

An aerial photograph of a lush green forest. A narrow path winds through the trees, and a person wearing a red jacket is walking along it. The text is overlaid on the center of the image.

Capital Markets Day 2023

Keynote presentation

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Today's speakers



Tom van Aken
CEO



Boudewijn van Schaik
CFO





1. Introduction



Key themes



Inflection
point ahead



Strategic
focus



Securing
funding





Addressing the plastics pollution problem

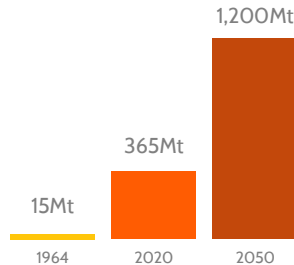
Plastics pollution:
a real problem...



PET / Plastics
GHG¹ Emissions

Plastic end-of-life
pollution

...the problem is
getting bigger...



Global plastics production will
triple by 2050

...and it can't be solved
only by recycling

- 11% Low recycling rate
- 65-95% Limited recovery rate through recycling depending on technologies
- 26% High share of hard-to-recycle plastics multi-material packaging

Constant need for new virgin
plastics unless we find a
circular alternative

Note: (1) Greenhouse Gas

Sources: OECD statistics on plastics use by polymer projections, 2023; OECD, Plastic leakage and greenhouse gas emissions are increasing, 2019; CIEL, Plastic & Climate: The hidden costs of a plastic planet, 2019; OECD, Global plastics outlook, 2022; Eriksen et al, A growing plastic smog, now estimated to be over 170 trillion plastic particles afloat in the world's oceans, 2023; PlasticsEurope Market Research Group and Consultic Marketing & Industrieberatung, World plastics production, 2016; RECORD, Chemical and physico-chemical recycling of plastic waste, 2022, 177 p, n°21-0919/1A; ScienceDirect, Recycling of multi-material multilayer plastic packaging: Current trends and future scenarios, 2022; Avantium and Nova Institute, PEF – A Sustainable Packaging Material for Bottles - ISO Certified LCA of Avantium's PEF products, 2022



Accelerating shift to bio-plastics

1

Increasing consumer pressure, demanding sustainable solutions



2

Increasing regulatory support for plant-based plastic and recycling:



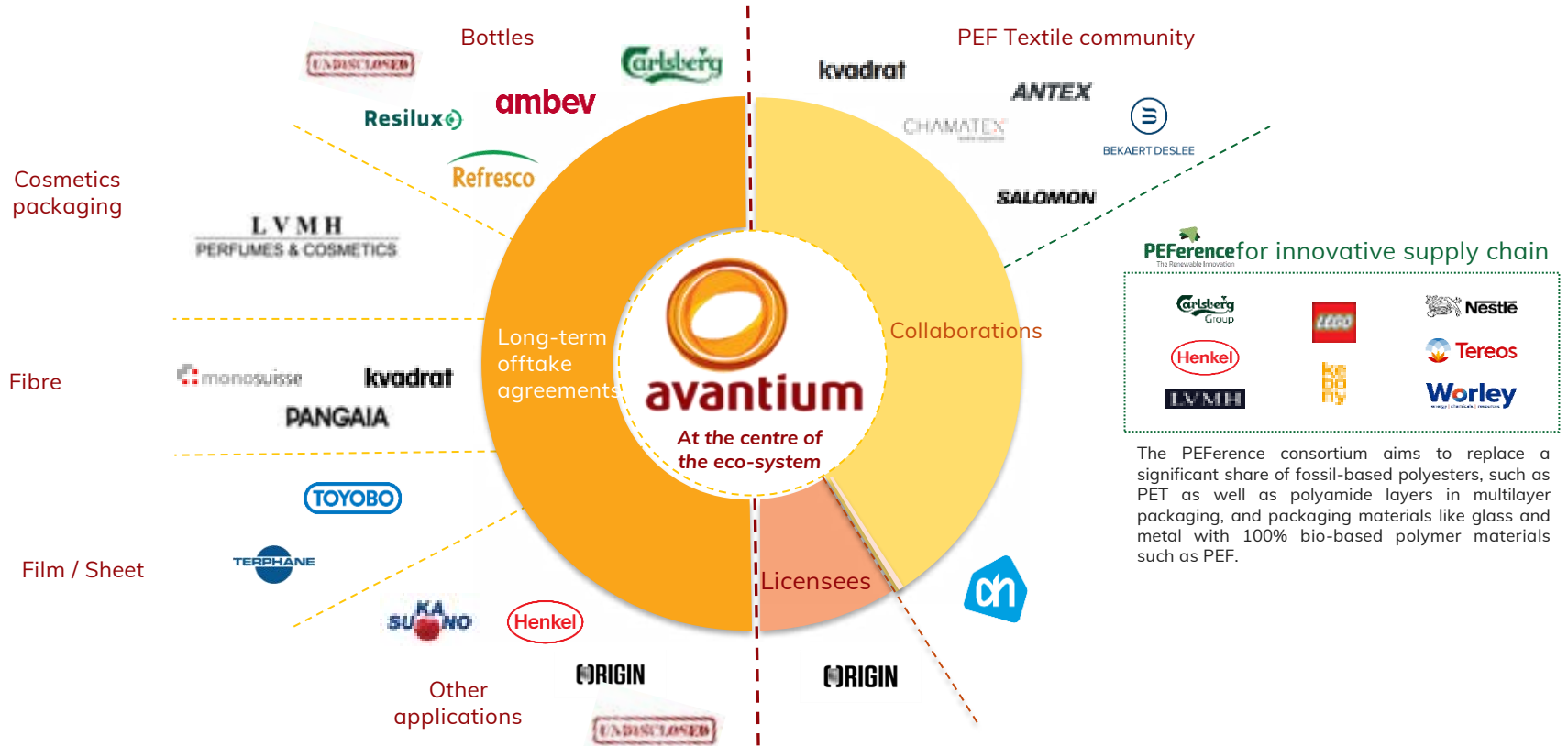
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Major brands setting ambitious targets but struggling to meet them

