



Proyectos **JTI BIOINDUSTRIAS (BBI): MANDALA**- The transition of Multilayer / multipolymer packagiNg into more sustainable multilayer/single polymer y **BARBARA**- Biopolymers with advanced functionalities.

JORNADA INFORMATIVA REGIONAL H2020 RETO SOCIAL 2: BIOECONOMÍA

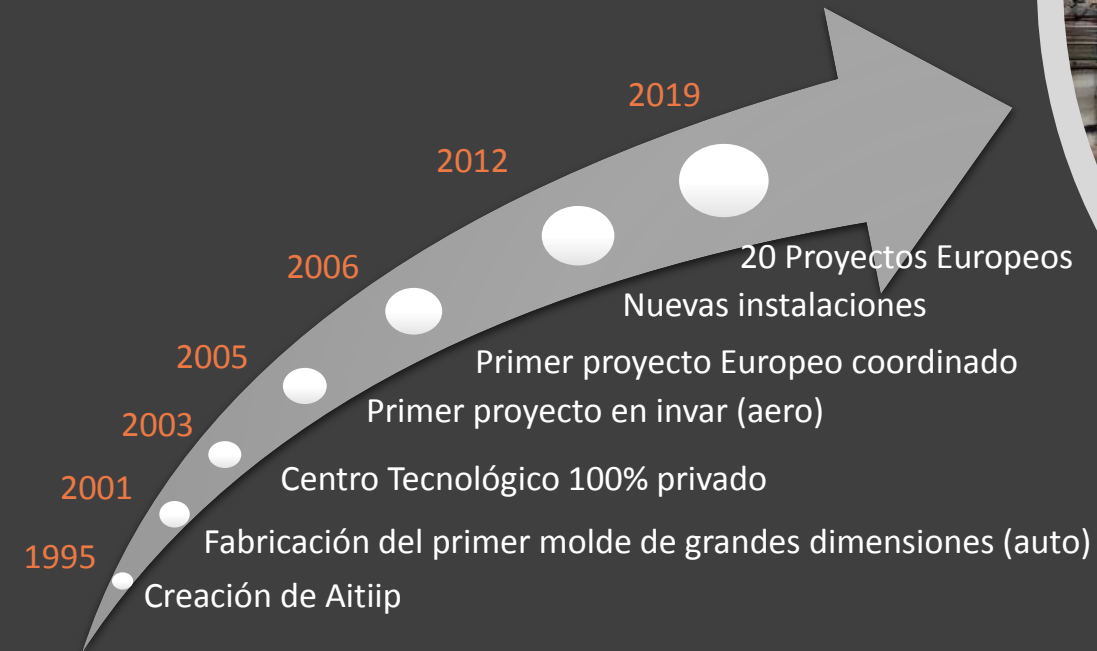
Sala Jerónimo Zurita. Edificio Pignatelli. Paseo María Agustín, Zaragoza

24 de Octubre de 2019



*Dra. Carolina Peñalva Lapuente
Responsable de envases y embalajes//Project manager
carolina.penalva@aitiip.com*

Ayudamos a las empresas a superar sus retos tecnológicos, actuales y futuros, de forma sostenible al ser líderes en tecnología e Innovación y mediante el compromiso, conocimiento y talento del equipo humano.





100

Un gran equipo con formación multidisciplinar.

12000 m²

Espacio diáfano con posibilidad para habilitar líneas piloto para nuestros clientes.

9 M€

Siempre mejorando, cada año 1,5 M€ es invertido a nuevo equipamiento.

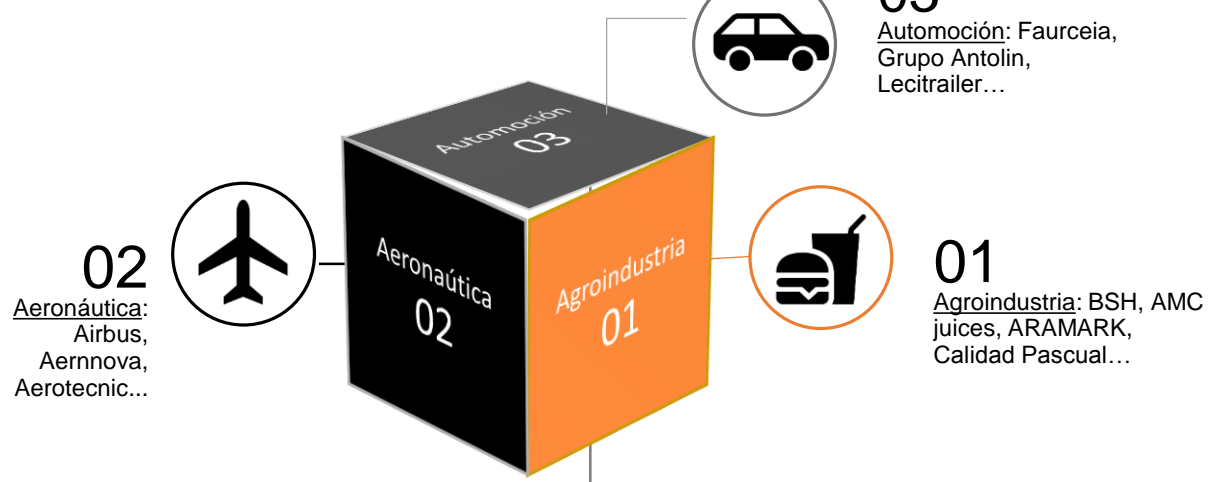
175

Clientes, de los cuales un 80% son SME y un 20% grandes empresas.

