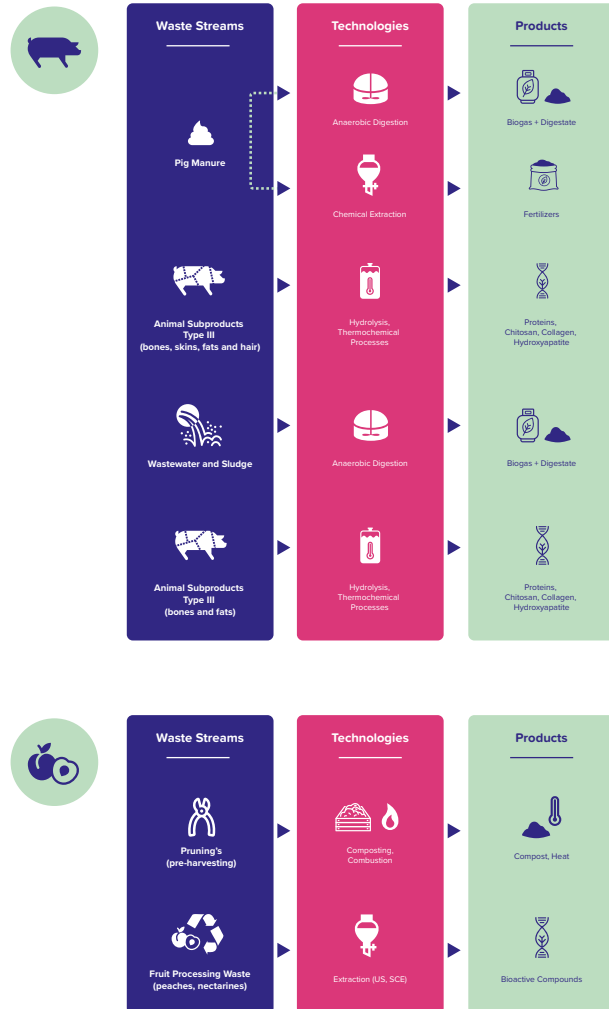


Technical innovation

Biomass residues, animal manure and other industrial by-products are often disposed of as waste, either in landfills or by incineration. **BBTWINS** will validate and adapt different technologies to allow for the extraction of nutrients and minerals from this biomass, minimising harmful environmental impacts as well as opening new potential revenue streams while increasing resource efficiency.



Contact us

Coordinator

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Communication

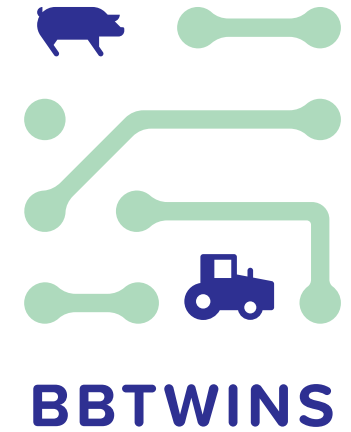
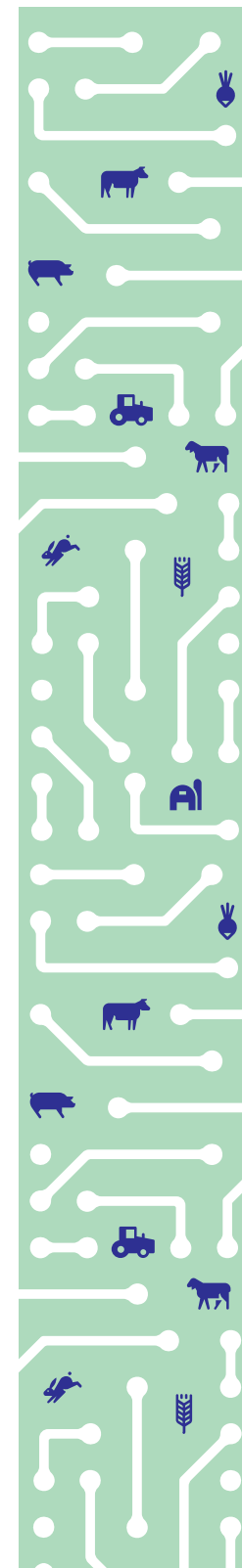
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Consortium

With 13 partners in 7 countries, the BBTWINS consortium will be focusing on meat and fruit production, integrating the value chain (from crop to final product) and will define the optimal pathway for each feedstock to maximise efficiency and minimise losses – without impacting quality.



This project has received funding from the Bio-based Industries Joint Undertaking (JU) under grant agreement No 101023334. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio-based Industries Consortium.



