WR1403: Business Waste Prevention Evidence Review

L2m5-3 – Hospitality Sector

A report for
Defra

November 2011

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Context of Project WR1403

Waste prevention is at the top of the waste hierarchy. A major priority of the coalition government is to move towards a zero waste economy, and an important element of this will be to encourage and increase waste prevention. This review aims to map and collate the available evidence on business waste prevention. It will help inform the preparation of England's National Waste Prevention Programme as required under the revised EU Waste Framework Directive (2008).

The focus is on aspects of waste prevention that are influenced directly or indirectly by businesses - it complements a previous evidence review, WR1204, which focused on household waste prevention. The definition of the term 'waste prevention' used here is that in the revised Waste Framework Directive:

'Prevention' means measures taken <u>before</u> a substance, material or product has become waste, that reduce:

a) *the quantity of waste, including through the re-use of products or the extension of the life span of products;*
a) *the adverse impacts of the generated waste on the environment and human health; or*
b) *the content of harmful substances in materials and products.*

Recycling activities or their promotion are outside the scope of this review.

Context of this module

This module is one of a number of Level 2 modules that contain analyses of Approaches, Interventions, Sector Issues and other aspects of the review. This module deals specifically with the aspect of waste prevention in the Hospitality Sector.

A full map of the modular reporting structure can be found within **L1m2: Report Index**.

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Contents

Glossary

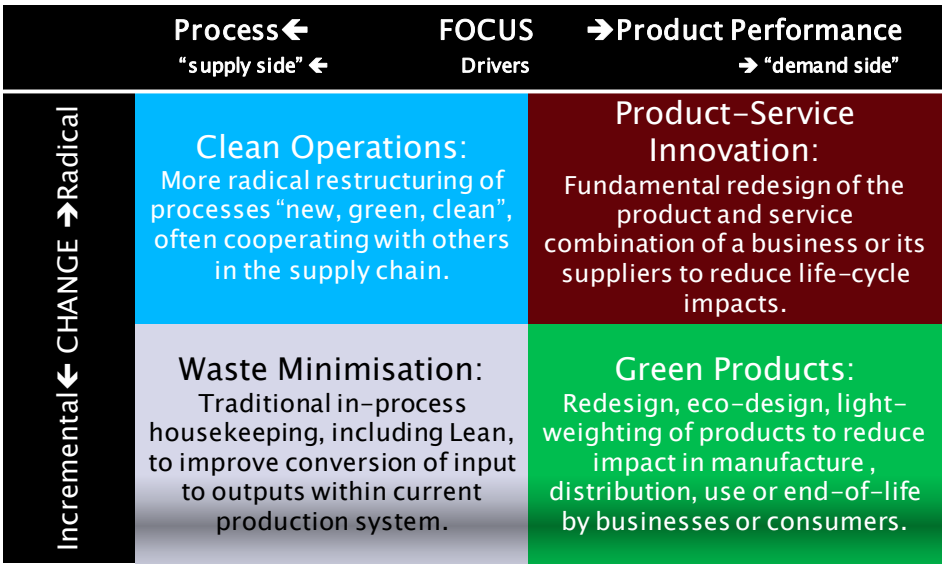
betre	Business Excellence Through Resource Efficiency (Programme)	LDA	London Development Agency
BREW	Business Resource Efficiency and Waste (Programme)	LOCOG	London Organising Committee of the Olympic and Paralympic Games
CO_2	carbon dioxide (emissions)	PSI	product/service innovation
Defra	UK Department for Environment, Food and Rural Affairs	RDC	refrigerated display cabinet
EMS	environmental management system	REC	Resource Efficiency Club (Programme)
ESRC	Economic and Social Research Council	RTP	returnable transit packaging
FISS	Food Industry Sustainability Strategy	SIC	Standard Industry Classification (code)
GVA	gross value added	SME	small/medium-sized enterprise (EU definition)
ICT	information and communication technologies	SRA	Sustainable Restaurant Association
IDEAL79	Initiatives Durables Et Alternatives Locales pour la prévention de la production des déchets en Deux-Sèvres (Sustainable and Alternative Local Initiatives for the prevention of the production of waste in Deux-Sèvres)	SW	solid waste

Units Conventional SI units and prefixes used throughout: {k, kilo, 1,000} {M, mega, 1,000,000} {G, giga, 10^9} {kg, kilogramme, unit mass} {t, metric tonne, 1,000 kg}

Language used in this report

This report has used a framework for evaluating both the actions a business takes to prevent waste (the Approaches), and the mechanisms that have catalysed the actions (the Interventions). The detailed description of Approaches and Interventions may be found within the respective modules **L2m2: Approaches** and **L2m4-0: Interventions Introduction**, but a brief reference outline to the Approaches is given here:

Positioning of approaches in response to business drivers including waste



Source: Oakdene Hollins/Brook Lyndhurst

1 Hospitality Sector in Context

1.1 Relevant SIC Codes and Gross Value Added

This report assesses waste prevention in businesses which offer accommodation or serve food and beverages: i.e. organisations with Standard Industry Classification (SIC) codes 55 and 56 (Table 1).

Table 1: SIC codes for the hospitality sector

SIC Code	Description
55	**Accommodation**
55.10	Hotels and similar accommodation
55.20	Holiday and other short-stay accommodation
55.20/1	Holiday centres and villages
55.20/2	Youth hostels
55.20/9	Other holiday and other short-stay accommodation
55.30	Camping grounds, recreational vehicle parks and trailer parks
55.90	Other accommodation
56	**Food and beverage service activities**
56.10	Restaurants and mobile food service activities
56.10/1	Licensed restaurants
56.10/2	Unlicensed restaurants and cafes
56.10/3	Take away food shops and mobile food stands
56.21	Event catering activities
56.29	Other food service activities
56.30	Beverage serving activities
56.30/1	Licensed clubs
56.30/2	Public houses and bars

Based on the 2007 SIC classification

The hospitality sector is also referred to as 'hotel and catering', and is sometimes included in the 'tourism & leisure' sector (1 p. 26). In this report the lessons learned on waste prevention in the hospitality sector apply equally to canteens and in-house catering services (2 p. 4), as well as to public sector catering (i.e. schools, colleges and universities; hospitals; prisons; the armed services) (2 p. 4). This is important because about £2 billion per annum is spent on public catering in England alone (3 p. 52).

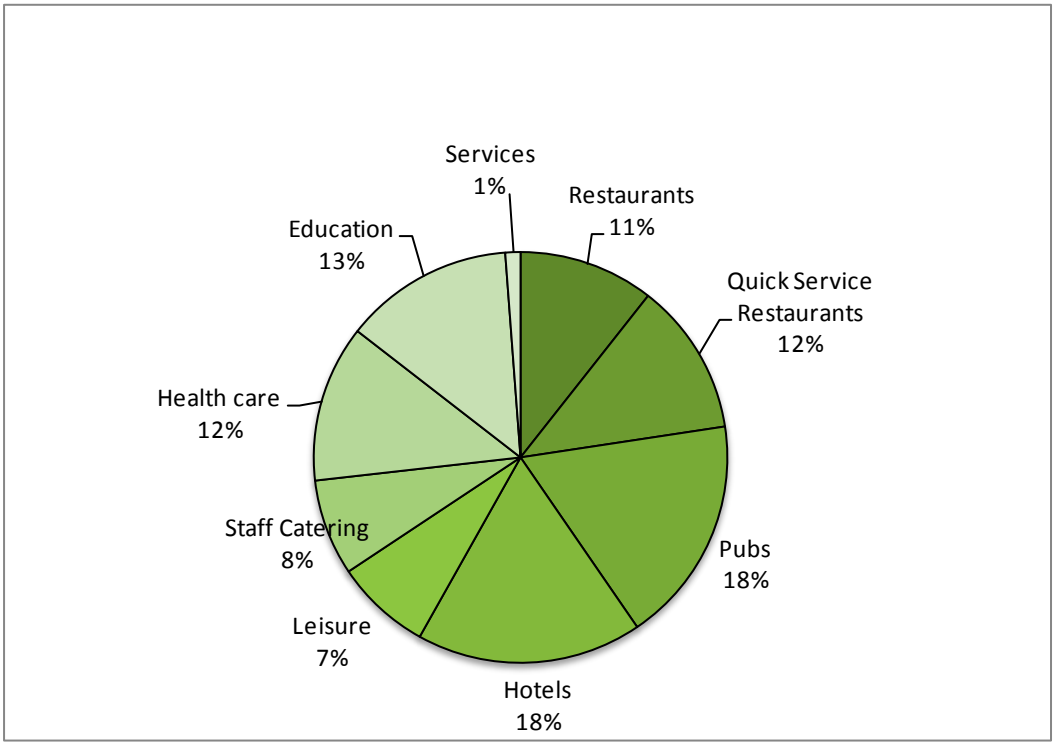
In 2009, the approximate gross value added (GVA) of the hospitality sector was just under £30 billion, accounting for 3.5% of total UK GVA.[a]

[a] ONS: Annual Business Inquiry

1.2 Description of Sector and Recent Trends

The hospitality sector is extremely diverse. In 2009, there were nearly 259,000 outlets[a] across a range of subsectors (Figure 1).

Figure 1: Breakdown of hospitality sector by number of outlets



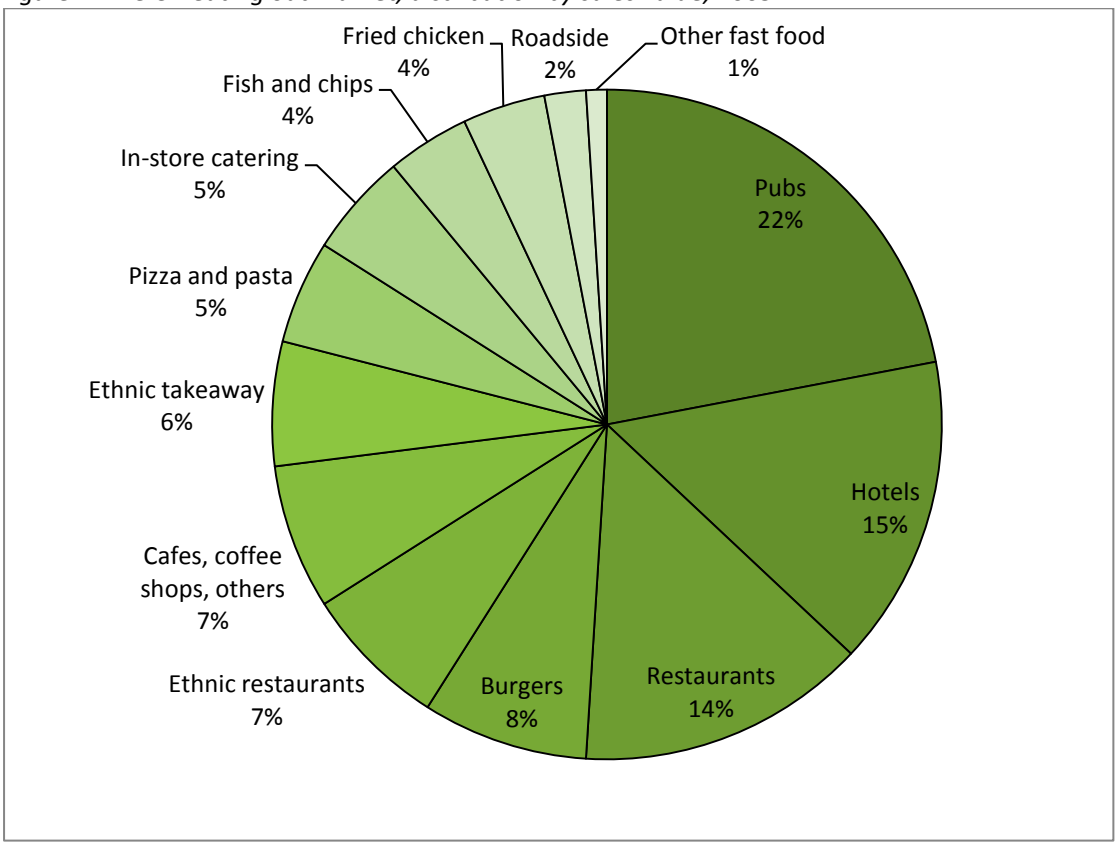
Source: http://www.horizonsforsuccess.com/files/UK%20Foodservice%20Industry%202009.pdf (Excludes event catering)

The industry is composed of a large proportion of SMEs. In London, for example, "more than 85 per cent of employees in Hotels & Restaurants work in SMEs" (1 p. 26).