Principales sectores y líneas de trabajo

- **250** Servicios tecnológicos a empresas.
- **25** proyectos propios en I+D+i.
- **75** proyectos colaborativos con empresas.

Servicios tecnológicos avanzados



I+D+i



Economía Circular

- Valorización de residuos agrícolas
- Biopolímeros
- Materiales compuestos verdes



Digitalización e Industria 4.0

- Fabricación aditiva multi-material e impresión 3D
- Robotización de procesos
- Materiales avanzados

Desarrollo y caracterización de materiales

Fabricamos **materiales a la carta** para cumplir cualquier requerimiento de cualquier sector. Somos especialistas en termoplásticos de alto rendimiento, biomateriales, nanoaditivos así como en funcionalización.

Caracterizamos materiales utilizando **reómetro** capilar y máquina de **prueba ensayos** (tracción, compresión y flexión).



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Transformación del plástico

Ofrecemos nuestras capacidades y espacios para **instalar líneas piloto de demostración con maquinaria industrial** para la validación de procesos.

Distintas tecnologías: inyección, soplado de film, extrusión soplado, casting, termoformado, impresión 3D.



Participación en BIO BASED INDUSTRIES PPP



Desarrollo de materiales



Diseño e ingeniería



Fabricación mecánica



Impresión 3D



Transformación del plástico



Industrialización



Nuevos Materiales



Fabricación eficiente



Soluciones innovadoras



Digitalización



Economía circular



Gestión de la I+D



BIO BASED INDUSTRIES PPP

Type of action: BBI-RIA 
(Bio-based Industries Research and Innovation action)

Coordinador : AITIIP (ES)



Call: H2020-BBI-JTI-2016

Topic: BBI-2016-R07

Biopolymers with advanced functionalities for high performance applications

Evaluation Summary Report: 14.5
Excellence: 5
Impact: 5
Implementation: 4.5



Call: H2020-BBI-JTI-2018

Topic: BBI.2018.SO3.R10

Develop bio-based packaging products that are biodegradable/ compostable and/or recyclable

Evaluation Summary Report: 15
Excellence: 5
Impact: 5
Implementation: 5

Technology Readiness Level (TRL) from 3 to 5

Las acciones de ID tienen como objetivo llenar los vacíos tecnológicos dentro de cadenas de valor específicas.

El impacto para toda la cadena de valor debe mostrarse claramente.

La propuesta debe apuntar a **producir prototipos** para ser probados contra estándares relevantes y certificaciones aplicables.

Involucrar a la industria y asociaciones de consumidores.

Financiación:

- RTDs 100%
- SMEs 100%
- LARGE 0%

Muy importante:
Acuerdos de consorcio, o disminución del presupuesto, in kinds, additional activities,...

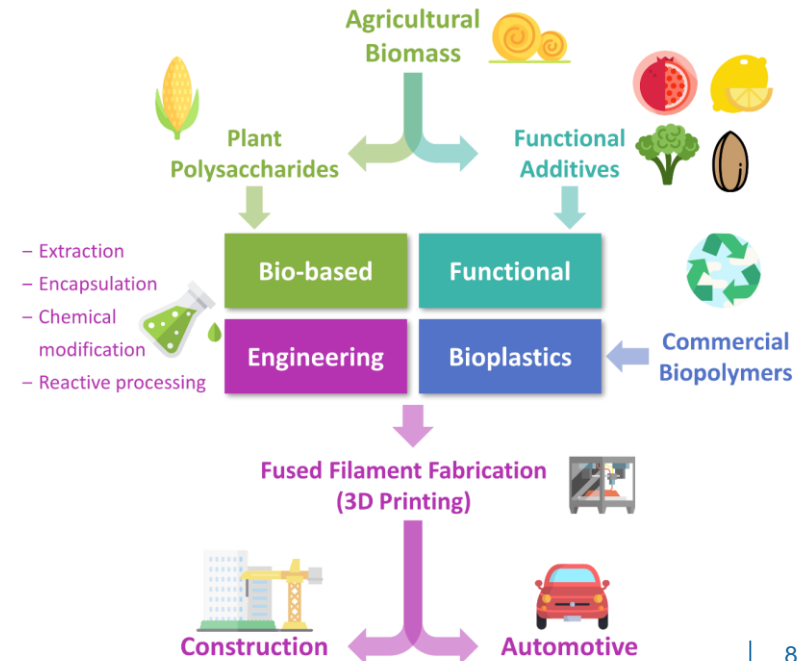
A tener en cuenta: 4% de costos administrativos de tarifa para BIC si la propuesta es financiada

