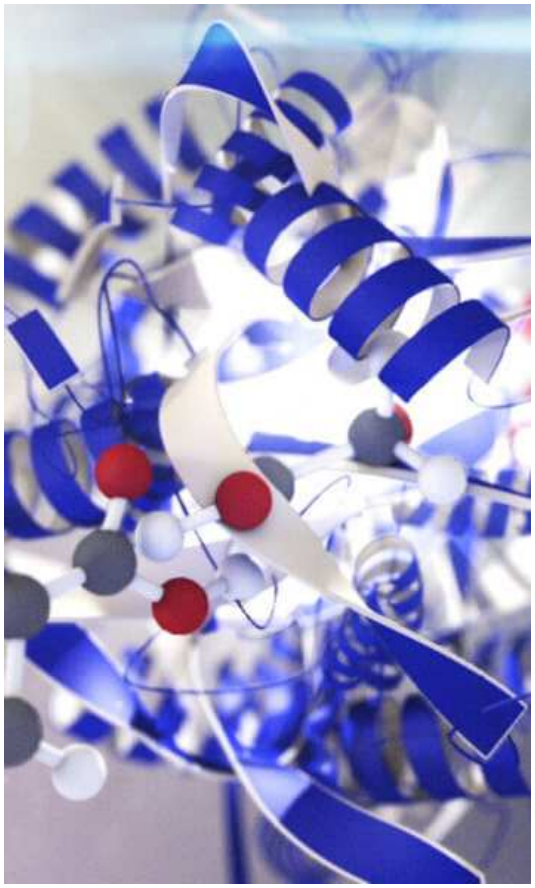
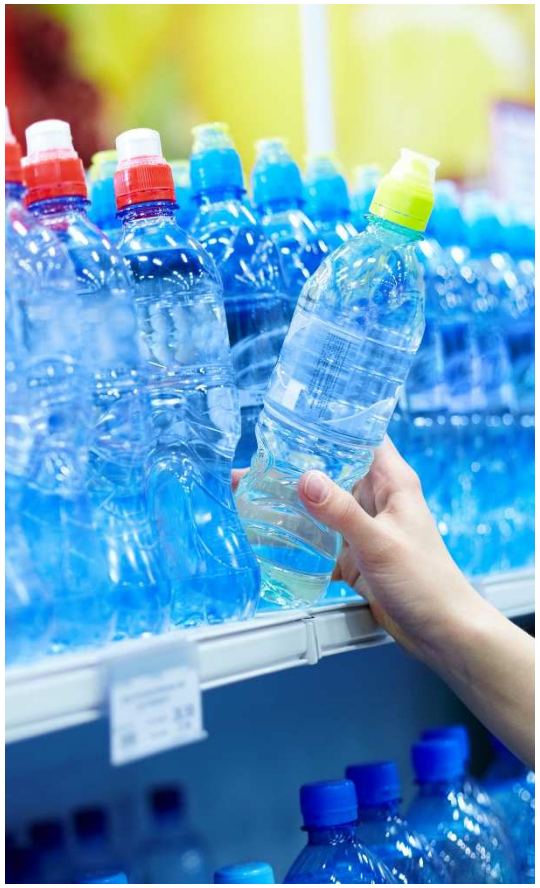
CARBIOS

