

# Action Plan

## Smart Planning and Demand Forecasting for Retailers

This Action Plan is intended to be used by a Director or senior individual within a Procurement function in a food retail organisation.

### Key Messages:

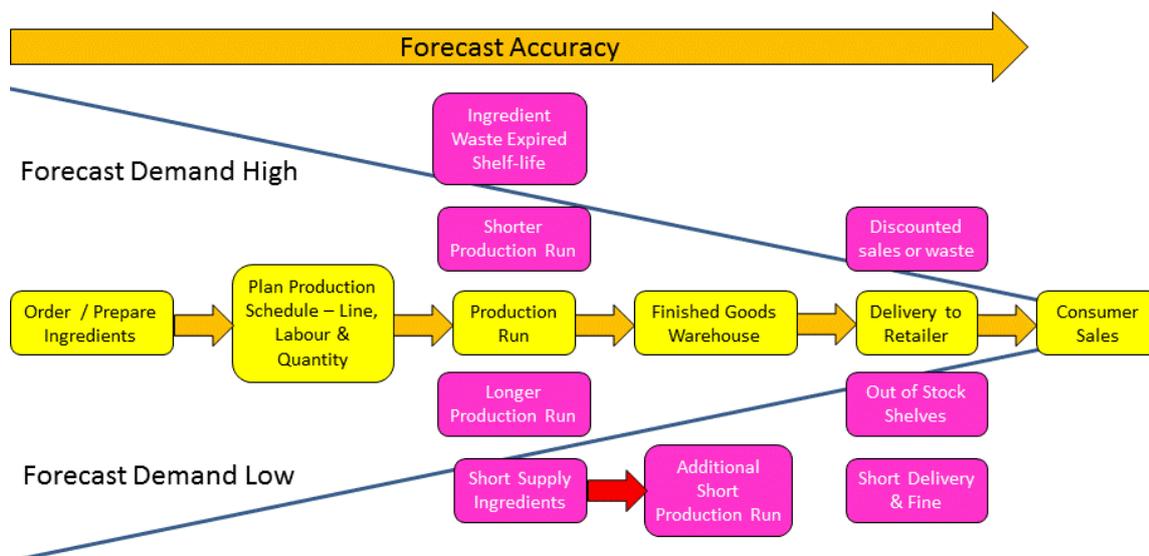
- Save up to 1% of turnover by reducing packaged food waste/discounting
- Increased product availability and reduced number of “out-of-stock” products
- Reduced supply chain waste and manufacturer savings

### Overview

WRAP estimate that waste in the supply chain is costing food retailers and manufacturers £5bn annually.<sup>1</sup> One of the problems faced by retailers and their suppliers is accurate sales forecasting of food products. Getting it wrong can lead to significant food waste or empty shelves and lost sales. Predicted sales may be altered by a number of factors such as changes in weather, local holidays, promotions/allocations and competitive activities. While some retailers and manufacturers have good or even excellent systems, there is often still room for refinement to reduce waste further.

There are two elements to this opportunity:

- Accurate forecasting, particularly important for short shelf-life products and products subject to demand amplification
- Timely effective communication to suppliers



In 2008, WRAP reported that £1 billion-worth of the food wasted annually in the UK is food still ‘in date’ and perfectly edible. Much of this consists of packaged food products with less than 75% shelf-life remaining that

cannot be delivered to retailers. In the UK, Fareshare, which provides surplus food stocks to disadvantaged people, handles 3,500 tonnes of food per annum, and estimate that this represents 0.1% of the total food wasted. Smarter planning by manufacturers and better demand forecasting and communication by retailers has been shown to reduce the amount of food and packaging waste in the food supply chain. The results include lower costs to suppliers and retailers, and reduced food and packaging waste. Based on work with many manufacturers, we estimate there is potential to reduce over-production waste by 50%.

## Opportunities

The dynamics of the supply chain are largely driven by retailers aiming to maximise stock availability on the shelves with maximum remaining shelf-life, while minimising wastage that can arise due to unexpected drops in product sales, or over-allocation of stock relative to normal SKU sale rates. This can be affected by a number of factors<sup>1</sup>. Around 6.5 million tonnes of waste arise in the manufacture, distribution and retailing of food and drink (WRAP, 2010)<sup>1</sup>. The majority (77%) of this waste rests in food manufacturing. The economic cost of this “supply chain” waste is estimated at around £5 billion.

In terms of manufacturers, access to more accurate demand forecast data (from retailers) at an earlier stage would allow them to plan smartly, maximise batch sizes (with increased efficiencies and reduced changeover waste), and minimise the risk of excess warehouse stock that is later scrapped. It is estimated that scrapped excess stock waste ranges from 1% for chilled foods to 0.1% for ambient products<sup>2</sup>. While short shelf-life foods, such as chilled foods, are susceptible to waste due to over-production, this problem affects many products, including long shelf-life products with low sales volumes. Most retailers will not accept product with less than 75% shelf-life remaining. The opportunity here is for retailers to discuss with their key suppliers what the benefits would be for both parties from a relaxing of shelf-life rules or from a more flexible approach to them. Remaining shelf-life may be critical for a slow-moving product, but not for a product with a rapid turnover.

