



avantium

Retail Investor Day

28 March 2022

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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

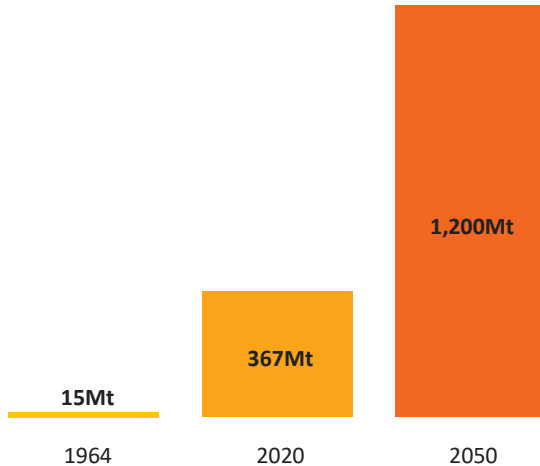
Our ambition

A fossil-free chemical industry by 2050

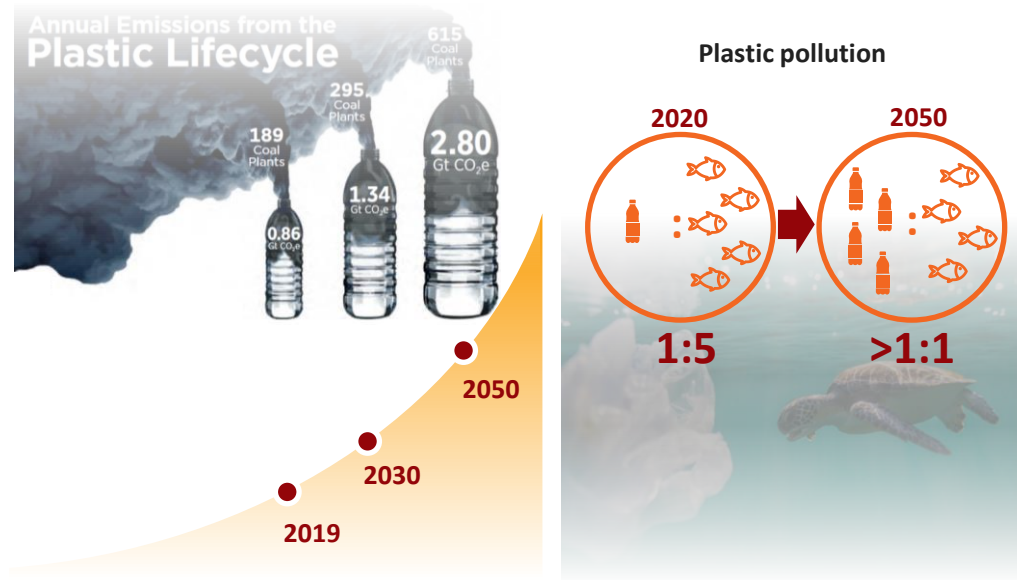


Increasing worldwide use of plastics causes major environmental challenges

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”

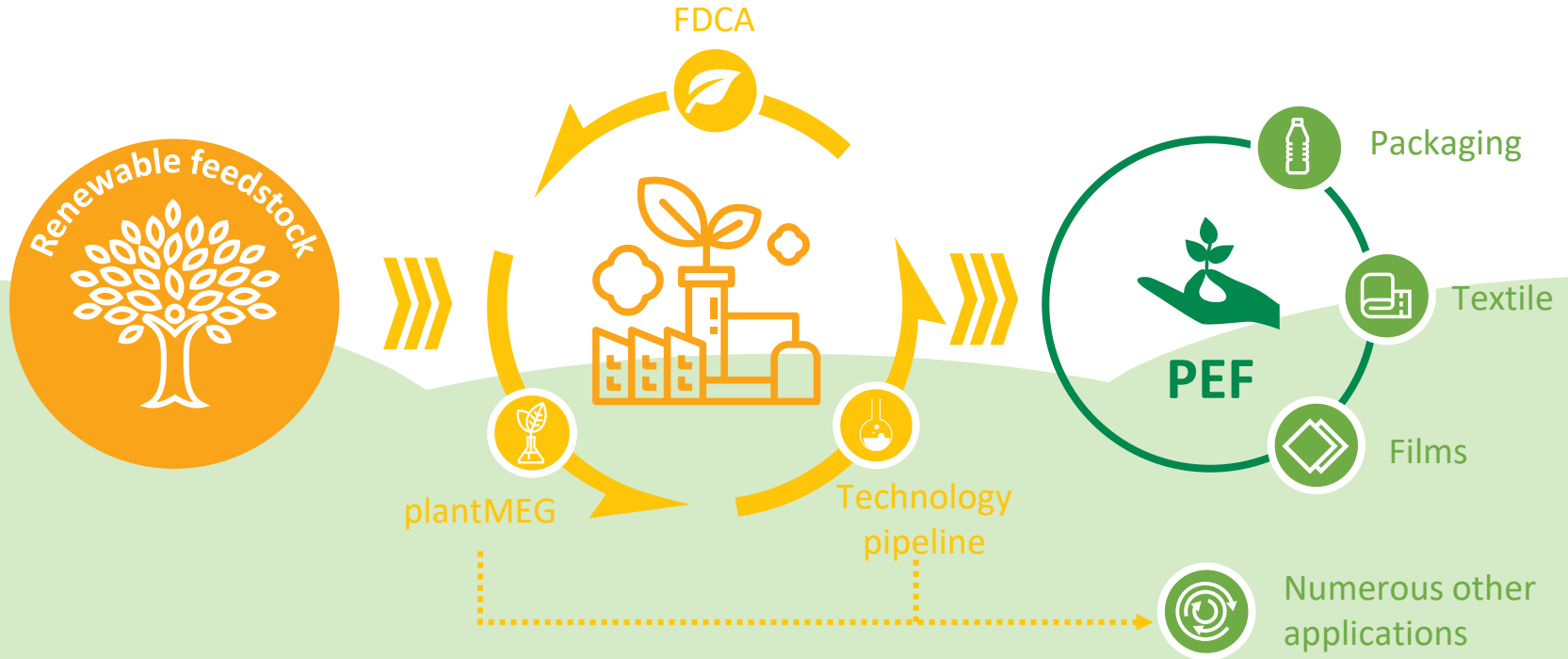
Companies throughout the value chain are shifting towards sustainable and carbon neutral plastics



