Introduction

About this slide deck …

This slide deck summarises some of the key environmental hotspots relevant to this product category. It also provides examples of reduction opportunities to explore – and references key initiatives that could support your activities to improve product sustainability.

This work has drawn upon a wide variety of evidence and is intended to be adapted for use by different business functions (e.g. procurement, R&D, etc.).

It is important to note that, as every supply chain is different, the information provided should be used to guide further investigation.

About the PSF

The Product Sustainability Forum (PSF) is a collaboration of 80+ organisations made up of grocery and home improvement retailers and suppliers, academics, NGOs and UK Government representatives. It provides a platform for these organisations to understand, improve and communicate the environmental performance of the grocery and home improvement products. (www.wrap.org.uk/psf)

How to use this deck

1. Please view in ‘Slide Show’ to activate hyperlinks.
2. To access the slide’s content either browse one page at a time or use the navigation bar below to jump between the main sections. Throughout the deck there are links to external sources of interest.
3. A ‘Help’ section is provided with more background information on this product summary, FAQs, terms of use and a list of other product summaries and reduction opportunities available to download.
4. We would like to encourage feedback on the contents of this deck. Please click the ‘Submit feedback’ links on each page to contribute.
### Hotspots – Ready meals (chilled & frozen)

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**Notable primary & secondary hotspots**

- **Agricultural production of ingredients** will be a key driver of impact, mainly due to protein source (e.g. meat, fish) and other higher risk commodities (e.g. palm, soya derivatives) (1,2,3).
- Sustainable sourcing can reduce impacts (21).
- **About 180,000t of ready meals are wasted in UK homes every year** (16). Supply chain loss for beef pie ~15% (21).
- Water use in agricultural production of ingredients (meats, vegetables, grains) (4).
- Energy use for refrigeration, freezing and cooking in the home – emissions could be up to 40% (1,3,11,13).
- Extraction and production of plastics, metals, paper products (1,3,11).
- Energy use in the preparation, pre-cooking, mixing of ingredients (1).

**Notes**

- The hotspots, left, can be used to target efforts – however actual performance will be dependent on the specifics of your supply chain.
- Numbers in brackets denote numbered reference in references slide.
- Evidence level: **Medium - High** variability within product group, but UK data used & key issues understood.
- Impacts will vary significantly based on product type, mix of ingredients (quantity of meats), packaging types & cooking requirements (1,3,11).
- Some key variables that affect performance are explored on later slides.
- Please also refer to other product summaries e.g. beef, lamb, tomato, potato.
Initiatives & key resources

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**Notes**

The initiatives and resources identified offer a range of potential business benefits, including: best practice guidance; knowledge sharing; innovation ideas; standards development; input or process certification; sustainability benchmarking; and communication.

1. **Alliance for Water Stewardship** – uses a standard to recognise and reward responsible water users and managers
2. **Greenhouse Gas Action Plan** – improving resource use efficiency to reduce GHGs from farming in England to meet Defra’s target
3. **Roundtable on Sustainable Palm Oil (RSPO)** – aims to improve industry’s sustainability practices through certification
4. **Roundtable on Sustainable Soy (RTSS)** – aims to improve industry’s sustainability practices through certification
5. **Courtauld Commitment** – responsibility agreement aimed at improving resource efficiency in the grocery supply chain
6. **Love Food Hate Waste** – WRAP initiative to support consumer waste reduction by providing storage advice & recipes
Variables affecting the role of protein choice in product impact

**Use of Meat**

The choice of protein ingredients in products can contribute significantly to their impacts, particularly with meat ingredients (1).

Growing meat has higher GHG and water impacts than growing vegetables, legumes or other staples in products, arising from:

- Methane emitted by the animals
- Methane emitted by manure and slurry
- Production of feed using nitrogen fertiliser, farm machinery, and large quantities of irrigated water (10)
- Housing of animals in cold climates.

Conditions in the source country are also important; for example, soya for animal feed or beef sourced from Brazil may be associated with land use change, which releases large amounts of previously stored CO₂e from cleared forest.

According to the UN’s Food and Agriculture Organisation (FAO), the livestock sector is responsible for 10-25% of global greenhouse gas emissions (14). The FAO estimates that 7% of global human water use is for growing feed crops for livestock (8).

**Beef vs. other protein**

Generally speaking, products containing beef have the highest carbon footprint, followed by lamb, then pork, then chicken and fish (2).

Conversion of grain or legume protein to meat is very inefficient. Grain-fed beef is one of the least efficient forms of animal protein, taking 7kg grain feed for 1 kg live weight gain in beef. Around 35% of the world grain harvest (760 million tons) is used to produce animal protein (6).

Farmed herbivorous fish such as tilapia achieve a much better conversion rate, producing 1 kg live weight for less than 2 kg of grain feed (6).

Eating the grains and legumes directly is the most efficient human consumption of food and carries health benefits as well. A study modelling consumption patterns in the United Kingdom estimates that a 50% reduction in meat and dairy consumption, if replaced by fruit, vegetable and cereals, could result in a 19% reduction in GHG emissions and up to nearly 43,600 fewer deaths per year in the UK (14).