On the retail side there is always a tension between availability and wastage. Central allocation of stock to stores (rather than store-led replenishment systems) has been shown (by M&S and others) to improve stock availability. However work with major supermarkets and smaller food retailers<sup>3</sup> shows that over-allocations and over-demands do still occur. At one major supermarket, stock ‘pushing’ by the allocators, irrespective of demand, seemed to be a real problem where there is excess stock of relatively short code items in stock upstream in the distribution centres and the allocator pushes it out to stores even if this will inevitably lead to heavy markdown or waste. Stores have varying customer demographics and an allocation that may suit one store will not suit another. In this sense, store led replenishment can reduce waste.

While algorithms are used in the large supermarkets to try to optimise stock, and generally work well under normal circumstances, customer demographics, variations in weather (e.g. affecting salad vs hot food), new promotions (one product competing with another) and discounting related effects may not all be taken fully into account. To give an example around discounting, despite poor demand at full price, the same number of replacement items may be ordered. For example, 10 organic chicken breasts out of 50 sold have to be discounted. Normally 50 replacements are immediately ordered again, but a more sophisticated system would allow a reduced size order. While in large supermarkets the overall effect of these issues is generally less than 1%<sup>4</sup> (cost impact due mainly to discounting rather than physical wastage), the impact can be far higher. Small food stores often have in excess of 3% losses overall in terms of waste and reductions and some

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<sup>1</sup> WRAP Report, 2011, Reducing Food Waste through Retail Supply Chain Collaboration

<sup>2</sup> Based on analyses from SKM confidential WRAP Waste Prevention Reviews

<sup>3</sup> SKM confidential private work with two of the leading UK supermarkets and with the major chains in Ireland

<sup>4</sup> SKM confidential work with one of the leading UK supermarkets

exceed 5%<sup>5</sup>. One UK sandwich / bakery chain has physical wastage of 12% or higher<sup>6</sup>, the focus being on high availability throughout the day. In-store bakeries in supermarkets also often suffer from over production, one recent visit identifying bakery losses of over 30% in cost terms<sup>7</sup>.

The amount of waste arising from variations in retail demand and planning decisions in manufacturing could therefore be substantially reduced by a combination of the following:

- Increased visibility of the amount of waste generated to both manufacturer and retailer – either real-time monitoring or regular reports
- Smarter stock control systems, e.g. which allow for discounting impacts, weather forecasts etc.
- Smarter product allocations that take account of promotions, customer demographics by store etc.
- Better communication between manufacturers and retailers on the expected size and timing of orders
- Joint responsibility for waste generated
- Flexible commercial arrangements

More affordable computing technology and so called ‘big data’ approaches, that use a wide range of data inputs and hence processes a lot of data to identify trends and use more complex algorithms, should enable greater optimisation in stock ordering and production planning. We understand that some systems are already being developed that aim to address many of these issues. Wider application of these, to the major supermarkets and, given affordability, to smaller retailers, should ensure very significant overall savings.

## Implementation Process

**Aim:** To reduce the amount of waste generated by poor forecasting and planning

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Manufacturer	Quantify waste	Review ordering and inventory management systems	Engage retailer on opportunities	Individual reviews between retailer and key suppliers	Trial of selected opportunities and cost / benefits delivered	Implementation and monitoring
Retailer			Engage manufacturer(s) on opportunities			Implementation and monitoring

### Step 1 – Quantify waste arisings

Measure your waste in tonnes and calculate the true cost of waste to the business at a sub-category level. Change your data recording and analysis to better reflect performance, and identify where and why waste is occurring. Develop KPIs to include measurement of:

- Finished goods with insufficient shelf-life that cannot be delivered to a retailer
- Waste out-of life ingredients
- Line waste generated during a product changeover

This will provide a useful resource efficiency baseline showing the proportion of waste due to forecasting and ordering issues. Separation of causes will allow you to set a KPI and identify where to allocate appropriate resources to improve performance. Pareto analysis (the 80/20 rule, identifying the 20% of possible causes that account for 80% of total resource efficiency opportunities) has proven to work well in this area.