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

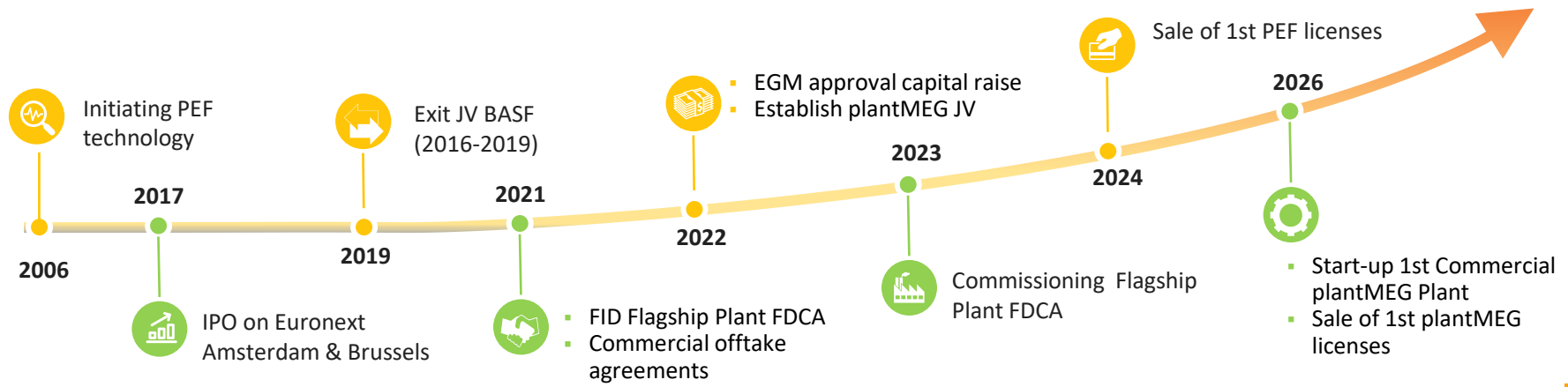


Avantium offers disruptive technologies for the production of PEF



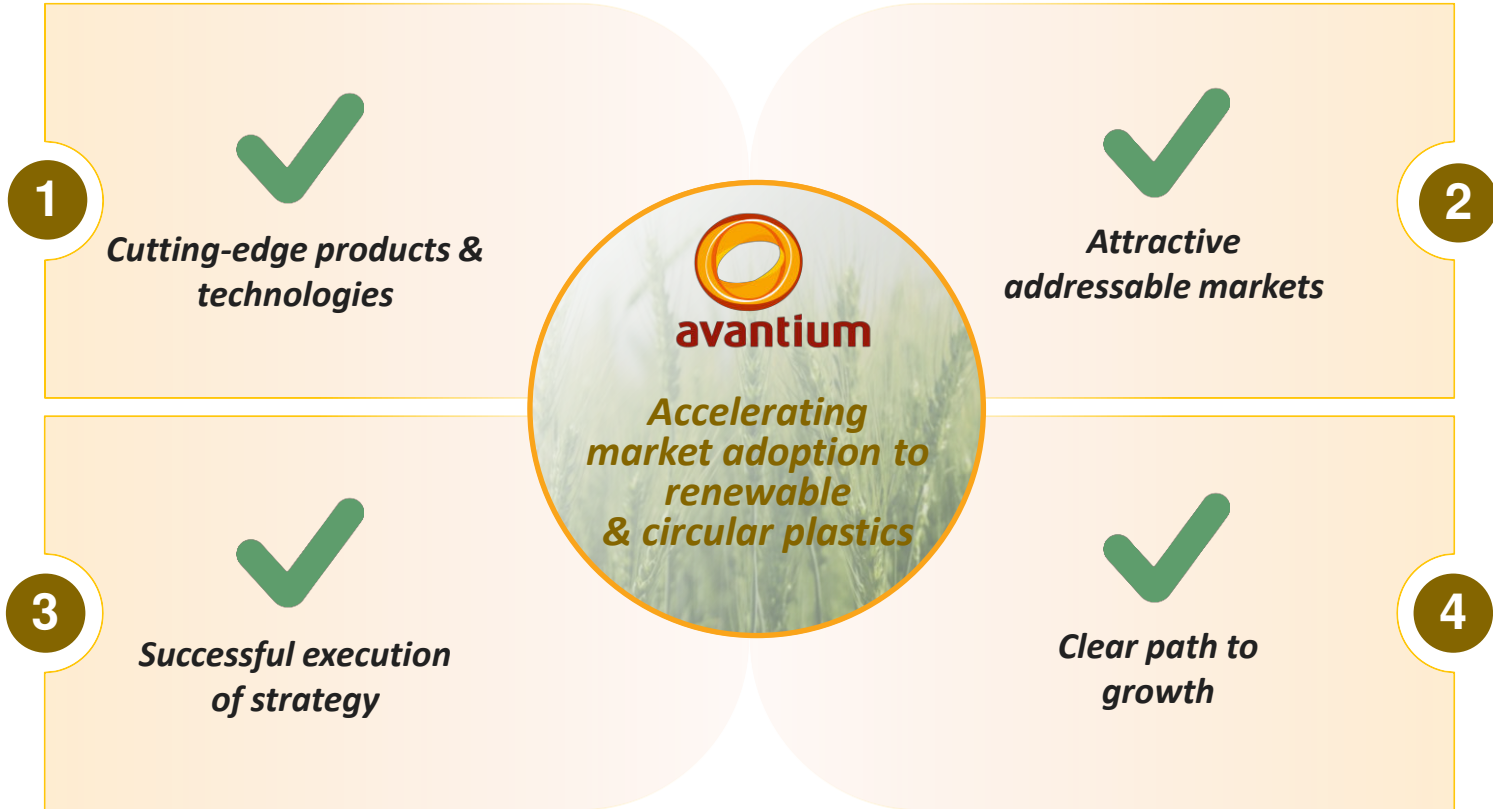