The hospitality sector has grown significantly over the last twenty years as increasing household incomes have encouraged people to eat out more often. Between 1992 and 2004, spending on eating out doubled (4 p. ii). In 2007, spending on catering services was £82bn, just under that spent in the retail sector (£90bn), although the actual quantity of food sold was less (3 p. 45). The UK's more than 50,000 pubs capture nearly a quarter of value of the eating out market (3 p. 40) (Figure 2).

[a] http://www.horizonsforsuccess.com/files/UK%20Foodservice%20Industry%202009.pdf

Figure 2: The UK eating out market, distribution by sales value, 2005



Source: Mintel (2006) Eating Out – Ten Year Trends (data exclude institutional and event catering and other expenditure on food outside the home)

The picture is further complicated by the fact noted in a 2008 analysis of the UK food supply chain that larger retailers are increasingly moving into the hospitality sector offering (3 p. 51):

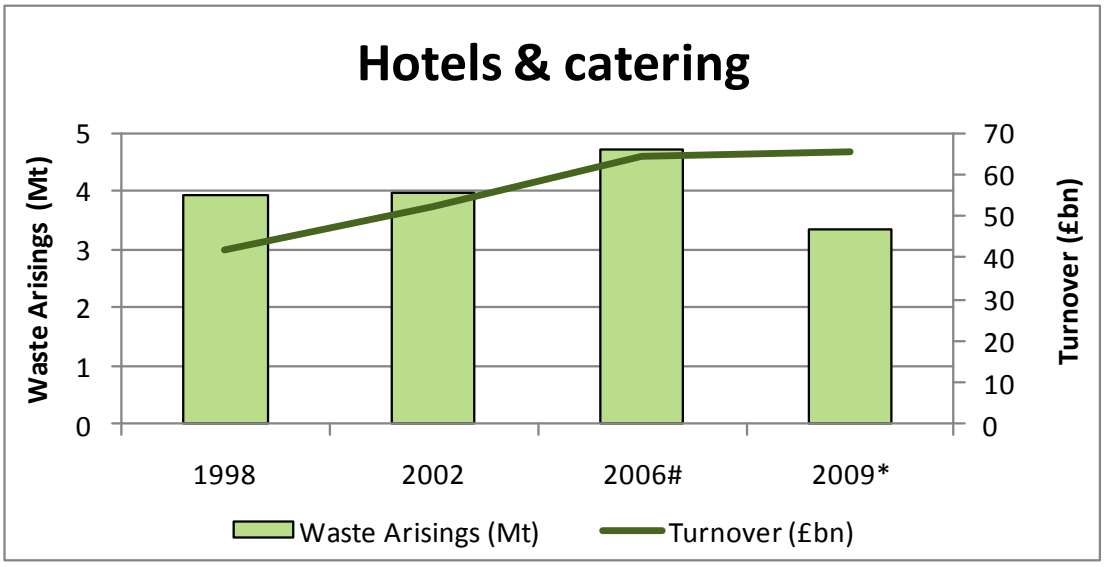
- food (e.g. sandwiches) virtually indistinguishable from that of takeaways
- food service-style products for consumption in the home – e.g. branded pizzas, hot cooked meals
- take-away or sit-down food service.

Please refer to module **L2m5-4: Retail Sector** for more information.

1.3 Waste Arisings, Composition, Trends and Causes

After a period of relative stability, waste arisings from the UK hospitality sector have declined (Figure 3). Data from 2009 indicate annual arisings of around 3.3 million tonnes from sector, representing just under 6% of the UK's total arisings for that year of about 58 million tonnes. Whether this is a new trend or a temporary reaction to the recent economic downturn is unknown. However, figures from the hospitality sector should be treated with caution as they are based on interpolation and, as noted in Section 1, reliable data from the industry are elusive.

Figure 3: Waste arisings in the hospitality sector, Mt/yr

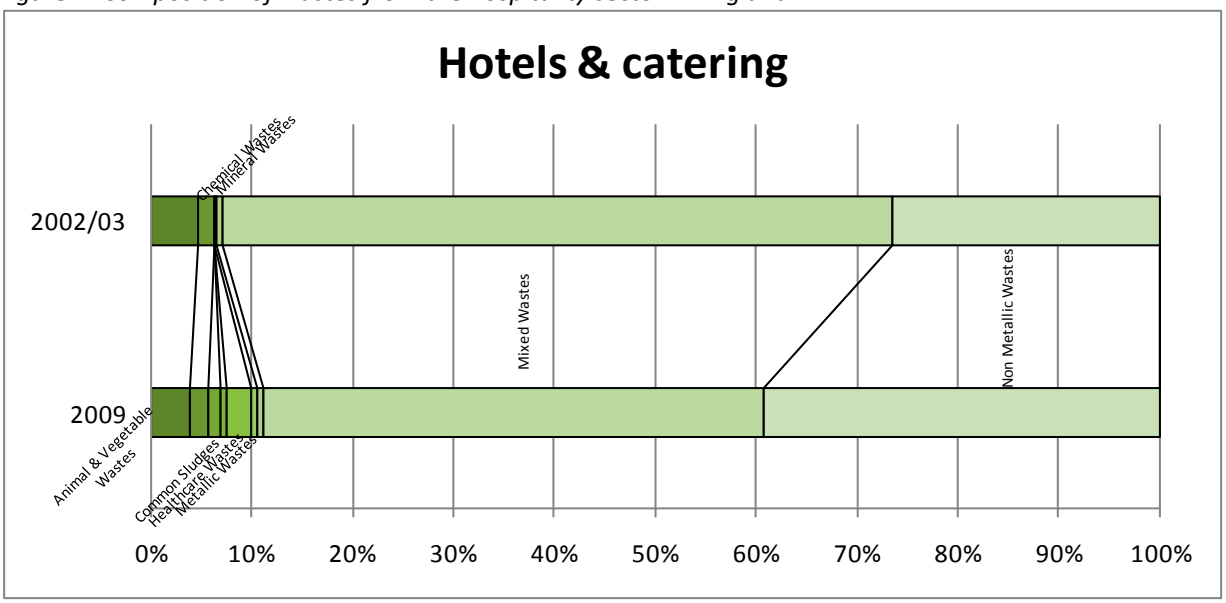


Source: Defra
**Extrapolation of England survey*
#Interpolation of service sector

As expected, given the diverse and fragmented nature of the hospitality sector, much of the industry's waste arises from smaller firms: 2009 data from Defra indicate that 85% of hospitality waste in England is generated by businesses with fewer than 50 employees. This contrasts with the situation in the food and drink manufacturing sector where just 8% of arisings come from companies of this size (see **L2m5-2: Food & Drink Sector**).

The hospitality sector generates a complex and diverse waste stream, with 'mixed wastes' accounting for the bulk of it (Figure 4). In material composition, the waste resemble that from households; and, like household waste, it arises in relatively small amounts from each site (5 p. 13).

Figure 4: Composition of wastes from the hospitality sector in England



Source: Defra

As Table 2 shows, waste material is generated from – and varies with – four main sources.

Table 2: Sources of waste in the hospitality sector

Source	Examples of waste material
Process	• batteries • cardboard packaging • food • furniture • gardening and landscaping waste • glass bottles • metals • polystyrene foam • waste cooking oil • waste electrical and electronic equipment • waste heating oil
Employee	• food • glass bottles • paper • plastic packaging
Customer	• aerosol cans • aluminium containers • batteries • cigarette butts • food • glass bottles • paper (e.g. old newspapers) • plastic packaging • polystyrene cups
Office	• cardboard packaging • fluorescent tubes • furniture • printer cartridges • shredded paper • waste electrical and electronic equipment

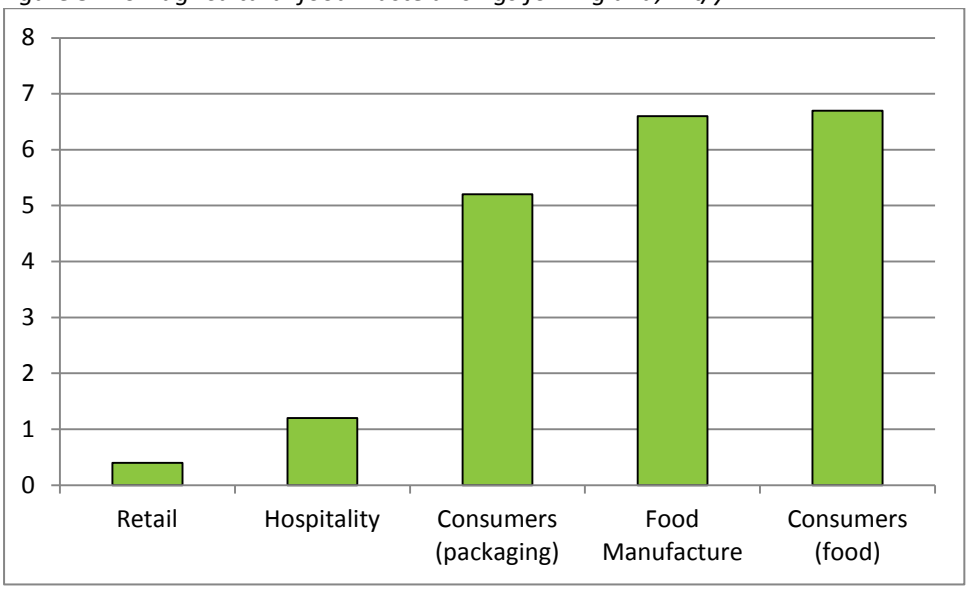
Sources: (4 p. 33); (5 p. 13); (6 p. 50); (7 p. 4); (8 p. 255); (9 p. 2); Brook Lyndhurst(10)

The precise composition will vary with the type and size of business. A large hotel, for example, will generate waste in numerous ways through activities such as (6 pp. 48, 49-50):

- building maintenance
- the laundry service
- general management
- lighting, heating and cooling (controlled by guests)
- procurement
- house-cleaning
- kitchen and dining operations
- recreational equipment
- hosting of conventions and receptions.

Food waste and associated packaging accounts for much of the arisings. Food waste arisings from the hospitality sector in England are perhaps three times those from the retail sector (3), although are less significant than those elsewhere in the supply chain (Figure 5).

Figure 5: Non-agricultural food waste arisings for England, Mt/yr



Source: (3)
NB: The growth in the convenience food sector means that a substantial proportion of the arisings from 'Consumers' will have originated from purchases made in the hospitality sector.

