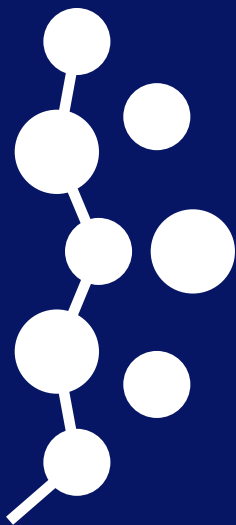




CARBIOS

Enzymes powering the Circular Economy



# Enzymes powering the Circular Economy

October 2021

**CARBIOS CORPORATE PRESENTATION**

Euronext Growth Paris: ALCRB



**CARBIOS**

Enzymes powering the Circular Economy

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SEPTEMBER, 2021: START-UP OF AN INDUSTRIAL DEMONSTRATION FACILITY OPERATING CARBIOS' PET ENZYMATIC RECYCLING TECHNOLOGY, **C-ZYME**®



# Management team



**Jean-Claude LUMARET**

**Founder & CEO**

40 years' experience in the international agro-industry & Intellectual Property expert

- **METABOLIC EXPLORER:** VP Strategy & Innovation (Member of the Executive Committee)
- **ROQUETTE:** Director, Business Intelligence, Director BU Fermentation and Industrial Chemistry, Director, Intellectual Property and Regulatory Affairs
- Chemical Engineer, Lyon University, European Trademark Expert, CEIPI Center for International IP Study, Strasbourg



**Prof. Alain MARTY**

**Chief Scientific Officer**

International expert in enzymology & biological processes

- **INSA** Institut National des Sciences Appliquées, Toulouse : Professor and Head of a research group
- **AERES** Agence d'Evaluation de la Recherche et de l'Enseignement Supérieur and **ANR** Agence Nationale de la Recherche: Evaluator (France's National Education Research Agencies)
- PhD in Biology, Biochemical Engineer, University of Toulouse



**Martin STEPHAN**

**Deputy CEO**

30 years' experience in the chemical industry

- **CHEMOURS:** Global Director of the Fluorotelomers business, EMEA Director, Sourcing, Logistics & Real Estate
- **DU PONT DE NEMOURS:** Global Product Manager, Business and Market Manager, Sales Director
- **ATOFINA:** Global Business Manager Fluorotelomers
- **ELF ATOCHEM:** Various positions in Finance
- MS in Business Management, HEC Paris, BA Economics Paris University.



**Lise LUCCHESI**

**Intellectual Property Director**

Biotechnology engineer & Intellectual Property expert

- **METABOLIC EXPLORER:** Market analyst
- Management of the Company's patents and trademarks portfolio. Lise also holds responsibility for contracts involving intellectual property rights (license, research collaborations and services, etc.)
- Biotechnology Engineer, CEIPI Center for International IP Study, Strasbourg



**Kader HIDRA**

**Chief Financial Officer**

Financial markets expert

- **CITEGESTION (EDF):** CEO of a digital start-up specialized in asset management and software development for Smart Cities
- **EDF:** Investor & Markets Director (Head of IR)
- **MORGAN STANLEY:** Utilities & Clean Energy Specialist Equity Sales
- **BERENBERG:** Utilities & Clean Energy Specialist
- Printing & Packaging Engineer (Ecole Polytechnique Grenoble), MBA from Duke University (Fuqua Business School).



**Vanina VARLAMOFF**

**Legal Affairs and Human Resources Director**

Lawyer, Strategic contracts manager & HR supervisor

- **LAWYER**, graduated from Paris' Bar School
- After spending few years as a lawyer in Paris, mainly in the fields of Intellectual Property rights protection and communication law, Vanina joined Carbios in 2017 as Legal Manager. Now Director of Legal Affairs and Human Resources, she is mainly in charge of analyzing and drafting strategic contracts. She also supervises the Human Resources department of the Company.

# Carbios at a glance

Founded in  
2011

39 patent  
families

Multi-source  
revenue  
business model

Strategic  
agreement with  
renowned  
brand owners

Exclusive  
partnership

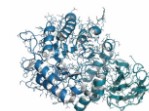
**novozymes**  
Rethink Tomorrow

50 employees

The first and only company to have developed biological technologies for the end-of-life of plastics and textiles

# Ambition

Lead the transition towards sustainable plastics economy by developing technologies for the end-of-life of plastics



# Technologies



Enzymatic biorecycling technology to recycle PET plastics and fibers to infinity



EVANESTO

First natural enzyme-based additive to fully biodegrade PLA-based plastics





# Carbios' PET enzymatic recycling technology, C-ZYME®

## *Demonstration plant now fully operational*

### Sept. 2021:

- Start-up of Carbios demonstration facility, which prefigures the design and operations of future industrial units.