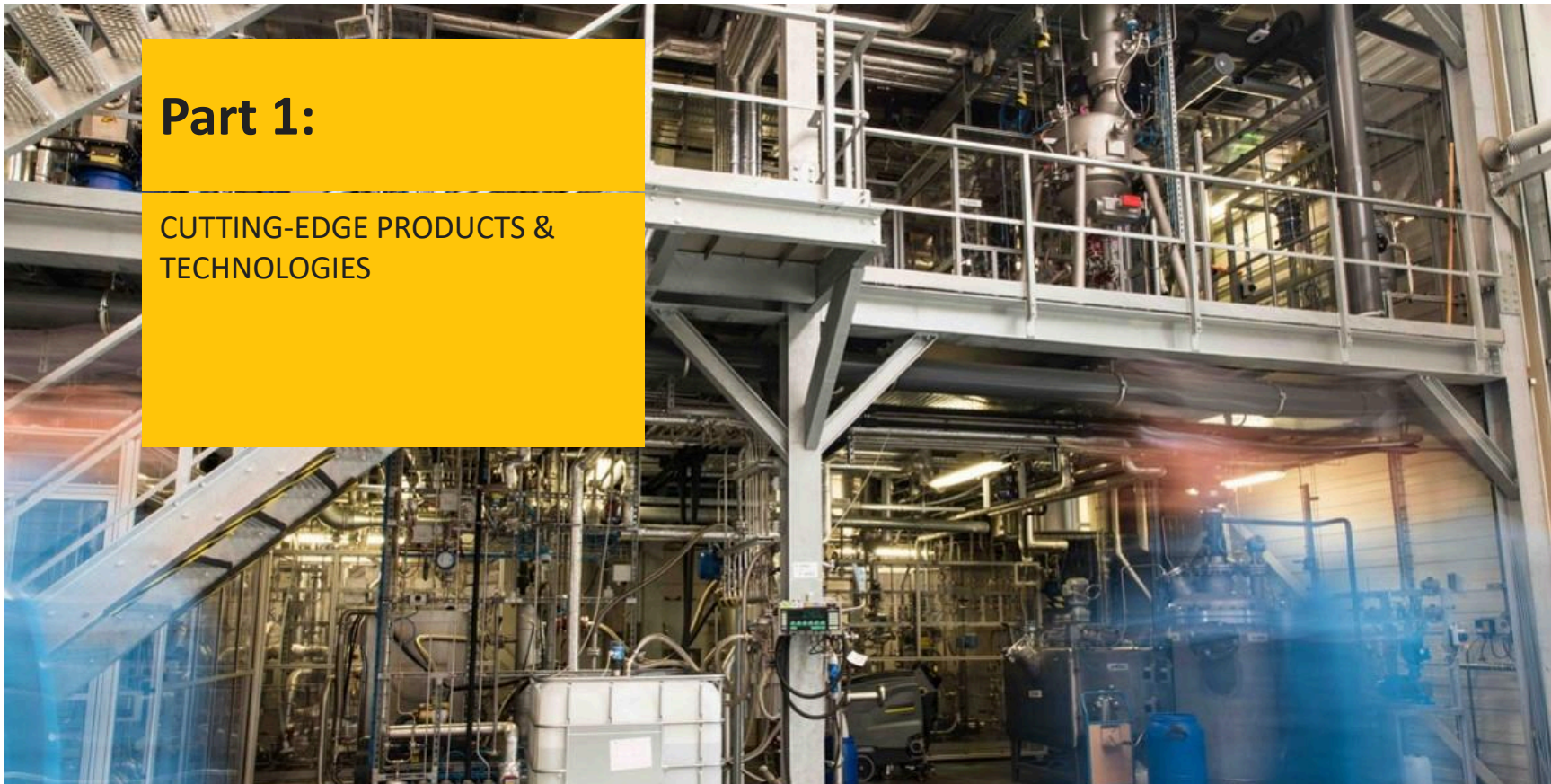
Avantium's successful trajectory towards growth



Note: (1) Avantium 2019 results

Key investment highlights





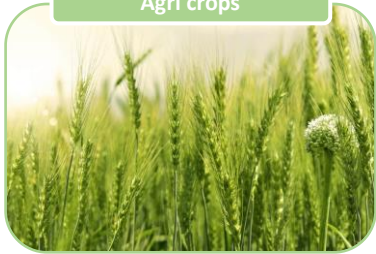
Part 1:

CUTTING-EDGE PRODUCTS &
TECHNOLOGIES

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

Feedstock flexible

Agri crops



Agri & forestry residue



Forest residues:
softwood and hardwood chips



Corn stover



Bagasse

Unique technological platform centered around catalysis process

Plant-based sugar



FDCA



plantMEG

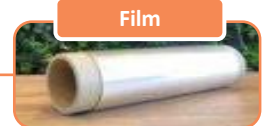


Broad range of applications

Packaging



Film



Textile



PEF

Furniture



Textile



Automotive



Packaging

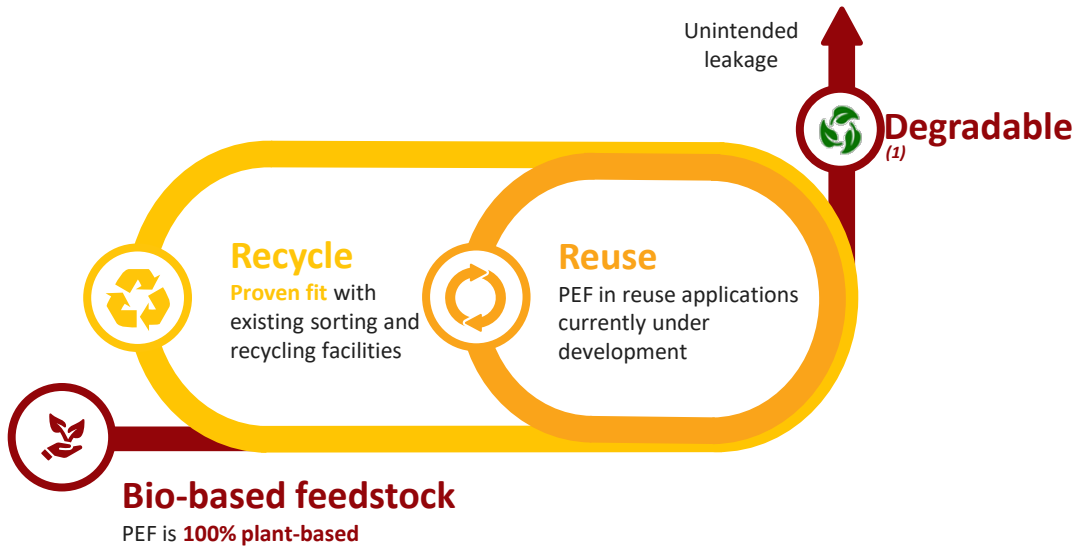


Solvent & Coolants



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⁽²⁾

“ 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



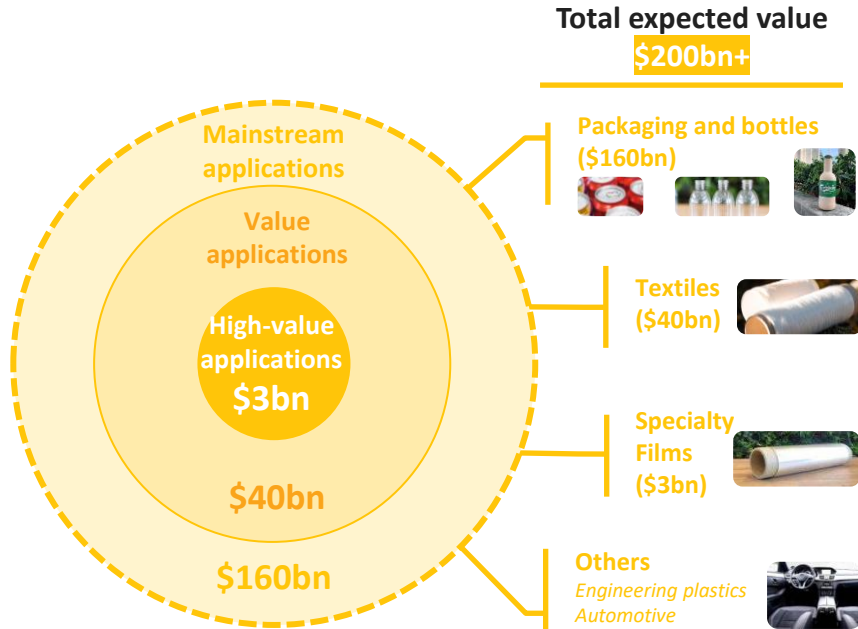
Part 2:

ATTRACTIVE ADDRESSABLE MARKETS

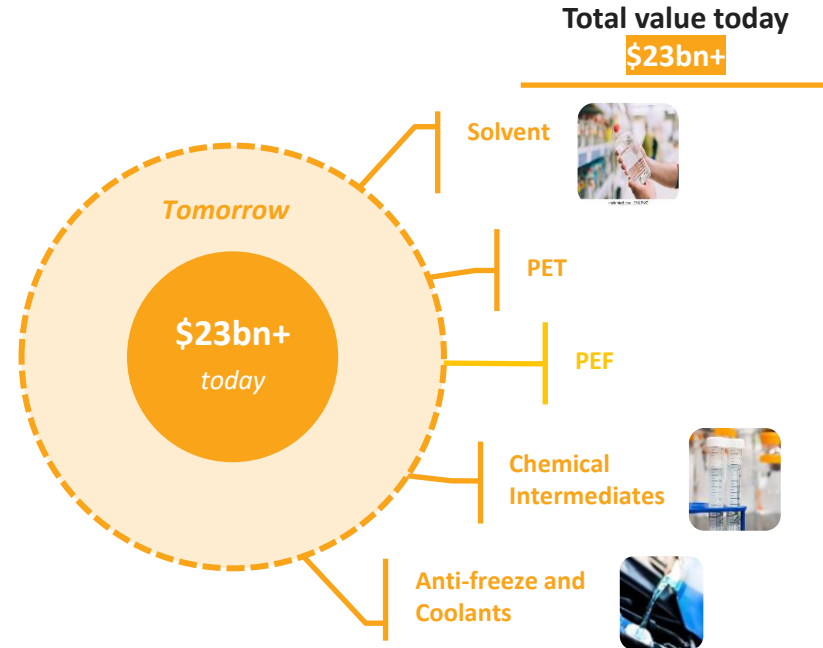


Avantium targets large and diverse PEF and MEG markets

PEF addressable market – 100mt+



MEG addressable market – 35mt+

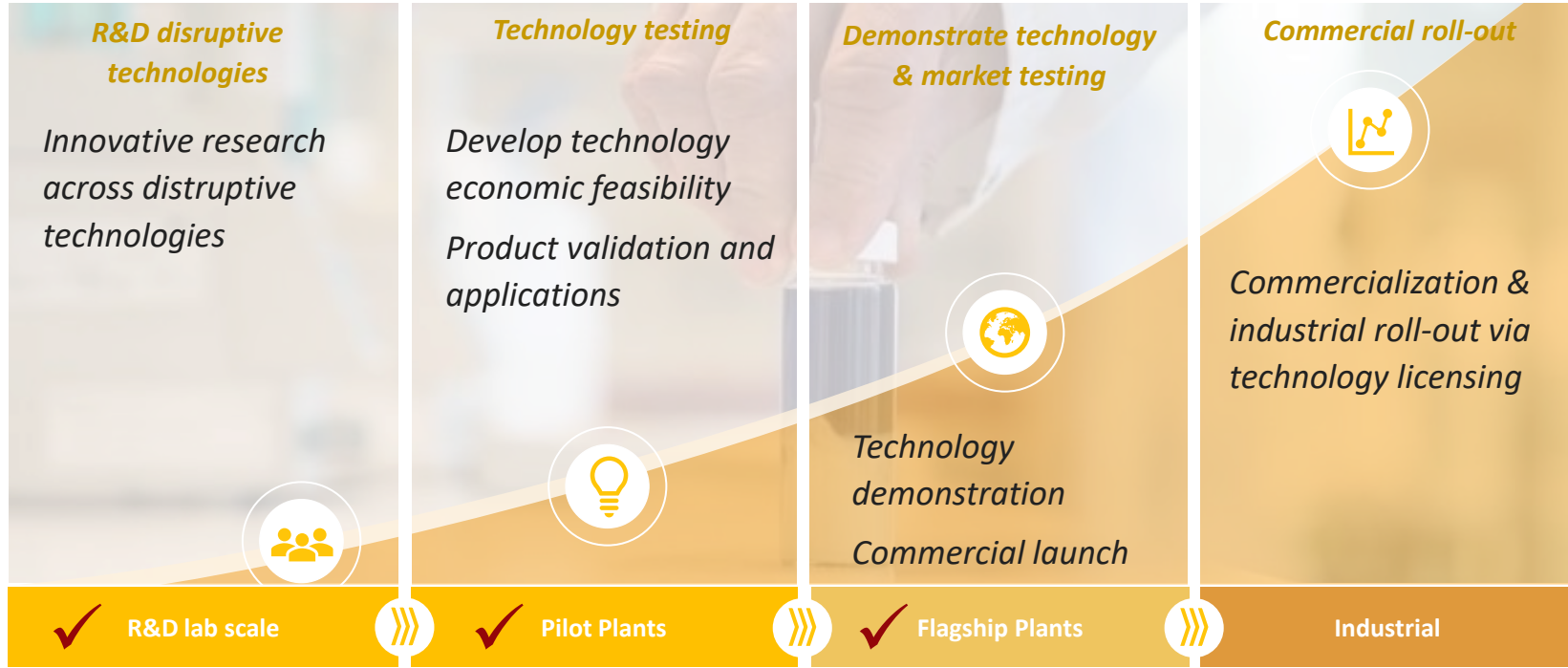


Part 3:

SUCCESSFUL EXECUTION OF STRATEGY



From technology development to commercialization

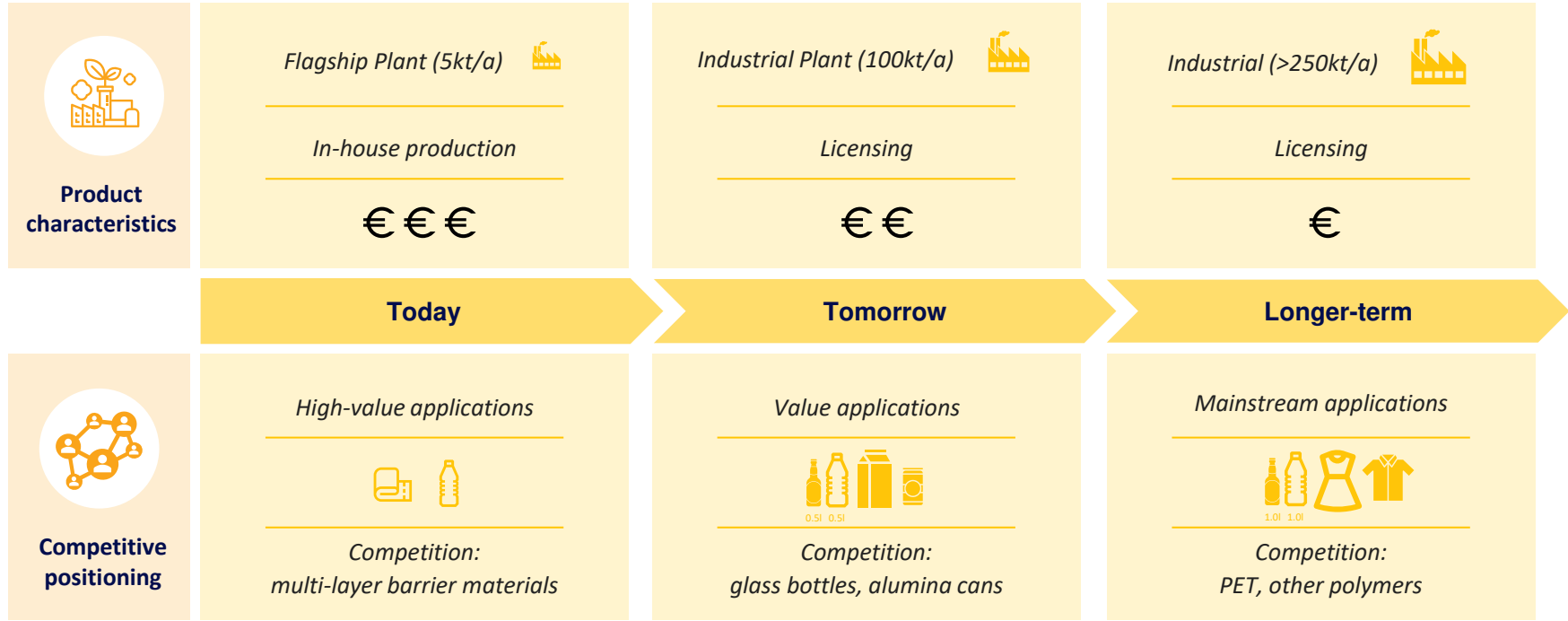


Mission: create & commercialize disruptive technologies & products to accelerate the transition to renewable & circular plastics





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

Three Key Conditions to FID are met

Avantium has taken the Final Investment Decision (FID) concerning the construction of the FDCA Flagship Plant as the Key Conditions thereto are now satisfied:



1. PEF market proven by obtaining sufficient offtake commitments



2. Process technology and supply chain ready for scale up



3. €192 million in financing secured



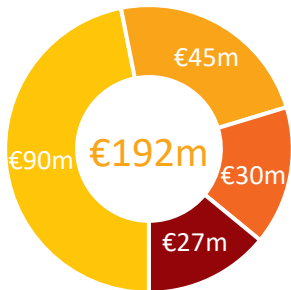
The **positive investment decision** marks a **defining milestone** in the evolution of Avantium and a pivotal moment towards the **commercialisation of Avantium's sustainable plastic PEF**





FDCA Flagship Plant secured financing breakdown

Funding sources



Funding uses



CAPEX: €115m



Running cost (OPEX): €65m



Interest, other: €12m

Grants (€27m):

- €20m PEference grant⁽¹⁾
- €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 Flagship Plant Equity



Avantium Equity (€45m):

- €45m investment by Avantium (€35m already invested)
- Represents 77.4% of Flagship Plant 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



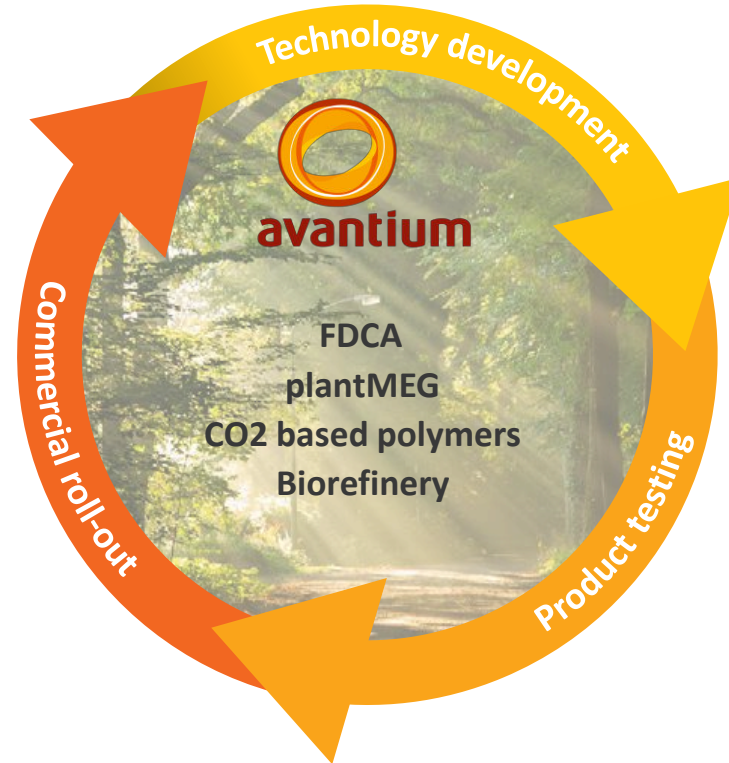
Note: (1) This project has received funding from the Bio-based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation program under grant agreement No744409. The JU receives support from the European Union's Horizon 2020 research and innovation program and the Bio-based Industries Consortium.