20-50% reduction of virgin fossil-based plastic by 2025-2030¹



Driving renewable & circular polymers



Market traction through wide range of applications



2. Strategy & ambition





Commercial-stage company in renewable & circular polymers

Mission

To bring to the market new, cost competitive renewable polymer materials with superior performance characteristics, contributing to reducing carbon emissions, plastic pollution and our dependency on fossil resources

Ambition

Be a €100m+ revenue & EBITDA positive company by 2026, with 500kta of committed capacity for sustainable polymers¹

ESG at the heart

SDG-linked targets



Chain Reaction 2030



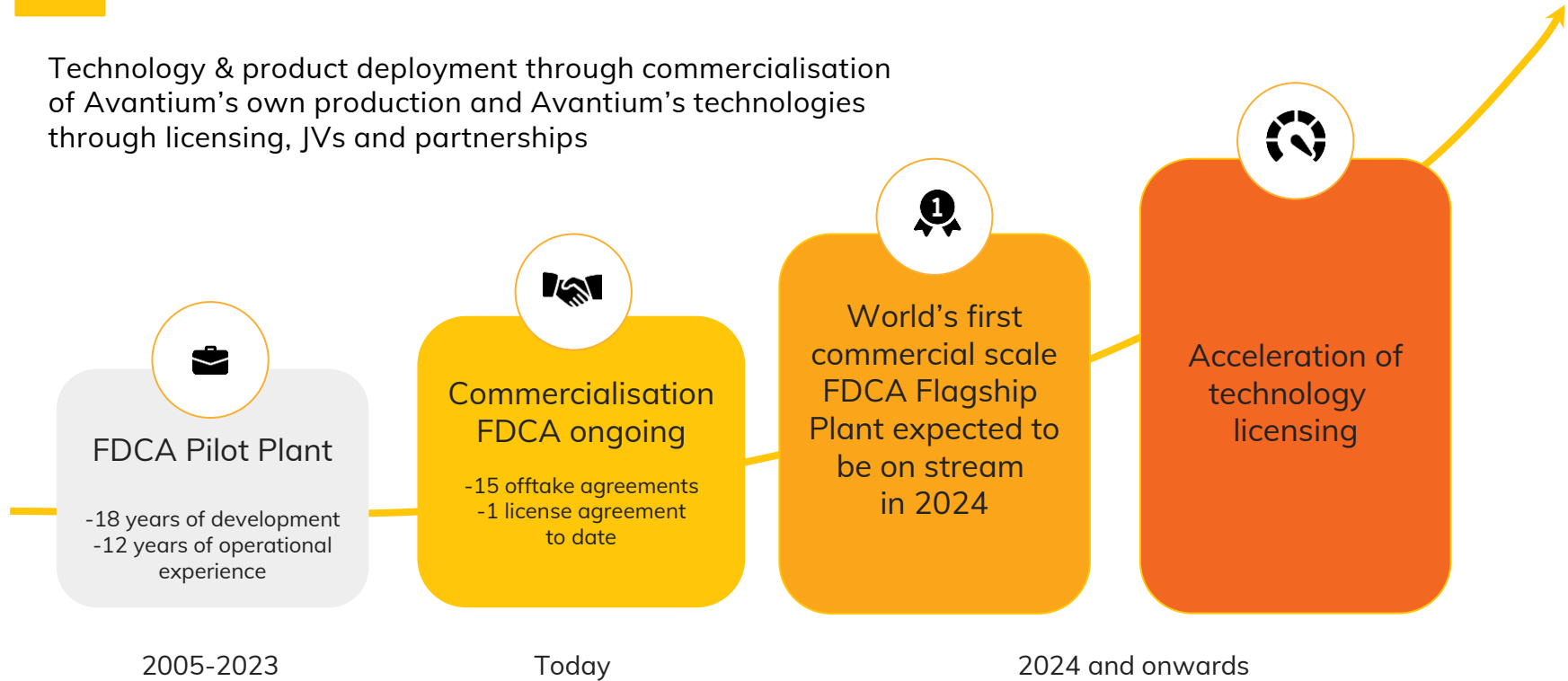
External recognition



Note: (1) Revenue based on contractual income, not considering the possible impact of IFRS 15; Running a fully operational FDCA Flagship Plant and selling multiple licenses will lead to Avantium reaching an inflection point. Under such conditions, management's ambition is that the Company could generate €100 million in revenues and be EBITDA positive in 2026; Revenue based on contractual income, not considering the possible impact of IFRS 15; Sources: Smithers, The future of high barrier packaging films to 2024, 2021; Smithers, The future of global flexible packaging to 2026, 2021; Smithers, The future of rigid plastic packaging to 2026, 2021; Thermoformed Packaging Market to 2025, 2018 ; PCI Wood Mackenzie, Abstract report global Multilayer PET bottles industry to 2024, 2016 ; Allied Market Research