<sup>5</sup> SKM confidential work for Zero Waste Scotland with Scottish food retailer

<sup>6</sup> SKM confidential work for WRAP with a UK sandwich/bakery chain

<sup>7</sup> SKM confidential work for Zero Waste Scotland in a convenience store

## **Step 2 – Review ordering and inventory management systems.**

### Retailer

Undertake a review of the decision process, flow of information and time to generate an order. This review should include:

- Visibility of the process to the manufacturer
- Effect of promotions (these and competing products) and new product launches
- Shortcomings of the forecasting system in use
- Benefit of 75% residual shelf-life requirement for fast moving products
- Accuracy of forecasts at various stages vs. actual sales

Identify and quantify potential areas for improvement.

Some of these opportunities may not be cost-effective for the retailer alone, unless the benefits to the manufacturer are included. It is important that potential collaborative solutions are considered.

### Manufacturer

Undertake a review of the production planning process, flow of information, timing and flexibility of manufacturing operations and distribution deadlines. This review should include:

- Ordering raw materials (especially short shelf-life ingredients)
- Preparation of ingredients prior to production run (e.g. thawing)
- Visibility and use of retailer inventory data and information received from retailer prior to confirmed order
- Effect of batch sizes, and standard variation in production achieved vs. order quantity
- Information available, and used, to forecast and order short shelf-life ingredients, and prepare ingredients prior to production.

Identify and quantify potential areas for improvement.

Some of these opportunities may not be cost-effective for the manufacturer alone, unless the benefits to the retailer are included. It is important that potential collaborative solutions are considered.

Both retailer and manufacturer should generate a priority list of improvements to reduce waste, identifying likely cost and benefit to both parties. Where there is insufficient information, these areas should be highlighted.

## **Step 3 – Engage manufacturers in discussions about demand forecasting.**

Initiate a product category workshop where suppliers and retailers come together to review the current planning and demand forecasting issues and opportunities. The retailer should share their insight into on-shelf availability, ordering systems, shelf-life requirements, and wastage. The suppliers should come prepared to do the same, while protecting any commercially sensitive information. This workshop should challenge existing assumptions and particularly address issues such as:

- How can the retailer provide better information to the manufacturer?
- Why fix available shelf-life at 75%? Could this vary according to sales turnover?
- Advantages / disadvantages of flexible order quantities (+/- % order)
- Promotion and new product demand forecasting
- Commercial arrangements to increase profits for both retailer and manufacturer

The workshop should generate a series of opportunities to reduce waste. These will be prioritised according to impact and ease of implementation.

**Step 4 – Individual reviews between retailer and key suppliers**

Take the common issues and opportunities identified in the category workshop, and focus upon issues relevant to each individual supplier. Agree how they might be resolved and the structure of a trial to demonstrate that the solution is feasible and quantify the cost and environmental benefits.

**Step 5 – Trial of selected opportunities between a retailer and selected key suppliers**

Select a number of SKU’s for pilot studies, and implement agreed improved forecasting and planning changes for these product lines. If new systems would be required, then manual data transfer may be adequate for trial purposes. The amount of waste arising from these and non-trial SKUs should be monitored and compared over a representative period. Quantify the tonnage of waste reduction and cost savings from improved forecasting, planning and commercial arrangements. Prepare a cost-benefit analysis, including:

	Waste Reduction	CO <sub>2</sub> e savings	Cost Savings	Investment	Time payback
Manufacturer	Finished product waste Ingredient waste	From waste reduction	True cost of finished product waste Ingredient waste	IT software and hardware if necessary	Calculate based on shared savings
Retailer	Expired shelf-life products	From waste reduction	Less lost sales from out-of-stock Less expired product waste	IT software and hardware if necessary	Calculate based on shared savings

**Step 6 – Implementation of agreed improvements**

Cost-effective opportunities shown to reduce waste should be implemented on a larger scale, and resulting waste monitored. If they are successful, they should be adopted as standard practice.

## Benefits

Savings		Supply Chain Actor			
Environment	Cost	Producer	Manufacturer	Retailer	Consumer
<ul style="list-style-type: none"> <li>• Reduced packaged product waste</li> <li>• Reduced ingredient waste</li> <li>• Reduced waste from short production runs and frequent changeovers</li> <li>• Reduced CO<sub>2</sub>e impact</li> </ul>	<ul style="list-style-type: none"> <li>• Significant cost savings from sale of product and ingredients that was previously disposed to waste</li> <li>• Increased productivity</li> </ul>	<ul style="list-style-type: none"> <li>• Fewer last minute orders for ingredients</li> </ul>	<ul style="list-style-type: none"> <li>• Significant savings from reduced waste</li> <li>• Better relationship with retailer</li> <li>• Fewer fines from retailer for under-supply</li> </ul>	<ul style="list-style-type: none"> <li>• Increased profits from sale of discounted purchase products</li> <li>• Reduced out-of-stock</li> <li>• Reduced waste from expired shelf-life products</li> </ul>	<ul style="list-style-type: none"> <li>• Discounted products available that otherwise would have been wasted</li> <li>• Improved product availability</li> </ul>