A 2010 survey conducted by the Sustainable Restaurants Association (SRA) of 10 member restaurants in London found that each diner left almost 0.5kg of food uneaten on their plates. This represents some 30% of the total food waste generated by each establishment; the remaining food waste took the form of peelings, off cuts and damage during cooking (65%) and out-of-date or unusable items (5%) (11). The report identifies the following causes of the food waste:

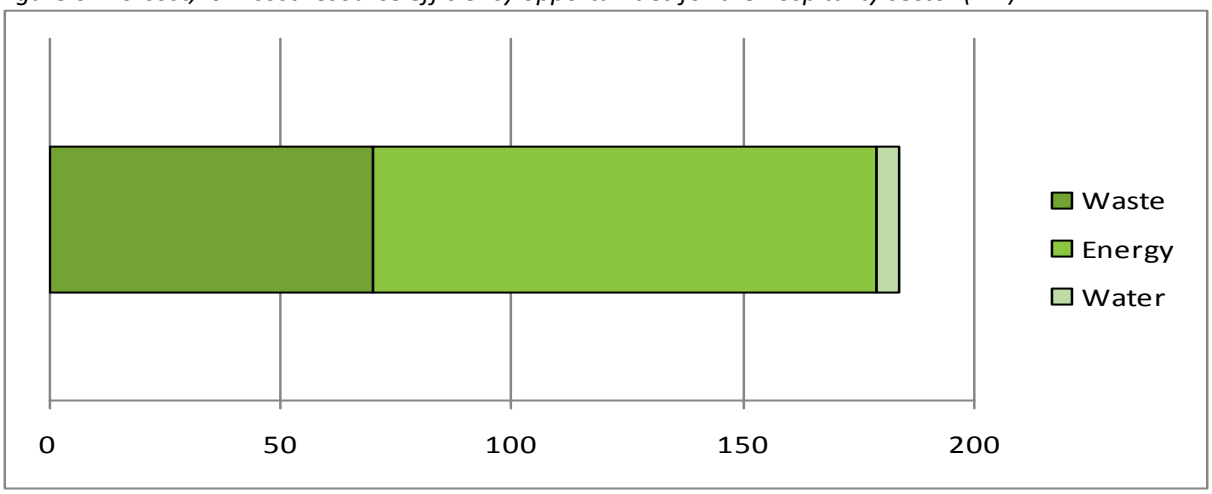
- food unusable (e.g. radish tops, onion skins, banana skins)
- food not dated properly and therefore not cooked before spoiling
- over-ordering (e.g. August is a quieter month so need to change regular orders)
- during a busy service period food is left out too long on prep benches
- fridge temperatures not recorded properly
- mistakes in cooking, food falling on floor
- over-portioning
- customer food returns due to unsuitable flavouring or over-seasoning.

Such wastage has long been a feature of the sector. Research from the late 1970s and early 1980s indicates that 15.5% of edible food was wasted by UK hotels and restaurants, while wastage of edible food by hospital catering departments was as high as 30% (12 p. 6). The unpredictability of demand is certainly a factor; according to a report from Canada, the "[hotel] industry standard usually calls for a 10% of surplus to accommodate any last minute guests" (6 p. 50). This factor is further supported by the following anonymous comments on the 2010 SRA research which were published on *The Independent* newspaper's website: "Not a surprise ... I worked in a Rocky Mountain dude range in the US during summer long time ago, the chef always cooked at least 1/4 more of everything (salad, steak, pie, desert, cakes) just in case" (13).

1.4 Resource Efficiency Savings Opportunity

In terms of resource efficiency, the hospitality sector has an estimated £184m in annual low- or no-cost savings potential. Measures to save energy hold out the greatest promise, accounting for £109m (almost 60%) of the overall savings opportunity. Nevertheless, waste saving has an important role to play, offering £70m in potential savings (38% of the total) (14) (Figure 6).

Figure 6: No-cost, low-cost resource efficiency opportunities for the hospitality sector (£m)



Source: (14)

One example is sufficient to make the point: based on the 2010 London restaurant survey discussed above, the SRA predicts that if an average restaurant reduced its food waste by just 20% it could annually save:

- 4 tonnes of food waste
- More than £2,000 from avoided food costs, from using food that would normally have been thrown away
- £150 - £1,700 on waste collection costs (11).

The same report calculates annual greenhouse gas emissions of around 216,500 tonnes CO_2 from the UK's restaurants (excluding pubs and hotel restaurants).[a]

[a] The SRA assumes that each restaurant disposes of an average of 21.842 tonnes of food waste per annum resulting in 7.972 tCO_2 emissions. SRA multiplied this by 27,153, the number of UK restaurants in 2008 (excluding pubs and hotel restaurants) according to www.catererserach.com.

1.5 Current Waste Management Options

The SRA offers guidance on simple measures which restaurants could adopt to prevent food waste (Table 3).

Table 3: Preventing food waste in restaurants

Source of waste	Recommendations
General	• Carry out a restaurant food waste survey to measure and benchmark waste • Reduce waste at source (using the measures below) and engage staff on the issue
Preparation	• Careful ordering and menu planning • Working with suppliers • Keeping skins on vegetables where acceptable to the diner (e.g. potato skins) • Re-using edible food items that often get thrown out (e.g. orange peel from making orange juice can be kept for making marmalade) • Ordering fish and meat cuts to specification so offcuts kept with producers who can dispose of them more cheaply • Employing nose-to-tail cooking methods (i.e. use more of the animal)
Customer plate	• Careful consideration of portion sizes as well as offering different portion sizes • Offering doggy bags where appropriate • Menu planning to ensure the food will meet with season-dependent customer expectations • Observation of customer eating to identify and eliminate often-wasted menu items
Spoilage	• Careful ordering • Correct fridge temperatures – checked regularly • Diligence with labelling and storage

Source: (11)

Despite advice such as this, the limited evidence available on the hospitality sector indicates that waste management efforts are largely directed towards landfill diversion rather than prevention. This is reasonable as, according to a 2009 report for Defra, "the most significant short term resource efficiency savings opportunity at company level [in the hospitality sector] involves diverting waste from landfill" (5 p. 13). Interventions may include:

- Use of local business waste recycling collection services (6 p. 49) e.g. for cardboard, glass bottles, cans, wood, used cooking oil (10).
- On- or off-site composting e.g. a Canadian restaurant set up an on-site vermi-composting system for food waste (6).
- Diversion of waste food for animal feed – where not prohibited by Animal By-Products Regulations.**Error! Bookmark not defined.**
- 'Informal recycling' with employees taking waste home or to bring sites to recycle, or giving it away to friends.**Error! Bookmark not defined.**

In England about 35% of the arisings in 2009 (where the fate is known) were sent to land disposal while 55% were recycled. Other management options were: thermal and non-thermal treatment (c. 4%), reuse (c. 2%), energy recovery (c. 2%) and composting (c. 1%).[a]

[a] Source: Defra

1.6 Government and Industry Initiatives

While focusing on the retail and food and drink manufacturing sectors (see **L2m5-2: Food & Drink Sector**), the Food Industry Sustainability Strategy (FISS) took an interest in the hospitality sector, despite the difficulties in assembling data discussed in Section 1. A 2007 report from the FISS Champions Group recommends that Defra and the food service sector should work together to establish (15 p. 13):

- where the principal waste arisings occur
- what opportunities for reducing waste arisings in the sub-sector exist
- a process for reducing waste as the sector's contribution to the FISS.

The extent to which these goals have been achieved is unknown.

The most interesting initiatives supported by the industry itself take the form of a number of award schemes such as the Green Globe programme, the Green Tourism Business Scheme and the Green Hospitality Award. These are discussed in Section 4.2, but little direct evidence is available on the volume of waste prevented, with most initiatives emphasising landfill diversion.

Further government-funded initiatives are outlined in Boxes 1 and 2.

Box 1: Envision

The Envision project, a £3.82m project financed by European Union structural funds, the South West Regional Development Agency and Devon County Council ran between 2005 and 2009. The aim was to improve resource efficiency, increase productivity and competitiveness and reduce CO_2 emissions from small and medium-sized enterprises in South West England. Information, guidance and up to two hours of free advice was offered to 2,206 businesses, of which 766 received more intensive support. The latter consisted of 3 to 10 days of on-site consultancy support.

Business Benefits

- Estimates range from £18m to £24m for the total savings to date through resource efficiencies (water, energy and waste) achieved by businesses as part of Envision. Ultimately, businesses are expected to benefit by between £65m and £105m.
- 78% of businesses receiving intensive support agreed that Envision helped them achieve savings, new market opportunities or staff cultural change. The most popular actions taken were reducing energy use and reducing the volume of waste going to landfill.

Drivers

- SMEs with a strong customer focus such as hotels and restaurants especially welcomed advice on how to implement environmental management systems as these were thought to attract customers and reduce the costs of resources.
- Envision focused on energy, greenhouse gas reduction and landfill diversion; waste prevention did not seem to be important to the organisers.

Key Elements for Success

- The use of mentors to engage businesses worked well at local level, but a lack of a region-wide marketing strategy limited Envision's overall effectiveness.
- The use of case studies was beneficial although critics were concerned that they might have been used more effectively to demonstrate the business case for resource efficiency.
- Businesses made a financial contribution towards the support which may have meant they were more likely to value the intervention.

Box 2: Business resource efficiency (BRE) campaign

Launched in 2009, BRE was a Defra-led nationwide initiative aimed at effecting long term behaviour change in businesses with fewer than ten employees (micro SMEs). Other Government departments involved were Business, Innovation & Skills and the Department of Energy and Climate Change. The BRE campaign consisted of "top ten tips" on waste, water and energy efficiency, each signposting to further information on the Business Link web page. The first phase of the intervention was part of an existing cross-Government campaign called "Real Help" aimed at all businesses. The second phase, an element of Defra's 'Act On CO_2' activity, focused on the retail, manufacturing & hospitality sectors.

Communications Channels

- A one-page website www.businesslink.gov.uk/savingmoney integrated with the "Real Help" campaign – redesigned to be more sector-specific for the second phase.
- A combination of national and trade press advertising.
- A 30-second radio ad played on regional stations for a 2-week period.
- Various PR activity using a spokesperson to generate editorial coverage and radio interviews.
- A short email sent to about 40,000 SMEs with snippets of case studies and a link to the campaign page.
- Online – display and search advertising.

Outcomes

- Resource efficiency "is a noisy market place" so the direct impact of the BRE campaign was hard to quantify. It seems that the second phase resulted in little behaviour change although it may have bolstered the resource efficiency message amongst businesses, reminding them of good practice.

Key Elements for Success

- The involvement of 'eco-design expert' Rob Holdway as a spokesperson to generate editorial coverage and radio interviews was a successful element of the BRE campaign.
- Targeting trade press was more successful than online advertising in terms of spend versus recognition. A more in-depth advertorial approach might have been more suitable than straight-forward tip-based adverts.

Sources:
**NB. 'BRE' in this context should not be confused with Buildings Research Establishment – formerly a government agency but now an independent organisation rebranded as 'bre'.*

2 The Nature of the Evidence

While rates of recycling are reasonably high, the hospitality sector seems not yet to recognise waste prevention as a major objective. The evidence base from which to draw conclusions is thus limited. For example, much of the evidence underlying the behavioural sections of the report has been drawn from research on general pro-environmental behaviour in the hospitality sector.

