



EMBRACED

Establishing a Multi-purpose Biorefinery for the Recycling of the organic content of AHP waste in Circular Economy Domain

Grant Agreement No.: 745746

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Topic: BBI-2016-D06 – Valorisation of the organic content of Municipal Solid Waste and contributing to the renewable circular economy

Starting date of project: June 1st, 2017

Duration: 60 months

WP 7 - Dissemination, exploitation and replication **Deliverable 7.13 – Intermediate report on the round table with external stakeholders**

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Lead beneficiary: **Contarina**

Dissemination Level (Specify with "X" the appropriate level)		
PU	Public	X
CO	Confidential, only for members of the consortium (including the Commission Services)	



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INTRODUCTION

The present report constitutes Deliverable 7.13 “Intermediate report on the round table with external stakeholders” within the framework of the EMBRACED project. The following activities refer to Work Package 7 and specifically to Task 7.4. “Stakeholders group set-up and replication plan”.

Among the objectives of Work Package 7, there is *“To promote project’s results as widely as possible and to all relevant stakeholders”*. Within Task 7.4. “Stakeholders group set-up and replication plan”, this objective is then further declined into the following detailed objectives:

- *“To establish a stakeholders group involving players operating in sectors crucial to the project, and specifically public authorities, waste management companies, relevant EU institutions, standardisation bodies, consumers’ associations, relevant players in the Bioeconomy sector;*
- *To involve stakeholders during the project to discuss on the new biorefinery model which will be demonstrated during the project and exchange important feedback and comments;*
- *To contact and involve stakeholders with dedicated interviews and meetings. Contacts with the stakeholders group also take the form of workshops and roundtables, set up by the project.”*

Engagement with stakeholders (e.g. businesses, research and education organisations, policy-makers, and non-governmental organisations) typically seeks to develop networks and collaboration between organisations, in support of business and research activity, and to inform and influence policy-making.

Engagement with civil society, moreover, may aim to increase people’s awareness of the bioeconomy, to gain public acceptance for a transition to a biobased economy, or to gather the views and concerns of different groups to inform decision-making.

The impact of engagement activities on society or decision-making not only depends on the approach taken but also on other dimensions, including: who participates, when engagement takes place, what issues are considered or excluded, and dynamics between participants.

The partners of the EMBRACED project do believe that the cumulative experience and the commitment of the partners as well as the network of stakeholders, already involved and to be contacted during the course of the project, will help in gaining acceptance through the value chain and in paving the ground towards future replication of the biorefinery model.

The number of the stakeholders participating into this group will increase during the years, thanks to a communication campaign and to a continuous work of involvement that encompasses the work for the project and extends to the business-as-usual performed from all the partners in this consortium.

Different tools and media, which will be developed in the course of the project, represent the core instruments to properly address these target groups. The stakeholders group will include at least 30 external stakeholders from 10 different countries, specifically targeting those countries which have a huge but still underexploited potential in the Bioeconomy and Circular Economy domains.

The cooperation with the stakeholders’ group in Task 7.4 is essential in order to get feedback from the situation in the territories they represent.

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Within this framework, in line with the above objectives, the work within Task 7.4 has started with the identification of relevant stakeholders and the collection of their contact details. A comprehensive database of stakeholders was built, with the aim of contacting the identified individuals during the various project activities.

Among the activities aimed at engaging stakeholders, then, two workshops / roundtables were organised until today. This deliverable reports about the two events, providing details about discussions with the participating stakeholders.



1 Round table with external stakeholders: intermediate reporting

1.1 Identification of relevant Stakeholders

A first potential stakeholders' database has been settled and presented by Contarina during the partner meeting in May 2018 held in Saragoza (Spain).

Between May and July a first stakeholders list has been finalized and approved by the Project Coordinator.

The start-up of the planning phase of the workshops/round tables for their involvement and the organization of the first stakeholders' roundtable has begun in July 2018.

During the following months, each potential stakeholder has received an invitation letter to join the group.

Until today 20 stakeholders from 11 different countries (Figure 1), mainly Waste Operators, Universities, International Organizations and Public Authorities, have already joined the Stakeholders group.



Figure 1 – Location of the participants to the EMBRACED Stakeholders group

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The Stakeholders list is provided below (Table 1).

STAKEHOLDER	COUNTRY	CATEGORY
ACR+	Belgium - Brussels	International Organization
Agencia de residus de Catalunya	Spain – Barcelona	Public Authority
AMIU	Italy – Genova	Waste Operator
City of Amsterdam	The Netherlands – Amsterdam	Public Authority
City of Warsaw	Warsaw – Poland	Public Authority
Cosmari	Italy – Tolentino	Waste Operator
EEB – European Environmental Bureau	Belgium - Brussels	International Organization
Fabbrica Pinza Schio	Italy – Santorso	Secondary Raw materials users
Garbitania Zero Zabor	Spain – Hernani	Public Authority
Helsinki Regional Environmental Services Authority	Finland - Helsinki	Public Authority
ISWA	Austria – Vienna	International Organization
IVAR	Norway – Stavanger	Waste Operator
JRC – Sustainable Production and Consumption Unit	Spain – Sevilla	Public Authority
Lipor	Portugal – Oporto	Waste Operator
OVAM	Belgium – Mechelen	Public Authority
Sartori Ambiente	Italy – Arco di Trento	Secondary Raw materials users
Scuola Superiore Sant’Anna di Pisa	Italy – Pisa	University
Snaga	Slovenia – Ljubljana	Waste Operator
Zero Waste Europe	Belgium – Brussels	International Organization
Zero Waste Scotland	United Kingdom – Stirling	Public Authority

Table 1 – Full list of the participants to the EMBRACED Stakeholders group



1.2 Workshops / roundtables held until May 2019

Hereinafter, details about the two workshops / round tables organised by the EMBRACED project for the engagement of stakeholders are provided, starting from the agenda of the events, up to the reporting about the main outcomes of the meeting.