Topic: BBI-2016-R07 Biopolymers with advanced functionalities for high performance applications

BARBARA: Biopolymers with advanced functionalities for building and automotive parts processed through additive manufacturing

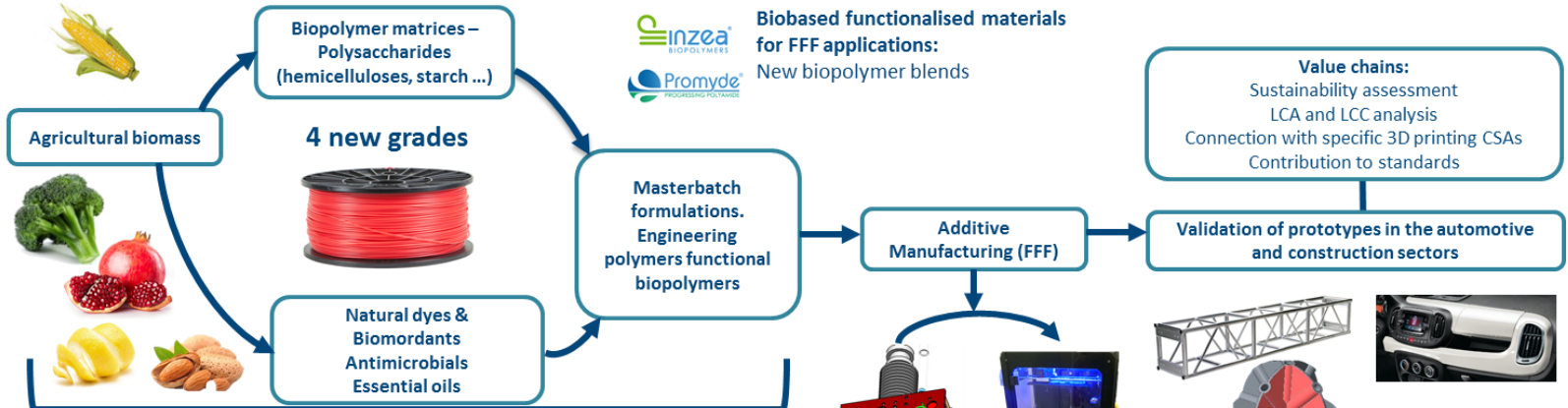


GENERAL OBJECTIVES



- Development of **4 new BARBARA materials**: Engineering functionalized biopolymers reinforced with bio-additives to achieve **customised physical-chemical properties**.
- **Validating** BARBARA materials **through additive manufacturing FFF in 2 key European sectors (automotive, building)**.
- Contribution to the **establishment of 2 new biobased value chains**:
 - New advances allow the setting up of direct final product parts with outstanding properties (first new value chain)
 - And moulds and tools for hybrid manufacturing (second value chain).

CONCEPT AND APPROACH



MATERIAL INNOVATIONS

MECHANICAL

- Increase the bending, tensile strength, fatigue resistance (in a 40%)
- Enhancement of resistance to scratching
- Change and control in the rheological properties

THERMAL

- Improvement of thermal, and structural degradation at high temperatures
- Target: 140°C

AESTHETICS

- Colour gamut and effects
- Transparent high performance colours
- Improvement of the wet rubbing fastness avoiding dye migration phenomena
- Improvement of the radiation exposure colour life from UV-Vis-NIR
- Controlled fragrance release
- Texturizing: cool touch and soft touch effects

PROCESS INNOVATIONS

FFF new heading device:

- Control of temperature and pressure
- Control of layer thickness
- Surface activation (plasma) increasing adhesion of layers
- Avoiding anisotropy in the z-direction
- Better printing quality (lines and porosity)

CONSORTIUM



It consists of **11 partners** with complementing competencies, **6 of them industrial** (FECOAM, CELABOR and TECNO as SMEs, and CARGILL, NUREL and ACCIONA as Large companies) and **5 research and academics partners** (KTH, UA, UNIPG, CRF and AITIIP).

