Cardiff Business School
Ysgol Busnes Caerdydd

Ocado salads waste project

A modelling project from Cardiff University

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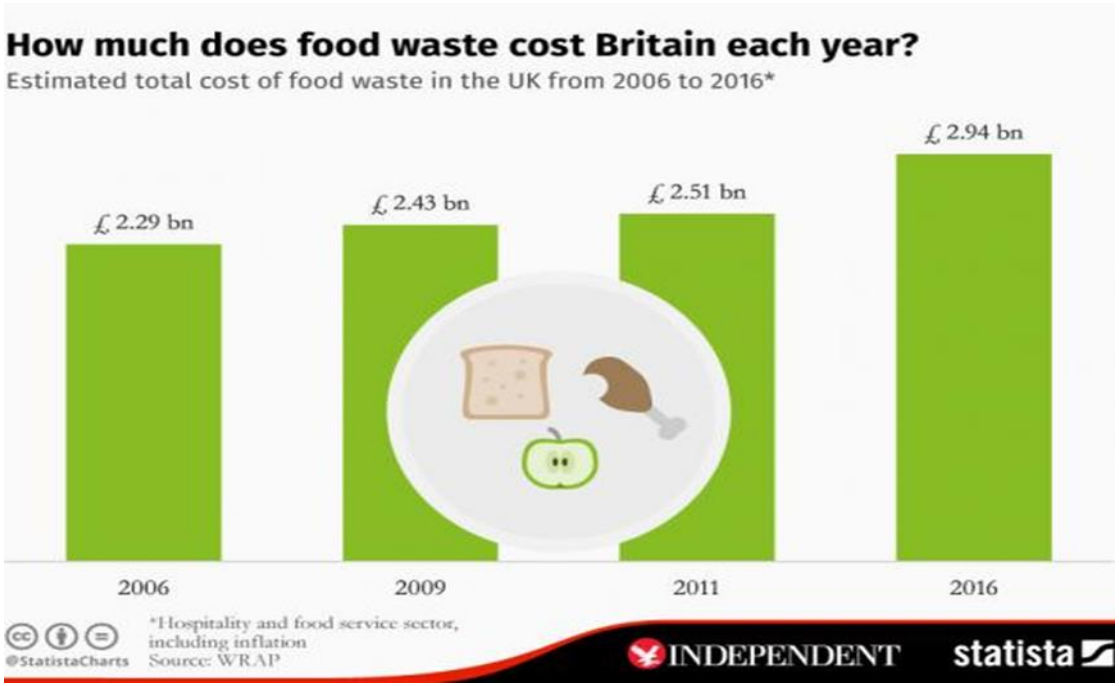
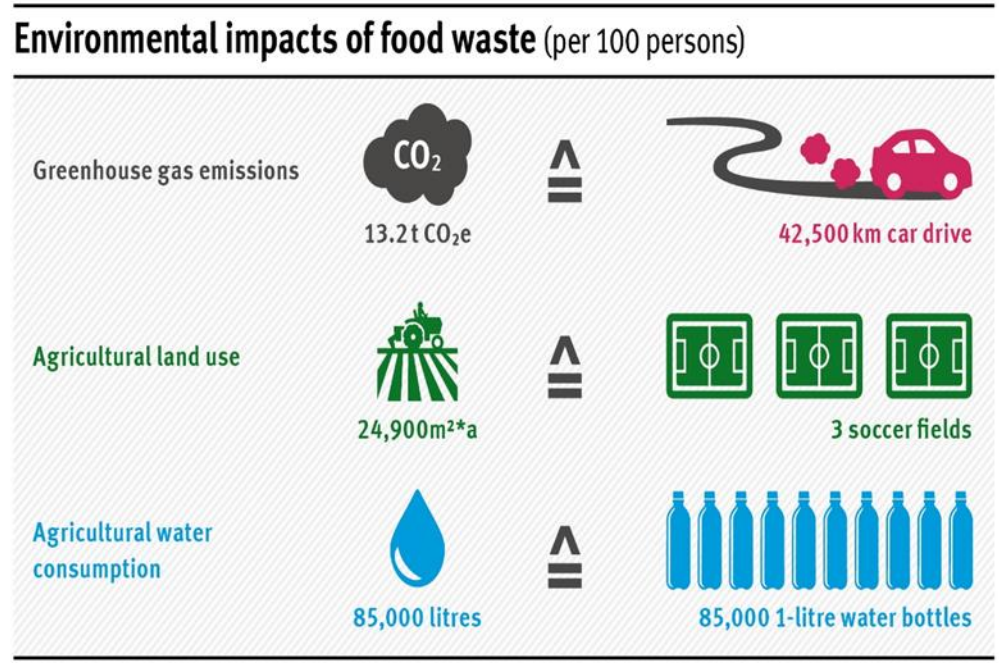
Structure of the presentation