1.2.1 1st Meeting in Rimini (Italy), 7 November 2018



EMBRACED **Stakeholders Group – 1st Meeting and Workshop**

7 November 2018 | Rimini (Italy)

AGENDA

Time		Topic	Moderator
STAKEHOLDERS GROUP MEETING			
09:30	09:45	Greetings, opening, meeting goals & participants presentation round	Fater, Contarina
09:45	11.15	Presentation of the Stakeholders Platform <ul style="list-style-type: none"> Scope, Members, Action plan Q&A and open discussion 	Contarina
11:15	11:20	Concluding remarks	Fater, Contarina
WORKSHOP			
AHP waste recycling perspectives in Europe in the framework of the bioeconomy			
11:30	11:45	Greetings, opening, agenda	Fater, Contarina
11:45	12:00	BBI mission and support for the development of the bio-based industry sector in Europe <i>Philippe Mengal – Bio-Based Industries Joint Undertaking, Executive Director</i>	
12.00	12.15	Presentation of the EMBRACED project & the AHP waste recycling plant <i>Marcello Somma – Head of R&D and Business Development AHP-R BU at Fater Spa</i>	
12.15	13:00	ROUNDTABLE: AHP waste recycling perspectives in Europe <ul style="list-style-type: none"> - <i>Marco Mattiello, Contarina</i> - <i>Paolo Marengo, ACR+ (Association of Cities and Regions for sustainable Resource management)</i> - <i>Maria Vidal, ARC Agència de Residus de Catalunya</i> - <i>Joze Grogoric, SNAGA (Ljubljana)</i> - <i>Kalhid Laktami, City of Amsterdam (The Netherlands)</i> - <i>Enzo Favoino, Zero Waste Europe (Belgium/Europe)</i> 	

Table 2 - Stakeholders meeting agenda

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The first stakeholders meeting took place at ECOMONDO in Rimini, Italy, the 7th of November 2018. The list of the participants to the meeting is provided below (Table 3).

STAKEHOLDERS AND PARTNER
ACR+
Agencia de Residus de Catalunya
FaterSMART
AEB
Contarina
ISWA
Fabbriche Pinze Schio
Snaga
IVAR
Edizioni Ambiente
Sartori Ambiente

Table 3 - Participants to the first stakeholders meeting

The focus of the first meeting was:

- To present in detail objectives and actions of the project
- To present the Stakeholders Platform: Scope, Members, Action plan that will facilitate open discussions with the participants on the AHP collection methods and discuss the experiences of different European regions.

During the meeting, the Project Coordinator FaterSMART introduced the Consortium and the main scope of the project (see presentation annexed to the Deliverable). The coordinator of the Stakeholder Platform, Contarina, introduced the objectives of the task and the members that already joined the platform (see presentation annexed to the Deliverable).

Goals:

- To introduce the project to the stakeholders;
- To receive stakeholders feedback about the project and how to keep them involved during its development;
- To learn from stakeholders about their experience in AHP collection systems
- To obtain feedbacks from stakeholders on the AHP waste recycling perspectives and the replication potential in Europe.

Main outcomes of the meeting:

The Stakeholders that took part to the meeting developed a very interesting and useful open discussion about the project and the AHP Recycling plant. Most of them were interested in understanding how this project could be replicated in their countries/regions, considering the positive impact on the waste management system and as an additional service to the population. They offered a support as well to increase its visibility through webinars and conferences. Finally, Contarina informed the stakeholders that a newsletter will be prepared and sent twice a year, to update the group about the project development.

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During the open discussion, stakeholders mentioned challenges that they are facing about the AHP waste collection. There are different kind of collection and selection systems but it is important to understand the costs and the environmental impact of the recycling plants.

Each Stakeholder showed interest in understanding how to realize and manage AHP waste recycling plant and collection systems. They asked for more specific information about minimum capacity of the recycling plant and its economic feasibility.

Another key aspect taken into consideration during the first meeting was the quality of the secondary raw materials, underling the importance of the quality of AHP waste that enters in the recycling plant. This would help the whole treatment process.

One of the participants highlighted the willingness to use the secondary raw materials in its supply chain.

The Project Coordinator FaterSMART replied to some issues that came out from the discussion, for example about EPR schemes, investment cost for the plant, Life Cycle Assessment (LCA) and AHP waste collection systems.

Stakeholders recommended to be involved about the project development and results, showing at the same time their availability in organizing dissemination events in Europe and offering their support with the organization of webinars.



Figure 2 – 1st Stakeholder meeting and workshop in Rimini

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1.2.2 2nd Meeting in Brussels (Belgium), 14 May 2019



EMBRACED Stakeholders Group – 2nd Meeting

May 14, 2019 | Brussels (Belgium)

Venue: Bio-Based Industries - Joint Undertaking (BBI - JU) Headquarters
White Atrium Building
Avenue de la Toison d'Or 56-60, B-1060 Brussels, Belgium

AGENDA

STAKEHOLDER GROUP MEETING		
Regulatory barriers for the implementation of AHP waste recycling in Europe: focus on the implementation of EoW criteria & market uptake of the secondary raw materials		
Time		Topic
14.00	14.10	Welcome greetings from BBI JU <i>Eleni Zika – Head of Programme Bio-Based Industries Joint Undertaking</i>
14:10	14:30	Opening, meeting & stakeholders group goals, participants presentation round <i>Marco Mattiello – International Relations Manager at Contarina</i>
14:30	14:40	Presentation of the EMBRACED project progress and main results achieved in the first 2 years of implementation <i>Orsola Bolognani – Grants & International Logistic Modelling Manager at FaterSMART</i>
14:40	14:55	End of Waste criteria for AHP waste: progress and learnings in Italy <i>Guido Polisenio - Business Development Manager at FaterSMART</i>
14:55	15.10	End of Waste criteria for AHP waste: progress and learnings in The Netherlands <i>Geert Cuperus – Diaper Recycling Programme Manager at RWS</i>
15:10	15:25	Legislative barriers for the recovery of AHP waste as secondary raw material in Europe: outcomes of the analysis developed in the EMBRACED project <i>Giorgio Zampetti – General Director at Legambiente</i>
15:25	15:40	Circular Economy policy & instruments <i>Paola Migliorini - Deputy Head of Unit, Sustainable Production, Products and Consumption – DG ENV</i>
15:40	16:50	Q&A and open discussion session on the meeting topic. <i>Moderated by Marco Mattiello – International Relations Manager at Contarina</i>
16.50	17:00	Wrap up & conclusions

Table 4 - Stakeholders meeting agenda

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The second stakeholders meeting took place in Brussels, Belgium, the 14th of May 2019. The list of the participants to the meeting is provided below (Table 5).

STAKEHOLDERS AND PARTNERS
OVAM
AEB Amsterdam
City of Amsterdam
P&G
BBI JU
Bic Consortium
Zero Waste Europe
RWS
Natuur en Milieufederatie Noord-Holland
EC – DG Env
EC – DG Grow
SUSDEF
ACR+
Legambiente
Scuola Superiore Sant'Anna di Pisa
Agencia de Residus de Catalunya
Lipor
FaterSMART
Contarina

Table 5 - Participants to the second stakeholders meeting

The meeting was focused on the legislative barriers for the implementation of AHP waste recycling in Europe, with a specific focus on the implementation of End of Waste criteria for this specific waste stream and the related market uptake of the secondary raw materials recovered through the EMBRACED project.