Part 4:

CLEAR PATH TO GROWTH

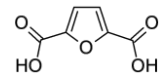
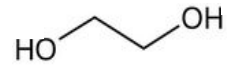




Avantium tomorrow: further develop & commercialize its innovative technologies





Avantium tomorrow: Successfully delivering the next bio chemicals from disruptive technologies

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

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

Avantium value proposition

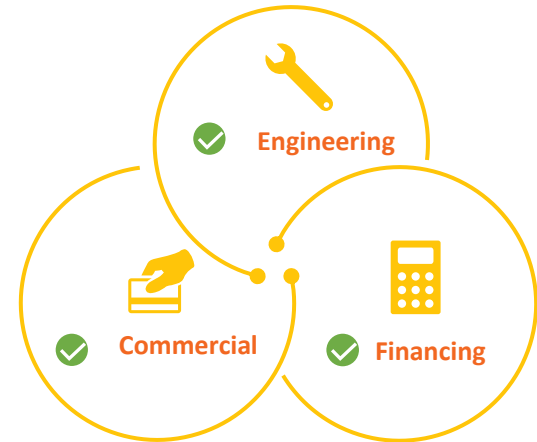
plantMEG will provide brands with a sustainable & innovative ingredient



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

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

Success of FDCA strategy execution will accelerate plantMEG execution



Key takeaways

Key milestones successfully achieved...

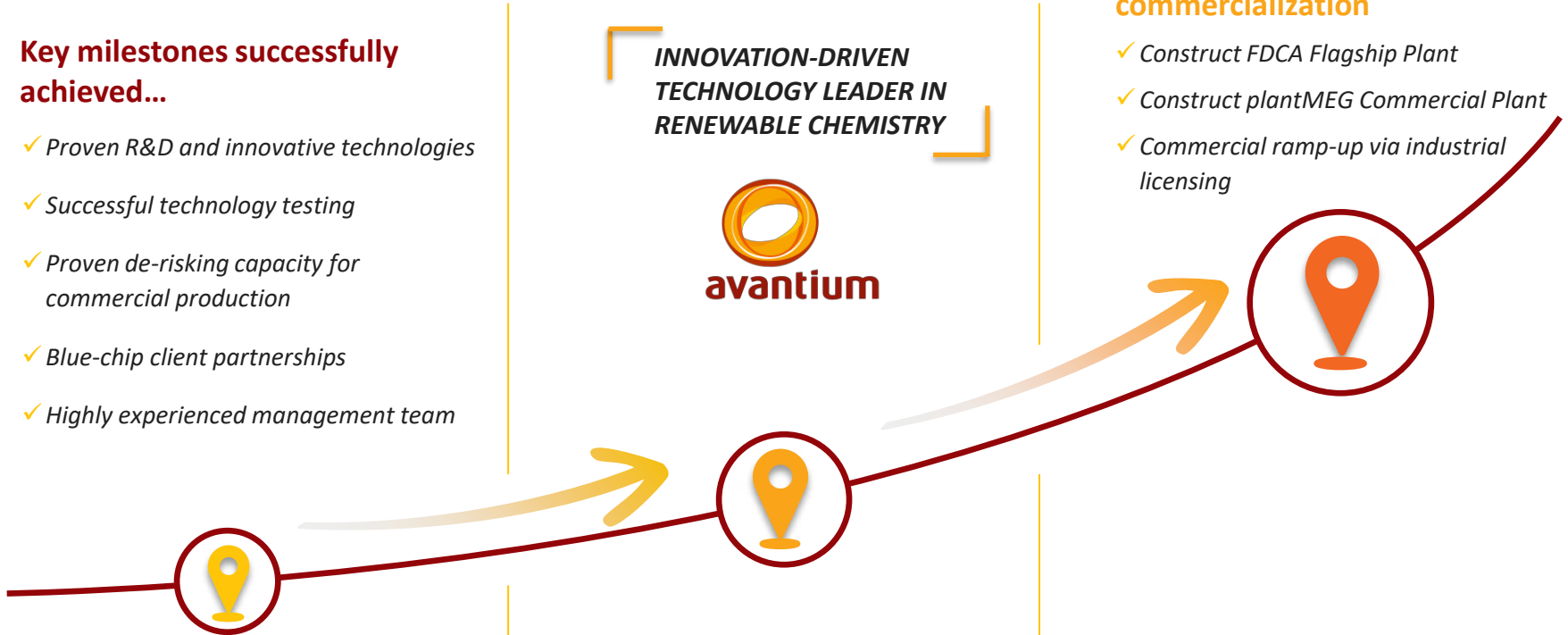
- ✓ Proven R&D and innovative technologies
- ✓ Successful technology testing
- ✓ Proven de-risking capacity for commercial production
- ✓ Blue-chip client partnerships
- ✓ Highly experienced management team

