

EMBRACED

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

Summary

Absorbent Hygiene Products (AHP) waste, which includes post-consumers nappies, adult incontinence products, feminine hygiene items, wipes, etc. are currently considered a non-recyclable fraction of the Municipal Solid Waste (MSW), with 8,500,000 tons of such waste incinerated or landfilled in Europe each year.

The EMBRACED project will demonstrate, in a relevant industrial environment, a replicable, economically viable and environmentally sustainable model of integrated biorefinery based on the valorisation of the cellulosic fraction of Post-Consumer AHP waste in producing bio-based building blocks, polymers, and fertilizers. The biorefinery will use a circular economy approach, closing the cycle of raw materials and minimising the use of primary resources.



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

Type of Action:
Innovation Action -
Demonstration

Value Chain: VC4 – organic waste

Start date: 01 June 2017

End date: 31 May 2022

BBI JU contribution: €
10,695,211.13

Objectives

- Demonstrate a replicable logistic scheme and service which will enable the collection of 10,000 tons/year of separated AHP waste
- Demonstrate the recovery of three separate high purity fractions from AHP waste suitable for subsequent added value valorisation
- Demonstrate i) a low cost, efficient one-step process for obtaining 2G fermentable sugars from high purity AHP waste cellulose; ii) a process for converting syngas from AHP waste cellulose into biodegradable polyesters; iii) a process for the conversion of sugars obtained by AHP waste cellulose fraction into biobased building blocks and polyesters. Validate the obtained biobased polyesters into the formulation of biodegradable films for non-food packaging and into the formulation of materials for medical applications

Achievements & milestones

Scientists want to use dirty nappies as a source of raw materials

08 October 2018
The project's recycling plant is turning thousands of soiled nappies, originally destined to clog Italian landfill sites or incinerators, into streams of high quality raw materials, in a new process that it is hoped

- Valorize all by-products through the production of final applications (i.e. organic fertilizers, plastic bins and caps, absorbent underpads)
- Demonstrate the active involvement of the

Expected impacts

- Demonstrate the feasibility of a significant added value valorization of organic waste compared to the biogas or compost production
- Develop sustainable biobased materials
- Deliver high quality products that can be easily commercialised in accordance with EU standards concerning the biodegradability and compostability.
- Potential creation of new 153 skilled jobs in the whole value chain (100 new jobs in the logistic sector, 8 new jobs in the waste management sector, 10 new jobs for the designed and realization of the new AHP waste pretreatment plant, 35 new jobs in the final products development)



will be replicated across Europe to release the separate collection and recycling of AHP

Moving Europe's mountain of nappies from landfill to helping create useful bio-based products

15 Jan 2018 the environmental impacts related

Our EMBRACE project is working towards establishing a multi-purpose biorefinery for the recycling of the organic polymers contained within absorbent hygiene products (nappies, wipes, etc). 'Only partnerships, like those being forged for EMBRACE can help us achieve the goals that we all have for the bioeconomy of the developed world'

Mauro Somma. [Read more](#)
processes through the development of standardization measures

Project coordination

- Fater Spa (Italy)
- Legambiente Onlus (Italy)

Email: enravan@fater.it

- Contarina Spa (Italy)
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. (Germany)
- Fundación CIRCE - Centro de Investigación de Recursos y Consumos Energéticos (Spain)
- Edizioni Ambiente Srl (Italy)
- AEB Exploitatie BV (Netherlands)
- TerraCycle UK Ltd (UK)
- Procter & Gamble International Operations SA (Switzerland)
- Saponia Kemijska, Prehrambena i Farmaceutska Industrija D.D. (Croatia)
- Fertinagro Nutrientes SL (Spain)
- B.V. Rubberfabriek Wittenburg (Netherlands)

Organisation name: Fater Spa (Italy)