During the meeting, the coordinator of the Stakeholder Platform, Contarina, introduced the objectives of the task and the members that already joined the platform. (see PPT presentation annexed to the Deliverable).

The Project Coordinator FaterSMART introduced the EMBRACED project progress and main results achieved in the first 2 years of implementation (see PPT presentation annexed to the Deliverable).

Goals:

- To share information about the most advanced experiences on the implementation of End of Waste criteria for AHPs (Italy and The Netherlands).
- To discuss and share ideas on legislative barriers for the implementation of AHP waste recycling in Europe and the ways to overcome them.

Main outcomes of the meeting:

The Stakeholders that attended the meeting confirmed their interest about the project and the topic of “End of Waste”.

The Head of the Bio-Based Industries Joint Undertaking Program in her welcome speech, underlined the importance of this project within the BBI-JU program and the positive aspects that it

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will bring to the social and environmental level. Ms. Zika noted with great pleasure the presence of Mrs. Migliorini from DG ENV, hoping for an even stronger collaboration between the two institutions in these issues.

The Deputy Head of Unit, Sustainable Production, Products and Consumption – DG ENV, opened the meeting talking about the adoption of the Circular Economy Action Plan by the Commission in 2015. The plan was developed to stimulate Europe's transition towards a circular economy, which increases global competitiveness, fosters sustainable economic growth and generates new jobs. The proposed actions contribute to "closing the loop" of product lifecycles through greater recycling and re-use, and bring benefits for both the environment and the economy. The plans help to extract the maximum value and use from all raw materials, products and waste, fostering energy savings and reducing greenhouse gas emissions.

Initiatives like the EMBRACED project contribute to achieve sustainability results.

The Project Coordinator showed the "End of Waste" criteria for AHP waste, especially the progresses and learnings in Italy.

RWS explained how the Dutch government is working on the assessment of risks related to diaper recycling. After evaluating the state of the art, they defined the approach that leads to a protocol to be applied in the permit application and to a new minimum treatment standard in the Waste Management Plan (Degradation test, Concentration in recovered materials and Availability in use). Continuous monitoring is planned during the operational phase.

Legambiente, one of the most widespread environmental organization in Italy and partner of the Project, talked about the legislative barriers for the recovery of AHP waste as secondary raw material in Europe, presented the study developed on this issue within the Embraced project (deliverable 6.1). Main outcomes pointed out:

- There is a need to move away from seeing landfills and incinerators as the go-to waste disposal solution. Rather, national and European networks of waste recycling and reuse plants and facilities should be consolidated.
- It is remarkable to encourage public debate in order to increase consensus and facilitate the construction of industrial recycling plants.
- It is also noteworthy to rigorously simplify the waste recycling system and make the use of secondary raw materials subject to official review by public environmental and health authorities.
- Once the bureaucratic regulatory process has followed its course, it may be necessary to make these criteria generalisable to other countries that seek to promote circular resource processes based on secondary raw materials.

The following main issues were discussed during the meeting:

- Collection and treatment of the AHP waste - the main focus of the project is on the treatment technology, but definitely to collect AHP waste in a proper way is a fundamental prerequisite;
- Importance to create same European standards for secondary raw materials – to provide assurances about the safety of the products to potential buyers;
- End of waste decree allows an easier social acceptance about the secondary raw materials and their use and removes the legislative barriers – e.g. the ones connected to the waste transportation.
- Harmonising the end-of-waste criteria is an opportunity to introduce widely recognised product standards.
- A high level of environmental protection can be achieved only if there is reliable and comparable information on the environmentally relevant product properties.

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- Decreasing of residual waste, thanks to the AHP recycling, probably will not bring fees reduction but will reduce the environmental impact.



Figure 3 – 2nd Stakeholder meeting and workshop in Brussels

The day after the meeting, the 15th of May 2019, the Italian Environment Minister approved the AHP recycling decree.

It has been a long road but now it is possible to see brilliant results: plastic, cellulose and super absorbent polymers, obtained thanks to the recycling process, can be used as secondary raw materials in Italy.



2 Outlook on future Stakeholder engagement activities

Engagement with stakeholders laterally and vertically across the EU (civil society, universities, research and industry), will raise awareness on the EMBRACED biorefinery model, will build public trust in the materials cycle, will result in a shared vision of best practice in waste management that would enable to envisage and implement exploration practices that are more acceptable to society.

Based on stakeholders dialogue and research, the EMBRACED project will produce a considerable amount of documents, that will prioritise recommendations and plans for improved availability of data, with the goal to improve e.g. systems for AHP waste collection, potential replication of the biorefinery model, social and economic impact, etc.

In the future, further stakeholder engagement activities will be carried out. Stakeholders will be involved in a couple of events per year, as these activities are proving to be an important source of information both for the partners and the stakeholders themselves.

The newsletter that includes the latest updates on the project, the minutes of the stakeholders meeting and more in general the communication and dissemination media and events organized within the project will be continuously share and promoted among the project stakeholders.

The effort for including other relevant stakeholders in the EMBRACED Stakeholder Group will also continue, in order to further expand our objectives and to gather new ideas and suggestions.

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ANNEXES

- Annex1_EMBRACED_project@07_11_18
- Annex2_Stakeholder_Platform@07_11_18
- Annex3_EMBRACED_2nd_Stakeholder_Meeting@14May19
- Annex4_Stakeholder_Meeting@14_05_19

REFERENCES

<https://www.embraced.eu/>

<https://www.linkedin.com/company/embracedproeu/>

**ESTABLISHING A MULTI-PURPOSE BIOREFINERY FOR
THE RECYCLING OF THE ORGANIC CONTENT OF AHP
WASTE IN A CIRCULAR ECONOMY DOMAIN**



**Closing the loop of AHP waste:
the EMBRACED project**

Orsola Bolognani – Grant & Logistic Modeling Manager



Stakeholder Group Meeting – November 7th, 2018



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FaterSMART is a business unit dedicated to the research, development and commercialization of the technology and industrial process of recycling used absorbent hygiene products

It is part of Fater Spa, a joint-venture between Procter&Gamble and Gruppo Angelini, leader in the Italian market of sanitary products and in the European bleach market

- 1,600 employees
- 1,000 related employees
- Turnover: € 911 milion
- 4,563,900,882 products per year
- 4% of turnover in R&D
- 5 facilities: Pescara (Abruzzo), Campochiaro (Italy), Porto (Portugal), Mohammidia (Morocco), Gebze (Turkey)

