

Mercredi 27 Janvier – 10h

RENCONTRE VIRTUELLE

*Plastiques biosourcés et / ou
biodégradables :
les spécificités françaises*

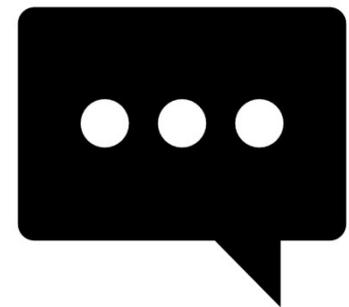
BIO
PLASTICS
EUROPE



NaturePlast
L'expert en Bioplastiques

Before we start...

... Avant de commencer



The agenda

Bio-Based and/or biodegradable plastics: french specificities

10:00 Welcome word	Dr. Laurent Bélard	 NaturePlast L'expert en Bioplastiques
10:15 Presentation of Bio-Plastics Europe project	Dr. Jelena Barbir	 HAW HAMBURG
10:30 Some vocabulary: bio-based and/or biodegradable?	Pauline Moreau	 NaturePlast L'expert en Bioplastiques
10:45 Evolution of regulation framework	Amélie Rangué	 NaturePlast L'expert en Bioplastiques
10:55 Market trends	Pauline Moreau	 NaturePlast L'expert en Bioplastiques
11:05 Experience sharing: FILT 1860	Jean-Philippe Cousin	 filt 1860
11:20 Experience sharing: FRANCOFIL	Florent Port	 FRANCOFIL
11:35 Discussions	All speakers	
11:50 Wrap up	Dr. Laurent Bélard	 NaturePlast L'expert en Bioplastiques

Presented by: Laurent Bélard
(NaturePlast)

Welcome!

BIO
PLASTICS
EUROPE



 **NaturePlast**
L'expert en Bioplastiques

Presentation of the company:

2007



SAS with a capital of 163 572 €

NATUREPLAST remains the **only European supplier** of all kinds of bioplastics produced in the world.



2010

Subsidiary company



SASU with a capital of 30 000 €

BIOPOLYNOV is the **only R&D center** dedicated to the improvement and modification of bioplastic properties in Europe.

Sales Team



R&D and Production Team



 **Our goal**

**TO SUPPORT OF FRENCH AND EUROPEAN INDUSTRIES
(manufacturers and end users)
in the transfer of technology to bioplastics.**



YOUR IDEA



YOUR EXPECTATIONS



OUR EXPERTISE



YOUR BIOPLASTIC SOLUTION

Our areas of expertise

3 areas of expertise
To support your projects

Service

- Training
- Technico-economical study
- Project engineering

R&D

- Customised formulation
- Characterisation
- Production of compounds

Distribution

- Raw material
- Compounds

Our three ranges of products

RAW MATERIAL
bioplastics

COMPOUNDS
bioplastics

BIOCOMPOSITES
fibres and by-products

NaturePlast is **the only supplier in Europe** providing all biobased and/or biodegradable bioplastics

NaturePlast produces a range of bioplastic compounds with **optimised properties**

NaturePlast produces a **range of biocomposites containing natural fibres or by-products from different activities**





Our production equipment

8 Characterisation equipments:

1/ Thermal:

- HDT / Vicat (ISO 75 / 306)

2/ Mechanical:

- Tensile / Flexural (ISO 527 / 178)
- Charpy Impact (ISO 179)

3/ Rheologic:

- MFI (ISO 1133)

4/ Physico-chemical:

- Shore Hardness (ISO 868)
- Accelerated ageing station
- Water content analysis Karl Fischer (ISO 15512)
- Density (ISO 1183)

4 Production equipments:

- **Laboratory** twin-screw **extruder** (21mm)
- **Industrial** twin-screw **extruder** (27mm)
- Prototyping by **extrusion, calendering, blowing**
- **Injection** machine (80 T)

4 Equipment for the valorisation of by-products:

- **Dryer**
- **Grinder**
- **Micronizer**
- **Sifter**

Our expertise



Optimisation
of bioplastics' properties



Valorization
of by-products

4 Major thematics in which Biopolynov is specialized.

Modulation
of bioplastics' shelflife



Adding
of function to a biopolymer



Our R&D projects

7 Current collaborative R&D projects, NaturePlast being a partner:



- **ALGRIPLAST** – *Région Normandie / FEDER* –
Production of biobased and biodegradable materials based on byproducts
- **INDIGO** – *Interreg France Angleterre* –
Development of biodegradable fishing gear
- **BIOPLASTICS EUROPE** – *H2020 BG 2018-2020 IA* –
Development of biobased and biodegradable solutions
- **URBIOFIN** – *H2020 BBI JTI 2016* –
Valorization of municipal waste to produce biobased materials (including PHAs)
- **MYPACK** – *H2020 SFS 2017* –
Development of innovative technologies for food packaging
- **WOW!** – *Interreg NWE* –
Production of biobased materials (including PHAs) using waste water
- **DEEP PURPLE** – *H2020 BBI-JTI-2018* –
Conversion of urban bio-waste into sustainable materials (including PHAs) by photo-biorefinery process

8 Finished projects

- AGROBOOST, SUCCIPACK, NICODEY, BIOSOURC'AIR, SEAPLAST, COPROPLAST, MATADORE, BIOCOMPLACK, etc.

NaturePlast-BiopolyNov team is task leader for activities which involves modification / optimization of materials:

- Supplier sourcing / Materials supply
- Research and development of formulations
- Compounds production / Injection of test specimens / Characterization

HAW HAMBURG Coordinator

Presented by: Dr. Jelena Barbir
(Lead Project Manager)

BIO-PLASTICS EUROPE



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 860407.
BIO-PLASTICS EUROPE project website: www.bioplasticseurope.eu



BIO-PLASTICS EUROPE

Developing and Implementing Sustainability-Based Solutions for Bio-Based Plastic Production and Use to Preserve Land and Sea Environmental Quality in Europe

October 2019 – September 2023



Project kicked-off in October 2019



HAW Hamburg



Prof. Walter Leal
Project Coordinator

Our Team



Financial Officer



Lead Project Manager



Project Manager



Senior Project Manager



Student Assistant



Student Assistant



Student Assistant



Student Assistant



PARTNERSHIP



22 partners
 13 countries
 8.5 million Euros



CONTACT INFO

HAMBURG UNIVERSITY OF APPLIED SCIENCES

Research and Transfer Centre „Sustainability and Climate Change Management“ (FTZ-NK)

Ulmenliet 20, 21033 Hamburg, Germany

E-mail: bioplastics@ls.haw-hamburg.de, www.bioplasticseurope.eu



The main objective:

To develop sustainable strategies and solutions for bio-based plastic products, as well as the to develop approaches focused on circular innovation for the whole bioplastics system. These may be deployed to support policy-making, innovation and technology transfer.