### Objectives by the end of 2022:

- Technical data generation
- Main parameters definition for each step of the enzymatic recycling process
- Future industrial Unit operations planification
- Fully operational Process Design Package (PDP)



Carbios depolymerization Unit for the conversion of PET waste into monomers

- Engineering partner for the design and construction :



A key step towards building a first of a kind recycling facility

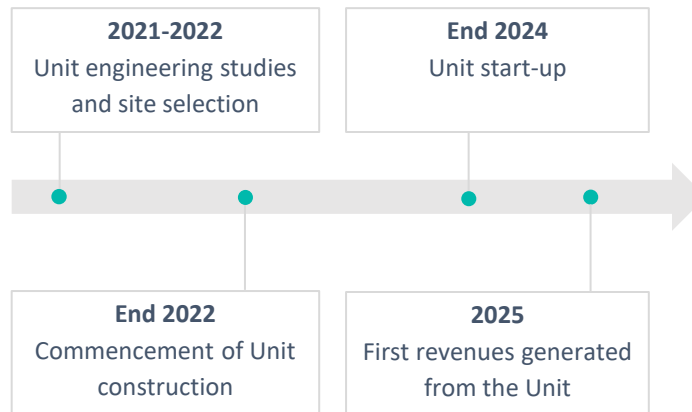
# Strategic update (1/2)

In April 2021, Carbios announced a new major step in the development of technology with the building of a first of a kind 100% PET recycling facility (the “Unit”)

## ■ Characteristics of the Unit

- annual production of c. 40,000 tons per year
- Potential saving of 30% CO<sub>2</sub> emissions compared to a conventional end of life mix of incineration and landfill, taking into account virgin PET production substitution<sup>(1)</sup>

## ■ Key timetable for the building of the Unit<sup>(2)</sup>



Estimated cost of the Unit of c. €100 million

# Strategic update (2/2)

In April 2021, Carbios announced the signing of a non-exclusive and non-binding Expression of Intent agreement with a major PET producer

- **A leading PET producer which could host the Unit on its site**
- **The agreement foresees**
  - an assistance in securing the sourcing of PET feedstock for the Unit
  - Shared access to data coming from Carbios' demonstration plant, its biorecycling technology and from the PET producer's facilities

Combination of Carbios' unique biorecycling technology and of a major PET producer's manufacturing and R&D know-how

# Agenda

- 1 Adressing high growth potential markets with strong drivers
- 2 C-ZYME®: unique enzymatic technology to recycle and reuse PET-based plastics and fibers
- 3 Evanesto®: the world's first enzymatic biodegradation technology for PLA-based plastics
- 4 Clear roadmap to reach commercial success