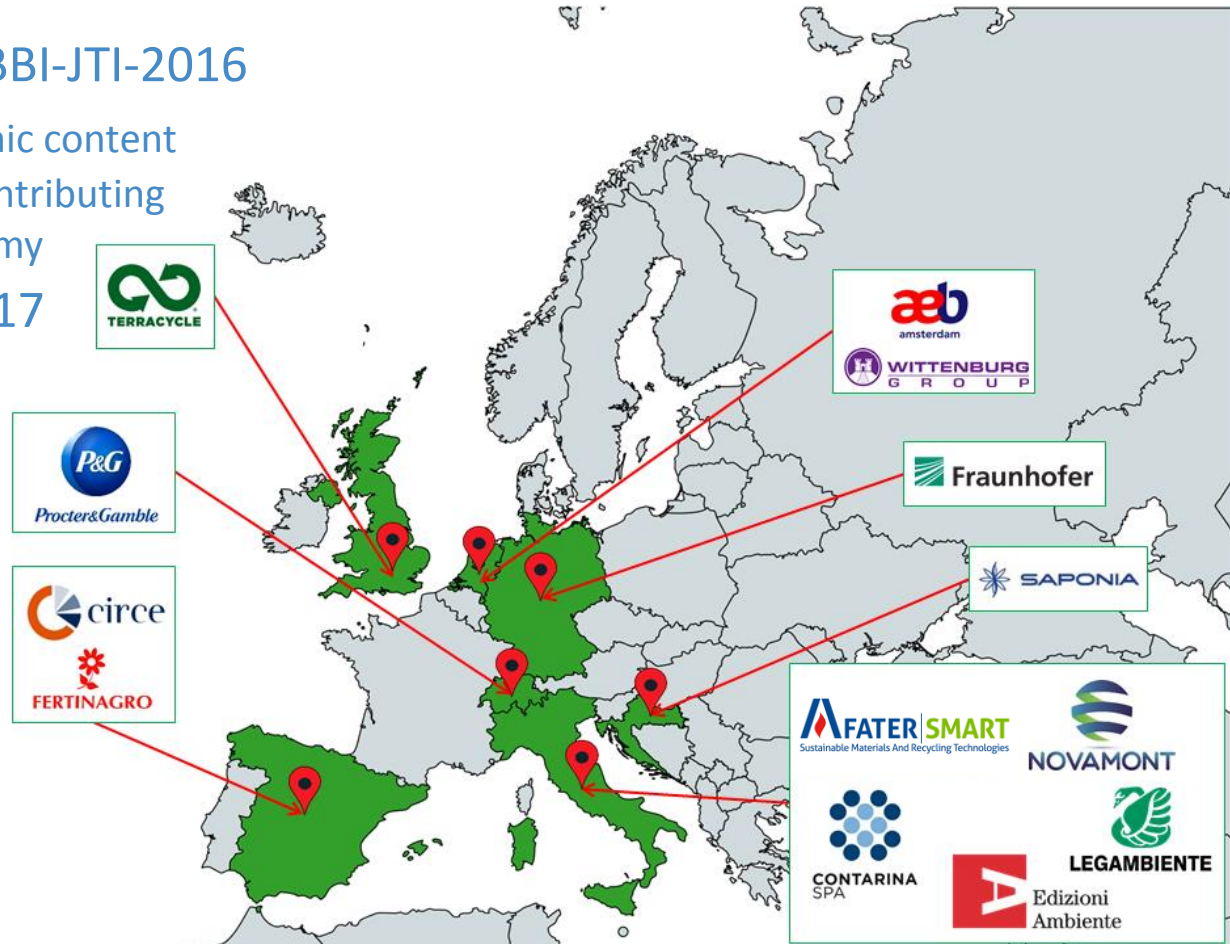




Project details & Consortium

- Call for proposal: H2020-BBI-JTI-2016
- Topic: Valorisation of the organic content of Municipal Solid Waste and contributing to the renewable circular economy
- Starting date: June 1st, 2017
- Duration: 60 months

13 Partners
7 EU Countries

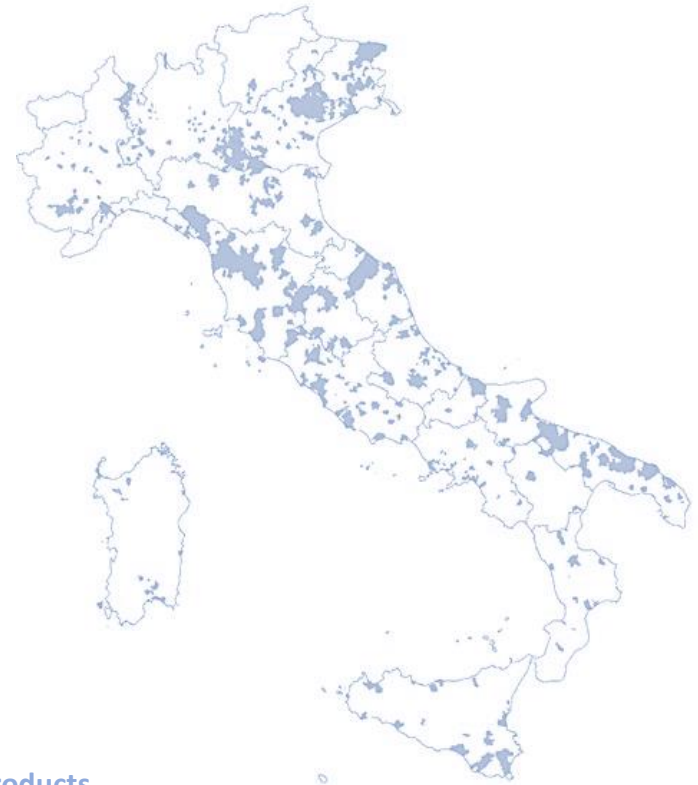


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Project premises

- **Absorbent Hygiene Products (AHPs) waste** contribute between **2-4% of the total Municipal Solid Waste** and to about 10% of the organic fraction
- Each year **900.000 tons of AHP waste are incinerated or landfilled in Italy, 8.500.000 tons in Europe and over 30.000.000 tons in the world**
- **In the contexts where the new EU recycling targets are achieved, used AHPs account for up to 20-25% of non-recycled residual waste**
- There is a **quickly growing trend to separate and collect AHP waste in some EU Countries**; for example **in Italy 12 million citizens** are already served by separate collection services of AHP waste



