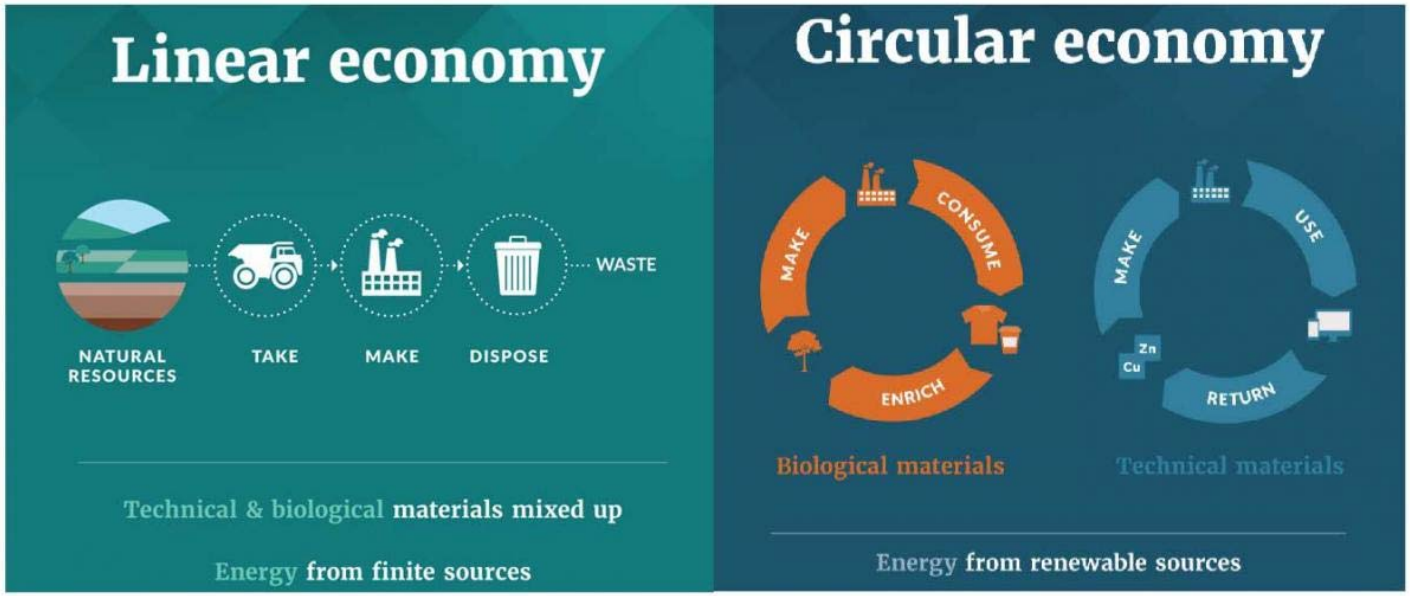
Engineering innovation for a circular economy

Dr. Matthew Moss
Process Engineer & Business Development Manager

The Circular Economy

Moving away from a linear economy, closing the loop to circular solutions



Ministry for Environment – New Zealand

Our Company

Our goal is a sustainable future, supporting change from a linear to a circular economy

Founded in 2011, we are a high-tech engineering and consultancy company delivering advanced solutions to develop the circular economy.

40+ skilled engineers, scientists and professionals

40+ innovation projects

400+ partners

EXERGY LOCATIONS

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Our Areas of Focus

Our goal is a sustainable future, supporting change from a linear to a circular economy

We develop value-added engineering solutions – to make businesses more sustainable and prosperous.

We offer high-quality services focused in three main areas:

Research & Innovation Management

Circular Economy Solutions

Digital engineering

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How we can collaborate

Provision of circular economic approaches & strategies

Engineering support & implementation for process developments

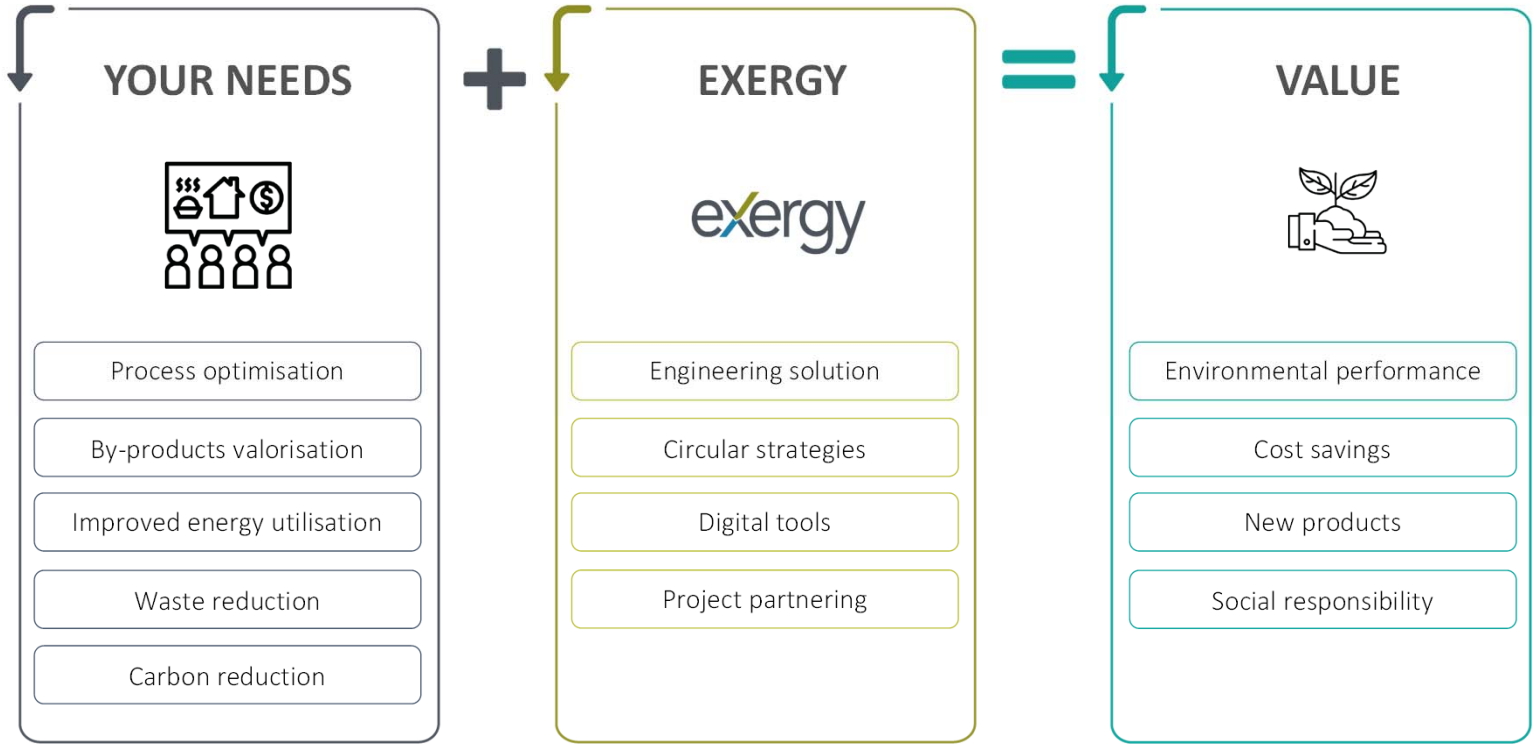
Access to innovative solutions via partners

Bespoke application / platform / tool development

Partnering on R&D projects

Value-added process

We facilitate the bridge to generate value, sustainably



SAFEGUARDING THE ENVIRONMENT PROFITABLY

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What we can do for you

We facilitate the development and implementation of circular processes informed through various R&D activities.

PROJECT MANAGEMENT / TECHNICAL COORDINATION

ASSESSMENT	MODELLING	DESIGN	STRATEGIES
• Circularity assessment	• Exergy / energy analysis	• Circular principles	• Circular approaches
• Renewable energy assessment	• Process simulation and optimisation	• Engineering design	• Business models
• LCA, TEA, S-LCA	• Digitalisation	• System integration	• Tools and platforms

APPLICATION / PLATFORM / TOOL DEVELOPMENT

Bio-based process

We develop and implement by-product valorisation technologies and concepts.

