

RCUK National Centre for Sustainable Energy Use in Food Chains

Prof. Savvas A Tassou – Director
Prof. Maria Kolokotroni – Co-I
Brunel University London



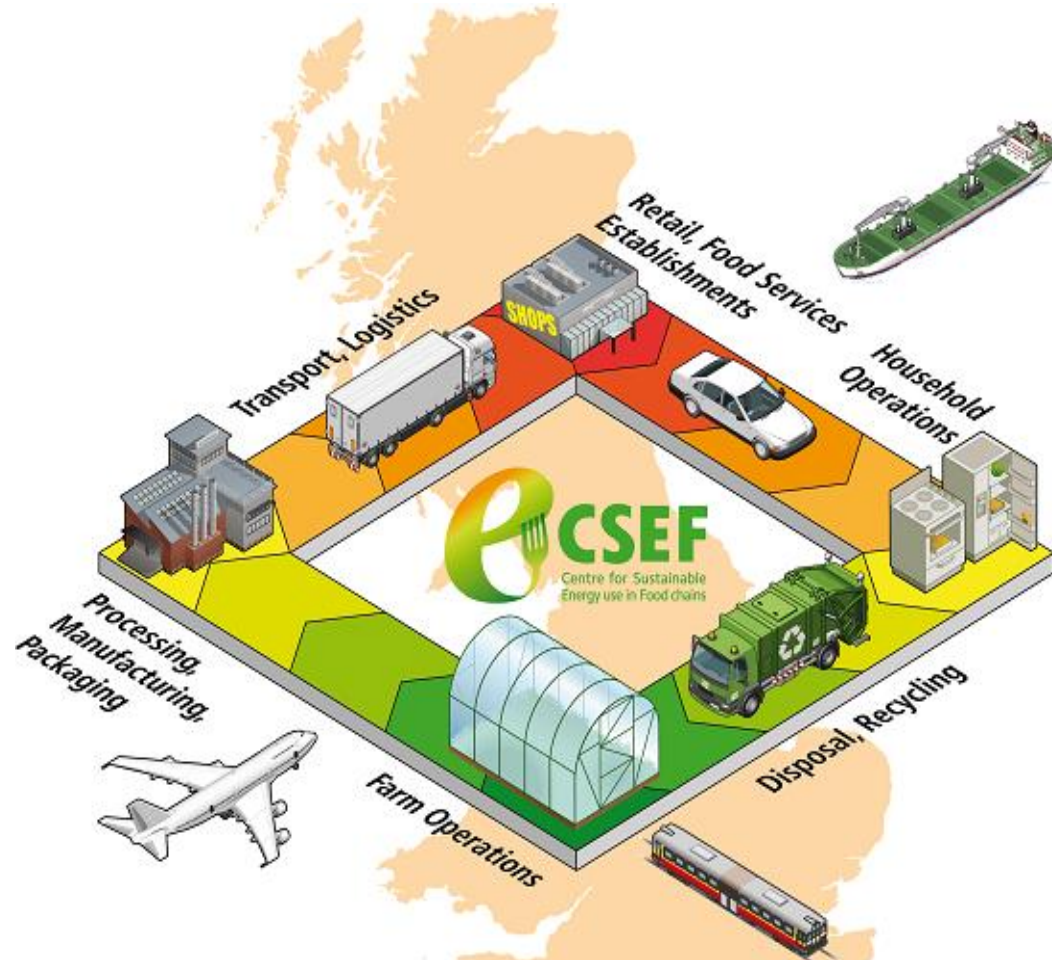
Mission

To carry out:

- i) research that will have demonstrable impacts on energy demand reduction in the food chain in the short term and
- ii) fundamental research into innovative technologies and approaches that will have significant impacts and contribute to the Government's long term greenhouse gas emissions reduction targets, while taking into consideration socio-economic and behavioural aspects.



Centre for Sustainable Energy Use in Food Chains



The Team

Internationally leading groups with complementary expertise covering all post farm stages of the food chain.

Brunel University: Profs. Savvas Tassou; Maria Kolokotroni; Jim Song; Drs. Yunting Ge; Valentina Stojceska, Hussam Jouhara

University of Manchester: Profs. Adisa Azapagic; Ada Wossink; Drs. Kostantinos Theodoropoulos; Laurence Stamford.

University of Birmingham: Profs. Peter Fryer; Serafim Bakalis
Ian Norton;

33 partner organisations: 7 major food and drinks manufacturers; 4 major retailers; 8 equipment manufacturers and service providers; 14 professional institutions, KTNs, food related trade associations.

Centre Themes

HT1: Food Production

HT2: Food Distribution

HT3: Food Retail

HT4: Food Consumption

VT1: Energy and Resource Flows
including Waste

VT2: Interactions and Integration
with UK Energy Supply System

VT3: Socio-economic
Aspects/Human Behaviour

Interactions, Management, Dissemination and Impacts

HT 1 - Reduction of energy/carbon footprint of food production

- Sustainable energy use in agriculture (direct energy use only).
- Energy demand reduction in food processing operations - high pressure processing, vacuum frying, ohmic heating, microwave baking, that can operate over a wide range of capacities and generating both texture and flavour
- Energy demand reduction in food manufacturing plant: Process integration; energy recovery; process/facility fit



HT 2 - Energy Demand Reduction in Food Distribution

- Energy in food supply operations
- Supply chain optimisation: plant, depot, transportation, vehicle motive power technologies including electrification of food transport, impact of internet shopping.
- Technologies for storage and distribution. Depots as energy hubs? renewables, food waste for power generation, tri-generation.
- Energy efficient packaging for food transportation.



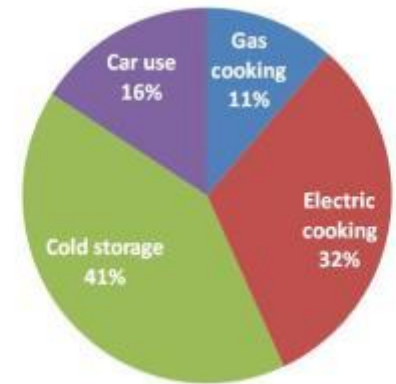
HT 3 - Energy Demand Reduction in Food Retail

- The future energy efficient store
- Minimisation of environmental impacts of food refrigeration.
- Predictive intelligent controls for demand reduction.
- Energy storage, renewable energy sources and interactions with the grid.



HT 3 - Energy Demand Reduction in Food Consumption

- Home and catering refrigeration – new technologies
- Influence of food type, preparation and behaviour on energy consumption (home and catering facilities)
- Interaction of catering refrigeration and food preparation equipment with HVAC



VT 1 - Energy and Resource Flows Including Waste

- Quantification of Energy Demand and Waste in the Food Chain – Data gathering and analysis, previous studies.
- Modelling of energy flows at each stage of the food chain.

VT 2 - Interactions and Integration with UK Energy Supply System

- Interactions at each stage of the food chain
- Whole Food Chain modelling and energy scenario analysis - UKTM model in collaboration with UCL.

VT 3 - Socio-economic and behavioural aspects

- **Socio-economic risks and benefits**-How can low energy food technology innovations be intensified and deployed at minimum socio-economic risks and maximum benefits?
- **Corporate behaviour** - Insights into the behavioural constraints to adoption of new, low-energy technologies in the food industry. Workshops, interviews and surveys will be used for these purposes.
- **Consumer behaviour** - examine consumer attitudes and behaviour related to energy, using a range of consumer psychology research methods to identify influence of demographics, disposable income, consumer information etc.

Thank you