Objective 6:
 Communication Strategy
 + cooperative knowledge
 sharing of Best Practices and
 Lessons Learned
 WP9

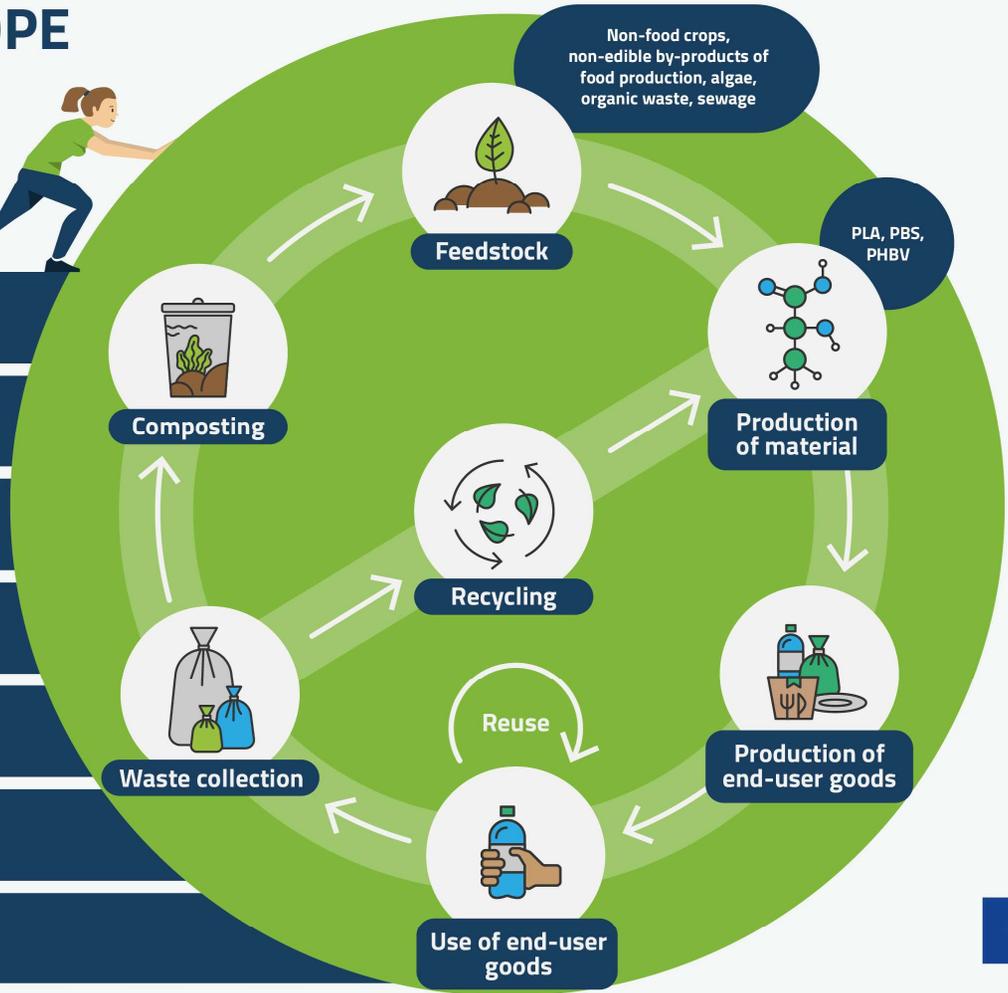


BIO-PLASTICS EUROPE

Pushes towards circular economy



- WP3** Identification and test of innovative product design
- WP4** Plastic waste collection, recycling and littering
- WP5** Prenormative research and field tests
- WP6** Health and environmental safety
- WP7** Replication, policy-making, capacity-building and upscaling
- WP8** Life cycle assessment environmental and economic
- WP9** Information, communication, and dissemination of results





EXPECTED RESULTS

FOCUS

Cutlery, Soft and Rigid Packaging,

Agricultural Mulch Film,
Toys and Aquatic Materials

● INNOVATIVE MATERIALS

to foster and encourage deployment of innovative bio-based and biodegradable materials

● STAKEHOLDERS ENGAGEMENT

to ensure strong commitment of producers, politicians, industrial and private consumers

● BUSINESS MODELS

to experiment with innovative business models by incorporating circularity and sustainability to maximize the value of materials along the entire value chain

● SAFETY PROTOCOLS

to ensure the safe use and end-of-life management on innovative bio-based plastics

Where we stand now....



Within the BIO-PLASTICS EUROPE project, the following end-products are experimented:

- **PACKAGING (rigid and flexible)**
- **TOYS**
- **AGRICULTURAL MULCH FILM**
- **CUTLERY**
- **AQUATIC MATERIALS: geo-membrane, fishing baits, fishing cradles**

First group of 5 materials developed

5 MATERIALS:
The materials under investigation are:

1. BPE-FP-PBS
2. BPE-RP-PLA
3. BPE-T-PHBV
4. BPE-AMF-PLA
5. BPE-C-PLA

From this list mainly PLA is already commercially in use and well available according to very recent application notes from various companies.



SENT FOR LABORATORY AND FIELD TESTS

- Samples prepared-received
- Test Protocols finished
- Tests started 1st of September
- First preliminary results obtained



MODIFICATION of the materials after 1st round tests

2nd round of TESTS



Besides focusing on research....