Reaching the inflection point

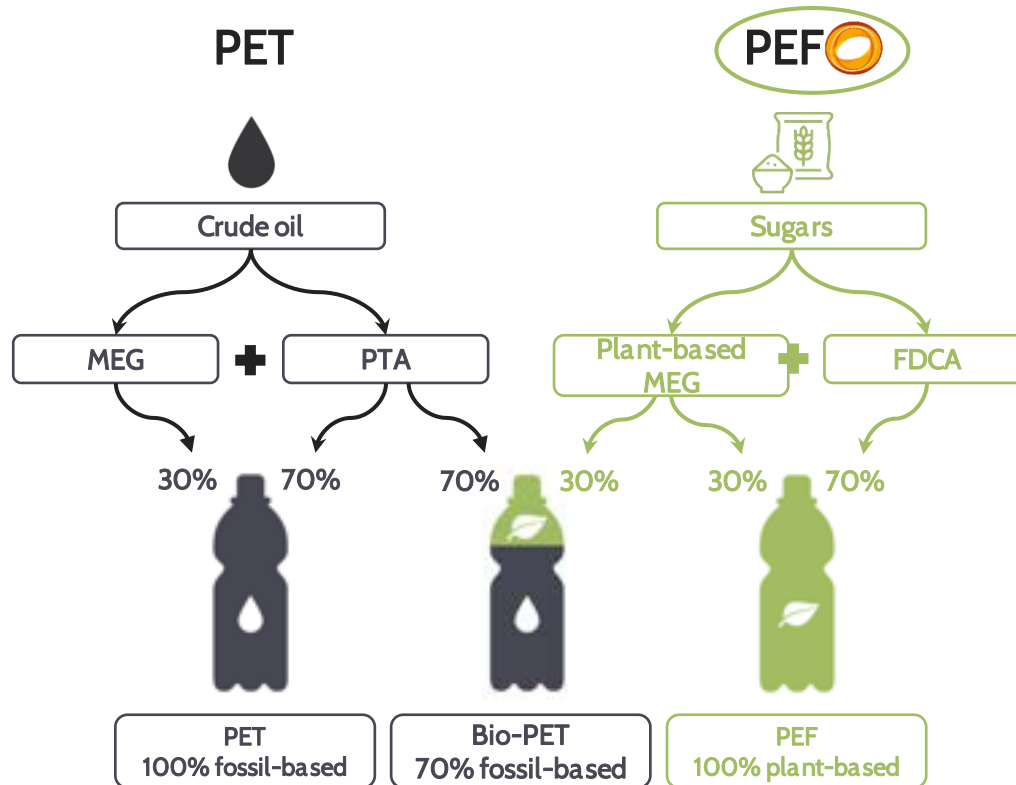
Technology & product deployment through commercialisation of Avantium's own production and Avantium's technologies through licensing, JVs and partnerships



3. FDCA / PEF



PEF: made from our focus product FDCA



Compared to PET

PEF is a renewable, circular plant-based polymer material

Low carbon footprint

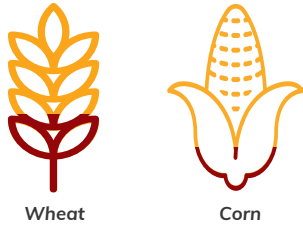
Superior technical properties

Enhanced recyclability

Cost competitive



FDCA – feedstock agnostic, utilising Gen 1 and 2 feedstocks

FDCA Flagship Plant is using Gen 1 feedstock:
starch – an abundant & low value co-product



Starch is part of the low value co-products
Glucose/Fructose from starch



 **Avantium's FDCA Flagship Plant** 
Regionally & commercially available
Sugar surplus, no competition with food supply 

Current Gen 2 feedstock

 **Origin Materials licensed facility** 
Commercially available 

Future Gen 2 feedstock options

 **Avantium's Dawn Technology** 
Avantium DAWN pilot plant 




PEF sustainable and superior alternative for PET

A more sustainable product...



100% bio-based feedstock

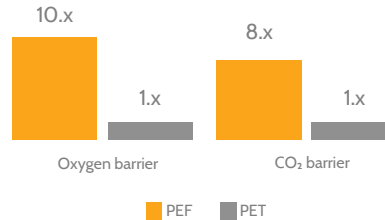


Recyclable



Circular

...with superior properties...



...providing distinctive value proposition

- ✓ Up to 20% weight reduction
- ✓ Longer shelf life leading to food waste reduction
- ✓ Larger range of applications and ability to replace glass, aluminium, etc.
- ✓ Enhanced recyclability as mono-material packaging or by replacing hard-to-recycle polymers (e.g. nylon) in multi-material packaging

✓ *EPBP¹ interim approval on multilayer PET/PEF and monolayer PEF bottles in the PET recycling stream*



✓ *APR² Critical Guidance Recognition on compatibility with standard PET recycling practices*



Notes: (1) The European PET Bottle Platform is a voluntary initiative of industry organisations representing waste collectors, plastic recyclers, PET material producers and brand owners; (2) The Association of Plastic Recyclers, non-profit organisation focused exclusively on improving recycling for plastics

Sources: Avantium and Nova Institute, PEF – A Sustainable Packaging Material for Bottles - ISO Certified LCA of Avantium's PEF products, 2022; University of Aberdeen, PEF plastic synthesised from industrial carbon dioxide and biowaste, 2020; Journal of Ecological Engineering, Energy Inputs on the Production of Plastic Products, 2022; RECORD, Chemical and physico-chemical recycling of plastic waste, 2022, 177 p, n°21-0919/1A; Avantium, The Journey of Avantium's PEF towards Commercialisation, 2021