- Background, key facts and potential solutions
- Project scope and aims
- Initial visual model
- Project stages
- Further research post-project completion

Key facts on food waste





- **Globally, the total amount of food waste is approximately 1.3 billion tons (The Telegraph, Jan 2018) - approximately 28 percent of the world's agricultural land area.**
- **Food losses/waste: £493Bn (developed countries) & £225 Bn (developing countries).**
- **8.4m people struggle to afford a meal, according to the UN's FAO – while the wasted food is approximately £13 Billion worth of edible food each year.**
- **Most of the food waste (61%) is avoidable and could have been eaten if it had been managed better.**

Some recent UK news on salad waste

Londoners Waste 1m Ba

https://ciwm-journal.co.uk/londoners-waste-1m-bags-salad-week-summer/

CIWM | Journal Online

LATEST NEWS FOR RESOURCES & WASTE PROFESSIONALS

Londoners Waste 1m Bags Of Salad A Week During Summer

Posted on 7 July 2016 by Darrel Moore

The survey of 1,000 Londoners also reveals that three quarters of people buy a bag of salad at least once a week over the summer, however only half of them use it all. A quarter of them throw away at least as ey eat.

https://ciwm-journal.co.uk/linkout/29328

Risks for retailers and potential solutions

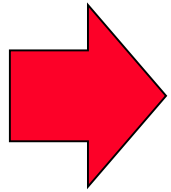
Potential risks

Budget conscious consumers could steer away from purchase, for example if a product is not available in small packaging sizes.

Repeat purchasing is less likely, especially if competitors or substitutable products provide a lower waste solution.

Reputation can be harmed if a particular product or company is associated with waste.

Government intervention becomes more likely



IDG advice on food waste reduction

Make food waste reduction a priority.

Measure waste in detail and track the cause of each incident back to its source.

Engage with trading partners and share relevant information. Often the root cause of waste are decisions made elsewhere in the chain.

For ambient products, introduce a zero tolerance policy for waste, whether it be for damage, date expiries or obsolete lines.

Take offsetting actions to reduce the net waste of retail supply chain

(Institute of Grocery Distribution, 2013)

Project partners

Project Scope

- This is a pilot project, the start of a journey, not the journey itself.
- Salad product families have been selected due to perishability, seasonality and waste levels.
- The project is focusing on designing a methodology to measure salad waste generated from farm to customer's bin.
- The product facilities included in the data collection are any raw salad products, including mixed salads and any raw vegetables used by customers to prepare salads at home. This excludes sauces, meat, cheese and any other non-salad products.
- The project team plans to collect food waste input data from a sample of Ocado suppliers, charities, food banks and customers, as well as from the two main Ocado CFCs.

Project Aim and Objectives

This project aims to estimate the total wasted materials generated from the Ocado salads supply chain and the impacts of those wasted materials on CO2 emissions and blue water footprint.

The objectives of this project are as follows:

- **Identify the main causes of salad waste along Ocado salad supply chain.**
- **Measure the total wasted amount of salad at every stage of Ocado salads supply chain.**
- **Develop specific KPIs to measure direct (total food and packing waste) and indirect impacts of salads waste (loss sales, cost, CO_{2e} emissions and blue water print).**
- **Undertake sensitivity analysis to establish how waste can be reduced across the Ocado supply chain.**