STAKEHOLDER ENGAGEMENT

12 ONLINE
STAKEHOLDER
PROMOTION EVENTS

September 2020 –
January 2021

PROMOTE PROJECT
CLUSTER stakeholders
FUTURE INVOLVEMENT

NETWORKS

3rd event
17th of
February



SUSTAINABLE SOLUTIONS FOR
BIO-BASED PLASTICS ON LAND AND SEA

EUROPEAN BIOPLASTICS
RESEARCH NETWORK

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 885407



LinkedIn: over 300 members
Preparing events
Foster communication
Share experience

1st
WORKSHOP
24th of
February

Connect cities
Preparing events
Exchange experience
Offer solutions



SUSTAINABLE SOLUTIONS FOR
BIO-BASED PLASTICS ON LAND AND SEA

HISTORIC CITIES AGAINST
PLASTIC WASTE

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 885407



THANK YOU FOR ENGAGING WITH US.....

HAMBURG UNIVERSITY OF APPLIED SCIENCES

Research + Transfer Centre „Sustainability & Climate Change
Management“ (FTZ-NK)

Ulmenliet 20 / 21033 Hamburg / Germany

T +49 40 428 75 6362 (Mon - Fri 8AM-3PM)

Email: bioplastics@ls.haw-hamburg.de

Website: <https://bioplasticseurope.eu/>

..... THANK YOU FOR YOUR ATTENTION!



HAW Hamburg



Horizon 2020

Presented by: Pauline Moreau
(NaturePlast)

Some vocabulary:
Biobased?
Biodegradable?



BIO
PLASTICS
EUROPE



NaturePlast
L'expert en Bioplastiques

- What is a “bioplastic”?

There is no standardized definition for the word « *bioplastic* », but a definition commonly admitted:

« A bioplastic is a **biobased**  **and / or**
biodegradable  **polymer** »

Most of the common plastics are oil-based  and long-lasting 

- What is a “bioplastic”?



being biobased does not imply being biodegradable
being biodegradable does not imply being biobased!

There are 3 catégories of bioplastics:

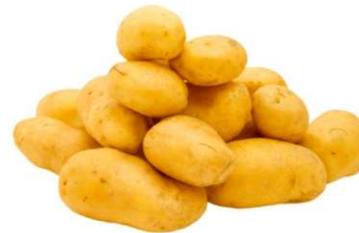
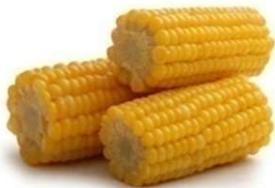
Non bioplastics	Bioplastics
  <p>Ex: PE, PP</p>	  <p>Ex: PLA, PHA</p>
  <p>Ex: PBAT</p>	  <p>Ex: bioPE, bioPP</p>

- What is a biobased plastic?

Biobased : defined by standard EN 16575:2014

Part of a product coming partially or totally **from biomass** (*vegetal or animal*).

This part can represent a **very variable amount** within the material, no minimum amount being currently defined to use this name.



- What is a biobased plastic?

Vegetal biomass is often divided in 3 generations:

1G (food)	2G (non food)	3G (non food ; off the ground)
<p>Vegetal oils : soybean, sunflower, rapeseed, etc.</p> 	<p>Lignocellulosic biomass: wood, wastes from wood or agriculture (bagasse, etc.)</p> 	<p>Sugars or oils produced by micro-organisms (algae, bacteria, mushrooms, etc.)</p> 
<p>Starch : corn, wheat, potato, tapioca, etc.</p> 	<p>Inedible vegetal oils: castor oil and production wastes from other oils</p> 	<p>Municipal wastes : organic wastes, wastewaters, etc.</p> 
<p>Glucose : sugar cane, beetroot, etc.</p> 		

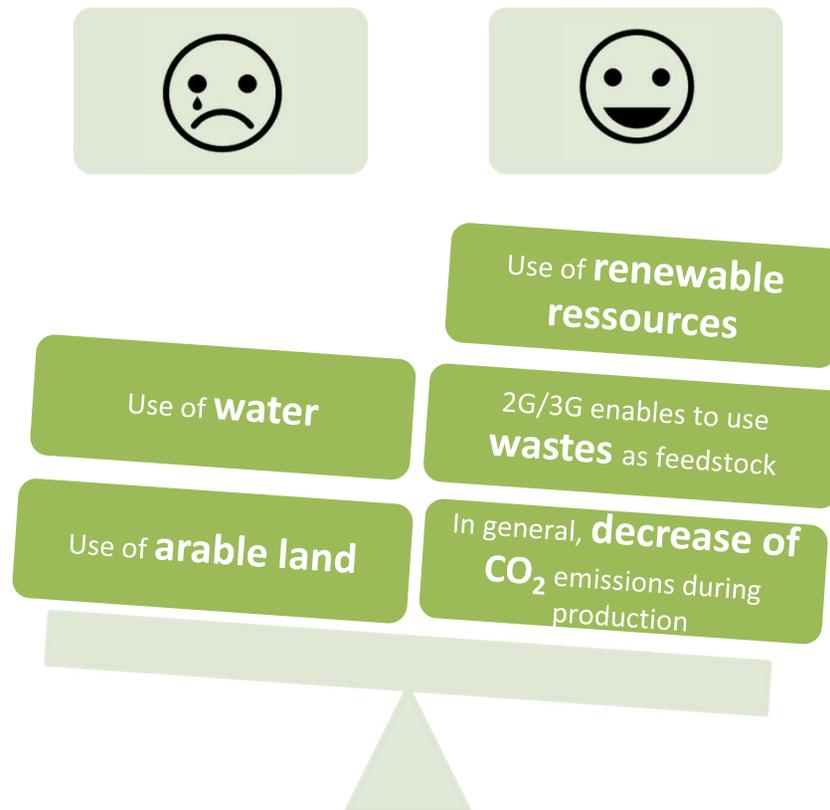
- How to recognize a biobased plastic?

Label OK Biobased :

- **OK Biobased *** : between 20 and 40%.
- **OK Biobased **** : between 40 and 60%.
- **OK Biobased ***** : between 60 and 80%.
- **OK Biobased ****** : between 80 and 100%.