Interdisciplinary



36-months project with a budget of 2,770,750€



RESULTS

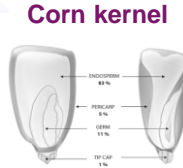


✓ Extraction of starch and arabinoxylans from corn residues:

- Selection of the best corn residues supplied by **Cargill**

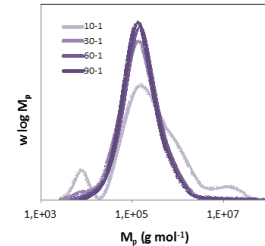
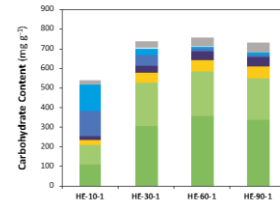
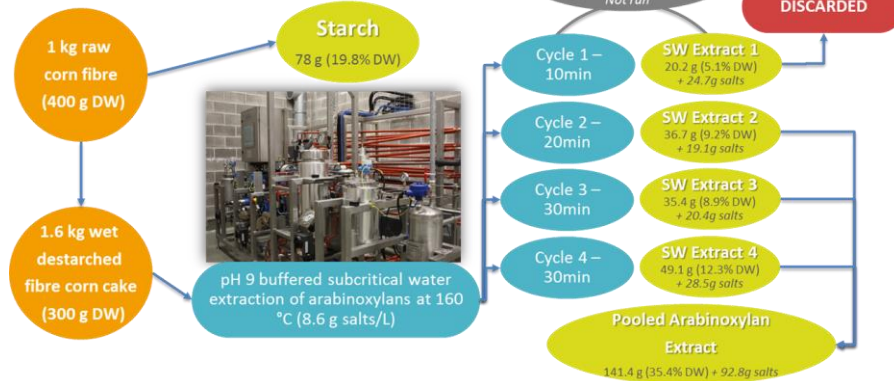
✓ Extraction of starch and arabinoxylans from corn residues by subcritical water:

- Lab scale optimization
- Scaling up



Target polysaccharides:

- Starch from broken corn
- Arabinoxylans (AX) from corn fibre

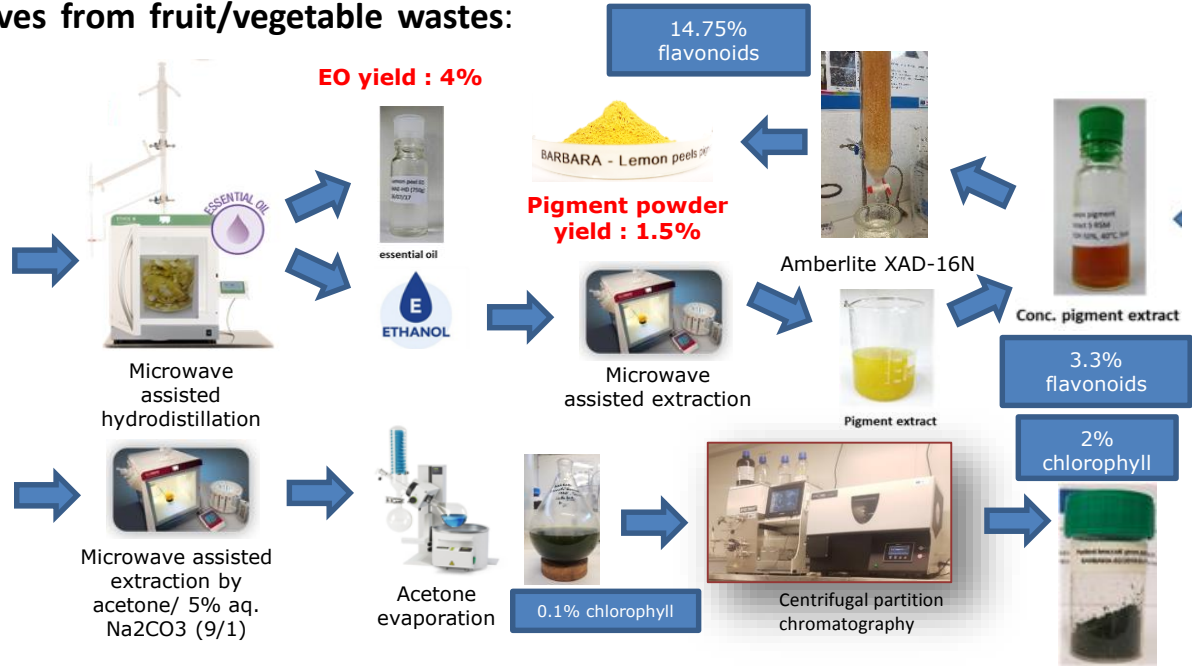


RESULTS



✓ **Extraction and purification of bioadditives from fruit/vegetable wastes:**
Lemon peels and broccoli

Developed by Alicante University
Upscaled by CELABOR





✓ **Extraction and purification of bioadditives from fruit/vegetable wastes:**
Discarded pomegranates and almonds shells

Developed by Alicante University
Upscaled by CELABOR



Pressing of the discarded fruits



Juice filtering



Amberlite XAD-7HP



Pigment powder yield : 20% (juice DW)

27.7% anthocyanins



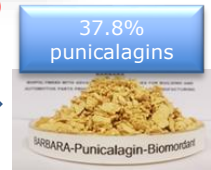
Peels drying



Microwave assisted extraction by ethanol/water (50/50)



Amberlite XAD-16N

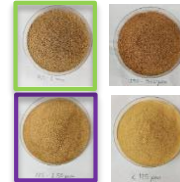


Biomordant yield : 6.4% (dried peels)

37.8% punicalagins



Shell milling



Dried and ground almond shell waste 0.5-1 mm, 250-500 µm, 125-250 µm and <125 µm.