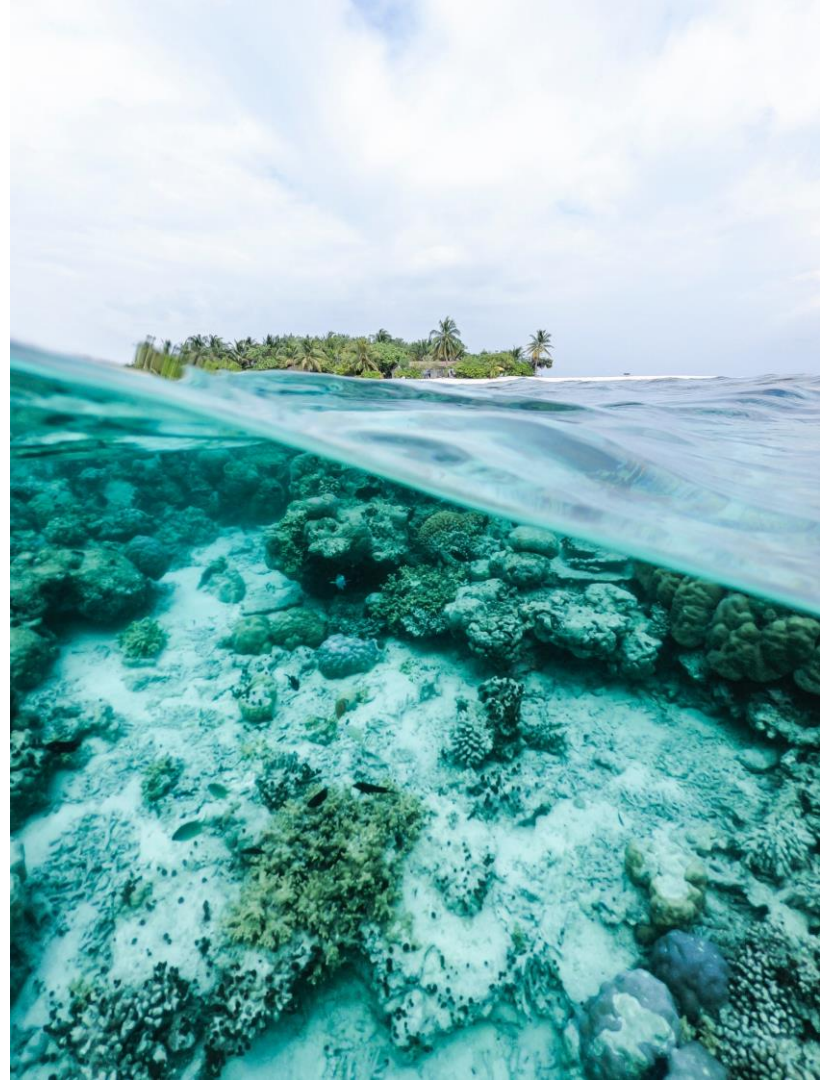


**CARBIOS**

Enzymes powering the Circular Economy



ADDRESSING HIGH GROWTH  
POTENTIAL MARKET WITH STRONG  
DRIVERS



# The situation – Environmental issue

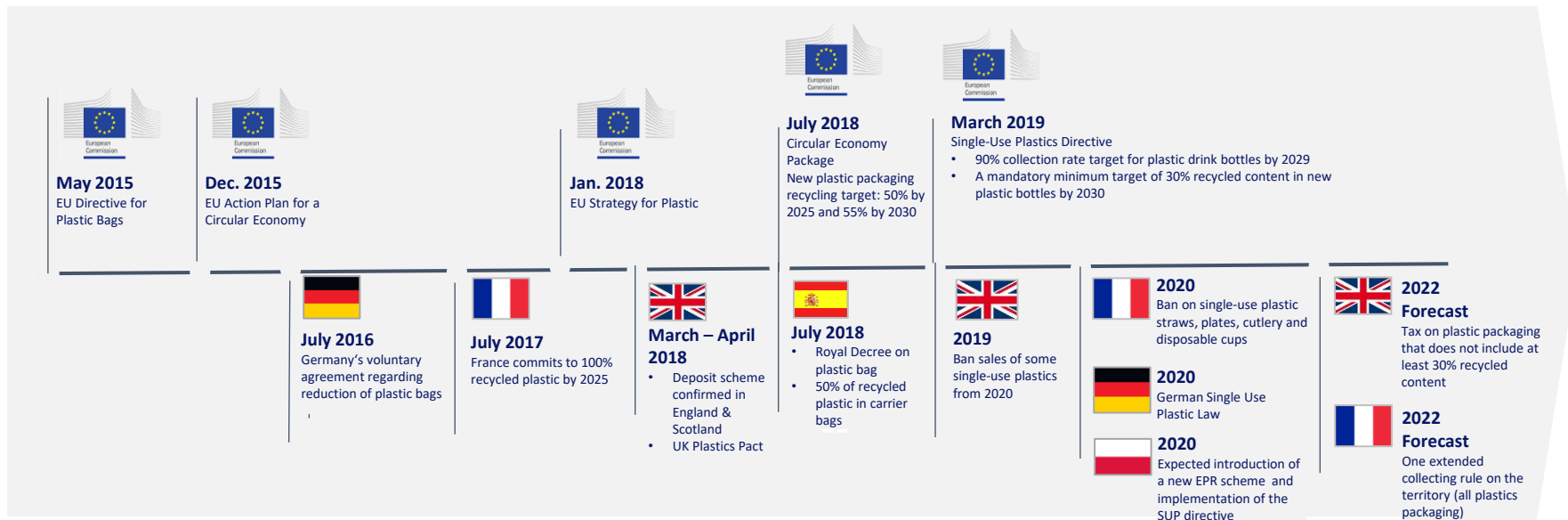
## Each year...

- 86% of packaging waste goes unrecycled globally<sup>(1)</sup>.
- **350 to 400 million tons**<sup>(2)</sup> of plastic are produced worldwide, including **70 million tons of PET**<sup>(3)</sup> worth approx. \$80 billion (a market growing by 4% p.a.<sup>(4)</sup>).
- **150 million tons**<sup>(5)</sup> of plastic waste are generated including **9 million tons**<sup>(6)</sup> that ultimately end up in the natural environment, particularly in our seas and oceans.
- **500 billion units**<sup>(7)</sup> of plastic bottles are produced each year and fewer than half are collected for recycling.
- Up to **\$120 billion**<sup>(8)</sup> worth of plastic material is disposed of just after one single-use.