- Some pros and cons of biobased plastics



- What is a biodegradable plastic?

A material is **biodegradable** if it can be **degraded** through the action of microorganisms (bacteria, mushrooms, algae, etc.).

The result of biodegradation is **water**, **CO₂** and/or **methan** and eventually **by-products** (residues, new biomass) **non-toxic** for the environment (Technical Guide, ADEME, 2012).

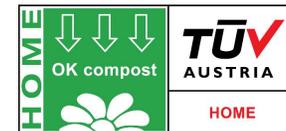
Biodegradation depends on end-of-life **environment**.



- How to recognize a biodegradable plastic?

Labels:

- **OK Compost industrial:** in industrial composting facilities.
- **OK Compost Home:** in individual backyard.
- **OK Biodegradable Soil:** on the ground.
- **OK Biodegradable Water:** in freshwater.
- **OK Biodegradable Marine:** in sea water.



- What is composting?

Composting is a process allowing the conversion of fermentable matter into compost, improving soil fertility. It consists in an **aerobic biodegradation (with oxygen) in specific conditions**.

Home composting



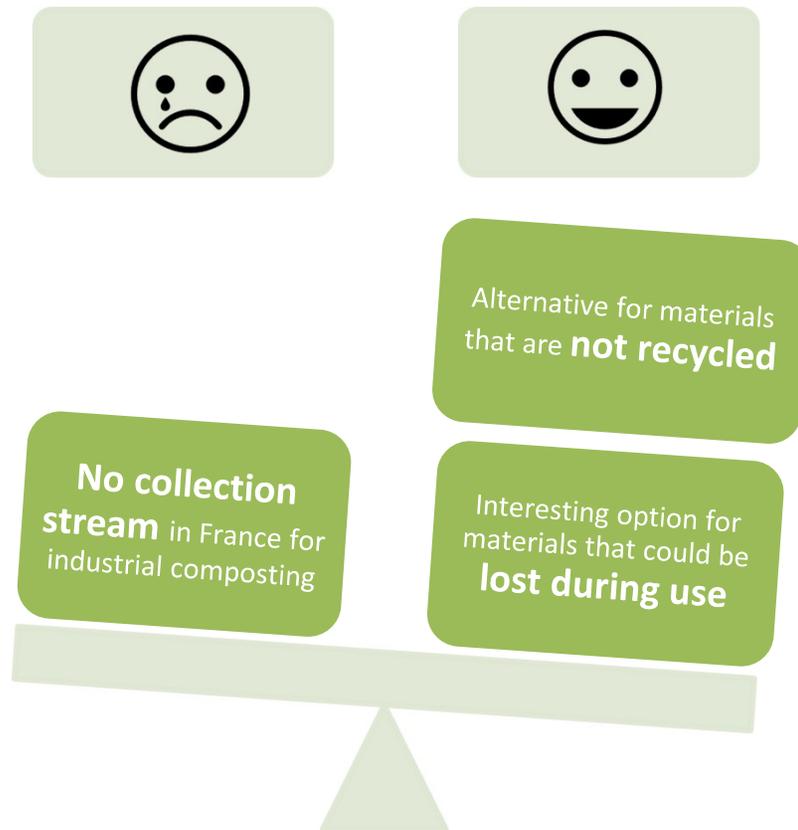
- Made by an individual
- « Uncontrolled » conditions

Industrial composting



- Made by a professional
- Controlled conditions

- Some pros and cons of biodegradable plastics



Presented by: Amélie Rangué
(NaturePlast)

Evolutions of regulation framework

BIO
PLASTICS
EUROPE



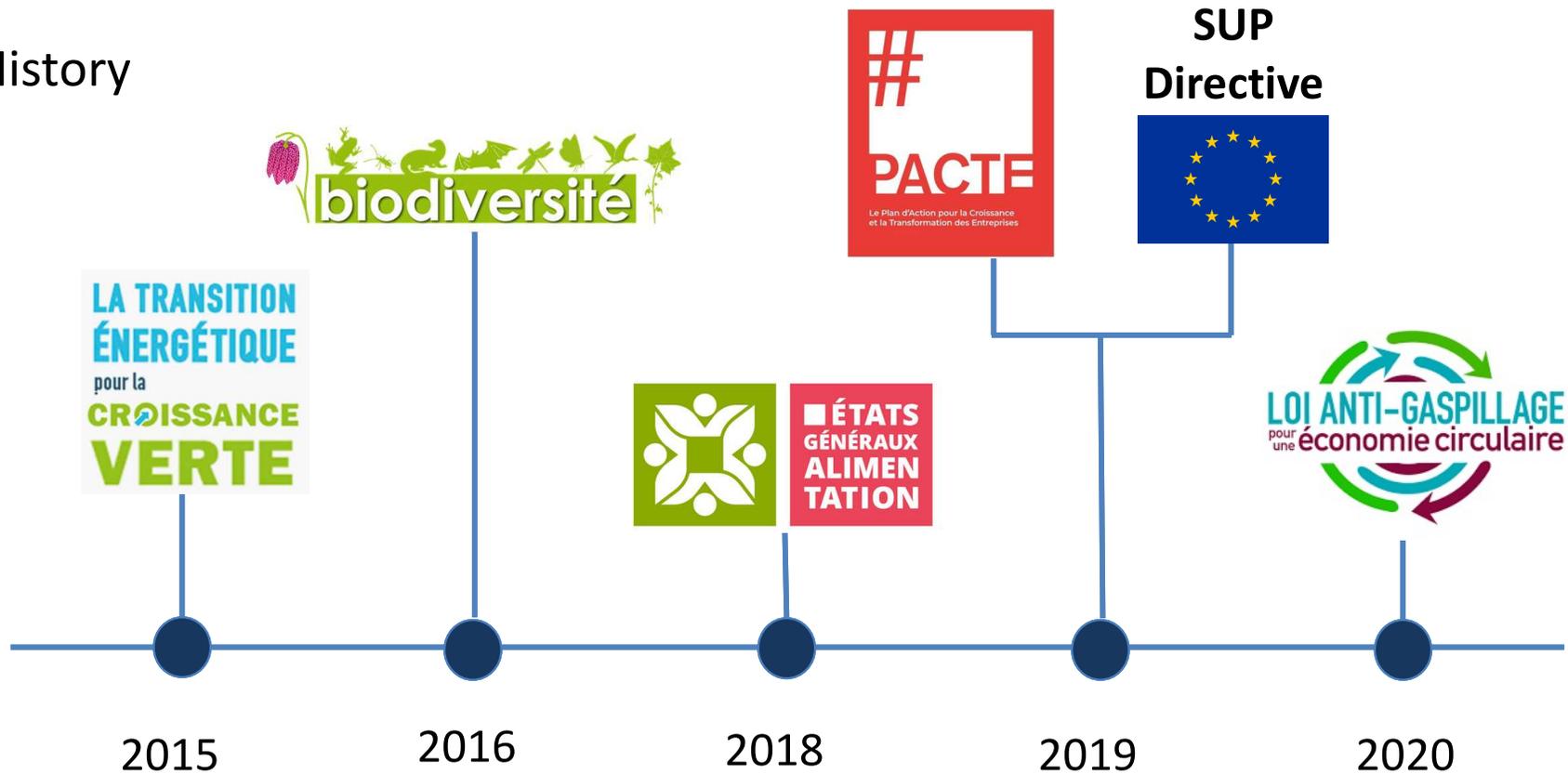
 **NaturePlast**
L'expert en Bioplastiques