PEF can be used in a very broad range of applications

Bottles



Beer, Juices, Waters,
Soft Drinks

Competing materials: Glass,
Aluminium, PET, Multi-layer

100 million ton/year



Fibers



Textile, Upholstery, Car
Tires, Industrial Fibers

Competing materials: PET, Nylon,
Cotton

>50 million ton/year



Films & More



Food Packaging, Non-Food
Packaging

Competing materials: Glass,
Aluminium, PET, Multi-layer

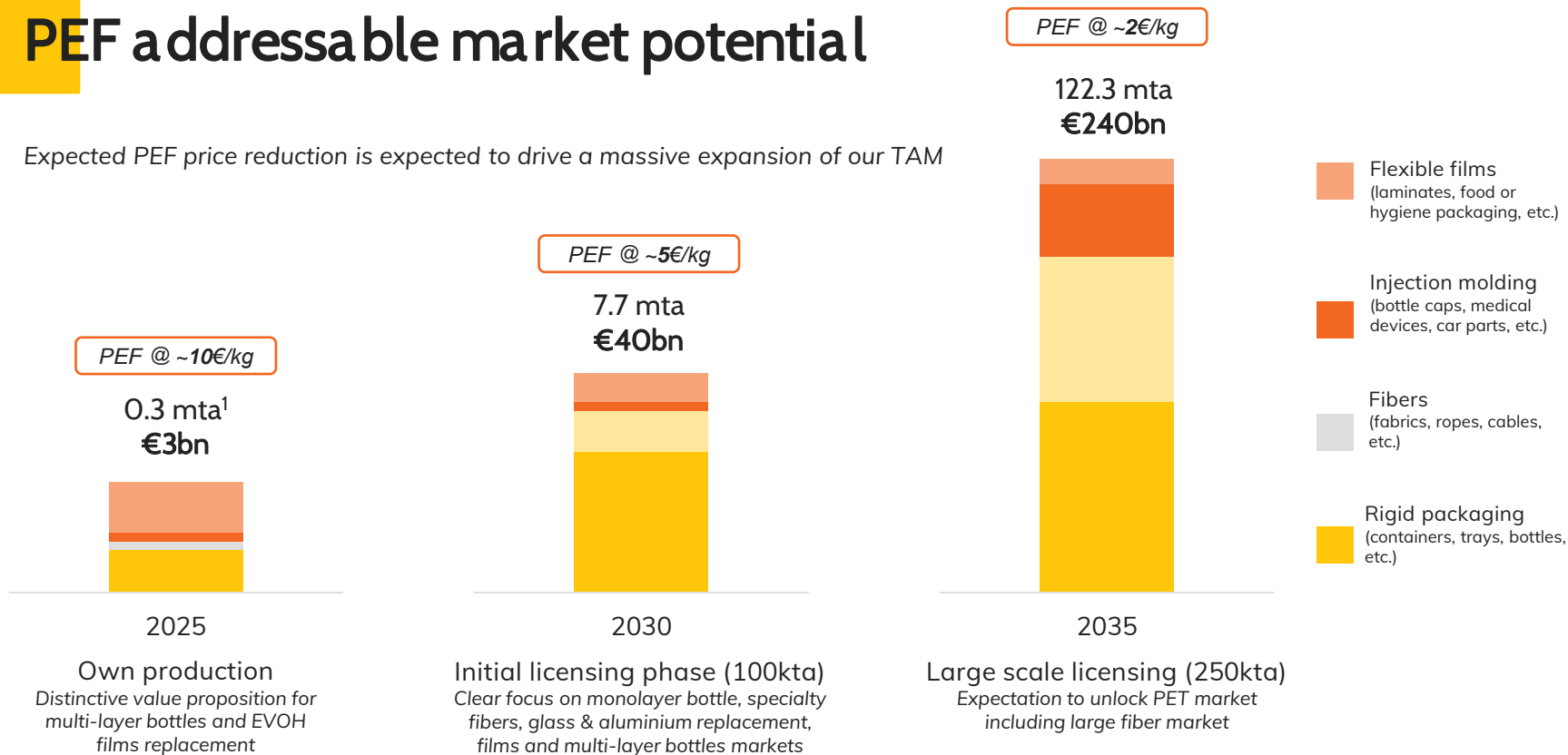
>5 million ton/year





PEF addressable market potential

Expected PEF price reduction is expected to drive a massive expansion of our TAM



Notes: (1) Million Metric Tons Annually

Sources: Smithers, The future of high barrier packaging films to 2024, 2021; Smithers, The future of global flexible packaging to 2026, 2021; Smithers, The future of rigid plastic packaging to 2026, 2021; Thermoformed Packaging Market to 2025, 2018 ; PCI Wood Mackenzie, Abstract report global Multilayer PET bottles industry to 2024, 2016 ; Allied Market Research