# The situation – A growing regulatory pressure

Regulatory pressure is also growing at both the EU and national levels.



Many European initiatives and associations such as the European Plastics Pact and the Circular Plastic Alliance, bring together several actors from the industry, academics, and public authorities, to accelerate the transition towards Circular Economy. This is made possible by considering the whole plastic value chain, and notably by aiming at boosting the recycled plastic EU market.

# Strong drivers for more sustainable solutions



**July 2020:** "by 2025, 100% of our plastic packaging will be refillable, reusable, recyclable or compostable"



**Oct. 2016:** "design 100% of its packaging to be recyclable, compostable or biodegradable by 2025"



Unilever

**Jul. 2017:** "100% of packaging recyclable, reusable or compostable by 2025" and "Recycled plastic content to at least 25% by 2025"



Good Food, Good Life

**Jan. 2019:** "Nestlé Waters will increase the recycled PET content in its bottles to 35% by 2025"



**Sept 2019:** "Our ambition? Offer 100% sustainable plastic bottles made from recycled or bio-sourced materials for our entire beverage portfolio."



**Mar. 2019:** H&M Group signatory of the New Plastics Economy Global Commitment. "Our business to become 100% circular and renewable"

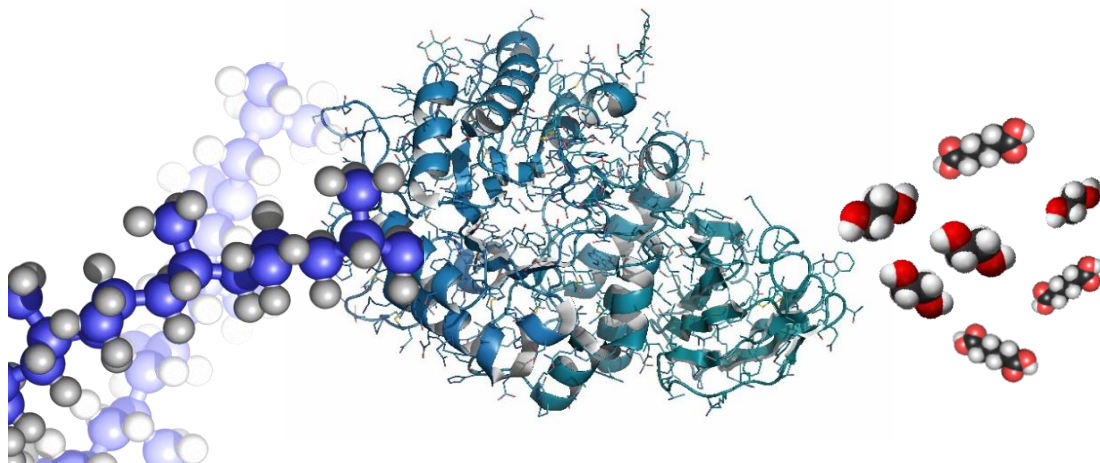




C-ZYME® : WORLD FIRST  
ENZYMATIC TECHNOLOGY TO  
RECYCLE AND REUSE PET-BASED  
PLASTICS AND FIBERS



# Enzymes to fully break-down plastics!



Polymers

(plastics and fibers)

Carbios enzymes

Monomers

(building blocks)



INFINITE RECYCLING

A revolutionary process for infinite recycling of plastics and fibers

# How does it work?



# Benefits of the technology

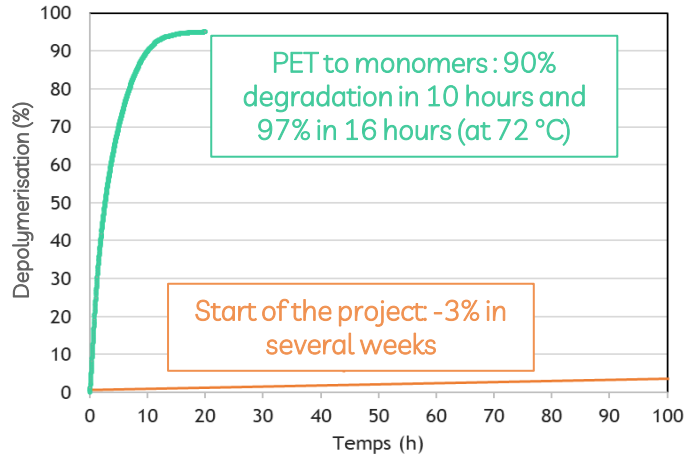
- ✓ 100% recycled PET
- ✓ A process that can handle all forms of PET plastics (clear, colored, opaque, multi-layer...) and polyester fibers (textile & technical fibers for tires)
- ✓ No inhibition of the enzyme by colorants, pigments, carbon black or other polymers (PE, PA, PVC...)
- ✓ Depolymerization at low temperature, atmospheric pressure, water based
- ✓ Diversion of all PET-based plastics and polyester fibers from landfills and incineration