The diversity of the hospitality sector in terms of numbers, types and sizes of business is also a challenge; the UK's Food Industry Sustainability Strategy's (FISS) Champions Group observed in 2007 that: *"assembling data on waste from the food service sector may be very difficult because of the complex and diverse nature of this sector … [and] complications arising from sub-contracting"* (15 p. 10).

More information on FISS is available in module **L2m5-2: Food & Drink Sector**.

The evidence evaluated in this report is drawn from a limited number of peer-reviewed academic articles and case studies and reports published by delivery bodies such as the Waste & Resources Action Programme (WRAP) and Envirowise, government departments (e.g. Defra, The Cabinet Office), local authorities and regional development agencies. An international context is provided by evidence from Europe, (both from the EU and individual countries), USA, Canada, New Zealand and elsewhere. Certain news websites (e.g. www.hospitalityandcateringnews.com, www.greenhotelier.org) are also a rich vein of recent evidence.

The metrics for waste prevention - on the rare occasions these are available - are usually framed in financial savings per year (£/yr), material savings per year (t/yr) or percentage reduction in material use. Carbon dioxide savings are also sometimes reported (tCO_2/yr). See module **L2m7: Metrics** for more information.

Despite the breadth of sources from which evidence of waste prevention has been drawn, a degree of self-selection is inevitable. This is most likely in case studies produced by delivery bodies which have an understandable emphasis in promoting positive exemplars; no cases were found of interventions which had not produced favourable results. Similarly, items appearing on news websites should be treated with caution as they are typically based on press releases from hospitality companies. However, some of the peer-reviewed research does highlight failures and so provides balance.

3 Evidence of Waste Prevention

3.1 Introduction

As discussed in Section 1.5, the hospitality sector recycles a considerable proportion of its waste arisings. This is despite such barriers as lack of storage space (16) (1), the disparate pattern of arisings and the absence of a publicly-supported collection infrastructure (5). Nevertheless, some examples of waste prevention have been found and are now discussed. For background information on the four approaches to waste prevention classified by WR1403, please refer to **L2m2: Approaches**.

3.2 Waste Minimisation

Evidence of waste minimisation in the hospitality sector takes the following forms:

- packaging reduction
- product or material reuse
- donation of surpluses to good causes.

Packaging Reduction
Examples of packaging reduction in the hospitality sector include:

- In 2009, the Four Seasons Hotel Philadelphia "installed a Natura® Water filtration system in an effort to reduce the volume of plastic bottle waste throughout the hotel and in restaurants" (17). Similarly, the hotel chain Scandic "has stopped offering bottled water … providing guests with chilled and filtered water, still and carbonated, from taps. It calculates it has cut CO_2 emissions by 160 tonnes per year. The Hotel Rafayel in London is using a mains-fed bottled water system from Vivreau to dispense purified and filtered mains water, eliminating an estimated 205 tonnes of glass bottle waste over five years" (18 p. 7).
- In 2009 an external consultant funded by the local authority advised a backpackers' hostel in New Zealand to implement a range of resource efficiency measures. The focus was on landfill diversion, but some packaging reduction was recommended such as saving plastic bottles by encouraging guests to drink filtered tap water (clean operations), buying remanufactured printer cartridges or refilling them. It is not known whether the measures were taken or what savings resulted (7).
- With the support of IDEAL79[a] (a resource efficiency initiative launched in 2004 in the western France department of Deux-Sèvres) individual portions of jams and soaps were done away with by hotels, although what they were replaced with and the savings achieved are not recorded (19 p. 10).
- In 1997, the Grecotel chain in Greece reduced use of individually packaged portions of jam and butter at breakfast buffets by 90% over 1993 levels by switching to reusable containers. They also eliminated plastic water bottles by switching to returnable and reusable glass bottles (20).
- A 1992 paper on solid waste minimisation in the hospitality sector reports that when "the Hard Rock Café insisted they simply would accept no more merchandise packed in polystyrene pellets, vendors shifted without hesitation (to using shredded junk mail)" (8 p. 260).
- A Canadian hotel implemented "a source reduction strategy targeting all hotel supplies … to control the input of materials and avoid things such as Styrofoam and excess packaging" (6 p. 51). The same hotel also uses 'communications' to "encourage guests to reduce their consumption and inform them of the reasons why they should do it" (6 p. 51).

[a] Initiatives Durables Et Alternatives Locales pour la prévention de la production des déchets en Deux-Sèvres (Sustainable and Alternative Local Initiatives for the prevention of the production of waste in Deux-Sèvres)

- A restaurant in Canada eliminated non-recyclable condiment packaging, for example, replacing "single serving creamers that were packaged in plastic" with glass 'sidecars' for cream and milk. No data on savings were provided, however (6 p. 43).

Box 3: Waste prevention at McDonald's Restaurants

McDonald's operates more than 30,000 restaurants in over 119 countries. The target of much public criticism over the years, the world's largest fast-food chain now claims that environmental sustainability is a core objective. A host of measures have been adopted in the area of waste management, many centring on landfill diversion or increased use of recycled or biodegradable materials. Some examples of waste prevention are though evidenced. For instance, McDonald's Europe re-designed the McFlurry spoons to save on material and, in 2007, BigMac carton and Hash Brown bags were resized. In the UK and elsewhere, McDonald's uses a stock control and forecasting system called "Manugistics" to balance customer demand with waste minimisation – an increasing challenge as the range of products offered grows. The system evaluates how historic store-specific data, local and national events, holidays, promotions, weather and other factors affect demand. An indication of the progress McDonald's has made is the fact that – along with Coca-Cola and Cadbury – the corporation has been invited by organisers of the London 2012 Olympic Games to advise on sustainable catering delivery.

Business Benefits

- Material savings of 286 tons per annum have been achieved with the shorter McFlurry spoons, while the new BigMac cartons and smaller Hash Brown bags reduce materials' consumption by 423 tons and 12 tons, respectively. The measures on this page contributed to reducing the consumption of materials from non-renewable sources by 2,302 tons. The total consumption of materials used dropped by 496 tons.
- The Manugistics system significantly reduces food waste and the costs associated with unsold food, and enables the company to pass on savings to customers. It also prevents restaurants from running out of stock and having to rely on expensive emergency deliveries. By taking the "hard work" out of stock management, Restaurant Managers can spend more time focusing on delivering a high standard of quality, service and cleanliness.

Drivers

- The large amount of negative media coverage which McDonald's received in the past has likely motivated the organisation to demonstrate a better environmental performance. The perennial and visible problem of fast-food chain litter motivated McDonald's UK to sign up to the Government's voluntary code on reducing litter, which includes a commitment to reduce packaging.

Key Elements for Success

- Good internal communications mean that lessons learnt in one section of the business can be passed to the rest of it.

Sources
http://www.bestofgreenmcdonaldseurope.com
http://www.telegraph.co.uk/earth/earthnews/4223106/McDonalds-waste-makes-up-largest-proportion-of-fast-food-litter-on-streets.html
http://www.thetimes100.co.uk/case-study--managing-stock-to-meet-customer-needs--28-273-1.php

Product or Material Reuse
Examples of reuse in the hospitality sector include:

- The Austrian ecolabel states that, notwithstanding legal requirements, accommodation businesses are not allowed to provide disposable products such as shampoo, soap, and shower caps in rooms. Disposable glasses for tooth brushes may be used only if they are made from renewable raw materials, are biological degradable and can be composted.[a] Currently, 150 hotels are currently certified.[b] Savings from these measures are not provided.
- In 2009, the hotel chain Marriott International "stopped delivering newspapers to every guest room … saving an estimated 8m newspapers annually". This is an example of product reuse as newspapers are now only supplied in communal areas for sharing unless specifically requested by guests (18 p. 4).
- As discussed above, an external consultant advised a hostel in New Zealand to implement a range of resource efficiency measures. Instances of product reuse recommended included paper reuse and double-sided paper printing. As also mentioned, the achieved savings are unknown (7).
- A 2008 Envirowise report describes how an unnamed "village fish and chip shop … saves up to £3,000/year through careful control of the frying temperature, regular and thorough filtering, and daily topping up of oil. It has no need to dispose of used cooking oil" (2 p. 10). The same report also refers to a Chinese restaurant which after changing "cooking practices … reduced the amount of oil used by 30 - 50%, saving nearly £6,000/year in oil purchase and disposal costs" (2 p. 9).
- At the Fairmont St Andrews hotel and golf resort in Scotland, waste prevention activities included: "preventative maintenance and re-use/mending of furniture, textiles, equipment, etc." and "efficiency improvements such as re-use of uniforms, removal of unnecessary labelling and packaging, and take-back schemes". Savings from these actions were not disaggregated from other waste management initiatives, however. Some of the impetus apparently came from the fact the resort is located close to a Site of Special Scientific Interest and a nature reserve, and the changes were driven through by a motivated facilities manager and 'Green Team'. Support from 'an independent Envirowise advisor' was also provided (9 p. 3).
- During the annual Winnipeg Folk Festival in Manitoba, Canada reusable plastic plates are provided to all concession stands and for meals served to performers and volunteers backstage with a two dollar returnable deposit to cut down on waste. In addition, reusable 'Folk Fest' mugs are sold for concession stands and backstage drinks. Savings are not evidenced but are likely to be considerable given the event's large attendance (21 p. 60).

Donation of Surpluses to Good Causes
The donation of surplus materials or products – typically food - to charitable organisations is regarded as waste prevention rather than landfill diversion because the surplus is used for its intended purpose. In the case of food donated to charity, for instance, the surplus is consumed by humans, an objective of food waste prevention policy.

Examples from the hospitality sector include:

- FareShare, a national charity that redistributes surplus food in the community, is well known for its participation with retailers, food manufacturers and hospitality companies. The tonnages diverted through FareShare are currently small, at around 3,000 tonnes in 2008 (22 p. 41) and it is unknown how much of this material arose in the hospitality sector. Please refer to modules **L2m5-2: Food & Drink Sector** and **L2m5-4: Retail Sector** for more information on FareShare, or see Box 4.

[a] http://www.umweltzeichen.at/cms/upload/20%20docs/richtlinien-lf/uztb_r5a2_tourismusbetriebe_2010_gesamt.pdf
[b] http://www.umweltzeichen.at/cms/home/tourismus/beherbergungsbetriebe/content.html

- In 2010, the manager of the newly reopened Savoy Hotel in London claimed to have "donated old towels to Battersea Dogs Home, and used slippers went to Help the Aged. Our soap goes to St Mungo's, the homeless charity" (23).
- Lomita, a city in California diverts "leftover, edible food from restaurants, food courts, hotels, and hospitals" to organisations that work with impoverished people (21 p. 51).
- Carlson Hotels Worldwide, Radisson Hotels & Resorts, Marriott International and Fairmont Hotels and Resorts "donate untouched food from catering displays and trolleys, unwanted bed linens, mending kits and bathroom amenities" to homeless or women's shelters, orphanages, homes for the elderly, drug rehabilitation centres, armed forces overseas and victims of natural disasters (20).
- Taj Hotels and Resorts donates "unwanted linen, toiletries, uniforms, crockery, carpets and blankets - even kitchen and computer equipment and unclaimed articles from 'lost and found'" to charities (20).

Box 4: Surplus food redistribution by FareShare

FareShare is a national charity redistributing surplus arisings from the UK's food industry to homeless hostels, breakfast clubs, women's refuges and other good causes. The charity works with many big names including Sainsbury's, Nestlé, Sodexo and Brakes and operates 15 depots including two in London. The most recent was opened in Llandudno, North Wales. In 2009-10, FareShare estimates that the equivalent of 6.7 million meals - around 3,000 tonnes - were redistributed. 29,000 people a day benefited from FareShare food. This is food that would otherwise have been disposed of, often to landfill. Food and drink manufacturers accounted for 61% of the food redistributed in 2009-10, while 31% came from retailers and 8% from the hospitality sector.