**Soya fed to livestock**

Soya is increasingly used as animal feed in the UK, but its production can be implicated in deforestation, biodiversity loss and GHG impacts through land use change. Locally sourced animal feed carries less risk of habitat loss and land use change in its production, and requires less transport, so has lower GHG impacts (8). Soya sources should be checked – the Round Table on Responsible Soy (12) may offer some guidance about suppliers – but note that it has been criticised by some NGOs for its stance on GM, deforestation and pesticide use (3) which are further factors to be considered.
Ready Meal Components
Ready meals encompass a wide variety of products with a myriad of ingredients which can be presented to consumers in chilled or frozen formats. There is significant variability in the environmental impacts of ready meals:

- Ingredient production contributes the most to the impact of a ready meal. This impact is strongly linked to the quantity and type of animal-originated ingredients. This is further discussed elsewhere (1,4).

- Packaging contributes to the environmental impact of ready meals to a lesser extent, from 6-22%. (1)

Packaging impacts
Packaging impacts are dependent on material type and weight. Adequate packaging can reduce ready meal retail wastage. Non-metallic packaging can facilitate consumer microwave use:

- Different materials (cardboard, aluminium and plastic) used for packaging will have variable effects on the environmental impact of the ready meal. Biogenic renewable materials will have a lower impact than non-biogenic materials (1,4).

Waste throughout the supply chain, and specifically at retail, affects the variability of ready meal impact. A 15% change in wastage rates at retail can change the climate change impact by up to 12% (1).

Food and drink packaging waste in the UK accounted for half of all packaging waste, approximately 5 million tonnes in 2006 (11). Ready meal have a high proportion of packaging – it represents approximately 5% by weight of total product weight (19).

- Consumer behaviour affects ready meal variability. Cooking ready meals in a microwave instead of a fan oven could lower the climate impact of ready meals by 7% (4).

Chilled vs. Frozen: Chilled meals may have higher spoilage rates due to shorter shelf life, but will have lower energy requirements during warehousing and retail than frozen meals.
Hotspot references

The documents below have been used to identify primary and secondary environmental impact hotspots

2. Corporate Europe Observatory (n.d.). Roundtable on Responsible Soy – the certification smokescreen.
3. DEFRA (2008). PAS 2050 Case Study: Applying PAS 2050 to a complex product: Cottage Pie Ready Meal [PDF]
4. DEFRA (2012). Green Food Project Curry Sub Group Report
6. Ecologist (2009). WWF and Monsanto – is GM soy now OK?
10. GM Watch (2010). More about the Round Table on Responsible Soy.
12. Round Table on Responsible Soy Association (n.d). Responsible Soy website.
15. WRAP (2009). Household Food and Drink Waste in the UK [PDF]
16. WRAP (2010). Reducing Food Waste through the Chill Chain [PDF]
17. WRAP (2010). Understanding Consumer Use of the Freezer [PDF]
19. WRAP (2011). Reducing Food Waste through Retail Supply Chain Collaboration [PDF]
20. WRAP (2013). An initial assessment of the environmental impact of grocery products [PDF]
22. WWF (n.d.). The 2050 Criteria
Reduction opportunities

The PSF has researched ‘reduction opportunities’, ‘action plans’ and ‘topic guides’ relevant to the grocery sector. Below are a selection relevant to ready meals. Follow the links to find out more about each opportunity. For a full list of resources available see the Help section.

While many of the opportunities are not tailored specifically to ready meals – the principles and resources are transferable. Where they target a hotspot they are flagged red.

Reduction opportunities

- Addressing 'green water' impacts in agriculture
- Sourcing palm oil responsibly
- Sustainable fisheries & aquaculture
- Water efficiency in livestock farming
- Closed-loop recycling
- Renewable packaging materials
- Boiler energy efficiency in food & drink processing
- Identifying the true cost of waste
- Product re-formulation
- Food redistribution
- Reducing consumer food waste

Action plans

- How to participate in the closed loop economy through waste exchange
- Refrigeration best practice in food and drink chill chains

Topic guides

- Implementing a sustainable procurement process for raw materials
- Engaging colleagues on sustainability
Addressing ‘green water’
Product sustainability opportunity

Green water is defined as "the precipitation on land that does not run off or recharge the groundwater but is stored in the soil or temporarily stays on top of the soil or vegetation" – i.e. soil infiltration (1). To date, water initiatives have tended to focus on blue water impacts (surface and groundwater abstracted), but green water is a major component of food water footprints, e.g. 94% of beef’s water footprint (1). Rain-fed agriculture represents 80% of cultivated lands (1.2bn ha) and 85% of global agricultural water usage. An effective approach is improved soil management.

Effective green water management

Addressing green water impacts has potential for yield improvements through increasing effective rainfall (2):
- Reducing runoff through levelling and terracing
- Increasing infiltration through conservation tillage
- Minimising deep percolation by improving soil texture and deep root zone
- Planning cropping patterns around rainfall patterns

Increasing yield has the added benefits of reducing other external inputs like inorganic fertilisers per unit of output – and so has potential to improve other PSF metrics as well.