Why regulations?

- Climatic urgency
- 6.5 to 8 million tons of plastic wastes are estimated to be discharged in the oceans every year
- Microplastic found in fishes, top of mountains, drinkable water, etc



- History



- Law on Energy Transition and Green Growth (2015)
 - Disposable plastic bags (thickness less than 50µm) have been banned since 2017
 - Bags that are home compostable and partially made with biobased materials (more than 50% since 1st January 2020) are exempted



- Law on Agriculture and Food (2018)
 - To reduce the use of plastic in food industry
 - Lots of single use plastic products banned from January 2020
 - Exemption for home compostable and partially made with biobased materials products



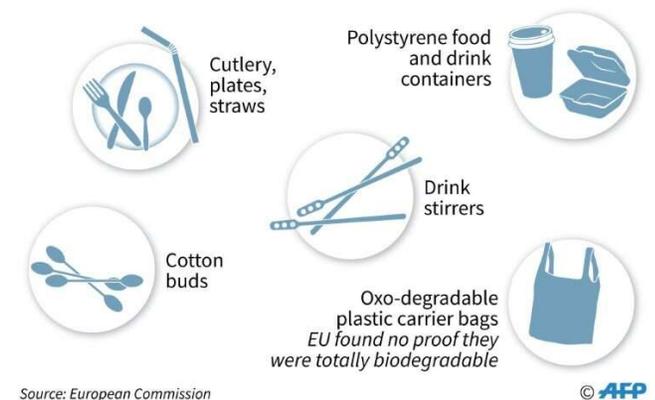
- Law PACTE : the Action Plan for Business Growth and Transformation (2019)
 - Go further than the previous law : no exemption for compostable products
 - Some bans moved to January 2021
 - Cancellation of the bans of some products

=> It was invalidated by the constitutional council

- The European directive on disposable plastic (2019)
 - Some single use plastic products (cotton buds, cutleries, plates, etc...) are forbidden on the market.
 - Oxo-degradable plastics are forbidden.
 - « Polluter pays » principle is extended to new products.
 - The directive shall be transposed at national levels by all member states at the latest in July 2021.

EU bans single use-plastics

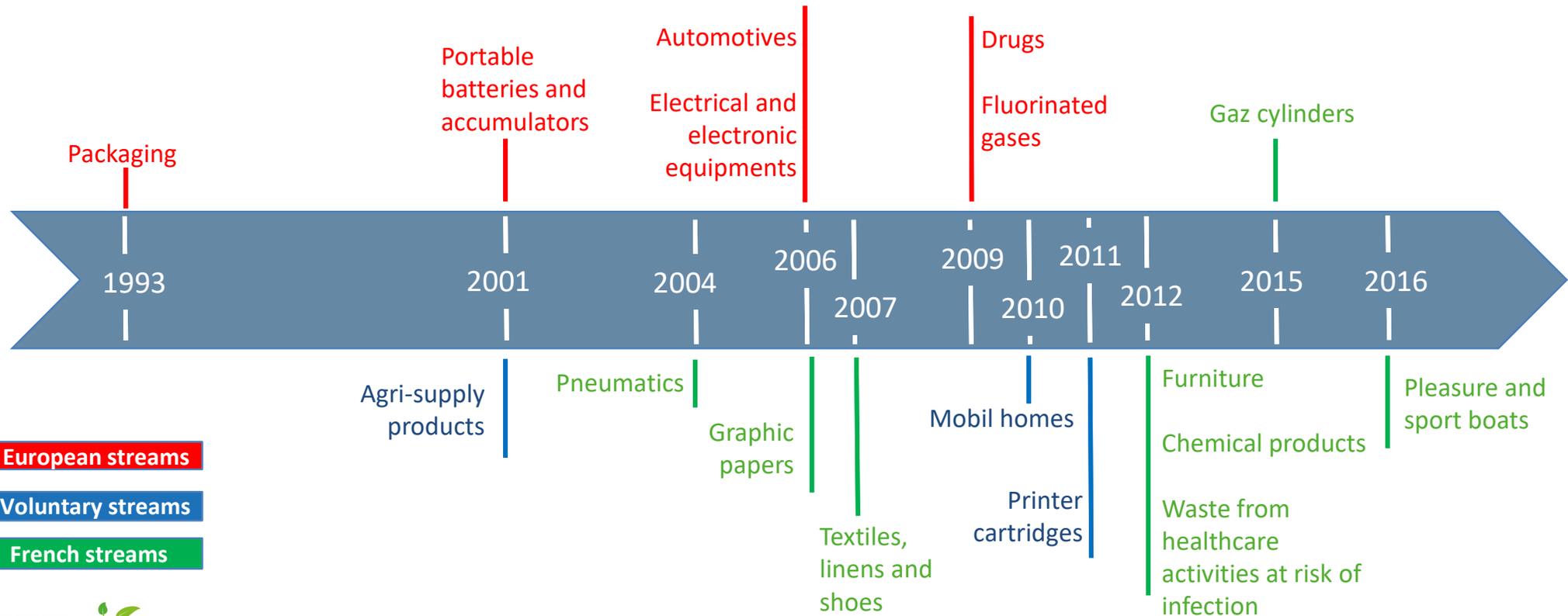
About ten product categories will be banned, from 2021