PIONEERING THE USE OF ENZYMES FOR THE EMERGENCE OF A SUSTAINABLE PLASTIC INDUSTRY





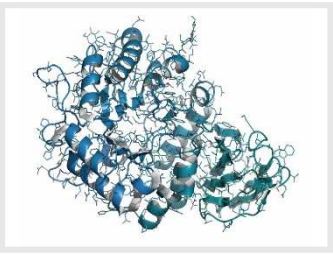


OCTOBER - NOVEMBER 2017

Disclaimer

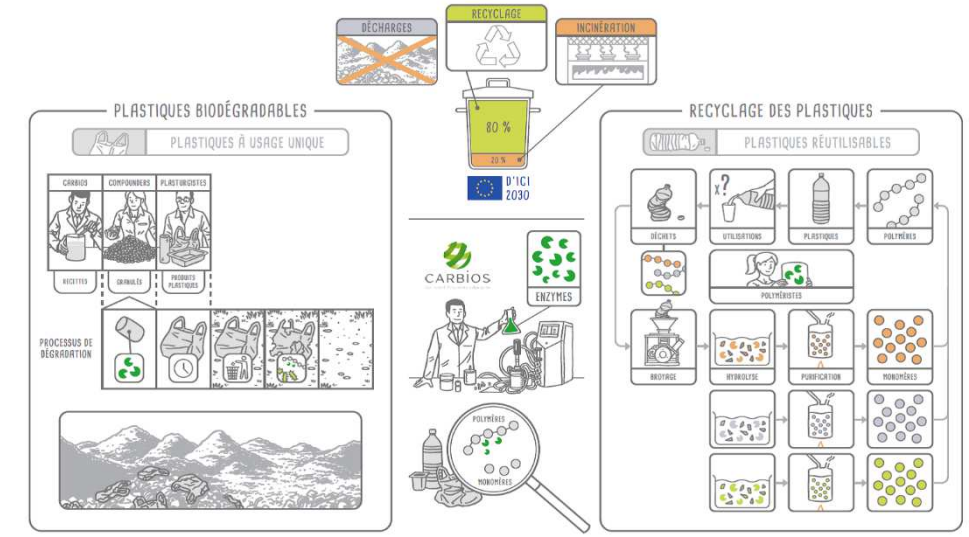
This presentation used sources deemed credible and reliable but is not guaranteed as to accuracy or completeness. It also contains forward looking information that expresses management's best assessments but might prove inaccurate. The information contained in this presentation is subject to many factors and uncertainties and therefore subject to change without notice. The company declines any responsibility to update, revise or correct any of the information hereby contained. This presentation does not constitute an offer or invitation to purchase securities of Carbios.

CARBIOS today



ENZYMES TO REINVENT THE LIFECYCLE OF PLASTICS

- CREATION : 2011
- IPO ON EURONEXT PARIS : Dec. 2013
- 18 EMPLOYEES
- 60 SCIENTISTS
- 22 PATENT FAMILIES
- 2 INNOVATIVE BIOPROCESSES
- R&D PROGRAM : 22 M€



KEY PARTNERS :

Truffle Capital

bpifrance

Holding Incubatrice Chimie Verte

CONSEIL RÉGIONAL AUVERGNE

Limagrain from earth to life

Groupe Barbier

cnrs

INRA SCIENCE & IMPACT

twb White Biotechnology center of excellence

Université de Poitiers

Plastics: not waste but resource !

Plastic production/year : 322 million tons[1]

Plastic waste/year : 125 million tons[2]

SINGLE USE AND SHORT LIFESPAN PLASTICS 50%

Oceans
9 Mtons/year



Landfills



Long term pollution

DURABLE AND MULTI-USE PLASTICS 50%

Incineration



Non profitable

Recycling



Too limited

SELF DESTRUCTIBLE PLASTICS
FOR ALL SINGLE USE AND SHORT LIFESPAN PLASTICS

INFINITE BIORECYCLING
FOR ALL DURABLE AND MULTI-USE PLASTICS

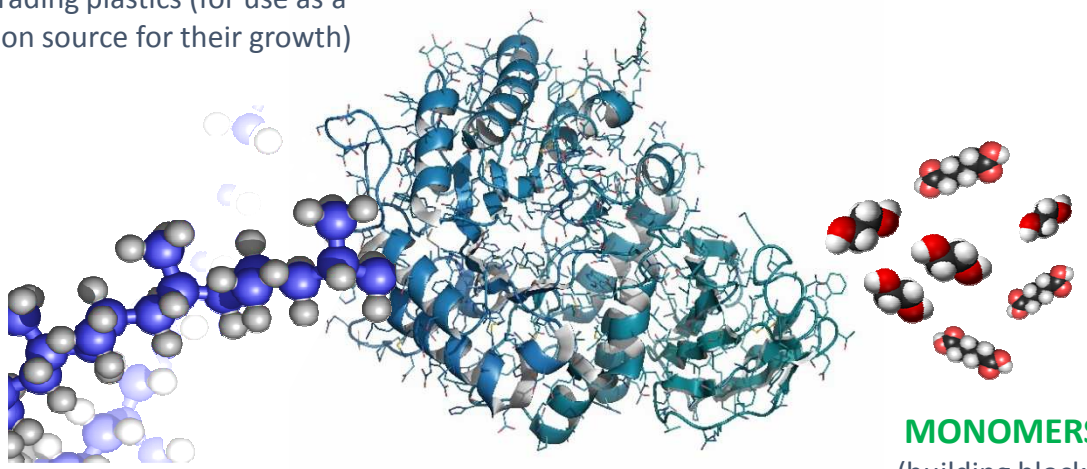
1 : Source PlasticEurope in 2015 / 2 : Global estimated waste stream by extension of available data from EU, US & Asia - Carbios

A radical innovation: enzymes to break down plastics !