YOUR **BY-PRODUCT(S)**

- Organic residues
- Agricultural waste
- Wastewater
- Other feedstock

OUR **ENGINEERING SOLUTIONS**

- Circular Assessment
- Circular Modelling
- Circular Design
- Circular Strategies

YOUR **OUTPUT(S)**

- Biochemical & additives
- Biofuel
- Biofertilizer
- Biopolymers
- Animal food

ADDED **VALUE**

- Valuable products
- Optimal asset utilisation
- Cost savings
- Increased energy and environmental performance
- Social responsibility
- New revenue streams and models

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Exergy case studies

AGRIMAX

Developing and demonstrating the production of multiple,
high value products from crop and **food processing waste**

NEWPACK

Development of new competitive and sustainable **bio-based plastics**

SCALIBUR

Develop innovative solutions to transform urban biowaste to **high value-added products**

URBIOFIN

Demonstrating the concepts of **municipal circularity** using MSW to produce new biobased products

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CASE STUDY

High value products from food waste

DESCRIPTION

Develop two pilot plants to demonstrate the technical / commercial feasibility of extracting high-value compounds from agricultural and food processing waste

TOTAL BUDGET

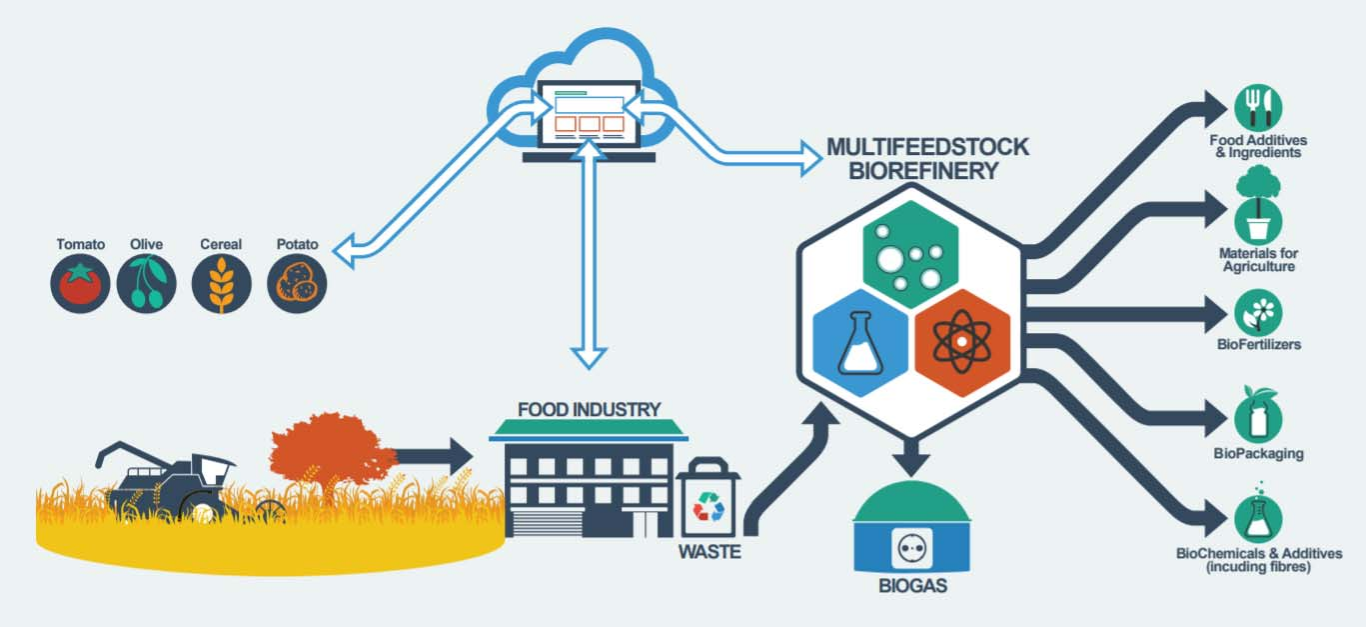
€15M / 48 months

PARTNERS

29 from 11 countries

DELIVERABLES

Plant design
Process modelling
Technology integration
Economic assessment



CASE STUDY

Development of new competitive and sustainable bio-based plastics

DESCRIPTION

Validating production in an industrial setting of PHB-PLA blends on Project NEWPACK