Other key resources & initiatives

1. Water Footprint Network – for definitions of water categories and a feel for priority products/countries
2. Green Water Management Handbook – a comprehensive review of technologies available for addressing green water impacts
3. Global Water Tool – free and easy-to-use tool for companies to map their water use from WBCSD
4. Protecting our Water, Soil and Air – Defra’s best practice guide for water, soil and air quality
5. Resources available to businesses to quantify and reduce the water impacts of their water use – Defra report
6. Simply Sustainable Water – advice from LEAF on Six Simple Steps for managing water quality & use

Case study – Zambia

In Zambia, like a lot of arid/semi-tropical regions, only 15-30% of rainfall contributes directly towards plant growth. Digging holes filled with organic matter to collect rainfall and tearing up the soil to increase soil infiltration has led to yield increases of 50-100% (2).

In the UK, green water yield improvements can be effected through increasing soil organic matter (see Soil Management Reduction Opportunity).
Sourcing palm oil responsibly

Product sustainability opportunity

Palm oil has become incredibly popular as a low cost, high yield vegetable oil with a vast range of uses in food and HPC products. In 2012 426,500t of palm oil, and 33,000t of palm kernel oil were imported into the UK, with more imported within other products. A 2011 study for Defra estimated that only 24% of palm oil consumed in the UK is sourced sustainably, despite 43 of the 100 best-selling branded products in UK supermarkets containing palm oil. Increased palm oil production can increase the risk of destruction of tropical rainforest and drainage of peatland, as well as having major impacts on biodiversity, climate change, and indigenous land rights (1). Sourcing palm oil responsibly and increasing supply chain transparency can reduce reputational risks and anticipate future changes in regulation e.g. EU Food Information Regulations.

Roundtable for Sustainable Palm Oil

The Roundtable for Sustainable Palm Oil (RSPO) was set up in 2004 with the aim of bringing certified sustainable palm oil to the market (2). In 2010, 2.3mt of certified sustainable palm oil (CSPO) was available, but only 51.7% was bought via available RSPO supply chain mechanisms (1).

However, many retailers & manufacturers have committed to 100% sourcing of sustainable palm oil by 2015. The RSPO reported that between 2009-2011, supply of CSPO increased 250%, with sales growing by ~620%.

Case study – Starbucks

Starbucks recently committed to sourcing 100% of its palm oil from certified sustainable suppliers by 2015, joining the RSPO along with several other major FMCG companies. Unilever reached their target of 100% CSPO three years early in 2012, and have now committed to a revised target of 100% palm oil from certified traceable sources by 2020.

Other key resources & initiatives

1. Review of policy options relating to sustainable palm oil procurement – Defra supply chain mapping
2. Roundtable on Sustainable Palm Oil – international organisation of producers, distributors, conservationists & other stakeholders
3. Consumer Goods Forum – the CGF is developing methods to improve the sustainability of palm oil & other high risk materials
4. WWF’s Palm Oil Buyers’ Scorecard 2011 – provides analysis of palm oil use progress by FMCG manufacturers
5. “Using certified sustainable palm oil no longer good enough” FCRN – source of knowledge into food systems and climate change
6. See also – Supply chains and land use change action plan
Capture fisheries and aquaculture provided 148 million tonnes of fish in 2010, with a total value of US$218 billion; 86% of this was used as food for people, with the remainder being used for fishmeal. Most of the stocks of the top ten species (30% of global production) are fully exploited (1). Aquaculture, although not directly harvesting wild populations of fish, has its own sustainability issues (see below). Securing sustainable supplies of fish are frequently achieved through the use of third party certification initiatives (e.g. Marine Stewardship Council), or awareness campaigns (e.g. Switch the Fish).

**Aquaculture**

Aquaculture remains the fastest growing food production system in the world, accounting for half of the total food fish supply (1). However, there are associated impacts:

- Wild caught fish are used to feed farmed stocks, which may not relieve wild stock pressure
- Fishing for fishmeal (especially anchovies & sandeels) can impact on marine food webs
- Disease, more easily caught in cramped farm conditions, can easily be spread to wild populations
- Surrounding ecosystems can be polluted by chemicals, antibiotics & vaccines if used on intensively farmed fish

**Case study – Birds Eye**

In March 2012 it was announced that the entire Birds Eye Cod and Haddock Fish Finger range had been awarded MSC certification, switching 5,200 tonnes of fish to sustainably certified produce and increasing the total weight of MSC labelled products sold in the UK by 20%.

Birds Eye helped rejuvenate depleting cod stocks in 2007 by introducing the Alaska Pollock Omega 3 Fish Finger. The move encouraged 78% consumers to switch, reducing its cod catch by 3000 tonnes p.a.