1. Selection of microorganisms degrading plastics (for use as a carbon source for their growth)

2. Microorganisms produce the enzymes in charge of plastic degradation



PLASTIC POLYMER

ENZYME
(Powerful & highly specific catalists)

MONOMERS
(building blocks)

A focus on two global markets

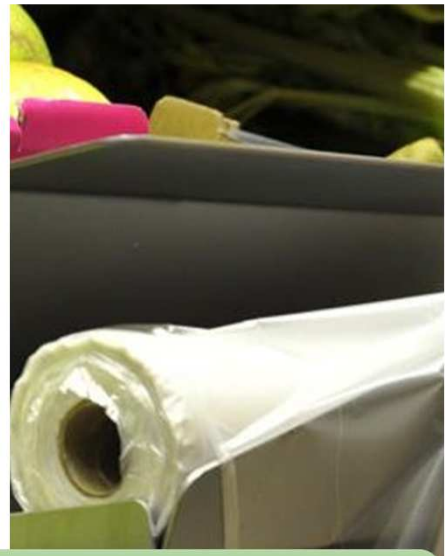
100% eco-friendly biodegradation

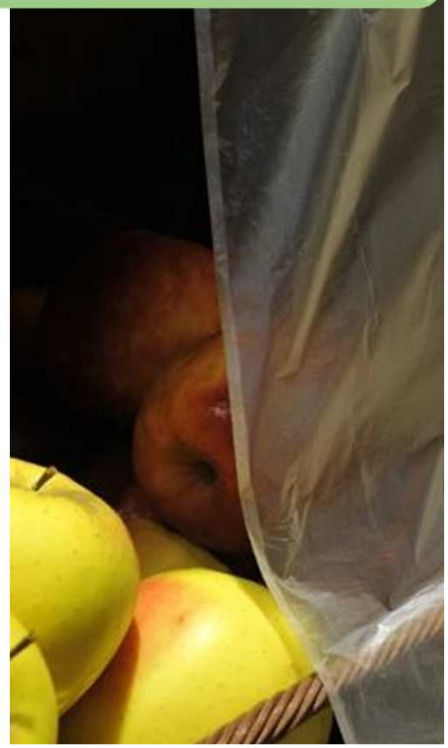
BIODÉGRADATION

BIORECYCLAGE

building blocks for new virgin plastics

BIODEGRADATION





What's on the market today and why doesn't it work?

ORDINARY PLASTICS



- ✘ Non biodegradable
- ✘ Ban in several countries
- ✘ 200 to 300 years to degrade
- ✘ Source of long term pollution

BIODEGRADABLE PLASTICS



- ✘ High cost of biodegradable polymers
- ✘ Poor mechanical properties
- ✘ Lack of control on the time of biodegradation

OXODEGRADABLE PLASTICS



- ✘ No complete biodegradation
- ✘ Invisible soil pollution / Toxic additives
- ✘ Ban in several countries