* Absorbent Hygiene Products = baby diapers, female pads, adult incontinence products



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Project premises

Start of R&D activities on AHP waste recycling

Demonstration of the first pilot recycling plant (1.500 t/year)

Inauguration of the industrial-scale recycling plant (10.000 t/year)

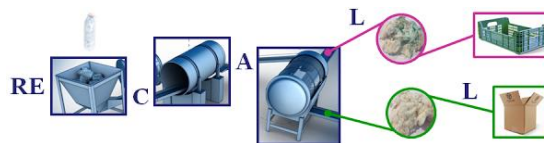
2008

2015

2017

Industrialization expansion

R&D on SRM applications



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The AHP waste recycling process



Sterilization



Drying



Storage system



Conveyor system



Separation



**High quality
Secondary
Raw Material**



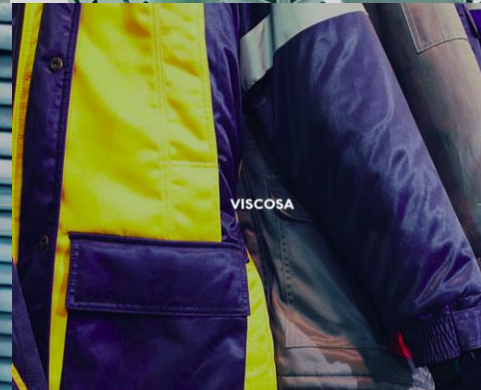
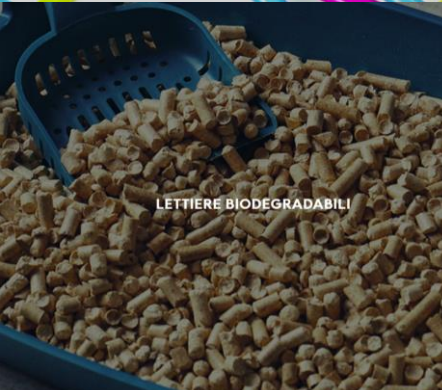
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The Secondary Raw Materials

150 kg of cellulose, 75 kg of plastic, and 75 kg of superabsorbent polymer are recovered from each ton of AHP waste, and may be used already in the main production processes currently using the same materials





Project scope

DEMONSTRATE in a relevant industrial environment a **circular model of integrated biorefinery** based on the **valorisation of the cellulosic fraction of AHP waste** towards the production of **biobased building blocks, polymers, and fertilizers**



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Project approach

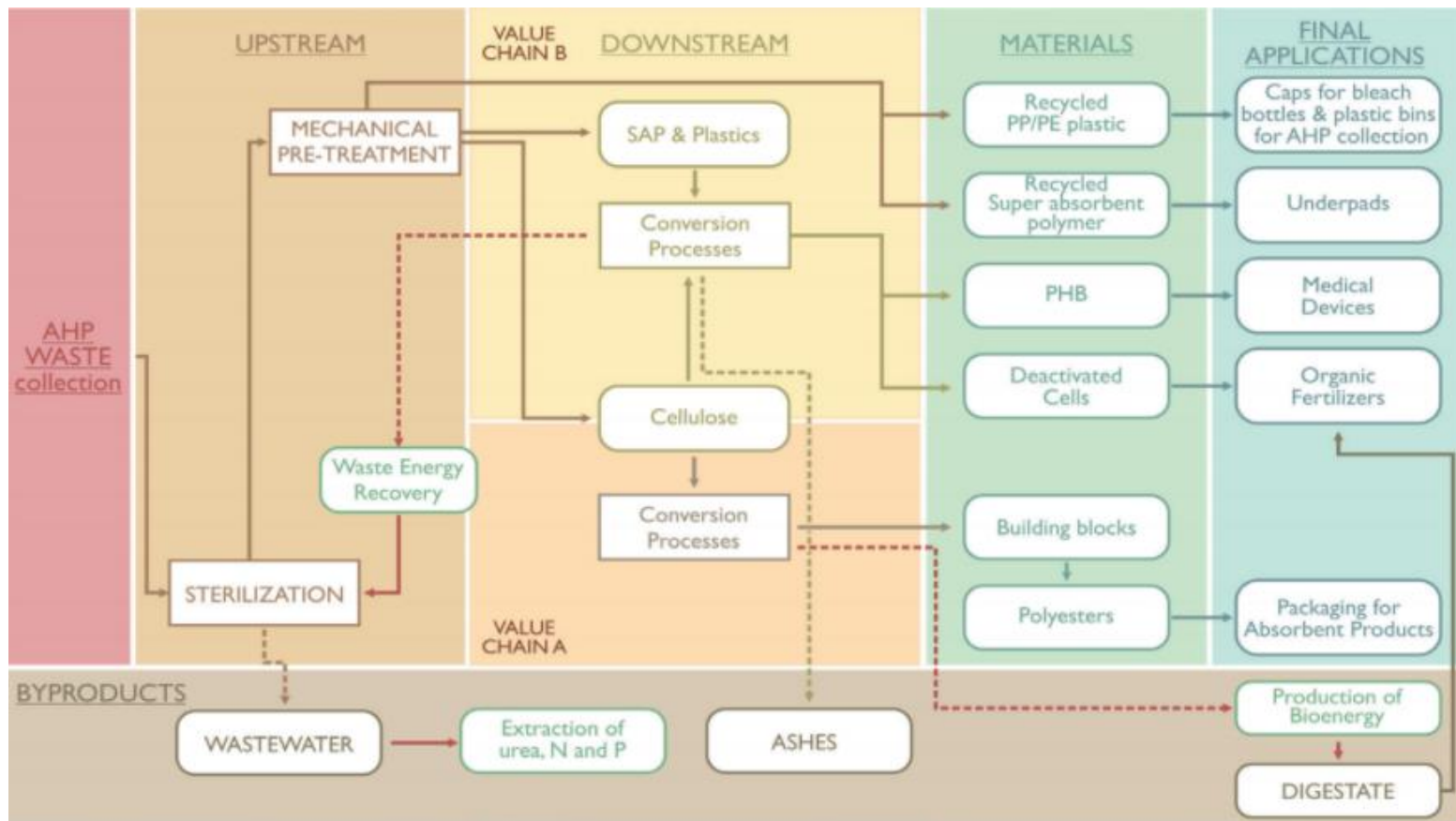
- **CASCADING APPROACH:** all fractions from the process will be valorized to obtain marketable end-products fully competitive with the respective fossil-based counterparts or other benchmark biomass-based products, in terms of cost, quality and sustainability
- **CIRCULAR ECONOMY APPROACH, closing the cycle of raw materials and minimizing the use of primary resources, through the establishment of virtuous models of cooperation among all the involved stakeholders:** diapers' producer, waste management company, logistic company, biobased processes developers, biopolymers producers, products developers and last but not least citizens.