- Law Against Waste and for a Circular Economy (2020)
 - Phasing out of all single use plastic packaging before 2040 : reduction, reuse and recycling targets will be set by decree
 - Goal of 100% recycled plastic by January 2025
 - Ban of new plastic products



Extended producer responsibility



European streams

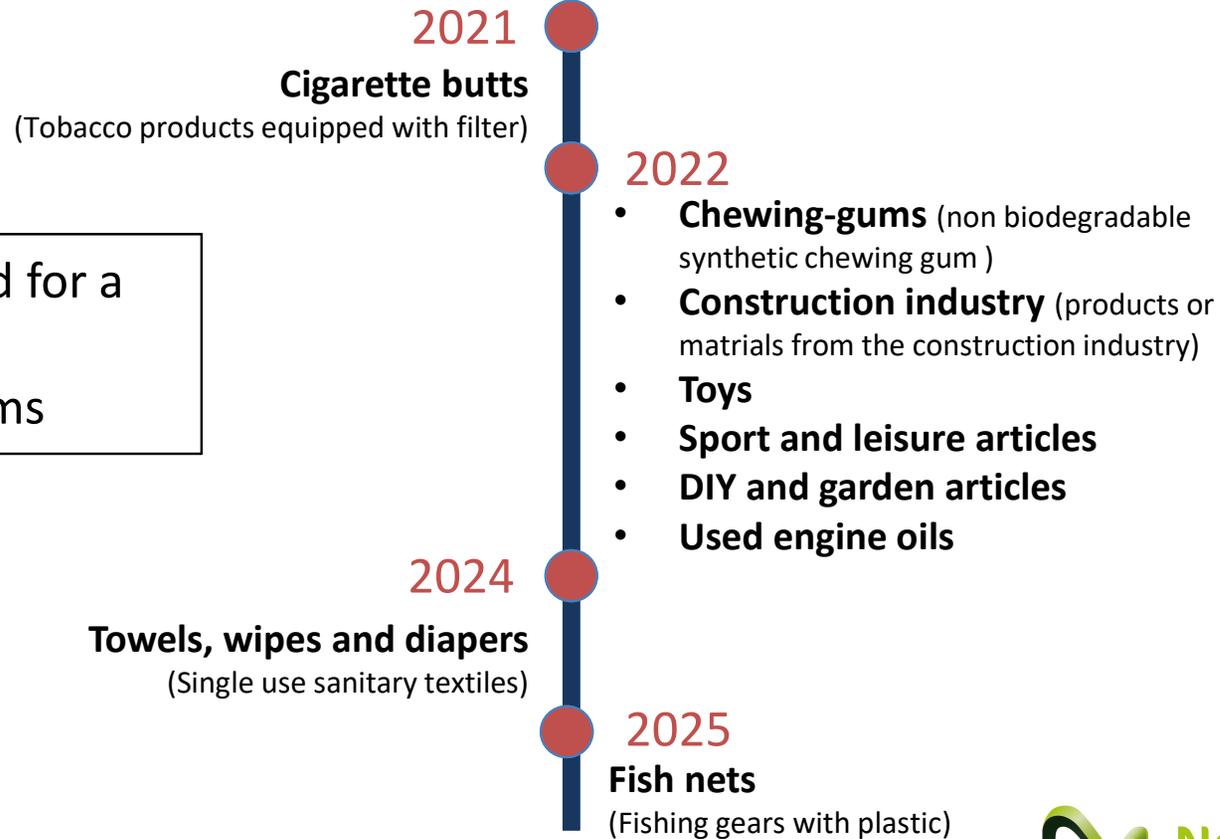
Voluntary streams

French streams



- Extended producer responsibility

Law Against Waste and for a
Circular Economy :
Creation of new streams



- Summary of single use plastics in France

2020

- Plates
- Plastic Cups

2021

- Plastic straws
- Plastic mixing sticks
- Disposable plastic cutlery
- Plastic lids
- Plastic steak picks
- Plastic confetti
- Balloon plastic rods
- Expanded polystyrene containers, bottles and cups (including their lids)
- Plastic bottles for free is forbidden in establishments welcoming people

2022

- Plastic tea (or herbal tea) bags
- Plastic packaging for fruits and vegetables
- Disposable plastic products used in the State's central administration
- Plastic toys for free in kids menu
- Plastic packaging for the press and advertising

2023

- Containers, cups, lids and cutlery used in (onsite) catering

2025

- Plastic food containers banned in collective catering services in schools and academic and health institutions

Presented by: Pauline Moreau
(NaturePlast)

Market trends



BIO
PLASTICS
EUROPE



NaturePlast
L'expert en Bioplastiques

- Plastics worldwide production



World

2018
359
million tonnes

→

2019
368
million tonnes



Europe (EU28+NO/CH)

2018
61.8
million tonnes

→

2019
57.9
million tonnes

www.plasticseurope.org

16% of plastics are produced in Europe.

