HOW DO COOPERATION MODELS STRENGTHEN STAKEHOLDER ENGAGEMENT FOR CIRCULAR BIO-ECONOMY

VIRTUAL EVENT - 27th January 2022, 10.30-12.30 CET

BIO-PLASTICS EUROPE

Co-funded by the Horizon 2020 Framework Programme of the European Union – Grant Agreement N° 860407

The event will start in a few minutes.
Thank you for joining.

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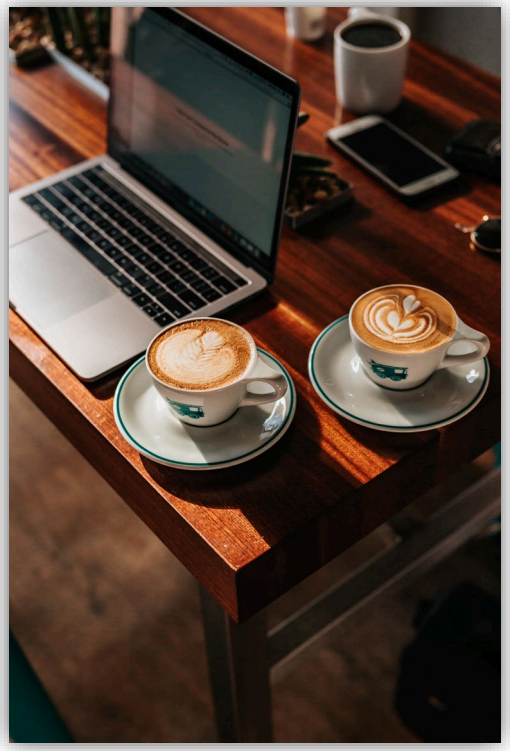
ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA
DEPARTMENT OF MANAGEMENT

HAW Hamburg

TECHNICAL INFORMATION

- ✓ The meeting will be recorded.
- ✓ Questions can be shared here in the chat.
- ✓ Please, switch your microphone and camera off.



BIO PLASTICS EUROPE

AGENDA

Time	Topic	Speaker
10.30-10.35	Welcome	Angelo Paletta (University of Bologna)
10.35-10.40	Welcome Video	Walter Leal (Hamburg University of Applied Science)
10.40-10.50	Stakeholder Engagement in BIO-PLASTICS EUROPE	Jelena Barbir (Hamburg University of Applied Science)
10.50-11.00	Cooperation models in the circular bio-economy: introduction to success stories	Genc Alimehmeti (University of Bologna)
11.00-11.15	The role of joint venture in strengthening expertise in the production of PLA	Maria Giovanna Vetere (NatureWorks)
11.15-11.30	OPENLab: a sharing space for value network enforcement and innovation	Davide Paltrinieri (IMA Group)
11.30-11.45	The contribution of EPR scheme to closing the loop in compostable packaging value chain	Marco Versari (BIOREPACK)
11.45-12.00	From business to policy: the link for fruitful collaboration in EUBP	Christian Schulz (European Bioplastics)
12.00-12.30	Q&A and closing remarks	Eleonora Foschi (University of Bologna)

WELCOME

Angelo Paletta is Head of Department of Management and Full Professor of Business Administration at University of Bologna with expertise in corporate governance, management control, strategic management of economic performance. Within BIO-PLASTICS EUROPE he coordinates working package on upscaling, replication, capacity-making and policy-building.

Walter Leal is Head of Research and Transfer Center Sustainability and Climate Change Management at Hamburg University of Applied Sciences. He has been working in the field of environmental and sustainable development since 1987. His main interest are in sustainable development, climate change and energy. He is coordinator of the BIO-PLASTICS EUROPE project.

AIM

BIO-PLASTICS EUROPE aims to research sustainable strategies and solutions for bio-based products to support the EU Plastics Strategy and a Circular Economy.

The transition to a circular economy goes beyond the borders of a single organization and ***stimulates a cooperation among different actors*** *within a* ***logic of the deconstruction of the value chains, and the reconstruction of new ones*** (Ruggieri et al., 2016).

BIO-PLASTICS EUROPE SPEAKERS

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Jelena Barbir is an expert in the H2020 project management. With over 5 years of experience in the H2020 proposal development, she now leads the BIO-PLASTICS EUROPE project. She has a strong background in sustainable development, conservation of biodiversity and environmental sciences.

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UNIVERSITÀ DI BOLOGNA

Genc Alimehmeti is a Research Fellow at the Department of Management, University of Bologna. His work within BIO-PLASTICS EUROPE project refers to the implementation of a stakeholder engagement strategy aimed at creating cooperation models in the filed of circular bio-economy.

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HOST-SPEAKERS FROM BUSINESS SECTORS

Mariagiovanna Vetere is NatureWorks Global Public Affairs Director and represents the company on public and legislative affairs. Her responsibilities include Government relations, product Circular Economy options, feedstock and biomass sustainability aspects, bioeconomy and interface with relevant industry associations and external stakeholders. She has practical experience in how the legislative process is implemented both in EU and USA.

Davide Paltrinieri is IMA/Ilapak Group Lab Materials Manager at Ima Group. Davide is in charge of builduing up, maintenance and technical leadership of Openlab network of packaging and technological laboratories and testing areas dedicated to the study and investigation of packaging materials properties and their performances on machines produced by all divisions of the company.

HOST-SPEAKERS FROM PUBLIC SECTORS

Christian Schulz is Project Manager at European Bioplastics. He is in charge of the EU project activities which include a. the BBI-JU projects BIOnTop and BIOSUPPACK, in which the properties and fields of application, as well as recycling and recovery possibilities of biobased, degradable food packaging are investigated; b. the H2020 projects - PRESERVE and BIOMAC, where he supports the association in the area of project communication and developments of international standards and legal framework conditions.

Marco Versari is Chair of Biorepack, the first Extended Producer Responsibility scheme for compostable plastics packaging and Member of the administration board of C.I.C. - Consorzio Italiano Compostatori (Italian Consortium of Compost Producers). Marco has been working as Public Affairs Manager in the Italian company Novamont since 1996.

BIO-PLASTICS EUROPE STAKEHOLDER ENGAGEMENT

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

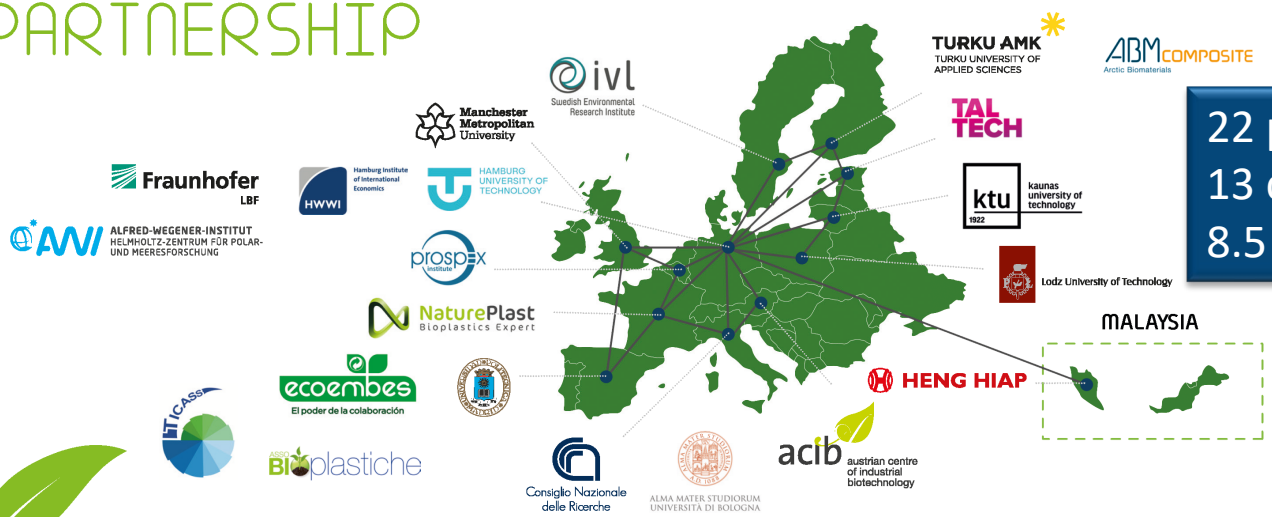
Developing and Implementing Sustainability-Based Solutions for Bio-Based Plastic Production and Use to Preserve Land and Sea Environmental Quality in Europe

October 2019 – September 2023

Project kicked-off in October 2019

After 2 years!

PARTNERSHIP



22 partners
13 countries
8.5 million Euros

CONTACT INFO

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Research and Transfer Centre „Sustainability and Climate Change Management“ (FTZ-NK)
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E-mail: bioplastics@ls.haw-hamburg.de, www.bioplasticseurope.eu

SCAN ME

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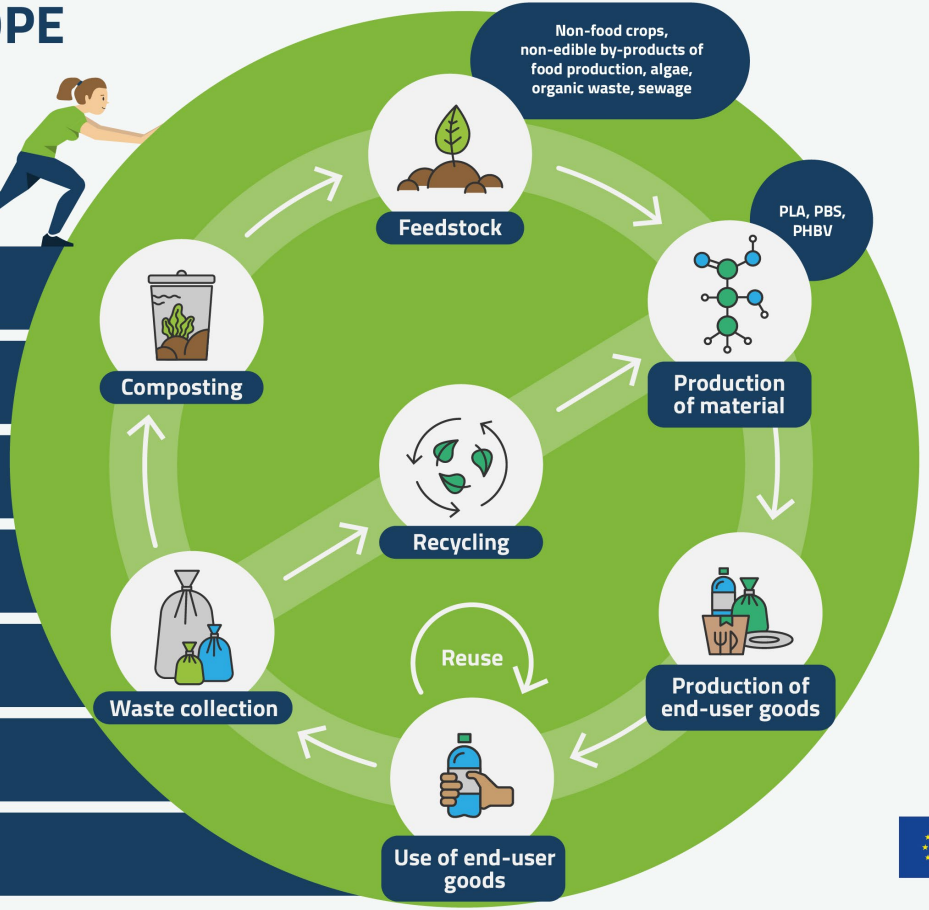
BIO PLASTICS EUROPE

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



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EXPECTED RESULTS

GOAL IS FOR SOLUTION TO BE SUSTAINABLE

BIO PLASTICS EUROPE

EXPECTED RESULTS

FOCUS
Cutlery, Soft and Rigid Packaging,

Agricultural Mulch Film, Toys and Aquatic Materials

- **INNOVATIVE MATERIALS** — Environmental
  to foster and encourage deployment of innovative bio-based and biodegradable materials — First results
- **STAKEHOLDERS ENGAGEMENT** — Social
  to ensure strong commitment of producers, politicians, industrial and private consumers — First results
- **BUSINESS MODELS** — Economical
  to experiment with innovative business models by incorporating circularity and sustainability to maximize the value of materials along the entire value chain — Under development..
- **SAFETY PROTOCOLS** — Environmental/Social
  to ensure the safe use and end-of-life management on innovative bio-based plastics — Under development..

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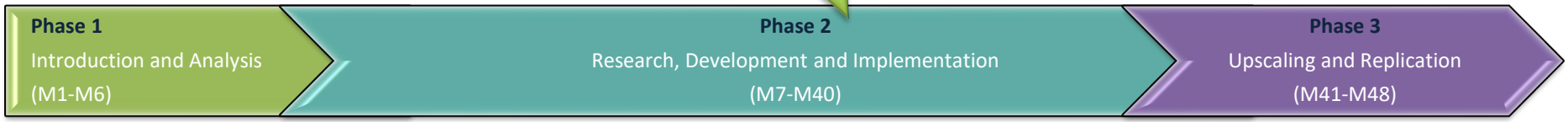
CURRENT STATUS

Where we stand now (M28)….



Sustainability-Environmental

5 Prototypes by M18:
The prototypes under development are:

1. **BPE-SP-PBS ----- Soft Packaging**
2. **BPE-RP-PLA ----- Rigid Packaging + Fishing Crates**
3. **BPE-T-PHBV ---- Toys + Fishing Bait**
4. **BPE-AMF-PLA – Agricultural mulch + Marine Geomaterial**
5. **BPE-C-PLA ------ Cutlery**

WP5

SENT FOR LABORATORY AND FIELD TESTS FOR BIODEGARDATION AND TOXICITY
- Samples prepared-received
- Test Protocols finished
- Tests started 1st of September 2020
- First results obtained autumn 2021

HERE NOW!

ARTIC BIOMATERIALS - Finland ABM COMPOSITE Arctic Biomaterials

NATURE PLAST - France NaturePlast Bioplastics Expert

Selected polymers for the demo applications are polylactic acid (PLA), polybutylene succinate (PBS), and one type of polyhydroxyalkanoate (namely PHBV). All three are commonly produced from renewable sources.

WP3

MODIFICATION of the compounds after 1st round tests

Development of aquatic prototypes:
BPE-FB-PHBV --- Fishing Baits
BPE-MG-PLA ---- Marine Geomaterial
BPE-FC-PLA ------ Fishing Crates

2nd round of TESTS

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WP3

DEMONSTRATORS: Toys, Cutlery, Agricultural mulch

2nd round of MODIFICATIONS

AGENDA

MODIFICATION OF COMPOUNDS ● 4

BIODEGRADATION (11)
- Soil ▲ 2
- Sea ▲ 2
- River ▲ 1
- Composting ▲ 3
- Laboratory Tests ▲ 3

ECOTOXICITY (4)
- Biota ◆ 4

CONTROLLED CONDITIONS (7)
- Structure ■ 3
- Stability ■ 2
- Recyclability ■ 2

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Besides focusing on research….

SOCIAL PROGRESS

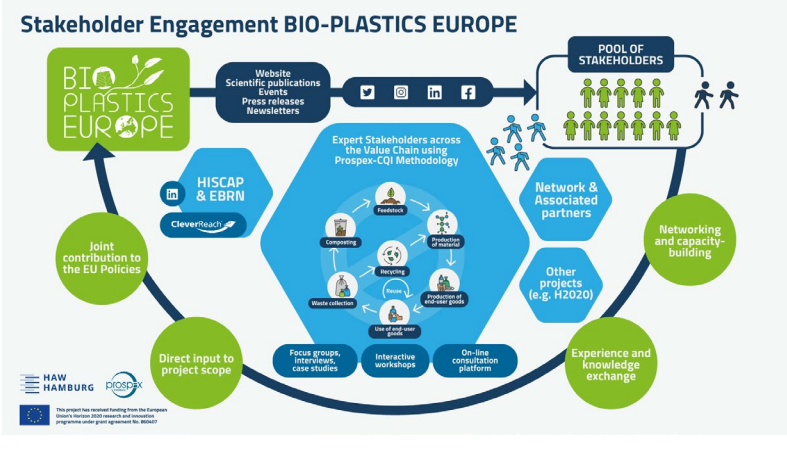
ALL PARTNERS

WHO?