INNOVATION-DRIVEN
TECHNOLOGY LEADER IN
RENEWABLE CHEMISTRY

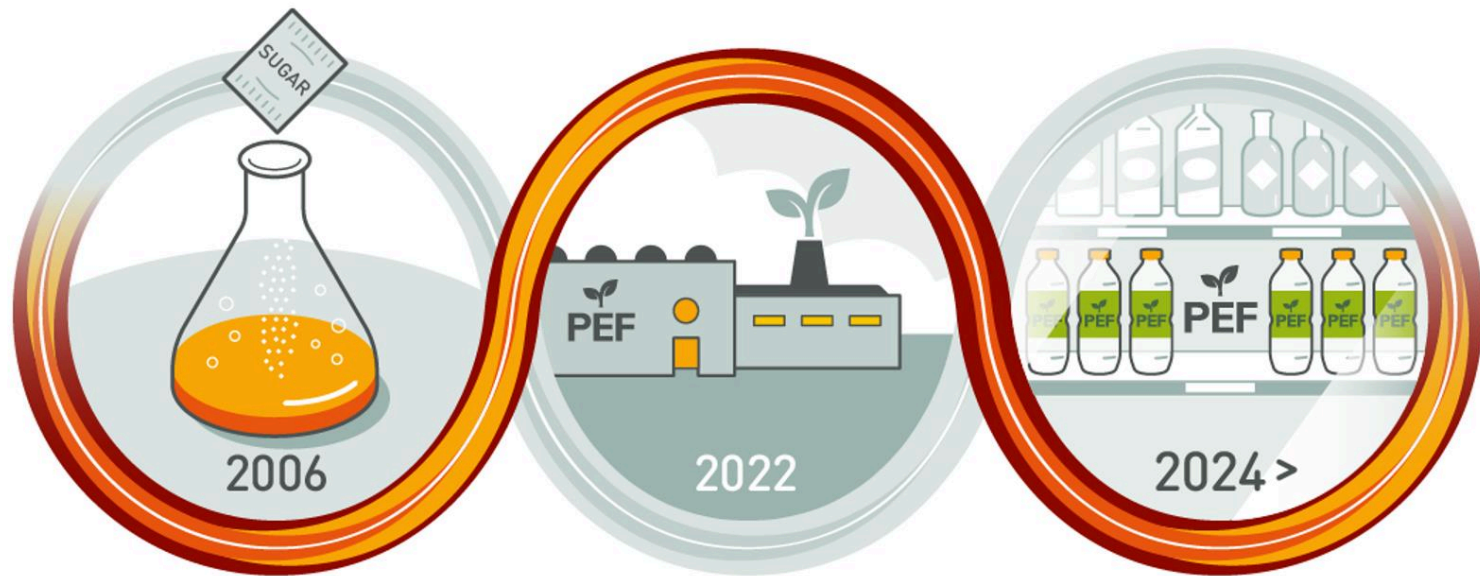


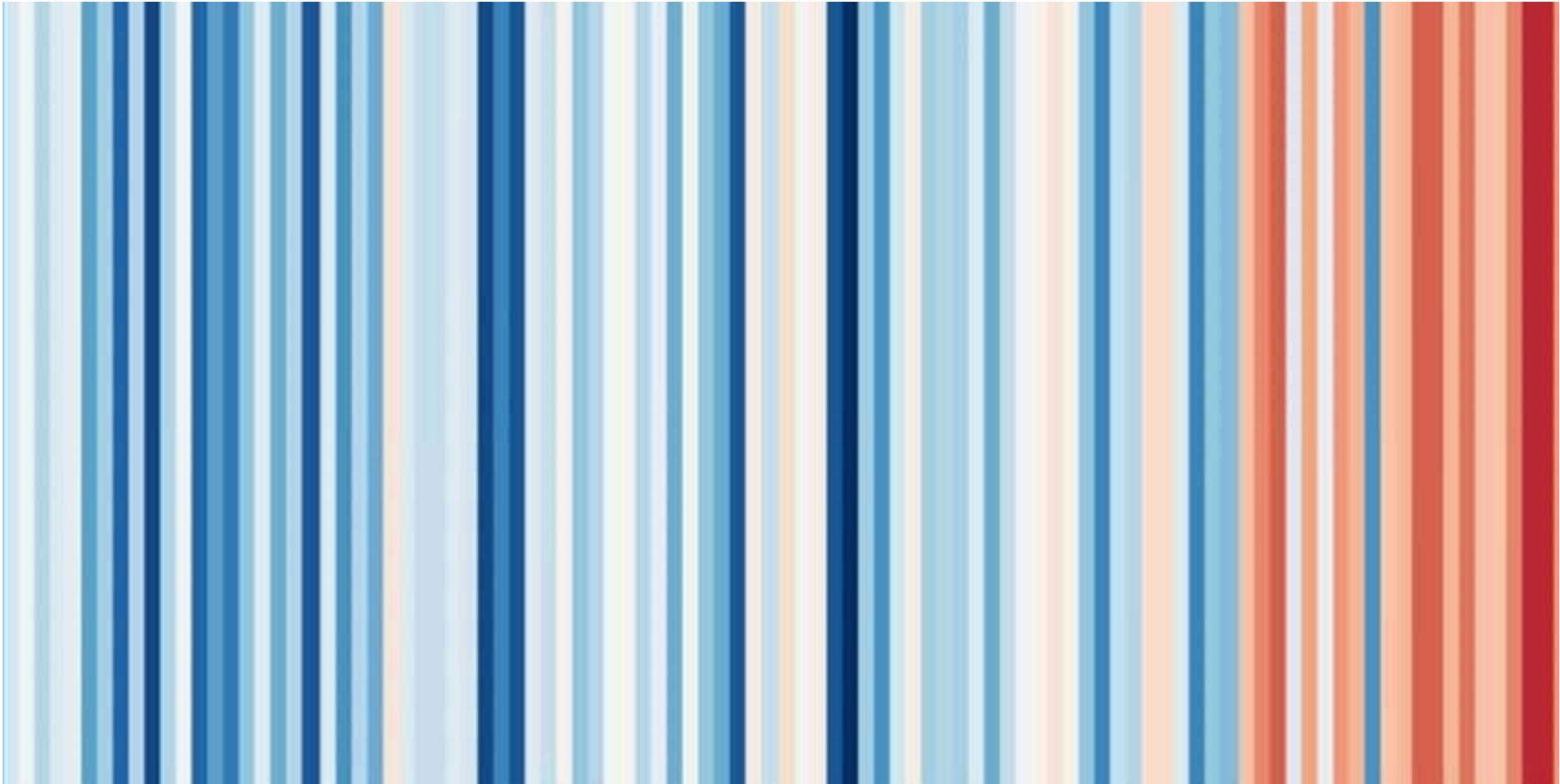
...Forming the foundation for commercialization

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



Q&A





Global warming stripes by climate scientist Ed Hawkins