**Other key resources & initiatives**

1. [The State of World Fisheries and Aquaculture](#) – FAO report assessing the current state of the global fishing industry
2. [Aquaculture Stewardship Council (ASC)](#) – organisation that sets sustainability standards for fish farms
3. [Global Partnership for Oceans](#) – multi-stakeholder initiative working on a range of ocean-related issues e.g. seafood certification
4. [Marine Stewardship Council (MSC)](#) – organisation that sets sustainability standards for fisheries (excl. aquaculture)
Livestock rearing accounts for approximately 119 million m³ of water use per year. The largest quantity is used by cattle: 82 million m³. Pig and poultry water intake remains consistent throughout the year, but cattle and sheep are affected by the dry matter content of their food as well as the weather, with typical peak water usage occurring in the summer. Water is used in a number of areas on the farm site, however indirect water use is significantly affected by grain use, with crops grown from irrigated water using 43 times more water than pasture based animal feeds.

Benefits & barriers
Up to 21% of the water used to support dairy cows is used in the washing of farm equipment (1), and may provide a significant area of increasing water efficiency. Farmers may consider using natural water traps, ponds, streams etc. to provide drinking water for livestock, reducing the need to purchase potable water. However they should be cautious regarding water contamination and soil erosion. Bite-ball drinking systems have been shown to reduce water use by 35% compared to nipple drinkers – however, initial cost may be a barrier as well as a lack of familiarity with this, or other new technology and practices (1).

Other key resources & initiatives
1. Water use – Sector: Livestock – comprehensive water use report from the University of Warwick
2. Opportunities for Water Efficient Livestock Production – International Livestock Research Institute report
5. Simply Sustainable Water – advice from LEAF on Six Simple Steps for managing water quality & use

Case study – Brackenburgh Home Farms
A 1,500 acre mixed farm in Cumbria saw a reduction of mains water use through a dairy modernisation program. Plate cooling water is re-used for animal drinking & rainwater harvested for washing down. Demonstrable savings include:
- 33% reduction in mains water use
- 13% reduction in water use per cow
- Reduced costs due to less slurry removal
Closed-loop recycling

Product sustainability opportunity

The adoption of a circular economy offers considerable economic benefits (1). Strictly defined, ‘closed-loop recycling’ is where recycled material from one product is wholly, or partially incorporated back into the same product. In contrast, ‘open-loop recycling’ is where recycled material is used for another purpose (2). Certain materials are better suited to this process. Glass, aluminium, steel & plastic recycling can reduce energy, GHG emissions & water use without affecting performance, e.g. recycling ink cartridges – see case study below (3).

Benefits & barriers

Closed-loop recycling ensures a long term relationship between customers and suppliers and provides a revenue from recovered material, whilst at the same time reducing the amount of waste sent to landfill (2). A closed-loop system operator will need to ensure the manufacturing process allows for the introduction of recycled material and that there are appropriate logistics and distribution networks to control the flow of recovered material (4). Additionally the cost of collection, and possible use of 3rd party collecting centres, may be an extra economic and organisational burden (3).

Case study – HP ink cartridges

HP ink cartridges are retrieved by post and disassembled following consumer use. PET pellets from packaging are combined with recycled drinks bottles and formed into new cartridges. To date, individual cartridges are recycled up to 10 times and have a 33% smaller carbon footprint per cartridge.

Other resources & initiatives

1. WRAP’s vision for the UK circular economy to 2020 – outlines the benefits of pushing the UK economy towards circularity
2. Recycled Content Fact Sheet – Incpen guidance on recycled materials
4. Closed Loop Recycling – Opening The Door To Cost Saving – WRAP case study of closed-loop recycling
5. Ellen MacArthur Foundation (EMF) – works with education & business to accelerate the transition to a circular economy
6. Environmental Benefits of Closed-Loop Glass Recycling – WRAP information supported by a glass collection directory
Renewable packaging materials
Product sustainability opportunity

Increasing the use of renewable materials is a key part of improving product sustainability. However, like any material, their use should be carefully considered to avoid unintended environmental consequences and deliver intended business benefits. Bioplastics cover a range of materials which are bio-based, bio-degradable or both (see 1 for definitions). Bio-based plastics can be derived from primary crops (e.g. sugarcane) or waste plant material. The sustainability benefits and trade-offs will largely depend on the raw material used and the specifics of the solution being considered.

**Case study – Plant Bottle**

Coca-Cola have developed bottles which contain PET derived from plant material. According to Coca-Cola the benefits include:

- 30,000 tonnes CO₂e saved
- Stimulates plant waste market to develop polymers from other sources

Learn more on the Coca-Cola [website](#).

**Benefits & barriers**

Bioplastics are being used more as a point of differentiation, and for the positive consumer perceptions associated with the term ‘biodegradable’ or ‘compostable’ (1). The main unintended environmental consequences relate to the sourcing of raw material feedstock. Where primary crops are used, there are concerns over competition with food and the impacts of non-renewable agricultural inputs (e.g. fertilizers & fuel).

However, increased use of bio-based material also requires more sophisticated EoL solutions. Bio-based materials would need to be efficiently identified and disposed of by consumers so as not to contaminate waste streams.

