



# CARBIOS

Biotechnology **powering**  
plastic and textile **circularity**

**Unlocking Advanced bio-recycling of PET**  
**Bruno LANGLOIS**

The first company to have developed at scale biological technologies to reinvent the life cycle of plastics and textiles

**>100**  
employees

**46%**  
of women  
**54%**  
of men

**65%**  
of staff  
dedicated to  
RDI

Patented  
technology  
with strong  
IP

**3**  
sites

Strategic  
partners



■  
Clermont-Ferrand  
area



■  
Toulouse

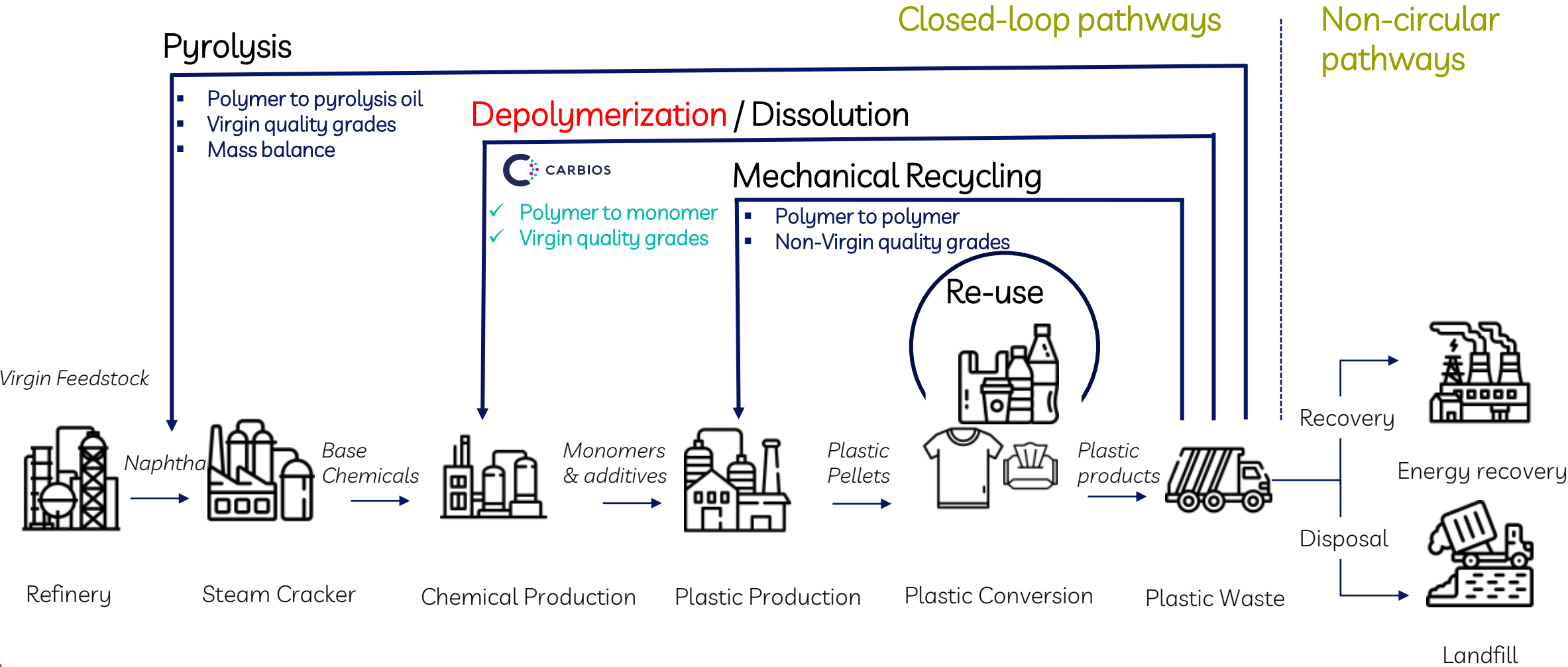


■  
Longlaville



# Main recycling processes

- As a complement to mechanical recycling, advanced recycling is needed



# The rise of a worldwide leader!

Carbios aims to offer the most circular process for the recycling of PET by enabling:



