FoodBioSystems DTP - PhD Project Advertisement

Project title:
FBS2021-88-Schmidt-Rivera: Society's Sustainable Sandwich – increasing circularity and sustainability with robust metrics

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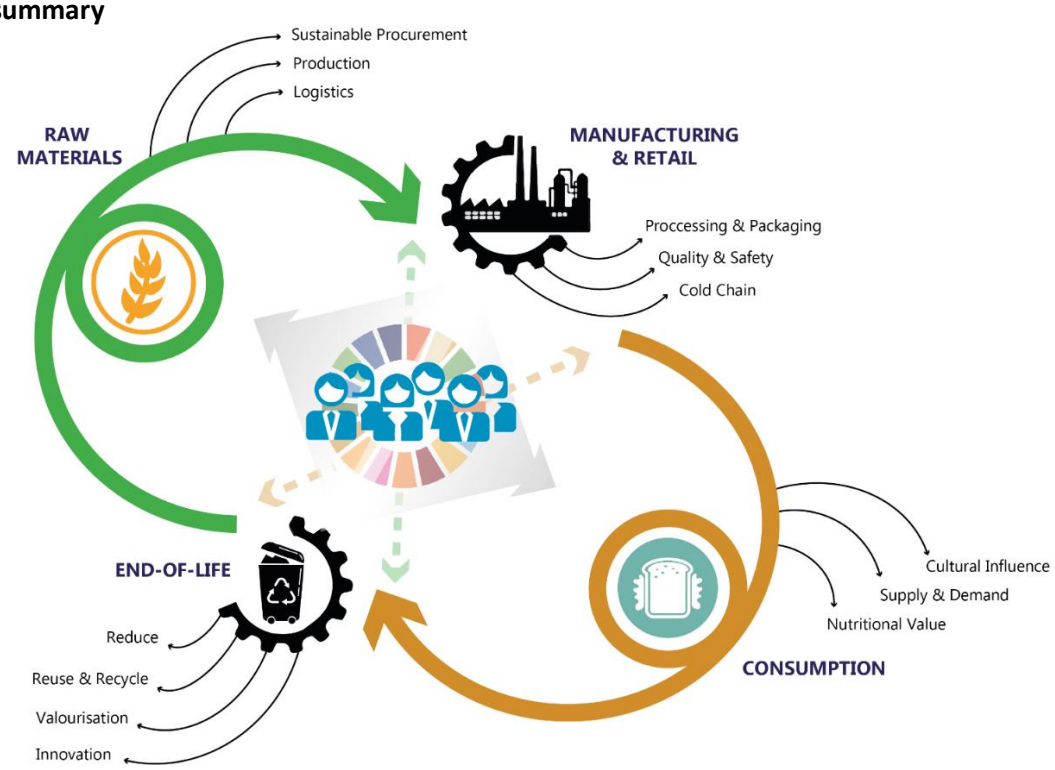
Project description:
Graphical summary



Drivers
The sandwich is the cornerstone of the UK's takeaway ambient food market and is widely prepared at home. The sandwich contains diverse ingredients from across the globe and are produced in diverse ways with complex supply chains. Takeaway sandwiches are wrapped to preserve food quality and safety, but packaging may not be designed for easy reuse or recycling. Food waste arises at manufacture from changes in supply, demand and interruptions. Moving towards circularity requires innovation and enhanced understanding of the metrics by which circularity and sustainability can be measured and communicated to stakeholders.

Hypothesis
Current circularity metrics are not adequate for the food industry, as they mainly focus on material flows and end-of-life management (e.g. the Ellen MacArthur Foundation's Material Circularity Index). The complexity of

food-material flows (e.g. nutrient consumption and transformations) needs suitable, comprehensive, and harmonised metrics for improving resource use and value creation from bio-resources together with ensuring sustainability by measuring it with validated and robust methods.