PEF is both sustainable and price-competitive at scale

100kta

Competing with aluminium and glass at €5.0/kg PEF



PEF Bottle
33cl – 13.5g
PEF material cost¹
€0.07 = ~7% of end price



Glass Bottle
33cl – 200g
Glass material cost¹
€0.13 = ~13% of end price



Aluminium Can
33cl – 13g
Alu material cost¹
€0.03 = ~4% of end price

250kta

Competing with mono-material PET at €2.5/kg PEF



PEF Bottle
50cl – 17.5g
PEF material cost²
€0.044 = ~3.7% of end price



rPET Bottle
50cl – 22g
rPET material cost²
€0.055 = ~4.6% of end price



PET Bottle
50cl – 22g
PET material cost²
€0.037 = ~3.1% of end price

PEF reducing Global Warming Potential

↓ **88%** vs. glass

↓ **74%** vs. aluminium

↓ **61%** vs. PET

Notes: (1) a 33cl bottle made with PEF at €5.0/kg sold at €1.00, a 33cl glass bottle sold at €1.00 and a 33cl aluminium can sold at €0.67; (2) Assuming PEF at €2.5/kg, rPET at €2.5/kg and PET at €1.7/kg, and a 50cl sold at €1.20. Sources: enzymatic rPET, Company's estimates; Glass, Food grade rPET & PET prices, BusinessAnalystIQ.com, average Europe & USA Aug.22-Aug.23; Aluminium prices, markets.businessinsider, average Aug.22-Aug.23, NAPCOR, Beverage Container LCA Report 2023, 2023; Nova Institute

First-of-a-kind FDCA Flagship Plant on stream in 2024

- Sale of PEF & FDCA at commercial scale
- Prove technology at 5kta scale
- 10-year feedstock supply partnership with Tereos
- Commissioning expected to start in Q1 2024
- FDCA production expected on stream in H2 2024
- Further accelerate licensing deployment





4. Licensing

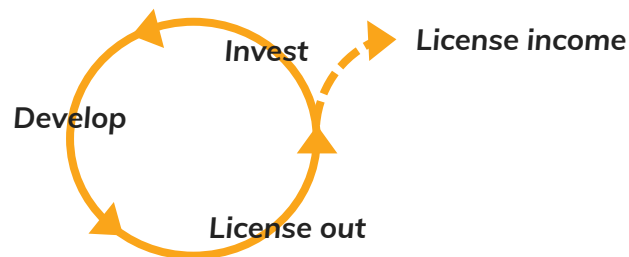


Licensing the FDCA / PEF technology

Generate income	Deployment
Through up-front fees and royalties	Licensees accelerate product deployment and global market entry
Asset light model	Technology development
Access capabilities, capital and resources of licensees	Technology and IP development accelerated by developments at licensees

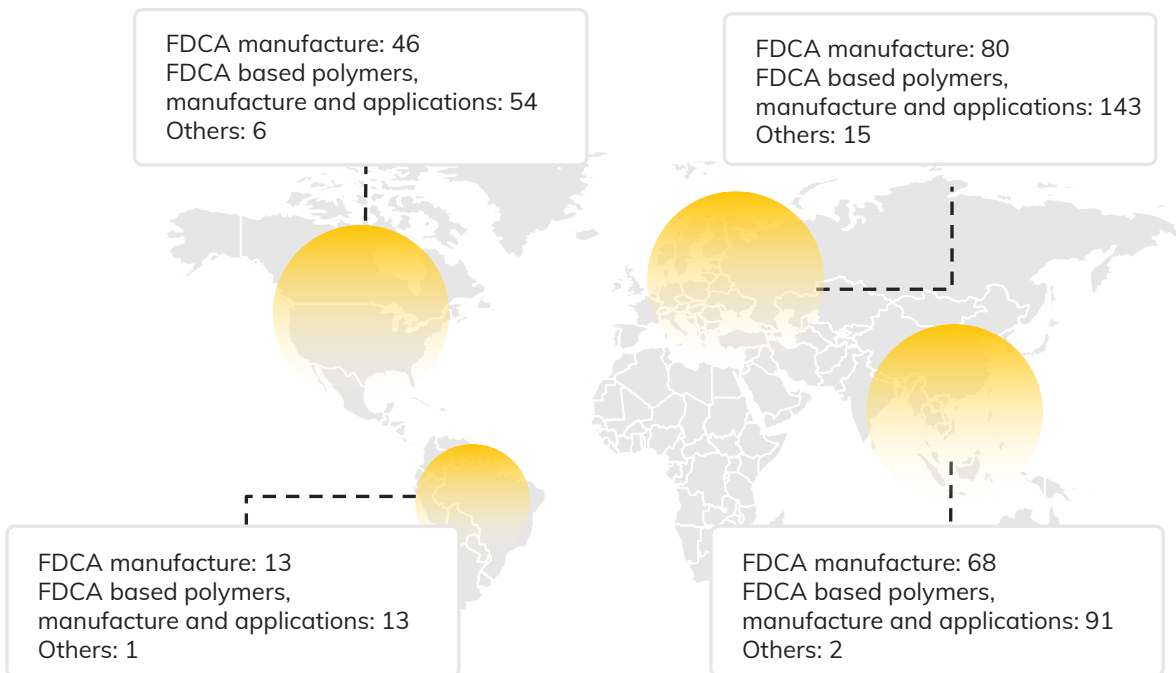
- Avantium to license out technology and IP
- Technology licensing deemed to offer the optimal combination of risk and reward
- Licensing closely aligned with our capabilities and capacities
- Multiple licensee market model preferred by converters / brand owners

Virtuous licensing circle





Owning necessary IP for production and licensing of FDCA and its high value applications