RESULTS

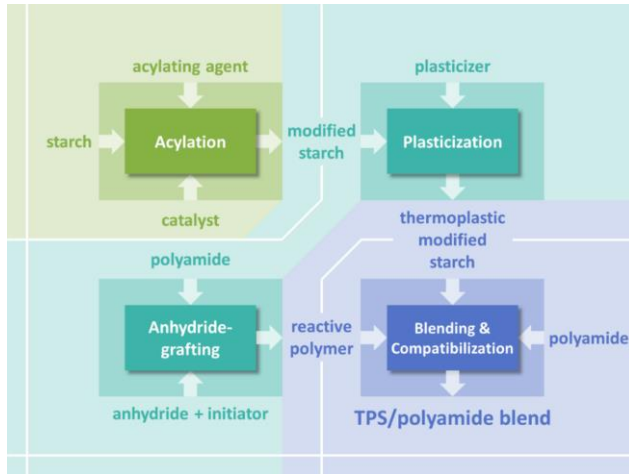


✓ **Functionalization of the polysaccharides** (KTH-TECNO-UNIPG):



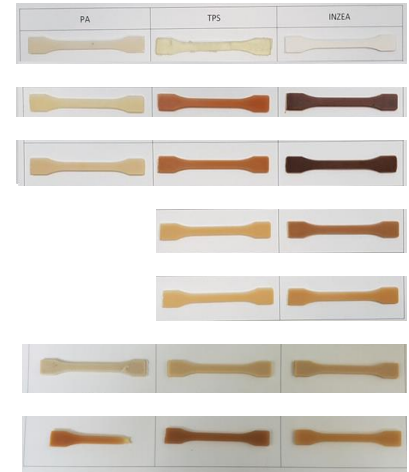
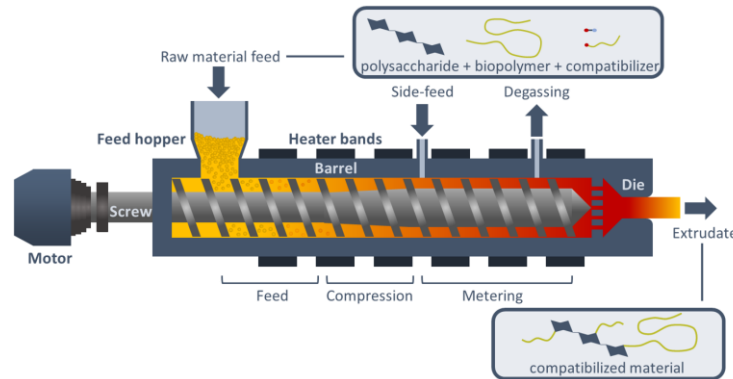
Objective: To design engineered bioplastic matrices with enhanced compatibility to be used for the final masterbatches (compounded with the selected additives).

Heterogeneous acylation in bulk



Chemical modification of starch

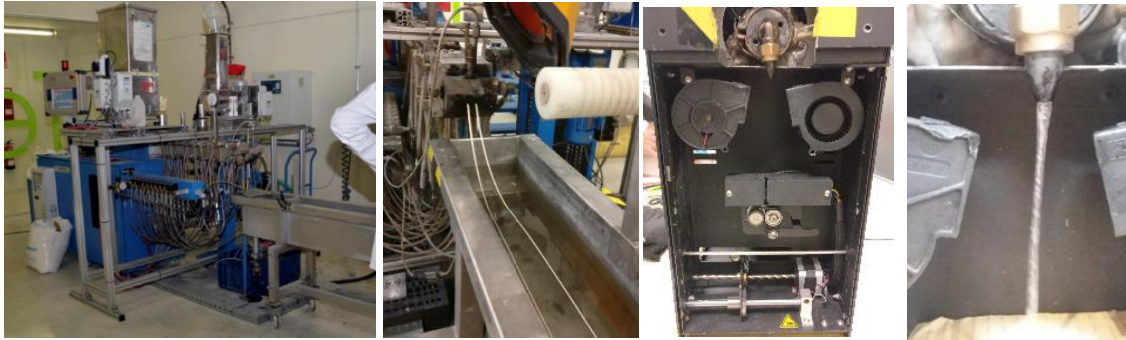
1. Organocatalytic esterification
2. Extrusion with reactive polymer (Grafting to)



60 formulations have been tested at pilot level



✓ **Functionalization of the bioadditives and inclusion in biopolymers matrices (Alicante University – CELABOR - UNIPG) :**