BUDGET

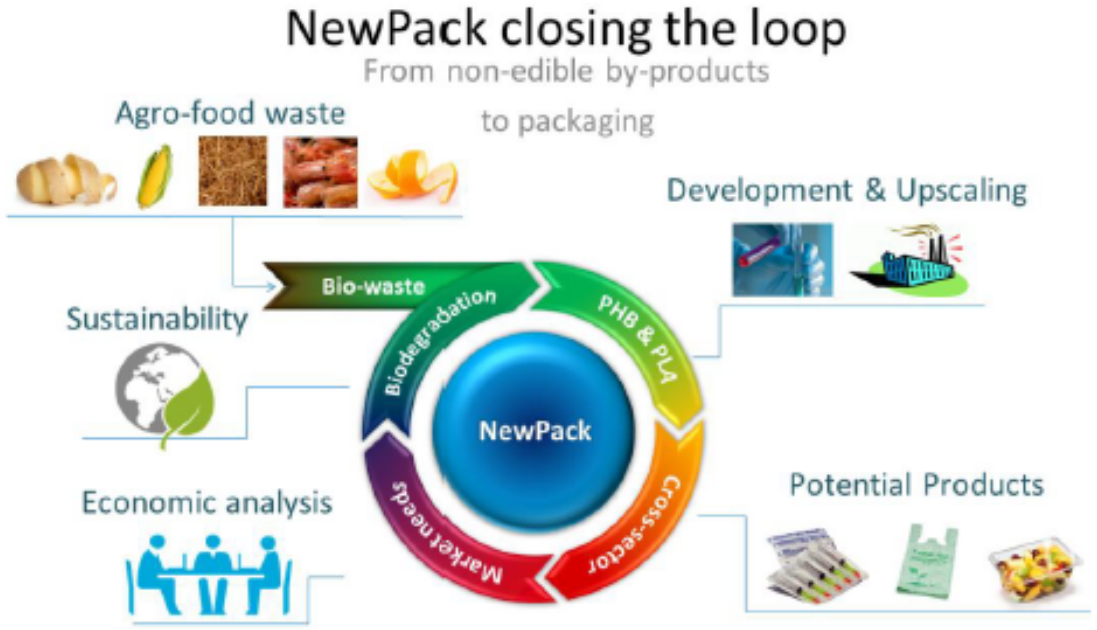
€5M / 36 months

PARTNERS

13 from 7 countries

DELIVERABLES

Techno-economic assessment
Simulation & modelling
Risk analysis



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CASE STUDY

Circular business solutions to turning urban biowaste into a resource

DESCRIPTION

Provide scalable solutions to recover and transform urban biowaste and generate business case model to prove economic validity of the processes developed

