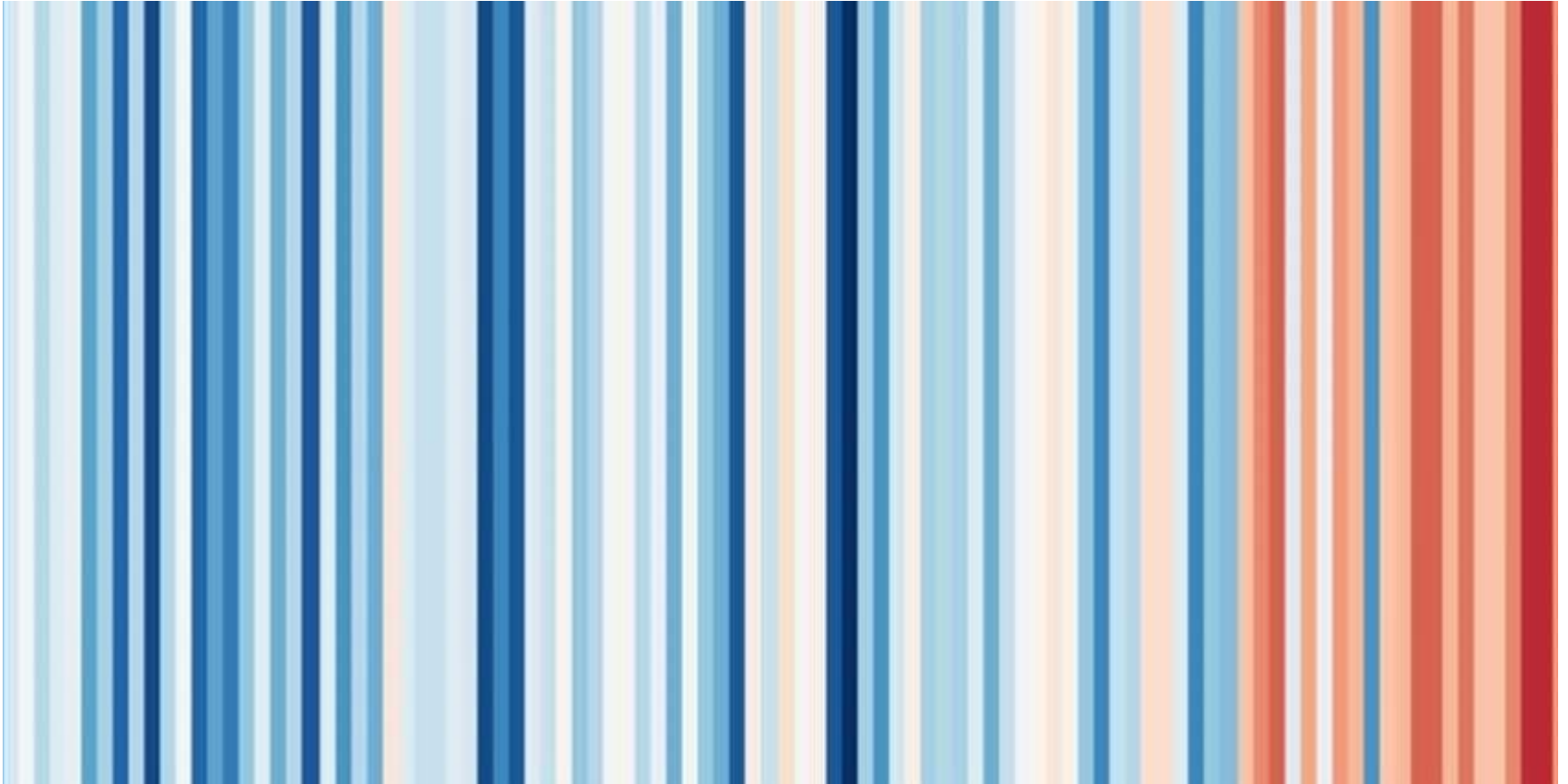
Avantium's expertise in catalysis processes as development platform of disrupting biochemical technologies

# PEF is able to address value-added markets thanks to enhanced performance



■ PEF ■ PET





Global warming stripes by climate scientist Ed Hawkins