Agri-food Value Chain Digitalisation for Resource Efficiency

www.bbtwins.eu

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Towards Sustainable Agriculture

To meet society's growing demands to provide sufficient, secure, nutritional and healthy food, the EU agri-food sector must transform its industry losses and inefficiencies into optimised, resource-efficient value chains for a more resilient food system.

Challenges



Inefficiency

Agri-food sector stagnation in resource efficiency



Climate crisis

Global crop yields to decline as a result of climate change



Population growth

Global population expected to reach 10 billion by 2050

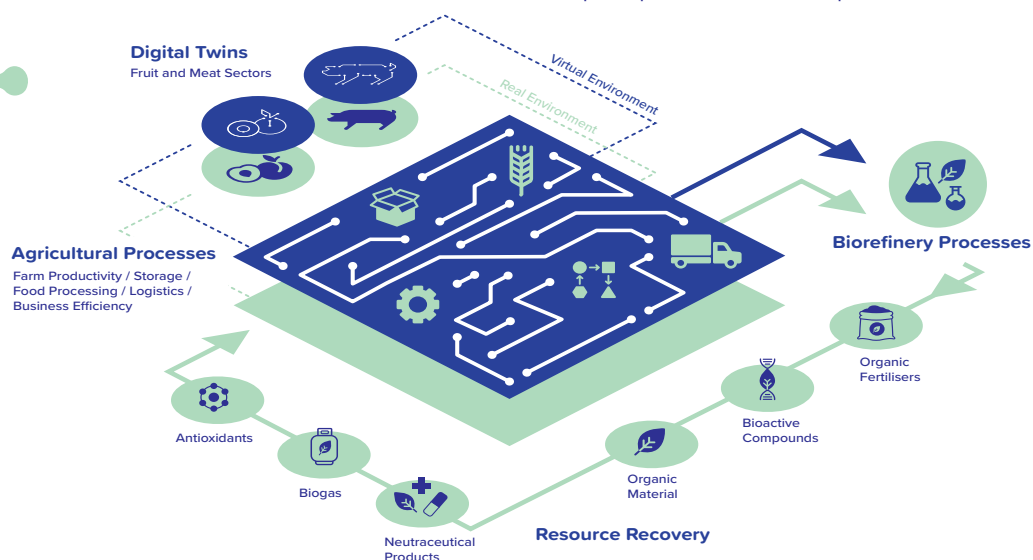


Rising costs

The price of energy and raw materials has risen sharply since 2020

What is a digital twin?

A digital twin is a digital replica of a physical system that can be examined, altered, and tested without disrupting existing value chains and avoiding negative consequences.



About BBTWINS

Bio-Based Digital Twins (BBTWINS) aims to overcome the challenges faced by the EU agri-food sector's transition to become more sustainable by developing a digital platform for the optimisation of agri-food value chain processes and the supply of quality biomass for processing.

The platform will be based on 'digital twins' technology – creating a real-time digital replica of physical processes in the agri-food industry.

Coordinated by CTIC-CITA, BBTWINS brings together tech companies, biochemistry specialists, and innovative feedstock producers to develop innovative digital solutions for the EU agri-food sector, improving practices that will:

1. Increase biomass availability, resource efficiency and sustainability for the bio-based industry
2. Decrease biomass losses from feedstock supply through the processing stages of the value chain
3. Increase storage times due to improved pre-treatment and preservation methods

The project will also support dialogue with educational institutions on a European level to align industry's needs for skills and competences, while promoting policy amendments that increase the scope of potential bio-based products.

Digital Twin Use Cases

BBTWINS will combine blockchain, artificial intelligence (AI), machine learning, the Internet of Things (IoT) and software analytics in this single platform. BBTWINS will then develop and validate two innovative digital twins in two use cases, pork and peach industries.



Portesa Pork Products – Teruel, Spain

BBTWINS will optimise the availability, quality, resource efficiency, and economic performance of PORTESA's feedstock production.

The project will optimise batch traceability both internally and for end consumers, the logistics of their internal production chain, valorisation of waste streams, and the modelling of physical and chemical food processes affecting quality and efficiency.

Dimitra Peaches – Velventos, Greece

BBTWINS will offer new possibilities for unsold fruits to maximise their valorisation through the extraction of high-added value compounds such as pectin, glucosinolates, proteins and other compounds that are suitable for functional foods and nutraceutical products.

The project will work to model the evolution of peach shelf life during storage and utilise smart agriculture to monitor fruit growth and development.



The project's digital twins will follow a multi-actor approach, integrating all the processing steps (from crop to final product) together with the valorisation of the bio-streams generated by using innovative processing treatments, all into a single platform.

The use cases will be addressed following a holistic approach including an environmental, social, and economic assessment.