Nanopolymer matrices



The first filament containing starch in the project



almond shell powder incorporated to give a woody aspect



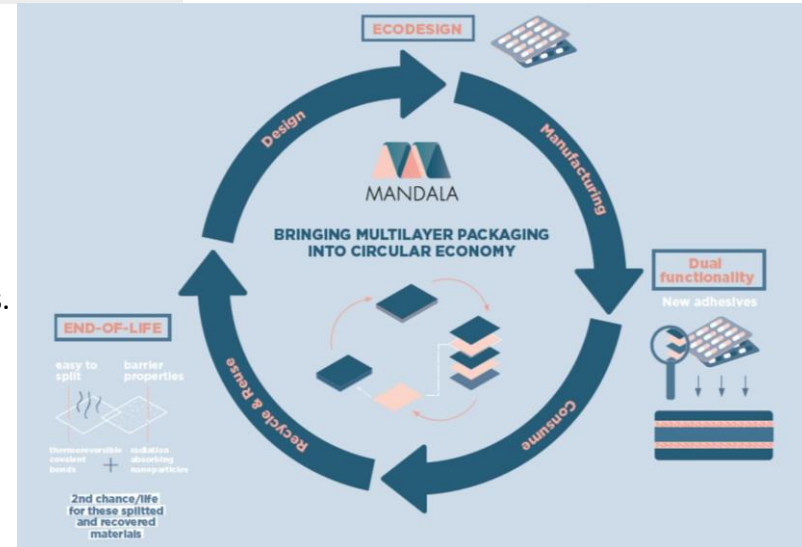
Topic: BBI.2018.SO3.R10 Develop bio-based packaging products that are biodegradable/ compostable and/or recyclable



MANDALA: The transition of Multilayer/multipolymer packaging into more sustainable multilayer/single polymer products for the food and pharma sectors through the development of innovative functional adhesives

- **Multilayer monomaterial packaging** with functionalities compared to multimaterial ones and fully produced with **biobased & recycled polymers**.
- **New adhesives with dual functionality:** by incorporating **thermoreversible covalent bonds and radiation absorbing nanoparticles** (easy to split), which at the same time will generate a tortuous path (barrier properties).
- **New polymer blends with increased biobased and recycled content** of film layers will be developed.
- **New food (meat, ready-to-eat) and pharma (pill blister) packaging products.**
- **De-lamination technology** can be **up-scaled** and applied to reach intermediate solutions for multilayer/multimaterial packaging (being biobased or not) progressively helping to become the end-of-life more sustainable by recovering all fractions and providing clean streams for their biodegradation or recycling.

GENERAL OBJECTIVES

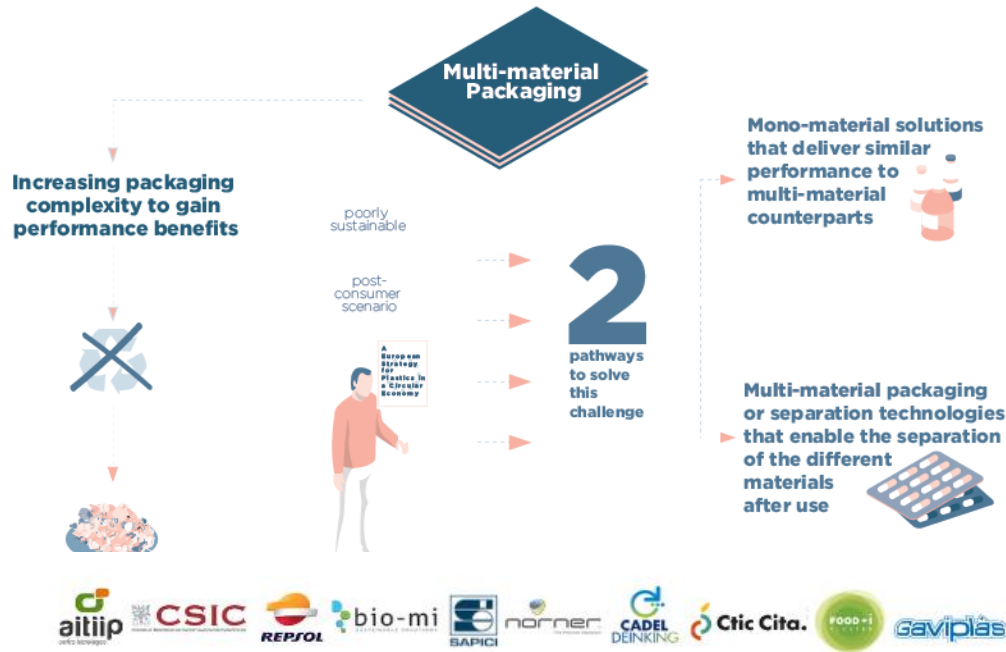


CHALLENGE

For technological design innovation

One particular challenge for technological design innovation is multi-material packaging.

Unfortunately, **increasing packaging complexity to gain performance benefits** also makes the packaging **much harder to recycle** and usually ends up in landfill or incineration plants.