**Other key resources & initiatives**

1. [Biopolymer packaging in the UK grocery market](#) – briefing note
2. Consumer Goods Forum [Global Packaging Project](#) – includes guidance on the use of renewable materials in packaging
3. [European Bioplastics](#) – organisation supporting the growth in use of bioplastics
4. [European Renewable Resources and Materials Association](#) – highlights best available technology and organisations
5. [NNFCC](#) – advises on bio-based materials (e.g. bioplastics [factsheet](#)) and co-ordinates the [Renewable Materials LINK Programme](#)
6. The WRAP [The International Packaging Study](#) and [Resource Efficient Innovations Database](#) contain examples of biopolymers
Boiler energy efficiency in F&D
Product sustainability opportunity

Boilers play a central role in food and drink manufacturing, consuming up to half of total fuel in the sector (1). The key business driver for addressing boiler energy efficiency is the increasing cost of energy. Common approaches include: regular maintenance, looking at the potential for recovering waste heat, and boiler replacement (see hierarchy below).

**Boiler energy savings hierarchy**

- Cost
  - Monitor energy use, carry out boiler maintenance
  - Flue gas/boiler blow down heat recovery
  - Boiler replacement

**Case study – Heinz**

The Heinz manufacturing site in Wigan has achieved impressive efficiency gains through targeting their boiler house operations. Heinz has increased its boiler house energy efficiency to ~90% by installing a heat exchanger, and developing regular steam trap maintenance. The benefits:
- 9,000tCO₂ reduction p.a.
- Payback period of 18-19 months
- Steam trap maintenance alone gives a cost return of 10:1 and CO₂ savings of 884t p.a.

**Other key resources & initiatives**

1. IGD - [Energy efficiency measures](#) website highlights boilers as key energy user in grocery sector, and suggests some basic solutions
2. [Enhanced Capital Allowances](#) – provide tax relief for energy efficient industrial purchases, improving cash flow
3. [The Energy Technology List](#) – a list of equipment that qualifies for ECAs, useful for aiding boiler selection
4. [Steam and high temperature hot water boilers](#) reductions guide from The Carbon Trust for staff involved in regular boiler operations
Identifying the true cost of waste

Product sustainability opportunity

The cost of waste disposal is a small fraction, typically 5%, of the true cost of waste. The true cost should include cost of materials and value added during the production process, including: costs of labour; energy; water; equipment; warehouse; administration; and disposal. The example shown in the chart shows how value added to a cake at each stage of production increases the true cost of waste.

Benefits & barriers

There are more than £800m worth of savings possible through improved waste in the food & drink sector (1). Estimates place the true cost of a tonne of waste at £550 (2) to £2,000 (3) per tonne. Calculation of the true cost helps prioritise opportunities, develop accurate cost-benefit analyses and implement waste prevention measures.

Other key resources & initiatives

2. Opportunities for Resource Efficiency in the Food and Drink Sector – WRAP report reviewing waste arisings at FDF member sites
3. WRAP, Confidential Waste Prevention Reviews, 2011-13
4. Efficient Consumer Response – working group co-ordinator, supporting developments in process efficiency
5. Lean Manufacturing and the Environment – USEPA research on advanced manufacturing systems and their environmental benefits
6. Waste Arising in the Supply of Food and Drink to Households in the UK – focusing on manufacture, distribution & retail
7. Benefits to Change in the Retail Supply Chain – provides links on improving supply chain resource efficiency
Product re-formulation

Product sustainability opportunity

Product reformulation, where a product’s composition is altered or ingredients are substituted for alternatives, can be driven by a number of different factors e.g. ingredient price fluctuation or compliance to government legislation. Altering a product’s composition can mitigate material risk associated with high environmental impact ingredients, or may impact how the product is used by the consumer which might lower the product’s energy or water requirement (1). There are many other potential benefits, including: reduced raw material costs; lower distribution impacts; less required storage space; reduced packaging; as well as the potential to pass on costs savings to the consumer.

Case study - United Biscuits

United Biscuits (UB) reformulated their McVitie’s biscuits, reducing the salt content by up to 60% and the saturated fat content by up to 80%. The reformulations enabled a 40% reduction in UB’s use of palm oil and reduced pressure on rainforest destruction, but most importantly, a total of £4m was added to sales value, with sales of biscuits up by more than 5%.

Case study – Britvic concentrate

In March 2011, Britvic introduced a new double concentrate to its Robinsons squash brand. The double concentrate squash is now in 1.25 litre and 1.75 litre bottles. The smaller bottle sizes have enabled a significant reduction in secondary packaging, & transport required. The benefits are:
- Better consumer value for money
- 61% reduction PET per litre drunk
- 70% reduction in total packaging
- 50% reduction in lorries used
- 14,000 tCO₂ saving p.a.

Other key resources & initiatives

1. See Unilever’s Persil Small & Mighty
2. Courtauld Commitment Phase Two Case Studies – provides some examples of product re-formulations
3. Product Re-formulation: Channelling Efficiency savings – WRAP information sheet encouraging re-thinking of products
Food redistribution
Product sustainability opportunity

In the UK, 3 million tonnes of food waste arises in the retail supply chain from factory gate to shelf. Currently, FareShare and FoodCycle redistribute a combined total of around 5,000 tonnes, and Company Shop accounts for a further 15,000 tonnes. A new working group has been coordinated by WRAP in order to tackle the issue of UK food waste and includes major players within this area (1). Waste food in the supply chain has been valued at £500 per tonne, and this is thought to be significantly less than its actual cost to business (see Identifying the true cost of waste reduction opportunity).

