



# PLENITUDE

Training / Learning from CBE JU Flagship Program  
Craig Johnston 21 April 2026

First-of-its-kind, large scale, minimal waste protein production  
from renewable feedstocks



Plenitude has received funding from the Bio-based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation programme under grant agreement No. 838104. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio-based Industries Consortium.

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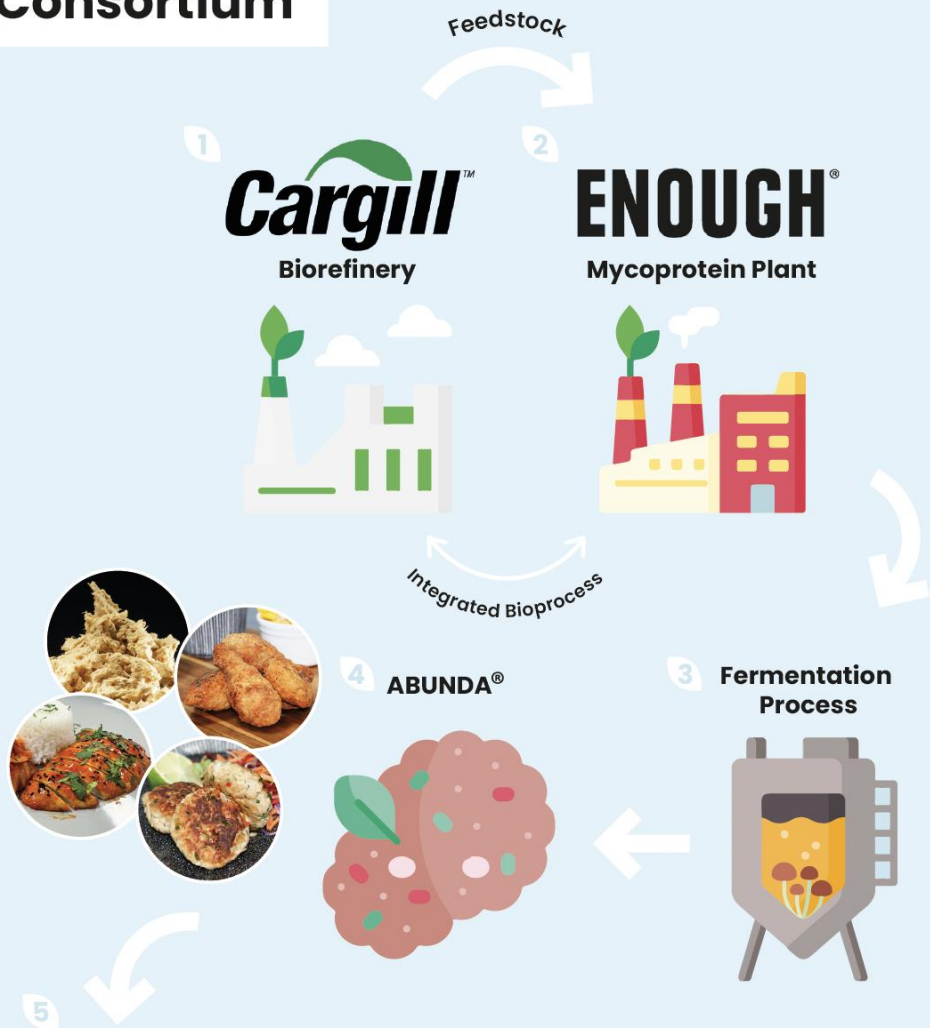
## EU Strategy to Shift Towards Sustainable Bio Economy

- 6¼-year project with a value of >€45 million has received funding from the Circular Bio-Based Europe Joint Undertaking (CBE JU) within the European Union's Horizon 2020 research and innovation programme
- CBE JU: €2 billion partnership between the European Union and the Bio-based Industries Consortium funding circular bio-based projects
- Plenitude part of CBE JU Flagship Program – €17m leveraging private funding
- 11 partners across value chain from 5 member states
- Duration: 1 Oct 2019– 31 Dec 2025



# PLENITUDE

## Consortium



**BRIDGE2FOOD**

Communicate project results to the public



**LCE**

Conduct life cycle analysis on ABUNDA<sup>®</sup> to assess its environmental and social impact



**WAGENINGEN**  
UNIVERSITY & RESEARCH

Conduct studies on the characteristics of ABUNDA<sup>®</sup>



**abp** **iff** **Lactips**  
**Mosa Meat** **VIV ERA**

Develop a wide range of bioproducts with ABUNDA<sup>®</sup>

**iconiq**  
YOUR PARTNER IN INNOVATION

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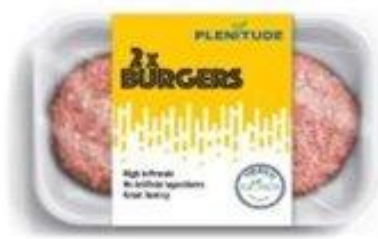
## Consortium representing the whole value chain