Carbios' innovation offers the potential to recycle PET plastics infinitely and contributes to achieving 100% recycled PET content in new products



PUBLICATION OF AN ARTICLE IN THE  
PRESTIGIOUS SCIENTIFIC JOURNAL NATURE  
co-authored by researchers at Carbios and  
Toulouse Biotechnology Institute (TBI) laboratory



Depolymerisation kinetics of commercial PET plastic waste (colored flakes, washed with 95% PET)

# nature



## CLEARING THE BOTTLENECK

Engineered enzyme promises efficient route to recycle and reuse PET plastics

# PET brand-owners consortium agreement



L'ORÉAL



- A 4-year agreement signed in April 2019
- Accelerate the technology's readiness and bring it to full industrial scale
- Increase the availability of high-quality recycled plastics
- Demonstrate the technical, economic and environmental efficiency of Carbios' technology
- Support the structuring of an industrial value chain for an efficient supply of consumer-grade PET

Global key players team up to boost recyclability of PET plastic products

# World's First Enzymatically Recycled Bottles



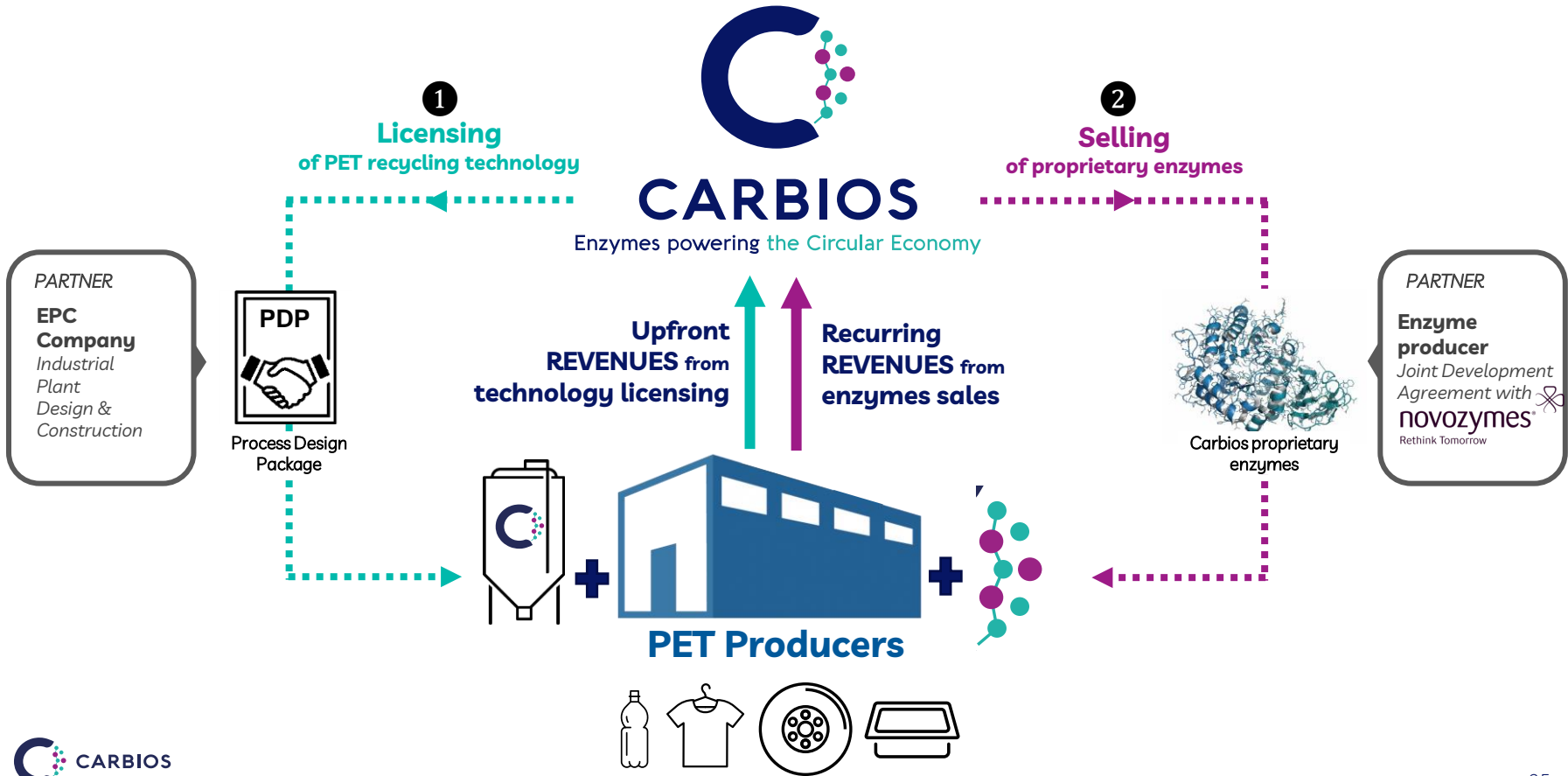
*June 2021: Food grade sample bottles produced by Consortium – including Carbios, L'Oréal, Nestlé Waters, PepsiCo and Suntory Beverage & Food Europe – using Carbios' breakthrough enzymatic recycling process  
(See [Press release date June 24, 2021](#))*