- Bioplastics worldwide production

Global production capacities of bioplastics in 2020 (by region)



Source: European Bioplastics, nova-Institute (2020)

More information: www.european-bioplastics.org/market and www.bio-based.eu/markets

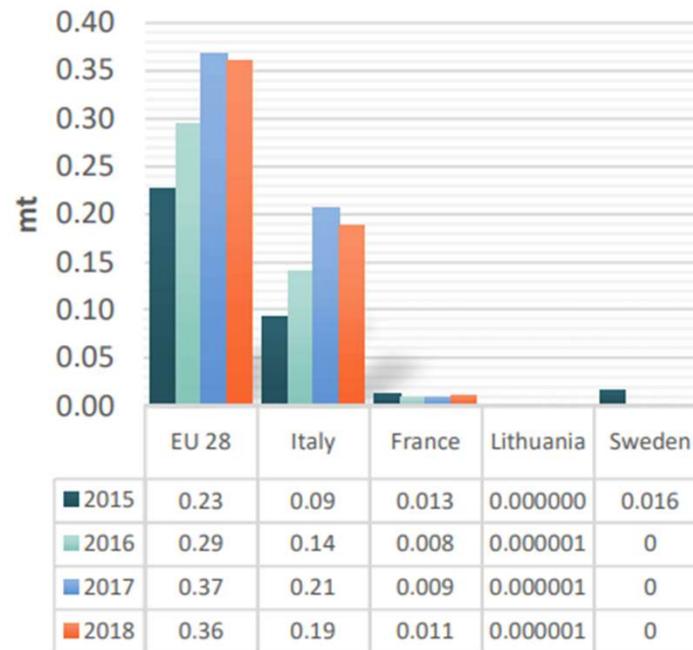
Only 1% of produced plastics are bioplastics.

- French production of bioplastics

350 000 tonnes
de bioplastiques
produits par an par l'Europe

38 000 tonnes
de bioplastiques
produits chaque année en France

<http://www.bioplastiques.org/>



Sold production – natural and modified natural polymers (datas gathered through Bio-Plastics Europe project)

It's **very difficult** to collect datas concerning national production...



- French production of bioplastics

Lactips construit son futur avec une nouvelle usine dans la vallée du Gier

Communiqué de presse

Lactips construit son futur avec une nouvelle usine dans la vallée du Gier

- Accroissement progressif des capacités de production et diversification des marchés adressés
- Revitalisation et extension d'un ancien site industriel régional pour le rendre conforme aux normes écologiques
- Recrutement de nouvelles compétences sur l'ensemble des opérations

Saint-Jean-Bonnefonds, le 9 octobre 2020 – Lactips, l'entreprise française spécialisée dans la production d'un plastique soluble qui ne laisse aucune trace dans l'environnement, entre dans une nouvelle phase de développement industriel avec le démarrage du projet de construction de sa nouvelle usine à Saint-Paul-en-Jarez (42), dans la vallée du Gier. Ce programme, porté par Lactips, fédère de nombreux acteurs industriels, financiers et locaux illustrant la volonté de renforcer le tissu industriel de la France au service de l'innovation.



24. Sep 2020

Total Corbion PLA announces the first world-scale PLA plant in Europe



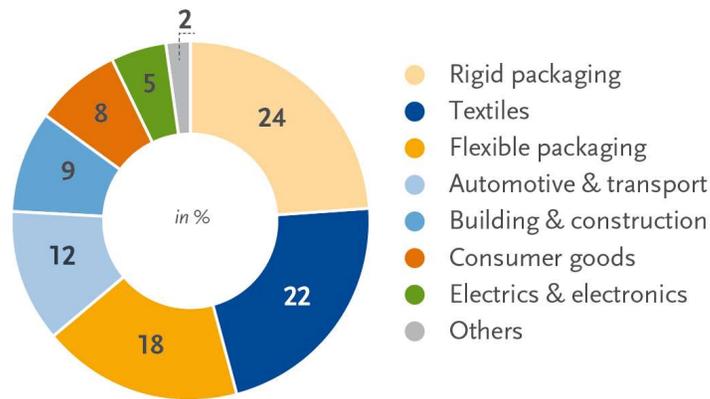
Total Corbion PLA, a 50/50 joint venture between Total and Corbion, announces its intention to build its second PLA plant with a capacity ramping up to 100,000 tons per annum.

This expansion would make Total Corbion PLA the global market leader in PLA, firmly positioned to cater for the rapidly growing demand for Luminy® PLA resins. The new plant is planned to be located on a Total site in Grandpuits, France and to be operational in 2024.

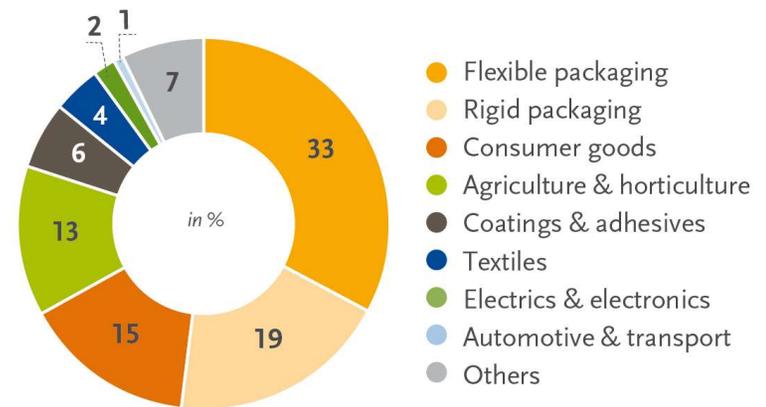
For the moment, production capacity in France are low, but **lots of developments** are in progress.

• The use of bioplastics

Bio-based plastics (by market segment) 2020



Biodegradable plastics (by market segment) 2020



Source: European Bioplastics, nova-Institute (2020). More information: www.european-bioplastics.org/market and www.bio-based.eu/markets

Bioplastics are used in **all sectors**.



Presented by: J-P Cousin
(Filt)

Sharing experience: FIL1860



BIO
PLASTICS
EUROPE



NaturePlast
L'expert en Bioplastiques

filt[®]
— 1860 —

Qui sommes-nous ?



MANUFACTURE FRANCAISE DE FILETS ET DE CORDON DEPUIS 1860
Nets and Braids Manufacturer since 1860, in France

Au savoir-faire unique
A special know-how



TRICOTAGE/knitting



TRESSAGE/Braiding



CONFECTION/Sewing

Notre histoire

1860



1990



Atelier de fabrication 1944

1944

2016



2020



2017

filt
1860

Nos valeurs



Authenticité

Ouverture

Engagement



Genuineness

Openess

Commitment

Filt1860 en quelques chiffres..