BUDGET

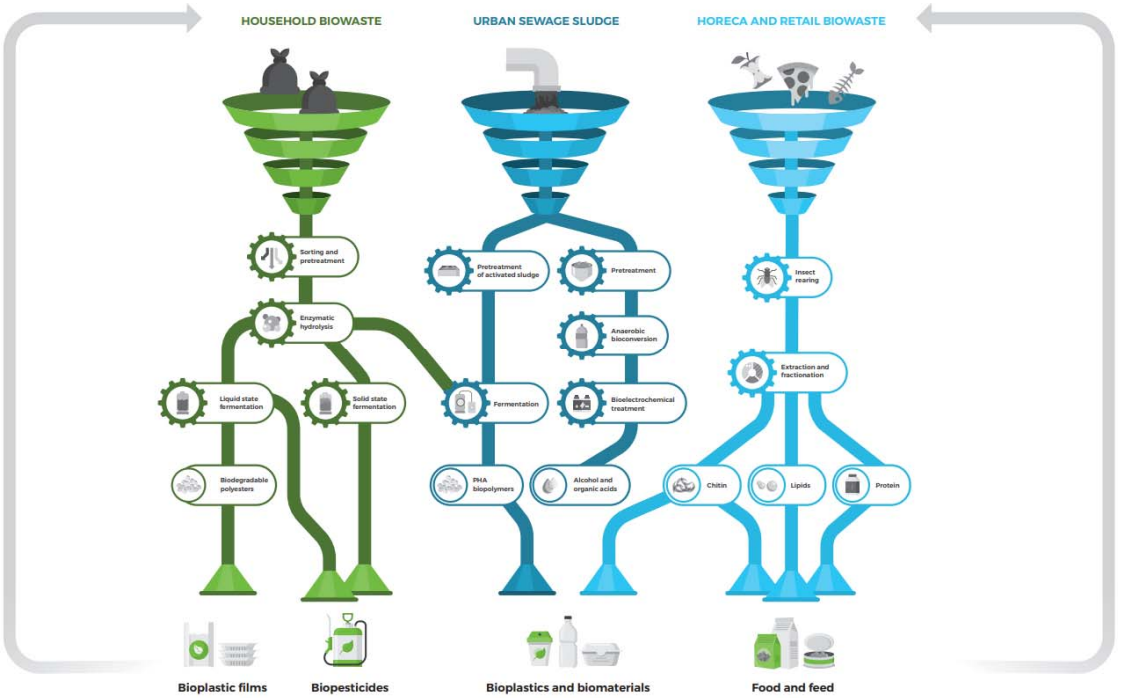
€10M / 48 months

PARTNERS

21 from 8 countries

DELIVERABLES

Techno-economic assessment
System simulation and Heat and Mass balance



CASE STUDY

Transforming urban biowaste into new biobased products

DESCRIPTION

Demonstrate the techno-economic and environmental viability of converting OFMSW to Chemical building blocks, biopolymers and and biocomposites

BUDGET

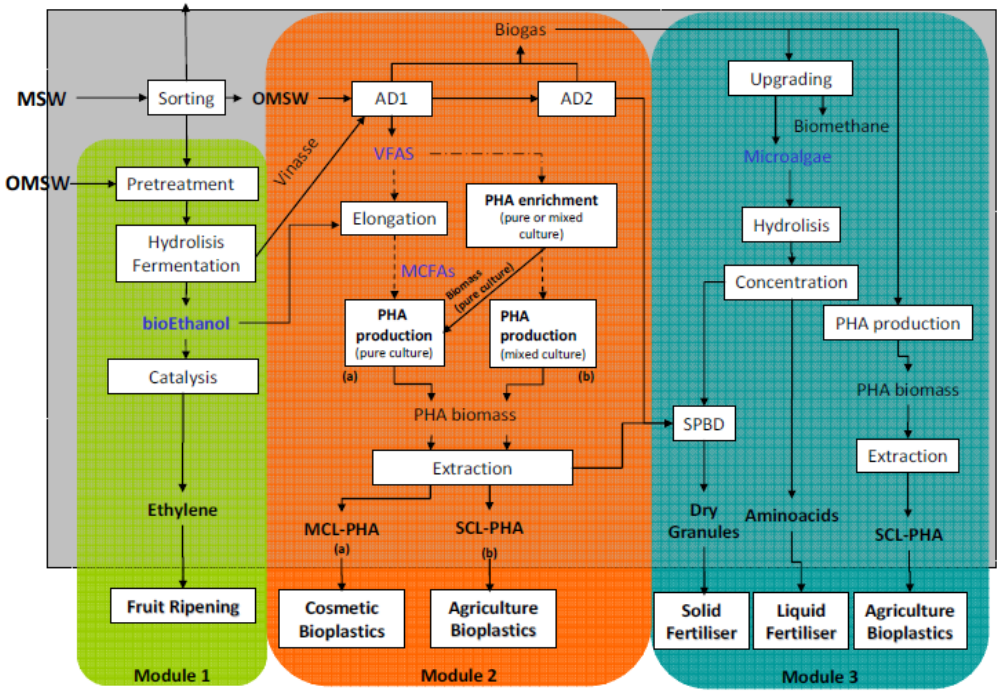
€10.9M / 48 months

PARTNERS

16 from 8 countries

DELIVERABLES

Circular economy process
Biorefinery model
TEA, LCA, LCC, S-LCA



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