**The treatment of  
any kind of PET  
waste**



upcycling low-value  
feedstocks



**Creating value from  
waste which is not  
recycled today**



avoiding incineration  
and landfill



**Lowering  
CO<sub>2</sub>  
emissions**

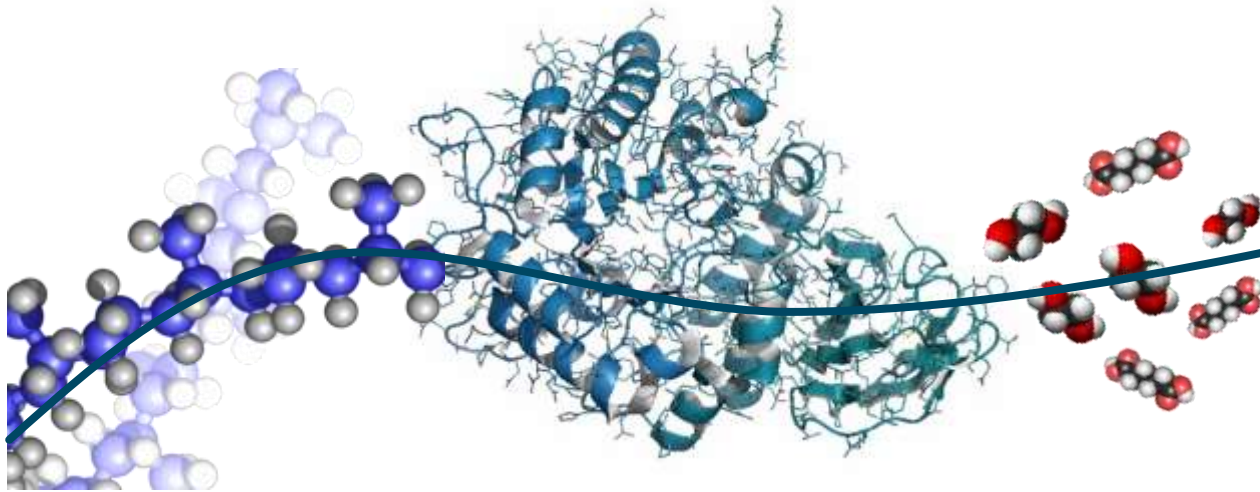


low energy  
consumption and  
proximity sourcing

Circular Economy is becoming a reality!



# Enzymes to breakdown plastics: **10** years of innovation!



**Polymers**

(plastic and fibers)