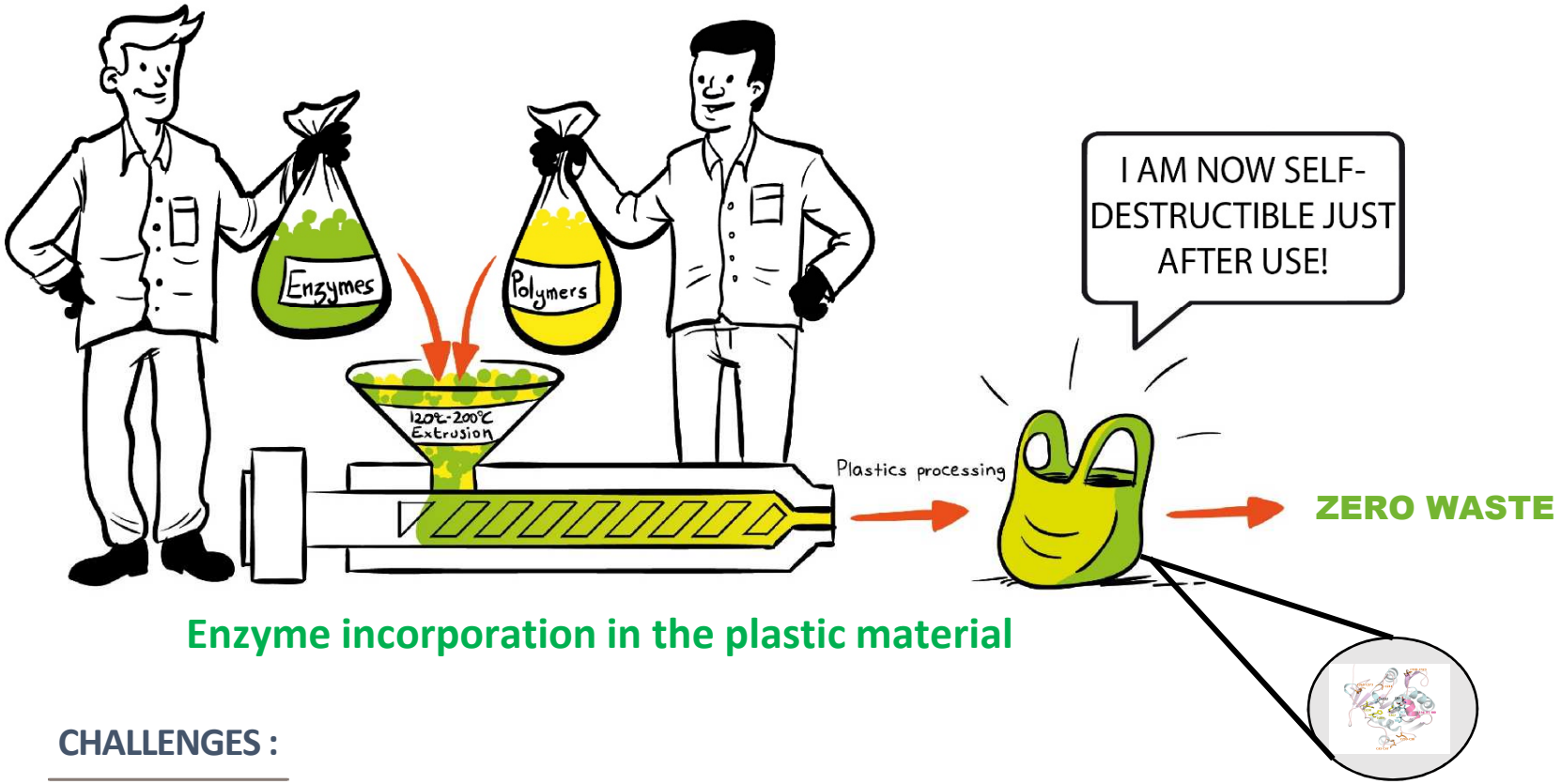
COMPOSTABLE PLASTICS



- ✘ Requires industrial composting
- ✘ Low biodegradation capacity in the environment

It's really time for a switch to eco-friendly solutions !

Carbios enzymated plastics with a controlled lifespan



Enzyme incorporation in the plastic material

CHALLENGES :

- ✓ Resistance of enzymes to high extrusion temperatures (PLA ~ 165°C)
- ✓ Maintain enzymes activity in the polymer

CARBIOLICE : An industrial & commercial joint-venture

CARBIOS

Enzymatic technologies applied to polymers

bpifrance

Support to industrial activities (SPI fund)

Limagrain Céréales Ingrédients

4th global seed producer



Operational launch: September 2016

CARBIOLICE : First commercial plant under control of CARBIOS

PRODUCTS

BIODEGRADABLE AND BIOSOURCED RAW MATERIALS: COMPOUND AND MASTERBATCH PELLETS

SIZING OF THE PROJECT

- **€18 M budget** including €11 M inflow from Bpifrance
- **1 industrial production plant** (capacity : 4.000 tons / year)
- 2 pilot production plant
- 1 application development laboratory



TARGETED MARKETS

BAGS & PACKAGING



17,5 Mtons/ year
($ 28 billion)

MULCHING FILMS



2 Mtons/ year
($ 5 billion)

TECHNICAL FILMS



500 Ktons/year
($ 4 billion)

CARBIOLICE OBJECTIVES

- Gain 1/3 of the EU market of soft biodegradable plastics
- Double production capacity by 2019
- Concede sub-licenses

VALORISATION FOR CARBIOS

- €8 M *Upfront* converted in shares of the JV
- Collaboration Revenus : €2,5 M
- First Royalties in 2019

BIORECYCLING









Current plastic recycling is expensive and inefficient

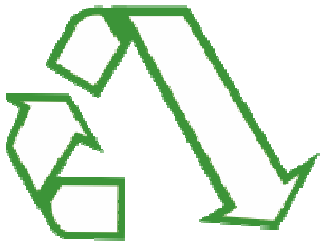


❑ CURENT LIMITATIONS

- Sophisticated and expensive sorting
- Limited efficiency
- Difficult for complex plastics

❑ DOWNCYCLING

- Recycling introduces impurities and toxic additives
- Mainly serves secondary applications
- Recycling is not a continuous process