- Scientific communities
- Policy makers
- Municipalities
- Producers and Consumers
- General public

STRATEGIES

1) Stakeholder engagement
2) Network EBRN
3) Network HISCAP



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STAKEHOLDER ENGAGEMENT

12 ONLINE STAKEHOLDER PROMOTION EVENTS

September 2020 – January 2021

PROMOTE PROJECT CLUSTER stakeholders FUTURE INVOLMENT

PROTOCOL defined 5 levels of engagement

Over 780 participants

- 30% companies
- 70% Research institution and public services

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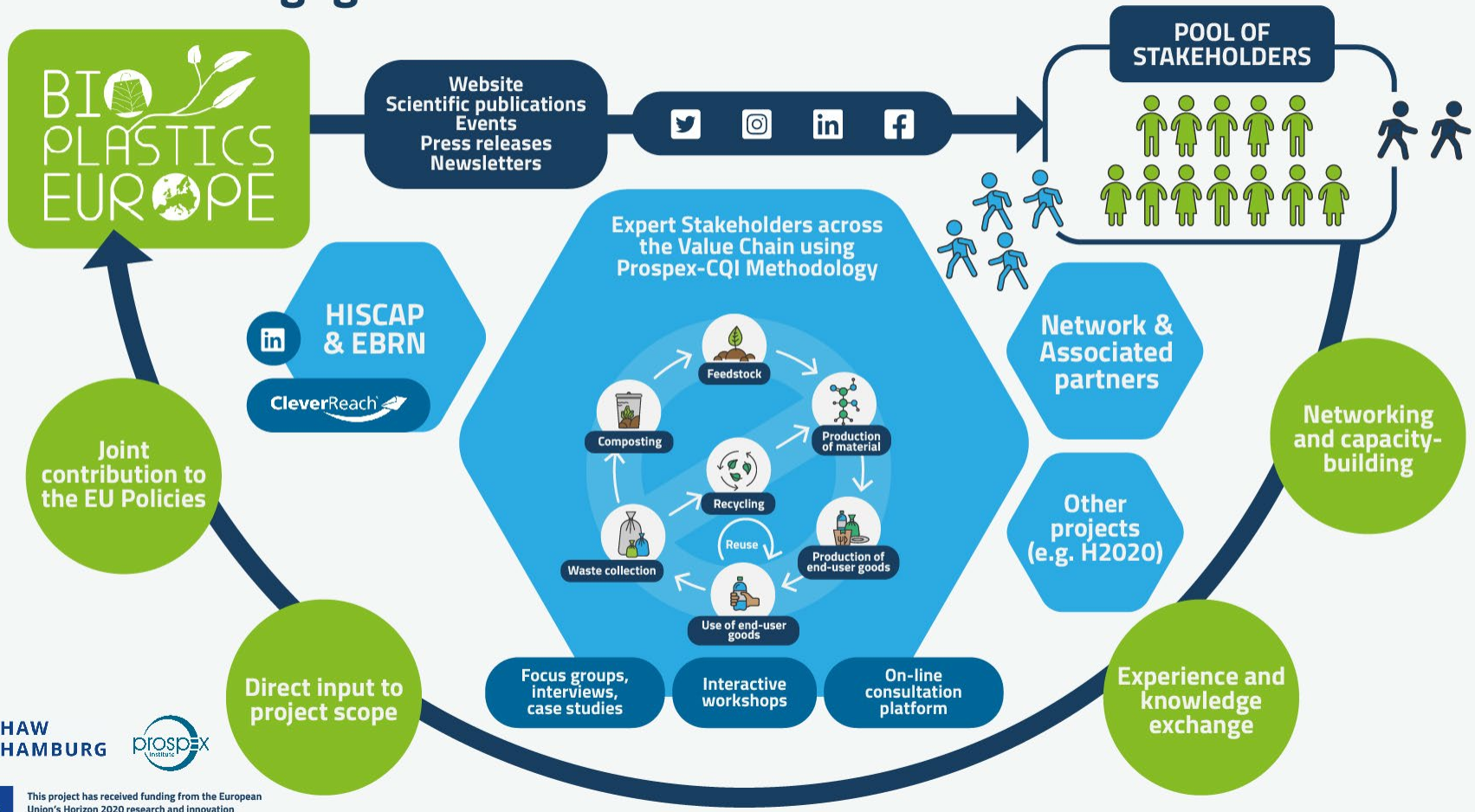
Stakeholder Engagement BIO-PLASTICS EUROPE



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prospex institute

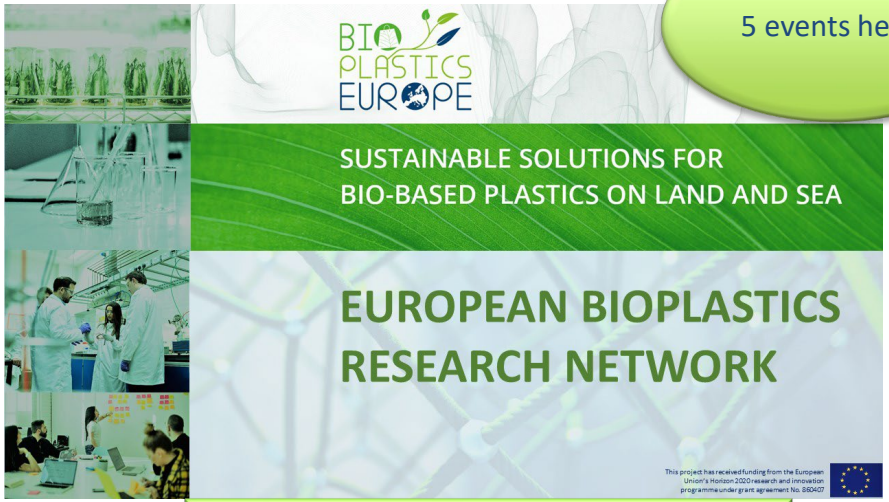
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 860407

STAKEHOLDERS ENGAGEMENT INVITATION

Join us!

https://bioplasticseurope.eu/stakeholderengagement

NETWORKS



5 events held!

LinkedIn: over 590 members
Preparing events
Foster communication
Share experience

4 events held!

LinkedIn HISCAP
Official 55 members
Connect cities
Preparing events
Exchange experience
Offer solutions

BIO PLASTICS EUROPE

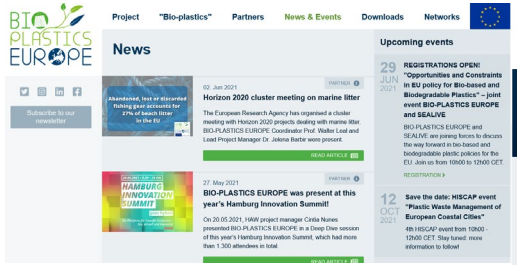
Communication and Dissemination

- Website
- Social media
- Over 15 scientific publications
- Augmented reality (**face-mask filters**)
- EVENTS:

12 events (stakeholders engagement Online Series)

5 EBRN events

5 HISCAP events



..... To be continued .....

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Horizon 2020

COOPERATION MODELS IN THE CIRCULAR ECONOMY: INTRODUCTION TO SUCCESS STORIES

Presented by:
Dr. Genc Alimehmeti (UNIBO Team)

BIO-PLASTICS EUROPE

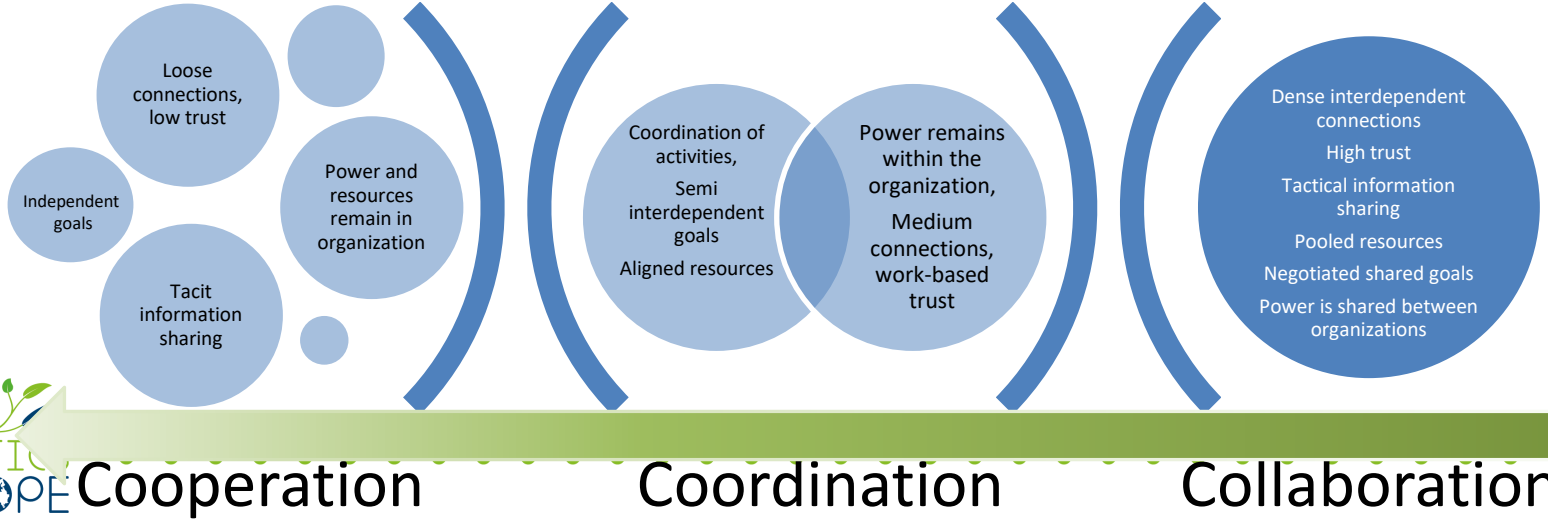
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 860407.
BIO-PLASTICS EUROPE project website: www.bioplasticseurope.eu

Contents

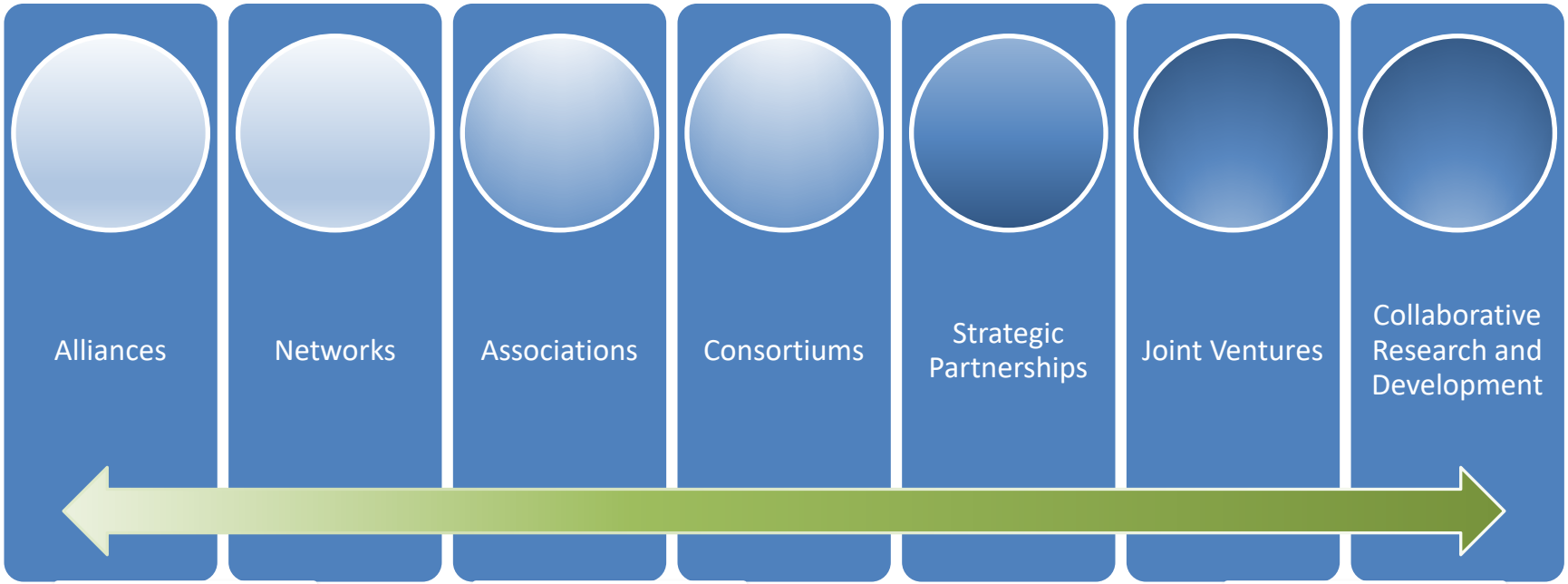
- From cooperation to collaboration
- Models of Cooperation/Collaboration in the Bio-Plastics Industry
  - Alliances
  - Consortiums
  - Networks
  - Associations
  - Strategic Partnerships
  - Joint Ventures
  - Collaborative R&D
- Conclusions

From Cooperation to Collaboration

The level of cooperation has to be seen as a continuum that starts from only the share of tacit information in ‘cooperation’, and spans to the share of power in ‘cooperation’ and ‘collaboration’.



Models of cooperation/collaboration



Alliances

Voluntary arrangements between stakeholders where the scope is, to a large extent, within the partner firms' control. Of the markets in which the two firms have mutual interests, the firms can choose which ones to include in the alliance and which to exclude, thus affecting the realization of private and common benefits.

(Khanna, 1998)

ALLIANCES

✓ Cooperation	Coordination	Collaboration

AIMS

Join forces in order to deal with global concerns and share the goal of strengthening their image and lobbying at EU and international level.

BASIC CHARACTERIZATION

TYPE AND NUMBER OF STAKEHOLDERS INVOLVED	STAKEHOLDERS ROLE	DURATION	FUNDING SOURCES
Multi-stakeholders: *- Firms* *- PROs* *- NGOs* *- Universities* *- Concerned Citizens*	*General and equivalent roles*	*Long term*	*Self-funding, public funds, and other incomes:* *- Public funds* *- Donations* *- Membership fees*

SCOPE	CHALLENGES	INNOVATIVENESS
Broad	*- Political* *- Social/Cultural*	*Incremental*

STRENGTH OF THE COOPERATION MODEL

LEVEL OF CONNECTION	LEVEL OF TRUST	LEVEL OF INFO, RESOURCES, POWER SHARED
Low	Low	Medium

BENEFITS:

- *Increased level of data and information shared*
- *Public awareness*
- *Potential cooperation for regulation changes*

POTENTIAL RISKS:

- *Free riders*
- *Low impacts on existing problems in the short run*

Examples of Alliances

Alliance	Mission
ALLIANCE TO END PLASTIC WASTE	*"Ending plastic waste is ambitious. But it is through cooperation and collective action that this complex problem can be solved. Together with policy makers, non-governmental organisations and local communities, we are driving and delivering transformational change: to end plastic waste in the environment and protect the planet."*
BIO-PLASTICS FEEDSTOCK ALLIANCE	*"To identify the potential impacts of the bioplastic industry and possible measures to mitigate them. In this way, BFA can help move the bioplastic industry's supply chain in a positive direction."*
EU BIOECONOMY ALLIANCE	*"To advance the economic and regulatory framework in Europe to allow for the bio-plastics market to grow and flourish. Therefore, EUBA aims to bring together all relevant partners and stakeholders and serve as both, a knowledge platform for all audiences and a business platform to support a sustainable technological development along the entire value chain as well as a full-scale market introduction of bio-plastics."*
FAIR PLASTIC ALLIANCE	*"Promotes and accompanies the development of inclusive and sustainable initiatives along the whole recycling chain, especially in low-income areas and adverse contexts".*
RETHINK PLASTIC ALLIANCE	*"Rethinking Plastic Alliance is an alliance of leading European NGOs, with thousands of active groups, supporters and citizens in every EU Member State. Rethinking Plastic Alliance brings together policy and technical expertise from a variety of relevant fields, and work with European policy-makers to design and deliver policy solutions for a future that is free from plastic pollution."*

Networks

A network is "a set of organizations (e.g., firms, unions, state agencies, associations) that have developed recurring ties (e.g., buyer-supplier relationships, joint activities, informational ties) when serving a particular market"

(Ebers and Jarillo, 1997)

✓ Cooperation	✓ Coordination	Collaboration

AIMS
Sharing data and information, exchange practices as well as lobbying at national or EU level.