Case study – Company Shop

Company Shop, a business that sells surplus stocks from leading UK supermarkets, recently opened a flagship ‘Zero Food to Landfill’ store in Tankersley, South Yorkshire. It is predicted that 98% of the food handled at the 14,000sqft store will either be sold to members or donated to local food charities (incl. FareShare, opposite).

Case study – FareShare

FareShare is a national UK charity addressing food poverty through:
• Providing quality food
• Providing training and education
• Promoting the message that ‘No Good Food Should Be Wasted’
• Working with UK food retailers (e.g. Sainsbury’s ‘Million Meal Appeal’)
The redistribution of food by FareShare minimises surplus food going to landfill and helped business reduce their emissions by 1,800tCO₂e in 2011/12.

Other key resources & initiatives
1. WRAP food redistribution industry working group – due to report late 2013
2. Company Shop – business that sells surplus stock from supermarkets discreetly on a strict membership basis
3. FareShare – national UK charity that supports communities to relieve food poverty
4. WRAP Retail Survey 2011 – helping consumers reduce food waste; gives figures for UK food waste
Reducing consumer food waste

Product sustainability opportunity

In the UK, 7.2 million tonnes of food and drink is wasted every year, 4.4 million of which is avoidable. The average UK household currently spends £480 on wasted food every year, totalling £12 billion overall. WRAP reported a significant reduction between 2006/7 and 2010 (13%) (1) but a range of opportunities exist for retailers and manufacturers to help further reduce this waste, and deliver significant financial (for customers) and environmental benefits.

Raising awareness and enabling behaviour change

A combination of large-scale campaigns and local engagement is an effective way to help consumers realise the benefits of throwing away less food, and giving them the tools and confidence to make small changes to the way they shop, store and cook food. Morrisons Great Taste Less Waste had regular articles in their magazine and on-line tips and advice, whilst Sainsbury’s Make your roast go further campaign provided its customers with leftover recipes designed to incorporate key ingredients from a roast. The Co-op regularly includes Love Food Hate Waste messages on till-screens, reaching millions of customers in store.

Other key resources & initiatives

1. Household food waste resource listing – summary of WRAP partner resources to use to reduce household food and drink waste
2. Courtauld Commitments Phase Two Case Studies November 2012 – WRAP report providing a list of useful case studies
3. Love Food Hate Waste partners site – wide range of resources available for partners to use free of charge
4. New estimates for household food and drink waste in the UK – WRAP report providing food waste estimates for 2011
5. What retailers and brands are doing to help you reduce food waste – Love Food Hate Waste report

Case studies: Changes to products

Changes to products, packaging and labelling makes it easier for consumers to buy the right amount and use what they buy.

- M&S were the first to introduce ‘freeze before the date’ labelling, replacing ‘freeze on day of purchase’, giving consumers more flexibility to freeze what they may not eat in time.
- ‘Display until’ dates are being removed by many retailers and brands, reducing confusion and giving prominence to the important dates.
- ASDA launched new packaging for their extra special Royal Jersey potatoes that increases shelf life and reduces waste.

A combination of large-scale campaigns and local engagement is an effective way to help consumers realise the benefits of throwing away less food, and giving them the tools and confidence to make small changes to the way they shop, store and cook food. Morrisons Great Taste Less Waste had regular articles in their magazine and on-line tips and advice, whilst Sainsbury’s Make your roast go further campaign provided its customers with leftover recipes designed to incorporate key ingredients from a roast. The Co-op regularly includes Love Food Hate Waste messages on till-screens, reaching millions of customers in store.
Participating in waste exchange

Action Plan

All businesses produce waste that they cannot reduce further, re-use in their processes or send for recycling. For manufacturers, distributors and retailers involved with grocery products, 5 million tonnes of food product related waste (excluding packaging) is sent to landfill each year. Establishing a mutually beneficial waste exchange arrangement with other organisations can reduce waste, material and processing costs and impacts. This may include involvement in food redistribution projects, supplying food waste and by-product materials for recycling or equipment and material reuse schemes.

Implementation Process

This Action Plan focuses on the steps and business case for taking part in a waste exchange arrangement as a waste producer or recipient. In doing this consideration needs to be given to regulators waste classifications (2, 3).

1: Determining value
   - Producer: Quantify the volume & characteristics of any waste materials, energy, water or by-products.
   - Recipient: Define the material needs, including volume and characteristics, of your operations.