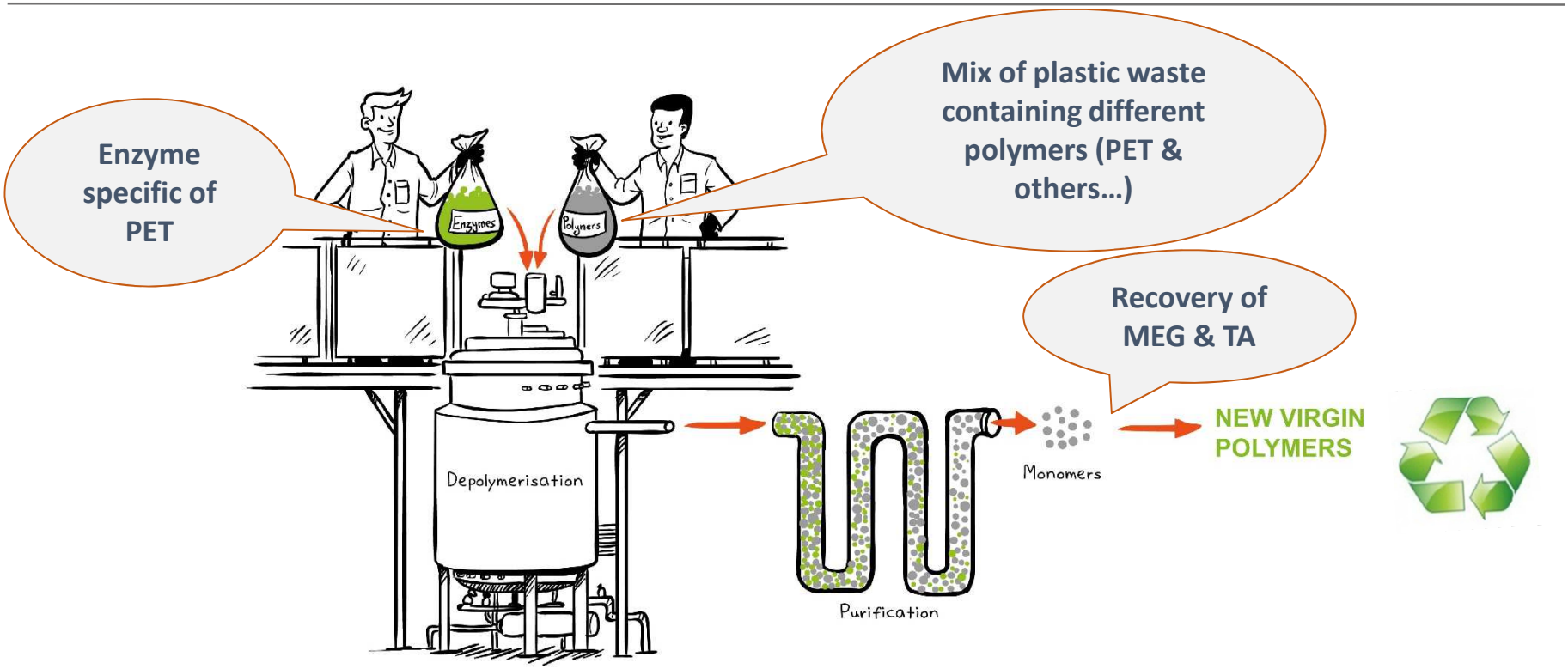


❑ INCREASING REGULATIONS

- In 2014, EU plastics recycling only reached **29,7%**
- EU has set a plastic recycling target of **60% by 2025**

CARBIOS develops a recycling process that overcomes current limitations

CARBIOS infinite recycling of PTE plastics



CHALLENGES:

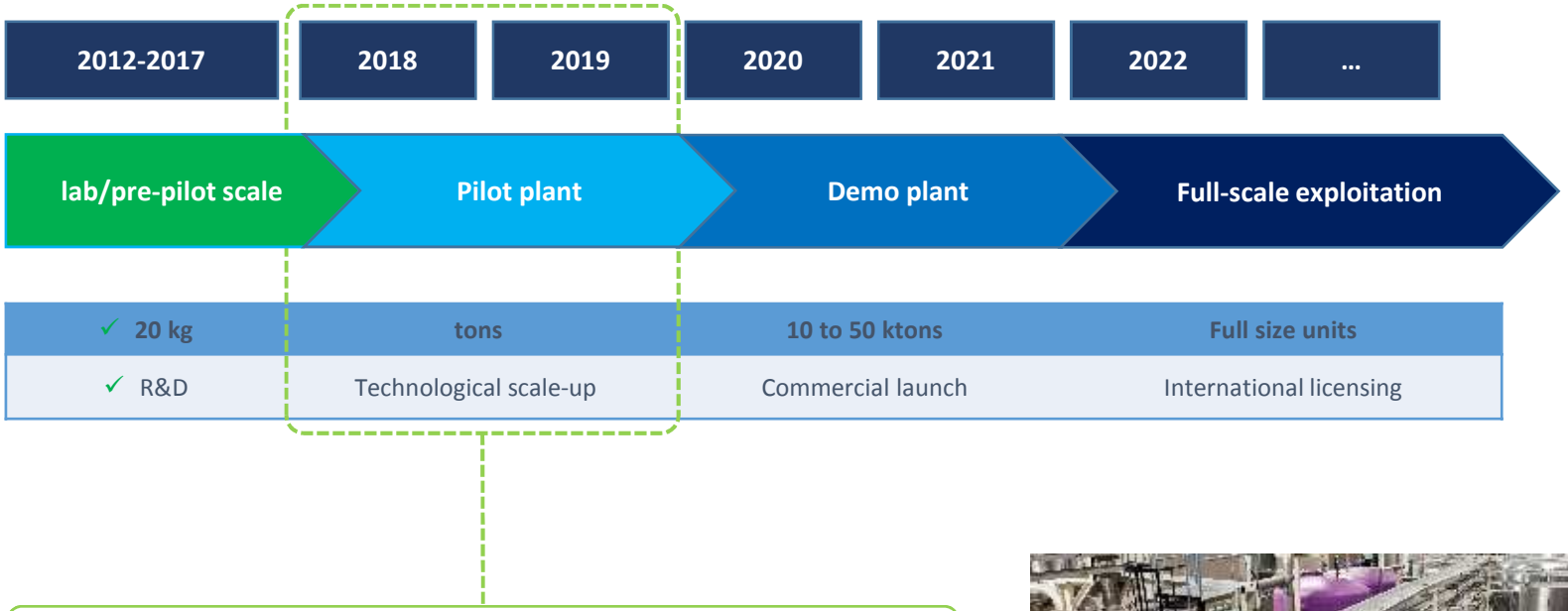
- ✓ Efficiency on mixed plastic waste
- ✓ Recycling of dirty plastic waste
- ✓ High productivity level
- ✓ High purity level of the recovered monomers

BENEFITS OF THE ENZYMATIC PROCESS:

- ✓ 100% recycling with no loss in quality
- ✓ No sophisticated sorting required
- ✓ Recycling of complex plastics (multilayers, opaque PET…)
- ✓ Low energy consumption

PET : Polyethylene terephthalate / **MEG** : Mono Ethylene Glycol / **TA** : Terephthalic Acid

Development Model : PET biorecycling



- Limited CAPEX investments
- Public cofinancing
- **TechnipFMC** in charge of the first industrial engineering stages
- First collaboration revenues expected in **2017**



PET market potential : a huge accessible market for CARBIOS

Bottles

15 Mtons/year



($ 22,5 billion)

Fibers

43 Mtons/year



($ 64,5 billion)

Packaging

3 Mtons/year



($ 4,5 billion)

Films

3 Mtons/year



($ 4,5 billion)

Source SRI Consulting In 2010, ICIS In 2009, Samsung In 2010

Worldwide IP protection

22 PATENT FAMILIES INCLUDING 2 WORLDWIDE EXCLUSIVE LICENCES



- Patents delivered : Europe, Asia, Northern America, Mexico, China, Japan, France, etc…

- Worldwide exclusive exploitation rights on all results within our collaborative R&D program THANAPLAST™
- A unique know-how in the development of bioprocesses combining enzymes & polymers
- Strong IP protecting the applicative use of enzymes, processes and products

Unique know-how & IP protection keeping CARBIOS step ahead from potential competitors

2017 Highlights

➢ Scientific milestones

- Extension of CARBIOS PET depolimerization process to opaque PET plastics (Jan. 2017)
- Synthesis of PET oligomers from biorecycled terephthalic acid (June 2017)

➢ Deals & Partnerships

- CARBIOS joins **PETCORE** Europe (May 2017)
- Contract with **TechnipFMC** for the scale-up of CARBIOS PET biorecycling process (June 2017)
- CARBIOS successfully carried out a **share placement of €4,2 M** (July 2017)

➢ People

- Appointment of **Martin Stephan** as Deputy CEO (June 2017)
- Appointment of **Ian Hudson and Jacques Breuil** as member of the Board of Directors (Dec. 2016/June 2017)

FINANCE



2017 first-half income statement

(in thousand euros)	June 30, 2016 (6 month)	June 30, 2017 (6 month)
Operating Revenue	556	632
Operating expenses	2,987	2,383
Operating Income	**(2,431)**	**(1,751)**
Financial income	41	33
Operating Income before Tax	(2,390)	(1,718)
Extraordinary profit (loss)	(6)	(6)
Income tax (research tax credit)	(860)	(371)
Net Income (loss)	**(1,536)**	**(1,353)**