CONSORTIUM

Consists of **12 partners with complementary competencies**, **7 of them industrial** (BIO-MI, GAVIPLAS, CADEL, COSMETIC and ARCHA as SMEs; and SAPICI and REPSOL as Large companies) plus **1 cluster of food SMEs** – FOOD+I - and **4 research partners** (NORNER, CSIC-ICTP, CTIC-CITA and AITIIP) . **Five European countries** (ES, IT, NO, HR, HE).

The **42-months project** will comprise a total estimated budget of **4,573,892,5€**

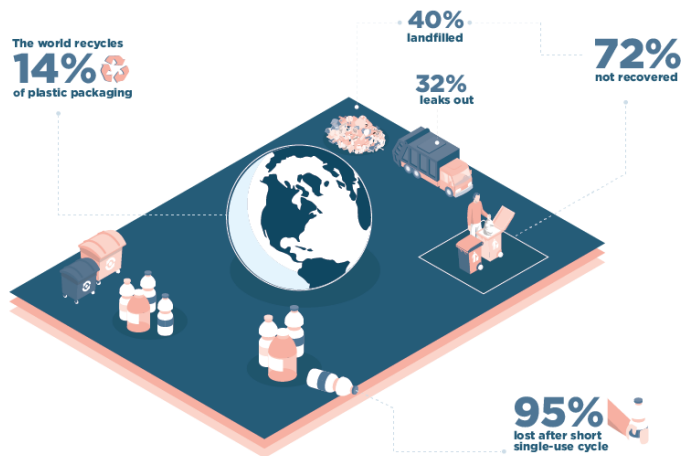


This Project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement N° 837715

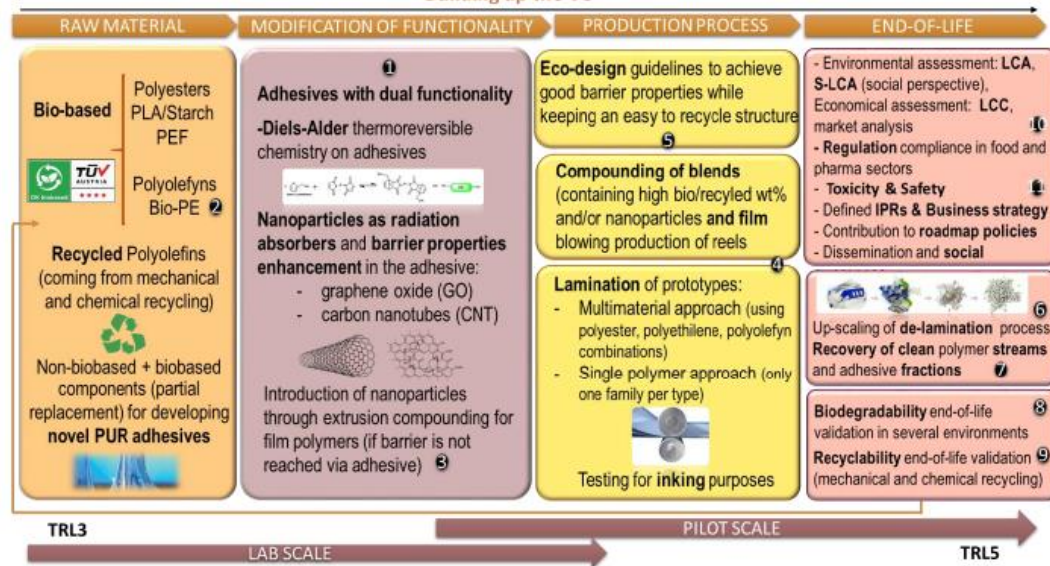
WHY MANDALA?



CONCEPT AND APPROACH



Building up the VC



Gestión de proyectos en BBI. Algunas recomendaciones



El consorcio debe informar oficialmente todos los costos elegibles después de cada período de informe en el "Periodic Report".

- P1: M1 to **M18**
- P2: M19 to **M36**

Además, **cada 6 meses**, se recopilarán **informes de actividad no vinculantes**, incluyendo aproximaciones de esfuerzos y costes. Estos informes provisionales ayudarán al Coordinador/BBI-JU a prever cualquier riesgo potencial o desviación.

La presentación de informes en H2020 difiere de FP7 o CIP, y debe hacerse *on line* (ver

http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/reports_en.htm)

Los **informes periódicos** incluyen un **informe técnico** (tablas de progreso + un PDF) y un **informe financiero** (estados financieros + explicación sobre el uso de recursos + solicitud de pago).

El coordinador debe presentar un informe periódico dentro de los **60 días posteriores** al final de cada periodo reportado.