Business Benefits

- Assuming it can be done efficiently and safely, redistributing surpluses to charity not only helps vulnerable people but saves food businesses significant disposal costs; however, not producing the waste in the first place would, theoretically, save companies far more money.
- The PR value of giving food to charity rather than dumping it is likely to be considerable.
- Preventing food waste also reduces greenhouse gas emissions.

Drivers

- The CSR agenda is an important motivator; many participating businesses publicise their involvement with FareShare in their CSR reports.
- For some businesses, procurement pressure may have driven participation. According to FareShare, many food and drink manufacturers got involved after being encouraged to do so by their retailer customers. The manufacturers' own trade body, the Food & Drink Federation, is also a strong supporter of the scheme, with 17 members now collaborating with FareShare.

Key Elements for Success

- Timing is key. The surplus food often has a short shelf-life so partnerships are most successful when FareShare is integrated into a company's business processes, all levels of the company are aware, and surplus food is identified as early on as possible.
- FareShare focuses its efforts on handling food from further up the supply chain as surpluses available at store level are small compared to those available at warehouse or manufacturer level. However, the charity does collect from a limited number of stores, for example, when stores are conveniently located on the way back from a delivery to a Community Member.
- FareShare has enjoyed the support of the UK Government. For example, a past Secretary of State wrote to retailers encouraging them to work with the charity. FareShare has also been referenced in the former Labour administration's food strategy 'food2030' and is promoted by WRAP.

Table 4 summarises evidence for waste minimisation approaches to waste prevention in the hospitality sector.

Table 4: Summary of waste minimisation evidence

Category	Supported	Description	Outcomes	Quality	Ref ID
Packaging reduction	No	Hard Rock Café: refused polystyrene pellet packaging so vendors shifted to shredded junk mail	n/a	*	(8)
	No	Canadian hotel: implemented a source reduction strategy to control input of materials	n/a	*	(6)
	No	Canadian restaurant: eliminated non-recyclable condiment packaging	n/a	*	(6)
	IDEAL79	Unnamed hotels, Deux-Sèvres department, France: eliminated individual portions of jams and soaps	n/a	*	(19)
	Local authority	New Zealand backpackers hostel: measures included saving plastic bottles by encouraging guests to drink filtered tap water and buying remanufactured printer toner cartridges – or refilling them	n/a	*	(7)
	No	Winnipeg Folk Festival, Canada: reusable plastic plates provided to concession stands, performers and volunteers with a deposit; reusable mugs sold	n/a	*	(21)
	No	Grecotel chain, Greece switched to reusable packaging for jam, butter, drinking water	Jam & butter packaging cut by 90% in 1993-7	**	(20)
	No	Four Seasons Hotel Philadelphia eliminated the use of plastic drinking bottles using a water filter	n/a	*	(23)
	No	The hotel chain Scandic now provides guests with chilled and filtered water from taps instead of in plastic bottles	160 tCO_2/yr saved	**	(18)
	No	The Hotel Rafayel in London uses mains-fed bottled water system to dispense filtered water	205t glass saved over 5 yrs	**	(18)
Product reuse	Local authority	New Zealand backpackers hostel: measures implemented include paper reuse, double-sided paper printing	n/a	*	(7)
	Envirowise	Fairmont St Andrews hotel and golf resort, Scotland: waste prevention activities included preventative maintenance, re-using or mending furniture, textiles and equipment; re-using uniforms, removal of unnecessary labelling and packaging, and take-back schemes	n/a	*	(9)
	Envirowise	Unnamed fish and chip shop, UK: reduces waste cooking oil by careful control of frying temperature, filtering, and daily topping up of oil	£3k/yr savings	**	(2)
	Envirowise	Unnamed Chinese restaurant, UK: changed cooking practices to save oil	Oil use reduced by 30 - 50%, £6k/yr saved	**	(2)
	No	The Austrian ecolabel prohibits hotels from providing disposable products, favouring reusables	n/a	*	[a]
Donation of surpluses to good causes	Unknown	Californian city: Leftover food in restaurants, food courts, hotels and hospitals is redistributed to charities	n/a	*	(21)
	FareShare scheme	Businesses in the hospitality sector can be in the distribution of their surplus produce; however the sector is less engaged than food & drinks manufacturers and retailers	n/a	*	(22)
	No	Carlson Hotels Worldwide, Radisson Hotels & Resorts, Marriott International and Fairmont Hotels, Taj Hotels and Resorts, Savoy Hotel: donate items to charities	n/a	*	(20) & (23)

Sources: As noted.

[a] http://www.umweltzeichen.at/cms/upload/20%20docs/richtlinien-lf/uztb_r5a2_tourismusbetriebe_2010_gesamt.pdf

3.3 Clean Operations

Evidence of clean operations in the hospitality sector takes the following forms:

- Bulk supply of materials
- returnable transit packaging
- purchasing remanufactured goods
- menu approaches
- ordering and forecasting systems.

Bulk supply of materials
By receiving and dispatching raw materials and products in bulk, hospitality businesses can reduce packaging and avoid wastage of raw materials (14 p. 95). The waste prevention occurs because less packaging per unit product is needed and product wastage from remnants within an emptied container is addresses. Research from the food and drink sector shows that up to 5% of raw materials can be left in supply containers after dispensing (5) (see **L2m5-2: Food & Drink Sector**). As suggested in Section 0, customer expectations may sometimes act as a barrier to such initiatives. Nevertheless, some examples of bulk packaging use in the hospitality sector were identified:

- Following advice from Envirowise, Deans Place Hotel in East Sussex switched from small toiletry bottles to large, pump dispensers in the public areas and guest rooms during 2008 saving an estimated £1,550/yr (24).
- Strattons Hotel in Norfolk installed refillable pump dispensers for toiletries in the rooms "to minimise packaging and allow bulk purchase". This diverted 164 kg of waste from landfill per year, saving £1,921 annually. The hotel also "arranged with suppliers (e.g. a local brewery and a fruit farm) to return cardboard boxes for re-use" (25).
- A third unnamed hotel, again with Envirowise engagement, "found that miniature toiletries were disposed of still containing an average of 70% of their contents. Refillable pump dispensers were installed in the rooms to minimise packaging and waste. The cost of toiletries fell by £5,250/year" (26).

Returnable Transit Packaging (RTP)
In other sectors (see for example, modules **L2m5-2: Food & Drink Sector** and **L2m5-4: Retail Sector**), the use of returnable (and reusable) transit packaging is much in evidence. However, the use of RTP was not well evidenced in the hospitality sector. One exception was a 2004 survey of restaurant owners in London and Leeds which reports that "some suppliers took packaging such as boxes back when they delivered …" (16 pp. 43-44). Whether the packaging was reused or recycled is not recorded, nor the volume of waste prevented.

Box 5: Waste reduction by apetito

Based in Wiltshire, apetito provides frozen food and catering solutions to care homes, local authorities and hospitals, and offers a frozen meal delivery service to the public via its Wiltshire Farm Foods franchise and a private hot meal delivery service through local authorities via apetito Services. In 2009, the company invested £630,000 in a new reusable plastic transit crate system to replace the single-trip corrugated cardboard boxes previously used to supply hospital and care home clients with multi-portion and twin-portion meals. The new crates work well with apetito's existing processes and are easy to fill up, handle, transport, store and wash. They also proved surprisingly robust, better protecting apetito's products and expected to last for up to five years. Following advice from WRAP, apetito also eliminated "low-sales-volume products" from its inventory to further reduce waste and started directing 3,000 tonnes of food waste to an anaerobic digestion plant in Devon.

Business Benefits

- Switching to the new crates enabled apetito to avoid the costs associated with procuring and disposing of around 1,200,000 cartons a year, saving some 112 tonnes of carton board and 230 tonnes of greenhouse gas emissions. Although apetito has not published the financial savings realised from this measure, the company "is confident that the investment will pay back financially in the longer-term".
- With the new plastic crates, customers are left with less waste to deal with and can more quickly access the contents than was the case with the cardboard boxes.
- Each crate can contain several meals with different recipes, whereas in the previous carton system, each case would contain identical meals. Individual products can now be ordered and are packed on the day of delivery offering flexibility to customers who need to serve varied or special menus.

Drivers

- Although apetito was keen to reduce the transit packaging waste, some pressure also came from its customers.
- apetito was motivated in part by its being a signatory to the Courtauld Commitment, a voluntary agreement hosted by WRAP aimed at reducing food waste and associated packaging.

Key Elements for Success

- One-to-one assistance in the form of a waste prevention review undertaken by WRAP helped apetito achieve its goals. The review was one a series of visits to members of the Food and Drink Federation in support of the trade association's "Five-Fold Environmental Ambition" and the Courtauld Commitment.
- Registration to ISO 14001 in 2009 helps apetito in achieving its environmental objectives.

Sources
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http://www.caterersearch.com/Articles/2010/10/14/335489/apetito-takes-the-holistic-approach.htm
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http://www.apetito.co.uk/Documents/Care%20Homes%20-%20Why%20Choose%20apetito.pdf

Purchasing Remanufactured Goods

The purchase of remanufactured[a] rather than new goods in order to save waste is also an example of a clean operations approach, although direct evidence from the hospitality sector is sparse. A familiar example is the remanufactured printer toner cartridge (6 pp. 56, 61), but the concept applies to many other goods, some of which are procured by the hospitality sector (Table 5).

A 2009 life-cycle analysis study found that a decision by a retailer to buy a remanufactured rather than new refrigerated display cabinet (RDC) saves 2.1 tonnes of CO_2e. Comparable savings would apply if a hospitality business made the same decision. If priority were given to the purchase of remanufactured RDCs where feasible, some 123,000 tonnes of CO_2e could be saved annually in the UK (27). Similarly,

[a] Remanufacturing is a process for reusing products, where the form and function of a device or its sub-components are retained to the fullest extent (27).

purchasing remanufactured toner cartridges currently saves 11,600 tonnes of CO_2e annually in the UK (28 p. 5). Unfortunately, evidence of material or financial savings exclusive to the procurement of remanufactured goods by the hospitality sector is not currently available.

Table 5: Data on the remanufacturing and reuse of selected products in the UK

Product	Value of activities (£m)	Material savings (kt)	Carbon savings (ktCO_2e)
General catering equipment	21	2.5	4.5
Refrigerated display cabinets	40	4.8	8.5
Vending machines	16.58	2.0	3.5
ICT equipment	192	11.5	20
Ink & toner cartridges	435	2.5	6.3
Office furniture	37.4	10	15.2

Source: (29)
Note that these data apply to remanufactured products procured across all UK business sectors.

Menu Approaches
Public procurement can sometimes motivate a clean operations approach as exemplified by Lifespan Catering Services, which delivers 32,000 portions of food daily to hospitals and care homes. As part of an NHS initiative, the company has developed a 'cook chill' process allowing food to be cooked, cooled down within strict temperature guidelines and safely re-heated at its destination. The process enables staff and patients to select how much they food they need prior to its being heated. The initiative, reported on the *Hospitality and Catering News* website in 2010, "limits food waste and subsequent clearing away at the end of mealtimes to a minimum – leading to staff saving time on the mealtime process in general" (30). See module **L2m4-3: Procurement** for background information.