Simplified Balance sheet

Simplified Balance Sheet (in thousand euros)	December 31, 2016	June 30, 2017
Intangible assets	371	415
Tangible assets	1,211	1,134
Financial assets	9,688	9,694
Fixed Assets	11,270	11,243
Inventory	15	14
Receivables	1,945	1,272
Cash and marketable securities	3,987	4,736
Pre-paid expenses	215	81
Current Assets	6,162	6,103
Total Assets	**17,432**	**17,346**
Shareholder's equity	13,113	12,879
Conditional advances	3,151	3,260
Loans	178	272
Trade payables and related accounts	494	515
Other liabilities	496	420
Payables	1,168	1,207
Total Liabilities	**17,432**	**17,346**

Cash flow statement

Cash flow (in thousand euros)	December 31, 2016	June 30, 2017
Cash at the opening	**9,011**	**3,987**
Net cash generated by operations	4,636	(498)
Net cash from investments	(9,829)	(77)
Net cash from financing operations	169	1,324
Change in cash	**(5,024)**	**749**
Closing cash	**3,987**	**4,736**

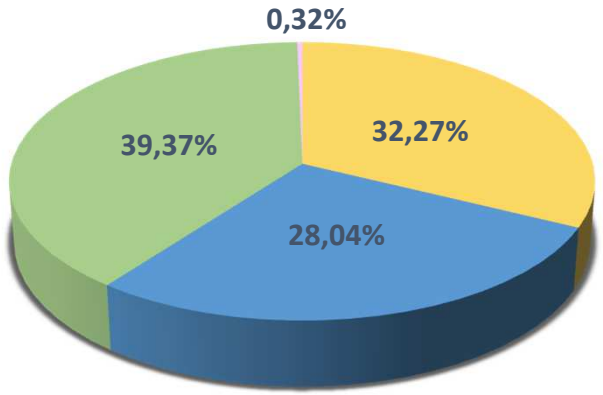
- Increase in the cash available during the first half of 2017: €749 K
- In light of the projections made on future expenses and investments, this cash position should allow CARBIOS to finance its activities until mid-2019

APPENDICES



Shares & shareholder structure as of June 30, 2017

Market	Euronext Growth Paris	
Mnemo/Reuters/Bloomberg	ALCRB / ALCRB.PA / ALCRB.FP	
ISIN code	FR0011648716	
Number of shares	4.018.787	
ICB Classification	Chemistry / Speciality chemistry	
Indices	Euronext Growth All-share, Euronext Growth Bpifrance Innovation Index	
French PEA-PME eligibility	Yes	
Analyst coverage	Gilbert Dupont Société de bourse	Damien Choplain
	Invest Securities	Laurent Wilk
	EDISON	Adrian Phillips



ALCRB EURONEXT GROWTH

ELIGIBLE PEA PME

An experienced management team



Jean-Claude LUMARET
Founder & CEO

37 years of experience in the agro-industry at an international level and expert in intellectual property

- President – CARBIOLICE
- Vice-President of Toulouse White Biotech
- VP Strategy and Innovation – METEX
- Director, Business Intelligence – ROQUETTE
- Director Fermentation and Industrial Chemistry BU – ROQUETTE
- Director, Intellectual Property – ROQUETTE



MARTIN STEPHAN
Deputy CEO

30 years of experience in the chemical industry

- Global Director of the Fluorotelomers activity, EMEA Director, CHEMOURS
- Global Product Manager – Business and Market Manager – Sales Director - DUPONT DE NEMOURS International Europe
- Business Manager Fluorotelomers ATOFINA
- CFO – ELF ATOCHEM



Professor Alain MARTY
Chief Scientific Officer

International expert in enzymology and biological processes

- Professor and Head of a Research Group - INSA's LISBP
- Evaluator for the AERES and the ANR (France's National Education and Research Agencies)

An operational Board of Directors

JEAN FALGOUX - *PRESIDENT*



- Ex CEO Ajinomoto Inc.
- Ex Vice President Ajinomoto Europe
- Ex Senior VP Hoechst Roussel group

JACQUELINE LECOURTIER
SCIENTIFIC ADVISORY BOARD PRESIDENT



- Ex General Director ANR
- Ex R&D Director IFP

IAN HUDSON



- Ex-CEO & President EMEA DuPont
- Ex President Europabio

JACQUES BREUIL



- Ex General Secretary Barbier Group

ALAIN CHEVALLIER



- Partner Life Sciences, Truffle Capital
- Ex CFO Abivax, Ex President Deinobiotics
- Ex CFO Sanofi France