+ de 50% du CA à l'export
+ 50% for export

1,7 millions € de CA
1,7 Millions € turnover



23 SALARIES
23 Employees

Présent dans 50 pays
Export through 50 countries

Présent sur plus de 15 secteurs d'activités
Present in more than 15 lines of business

L'équipe Filt1860



Les domaines d'activité



Aquaculture



Filets à provisions/Net bags



Tresse inox/Inox braid



Mèche pour bougies/Candle Wicks



Outdoor



Nautisme/Yachting



Storage/Automobile



Puériculture/Baby sling



Filets de filtration/Treatment plant

Aquaculture



MERCI.



Presented by: Florent Port
(Francofil)

Sharing experience: Francofil



BIO
PLASTICS
EUROPE



NaturePlast
L'expert en Bioplastiques

FRANCOFIL

Expert en fabrication de filaments 3D

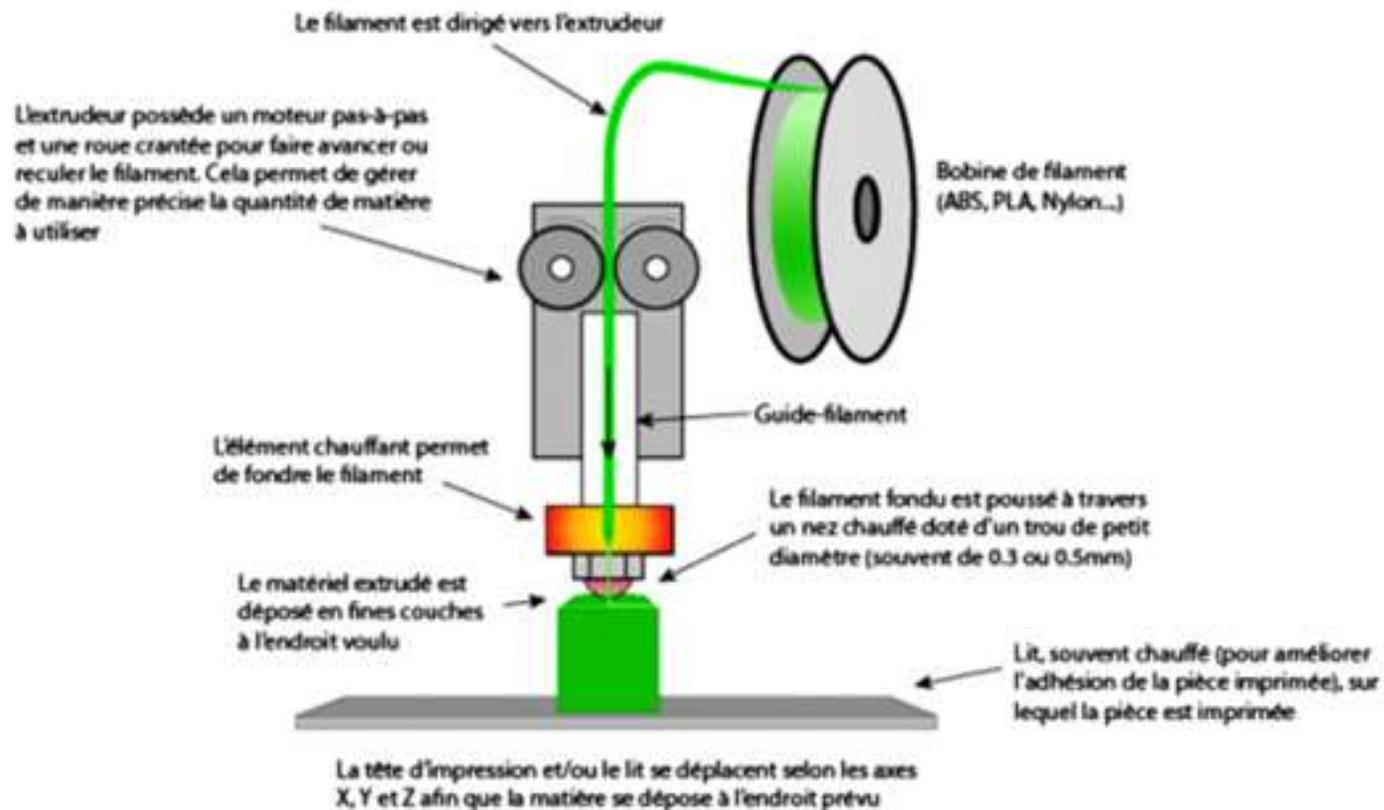


Our activity



PLBIC

FDM process



Our activity


Specific developement


Color on demand


Co-products


Metallic effect


Technical filament



Public

PLA, flagship material for 3D printing

Avantages

- No shrinkage
- Very good Interlayer bonding
- Easy to print (temperature, speed...)
- Usable with every 3D printing machine, no required specificity
- Very good final render quality
- Printed pieces are hard

Inconvenients

- Poor thermal resistance
- Poor mechanical resistance all the more to thin pieces
- No recycling stream today

Some examples of application



Goodies



Prototyping



Finished parts

Co-products filaments

CO-PRODUITS

filaments 100% biosourcés

naturellement colorés par la revalorisation de déchets



créations originales Francofil depuis 2017

Co-products filaments

Drêche de bière



Coquille saint Jacques



Co-products filaments

Quelques exemples:



Thank you

Presented by: NaturePlast

Discussions et questions



BIOPlastics
EUROPE



NaturePlast
L'expert en Bioplastiques

Presented by: Laurent Bélard
(NaturePlast)

To conclude...

BIO
PLASTICS
EUROPE



 **NaturePlast**
L'expert en Bioplastiques



Thank you!

You can subscribe to Bio-Plastics Europe Newsletter here: <https://www.bioplasticseurope.eu/newsletter>

You can contact NaturePlast through our website: <http://natureplast.eu>