2: Business case
   - Involve operational and management staff in assessing:
     - Business benefits
     - Investment requirements
     - Risks
     - Operational changes

3: Identifying partners
   - Priorities:
     - Amounts, quality and consistency of supply of materials
     - Compliance with grocery labelling requirements (4)
     - Compliance with waste responsibilities (5)

4: Trialling & monitoring
   - Initiate a small scale trial with one type of waste with one organisation.
   - Key factors to agree:
     - Quantity
     - Material performance
     - Storage and transport
     - Regulatory requirements
     - Health and safety

5: Embedding & review
   - Implement new contracts, operational procedures and training
   - Understand who needs to buy-in to change. Consider a workforce partnership approach (6)
   - Establish a programme of review

Resources
1. WRAP - Waste arisings in the supply of food and drink to households in the UK
2. DEFRA - Guidance on the legal definition of waste and its application - a practical guide for businesses and other organisations
3. SEPA - Is It Waste - Understanding the definition of waste and supplementary guidance
4. WRAP - How to apply date labels to help prevent food waste
5. Environment Agency - A guide to when electrical and electronic equipment is considered waste and the controls that apply
6. WRAP - Workforce partnerships for resource efficiency
Optimising refrigeration
Action Plan

Refrigeration is a crucial utility used in the grocery supply chain, in particular in manufacturing, transport, bulk storage and retail. In terms of energy use and CO₂e emissions, refrigeration is the most important utility in food and drink manufacturing and retail operations. This action plan addresses the management, operation, maintenance and design of refrigeration systems so you can benefit from significant cost savings as well as large reductions in CO₂e emissions.

Saving Potential

<table>
<thead>
<tr>
<th></th>
<th>Refrigerant GHG emissions</th>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Systems</td>
<td>50%</td>
<td>25%</td>
</tr>
<tr>
<td>New Systems</td>
<td>&gt;90%</td>
<td>40%</td>
</tr>
</tbody>
</table>

Implementation Process

- **Improve Management Information**
  - Cooling loads, energy use, operating data, leak rates

- **Invest in existing refrigeration plants**
  - Leakage: replace leaky components, replace R404A
  - Energy: better maintenance, operation and control

- **Careful selection of all new refrigeration plants**
  - Minimise cooling demand and design for high efficiency
  - Use low GWP refrigerants and design for low leakage

Resources

1. [Defra and SKM Enviros, 2011](#) - Examination of the global warming potential of refrigeration in the food chain
2. [FDF and others, 2007](#) - Food and Drink Industry Refrigeration Efficiency Initiative
3. [IOR, BRA, Carbon Trust, 2010](#) - Refrigeration road map for the food retail sector
# Sustainable Procurement of Raw Materials

## Topic Guide

Raw materials (RMs) used in grocery products present both sustainability opportunities and risks to businesses, whether they are producers, manufacturers or retailers. This Topic Guide describes the overall process for implementing sustainable RM procurement to reduce risks, achieve lower costs and encourage innovation. Procurement’s role here is to work in a structured way with product development and supply chain management partners to identify and pursue opportunities.

## Implementation Process

The process follows a step by step approach to ensure that raw material procurement takes account of sustainable aspects by thorough risk and opportunity analysis, and by working closely with key suppliers.

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<tbody>
<tr>
<td><strong>Retailer</strong></td>
<td>Map how sustainability is currently included in procurement processes</td>
<td>Identify key RMs through a spend and risk analysis, and map their current sourcing</td>
<td>For each key RM review impacts and risks along the supply chain</td>
<td>Select key suppliers and engage to jointly review impacts, risks and opportunities</td>
<td>Develop joint action plan and implement with selected suppliers</td>
<td>Track progress, review and communicate to key stakeholders.</td>
</tr>
<tr>
<td><strong>Manufacturer / Supplier</strong></td>
<td>Map how sustainability is currently included in procurement processes</td>
<td>Identify key RMs through a spend, risk and product sales analysis, and map their current sourcing</td>
<td>For each key RM review impacts and risks along the supply chain</td>
<td>Identify key customers and suppliers and discuss impacts, risks and opportunities</td>
<td>Develop joint action plan and then implement with selected customers and suppliers</td>
<td>Review learnings and repeat process for a cycle of continuous improvement</td>
</tr>
</tbody>
</table>

## Resources

1. [Food & Drink Federation](#) - Sustainable Sourcing: Five Steps Towards Managing Supply Chain Risk
2. [Defra](#) - Sustainable Procurement Prioritisation Tool
3. [WRAP](#) - Reducing Food Waste through Retail Supply Chain Collaboration
4. [SAI Platform](#) - Practitioner’s Guide for Sustainable Sourcing of Agricultural Raw Materials
5. [UN Global Compact](#) - Supply Chain Sustainability guide
Engaging employees on product sustainability

Topic Guide

Engaging employees on product sustainability provides an opportunity to embed sustainability within everyday business practice. The aim is to engage employees on in a way that promotes behaviour change and encourages employee-led action. An engagement strategy developed by Sustainability teams is then lead by employee representatives, and supported by HR, internal marketing communications, category managers and online communications. The strategy should also seek to incentivise employees to take further action and increase buy-in.

The business benefits include cost-savings, product innovation, brand enhancement, reduced environmental impacts and increased employee motivation.