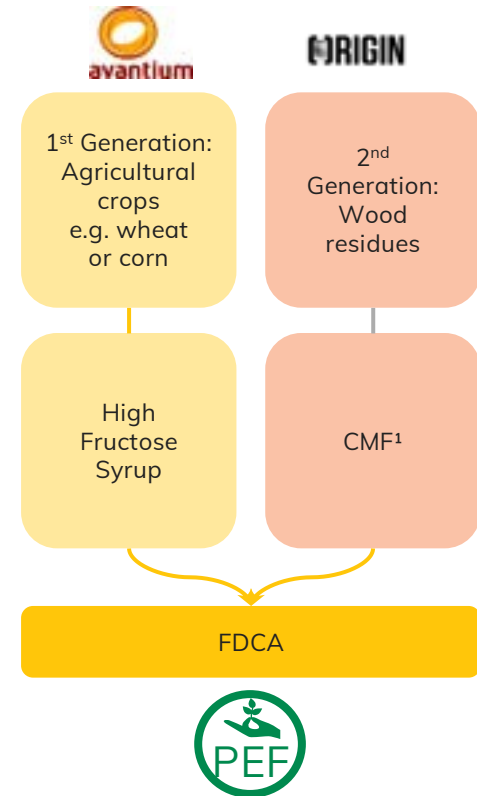
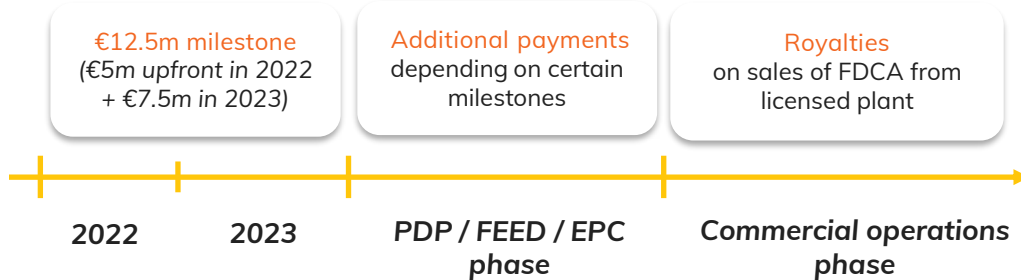
- Avantium has 166 patent families¹ containing 998 rights
- Actively managing IP portfolio including review of third-party patent positions
- Dedicated team of in-house patent attorneys
- Figures include patents and patent applications

Note: (1) Includes not yet published families while geographic overview excludes these

First license agreement signed with Origin

- Non-exclusive technology license agreement for conversion of Origin-produced CMF derivatives into FDCA at a 100 kta scale facility
- Avantium and Origin already secured capacity reservations for the future plant, for example from Terphane

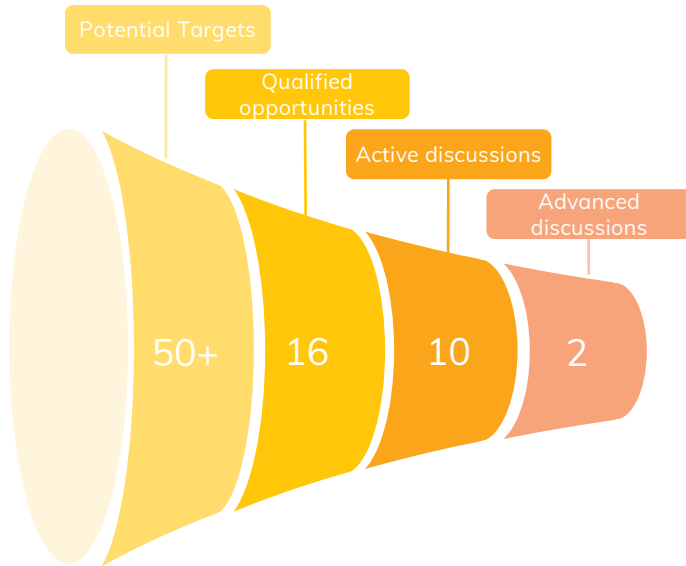
Technology license agreement model with Origin



Note: (1) Chloromethylfurfural - and derivatives such as methylfurfural (MF) and others.



Global FDCA licensing opportunities for Avantium



Potential pipeline of technology licenses

Technology licensing target customers

- Feedstock suppliers
- Chemical companies
- PET (/polymer) producers

Key considerations on licensing

- Proximity to feedstock
- Proximity to existing production infrastructure (brownfield)
- Local market proximity & size
- Local regulations & incentives

We can almost touch it...



5. Strategic focus



Reinforcing strategic focus: the FDCA/PEF commercial opportunity

FDCA/PEF technology	Volta Technology (PLGA)	R&D Solutions	Ray Technology (plantMEG/MPG)
Prioritising getting Flagship Plant on stream in 2024 and commercialisation and licensing of FDCA / PEF	Exploring strategic or financial partnerships to fund the next phase of development	EBITDA positive, targeting sustainable chemistry opportunities	Further investments on hold



Ray Technology investments on hold

FDCA/PEF
technology



Full priority

Ray Technology to produce plantMEG &
plantMPG



Further investments on hold



Pursuing potential strategic
equity partnerships



Reallocating and
reducing workforce



Anticipated direct and indirect
cost savings





6. Funding growth & execution

Funding focused on the FDCA / PEF opportunity

Renewable Polymers Business FDCA/PEF technology

Completing
Construction of the
FDCA Flagship Plant

Commissioning and
Start-up of the FDCA
Flagship Plant

Licensing acceleration
– Commercial strength
and pipeline

Avantium

Financial stability, general
corporate items and R&D



Focus on financial stability
to execute on our
strategy



Strong financing fundamentals for long-term success

- ✓ Lenders remain committed
- ✓ Shareholders in Renewable Polymers remain committed
- ✓ FDCA Flagship nearing completion with strong commercial traction
- ✓ Promising licensing pipeline
- ✓ Priority is now to secure funding for Avantium