BASIC CHARACTERIZATION			
TYPE AND NUMBER OF STAKEHOLDERS INVOLVED	**STAKEHOLDERS ROLE**	**DURATION**	**FUNDIND SOURCES**
Multi-stakeholders: • *Firms* • *PROs* • *NGOs* • *Universities*	*General and equivalent roles*	*Long term*	*Self-funding, public funds and other incomes:* • *Public funds* • *Membership fees* • *Donations*

SCOPE	CHALLENGES	INNOVATIVENESS
Broad	*- Political* *- Social*	*Incremental*

STRENGTH OF THE COOPERATION MODEL		
LEVEL OF CONNECTION	**LEVEL OF TRUST**	**LEVEL OF INFO, RESOURCES, POWER SHARED**
High	Low	Medium

BENEFITS:
- *Increased level of data and information shared*
- *Increased organizational learning*
- *Expansion of opportunities between members*
- *Political influence in changing regulations*
- *Collective reputation*
- *Public awareness*

POTENTIAL RISKS:
- *Activities non beneficial to all members*
- *Low active contributions from all members*

Examples of Networks

NETWORKS (INCLUDING PLATFORMS)	Mission
PLA-NET PLASTIC NETWORK	PLA-NET is a platform about plastics in freshwater and coastal environments to boost information exchange between various global regions.
EUROPEAN BIO-BASED UNIVERSITIES	The EU Bio-based Universities is composed of six Europe's leading universities in the field of the bioeconomy that aim to intensify their existing cooperation to develop common problem-solving approaches for society's most urgent challenges.
BIC BIOECONOMY PLATFORM	The BIC bioeconomy platform aims to connect European regions and the bio-based industry. The platform focuses on creating local value chains and access to finance, namely helping regions and industry bridge the gap between bio-based investment opportunities and financial incentives at regional level
BIO-PLASTICS ORGANISATIONS NETWORK EUROPE	The Bio-plastics Organisations Network Europe is a collaboration of national bio-plastics organisations from across Europe. The main objective of BON Europe is to push for an economically and politically favourable landscape for bio-plastics in Europe
CIRCULAR ECONOMY FINANCE SUPPORT PLATFORM	The Circular Economy Finance Support Platform is a web tool that continuously showcases new examples of innovative ways in which industry, small- and medium-sized enterprises (SMEs), and other business add to the CE in Europe. The platforms address challenges in the field of agriculture, raw materials and waste etc.
EUROPEAN CIRCULAR ECONOMY STAKEHOLDER PLATFORM	The Platform brings together stakeholders active in the field of the CE in Europe. The platform includes, among the other, applications in environment, industry, research and innovation etc.

Consortiums

"an association of two or more individuals, companies, organizations or governments with the objective of participating in a common activity or pooling their resources for achieving a common goal"

(Watkins et al., 2017)

✓ Cooperation	✓ Coordination	Collaboration

AIMS

- Project-based: Concentrate skills and expertise to find out new disruptive technology and social innovations.
- Waste-based: Establish a financial and legislative scheme to exploit the EPR principles and manage goods in a life cycle perspective.

BASIC CHARACTERIZATION

TYPE AND NUMBER OF STAKEHOLDERS INVOLVED	STAKEHOLDERS ROLE	DURATION	FUNDING SOURCES
• *Project-based: Multi-stakeholders:* - *Firms* - *PROs* - *Universities* - *Other organizations* • *Waste-based:* - *Firms* - *Waste Management companies* - *Municipalities*	*Specific and hierarchical roles*	• *Project-based: Medium-term* • *Waste-based: Long-term*	• *Project-based:* • *Public funding* • *Waste-based:* • *Self funding* • *Other incomes*

SCOPE	BARRIERS TO OVERCOME	INNOVATIVENESS
Specific	*Mainly:* *- Political* *- Technical*	• *Project-based: Radical* • *Waste-based: Incremental*

STRENGTH OF THE COOPERATION MODEL

LEVEL OF CONNECTION	LEVEL OF TRUST	LEVEL OF INFO, RESOURCES, POWER SHARED
High	High	High

BENEFITS:

- *Increased level of data and information shared*
- *Political influence in changing regulations*
- *Contribution to high recycling performance*

POTENTIAL RISKS:

- *Non active participation from stakeholders due to the obligatory nature of the consortium*

Examples of Consortiums

PROJECT CONSORTIUMS	Description
CIRCpack (Horizon 2020 by EU Union)	The CIRCpack project will develop more sustainable, bio-based and recyclable plastics used for the manufacture of a wide range of products: trays, bottles, coffee capsules, jars, car parts, pallets, and new types of multi-layer and multi-material packaging. CIRC-PACK aims to create biodegradable or compostable polyesters as well as smart eco-designs that make sorting easier, with improved recycling technologies that will increase recovery rates and ensure quality.
B-PLAS DEMO (Demo by EIT Climate kic)	The B-PLAS project aims to realize fully automated plant that allows to convert food waste, waste sludge and other organic residues into Polyhydroxyalkanoates (PHA).
SEALIVE (Horizon 2020 by EU Union)	The SEALIVE project will bring advanced bio-based plastic solutions to the market, providing viable alternatives to single-use plastics.
ECOXY (Horizon 2020 by Bio Based Industries Joint Undertaking)	The ECOXY project aims to realize bio-based, recyclable, reshapable & repairable fibre reinforced thermoset composites.
BIO4SELF (Horizon 2020 by EU Union)	The BIO4SELF project aims at fully biobased self-reinforced polymer composites for automotive and home appliances to illustrate the much broader range of industrial applications (E.g. furniture, construction and sports goods).
POLYBIOSKIN (H2020 by Bio Based Industries Joint Undertaking)	The POLYBIOSKIN project wants to broaden the use of biopolymers in biomedical, cosmetic, and sanitary skin-contact applications by developing and validating a 90% or more bio-based and fully biodegradable baby diaper with a skin-compatible surface and a biopolymer-based

Country	WASTE CONSORTIUMS
Austria	**ARA**
Belgium	**FOST-PLUS**
Bulgaria	**ECOPACK**
Cyprus	**GREEN DOT CYPRUS**
Czech Republic	**EKO-KOM**
Estonia	**ETO**
France	**CITEO**
Finland	**RINKI LTD**
Germany	**DER GRUNE PUNKT**
Greece	**HELLENIC RECOVERY RECYCLING CORPORATION**

Examples of Consortiums

BIOREPACK

Consorzio nazionale per il riciclo organico degli imballaggi in plastica biodegradabile e compostabile

CHALLENGES AS STANDALONE

- P • Lack of waste management for specific compostable plastic waste
- E • Higher EPR fee for compostable packaging
- S
- T • Lack of information about biodegradability of compostable plastic packaging waste

CONSORTIUM

Cooperation	Coordination	✓ Collaboration

AIM OF THE COOPERATION

Ensure the recycling of biodegradable and compostable plastic packaging waste together with the organic fraction and govern the development of biodegradable and compostable plastic packaging consistent with separate collection and recycling systems for the bio-waste in industrial composting plants.

BASIC CHARACTERIZATION

TYPE OF STAKEHOLDERS INVOLVED	STAKEHOLDER' ROLE	DURATION	FUNDING SOURCE
Multi-stakeholder: - *Firms* - *Government*	*General*	*Long Term*	*Membership fees* *Public Funds*

SCOPE	CHALLENGES	INNOVATIVENESS
Specific	- *Political* - *Technological* - *Economic*	*Incremental*

STRENGTH OF THE COOPERATION MODEL

LEVEL OF CONNECTION	LEVEL OF TRUST	LEVEL OF INFO, RESOURCES, POWER SHARED
High	*Medium*	*Medium*

BENEFITS OF COOPERATION

- P • Impact for new regulation on waste management system
- E • Lower EPR fee for compostable packaging
- S
- T • Ensuring biodegradation in composting plants

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Associations

One collective structure that has developed to provide the centralized information and coordination that may be required in unconcentrated industries.
(Pfeffer and Salancik, 2003)

✓ Cooperation	✓ Coordination	Collaboration

AIMS
Exchange of information and exert of political influence for the benefit of its members.

BASIC CHARACTERIZATION			
TYPE AND NUMBER OF STAKEHOLDERS INVOLVED	**STAKEHOLDERS' ROLE**	**DURATION**	**ECONOMIC MANAGAMANT (FUNDING SOURCES)**
Multi-stakeholders: • *Firms* • *PROs* • *NGOs* • *Universities*	*General and equivalent role*	*Long term*	*Self-funding and other incomes:* • *Membership fees* • *Donations*

SCOPE	CHALLENGES	INNOVATIVENESS
Specific	*- Political* *- Economic* *- Social* *- Technical*	*Incremental*

STRENGTH OF THE COOPERATION MODEL		
LEVEL OF CONNECTION	**LEVEL OF TRUST**	**LEVEL OF INFO, RESOURCES, POWER SHARED**
High	Low	Medium

BENEFITS:
- *Increased level of data and information shared*
- *Political influence in changing regulations*
- *Collective reputation*
- *Public awareness*

POTENTIAL RISKS:
- *Non alignment of interests between members and the association*

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Examples of Associations

Associations	Description
EUROPEAN BIO-PLASTICS	European Bio-plastics (EUBP) is the European association representing the interests of the industry along the entire bio-plastics' value chain. Its members produce, refine, and distribute Bio-plastics, i.e. plastics that are either biobased, biodegradable, or both.
ASOBIOCOM	Asobiocom is the Spanish association for biodegradable, compostable plastics. It represents the interests of producers of compostable plastics in Spain and functions as interface between the industry, policy makers and authorities, as well as customers and consumers in order to promote the use of these materials.
BIO-BASED AND BIODEGRADABLE INDUSTRIES ASSOCIATION	The Bio-based and Biodegradable Industries Association is the UK association representing companies involved in the production of biodegradable polymers and finished products for the benefit of the environment.
HOLLAND BIO-PLASTICS	Holland Bioplastic is the Holland association that aims to disseminate, share and make knowledge accessible and to connect parties around bio-plastics.
NORDISK BIOPLASTFÖRENING	Nordisk Bioplastförening (Nordic Bio-plastics Organisation) is the Nordic association for bio-plastics companies in Sweden, Norway, Denmark, and Finland. Nordisk Bioplastförening represents the interests of its members covering all parts of the bio-plastics value chain and provides information to all stakeholder groups, including media, policy makers, and the general public.
CLUB BIO-PLASTIQUE - FRENCH ASSOCIATION FOR THE DEVELOPMENT OF BIO-PLASTICS	French Association for the Development of Bio-plastics represents all the players in the

Strategic Partnerships

A strategic partnership is a “formal contractual agreement made by two or more organizations, where no new equity structure or separate joint venture company is created”.

Cooperation	✓ Coordination	✓ Collaboration

AIMS

Sharing unique capabilities and resources to create a competitive advantage in a new product and/or service.

BASIC CHARACTERIZATION			
TYPE AND NUMBER OF STAKEHOLDERS INVOLVED	**STAKEHOLDERS' ROLE**	**DURATION**	**FUNDING SOURCES**
Multi-stakeholder: • *Firms* • *PROs*	*Specific and hierarchical roles*	*Medium term*	*Self-funding:* • *Owners' contributions*

SCOPE	CHALLENGES	INNOVATIVENESS
Specific	*- Technical* *- Economic*	*Radical*

STRENGTH OF THE COOPERATION MODEL		
LEVEL OF CONNECTION	**LEVEL OF TRUST**	**LEVEL OF INFO, RESOURCES, POWER SHARED**
Low	High	Medium

BENEFITS:

- *Potential innovations*
- *Synergies*
- *Access to technology and/or know-how*
- *Access to finances*

POTENTIAL RISKS:

- *Typical business model risks*
- *Expropriation of wealth by one of the partners*

Examples of Strategic Partnerships

PARTNERSHIP	Description
BIO-BASED INDUSTRIES	Bio-based industry is a public-private partnership initially launched by the European Commission under the European Strategy for Bio-Economy and subsequently established officially as a joint undertaking between the European Commission and the Bio-based Industries Consortium (BIC), that focuses on industrial sectors that use biological resources as the main supply source and on other sectors that use biomass as raw material.
BRASKEM & BIOPROMOTIONS	Biopromotions has developed mask straps made of a Braskem's bio-based material (I'm greenTM polyethylene) that significantly reduce the carbon footprint of its product, as well as the use of fossil resources.
BIOBAG & THANTAWAN	The partnership between Norwegian bio-plastics maker BioBag International AS and Thailand's Thantawan Industry Public Co. Ltd is a partner agreement, based on a strong supply where the first gives to the second the volumes and the second ensures to the first the production capacity.
BIOME BIO-PLASTICS & FUTAMURA	Through this partnership, companies have developed a sustainable alternative to multilayer pouches. They have combined Biome's range of biodegradable sealant resins with Futamura's composable NatureFlex cellulose films to create a range of laminated flexible structures, that are compliant with the European industrial composting standard.
EUROPEAN PARTNERSHIP FOR A CIRCULAR BIO-BASED EUROPE (funded by BBI)	The partnership, funded by BBI, aims to support sustainability-driven innovation in creating new local value from waste and biomass. It will focus on helping develop sustainable and climate-neutral technologies and replacing non-renewable fossil and mineral

Joint Ventures

The term joint venture refers to "*the creation of a new organizational entity by two or more partner organizations*"

(Pfeffer and Salancik, 2003)

JOINT VENTURE

Cooperation	Coordination	✓ Collaboration

AIMS

Sharing a common business purpose, including the creation of a new organizational entity that has the autonomy to undertake activities in its own name, without consequences for the parent organizations.

BASIC CHARACTERIZATION

TYPE OF STAKEHOLDERS INVOLVED	STAKEHOLDERS' LEADERSHIP ROLE	DURATION	FUNDING SOURCES
Mono-stakeholder: *- Firms*	*Specific and hierarchical roles*	*Medium*	*Self-funding:* *- Owners contributions*

SCOPE	BARRIERS TO OVERCOME	INNOVATIVENESS
Specific	*- Technical* *- Economic*	*Incremental*

STRENGTH OF THE COOPERATION MODEL

LEVEL OF CONNECTION	LEVEL OF TRUST	LEVEL OF INFO, RESOURCES, POWER SHARED
High	High	High

BENEFITS:

- *Access to capital*
- *Overcome resource limitations*
- *Easily enter new markets*
- *Synergies between partners*
- *Increased business effectiveness*
- *Access to bio-plastics technology*
- *Possible innovations*

POTENTIAL RISKS:

- *Typical business model risks*
- *Eroding of intellectual properties*

Examples of Joint Ventures

Bio-plastics	Description	Year of establishment
CARBOLICE	A joint venture between Carbios and Limagrain Céréales Ingrédients, both headquartered in France	2016
TOTAL CORBION PLA	A joint venture between Total (headquartered in France) and Corbion (headquartered in Netherland), aimed at producing polylactic (PLA) polymers	2016
MATRICA	A joint venture between Novamont and Versalis (Eni) (headquartered in Italy), aimed at producing Matrilox bio-based product in the chemical refinery (converted in bio-chemical refinery) located in Porto Torres.	2011

Collaborative Research and Development

Aform of cooperation among actors that is generally adopted when parties have a mutual interest, whereas contract research concerns the provision of solutions by one party to problems identified by another party.

COLLABORATIVE RESEARCH AND DEVELOPMENT

Cooperation	Coordination	✓ Collaboration

AIMS

Research and develop new products/services and business models.