Engagement strategy

This Topic Guide focuses on how to engage employees using established methods as part of an engagement strategy:

1) Employee-led approaches
2) Action Learning
3) Internal communications
4) Online communications
5) Training and e-learning
6) Incentivisation programmes

Resources

1. Action Learning guide – guidance on the action learning process
2. Ecoinomy – online education platform
3. Wal-Mart case study – example of online communication tool
4. Unilever case study – example of employee-led action and marketing mechanisms
5. M&S case study – Plan A Product Attributes – assigning health, environmental and ethical attributes to drive product sustainability
This section contains background information on the contents of this slide deck, including:

1. **Frequently Asked Questions** (FAQs)
2. **Terms of use**/Disclaimer
3. **Product summary list** – 50 product summaries are available covering food, drink, household and personal care categories
4. **Reduction opportunities** – a list of all those developed to date
5. **Action plans & topic guides** – a list of all those developed to date
1. **What is the Product Sustainability Forum (PSF)?** The Product Sustainability Forum is a collaboration of 80+ organisations made up of grocery and home improvement retailers and suppliers, academics, NGOs and UK Government representatives. It provides a platform for these organisations to understand, improve and communicate the environmental performance of the grocery and home improvement products. Website: [www.wrap.org.uk/psf](http://www.wrap.org.uk/psf)

2. **What are the five PSF ‘metrics’?** To date, the PSF has focused on the performance of products across five core environmental ‘metrics’: energy use, water use, waste generation, material use and greenhouse gas emissions. A more detailed discussion of the work done on these five metrics is available in a published PSF report entitled "An initial assessment of the environmental impact of grocery products". The PSF is also beginning to look at the biodiversity impact of products.

3. **What do the red and orange shading denote on hotspot matrices?** Red cells highlight stages within the value chain which are often the primary source of impact for the metric in question (e.g. greenhouse gas emissions, energy use, etc.). Orange cells are typically secondary sources of impact. These are qualitative assessments to highlight likely hotspots and should be used to focus further investigation.

4. **How are ‘Primary’ and ‘Secondary’ hotspots identified?** Primary and secondary hotspots have been identified using a range of sources – but mainly publicly available life cycle and sector-level research into resource use and environmental impacts. These are fully referenced within the deck. Primary hotspots are those which, according to the evidence identified, are likely to contribute the most to the metric in question (e.g. agricultural stages dominate the carbon footprint of dairy products). However, due to the varied and patchy nature of the evidence, some summaries are more complete than others – and in many cases, hotspots have been estimated based on proxies. To guide users a qualitative ‘evidence level’ score has been developed to highlight any significant data gaps. As every supply chain is different, this information should be used to guide further research into your own supply chain.

5. **Which other product summaries are available and where can I get them from?** A summary of products researched to date is available at the end of this deck.

6. **How can I submit ideas/comments for future revisions of this PowerPoint deck?** Click on the ‘Submit feedback’ link at the top right hand side of each slide to send feedback to the PSF team.

7. **How can I use this content?** See our ‘Terms of Use’ slide.
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<thead>
<tr>
<th>Category</th>
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<tr>
<td>Bananas</td>
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<td>Bath &amp; shower products</td>
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<tr>
<td>Butter</td>
<td><img src="image" alt="Butter" /></td>
<td>Cakes, pastries, etc.</td>
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<tr>
<td>Cheese</td>
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**Resources**

**Opportunities**

**Introduction**

**Hotspots**

**Help**
Reduction opportunity list

- Addressing ‘green water’
- Benefits of soil management
- Crop irrigation best practice
- Precision agriculture
- Rolling out agricultural GHG tools
- Sourcing palm oil responsibly
- Sugar crop sustainability
- Sustainable fisheries & aquaculture
- Sustainable forestry products
- Water efficiency in livestock farming
- Closed-loop recycling
- Drinks packaging optimisation
- Renewable packaging materials
- Boiler energy efficiency in F&D
- CIP for resource efficiency
- Identifying the true cost of waste
- Increased efficiency of in-store bakeries
- Increasing motor drive efficiency
- Product re-formulation
- Water efficiency in drinks manufacture
- Water efficiency in meat processing
- Water re-use in F&D processing
- Extending product shelf life
- Food redistribution
- Shared logistics opportunities
- Improving consumer portioning
- Reducing kitchen energy use
- Reducing consumer food waste
- Water efficiency in the home
- Capital allowance for green tech
Action plan & topic guide list

Action plans
• Refrigeration best practice in food and drink chill chains
• Harmonising smart planning (manufacturers) and demand forecasting (retailers)
• How to participate in the closed loop economy through waste exchange
• Securing crop supply through whole crop purchasing
• How to use digestate as a fertiliser substitute

Topic guides
• Implementing a sustainable procurement process for raw materials
• Best practice in embedding sustainability in product design
• Effective commissioning of LCAs/footprint studies
• Engaging colleagues on sustainability
• Lowering the impact of pig feed soya
• Demystifying and de-risking land use change
• How to identify high sustainability, reputation, supply chain risk and resilience
• Engaging suppliers on sustainability