This previous example resembles an initiative taken by the Maritim proArte Hotel in Berlin. According to a report published in 2010, the hotel now encourages guests to take only the amount of food from a buffet that they wish to consume and "offers an alternative organic breakfast buffet with 52 food components (the conventional buffet has about 100 food components), marketed as a healthier, higher-quality choice. It also provides smaller plates to avoid 'overloading'" (18 p. 7).

Ordering and forecasting systems
As noted in Section 1.3, the unpredictability of demand is an important cause of food waste in the hospitality sector. A 2007 report from the FISS Champions Group refers to "ordering/forecasting systems … such as those used in the food service industry", implying that such systems are already in place (15 p. 25). A variety of computer-based technologies such as the 'ePic Kitchen Display Software' which is aimed at the fast-food sector have been developed in the US by QSR Automations. The UK distributor Call-Systems Technology claims that ePic "can help even the most complex sites to enhance order accuracy, reduce food waste and meet productivity goals. The system offers advanced bin management capabilities as well as a variety of order routing and display options, with configurable sorting and load balancing functions – so the kitchen workload can be adjusted, depending on how busy individual members of staff are." However, data on waste prevented through technologies such as ePic are not available (31).

Table 6 summarises the evidence for clean operations approaches to waste prevention in the hospitality sector.

Table 6: Summary of clean operations evidence

Category	Supported	Description	Outcomes	Ref ID
Bulk supply of raw materials	Envirowise	Deans Place Hotel, East Sussex: switched to refillable bulk toiletry dispensers	£1,550/yr saved	(24)
	Envirowise	Strattons Hotel, Norfolk: switched to refillable bulk toiletry dispensers	164 kg/yr waste saved; £1,921/yr saved	(25)
	Envirowise	Unnamed hotel: switched to refillable bulk toiletry dispensers	£5,250/yr saved	(26)
Returnable transit packaging	No	Suppliers to some restaurants in London and Leeds used returnable packaging for ingredients	n/a	(16)
Purchasing remanufactured goods	No (normally)	Various hospitality sector companies purchase remanufactured, refrigerated display cabinets vending machines, ICT equipment, ink & toner cartridges, furniture and other general catering equipment	Huge material savings likely but not disaggregated for hospitality sector	(29)
Flexible menu selection	NHS	The 'cook chill' process for serving patients' food	n/a	(30)
	No	Berlin's Maritim proArte Hotel alternative organic breakfast buffet and smaller plates	n/a	(18)
Ordering & forecasting systems	No	ePic Kitchen Display Software aimed at improving efficiency and preventing food waste in fast food restaurants	n/a	(31)

3.4 Green Products

Evidence of green products in the hospitality sector takes the following forms:

- packaging lightweighting
- refillable packaging systems
- design for reuse.

Packaging Lightweighting

The aim of lightweighting is to reduce the quantities of packaging waste arising, hence reducing material requirements, as well as fuel consumption associated with distribution of products. A 2007 report for the Resource Efficiency – Knowledge Transfer Network identifies three main types of packaging lightweighting (Table 7).

Table 7: Approaches to packaging lightweighting

Approach	Example(s)
Change packaging design	Concentration of products e.g. laundry liquids. De packaging e.g. toothpaste tubes stand up in polystyrene stands rather than in cardboard tubes
Substitute materials	Plastic for glass as in ketchup bottles Aluminium for steel in drinks cans
Change manufacturing techniques	Thinner walled cans and using two pieces rather than three

Source: (32)

Where a lightweighting approach is taken to primary packaging, the impact will be on household waste arisings, but since the agency in the decision-making lies with business, packaging redesign is included within this review.

Examples of lightweighting include:

- A 1992 paper on solid waste minimisation in the (mainly North American) hospitality sector reports that the "Jack in the Box fast food chain expects to reduce waste by at least 15% by 1994 through such moves as specifying lighter-weight carry-out bags. The streamlining is expected to save 500,000 pounds [227 tonnes] of paper annually, equivalent to 4250 trees" (8 p. 260).

Refillable Packaging Systems

As production has centralised and supply chains lengthen, refillable systems for primary packaging (especially refillable beverage containers) have declined **(33)**. An unpublished internal assessment for WRAP notes that the return of glass bottles to suppliers for reuse is "far from ubiquitous" and "happens at the supplier's initiative" **(10)**. Vertical integration, a feature in some parts of hospitality sector, may sustain refillables systems. Here, a single company seeks to increase revenues by acquiring each stage of a supply chain from raw materials to final sale. Typically, a food and drink manufacturer will buy up a chain of pubs, hotels and restaurants together with the necessary distribution infrastructure. In theory, this would facilitate the establishment and maintenance of reusable primary and transit packaging systems since the packaging remains under the control of the manufacturer.

The following examples of refillable packaging systems were found in the hospitality sector:

- The Beer Store, the sole distributor of beer in the Canadian province of Ontario is a good example. The company "obtains supplies from 46 domestic and foreign breweries, and has 428 retail stores and 17,000 licensed locations serving 12 million people". Using a deposit to incentivise container-return, the Beer Store has achieved a 98% bottle return rate (of these "80% are standard refillable bottles, 11% are refillable kegs and 8% are recyclable one-way packaging".) Annually, the system "saves brewers about $160 million in avoided packaging costs [and] Ontario municipalities save about $31 million in avoided costs associated with waste collection and disposal" (21 p. 23). It should be noted that Ontario has introduced this as a universal policy for alcoholic beverages since 2007.

- A 1992 paper on solid waste minimisation in the (mainly North American) hospitality sector reports that "the University of Wisconsin experienced 7000 student refillable beverage mug reuses in a single week" (8 p. 260).

Design for Reuse

A green product approach seen in the hospitality sector is the redesign of menus, dishes and cooking methods with waste prevention in mind. Interestingly, this is a rare example of a *service* rather than a product being redesigned. A potential example may be an unnamed city-centre Indian restaurant which according to a 2008 Envirowise report changed "its menu and cooking methods in order to reduce the number of fried items on the menu (reflecting healthier eating trends). This, in turn, reduced the quantity of fats and oils used by 40%, saving nearly £2,000/year in purchase and disposal costs" (2 p. 2). However, it is unclear whether the waste prevention was just an unintended by-product of the restaurant owner changing the menu to meet changing customer preferences for 'healthier eating'. Arguably, this example could also be classified as a form of waste minimisation.

An unusual example of a green product is evidenced by the Hilton Tokyo Bay as part of a range of solid waste management activities. According to a 2006 report on the *Waste Management World* website, staff at the Japanese hotel designed a special device "for winding together unused toilet tissue from rolls too small to use in guest rooms so that it would not be wasted". The savings from this novel approach are unknown (20).

Table 8 summarises evidence for green products approaches to waste prevention in the hospitality sector.

Table 8: Summary of green products evidence

Category	Supported	Description	Outcomes	Ref ID
Lightweighting (primary packaging)	No	Jack in the Box fast food chain: specified lighter-weight carry out bags	227t/yr paper saved (projected)	(8)
Refillable packaging	No	The Beer Store, Ontario, Canada: has a deposit scheme for incentivising return of refillable kegs and bottles	A 98% bottle return rate achieved; brewers save $160 m/yr in avoided packaging costs	(21)
	No	University of Wisconsin: introduced student refillable beverage mugs	n/a	(8)
Design for reuse	Envirowise	Unnamed Indian restaurant, UK: menu and cooking methods changed to reduce fried items	Fats and oils use reduced by 40%, £2k/yr saved	(2)
	No	Hilton Tokyo Bay hotel in Japan designed a device for reusing leftover toilet rolls.	n/a	(20)

3.5 Product/Service Innovation

Since hospitality is already classed as a service sector, the scope for product/service innovation (PSI) may appear to be limited. But, as noted in a 2006 report for the European Commission on the environmental impact of products, what is sold as a 'service' is in fact an "envelope around a set of products generated via a life cycle of very material-oriented production processes". The same report, which reviewed a number of studies, explains that "many service-related categories (healthcare, restaurants, etc.) are among the top 60-percentiles of environmental impacts" (34 pp. 134-5).

The following evidence for PSI was found in the hospitality sector:

- Electrolux Professional Appliances leases kitchen equipment to restaurants and caterers for a monthly fee. The quicker service reduces start-up costs and is also more reliable than the alternative of second-hand equipment which often malfunctions. Electrolux claims that good maintenance and reuse extends the life of the equipment and improves energy efficiency (21 p. 38).

- The Residu Minim project in Spain lends and washes dishes to reduce the use of disposable drinks containers and plates in public places. The service is provided by a not-for-profit community group and is limited to a region close to Barcelona (21 p. 39).

- In Austria's second city of Graz, a company called Ökoservice hires out washable and reusable catering equipment for large events such as football matches. Support comes from the city's environment department which "put up €140,000 to buy a large capacity washing machine" enabling the use of reusable plastic tumblers. Up to a million tumblers per year are washed.[a]

- The German Federation of Environment and Nature Protection has used a mobile dishwashing service system at outdoor festivals and markets since 1992 to allow the use of 'real' crockery and utensils rather than plastic and paper disposables (21 p. 39).

[a] http://ec.europa.eu/employment_social/equal/data/document/etg2-suc-repanet.pdf

Table 9 summarises evidence for PSI approaches to waste prevention in the hospitality sector.

Table 9: Summary of product/service innovation evidence

Category	Supported	Description	Outcomes	Ref ID
Lending/hiring	No	Electrolux leasing of kitchen equipment	n/a	(21)
	German Federation of Environment & Nature Protection	Mobile dishwashing service at outdoor festivals and markets	n/a	(21)
	No	The Residu Minim project in Spain lends and washes dishes to reduce the use of disposable drinks containers and plates in public places.	n/a	(21)
	Local Authority	In Austrian a company called Ökoservice hires out washable and reusable catering equipment for large events.	Up to 1m tumblers a year are washed	[a]

3.6 Hazard Reduction

Evidence of hazardous waste prevention was sparse for the hospitality sector, perhaps because food service is a large element of many business activities, and hazardous materials tend not to be used in this context. Obvious and simple examples may be found related to detergents, cleaning agents and other 'eco products' promoted under various labelling schemes.

3.7 Marginal Scope Examples

Other waste management options occasionally evidenced in the hospitality sector which fall less easily into the categories of either landfill diversion or waste prevention as defined in this report include procuring reclaimed, recycled or biodegradable products (16 p. 37).

One example of waste reduction lies just outside the scope of this review but is instructive. According to a 1992 paper on waste minimisation practices in the (mainly North American) hospitality sector, Marriott Corporation "increased purchases of pre-cleaned, pre-cut produce" in order to reduce food waste (8 p. 260). This may not be true waste prevention, as the waste arises elsewhere in the supply chain; however, centralising raw food processing or pushing it up the supply chain can offer other efficiencies, and the practice is sometimes seen in the food and drink manufacturing sector. For example, UK-based Northern Foods[b] now requires some suppliers to perform all vegetable preparation work (see **L2m5-2: Food & Drink Sector**). The approach reduces vehicle movements between growers and food manufacturers and transport packaging. The risk of wastage due to incorrect demand forecasting was also reduced (5).