Securing additional funding



Equity raise of
€ 50m

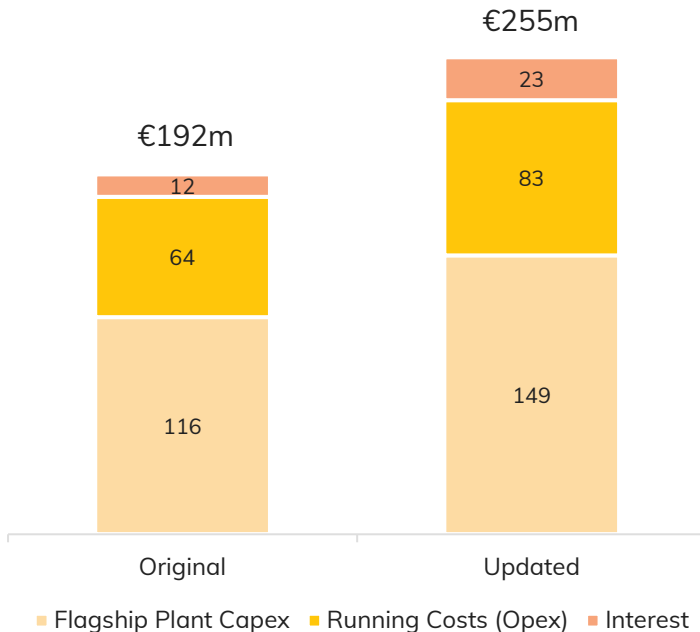
*with the option to increase
by up to €20m to further
strengthen its financial
profile*



- Fund Avantium's share of the financing package for Avantium Renewable Polymers
- Fund ongoing activities incl general corporate and R&D
- Be properly capitalised and a financially stable partner for future licensees



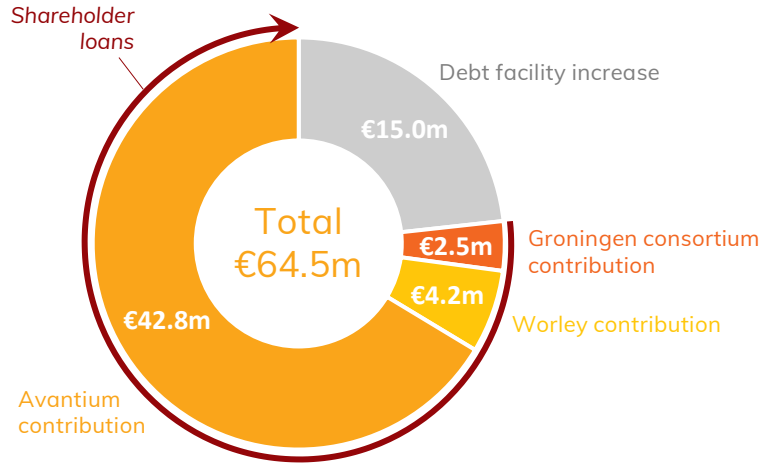
Avantium Renewable Polymers cost update



- Interest impacted by unprecedented rise in interest rates
- Running costs impacted by inflation, longer commissioning period, and additional business requirements
- FDCA Flagship Plant CAPEX driven by inflation and supply chain challenges



Financing package Avantium Renewable Polymers



Use of the proceeds

Financing the cost increase of approximately €64.5m

- €33m CAPEX
- €19m OPEX
- €11m interest
- €1.5m contingency



Use of proceeds

Execution
&
Growth

€50m

FDCA/PEF
80%

General Corporate
15%

Volta 5%

€20m

Strengthening financial profile



Focus on revenue and EBITDA generation

R&D Solutions Business:

Growing revenue from products and services business – pursuing strategic growth opportunities

FDCA/PEF Sales:

<u>Installed capacity</u>		<u>Average selling price</u>		<u>Annual turnover</u>		<u>Illustrative EBITDA margin</u>
5kta	x	~€9-10/kg	=	~€45-50m		~35-40%

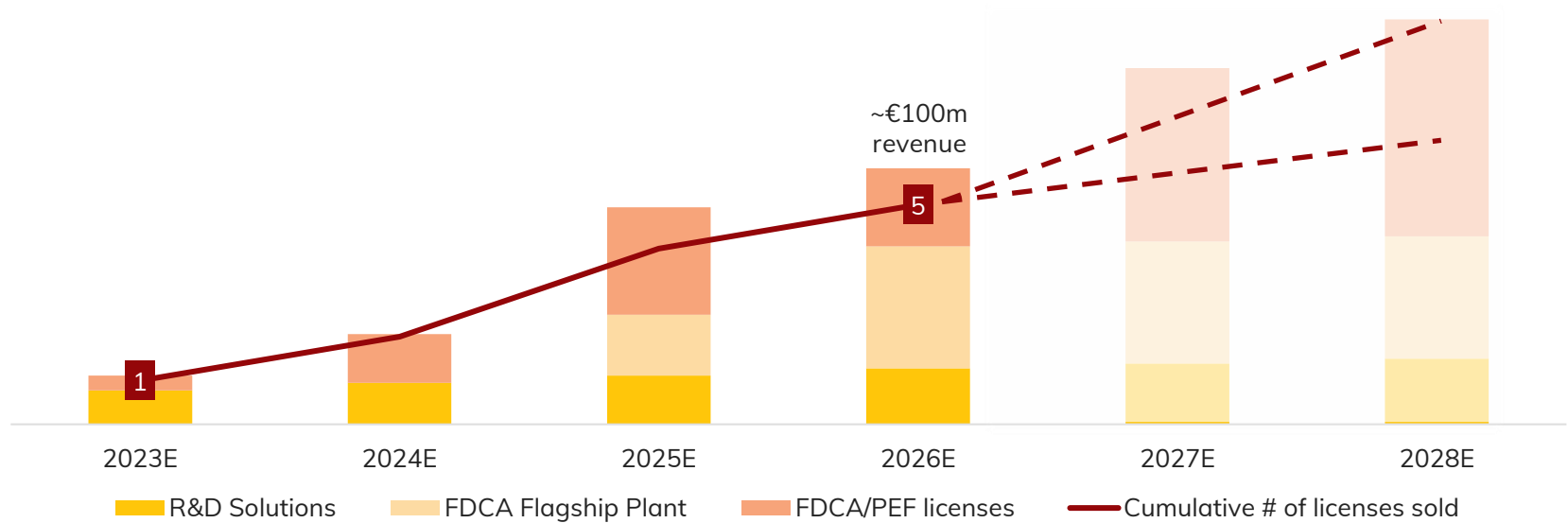
Technology Licenses:

Milestone payments and royalties from multiple technology license agreements

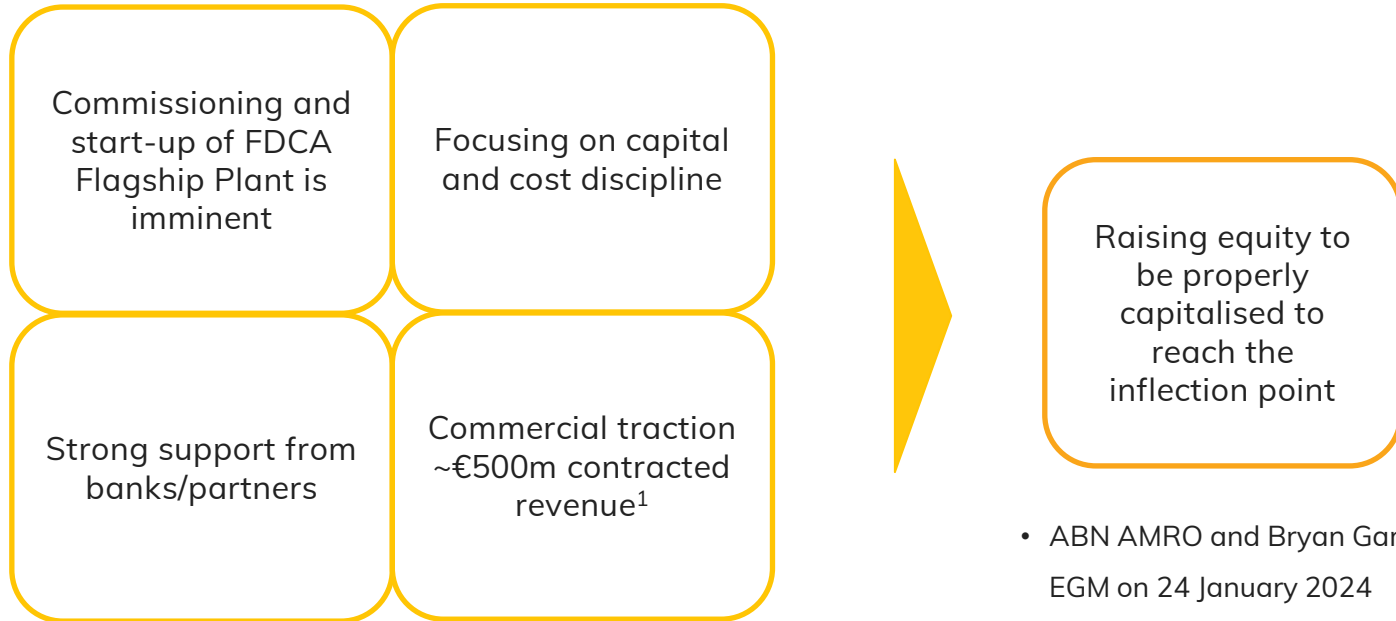


Focus and execution leading to growth

Illustrative financial performance: based on assumption that FDCA Flagship Plant is on stream in 2024 and multiple technology licenses have been sold



Funding key for growth & execution



- ABN AMRO and Bryan Garnier EGM on 24 January 2024



7. Key takeaways

Key take aways / Investment highlights



1 Strong commercial traction, with 15 offtakes and 1 technology license to date

2 Most advanced FDCA and PEF player worldwide, contributing to the transition of the chemical industry towards renewable and circular polymer materials

3 Reaching a key inflection point in the transition to a commercial-stage company: 1/ commercial-scale FDCA production start-up in 2024, 2/ contracted offtake by industry leaders and 3/ license sales

4 Clear path to revenue growth with the ambition to be a €100m+ revenue & EBITDA positive company in 2026¹

5 Raising €50 – €70m to bring the FDCA Flagship Plant on stream in 2024, accelerate our licensing activities by strengthening our global commercial capabilities, and continue the development of the Volta Technology

Note 1: Running a fully operational FDCA Flagship Plant and selling multiple licenses will lead to Avantium reaching a key inflection point. Under such conditions, management's ambition is that Avantium could generate €100 million revenue and be EBITDA positive in 2026



Conclusion



Inflection
point ahead



Strategic
focus



Securing
funding



Q&A



avantium