# Carbios creates value for all players of the value chain





# PET Recycling: our business model





# CARBIOLICE

Biodegradability is the future


EVANESTO<sup>®</sup>, the world's first enzymatic biodegradation technology



Carbiolice industrial production facility

# Carbiolice at a glance



Founded in <b>2016</b>	<b>26</b> employees
<b>1</b> shareholder  <b>CARBIOS</b> Enzymes powering the Circular Economy	<b>20</b> Patent families



- An enzyme-based additive
- Makes plant-based plastic fully compostable, even from home

Jan. 2019: Joint Development Agreement between Carbios,  Carbiolice and **NOVOZYMES**  
Rethink Tomorrow

# How does it work?

Step by step



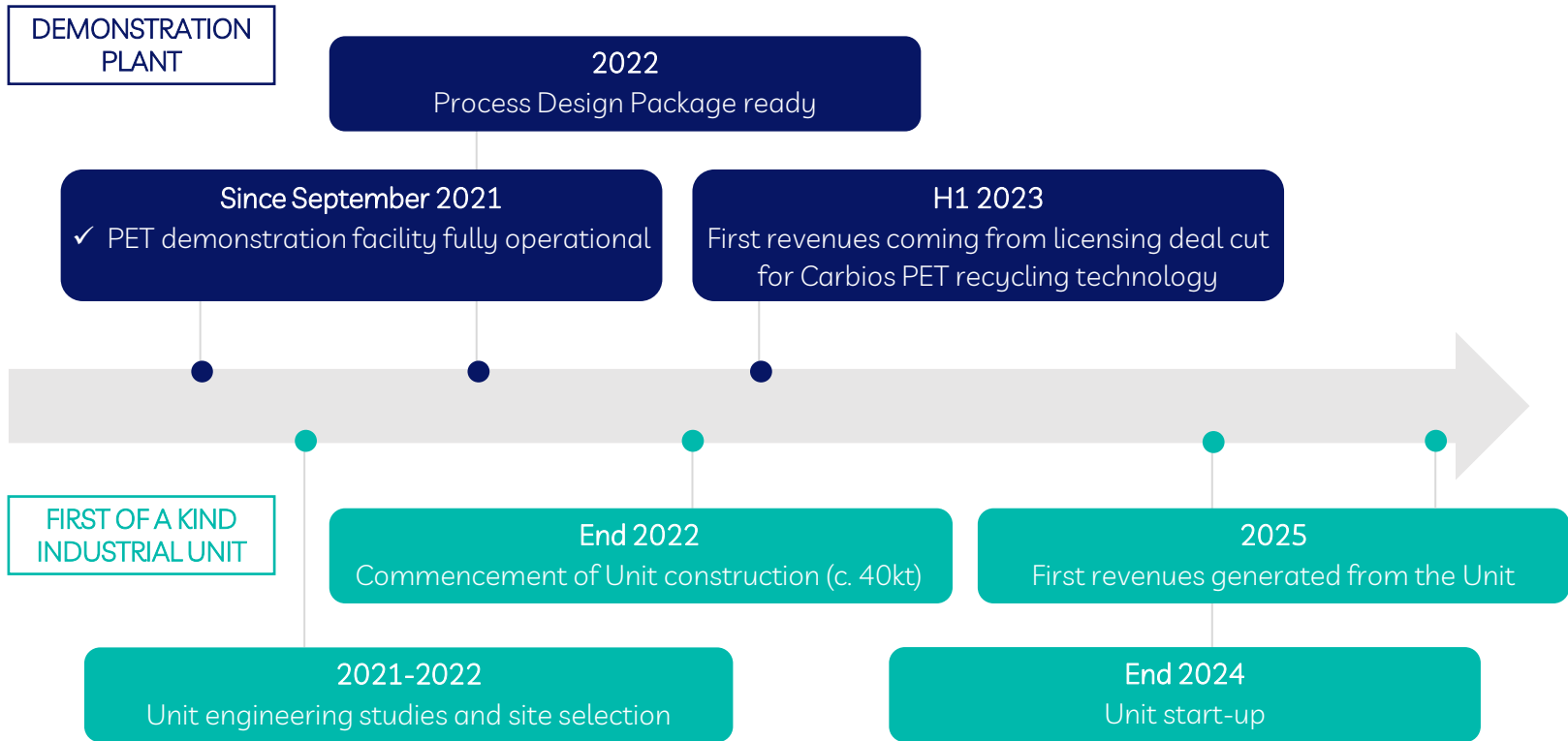
Accelerate PLA-based plastics biodegradation and guarantees compostability in less than 200 days