**Carbios'  
proprietary  
enzyme**

**Monomers**



**ENZYMATIC RECYCLING**

*Carbios' solutions labelled by  
Solar Impulse since 2019 & 2020*

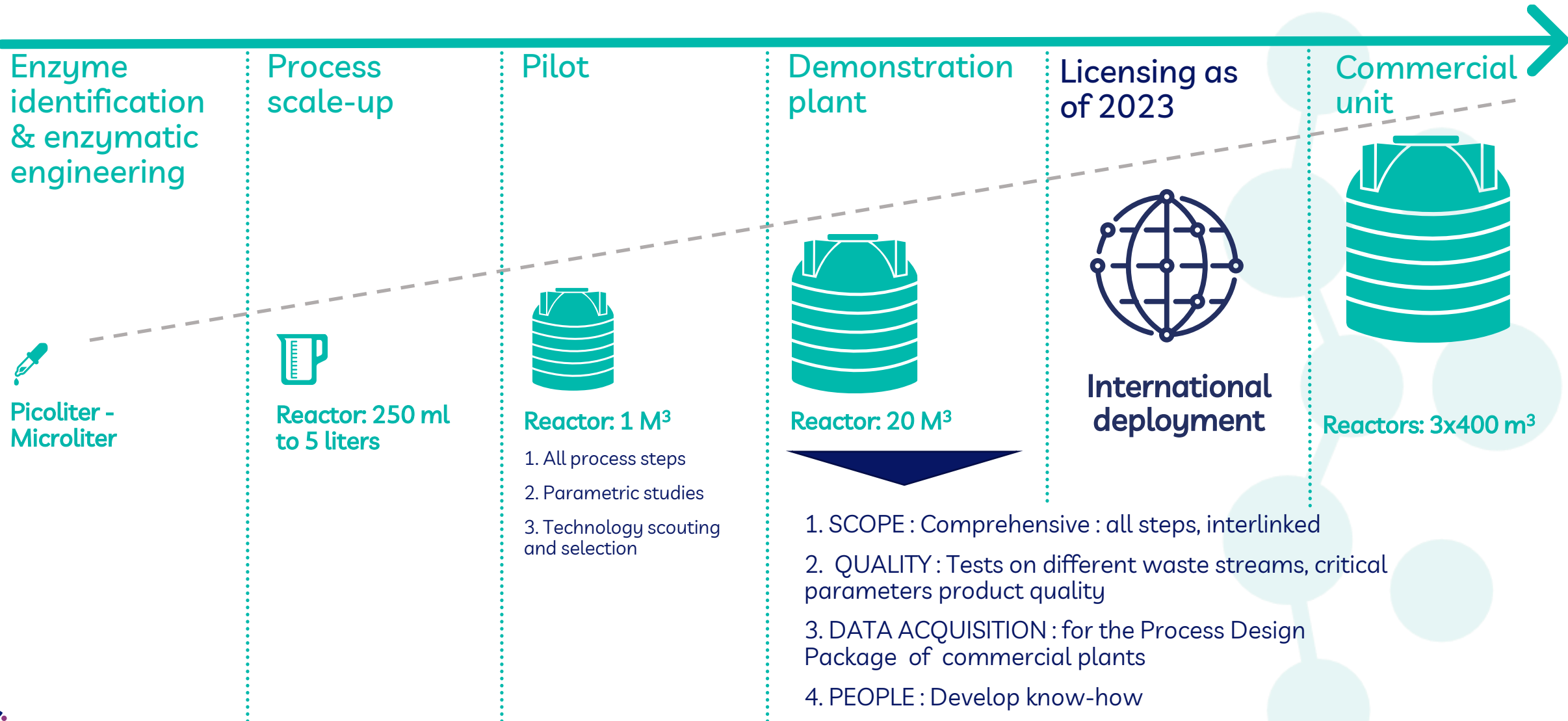


A revolutionary process enabling plastics and fibers circularity





# The demonstration plant: the last step before commercial scale



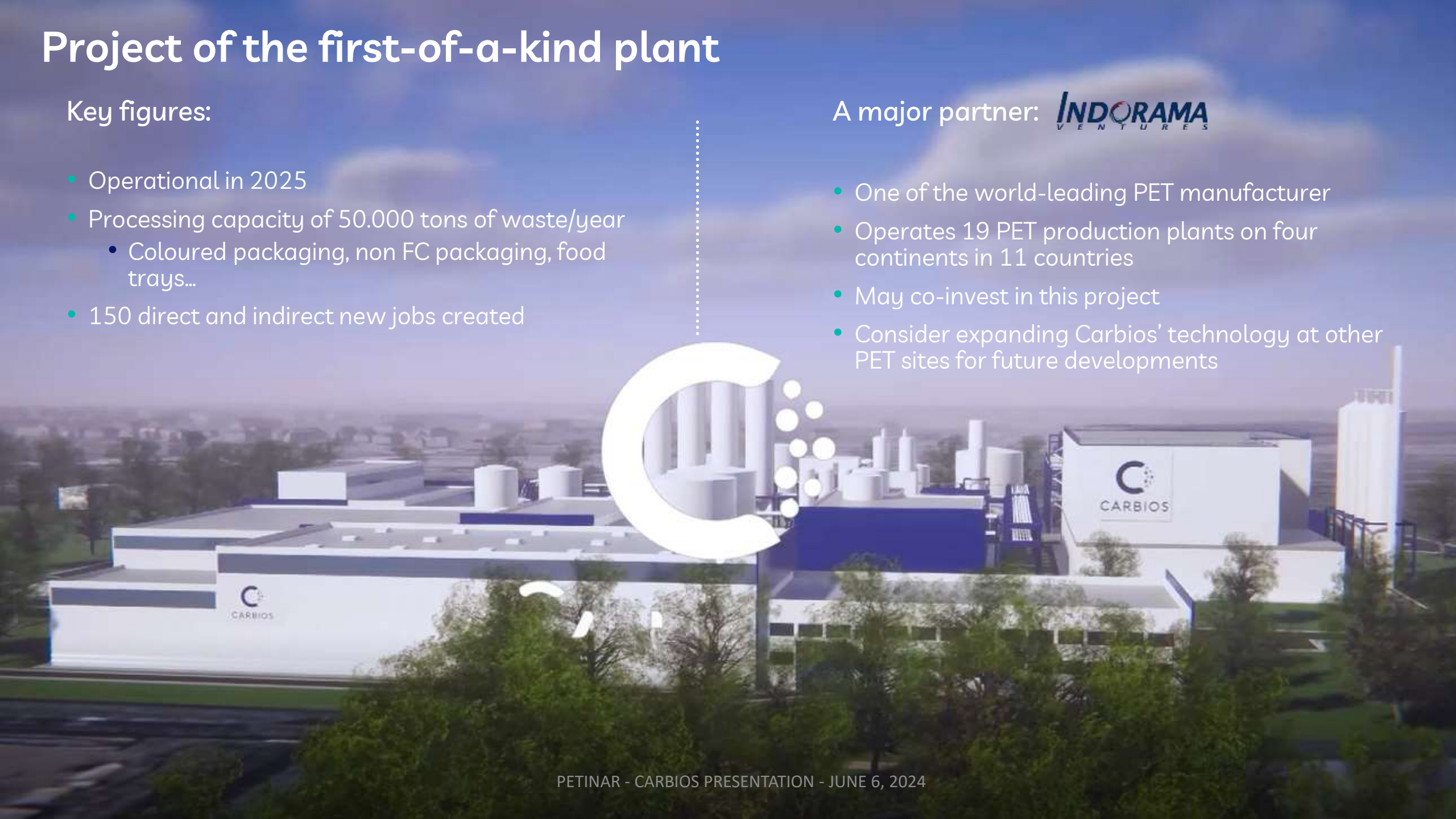
# Project of the first-of-a-kind plant

## Key figures:

- Operational in 2025
- Processing capacity of 50.000 tons of waste/year
  - Coloured packaging, non FC packaging, food trays...
- 150 direct and indirect new jobs created

A major partner: **INDORAMA**  
VENTURES

- One of the world-leading PET manufacturer
- Operates 19 PET production plants on four continents in 11 countries
- May co-invest in this project
- Consider expanding Carbios' technology at other PET sites for future developments





# **First-of-a-kind** commercial plant will generate revenues ... and boost Carbios position for licensing

Strategic value of the 1<sup>st</sup> commercial plant project:

## For Carbios

- Monomers sales from 2025
- Volumes deliveries to Brand Owners
- Initiate Novozyme supply operations