Aim and objectives

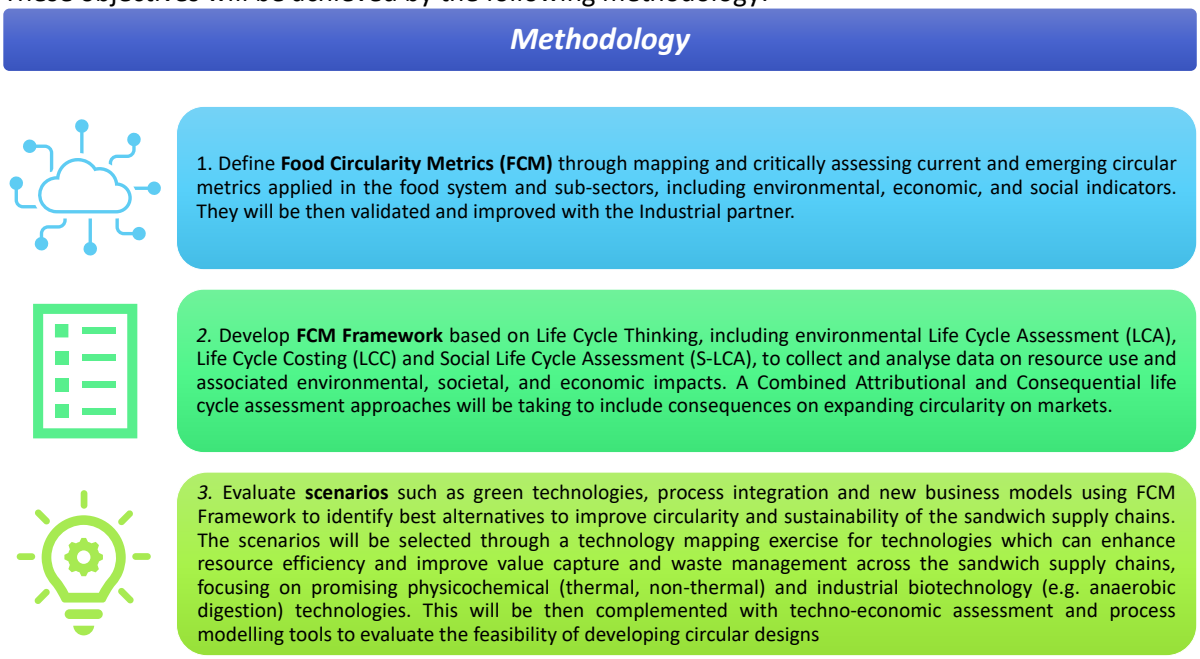
This project aims to develop a harmonised methodology and metrics to aid the food sector transition to a circular economy model while improving and ensuring sustainability. Ready-made sandwiches will be the pilot food group and our partner Samworth Brothers and its supply chain will be key to providing data (e.g. supply chain data, energy/water usage), co-developing and testing strategies and validating results.

The specific objectives are:

1. to develop and define Food Circularity Metrics (FCM) as a set of comprehensive and harmonised indicators, under a system thinking approach that avoids one-dimensional understanding of sustainability
2. to develop an approachable framework on FCM using Life Cycle thinking (e.g. LCA, LCC, S-LCA) to assess new products, technologies and business models, and track progress towards circularity
3. to investigate (through experimentation, simulation and modelling) innovative technologies and strategies for food waste valorization and food circularity in the sandwich supply chain that will serve as evidence for industrial and policy interventions

Methodology

These objectives will be achieved by the following methodology:



Significance:

You will develop the first bespoke Framework of Food Circularity Metrics (FCM) for the UK food industry, which will be co-designed and tested with industry. The harmonised tested framework will enable food industry players to measure and benchmark themselves, their suppliers and consumers about their sustainability and circularity in novel ways and add value to current company reporting obligations.

Working with a diverse and interdisciplinary team of supervisors, you will learn, develop, and improved your skills in the field of sustainability, circular economy and food supply chain, innovation and biotechnology, experimental and techno-economic analysis, data management and modelling.

Training opportunities:
This project provides a flexible industrial placement opportunity with food manufacturer and an institutional placement and training for experimental work. Additionally, ad-hoc training will be provided by supervisors and their research teams, in addition to opportunities offered across the partner Universities (Brunel, Cranfield and Reading).

Student profile:
This project would be suitable for students with experience in food systems, sustainability and life cycle assessment, biotechnology, food processing, supply chain or circular economy or/and a degree in industrial biotechnology, food science, environmental science, process engineering, chemical engineering, environmental engineering, supply chain management or a closely related subject.
Please, contact us if you have questions or for more clarifications.

The Partner Universities are committed to having and providing a diverse and inclusive environment, support the gender equality Athena SWAN Charter and the Race Equality Charter, and are Diversity Champions for Stonewall, the leading LGBT+ rights organization.

Funding particulars:
This project has a co-sponsorship under CASE framework and attracts an enhanced student stipend.
The project is part of the FoodBioSystems BBSRC Doctoral Training Partnership (DTP), it will be funded subject to a competition to identify the strongest applicants.
The studentship is open to UK and international students (including EU countries) however due to funding rules, no more than 30% of the projects can be allocated to international students.
The funding will include a tax free stipend (minimum £15, 285 per year), support for tuition fees at the standard UK rate (currently £4,407 per year) and a contribution towards research costs. **Please note** that the host universities have not yet confirmed the level of fees charged to international students funded by the DTP. Fee levels may vary across the institutions. This information will be shared on the FoodBioSystems DTP website as soon as it becomes available.

To apply
Please go to FoodBioSystems DTP website for information on how to apply for this studentship. The closing date for applications will be 8 February 2021.