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The biorefinery model



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A carbon negative process

First plant in ITALY	Recycling scenario	Current scenario
Kg CO ₂ eq/ton produced during AHP waste collection	28	11
Kg CO ₂ eq/ton produced during the treatment process	177	422
Kg CO ₂ eq/ton avoided	-373	-166
TOTAL	-168	267

Source: Ambiente Italia «REPORT ON SCENARIOS OF THE COLLECTION AND RECYCLING OF ABSORBENT HYGIENIC PRODUCTS» (2016)

Demonstration plant & further scale-up



Development of an innovative integrated biorefinery in Amsterdam:

- Demonstrate a **replicable logistic AHP waste collection scheme** based on the adoption of innovative business models (direct to customers services)
- Design and realize an innovative **AHP waste based (demonstration) biorefinery train (10,000 t/year)** in order to separate 3 different high purity grade fractions (plastic, cellulose, SAP)
- **Multipurpose approach for the biorefinery** in order to convert the AHP cellulosic fraction into different biobased products : building blocks, polyesters, PHB and fertilizers
- Development of **profitable business cases, business models and business plans** tuning the biorefinery model to different local conditions across EU



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**ESTABLISHING A MULTI-PURPOSE BIOREFINERY FOR
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**Thank you for your kind
attention!**

Contact:
embraced@fatergroup.com



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**WP7: Dissemination, exploitation and
replication**

Task 7.4

Stakeholder group set-up and replication plan

Duration: M1-M60



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OVERVIEW OF WP7

Objectives:

- *To promote project's results as widely as possible and to all relevant stakeholders;*
- *To assess market studies of the targeted biobased materials;*
- *To ensure the proper handling of Intellectual Properties.*



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Objectives of the task:

The objective of this task is to establish a stakeholders group involving players operating in sectors crucial to the project, and specifically public authorities, waste management companies, relevant EU institutions, standardisation bodies, consumers' associations, relevant players in the Bioeconomy sector.

Overview of the task:

- ✓ *To set-up the stakeholders group;*
- ✓ *To organize Workshops/round tables for their involvement;*
- *To animate the group during the project development by delivering information on the project progress and intermediate results;*
- *To Involve stakeholders during the project to discuss on the new biorefinery model;*
- *To Exchange feedbacks and comments;*



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WP7 - Task 7.4



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Stakeholders List

Name	Country	Category
ACR+	Belgium - Brussels	International Organization
Agencia de residus de Catalunya	Spain - Barcelona	Public Authority
AMIU Genova	Italy - Genova	Waste Operator
City of Amsterdam	The Netherlands - Amsterdam	Public Authority
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Cosmari	Italy – Tolentino (MC)	Waste Operator
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IVAR	Norway - Stavanger	Waste Operator
JRC – Sustainable Production and Consumption Unit	Spain - Siviglia	Public Authority
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WP7 - Task 7.4



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Zero Waste Scotland	United Kingdom - Stirling	Public Authority

Stakeholders an added value

This group will provide support to define new scenarios for the replication of the model in their context, paving the grounds towards the achievement of consistent impacts at EU level.

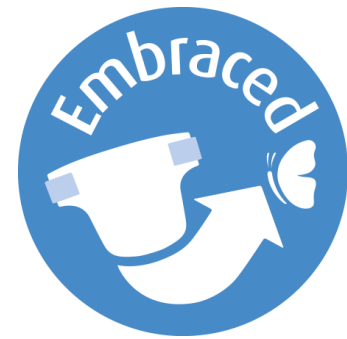
We are convinced that this mix of skills and experience will provide an added value to the project in terms of Technical, Economical, Social and Environmental aspects.

Stakeholders involvement

Contarina in collaboration with FATER, Legambiente and Edizioni Ambiente will set-up the stakeholders group and organize the workshops/roundtables for their involvement and will be responsible for the animation of the group during the project development by delivering information on the project progress and intermediate results.

Contarina in collaboration with FATER and Edizioni Ambiente will sum up the results of the stakeholders' workshops activities in two stakeholders' vision documents (M24 and M60).

ESTABLISHING A MULTI-PURPOSE BIOREFINERY FOR THE RECYCLING OF THE ORGANIC CONTENT OF AHP WASTE IN A CIRCULAR ECONOMY DOMAIN



Thank you for your attention

Contacts:

- Contarina: marco.mattiello@contarina.it
comunicazione@contarina.it



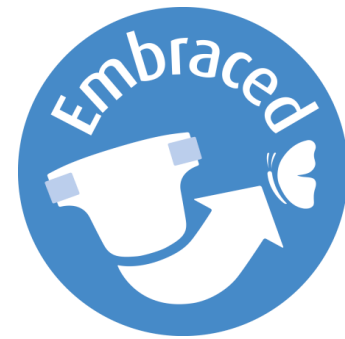
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**ESTABLISHING A MULTI-PURPOSE BIOREFINERY FOR
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EMBRACED Project Progress Main Results over the first 2 Years of Implementation

Orsola Bolognani – Grant & Logistic Modeling Manager



Stakeholder Group Meeting – May 14, 2019



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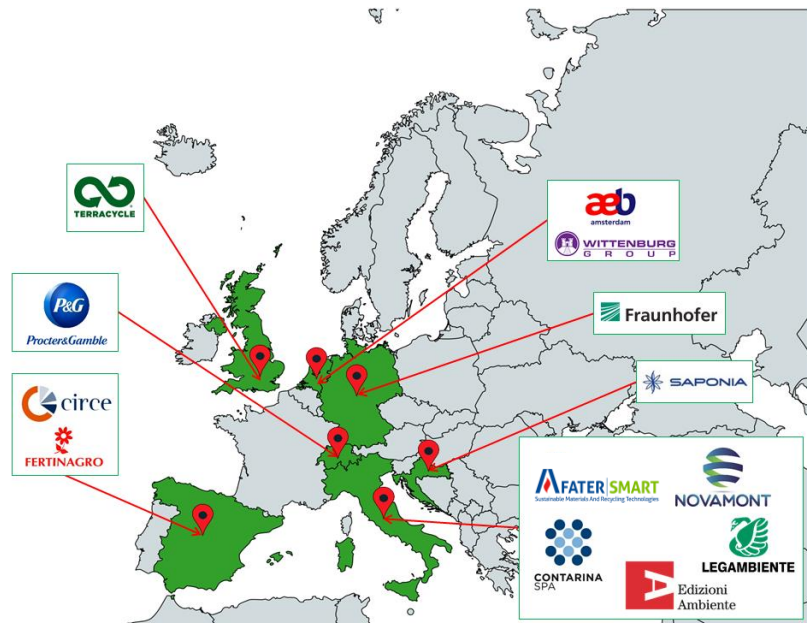
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Project Details & Consortium