[a] http://ec.europa.eu/employment_social/equal/data/document/etg2-suc-repanet.pdf

[b] In November 2010, Northern Foods announced its merger with Irish-based food company Greencore

4 Behavioural Aspects

4.1 Attitudes

Very little was found on the attitudes of hospitality sector to waste prevention in the narrow sense defined in WR1403, but evidence into the industry's attitudes towards more environmental issues in general was available. However, it appears to be contradictory. For instance, a 2006 report for the London Development Agency (LDA) on business resource efficiency and waste pilot projects in the city found that compared "to recruitment or energy costs, environmental issues ranked fairly low on most food [service] businesses' agenda, with 8 out of 12 businesses believing they were either not very important or not at all important" (35 p. 9). These findings were reinforced by a 2009 survey of SMEs in ten different sectors conducted by the UK Government-run NetRegs website which indicated that businesses in the 'Hotels and Restaurant' sector were among the "least likely to consider their activities harmful" (36 p. 3).

By contrast, owner-managers of restaurants in London and Leeds surveyed for a 2004 study funded by the Economic and Social Research Council (ESRC), 'on prompting' saw waste disposal as having an environmental impact; most restaurateurs, however, "felt that there was limited scope to minimise waste", claiming, for example, that food waste was "minimal due to the fact that careful attention was paid to stock take and portion control" (16 pp. 3, 43). In addition, a forthcoming Defra report, a review copy of which was available at the time of writing, indicates that, because they worked with food, businesses in the 'hotels and catering' sector were more aware than other sectors of 'food waste' as an issue (37).

Even when a company is aware of its impacts, the type or location of the business – or the individual running it – can determine whether or not the company is motivated to prevent waste. Research published in 2006 by the North West of England Development Agency on resource efficiency business support found that service sector companies were less likely to identify benefits of 'good environmental practice' (38 p. 5). This attitude does not seem universal: as discussed in Section 4.2, businesses targeting environmentally-conscious customers are more likely to implement some form of waste reduction measure. Although lacking data specific to the hospitality sector as defined in this report, a 2009 survey of business attitudes to resource efficiency in the northwest of England found that leisure and tourism (which overlaps with hospitality) was the sector "placing most importance on resource efficiency" (39 p. 29). The same survey found that the "only sector where more than half of businesses have taken action to improve resource efficiency over the past 12 months [was] Leisure & Tourism" (39 p. 31). Although it failed to implement any 'no-cost savings', leisure and tourism also had the "highest rate of investments over £10,000" (39 p. 29). Detail on specific measures taken was not provided, however.

On balance, therefore, awareness of waste as an issue is relatively high in the hospitality sector, and businesses seem prepared to address it.

Please refer to **L2m3: Attitudes & Behaviours** for background information of waste prevention behaviours.

4.2 Motivators

In the hospitality sector, the factors which motivate waste prevention, specifically, are not known. However, considerable evidence exists for factors driving general pro-environmental behaviour, and these offer some useful insights. The main motivators identified are:

- cost-saving
- customer and media pressure
- standards, awards and labels
- compliance with legislation
- competition and peer influence
- commitments and voluntary agreements.

Cost-saving
Commenting on the results of its 2010 survey of food waste in London restaurants, the SRA observes that these businesses "are effectively paying twice for all food items that are thrown out – once for the food that has been purchased but not used and secondly to have it taken away as waste" (11).

Evidence does indeed suggest that cost-saving could be motivating change. *The Independent* newspaper notes that "big chains have quietly trimmed back the amount they dish up in an attempt to save money" and refers to a pilot scheme at Pizza Hut to eradicate waste at one of its restaurants (13).

Similarly, cost-saving was mentioned by businesses as a reason for choosing remanufactured products (27) or for leasing catering equipment from companies such as Electrolux Professional Appliances (21). Older evidence is provided by the facilities engineer for Harrah's mega-resort in Las Vegas, interviewed in a 1992 paper on waste minimisation in the hospitality sector, who argued that '[financial] incentives', along with executive-level commitment, was a key ingredient for success. Similarly, a restaurant in Canada sought to save money by implementing new waste saving practices, although in this case, the main initiative was the installation of on-site worm-composting equipment rather than true waste prevention (6). However, evidence from other companies sometimes indicates that "actions need not be based solely on immediate, direct, economic pay-back" and that "long-term and indirect contributions are valued" (8 p. 259).

Customer and Media Pressure
Little evidence was found for customers pressing hospitality businesses to prevent waste in the narrow sense defined in this report. However, research does indicate that companies are motivated to address their waste impacts when customers, NGOs, the media or the public sector demand it.

For instance, a comprehensive evaluation of the Envision resource efficiency project in the southwest of England published in 2010 found that support to implement an environmental management system (EMS) or make environmental improvements were particularly welcomed by companies in the hospitality industry who saw such interventions are "attracting customers" (40 p. 78).

Much earlier research (1992) on waste minimisation in the hospitality sector cited 'media headlines' which "continue to herald refuse, garbage, or SW [solid waste] as a major economic, health, safety, and ethical concern" as a reason for 'hospitality leaders' to 'take action'. The paper continues: "Failure to screen product and material inputs as potential SW outputs can result in public scorn, regulatory handcuffs, and increasing environmental dysfunction" (8 p. 257). The quick service sector, whose brands are well known through advertising is - according to the same author - particularly vulnerable to public disapproval, some viewing it as "a major waste generator" even though compositional analyses available at the time showed that fast food packaging represented "a mere 0.3% by volume" (8 p. 258). The

author argues that "a waste minimization mentality is imperative to arrest public criticism and to retain or regain a public image as proactive and socially responsible" (8 p. 258).

Pressure to improve environmental performance seems most acute when customers are attracted to a hospitality business because of its proximity to an area of natural beauty. In such cases, management can be motivated by concerns to protect the local environment, or at least to be seen to be addressing those of their customers. For example, according to a case study published in 2003, Banff Fairmont hotel, situated in Canada's oldest National Park, voluntarily adopted environmental measures (including waste prevention) in order to "reconcile nature's integrity with the ever-growing influx of patrons and visitors" (6 p. 47). The case study also points out that "the region's population is highly sensitive to environmental matters and the Banff Fairmont's initiatives in this area are likely to be vigilantly scrutinized on an on-going basis … [and] the waste management system must live up to the Fairmont chain's marketing efforts" (6 pp. 48, 49). Similarly, waste prevention measures implemented by a Scottish hotel and golf resort may have been motivated in part by the resort's closeness to a Site of Special Scientific Interest and nature reserve (9).

Customer pressure is also evident in high-profile developments – or when public sector money is funding a project. The preparations for the London 2012 Olympic Games are a notable example (see Box 6). The *Sustainability Sourcing Code* published by LOCOG[a], the event's organising body, contains a matrix wherein waste reduction is designated as a 'High priority area' for procuring 'Restaurants and catering' services for the Games. This means that there is a "high likelihood that this area will be assessed during the tender process". Waste reduction is a 'Moderate priority area' for spending on 'Accommodation and conference facilities', which means that there is "potential for this area to be assessed …; [it] will be determined by LOCOG on a case-by-case basis". This is a good example of a large customer placing procurement pressure on businesses in the hospitality sector to reduce waste; however, evidence of actual savings has yet to be published (41 p. 22) Similarly, the example identified in Section 3.3 of the NHS motivating a novel approach to serving hospital meals is also pertinent, but again data on waste saved was not available (30).

But some studies contradict the assertion that customer pressure is a motivator. In research funded by the ESRC published in 2004, restaurateurs surveyed in London and Leeds 'did not feel that being environmentally-friendly would be a particular draw for customers. Customers and clients rarely asked respondents about their environmental practices …' (16 p. 2). Another output from the same study, also published in 2004, reports that restaurants were among a range of small businesses (also including builders, architects, restaurateurs and farmers), whose customers were 'not yet demanding environmental behaviour'. This study concluded that "small firms are not subjected to the same stakeholder pressure for environmental management that large corporations are" (42 p. 6) and that legislative compulsion would be the most effective intervention to achieve behaviour change in these businesses.

Similarly, an unpublished internal WRAP assessment found "little opportunity for green marketing" in the hospitality (and leisure) sector and "[n]o evidence of supply chain pressures". SMEs consulted during the research "had not been subject to customer pressure to engage in recycling" (10).

Please refer to **L2m4-3: Procurement** for background information on the role of sustainable procurement and supply chain pressure in business waste prevention.

[a] London Organising Committee of the Olympic and Paralympic Games

Box 6: London 2012 Olympic Games development

Waste prevention has been evident in the preparations for the London 2012 Olympic and Paralympic Games. While landfill diversion is a priority - LOCOG, the organising committee, has the objective of sending 'zero waste to landfill' – several measures have been taken to reduce the waste arising in the first place. For instance, LOCOG favours the leasing of temporary venues and other elements to limit the volume of material needing to be disposed of after the Games. These include seating, tented and modular buildings, flooring, fencing, furniture, signage, tensile fabrics, cabling and pipework. Where new permanent developments are needed, off-site manufacturing has been adopted with construction materials and products for bridges and structural frames procured in pre-assembled form. Particular construction and fixing methods are also prescribed by LOCOG to facilitate disassembly and maximise the options for reuse or recycling. Finally, LOCOG's Sustainable Sourcing Code required that, where practicable, all packaging and products could be reused, recycled or recovered and certain hazardous materials (e.g. PVC with heavy metal additives) avoided. Suppliers and licensees were also expected to calculate the carbon impact of their products and services.

Business Benefits

- Quantitative evidence is not yet available on the amount of waste that LOCOG has avoided through these initiatives and the financial costs saved, but the figures are likely to be impressive.

Drivers

- Although LOCOG had already pledged to divert 90% of construction refuse from landfill, its ambition was further boosted by WRAP's Halving Waste to Landfill commitment which it signed up to in 2009. LOCOG wanted to demonstrate it was part a much bigger government initiative, and to show leadership

Key Elements for Success

- LOCOG clearly set out its intentions in *Towards a one planet 2012*, the sustainability plan it published in 2009.
- Given the scale of the Olympic development, the organisers were in a strong position to put pressure on a range of suppliers to prevent waste in their activities. LOCOG saw its Sustainable Sourcing Code and Materials Policy as an opportunity to inspire change and catalyse industry innovation.
- LOCOG helped develop a new standard: BS 8901 Sustainability Management Systems for Events – which in turn guides preparations for the Games.

Standards, Awards & Labels

A number of voluntary standards, awards and labelling schemes have been introduced with the aim of reducing environmental impacts of the hospitality sector. These are most notable in the tourism sector which overlaps with hospitality. For example, as part of its *Tomorrow's Tourism* initiative[a], Visit Britain was reportedly developing an environmental award scheme "to encourage environmental best practice amongst businesses within tourism". Firms gain the award if they can demonstrate that they have fulfilled specified environmental criteria. The award is marketed to tourist companies "on the basis that it [is] good for business" (16 p. 47). Table 10 has other examples of such schemes.