Initial Visual Model - Typical Ocado Salads Supply Chain

Supplier

Total cost

CO_2e

Blue water

Food waste

Packer

Ocado CFC

Ocado local

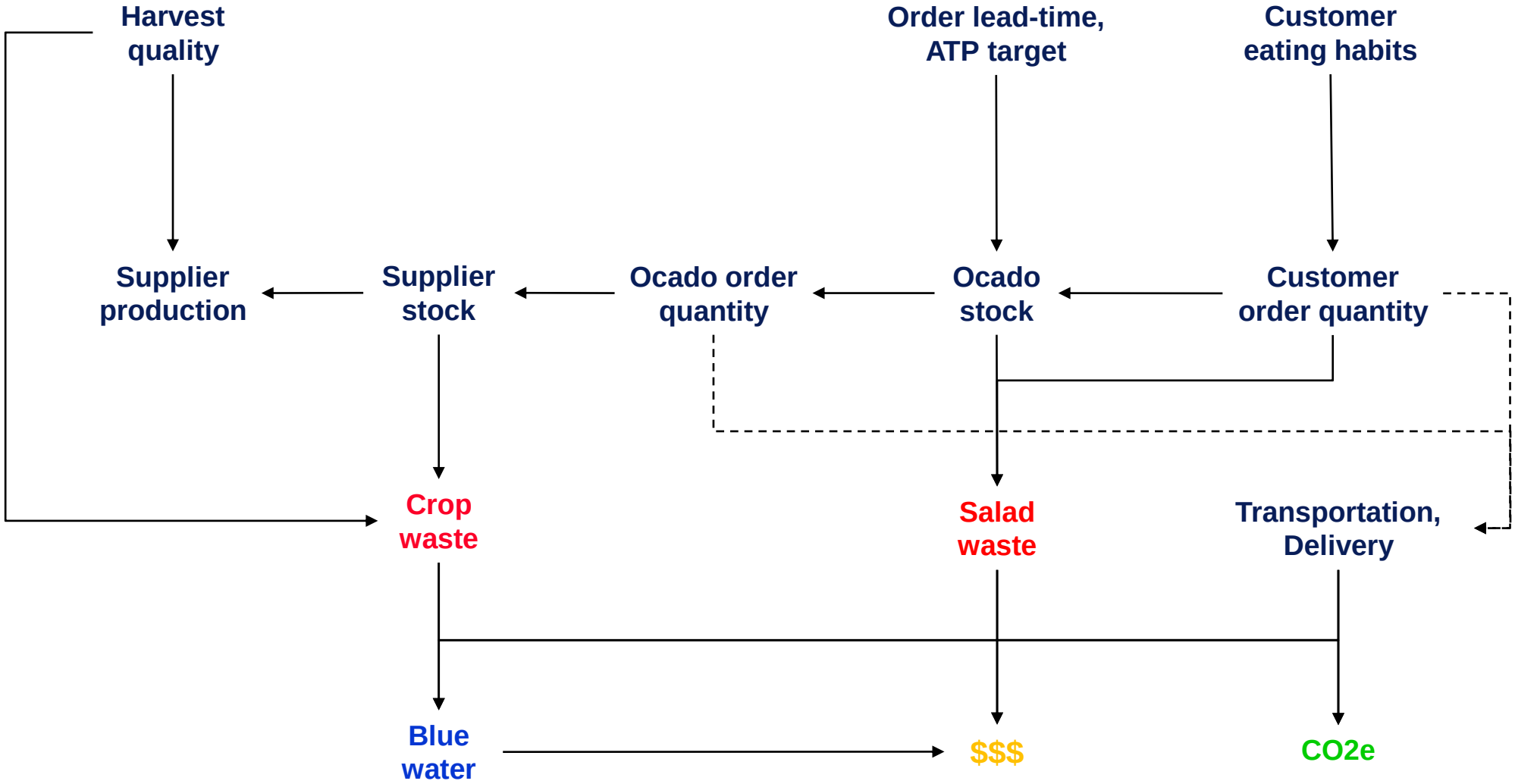
Charity

Ocado customer

Research method:

1) Input data from Ocado
2) Supplier/customer survey
3) Simulation
4) Multi-variable optimisation

Mental Map of the Research Problem



Project Stages and Expected Outputs

Stage	Description	Outputs
Stage 1 (March 2018)	Model scope and data screening	Data collection scope Process map Initial model
Stage 2 (April 2018)	Data collection requirements informed to Ocado	Agreed data sample
Stage 3 (May – July 2018)	Data collection process Roll-out of customers and supplier questionnaires Generation of internal Ocado dataset with the inbound and outbound waste related data Survey of a sample of food charities	Initial model Initial food waste measurement tool
Stage 4 (August – Sept 2018)	Model refinement	Refined model Refined food waste measurement tool
Stage 5 (October 2018)	Dissemination	Project report Case study brief

Further research post-project completion

- **Replicate/apply the methodology to other food product categories.**
- **Develop a multi-variable optimisation model - trade-offs, major food waste sources and factors, and test potential solution.**
- **Undertake applied research on circular economy innovations adopted in industry to reduce net food waste.**
- **Undertake an in-depth study on consumer food waste to design and test marketing experiments that can be used to reduce food waste.**

Any ideas of further research

- **In the inbound supply chain, which are the key priority areas (e.g. forecasting, inventory control, inventory accuracy and/or supplier order policy)?**
  - Do you recommend us to focus on any of these areas?

- **What about the outbound supply chain? Pricing & promotion / forecasting & inventory optimisation?**
  - Is it worth for us to undertake research on the dynamic trade-offs between price discounts, forecasting errors, stock quantities and food waste?

- **What about research on circular economy?**
  - Which areas of circular economy should we focus on?

- **Any other ideas on further research?**

Thank you for your attention