- Scope: **DEMONSTRATE** in a relevant industrial environment a **circular model of integrated biorefinery based on the valorisation of the cellulosic fraction of AHP waste** towards the production of biobased building blocks, polymers, and fertilizers
- Starting Date: **June 1st, 2017**
- Duration: **60 months**

13 Partners 7 EU Countries

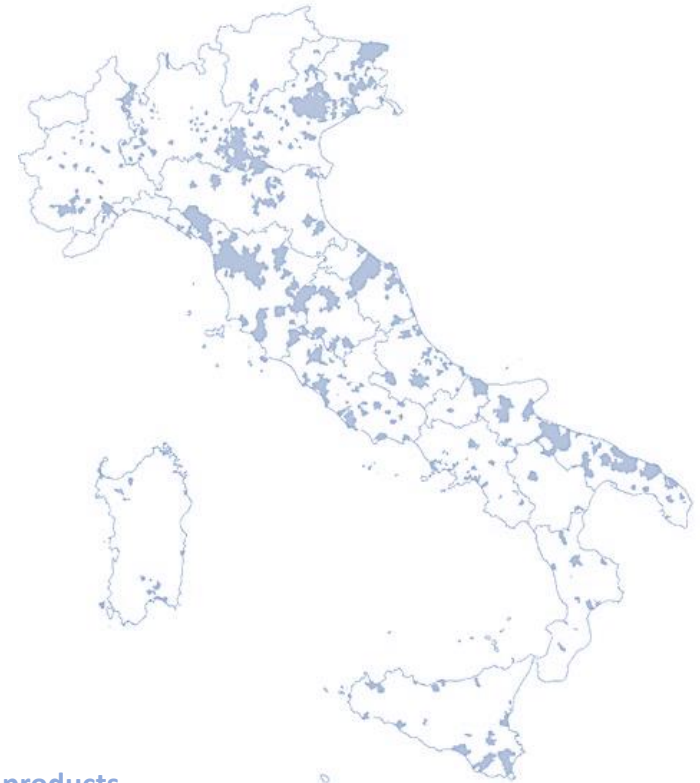


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Project Background

- **Absorbent Hygiene Products (AHPs)** waste contribute between **3-4% of the total Municipal Solid Waste** and to about 10% of the organic fraction
- Each year **900,000 tons of AHP waste are incinerated or landfilled in Italy, 8,500,000 tons in Europe and over 30,000,000 tons in the world**
- In contexts where the new EU recycling targets have already been achieved, used AHPs account for up to **20-25% of non-recycled residual waste**
- There is a **quickly growing trend to separate and collect AHP waste in some EU Countries**; for example, **in Italy 12 million citizens** are already served by separate collection services of AHP waste



* Absorbent Hygiene Products = baby diapers, feminine pads, adult incontinence products

