

# Reducing plastic packaging and food waste through product innovation simulation: findings from qualitative research with households

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## 1. Introduction

In high income countries, households (HH) are the main contributor to food waste generation. Although there is considerable research on households food waste generation and potential solutions to minimise it, empirical research on this field are usually costly and time consuming.

Waste modelling and simulation can explore the households dynamics of the activities impacting waste generation and determining the impact of interventions towards waste reduction. Qualitative social research is essential to inform the model logic pathways to match reality of households and identify unexpected practices and behaviours

## 2. Aim and objectives

The aim of this research is to support the development of the new household simulation model (HHSM) with qualitative social research on HH-packaging interactions and households behaviours, practices and attitudes on food and packaging waste. The objectives to fulfil this aim are:

- (1) To provide insight into how decision points should be modelled for different food products
- (2) To highlight areas of additional questions to tackle using the model
- (3) To inform assumptions about household behaviours around food and plastic waste

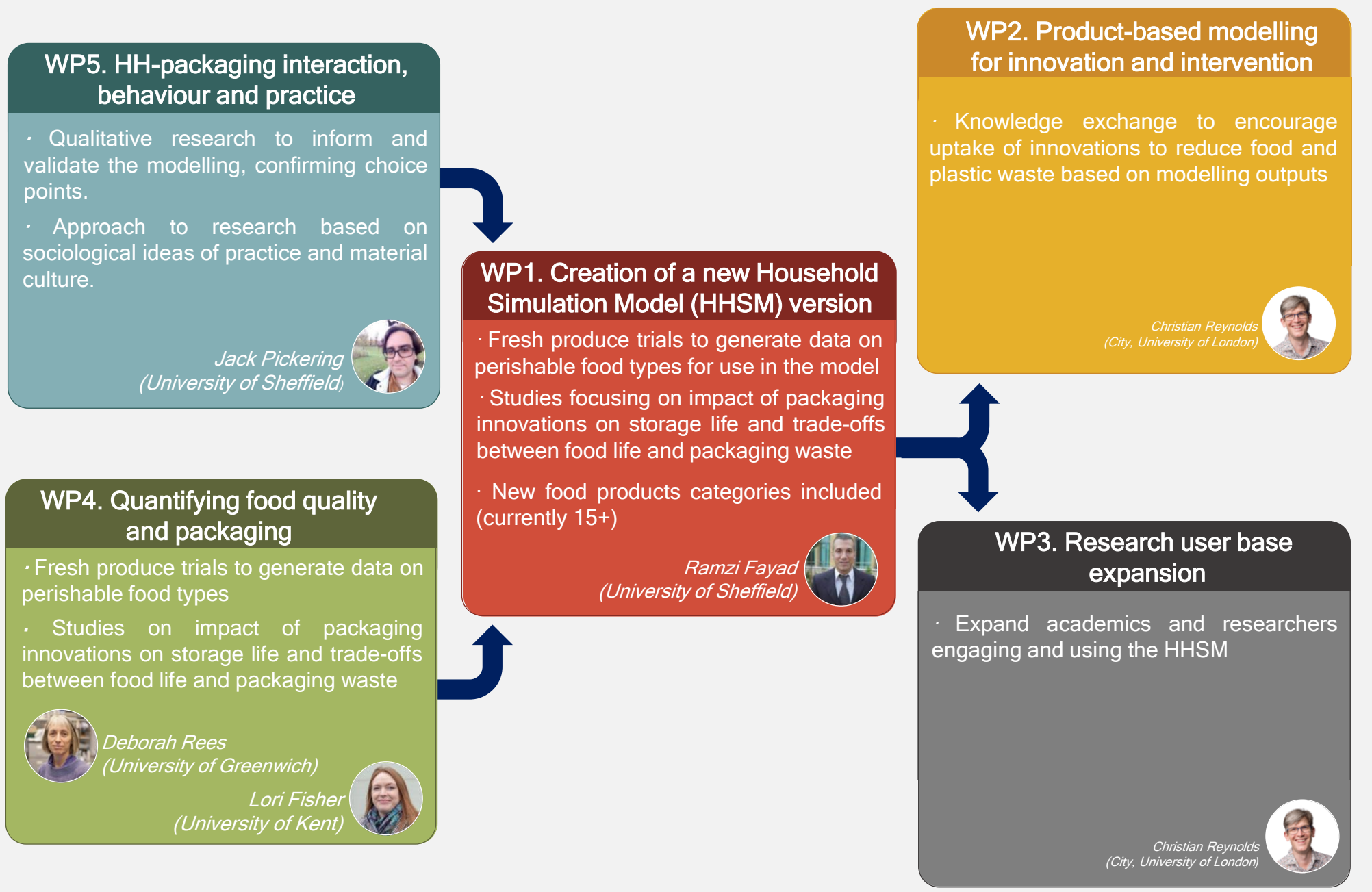


Figure 1. Project work packages (WPs) and their relationship within our NERC-funded project, 'Reducing plastic packaging and food waste through product innovation simulation', where this research is allocated in WP5.