BASIC CHARACTERIZATION

TYPE AND NUMBER OF STAKEHOLDERS INVOLVED	STAKEHOLDERS' ROLE	DURATION	FUNDING SOURCES
Multi-stakeholders: *- Firms* *- PROs* *- NGOs* *- Universities*	*Specific and equivalent roles*	*Medium*	*Self-funding, public funds and other inc* *Self-funding, public funds:* *- Owners contributions* *- Public funding*

SCOPE	CHALLENGES	INNOVATIVENESS
Specific	*- Technical*	*Radical*

STRENGTH OF THE COOPERATION MODEL

LEVEL OF CONNECTION	LEVEL OF TRUST	LEVEL OF INFO, RESOURCES, POWER SHARED
High	High	High

BENEFITS:

- *Increase the effectiveness and practical implications of research in bio-plastics*
- *Generate innovation*

POTENTIAL RISKS:

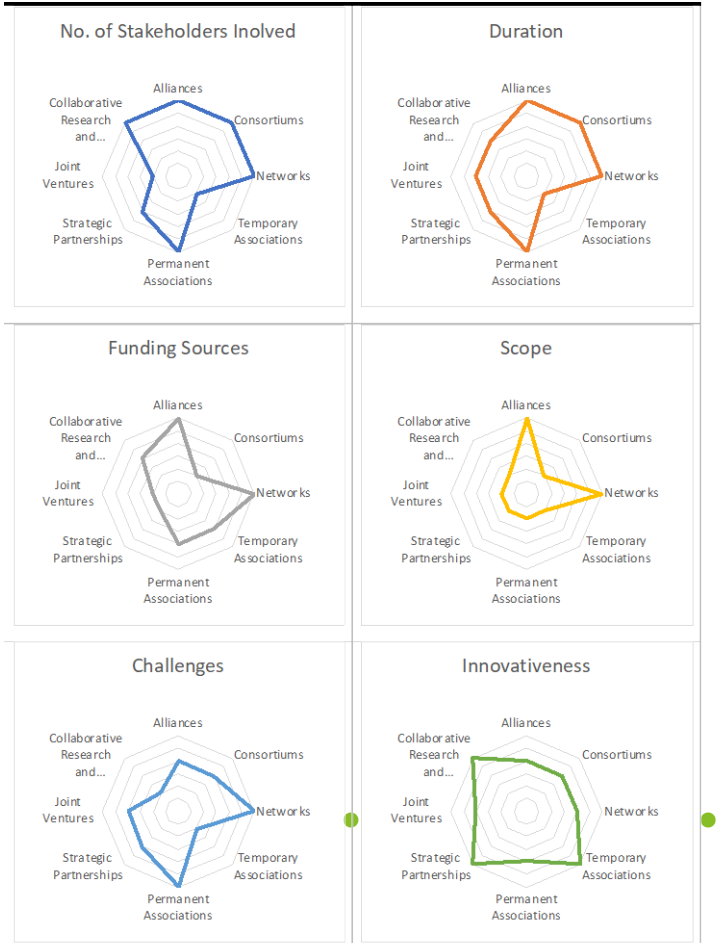
- *Typical business model risks*
- *Eroding of intellectual properties*

Examples of CR&D

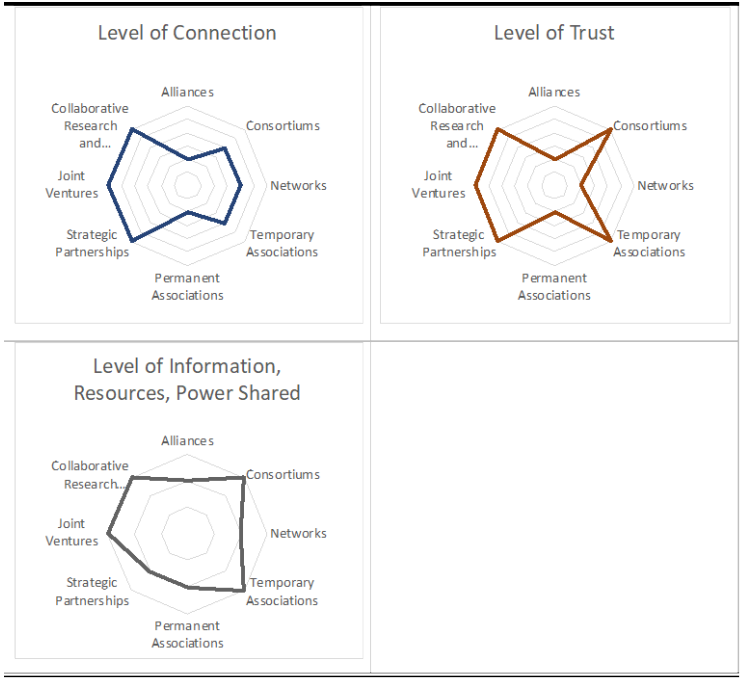
Collaborative Research and Development	Description
NOVA CHEMICALS CORPORATION & ENERKEM INC.	The main aim of this joint research is to explore turning non-recyclable and non-compostable municipal waste into ethylene.
CIRCpack (Horizon 2020 by EU Union)	The CIRCpack project will develop more sustainable, bio-based and recyclable plastics used for the manufacture of a wide range of products: trays, bottles, coffee capsules, jars, car parts, pallets, and new types of multi-layer and multi-material packaging. CIRC-PACK aims to create biodegradable or compostable polyesters as well as smart eco-designs that make sorting easier, with improved recycling technologies that will increase recovery rates and ensure quality.
B-PLAS DEMO (Demo by EIT Climate kic)	The B-PLAS project aims to realize fully automated plant that allows to convert food waste, waste sludge and other organic residues into Polyhydroxyalkanoates (PHA).
SEALIVE (Horizon 2020 by EU Union)	The SEALIVE project will bring advanced bio-based plastic solutions to the market, providing viable alternatives to single-use plastics.
ECOXY (Horizon 2020 by Bio Based Industries Joint Undertaking)	The ECOXY project aims to realize Bio-based, recyclable, reshapable & repairable (3R) fibre reinforced thermoset composites.

Comparing Models

Basic Characterization



Strength of the Cooperation Model



Thank you for the attention

genc.alimehmeti@unibo.it

NatureWorks

The role of joint ventures in producing innovative materials

Mariagiovanna Vetere
Global Public Affairs Director – NatureWorks
January 27th ,2022

Back in 1989 we had a crazy idea…

https://youtu.be/EVmY9nnXM6o

Our History

1989 — Project to commercialize PLA begins as part of a Cargill initiative to find alternative uses for sugar

1994 — Pilot PLA plant opened in Savage, MN

2002-2003 — Lactic acid (by Cargill) and Ingeo PLA (by NatureWorks) plants open in Blair, NE

2004 — First integrated run (lactic acid through Ingeo PLA) at Blair plant

2009 — Open state-of-the-art Ingeo Applications Development Facility in Savage, MN

2011 — Equity investment from PTTGC for 50% stake in NatureWorks

2012 — Blair plant capacity and product capability expansion to 150 kta

2015 — Published Ingeo LCA passes rigorous 3rd-party peer review

2016 — NatureWorks opens new $1M R&D facility for fermentation to lactic acid research

2020 — Announced additional lactide monomer purification technology to expand the availability of Ingeo biopolymer from Blair facility

2021+ — NatureWorks passes final authorization to construct a fully integrated 75kta Ingeo PLA manufacturing facility in Thailand

In 2016 the US planted…

ingeo™ by NatureWorks

93.4
million acres
of field corn

0.6
million acres
of sweet corn

= 1 million acres

U.S. Corn Statistics for 2016/2017

94 Million
acres planted

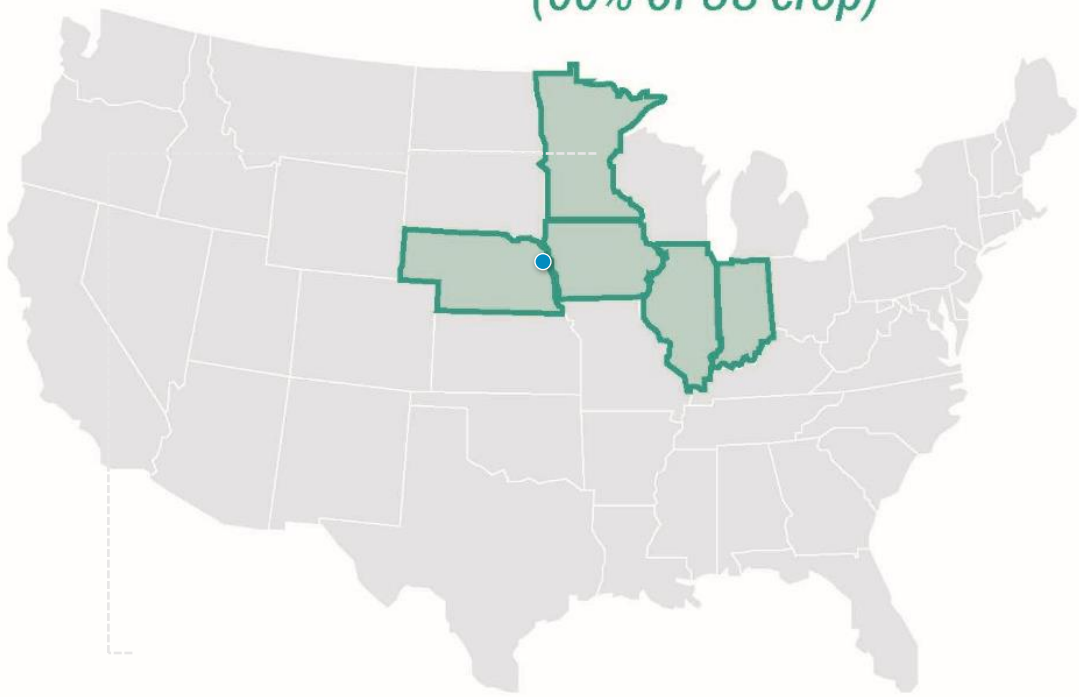
15.2 Billion
bushels harvested

8.62 Billion
bushels are in storage
(59% on farm)

1 bushel = 56 lbs = 25.4 kg

Sources: World of Corn Report 2016, National Corn Growers Association
USDA Grain Stocks report, 03/2017

TOP 5 PRODUCERS
IA, IL, NE, MN, IN
(66% of US crop)



NatureWorks' corn is supplied by farmers within 50 miles / 80 km of our manufacturing facility in Blair, NE

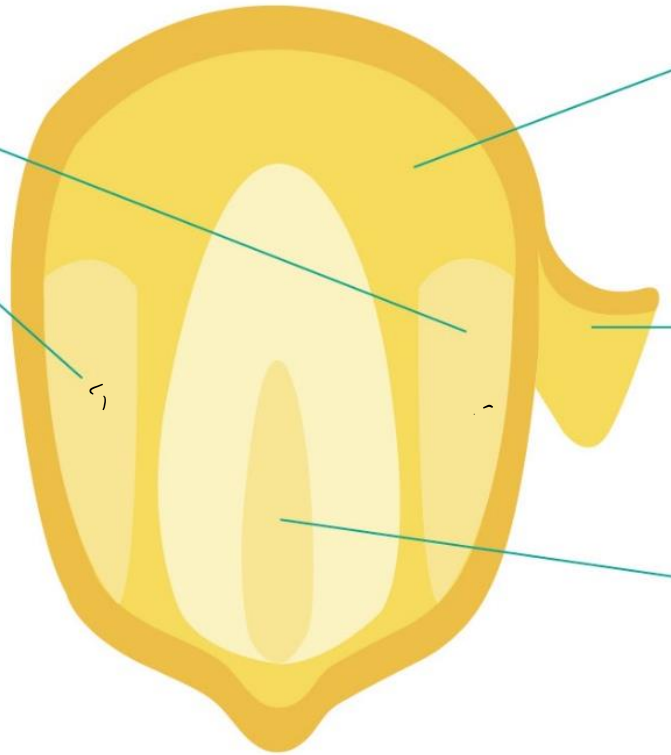
Components of Yellow Dent Corn

Starch
65%

Dextrose

Fermentation-based Derivatives

Sweeteners



Gluten Meal
5.3%

Hull & Fiber
23%

Germ
6.7%

It’s not food or bioplastic. It’s food AND bioplastic.

ingeo™ by NatureWorks

What do you get from one bushel of corn?

all of these

0.7
kg of corn oil
cooking oil, margarine, mayonnaise, salad dressing, shortening, soups, printing ink, soap, leather tanning

AND

1.2
kg of gluten meal
amino acids, fur cleaner, poultry feed

AND

6.1
kg of gluten feed
livestock & poultry feed, pet food

and

one of these

14.3
kg of starch
adhesives, batteries, cardboard, crayons, degradable plastics, dyes, plywood, paper, antibiotics, chewing gum

OR

10.6
liters of fuel ethanol
motor fuel additive, alcoholic beverages, industrial alcohol

OR

15
kg of sweetener
shoe polish, soft drinks & juices, jams & jellies, canned fruit, cereal, licorice, peanut butter, ketchup, marshmallows

OR

10.2
kg of Ingeo biopolymer
nonwovens, food packaging, serviceware, durables, apparel, films, home textiles, cards

1. National Corn Growers Association, World of Corn Report 2017
2. Global crop: USDA, FAS Grain: World Markets and Trade, 2017