ERIK ORSENNA



- Novelist, Economist
- Member of « L'Académie française »

PASCAL JUERY



- President Solvay Essential Chemicals
- Ex CEO Rhodia Novecare

DOMINIQUE EVEN

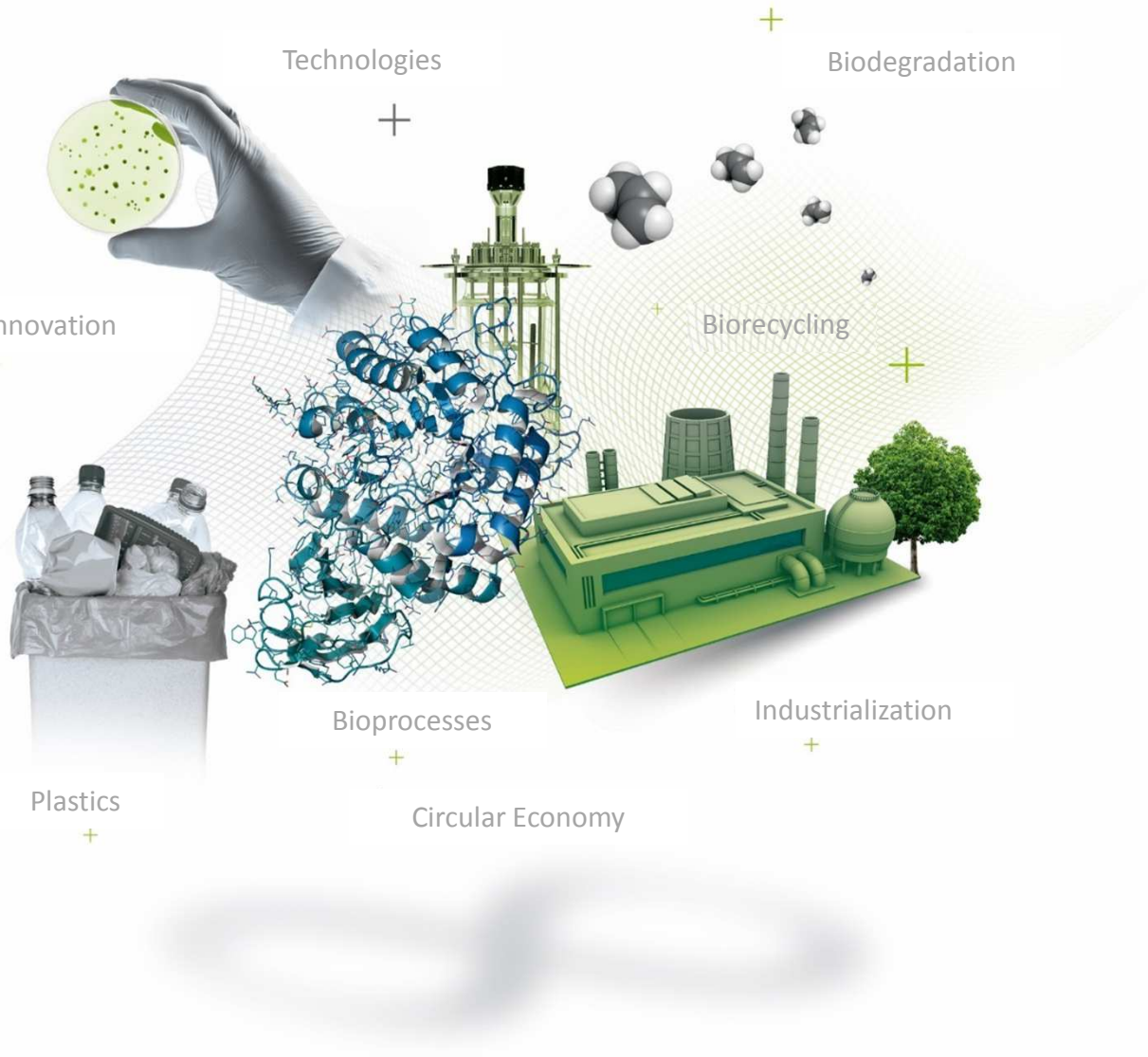


- Ex Industrial Director Sanofi Chemicals
- Ex Industrial Director Aventis

Complementary expertises: scientific, industrial & financial

CARBIOS

Reinvent Polymers Lifecycle



Biopôle Clermont-Limagne - 3 rue Emile Duclaux – 63360 St-Beauzire, France
Phone: +33(0)4 73 86 51 76 / Email: benjamin.audebert@carbios.fr