### MEAT ALTERNATIVES



### MEAT HYBRIDS



### PET-FOOD



### PROTEIN INGREDIENTS



### CLEAN MEAT



### BIO-PLASTICS



# ABUNDA is a highly versatile alternative protein ingredient, which can be used in many different applications.

**ENOUGH**

## Categories in focus

### Meat Alternatives



### Seafood Alternatives



### Hybrids



### Dairy alternatives



# FOAK Reality & Requirements

**ENOUGH<sup>®</sup>**

*A FOAK facility built over 2021-23, and commissioned over 2023-25*



# TRL journey: Key for Flagships

**ENOUGH**

1500L – 15m<sup>3</sup>



1L – 10L



150L



Bio Base Europe  
Pilot Plant



# FOAK Reality & Requirements : infrastructure to build scale

**ENOUGH<sup>®</sup>**

*Our facility is located in the Sas van Gent, Zeeland, in The Netherlands and was commissioned during 2024*

## Construction

**2021**

Detailed engineering.  
Contractual terms re site  
and location



## Construction & Commissioning

**2022-23**

Built 'fast' during a  
challenging external  
environment



## Commissioning Problem Solving

**2024**

Commissioning  
Product sampling to  
customers



## Progress, with first commercial supply

**2025**

Production  
Commercial Supply



# Circular Bioeconomy in action

ENOUGH<sup>®</sup>



# The 18M review highlighted the historic path for Plenitude



# At 36 months the key milestone (MS6) was nearing completion

## Ground-breaking – Sep 2021

Plenitude flagship facility in Sas van Gent co-located with Cargill broke ground



## Ribbon Cutting – Sep 2022

WP3 nears completion  
Critical milestone (MS6) to complete in Q1 2023



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## 18 Month Review – July 2021

Mid Term Review completed and Plenitude is on track to deliver its objectives



## Construction Phase

The impact of global issues on inflation and resources provided challenge to the construction project



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# At 54 months overcoming issues to increase production for MS9

FIE trade show – Dec 2023  
Ramping up commercial and exploitation activities

Celebrating first production  
Ground-breaking – May 2023  
Production material to consortium partners and customers



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Learning from other flagships

Initial Production Phase  
Some delays due to sterility and operability issues



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**PLENITUDE**

BBJ

PLENITUDE: Project 838104 – Project Overview 8th July 2021

First-of-its-kind, large-scale, lowest-cost, zero-waste biorefinery for the production of proteins for food application from low cost sustainable feedstocks

Virginia Puzzolo, Elna Zicmane, Diogo Romano, Antonella Canalis

ENOUGH Cargill VIV Red FFF Loctite IFC mosa meat WAGENINGEN BRIDGEFOOD

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Initial Engineering Handover – Q1 2023  
Commissions and early production trials



# At 75 months, the future has a strong base with some uncertainty

## Positive Customer demand H1 2024

Positive feedback from initial runs validated customer interest with additional funding to add capacity.

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## Ongoing production challenges frustrated sales H2 2024-H1 2025

Issues with sterility and maintaining in spec product, which were assessed in parallel by multiple experts.

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## Sustained improvements by project approach H2 2025

Good learnings with repeated in spec production and clear improvement options

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**Final Project Report – Jan 2026**  
**A range of possible futures**  
Validated project aims to demonstrate operational capability and market demand. Further funding activity in progress.

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## Collaboration & Teamwork



Sep 2022  
Ribbon-cutting Event at Flagship Plant in Sas van Gent



Apr 2023  
Steering Committee Meeting in Turin

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## Dedication & Persistence

Sas van Gent, Netherlands  
51.2 N, 3.8 E



Flagship Plant Concept Photo



Groundbreaking to Completion

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## Food Truck Showcase in Turin



ENOUGH  
ABUNDA Chicken Filet



Cargill  
Plant-based Burger Patty



Vivera  
Plant Shawarma Kebab



ABP  
No Pork Pieces



IFF  
No Beef Rendang

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## Showcase/ Network / Learning: CBE JU Events





Bio-based Industries  
Joint Undertaking

# PLENITUDE: successful grant & project management

Thomas Vyzikas

BBI JU Project Officer

Brussels, 2 October 2019



@BBI2020





# PLENITUDE



plenitude-eu.com



Plenitude

**HAPPY TO HELP!!**

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