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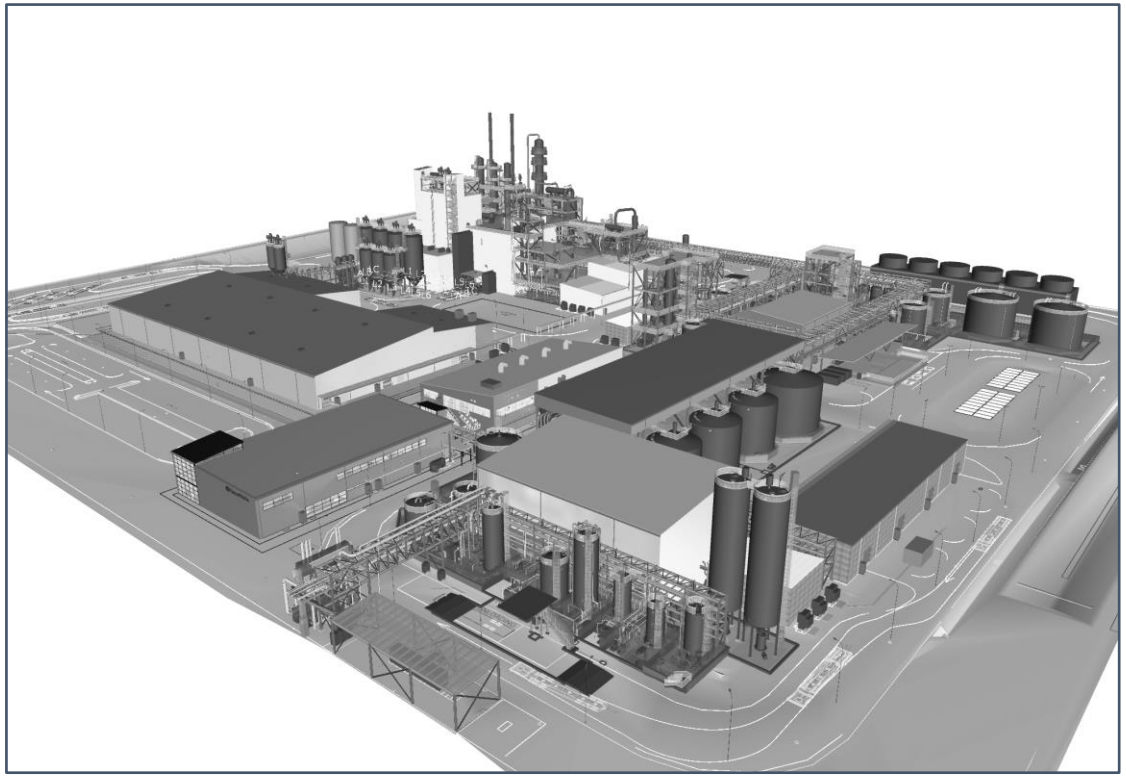
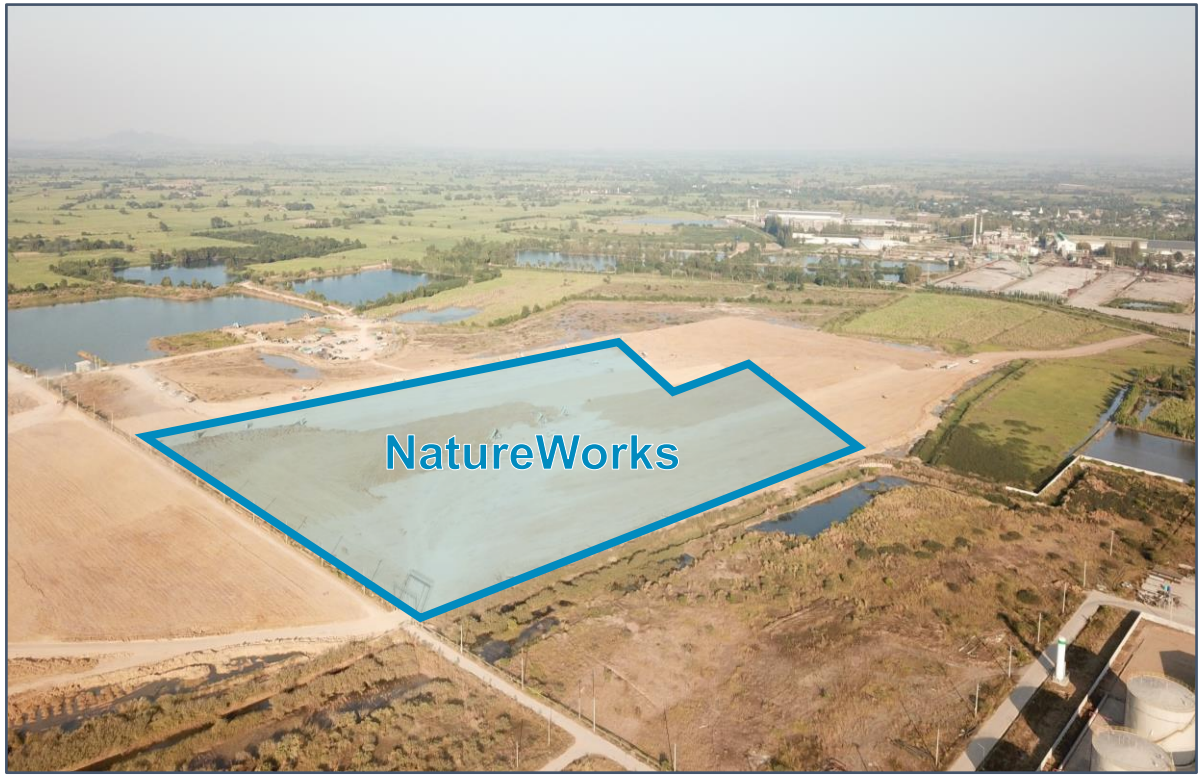
New Fully Integrated Ingeo Manufacturing Plant in Thailand



Rendering of the constructed fully integrated 75kta Ingeo PLA manufacturing facility in Thailand

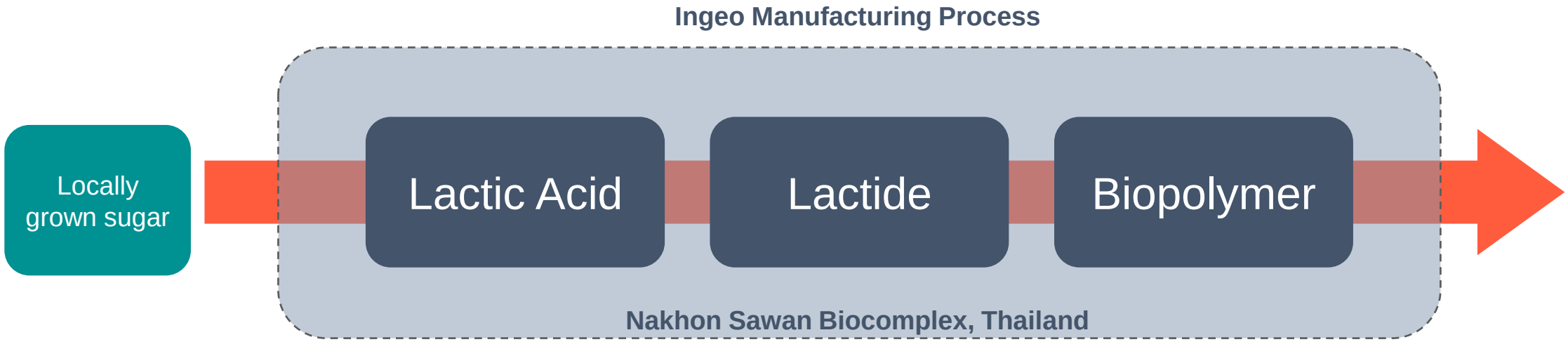


Pre-construction site of the new Ingeo PLA manufacturing facility

- 75,000 tons per year
- Dedicated Ingeo manufacturing with integrated lactic acid, lactide, and polymer manufacturing sites
- $600 million investment by NatureWorks

- Located in the Nakhon Sawan Biocomplex in Nakhon Sawan Province, Thailand
- Opening in 2024

New Ingeo manufacturing complex will be a “sugar forward”



All three facilities will be owned and operated by NatureWorks

Production of Ingeo at NBC Expected to Begin in 2024

September 2020
NatureWorks announces lactide production expansion at Blair facility

May 2021
Thailand Board of Investment approves NatureWorks application to invest in new Ingeo PLA manufacturing site at the Nakhon Sawan Biocomplex (NBC)

August 2021
NatureWorks passes final authorization milestone to invest $600 million for the construction of a new Ingeo PLA manufacturing facility

Q2 2022
Groundbreaking

2024
Opening of the Ingeo Manufacturing Facility at NBC

NatureWorks

Thank you.

From business to policy: the link for fruitful collaboration in EUBP

Christian Schulz, EU Project Manager, European Bioplastics (EUBP)

BIO-PLASTICS EUROPE Virtual Meeting: How do cooperation models strengthen stakeholder engagement for the circular bio-economy | 27.01.2022 | Online

“The transition to a circular economy goes beyond the borders of a single organization and stimulates a cooperation among different actors within a logic of the deconstruction of the value chains, and the reconstruction of new ones.”

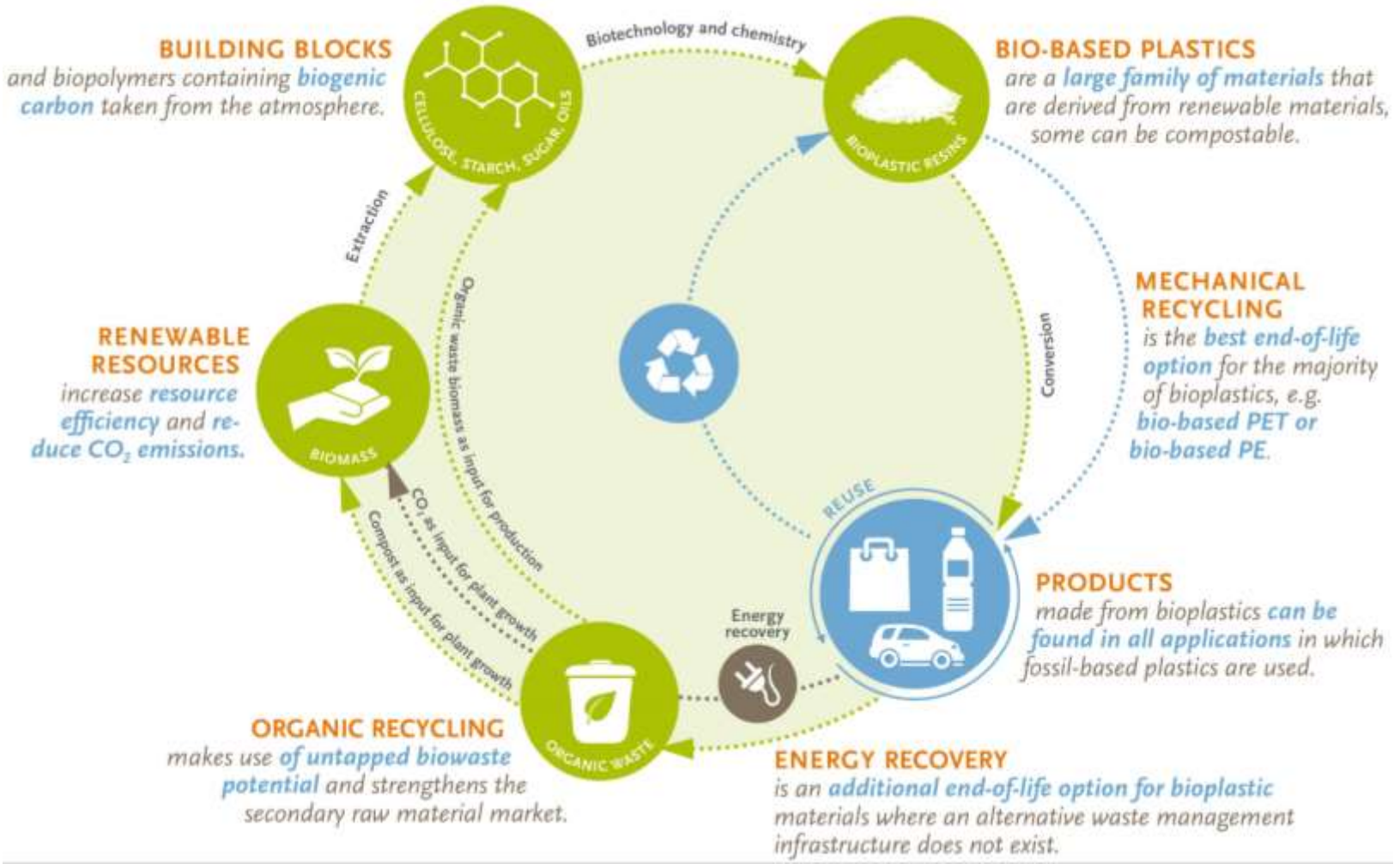
– *Ruggieri et al. (2016)*
A Meta-Model of Inter-Organisational Cooperation for the Transition to a Circular Economy

Our vision: Bioplastics drive the evolution of plastics

- **Our Vision**
  Bioplastics drive the evolution of plastics and contribute significantly to a sustainable society.

- **Our Mission**
  European Bioplastics' mission is to align the bioplastics value chain and work in partnership with various stakeholders towards a favourable landscape enabling the bioplastics market to grow.

Our bioeconomy strategy: Bioplastics life cycle model



European Bioplastics at a glance

25 years of bioplastics experience

- European Bioplastics represents the interest of the bioplastics industry along the entire value chain in Europe.

- **Foundation of IBAW**
- Biodegradable polymers
- Germany

- Name change to **European Bioplastics**
- Bioplastics incl. biobased & biodegradable
- Europe

- Networking on **EU & Member State** level

Networks and Networking hub

- Bioplastics Organisations Network (BON) Europe
- European Bioeconomy Alliance (EUBA)
- Annual EUBP Conference (30/11 – 01/12/2021)
  Largest bioplastics industry forum (more than 350 participants) in Europe which will can also used for project dissemination

www.european-bioplastics.org/events/

European Bioeconomy Alliance
ASOBIOCOM
BBiA
Club Bio-plastiques
HOLLAND BIOPLASTICS
NORDISK BIOPLASTFÖRENING

Activities & services

- EUBP is a knowledge partner and business network for companies, experts, and all relevant stakeholder groups of the bioplastics industry
- **Our activities and services at a glance:**

> Gathering insights and knowledge about the industry

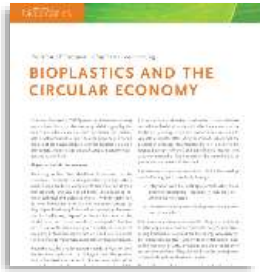
> Formulating & communicating industry's key positions

> Representing members' policy interests in Europe

> Connecting members with potential business partners

> Facilitating a dynamic stakeholder dialogue

> Supporting standardisation, certification & labelling: EUBP owns the Seedling mark for (industrial) compostability awarded by certifiers DIN CERTCO and Vinçotte



Members 2021

Supporting members

Renewable raw material Green chemistry
Agrana Staerke
Alcogroup
Allessa
Cargill
Ingevity
Neste Corporation
Total Corbion PLA

Bioplastics manufacturers and auxiliaries
A.P.I.
Avantium
BASF
BIO-FED
BIOTEC
Bio Valore
Carbiolice
CJ Europe
Corbion
Danimer Scientific
DuPont
FKuR Kunststoff
Futerro
Futamura Group
Indochine Bio Plastiques
Jinhui Zhaolong High Tech.
Kaneka Corporation
Kimberly-Clark
Microtec
Mitsubishi Chemical Europe
NatureWorks
Novamont
Promateris
Sukano
Sidaplax
Sulapac
Taghleef Industries
TIPA Corp
Toro Gips
United Biopolymers
Zhejiang Hisun Biomaterials

Bioplastics distribution
BROSBIO

Plastic converters
BioBag International
Fiberweb Berlin
KIK Compounds
Kompuestos
Polifilm
SIBUR
SIG International Services
SPhere

Machinery, engineering, equipment
Coperion
Sulzer Chemtech

Research, consulting and others
AIMPLAS
C.A.R.M.E.N.
COBRO
DIN CERTCO
Fraunhofer ISC
Fraunhofer LBF
IFA Tulln
IfBB
Institut für Kunststofftechnik
ISCC
nova-Institut
Organic Waste Systems
Packbridge
ProfiKomp
Roundtable on Sustainable Biomaterials
TÜV AUSTRIA BELGIUM
University of Bologna

Industrial end user
Cofresco Frischhalteprodukte
Danone
Kimberly-Clark
Lavazza
Reckitt Benckiser
Tetra Pak

May 2021

Board and management of European Bioplastics

Francois de Bie
(TotalEnergies Corbion)
Chairman

Mariagiovanna Vetere
(NatureWorks)
Vice Chairperson

Lars Börger
(Neste)
Vice Chairperson

Erwin Lepoudre
(Kaneka)
Treasurer

Jean-Marc Nony
(SPHERE)

Michael von Ketteler
(BASF SE)

Patrick Zimmermann
(FKuR)