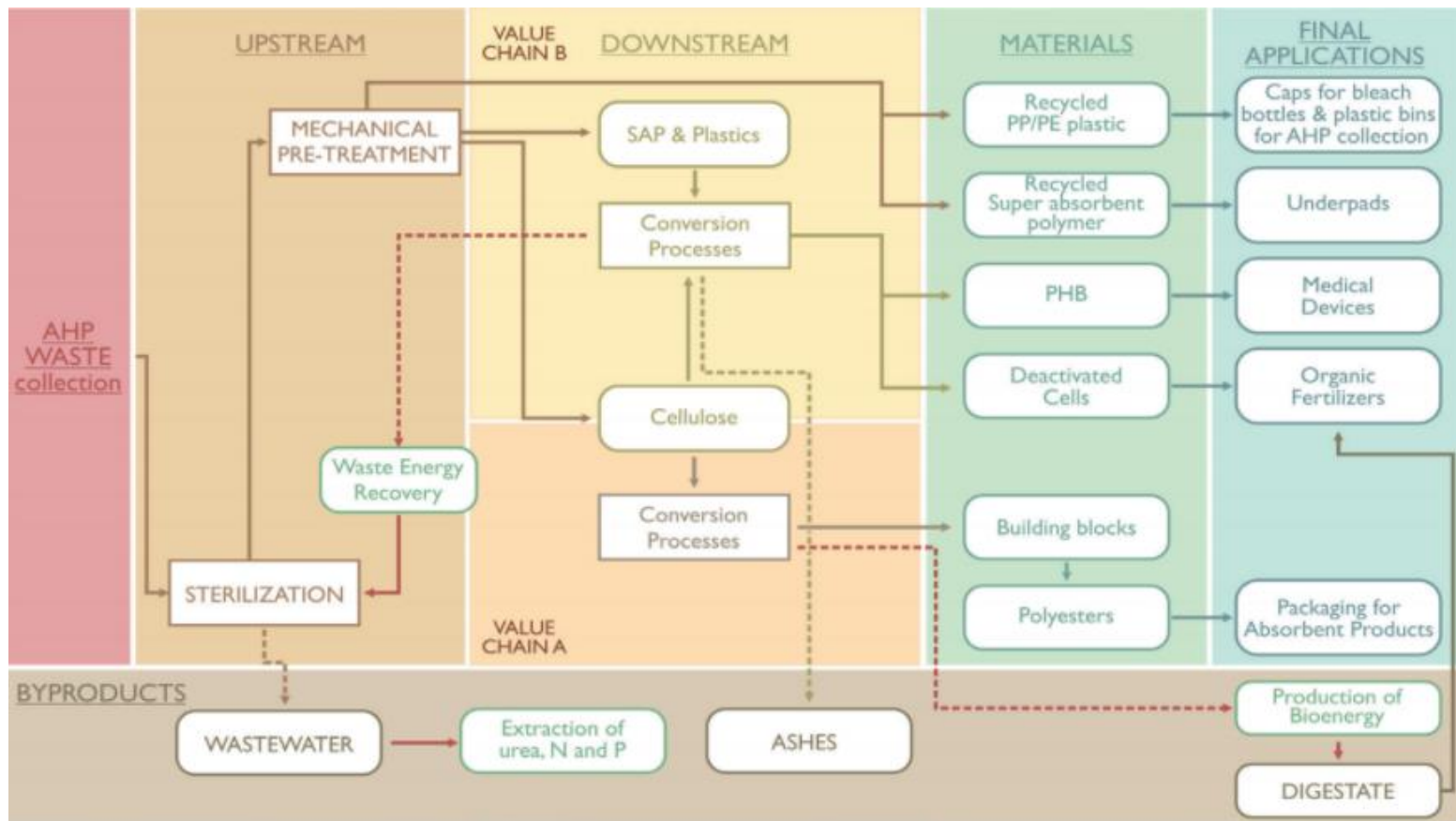


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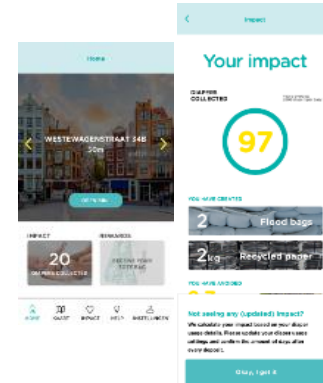
The biorefinery Model



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Main Tangible Achievements: AHP Waste Collection

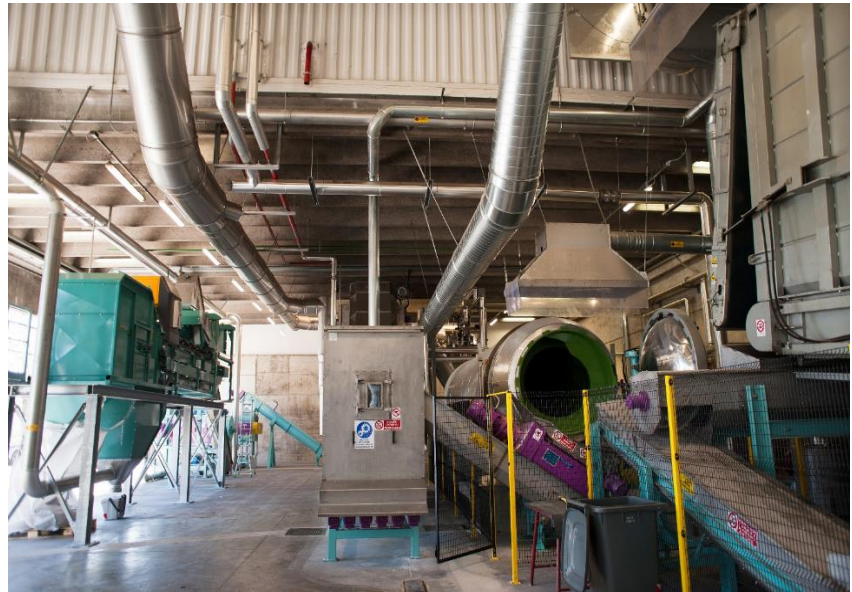


- Design and test in Amsterdam of an **innovative reverse-logistics** AHP waste collection service from consumers
- **Successful pilot test with 9 smart bins** located in front of day cares and stores, launched on 18th January 2019

Main Tangible Achievements: AHP Waste Pre-treatment



- **Upgraded AHP waste pre-treatment plant at Contarina (Italy) up and running,** enabling the recovery of 100% of the three AHPs components: plastic, cellulose and Super Absorbent Polymer (SAP)



- **Optimization of SAP-cellulose separation process for achieving higher separation efficiency will be completed by August '19**

Main Tangible Achievements: Biorefinery Value Chains



- **Value Chain A:** Samples of purified 1,4 bio-BDO suitable to be used for applications into biodegradable and compostable bioplastics
- **Value Chain B:** PHB from AHP waste cellulose extracted at gram scale



Main Tangible Achievements: SRMs Applications



AHP waste recycled plastic and SAP applications almost finalized:

- Final design and first work-like prototypes of the **AHP waste collection bin**, ready for production trials
- Mould design and production trials of **detergents' caps**
- Production tests of the **underpads** absorbent inner layer performed. Absorption capacity of underpads with AHP recycled SAP & cellulose much higher than current Fater's products



Main Tangible Achievements: Exploitation Results



- Fater created already in November '18 a **new business unit** dedicated to developing and commercializing the AHP recycling technology



- 22 Letters of Interest already signed by waste **operators interested in purchasing plants** (20 from Italian waste operators, 2 from international waste operators, one of which interested in replicating the plant in 9 EU Countries: DE, BE, NL, LU, FR, ES, UK, SE, CZ)
- 12 Letters of Interest already signed by **final users interested in buying the SRMs** (plastic, cellulose and SAP)
- Several contacts and ongoing discussions with various stakeholders (waste operators, public administrations, SRM's users) from EU Countries and worldwide (e.g., Japan, USA, South Africa, New Zealand)



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What's Next

- Final validation of the **applications for recycled plastics and SAP**
- Installation of the **AHP waste pre-treatment plant in Amsterdam**
- **Synthesis of biobased 1.4 BDO & samples of biobased compounded polyesters** for final applications
- More sustainable **PHB extraction**
- Validation of **nutrient recovery methods** from the AHP waste pre-treatment process

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THE RECYCLING OF THE ORGANIC CONTENT OF AHP
WASTE IN A CIRCULAR ECONOMY DOMAIN**



**Thank you for your kind
attention!**

Contact:
embraced@fatergroup.com



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**WP7: Dissemination, exploitation and
replication**

Task 7.4

Stakeholder group set-up and replication plan

Duration: M1-M60



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OVERVIEW OF WP7

Objectives:

- *To promote project's results as widely as possible and to all relevant stakeholders;*
- *To assess market studies of the targeted biobased materials;*
- *To ensure the proper handling of Intellectual Properties.*



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Objectives of the task:

The objective of this task is to establish a stakeholders group involving players operating in sectors crucial to the project, and specifically public authorities, waste management companies, relevant EU institutions, standardisation bodies, consumers' associations, relevant players in the Bioeconomy sector.

30 stakeholders to be achieved during the project

Overview of the task:

- ✓ *To set-up the stakeholders group;*
- ✓ *To organize Workshops/round tables for their involvement;*

- ✓ *To animate the group during the project development by delivering information on the project progress and intermediate results;*
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WP7 - Task 7.4



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Participants list – 1st meeting in Rimini (Italy)

Stakeholders and Partners
ACR+
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FaterSMART
AEB
Contarina
ISWA
Fabbriche Pinze Schio
Snaga
IVAR
Edizioni Ambiente
Sartori Ambiente

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Thank you for your attention

Contacts:

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laura.tonon@contarina.it

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