## A CLEAR ROADMAP TO COMMERCIAL SUCCESS



# What we plan to deliver next?



# Key takeaways

1

A pioneer in the development of enzymes for plastic processing

2

Breakthrough technologies to disrupt the plastic industry

3

Huge market opportunities and growth potential

4

Numerous strategic partnerships with worldwide blue-chip industry experts

5

Major milestones ahead including reaching licensing stage end of 2022/ early 2023 and first substantial revenues generation

6

Highly experienced management supported by renowned shareholders and partners

## APPENDIX





# Intellectual Property

Carbios holds 39 patent families worldwide, including 19 protecting its recycling process as well as the associated proprietary PET-degrading enzymes



Patents granted in:

Europe, United-States, Canada, Mexico, China, India, Japan...



## WORLDWIDE EXCLUSIVE EXPLOITATION RIGHTS

On all results of R&D collaborations

## A UNIQUE KNOW-HOW

In the development of bioprocesses combining enzymes & polymers

## A STRONG INTELLECTUAL PROPERTY

Protecting the applicative use of enzymes, processes and products

# Share & Shareholders

as of June 30, 2021

**MARKET** Euronext Growth Paris

**MNEMO/REUTERS/BLOOMBERG** ALCRB / ALCRB.PA / ALCRB:FP

**SHARES ISIN CODE** FR0011648716

**NUMBER OF SHARES** 11,164,472

**ICB CLASSIFICATION** Chemistry / Speciality chemistry

**INDICES** Euronext Growth All-share, Euronext Growth Bpifrance Innovation, Euronext Tech Croissance, CAC PME, Enternext PEA-PME

**FRENCH PEA-PME ELIGIBILITY** Yes

**ANALYST COVERAGE**

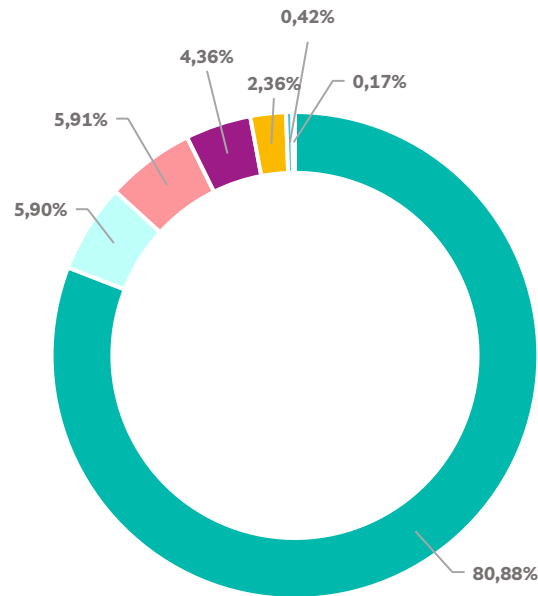
 **Kepler Cheuvreux** Baptiste de Leudeville

 **BRYAN, GARNIER & CO** Xavier Regnard

 **GILBERT DUPONT** Alexandre Letz

 **ODDO BHF** Hana Maalej

 **EXANE BNP PARIBAS** Laurent Gelebart



- Free Float
- HNWI
- BOLD (L'Oréal)
- Michelin Ventures
- Group L'Occitane
- Truffle Capital
- Treasury shares & Directors