Hasso von Pogrell
(EUBP)
Managing Director

European Bioplastics – management and committees

Hasso von Pogrell
Managing Director

Constance Ißbrücker
Head of Environmental Affairs

Katharina Hinse
Environmental Affairs Manager

Joanna Dupont-Inglis
Head of EU Affairs

Maja Lisac
EU Affairs Manager

Denise Valdix
Event Manager

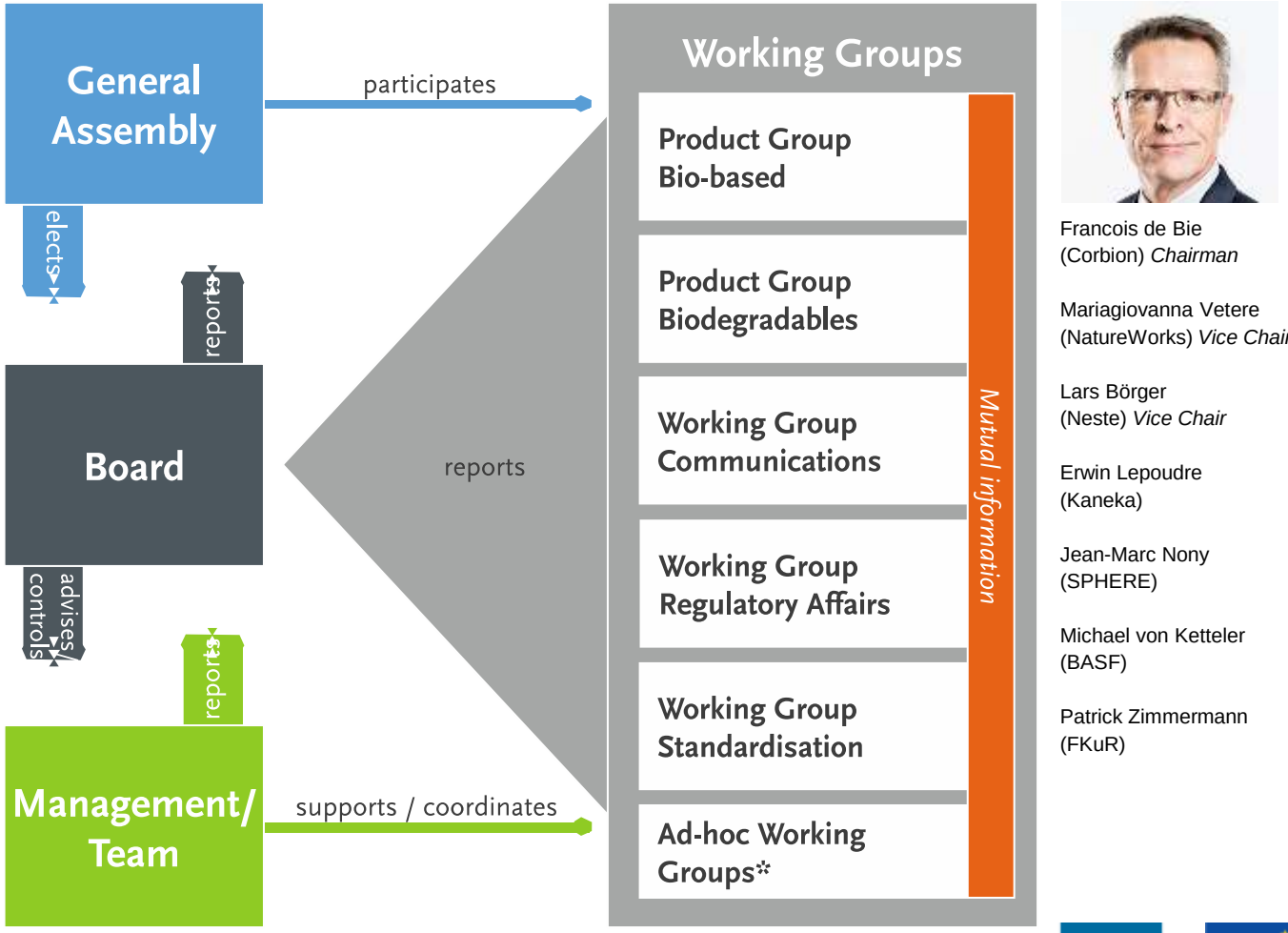
Oliver Buchholz
Head of Communications

Marike Fronk
Communications & Environmental Affairs

Christian Schulz
EU Project Manager

Katrin Schwede
EU Projects & Sustainability Communication

Benita Zabel
Office Manager



Francois de Bie
(Corbion) *Chairman*

Mariagiovanna Vetere
(NatureWorks) *Vice Chair*

Lars Börger
(Neste) *Vice Chair*

Erwin Lepoudre
(Kaneka)

Jean-Marc Nony
(SPHERE)

Michael von Ketteler
(BASF)

Patrick Zimmermann
(FKuR)

Monitoring and supporting the regulatory landscape
(selection)

EU Taxonomy / sustainability criteria for EU funding and investment

Review of sustainability criteria for products to receive funding & investment through EU funds. Potential risks for bioplastics sector to be excluded from these criteria needs to be averted.

>> EUBP actively monitors and contributes to process.

(adoption expected for 2022)

EUROPEAN WASTE LEGISLATION / Upcoming revision of the PPWD Essential Requirements

Aims to ensure all packaging is reusable or recyclable by 2030.

>> The review should seek to:

- **Encourage use of bio-based feedstocks for packaging equivalent to recycled content**
- **Clarify the definition of "recyclability" or "recyclable" to encompass organic recycling**

(**expected beginning 2022**)

POLICY FRAMEWORK for bio-based and biodegradable/compostable plastics

Planned Communication on a future Policy Framework for bio-based, biodegradable and compostable plastics as a key deliverable of the nCEAP, Plastics Strategy, and Green Deal.

>> EUBP actively monitors and contributes to the ongoing discussions.

(**expected beginning of 2022**)

Supporting standardisation, certification & labelling

- EUBP is a member of the relevant standardisation committees at DIN and CEN level to monitor and participate in the review of existing as well as in the development of new standards

EU level	•CEN/TC 249 WG 9 - Biobased and biodegradable plastics •CEN/TC 249 WG 24 - Environmental Aspects •CEN/TC 261 SC 4 WG 2 - Degradability and organic recovery of packaging and packaging materials (this group is in duty of EN13432) •CEN/TC 411 Bio-based products WGs 1,3,4,5 (currently few activities)
International	•ISO/TC 61 SC 14 WG 2 „Bio-based plastics“ and „WG 3 Biodegradable Plastics“
National level	•On national level: DIN Committees „Biodegradable Plastics“ and „Degradable Packaging“ mirroring the activities on CEN and ISO level

- We support independent third party certification according to acknowledged standards
- EUBP owns the Seedling mark for (industrial) compostability awarded by certifiers DIN CERTCO and Vinçotte
- We provide comprehensive information on standardisation, e.g. in our fact sheet on relevant industry standards and labels (download on our website)

Networks in Europe

Bioplastics Organisations Network (BON) Europe:

- Inaugurated on 1 April 2015 in Berlin
- EUBP (organiser) and national bioplastics associations
- Objectives: exchange of information between EU and Member State level, harmonisation of standardisation, facilitation of legislation

European Bioeconomy Alliance (EUBA):

- 12 European Associations: EuropaBio, BIC, Copa-Cogeca, CEFS, Starch Europe, CEPF, Primary Food Processors, CEPI, Forest-based Sector, FEDIOL, European Renewable Ethanol
- Lead the transition towards a sustainable, innovative, energy secure post-petroleum society while decoupling economic growth from resource depletion and environmental impact

ASOBIOCOM
ASOCIACIÓN ESPAÑOLA DE PLÁSTICOS BIODEGRADABLES COMPOSTABLES

BELGIAN BIOPACKAGING

BBIA
BIO-BASED AND BIODEGRADABLE INDUSTRIES ASSOCIATION

Club Bio-plastiques

HOLLAND BIOPLASTICS

NORDISK BIOPLASTFÖRENING

European Bioeconomy Alliance

Verbund kompostierbare Produkte e.V.

INTERNATIONAL NETWORK

For many years now, EUBP has maintained relations with bioplastics associations outside of Europe. Although EUBP considers its main field of activities to be within the European Union, it is also important to know what is going on around the world. As many of our members are active in a globalised market, EUBP strives for a continuous exchange of information to harmonise actions (standards, policies, certification) and enhance the global market for bioplastics. The following bioplastics organisations and interest groups are part of our international networking program:


Australasian Bioplastics Association (ABA)


ABICOM


Asociación Nacional de Industrias del Plástico (ANIPAC)


Biodegradable Materials Group (BMG)


Central Institute of Plastics Engineering & Technology (CIPET)


Israel Bioplastics

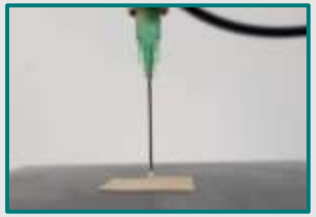

Japan Bioplastics Association (JBPA)


Thai Bioplastics Industry Association (TBIA)


The Biodegradable Products Institute (BPI)
Bioplastics Council /SPI

Current research activities and intra-project cooperation

Innovative packaging solutions



- **BIOnTop** – Novel packaging films and textiles with tailored end of life and performance based on bio-based copolymers & coatings
  - BBI-JU: 21 partners; 8 countries; 5.4 million €; Lead: AIMPLAS
  - Duration: June 2019 to May 2023
  - https://biontop.eu/

- **PRESERVE** – High performance sustainable bio-based packaging with tailored end of life and upcycled secondary use
  - H2020: 26 partners; 10 countries; ~8 million €; Lead: IRIS
  - Duration: January 2021 to December 2024
  - https://www.preserve-h2020.eu/

- **BioSupPack** – Demonstrative process for production & enzymatic recycling of environmentally safe, superior & versatile PHA-based rigid packaging solutions
  - BBI-JU: 17 partners; 8 countries; 8.8 million €; Lead: AIMPLAS
  - Duration: June 2021 to November 2024
  - https://www.biosuppack.eu/

- **BIOMAC** – European Sustainable Bio-based nanoMAterials Community
  - H2020: 33 partners; 12 countries; 16.7 million €; Lead: University of Thessaloniki
  - Duration: January 2021 to December 2024
  - https://www.biomac-oitb.eu/

European Commission | Horizon 2020 European Union funding for Research & Innovation

Cross-project cooperation

- **Project sibling cooperation** dealing with the same funding call (Upcycling technologies for sustainable recycling or biological degradation; CE-BIOTEC-09-2020: UPLIFT, upPE-T, PRESERVE)

"Cooperation makes stronger": In total, the project siblings comprise 58 partners from 19 European countries with a total budget of 23.3 million €.

- **Project-initiated networks** helping to cluster similar initiatives

BIO-PLASTICS EUROPE
HISCAP Network of Historic Cities against Plastic Waste
EBRN European Bioplastics Research Network

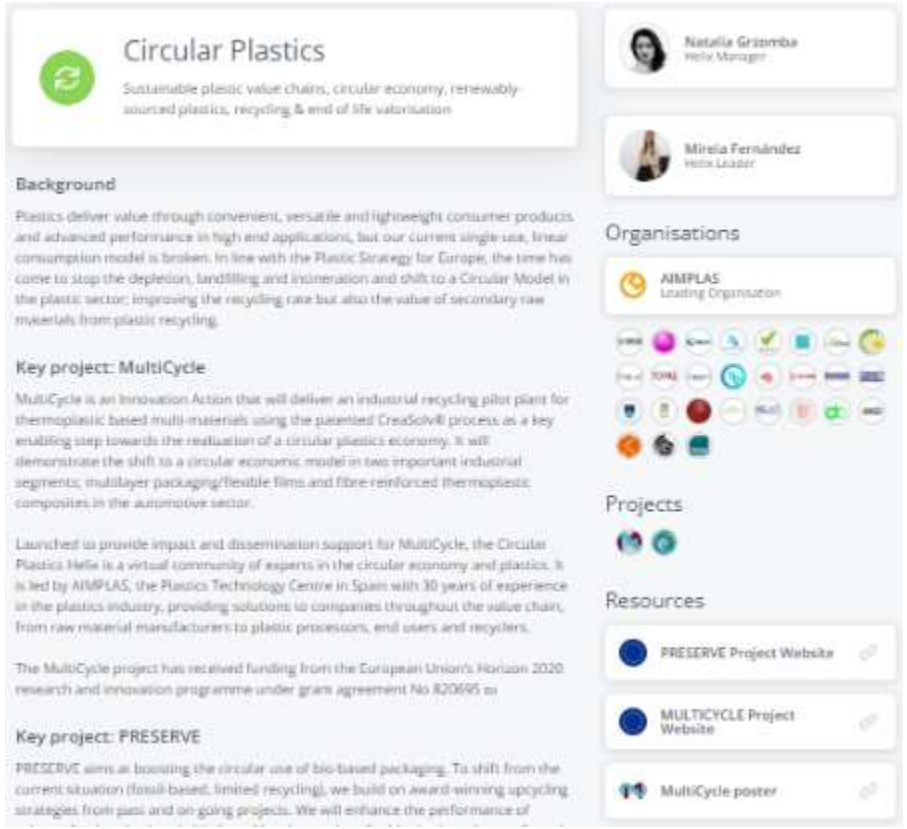
BIOVOICES
The European Bioeconomy Network is a proactive alliance of 101 EU funded projects dealing with Bioeconomy promotion, communication and support.

Building upon expertise and experienced networks: Upscaling of biopackaging

Crowdhelix

External partners

european bioeconomy university



„Historical“ networks

REFUCOAT

WHEYLAYER

ECOAT

ProCell

BIOnTop

MULTICYCLE

Decoat

Plast-i-Com

TERMINUS

BIO4SELF

FIBRILTEX

E-SLEEVE

OPEN-BIO

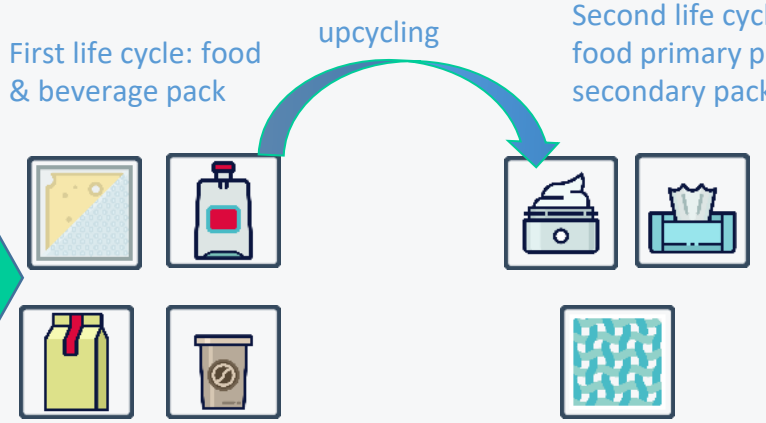
SEALIVE

FlexFunction2Sustain

BioActiveMaterials

Micellar Adhesive

TRL3-5



Representative of over 70% of the packaging market

TRL5-6

Overview on bioplastics research funding on a European level

- European Bioplastics monitors relevant projects concerning biobased and biodegradable plastics, its material development, recycling, promotion etc.
- Monitoring contains data of different EU funding (such as Horizon Europe, CBE-JU, LIFE…) for **more than 130 projects** with direct link to the area of bio-based/biodegradable plastics are or have been performed between 2007 and 2020.

- Average project funding: **~ 6,950,000 €**
- Average funding rate: **~ 85.2 %**
- **Total: ~ 903,980,000 €**
- **Annual funding: ~ 69,540,000 € / a**

Data may not cover every project ever funded, but gives an educated guess.

Benefits of becoming a member

1. Framework conditions:

- European Bioplastics represents the bioplastics industry at EU-level in all legislative matters concerning the European bioplastics market.
- **Your benefit:** up-to-date policy intelligence about all important legislative proposals, changes to directives, and information on relevant trends enabling you to promote bioplastics by liaising with policymakers.

2. Standardisation, certification, labelling:

- European Bioplastics is committed to maintaining industrial standards such as EN 13432 for industrial composting or EN 16640 for the biobased content of a product. We support corresponding certication schemes by respected institutions while promoting the harmonisation of independent and unambiguous la- belling for bioplastic materials and products.
- **Your benefit:** ensuring trust in bioplastic technology and products among all stakeholders; the ability to make informed choices when talking to suppliers; sat- is ed and well-informed customers.

3. Market intelligence:

- European Bioplastics compiles cost-free data of the overall market development and an in-depth analysis of developments in relation to material type, region and market segment. The scope is continuously being broadened.
- **Your benefit:** transparently compiled, conservative market forecasts as a basis for strategic company decisions.

4. Communication:

- European Bioplastics actively communicates the advantages of bioplastics, fostering a positive public image. It also acts as a communication platform for its members.
- **Your benefit:** a platform to communicate important is- sues; a source to support your position and communication efforts when required.

5. Exclusive involvement in EUBP committees and working groups:

- Our members play an active role in EUBP's internal standing expert committees, working groups and communication initiatives, and contribute to steering the course of the association through the General Assembly.
- **Your benefit:** raising issues affecting your business; gaining access to expert knowledge; exclusive up-to-date insight into all important topics concerning the sector.

6. Business opportunities:

- Our association is the first point of contact for business requests from converters, brand owners, etc. We forward these requests to our members via a formal procedure.
- **Your benefit:** potential new business contacts and customers.

For more information or to apply for membership, please go to www.european-bioplastics.org.