## Barriers

Barrier	Description	Mitigation	
		Manufacturer	Retailer
Internal communications within retail operations	Product promotions are commercially sensitive, and category managers may not wish to inform others of impending promotions. Promotions in one category may affect competing products. For example, in low-income areas, a promotion on sausages may generate “victim lines” in meat, fish and ready meal categories	n/a	Demonstrate real cost of planned promotions to other products, and encourage co-operation to benefit everyone involved
Knowledge gap in manufacturer planning department	Manufacturers may not have the technology or knowledge to interpret evolving forecast data from retailers	Training and/or development of tools to provide informed planning decisions	n/a
Commercial sensitivity of competing retailer promotions	(is there something missing in this box?)	It is important that a trusting relationship is established between retailer and manufacturer, and that any short term gain may result in a long term loss	
Commercial sensitivity of the amount of supplier waste	If manufacturers produce significant waste savings, some manufacturers fear that these will be clawed back by retailers enforcing reduced selling prices	It is important that manufacturers and retailers co-operate closely and agree to share savings from waste reductions. This is best achieved by agreement before trials	

## Case Study – Marks & Spencer and Uniq Prepared Foods

Uniq Prepared Foods and Marks & Spencer (M&S) embarked on a journey to discover how much waste can be saved by careful planning, forecasting excellence and a new collaborative approach. Improved supplier relationships with better availability and less waste was the outcome.

### Description

The M&S and UNIQ Prepared Foods team studied the supplier's daily process, order fluctuations, order change impact and raw material usage and the retailer's replenishment and date code rotation.

The team analysed order fluctuation by product compared with the ideal requirements and the relationship between M&S provisional, pre-final and final orders and Uniq demand forecasts. The team then undertook a full review of their sandwich buying and forecasting process. They found that there was a lack of visibility at product level in terms of current sales performance and forward estimate versus proposed final order. The process was biased toward buying extras on bigger key lines with limited visibility on requirement for smaller peripheral products. Assumptions were made around key line requirements. The process did not enable tracking of products that are consistently under/over ordering.

### **Redesign & Pilot**

The team redesigned working practise. The process was refined as follows:

- Review stock requirements at product group level initially based on previous day's sales and weather forecasts;
- Re align orders for each group vs. planned estimate by reviewing waste, sell outs and progressive sales;
- Using newly developed commitment sheet, enter and review orders at line level;
- Re-align line level estimates and review against finalised order; and
- Make amendment to finalised order as recommended by new sheet.

### **Roll-out & Sustain**

Following successful piloting in vegetable sandwiches, the new line level process was rolled out to meat, fish and poultry. Vegetable sandwich waste improvement remained through this period. After a year, overall waste across all lines had reduced by 18%. Waste improved generally due to seasonal changes i.e. better weather, higher level of sales.

Final to pre-final forecast accuracy has improved from 8.5% to 5.5% variance by additional focus on line level commitment by the M&S Merchandising team. This has improved the M&S waste number by 0.5% which equates to 92 tonnes of food waste.

M&S and Uniq's forecasts are more aligned delivering a forecast accuracy improvement from 68% to 82%. This reduces the need to revisit production and is saving approximately four tonnes of food waste per annum.

## **Business Case**

<b>Financial</b>	<b>Environmental</b>	<b>Consumer</b>
<ul style="list-style-type: none"> <li>• Retailer savings from reduced discounting</li> <li>• Savings to manufacturer and retailer from reduced expired shelf-life losses</li> <li>• More economic production runs</li> <li>• Fewer short supply fines</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced waste levels on best-selling lines in stores</li> <li>• Reduced manufacturer packaged product waste</li> <li>• Reduced line changeover waste</li> </ul>	<ul style="list-style-type: none"> <li>• Greater availability across the entire range</li> </ul>

### **Feasibility:**

- The pilot study was a success and adopted for all sandwich categories.
- M&S and UNIQ Prepared Foods believe these significant waste reductions could easily be rolled out to other categories / customers.
- No financial investment was required to achieve waste reduction and cost savings.

## **Resources**

1. European Commission, 2012. Parliament Calls for Urgent Measures to Ban Food Waste in the E.U. European Parliament News.
2. WRAP, 2010 Reducing Food Waste through Retail Supply Chain Collaboration
3. Lee, P., Willis, P., 2010. Waste arising in the supply of food and drink to households in the UK.
4. Tristram, S., 2012. Food redistribution is a win-win solution for food waste [WWW Document].
5. WRAP 2011a. New estimates for household food and drink waste in the UK, Final report (version 1.1).

### **You may also be interested in these related Action Plan/Topic Guide(s):**

- Best practice in embedding sustainability in product design
- How to participate in the closed loop economy through waste exchange

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<sup>1</sup> WRAP, 2010 Reducing Food Waste through Retail Supply Chain Collaboration