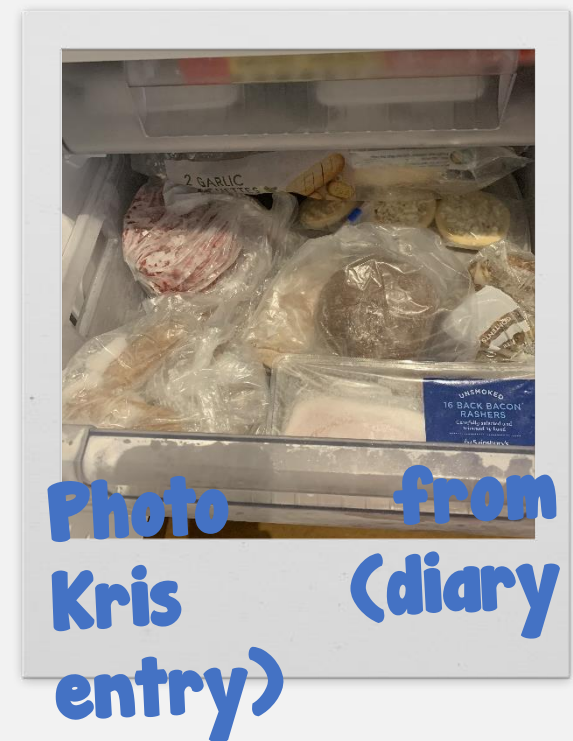
## 3. Methods and approach

- Data gathering on HH practices surrounding surplus food and HHs routines and practices
- 28 online interviews following practice theory and approaches to HH waste and consumption
- 25 diaries filled in, including photos about routines and practices
- Photo-elicitation conducted with participants
- Observational ethnographic methods were not possible due to COVID restrictions

## 4. Results

### (A) PORTIONING PRACTICES AND HOUSEHOLD CONTAINERS

- The new version of the model can incorporate food portioning, which is connected with (1) division of the food in the retail packaging into smaller portions and (2) storage of surplus food after cooking for later consumption
- The participants had their own systems to classify portioning containers, which mainly come in two formats: rigid plastic containers and plastic bags
- Meat portioning prediction has several possible determinants, including family size, busyness and diet restrictions
- The use of freezer bags raised issue of volume restrictions in freezers
- This research could not find the prevalence and the amount of containers used.



### (B) DE-PACKAGING BEHAVIOURS, FRESHNESS AND PLASTIC PACKAGING

- The new version of the HHSM can model de-packaging behaviour, that consists in the consumer removing the original retail packaging for food storage
- The participants de-package their food because they think the food products 'needs to breathe' in order to stop 'sweating' and 'weeping'
- This behaviour is also related to mundane consumer challenges to normal status of plastic packaging and different enactments of freshness
- Removing fresh vegetables from packaging was more common than expected



"Mushrooms annoy me because they always come in plastic and they need to be in paper (...) I've now got some paper bags to put that in to go in my fridge so that they don't sweat and ang go mouldy and awful"

[Tracy, interview]

### (C) LINKAGES BETWEEN CONSUMPTION, PURCHASING AND PLANNING PRACTICES

- Certain purchasing patterns may be linked to particular cooking practices like batch cooking practices and meal bulging? and the capacities needed to make them work
- Recipes may underpin this, as these are the sets of ingredients that make up a viable meal. The flexibility/mutability
- The flexibility/mutability of meals determines or is related to many aspects of consumption and household planning



'Got some chopped up pumpkin from the weekend. I roasted it and I'll probably make like pumpkin pancakes or fritters or something, you know. It's just, or stick it in a soup or something like that'

[Daria, interview]

## 5. Conclusions

- 'Basket modelling' may be interesting for estimating effect of interacting products
- Relationship between containers, Tupperware, other forms of freezer storage, and defrosting practices need further research. Future modelling to consider batch cooking and meal bulking
- Planning and cooking are worth looking at in more detail, but their relationship to waste is not straightforward

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