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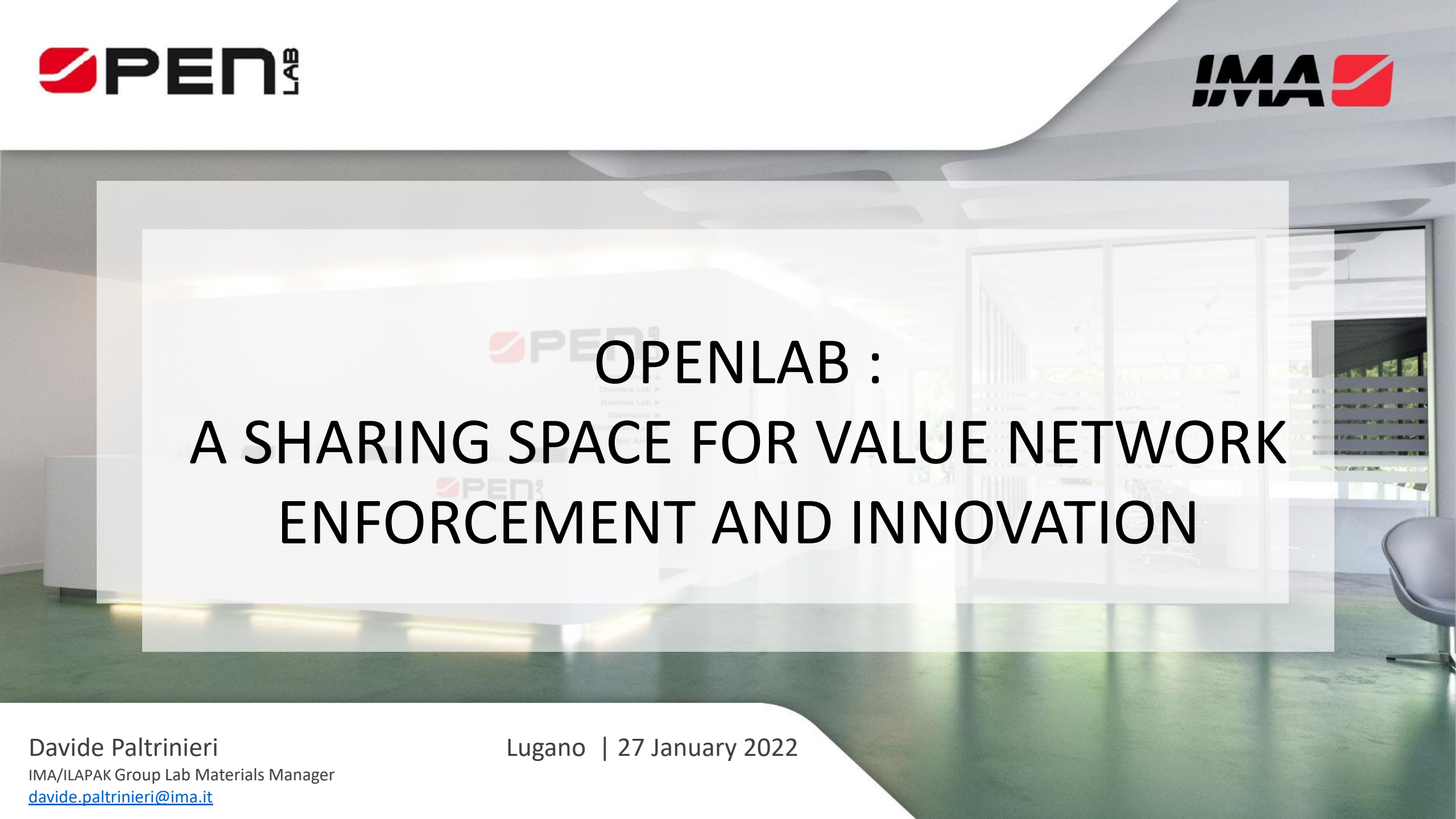
http://twitter.com/EUBioplastics



OPENLAB :
A SHARING SPACE FOR VALUE NETWORK ENFORCEMENT AND INNOVATION

Davide Paltrinieri
IMA/ILAPAK Group Lab Materials Manager
davide.paltrinieri@ima.it

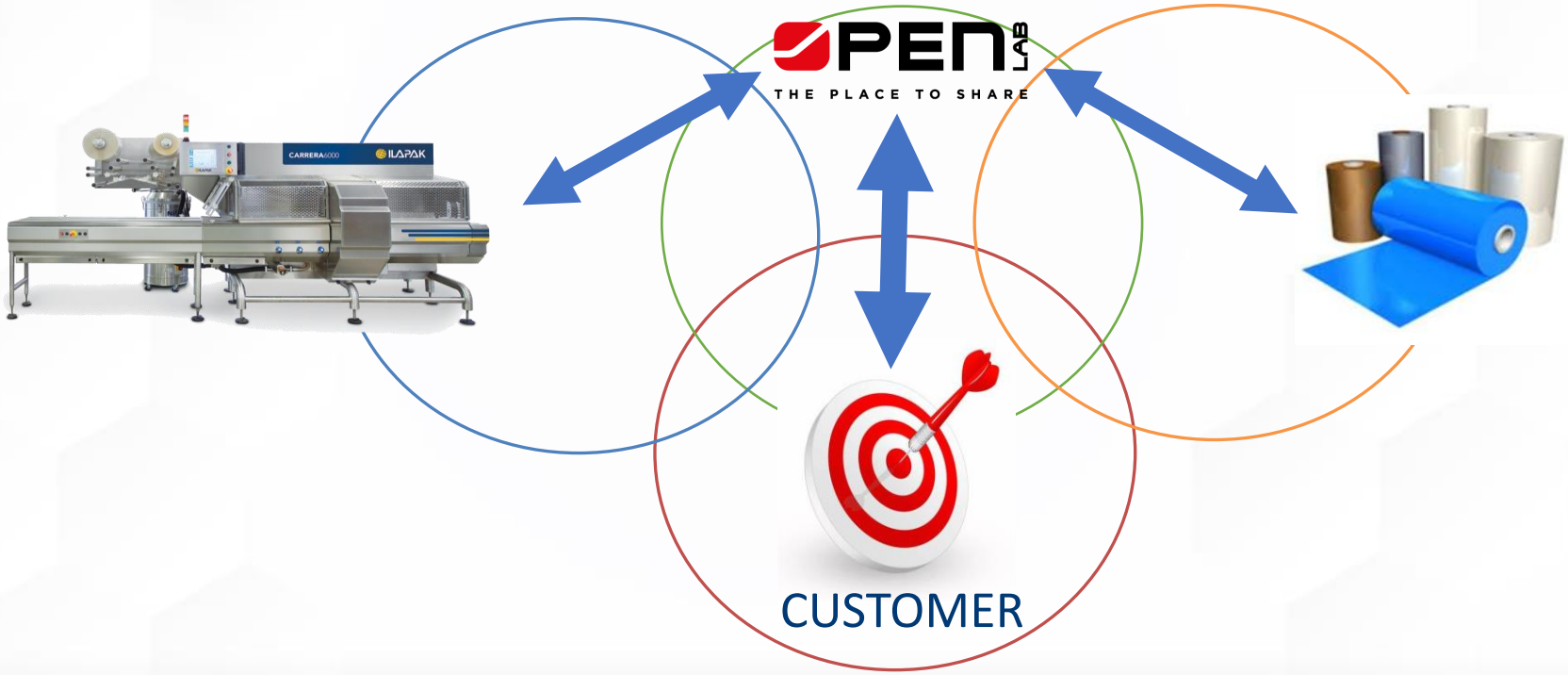
Lugano | 27 January 2022

THE PLACE TO SHARE

OPENLab is the **IMA Group's network of technological laboratories and testing areas**, dedicated to the research on sustainable materials, technologies and production optimisation processes.

Sustain Ability

Thanks to the implementation of the most modern digital infrastructures, together with think tank spaces and environments dedicated to the generation of ideas and the prototyping of materials, we aim to build a connection between knowledge and skills coming from machines, packaging manufacturing and customers.



Sustain Ability

OPENLab: The place to share

IMA OPENLab aims to merge studies, experimentation and industrial development activities on **materials** including all laboratory phases, from design to engineering of products and processes.

Over **3,600** film structures were analysed and studied in our laboratories since 2017.

The program includes the on-site material testing on dedicated machines under the supervision of group engineers and researchers, not to interrupt the customer's production cycle, simulate real manufacturing conditions, avoiding costs related to production stoppages.

Over **400** films were tested since 2017.

Sustain Ability

NoP – No Plastic Program

OPENLab is part of our **NoP Program**, one of the 4 pillars of **IMA ZERO**.

NOP (No-Plastic Program) means we promote **eco-friendly** plastic substitutes for the packages manufactured on IMA machines.

- Through the research and testing of alternative processes and materials, together with our partners, **we foster plastic-free compostable or biodegradable materials, recyclable and/or more sustainable plastic based materials**.

OPENLab

OPERATIONAL SITES

OPERATIONAL SITES

OPENLab actually has 4 operational sites:

OPENLab Bologna (IT)
100 m² surface lab dedicated to research and testing. The lab is built with green building materials and incorporates the latest digital infrastructure. It is divided into a think tank space - dedicated to ideas' generation and to the prototyping of materials - and a test area to study and analyse over 1000 samples yearly.

OPERATIONAL SITES

OPENLab actually has 4 operational sites:

OPENLab Lugano (CH)
400 m² surface with different horizontal form fill seal machines (rotative, Long Dwell, D-Cam,Box motion etc.) always available for tests:

- **Internal:** prototyping, R&D, technological innovation;
- **Clients:** tests on new materials or new upgrades;
- **Packaging producers**: processability tests on new packs before entering the market.

OPERATIONAL SITES

OPENLab actually has 4 operational sites:

OPENLab Arezzo (IT)

50 m² Cold Room Area-Test (min. temperature 0°C product continuous feed).

200 m² Area test with vertical form fill seal lines available for internal or client tests.

Sustain Ability

OPERATIONAL SITES

OPENLab actually has 4 operational sites:

OPENLab Lowell (USA)
The OPENLab in Lowell (USA) is still work in progress and we will share some more precise information very soon!

CASE HISTORY

CUSTOMER'S REQUEST
Adopt a compostable material and improve shelf life of chocolate without compromising its quality.

FILM MANUFACTURER
Design of a paper based high barrier industrial compostable film.

IMA-ILAPAK -OPENLAB
Machine engineering to process the film at comparable speed with respect to standard materials with the possibility to use modified atmosphere packaging.

Laboratory check for hermeticity, Oxygen residue and shelf life.

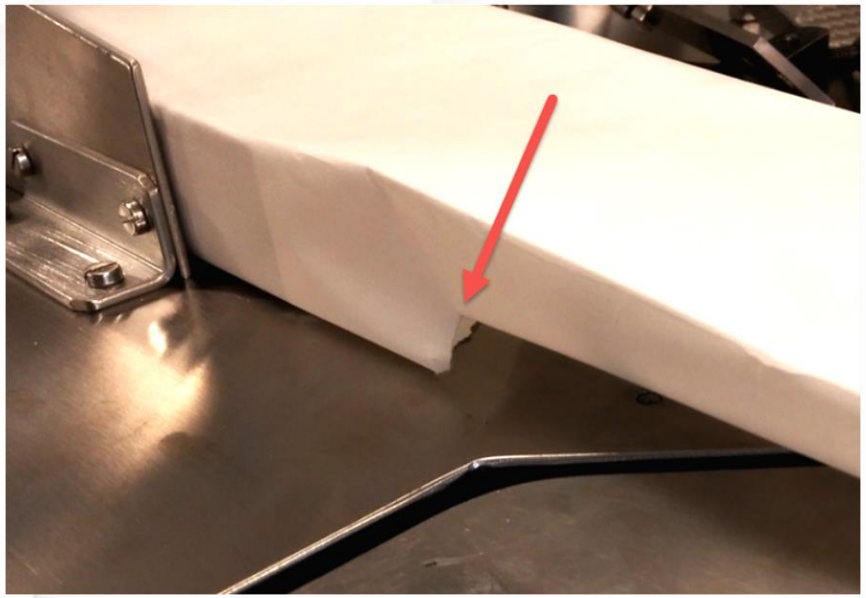
Sustain Ability

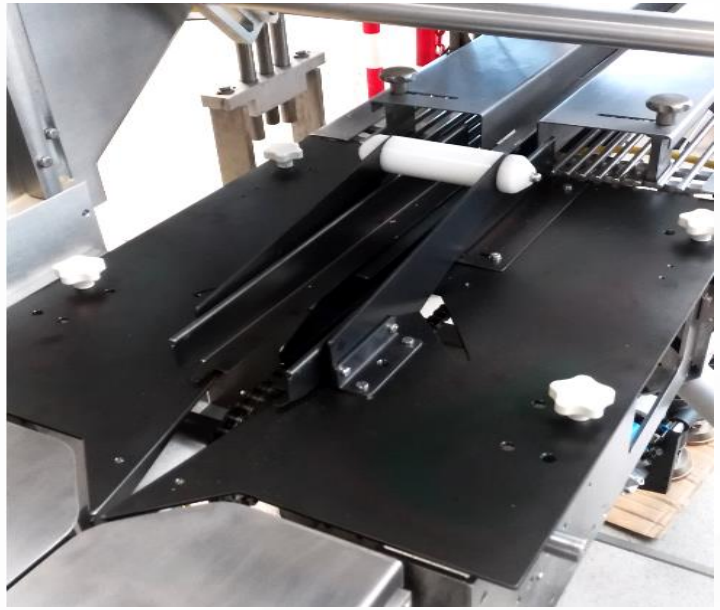
CASE HISTORY

www.itscompostable.com

- IMA Flx Hub, Novamont, Saes Coated Films, Sacchital Group and Ticinoplast joined forces for a compostable packaging project. Intense and joint research and development work, based on the respective know-how and focused on biodegradable and functional materials as well as their transformation, has given life to an all-Italian project dedicated to compostable packaging and its implementation. The result of this synergy has been a new **100% compostable and high-barrier packaging**:
- a revolutionary compostable food packaging with high oxygen and water vapour barrier properties.
- Certified in compliance with the European standard EN 13432, it can disintegrate in just 45 days, thus contributing to the generation of compost, a natural and nutrient-rich soil improver that promotes fertility and regeneration of agricultural soil. Deriving from renewable raw materials and suitable for replacing non-recyclable multilayer