Launch new interaction with the EU +

Continuous Reporting
745578 - BARBARA

01 May 2017
Started

Completed

Continuous reporting data

Process documents Expand All Collapse All

Deliverable Assessment (2)

- 745578_Deliverable_6_(Report on the preparation and compatibilization of engineering bioplastic blends by reactive extrusion using corn polysaccharides and engineering polymers)_Request_For_Revision
- 745578_Deliverable_7_(Report on the functionalization of bioadditives from biobased molecules)_Request_For_Revision

Deliverables (28)

Process communications

No topics

Process history

New message

MY PROJECT

HORIZON 2020

Call: H2020-BBI-JTI-2016
Type of Action: BBI-RIA
Acronym: BARBARA
Current Phase: Grant Management
Numbers: 745578
Duration: 36 months
GA based on the: H2020 BBI JU
MGA - Multi - 2.null
Start Date: 01 May 2017
Estimated Project Cost: €2,711,375.00
Requested EU Contribution: €2,603,861.25
Contact: Paloma.MALLORQUIN

Latest Legal Data

Active Processes

Document Library

Communication Centre

Archived Processes

74578 (BARBARA) BBI-RIA

Summary for publication

Deliverables Ethics, DMP, Other Reports

Milestones

Critical Risks

Publications

Disseminat...

Patents (IPR)

Innovation

SME Impact

Gender

ABS Regulation

Call: H2020-BBI-JTI-2016
Topic: BBI-2016-R07
Unit: BBI

Publications

This project does not currently have any scientific publication

Suggested publications from OpenAIRE (0 publications)

No publication has been added for this project yet

Project publications (1 publications)

No. #	Type	Title	Authors	Title of the Journal/Proc./Book	Number, date or freq. of the Journal/Proc./Book	Is Peer-reviewed?	Is Open Access?	DOI	Repository Link	Actions
1	Article in...	Reactive Compatibilization of Plant Polysaccharide	Balazs Inre, Lidia Garcia, Deb	Carbohydrate Polymers		Yes	Gold	10.1016/j.carbpol.2016.12.08		Validate

Grant Management

Project Continuous Report

745578 (BARBARA) BBI-RIA

THE HORIZON PROGRAMME FOR RESEARCH AND INNOVATION

Call: H2020-BBI-JTI-2016
Topic: BBI-2016-R07
Unit: BBI

Summary for publication

Deliverables Ethics, DMP, Other Reports

Milestones

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Gender

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Deliverables, Ethics, DMP, Other Reports

For each Deliverable, a single file (max 52MB) can be uploaded

Show Filters Clear Filters

WP No	Del Ref.	Del No	Title	Description	Lead	Nature	Dissemi	Est. Del. D	Rev. Due C	Receipt Da	Approval Dat	Status	Actions
V/P1	D1.1	D1										Approved	
V/P1	D1.2	D2										Approved	
V/P1	D1.3	D3										Approved	
V/P1	D1.4	D4										Submitted	
V/P1	D1.5	D33										Submitted	
V/P1	D1.6	D34										Submitted	
V/P1	D1.7	D35										Submitted	
V/P2	D2.1	D5										Approved	
V/P2	D2.2	D6										Submitted	
V/P2	D2.3	D7										Submitted	
V/P2	D2.4	D8										Submitted	
V/P2	D2.5	D9										Submitted	
V/P2	D2.6	D36										Submitted	
V/P3	D3.1	D10										Submitted	
V/P3	D3.2	D11										Submitted	

Validate

Gestión de proyectos en BBI. Lecciones aprendidas



La implementación de un control técnico y económico bianual interno del proyecto está duplicando, a veces triplicando, el trabajo, pero vale la pena.

- Permite al coordinador identificar las desviaciones por adelantado y comentarlas con el CE
- Permite a los beneficiarios saber qué está sucediendo y comunicar problemas dentro de sus departamentos financieros.
- Facilita el trabajo que lleva a la finalización de los informes periódicos.

Gestionar BARBARA ha resultado ser una tarea muy exigente

- Si lo hemos logrado, solo se debe a la cohesión, el trabajo duro y el buen humor que todo el consorcio ha demostrado durante los tres años.

Revisiones con el PO del proyecto

- Entendemos que las limitaciones para viajar son una obligación, pero aún así ...
- ¿Quizás las limitaciones para viajar podrían ser más flexibles para ciertos proyectos (cuyos resultados no pueden trasladarse físicamente a Bruselas)?

Gracias por vuestra atención

aitiip
centro tecnológico

JORNADA INFORMATIVA REGIONAL H2020 RETO SOCIAL 2: BIOECONOMÍA


Sala Jerónimo Zurita. Edificio Pignatelli. Paseo María Agustín, Zaragoza
24 de Octubre de 2019



HORIZONTE 2020
Portal español del Programa Marco de Investigación e Innovación de la Unión Europea



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 Calle Romero 12, P.I. Empresarium, La Cartuja Baja. 50720 – Zaragoza (ES)

 +34 976 46 45 44

 aitiip@aitiip.com

 www.aitiip.com



Dra. Carolina Peñalva Lapuente
Responsable de envases y embalajes//Project manager
carolina.penalva@aitiip.com