# HY 2021 Highlights

## SCIENTIFIC MILESTONES:

- **Michelin has successfully validated the use of Carbios' enzymatic recycling technology** for PET plastic waste in its tires (April 2021)
- Successful production of **food-grade PET plastic bottles produced entirely from enzymatically recycled plastic.** (June 2021)

## CORPORATE:

- **Successful €114 million capital increase** (May 2021)
- **Full takeover of Carbiolice through the acquisition of the SPI fund's equity** (June 2021)
- Carbios awarded as **Technology Pioneer** by **World Economic Forum** (June 2021)
- Production of the **world's first samples of food-grade PET plastic bottles** manufactured entirely from **enzymatically recycled plastic.** (June 2021)
- **Operational start-up of the Company's PET recycling demonstration facility** in Clermont-Ferrand, France (Sept. 2021)

# Cash Flow Statement

<b>Cash flow</b> (in thousand euros)	<b>December 31, 2020</b>	<b>June 30, 2021</b>
<b>Cash at the opening</b>	<b>15,915</b>	<b>29,097</b>
Net cash from operations	(5,169)	(4,723)
Net cash from investments	(12,668)	(20,908)
Net cash from financing operations	31,020	108,766
<b><i>Change in cash</i></b>	<b>13,183</b>	<b>83,135</b>
<b>CLOSING CASH</b>	<b>29,097</b>	<b>112,232</b>

# HALF-YEAR 2021 Income Statement

(In thousand euros)	June 30, 2020	June 30, 2021
Operating revenue	849	568
Operating expenses	3,567	6,143
<b>Operating Income</b>	<b>(2,718)</b>	<b>(5,575)</b>
Financial Income	(50)	(39)
<b>Current Income before Tax</b>	<b>(2,768)</b>	<b>(5,614)</b>
Extraordinary profit (loss)	39	15
Income tax (Tax research credit)	(469)	(1,182)
<b>NET INCOME (LOSS)</b>	<b>(2,260)</b>	<b>(4,417)</b>

# Simplified Balance Sheet

<b>Assets</b> (in thousand euros)	<b>December 31, 2020</b>	<b>June 30, 2021</b>
<i>Intangible assets</i>	1,086	1,301
<i>Tangible assets</i>	4,793	8,179
<i>Financial assets</i>	20,907	38,804
<b>Fixed Assets</b>	<b>26,786</b>	<b>48,284</b>
<i>Inventory</i>	39	54
<i>Receivables</i>	2,150	3,555
<i>Cash and marketable securities</i>	29,097	112,232
<i>Pre-paid expenses</i>	139	518
<b>Current Assets</b>	<b>31,425</b>	<b>116,359</b>
<i>Deferred financing costs</i>	17	15
<b>TOTAL ASSETS</b>	<b>58,228</b>	<b>164,658</b>

<b>Liabilities &amp; Equity</b> (in thousand euros)	<b>December 31, 2020</b>	<b>June 30, 2021</b>
<b>Shareholder's equity</b>	<b>45,134</b>	<b>149,538</b>
<b>Conditional advances</b>	<b>4,173</b>	<b>4,173</b>
<i>Loans</i>	5,647	5,593
<i>Trade payables and related accounts</i>	1,952	3,498
<i>Other liabilities</i>	1,146	1,378
<i>Prepaid income</i>	176	478
<b>Payables</b>	<b>8,921</b>	<b>10,948</b>
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>58,228</b>	<b>164,658</b>

# Our Values

Our corporate culture focuses on 4 strong pillars shared by our employees and our partners.

**RESPECT for people:** Our employees are our most precious assets. At Carbios, we aim to respect people in their diversity and ensure an ideal, stimulating work environment. The key importance of respect at Carbios also concerns the integrity of our words and actions with our partners.

**COMMITMENT for the Planet:** By proposing sustainable solutions to rethink the end-of-life of plastic materials and textiles, Carbios shows its commitment to protecting the environment and its desire to support a Circular Economy that benefits future generations.

**INNOVATION benefiting industrial reality:** Thanks to high level scientific research combining for the first time the world of enzymology and plastics, we innovate every day to be able to offer sustainable and industrial solutions that address the major environmental and societal challenges of our time.

**AGILITY serving performance:** The agility of our teams along with the diversity of their expertise is one of Carbios' major strengths enabling us to provide the best in innovation to our partners.



# CARBIOS

Enzymes powering the Circular Economy

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