CASE HISTORY





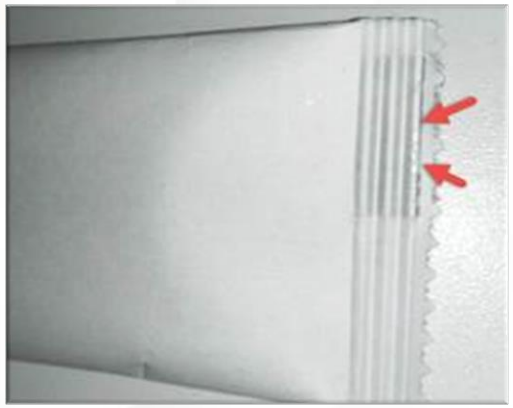
210 ppm - 34 m/min

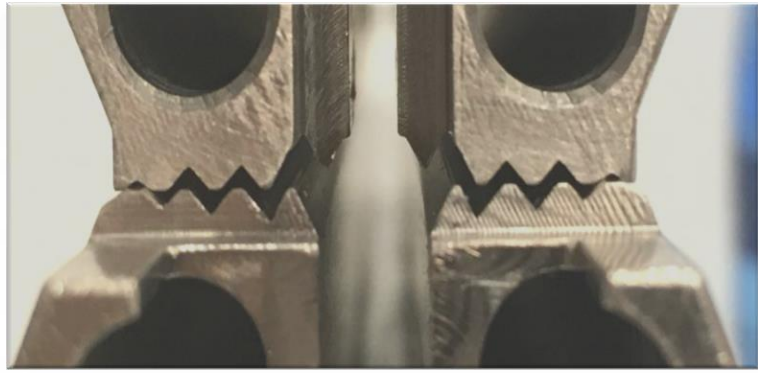
Carrera D-CAM Sealing head technology

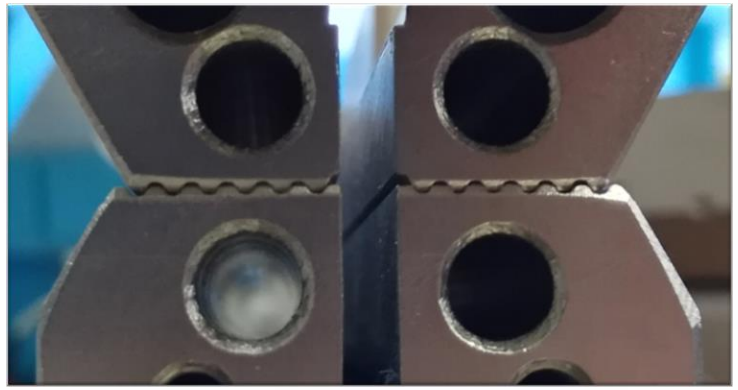
Special forming box solutions

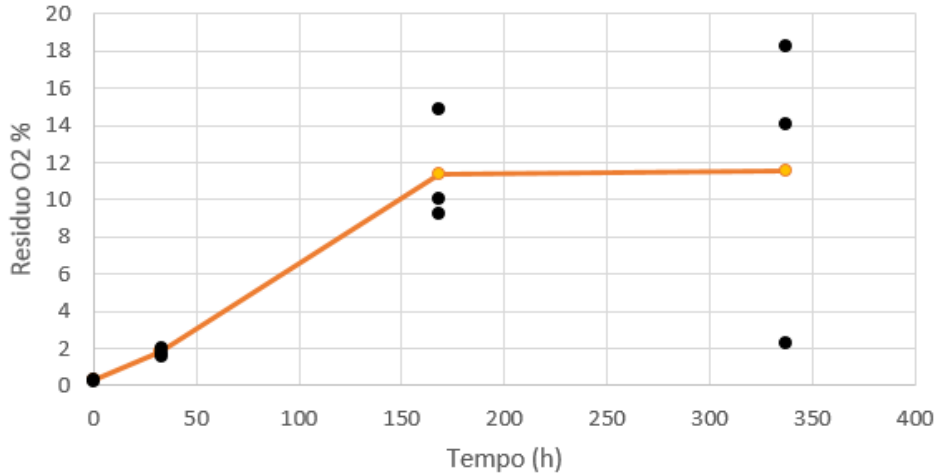
IMA SPA
Sustain Ability

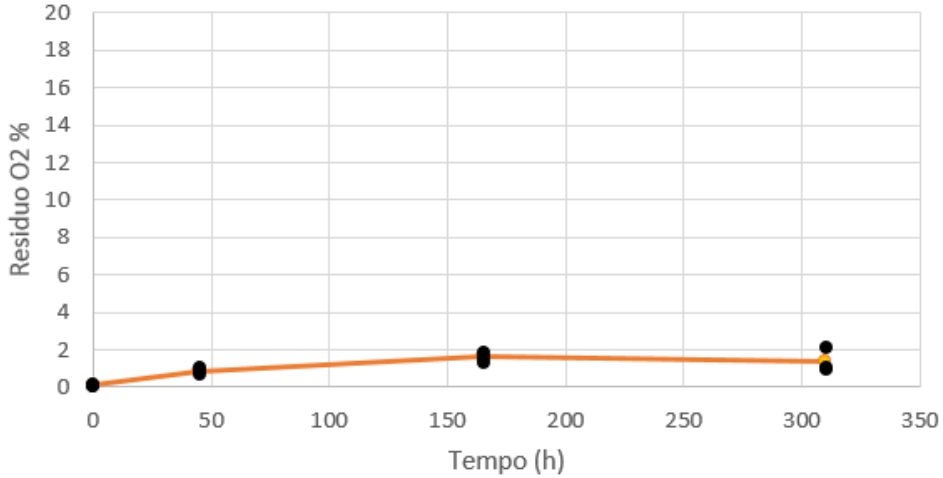
CASE HISTORY











Dedicated sealing jaws profiles for high level of hermeticity

CASE HISTORY

Rotary ultrasonic fin seal technology :

- **Product safety** – no organoleptic damages
- **Less packaging waste** – film width reduction

Sustain Ability

OPEN LAB

THE PLACE TO SHARE

Thank You for your attention!

IMA SPA
Sustain Ability

biorepack

CONSORZIO NAZIONALE PER IL RICICLO ORGANICO DEGLI IMBALLAGGI IN PLASTICA BIODEGRADABILE E COMPOSTABILE

Marco Versari

January 27, 2022

Index

- Who we are
- Consortium members and board of directors
- What we do
- The Italian food waste scenario
- How we do it

WHO WE ARE

- Biorepack, the National Consortium for the organic recycling of biodegradable and compostable plastic packaging*, is a private non-profit consortium based in Italy

- Biorepack is the first worldwide EPR scheme for compostable packaging

- Biorepack's scope is the proper collection and organic recycling of biodegradable and compostable plastic packaging through the separate collection of food and biowaste

- Through Biorepack, packaging producers and users ensure the achievement of the recycling and recovery targets for biodegradable and compostable plastic packaging waste**

- The statute of Biorepack has been approved by the Ministry of the Environment in agreement with the Ministry of Economic Development by the National

CONSORTIUM MEMBERS

- Biorepack has two categories of members:

- Obligated members (who pay the contribution):
  - compostable resin producers
  - packaging producers

- Volunteer members
  - Compostable packaging users (food industry….)
  - Retailers (A&O, CONAD, COOP, ESSELUNGA, EUROSPIN, FAMILA….)
  - Composting industry

Up to date Biorepack has > 200 members

CONSORTIUM BOARD OF DIRECTORS

The Board of Directors is voted by the Assembly and is composed of 7 Members

- 2 members representing the resin producers
- 2 members representing the packaging producers
- 1 member representing the packaging users
- 2 members representing the composting industry

WHAT WE DO

According to its statute, Biorepack shall:

- **monitor** the production and **consumption** of biodegradable and compostable plastic packaging and similar fractions;
- promote the **labelling** of biodegradable and compostable plastic packaging to improve recognisability and correct end-of-life management.
- promote the development of the **separate collection of biodegradable and compostable plastic packaging waste and similar fractions** within the organic fraction of urban waste;
- grant the management of biodegradable and compostable plastic packaging waste and similar fractions for **recycling in composting/anaerobic digestion plants**
- **analyse biowaste composition** in order to determine the performance of the interception and recycling systems of biodegradable and compostable plastic packaging waste and similar fractions;


BIO
COMPOSTABILE
ITALIA-SICILIA
BIO
ITALIA-21 cm
0,690 kg

THE ITALIAN FOOD WASTE SCENARIO

According to the ZWE and BIC June 2020 report, total bio-waste in the **EU 113 MT, with ~ 60 MT of food waste.** **Currently Italy treats half of all the foodwaste treated in the EU**

There is an untapped potential for bio-waste in Europe:

- Only **34% of biowaste** is collected
- Only **16% of food-waste** is collected (~9,5MT)

Italy captures circa **5 million tonnes** of food-waste

Plastic contamination still high: 145.000 T/Y*

Dragging factor: 2,75 - 1 kg of non compostable waste (60% of which is plastic) generates 2,75 kg of waste*

Separate collection of food waste will be mandatory in Europe starting from January 2024.

***CIC (Italian biogas composting association June 2020)**

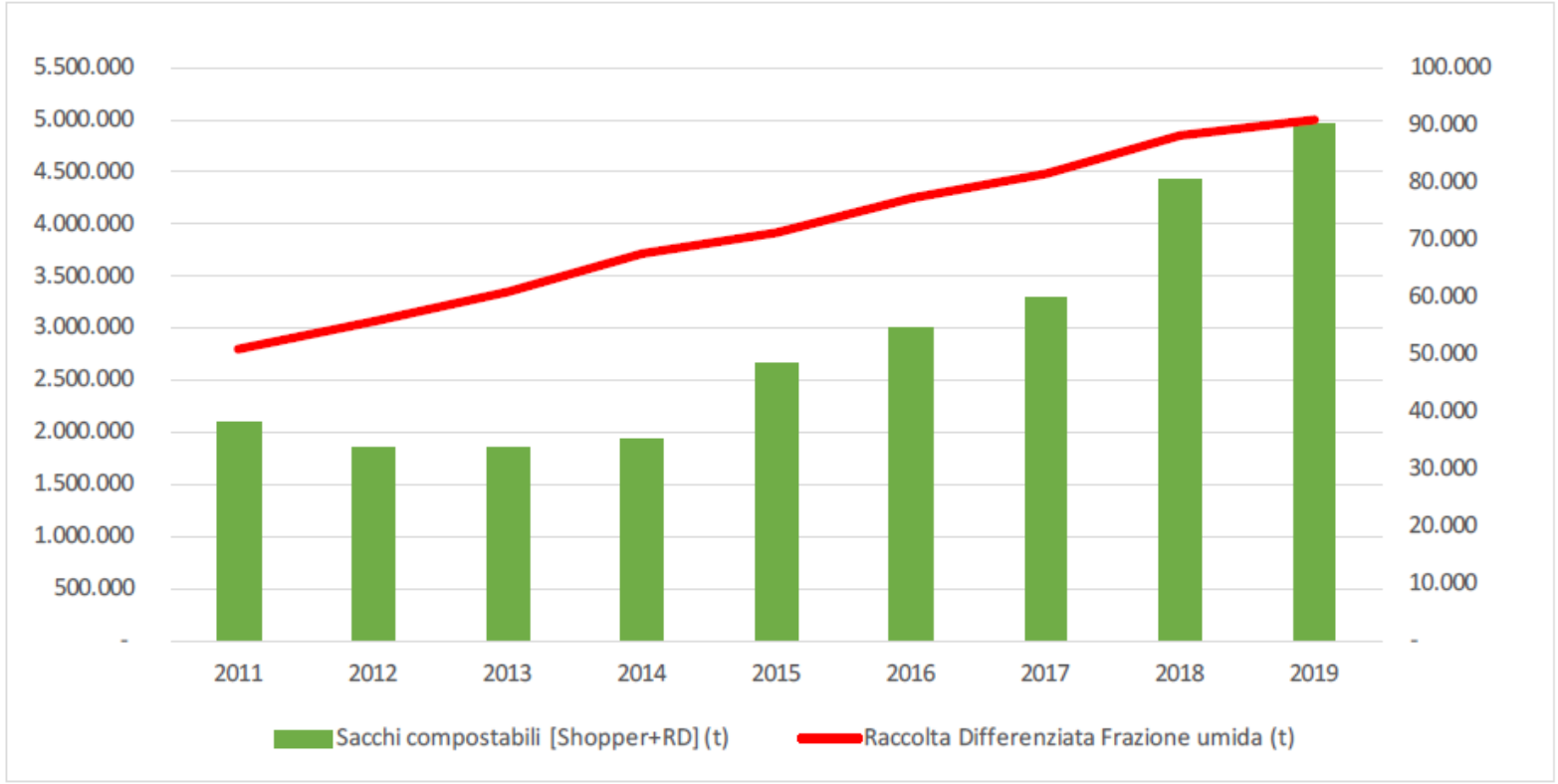
Table 10: Comparison theoretical potential / currently collected (food waste and bio-waste)

	ESTIMATE FOOD WASTE COLLECTED / POTENTIAL GENERATION	ESTIMATE BIO-WASTE COLLECTED (FOOD + GARDEN) / POTENTIAL GENERATION		ESTIMATE FOOD WASTE COLLECTED / POTENTIAL GENERATION	ESTIMATE BIO-WASTE COLLECTED (FOOD + GARDEN) / POTENTIAL GENERATION
EU 27+	16%	34%	ITALY	47%	55%
AUSTRIA	19%	17%	LATVIA	4%	10%
BELGIUM	16%	3%	LITHUANIA	6%	14%
BULGARIA	0%	16%	LUXEMBOURG	13%	29%
CROATIA	2%	19%	MALTA	4%	19%
CYPRUS	5%	83%	NETHERLANDS	15%	41%
CZECHIA	10%	8%	NORWAY	45%	30%
DENMARK	22%	34%	POLAND	5%	11%
ESTONIA	3%	54%	PORTUGAL	2%	4%
FINLAND	15%	57%	ROMANIA	3%	7%
FRANCE	21%	16%	SLOVAKIA	9%	17%
GERMANY	27%	11%	SLOVENIA	13%	28%
GREECE	4%	20%	SPAIN	3%	10%
HUNGARY	5%	55%	SWEDEN	14%	32%
IRELAND	8%	10%	UK	13%	35%

THE ITALIAN FOOD WASTE SCENARIO

In its annual National Urban Waste Report, ISPRA (Italian EPA) shows the connection between quantities of food waste collected and production of compostable plastics bags

Figura 4.6 - Andamento della raccolta differenziata della frazione umida e dell'immesso al consumo di sacchi compostabili per asporto merci e raccolta della frazione umida, anni 2011-2019



Fonte: elaborazioni ISPRA su dati Assobioplastiche

Food waste collection is regulated in Italy since 2010 through specific provisions that mandate the use of biodegradable and compostable bags certified according to the harmonized standard EN13432 (or no bags)

HOW WE DO IT

- To achieve its goals Biorepack uses the resources deriving from the contribution defined by CONAI for the specific compostable packaging EPR scheme

- **The contribution approved for years 2021-2023 is 294 €/T**

- **The turnover for year 2021 is ~20 M/€**

- The contribution covers the costs related to:
  - collection, transportation and treatment of bioplastic packaging waste together with the organic fraction
  - the analysis of the organic fraction composition to establish the % of compostable packaging in the system)
  - communication campaigns (national and local)
  - projects finalized to improve food waste collection efficiency and quality
  - projects with composting industry to improve compostable plastic management in composting and AD plants

- October 20 2021, Biorepack signed an agreement with ANCI – Association of Italian Municipalities – for the development of separate collection and organic recycling of bioplastic packaging waste

HOW WE DO IT

first actions: communication campaigns

- Corriere della Sera (main Italian daily paper) issued November 2021

CAMPAGNA CONAI – BIOREPACK 2021

HOW WE DO IT

first results of the information campaigns

- Percentuale imballaggi in bioplastica presenti nella raccolta differenziata della plastica

(trasl: % of compostable plastics in the plastic waste separate collection stream from January to August 2021. Three areas North, Centre, South Italy and three target Provinces)

	Gennaio	Febbraio	Aprile	Maggio	Giugno	Luglio	Agosto
NORD	1,10%	1,08%	0,98%	0,96%	0,85%	0,81%	0,80%
CENTRO	1,70%	1,67%	1,42%	1,32%	1,22%	1,19%	1,18%
SUD	1,37%	1,36%	1,36%	1,04%	1,06%	0,99%	0,93%
Totale	**1,31%**	**1,30%**	**1,21%**	**1,06%**	**1,00%**	**0,94%**	**0,92%**
Alcune Province Campione							
Province	Gennaio	Febbraio	Aprile	Maggio	Giugno	Luglio	Agosto
TREVISO	1,06%	1,34%	1,14%	1,59%	1,22%	0,69%	0,59%
PESARO URBINO	1,41%	1,66%	1,42%	1,77%	1,46%	0,98%	0,94%
LECCE	2,34%	1,97%	1,81%	1,66%	1,26%	1,52%	0,95%

Source: Conai in Ecomondo – Rimini October 26, 2021

FIRST, CRITICAL ISSUE

COMMISSION IMPLEMENTING REGULATION (EU) 2020/2151 of 17 December 2020 laying down rules on harmonised marking specifications on single-use plastic products Annex IV “armonized specifications for beverage cups”

QUESTIONS

1: what about compostable plastics?

2: how can an EPR scheme promote correct labelling and information campaigns for the correct end of life of compostable packaging when a compostable packaging is labelled in this form?

biorepack
CONSORZIO NAZIONALE PER IL RICICLO ORGANICO DEGLI IMBALLAGGI IN PLASTICA BIODEGRADABILE E COMPOSTABILE

Thanks!

www.biorepack.org