

DEEP PURPLE

Conversion of diluted mixed urban bio-wastes into sustainable materials and products in flexible purple photobiorefineries

Summary

The EU generates almost 140 million tonnes of urban biowaste every year. Around 75 percent of this is sent for incineration or landfilled and has a major environmental impact. It is also a lost opportunity as much of this waste has the potential to be recycled. The main reason why the various waste streams are not recycled is that current methods of valorisation has a low performance, a high carbon footprint and most nutrients are dissipated. The waste streams are also highly heterogeneous and diluted, meaning that efforts to separate them at source are difficult.

In an effort to address this challenge and recover the potential from these urban wastestreams, DEEP PURPLE project aims to demonstrate a method of transforming diluted urban bio-wastes, including mixed waste streams, the organic fraction of municipal solid waste, waste water and sewage sludge into a sustainable source of feedstock for various bio-industries.

It will use an innovative approach, implemented by using a novel Multi-Platform Biorefinery Concept (Biomass, Cellulose and Biogas). This will replace current destructive and polluting practices.

Objectives

The overall objective of DEEP PURPLE is to develop and demonstrate the viability of the concept of a versatile, integrated and flexible multi-platform biorefinery capable of extracting and recovering high added-value compounds from urban waste streams.

Within this, DEEP PURPLE has a number of specific objectives.

- It will reduce the amount of waste currently going for incineration or landfilled, by recycling and re-using almost 60 percent of the primary sludge and nearly 85 percent of the secondary sludge produced at a wastewater treatment plant.
- It will attempt to reduce the amount of organic waste going to landfill, by converting the biogas that can be produced by the organic fraction into high-added value products such as ectoine.



<http://deep-purple.eu/>

Type of Action:
Innovation Action -
Demonstration

Value Chain: VC4 – organic waste

Start date: 01 May 2019

End date: 30 April 2023

BBI JU contribution: €
6,983,049

Expected impacts

DEEP PURPLE aims to deliver a number of impacts. It seeks to:

- Establish new interconnections between companies and other sectors to build new value chains. These will feature actors that have not previously worked together in a value chain and is likely to see cooperation between waste management companies and those in the fields of packaging, construction, fertilisers and cosmetics.
- Develop five new bio-based value chains which will involve developing industrial symbiosis models between municipal waste managers and end users in three different sectors.
- Demonstrate the viability of converting the bio-based intermediate products obtained into five consumer-oriented products. These will have greater overall sustainability than existing alternatives, will



will develop a range of bio-based products – slow-release fertilisers, polyesters for film applications, packaging applications, cosmetics and a ‘self-healing’ additive for concrete, all of which will offer improved environmental performance.

perform as well and will meet a clear market demand.

Project coordination

- FCC Aqualia SA (Spain)
- Activatec Ltd (United Kingdom)
- RNB, SL (Spain)
- Natureplast SAS (France)
- Fomento de Construcciones y Contratas SA (Spain)
- Instituto Tecnológico del Embalaje, Transporte y Logística (Spain)
- Brunel University London (United Kingdom)
- Novamont SPA (Italy)
- Universidad Rey Juan Carlos (Spain)
- Alchemia-Nova Research & Innovation Gemeinnutzige GmbH (Austria)
- Asociación Española de Normalización (Spain)
- Investornet-Gate2growth APS (Denmark)
- Universidad de Valladolid (Spain)
- Agro Innovation International (France)

Organisation name: FCC Aqualia SA (Spain)