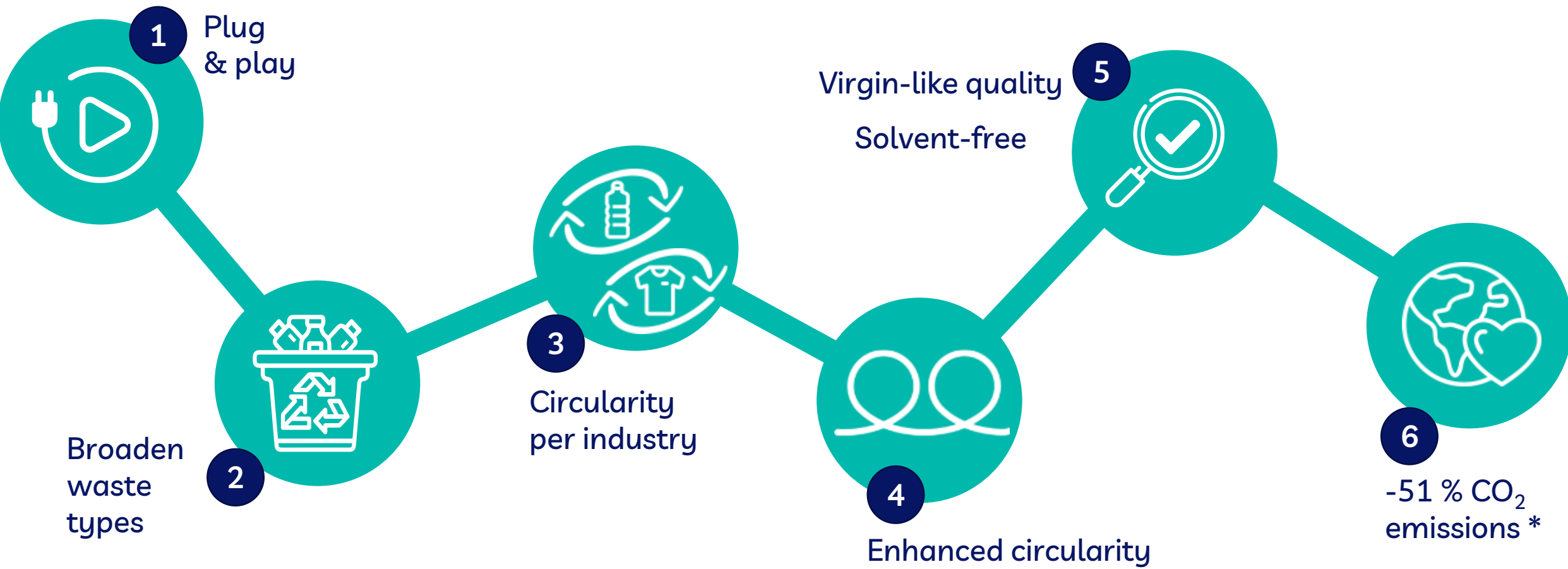
## For Carbios future licensees

- 100% proven technology
- Experience of the licensor
- Demonstration of Carbios' technology integration in the r-PET value chain





# Carbios brings value along the chain while preserving the planet



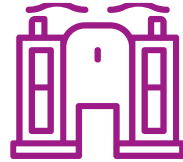
\* taking into account diversion of 50% PET waste from a conventional end-of-life. Virgin PET: 2.19kg CO<sub>2</sub>/kg (cradle to gate)



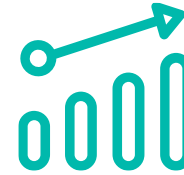
# Key industrial takeaways



A team, supported by leading partners in the field



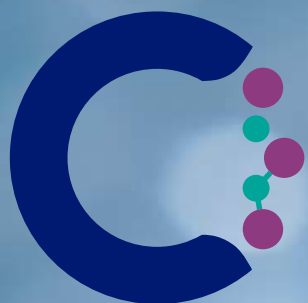
A demonstration plant that confirms the main technology choices



Industrial Unit:  
A project fully on track for the operational launch by 2025



A licensing offer that will be ready by 2023



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## Q&A