However, only limited evidence is available that standards and labels have prevented waste, and this tends to be aggregated with general waste reduction data. Ireland's Green Hospitality Award serves as a typical example. In January 2009, the organisers announced that by "reducing packaging, preventing waste, increasing re-cycling and segregation each hotel [member of the scheme] has saved between €5000 and €45,000, equal to 4000 tonnes or 1600 skip fulls, of landfill waste".[b]

[a] 'Tomorrow's Tourism' is a report published by the UK Department for Culture, Media and Sport setting out Government plans for the tourist industry.(16)

[b] http://www.ghaward.ie/ghaward/userfiles/file/Media/Final%20EPA%20press%20release%20JH19%2010%20_2_.pdf

Table 10: Selected environmental award schemes targeting the hospitality sector

Scheme	Launched	Coverage	Description	Aims	Source
The Tourism Partnership	1992	Global	Part of the Prince of Wales International Business Leaders Forum, which grew out of the International Hotels Environment Initiative	"sharing expertise and resources to address environmental issues such as energy and water consumption and waste disposal"	(20)
Green Globe programme	1994	Global	Established by the Hotel Catering & Institutional Management Association and the World Travel and Tourism Council	"to provide practical and low-cost means by which hospitality companies can: commit themselves to undertaking environmental improvements, based on international guidelines"	(12)
Green Tourism Business Scheme	1997	UK, Ireland	Formal accreditation scheme launched in Scotland; over 2,000 current members	to "ensure that the UK remains at the forefront of sustainable tourism in the future"	Green Tourism Business Scheme website[a]
Green Hospitality Award	Late 1990s, relaunched in 2004	Ireland	Members apply for "either an Eco Label or an Award based on a set of strict criteria" and, if successful, are allowed to use and display a logo	To demonstrate "leadership in environmental management within the hospitality sector"	(43) & Green Hospitality Award website[b]
Green Key Eco-Rating Programme	2009	USA mainly	Based on self-assessment, hoteliers are awarded a 1-5 Green Key rating and provided with guidance	"to recognize hotels, motels and resorts that are committed to improving their environmental and fiscal performance"	(23)

Also useful to note is the work LOCOG has been doing in developing the standards: BS 8901 Sustainability Management Systems for Events (see Box 6). In addition, hospitality sector businesses can apply for the more generic ecolabel schemes (e.g. the Austrian ecolabel or the EU Ecolabel) which may promote limited forms of waste prevention, for instance, in favouring reusable toiletry packaging.[c]

For more evidence on the role of standards, labels, awards and other incentive schemes in preventing waste please refer to **L2m4-1: Standards**, **L2m4-2: Labelling** and **L2m4-6: Incentives**.

Compliance with Legislation

A representative of Visit Britain[d] interviewed for 2004 ESRC-funded research stated that "apart from waste fees there [is] currently very little in the way of environmental policy targeting the restaurant industry, and that new regulations were unlikely" (16 p. 47). According to this interviewee, the Government instead prefers voluntary improvements under its *Tomorrow's Tourism* initiative (see Section 4.4). Meanwhile, as mentioned above the ESRC 2004 on restaurants and other types of SME concluded that legislative compulsion would be the most effective intervention to achieve pro-environmental behaviour change (42).

However, whether or not legislation does or could promote waste prevention is by no means certain, even though the sector is already subject to numerous waste regulations (10):

[a] http://www.green-business.co.uk
[b] http://www.ghaward.ie
[c] http://www.umweltzeichen.at/cms/upload/20%20docs/richtlinien-lf/uztb_r5a2_tourismusbetriebe_2010_gesamt.pdf
[d] A 'quango' formed from the merger of the British Tourist Authority and the English Tourism Council (16)

- Control of Pollution (Oil Storage) (England) Regulations 2001
- Animal By-Products Regulations 2005 SI 2347
- Producer Responsibility Obligations (Packaging and Waste) Regulations 2007
- Packaging (Essential Requirements) Regulations 2003
- Licensing Act 2003
- Hazardous Waste (England and Wales) Regulations 2005 SI 894.

Evidence supporting the role of legislation includes a 1992 paper on the hospitality sector (with a largely North American focus) which reported that restrictions on the disposal of certain materials such as "polystyrene foam,… specific plastics, grease, hazardous wastes … phone books, newspapers, white goods … and landscape waste" can motivate waste minimisation behaviour (8 pp. 257-8). In addition, a 2006 report for the LDA on business resource efficiency and waste pilot projects in the city indicated that food service companies "were more likely to recognise and prioritise environmental legislation and be familiar with inspections and the outside support than small retailers and serviced office" (35 p. 15). The same report found that compliance "and therefore the avoidance of costs incurred through fines was an important incentive for businesses to participate in the pilots. Thus, although not actually reducing resource costs for businesses, minimising the risk of prosecution contributes to the business case for introducing resource efficiency measures and environmental monitoring systems" (35 p. 12).

Other studies failed to find evidence that regulations were making a difference. For example, although restaurant-owners in London and Leeds surveyed for a 2004 ESRC study viewed "legislation as the most effective way to improve the environmental practices of their industry", there was little to suggest that environmental laws were actually impacting the sector. "This reinforced restaurateurs' perception that the environmental impacts of their firm were too small to warrant much attention" (16 p. 3). Similarly, the 2006 LDA report cited above found that for certain companies "compliance issues can also be a barrier to engagement. Some businesses may not wish to get involved with the council or the Environment Agency for fear of not having the necessary legal documents" (35 p. 15).

As in the food and drink manufacturing sector (see **L2m5-2: Food & Drink Sector**), caterers are preoccupied with meeting stringent food safety regulations – and often take precedence over other rules. For example, an unpublished internal assessment for WRAP in 2007 found that strict animal by-products and health and safety regulations are important pressures (10). Nevertheless, the same report elsewhere identifies legislation as a key motivator for this sector – and points to the fact that regulations have promoted waste cooking oil recycling.

Sometimes, hospitality businesses even confuse health and safety regulations with waste laws. For instance, restaurant-owners in London and Leeds surveyed for the 2004 ESRC study mentioned above conflated "environmental regulations … with food hygiene and environmental health legislation" and so considered that their environmental obligations extended only to food safety practices (16 p. 46).

Competition and Peer Influence

According to a forthcoming report for Defra entitled *Improving Communications with SMEs. A review of Six Sectors*, a review copy of which was reviewed at the time of writing, competition and peer-influence can motivate pro-environmental behaviour in the hospitality sector: "some participants in the accommodation industry linked their decision to ask guests to reuse their towels to similar policies adopted by other businesses" (37). However, whether or not peer-influence has promoted waste prevention behaviour is unknown.

4.3 Barriers

Despite the considerable savings to be won from waste prevention in the hospitality sector, a number of potential barriers have been identified:

- customer expectations
- fragmentation of the sector
- lack of influence in the supply chain
- perception of cost
- perception of poor quality
- financial and time constraints
- staff turnover.

Customer Expectations
Commenting on the finding from the 2010 SRA survey that the average restaurant diner leaves 0.5kg of food uneaten on the plate (11), *The Independent* newspaper suggested that "British restaurateurs are following the lead set by their American counterparts and serving portions that are too large" (13). This implies that a hospitality sector's perception of customer expectations could act as a barrier to resource efficiency. Similarly, a 1995 paper on environmental management in hotels notes that "many of the customers who seek hospitality services do so expecting to be pampered, with lashings of hot water, high-pressure showers, freshly laundered linen, an ample supply of towels, copious supplies of food and drink, the availability of swimming pools and saunas and the limousine to take them to the airport" (12 p. 3). The author contends that waste reduction initiatives must be implemented "either with the consent of the customers or in such a way that they do not notice any deterioration of service", and highlights as an example the fact that "soap and shampoo dispensers may reduce waste but may be contrary to customer expectations" (12 p. 5). These examples suggest that the customer can sometimes act as a barrier to resource efficiency – or at least a business's *perception* of what the customer expects is to blame. However, as discussed in Section 4.2, the weight of evidence suggests the contrary, with consumers generally a significant motivating factor. In addition, anecdotal evidence - also published in *The Independent* - suggests that some major restaurant "have quietly trimmed back the amount they dish up in an attempt to save money" (13).

Fragmentation of the Sector
While hospitality establishments may not individually generate vast quantities of waste, the sector as a whole has substantial arisings, albeit in decline. Its fragmentation, with large numbers of SMEs, is seen by some as a potential barrier. The author of a 1995 paper on environmental management in hotels writes: "if the impact of all of these small individual operations is added together the industry does have a significant effect on global resources. This is the dilemma – how can we persuade companies involved in the hospitality industry (many of them small independent operators) to take environmental management seriously?" (12 p. 3). Research on hotels in Edinburgh published in the same paper showed that larger establishments "perceived greater benefits … in the areas of public relations and marketing" than did smaller hotels (12 p. 7).

Lack of Influence in the Supply Chain
The fact that a significant proportion of hospitality businesses are small can limit their procurement power in the supply chain (see **L2m4-3: Procurement**). For example, caterers, which account for just 10% of food and drink manufacturers' sales, have far less influence on suppliers than retailers which account for 75% of sales (3) (see **L2m5-2: Food & Drink Sector**). This is evidenced by a 1995 paper on environmental management in hotels which suggests that many individual hospitality operations may "feel that they are too small to have any real effect [in terms of environmental impact], that these

services are very price sensitive, and that the customer would soon go elsewhere if asked to pay any of the cost of environmental management" (12 p. 3). Similarly, restaurant-owners in London and Leeds surveyed in ESRC-funded research from 2004 "felt there was little scope to limit their waste … packaging waste was considered out of their control as only some suppliers took packaging such as boxes back when they delivered, and the rest had to be disposed of by the restaurant" (16 pp. 43-44).

Obviously, when a hospitality business is large, then change can be effected. For example, a 1992 paper on solid waste minimisation in the hospitality sector reports that when "the Hard Rock Café insisted they simply would accept no more merchandise packed in polystyrene pellets, vendors shifted without hesitation (to using shredded junk mail)" (8 p. 260).

Perception of Cost

Waste prevention offers substantial financial benefits but for some hospitality sector companies cost is still viewed as a barrier. Although lacking data specific to the hospitality sector, a 2009 survey of business attitudes to resource efficiency in the northwest of England found that significantly more companies in the leisure and tourism (which overlaps with hospitality) cited cost as a significant barrier to making changes (32% of leisure and tourism businesses versus 16% and 14% of construction and retail & wholesale business, respectively) (39 p. 17). The recent economic downturn also seemed to have disproportionately impacted the sector with 32% of companies claiming to have moderated their plans for resource efficiency improvements (39 p. 60).

Smaller hospitality companies may sometimes think that they would be forced to pass on the costs from waste prevention measures to customers which would lose them business. For instance, a 2004 paper on the response of UK SMEs (including restaurants) to environmental issues found that "many small business owners may not be convinced that embracing environmental management is a good way of reducing costs or winning customers". The authors believe that voluntary environmental action would be resisted "if owner-managers think there is a chance that it will adversely affect their firm's competitiveness". The fact that resources are limited only exacerbates the problem (42).

Perception of Poor Quality

Sometimes a perception (often false) may exist that a less wasteful product has poor quality or reliability. This was found to be the case, for example, with remanufactured refrigerated display cabinets (27).

Financial and Time Constraints

Even though waste prevention does not have to be expensive, a minimum investment is required in staff time if not in capital. For example, a 2007 Defra report found that SMEs in particular did not have the manpower to investigate, let alone have time to implement, water-, energy- or waste-related saving opportunities (44 p. 6). The problem may be exacerbated by the perception that preventing waste would have a minimal impact on turnover and it thus not worth tackling (16 p. 37). A 2004 ESRC study on responses of UK SMEs to environmental pressures found that most "restaurateurs in the sample claimed to be too busy coping with daily business pressures to contemplate environmental issues. Many owner-managers spoke of the considerable time pressures they felt themselves to be under and explained that it was difficult to contemplate managerial activities that were not core to their business, such as improving their environmental performance" (16 p. 2). Similarly, a 2004 LDA study suggested that given "the multiple pressures on the micro-business end of the [catering sector] … there would appear to be little or no prospect of providing environmental advice in an enticing way. The possible exception would appear to be the possibility of providing advice at the start-up phase". The authors did, however, find that restaurant chains were "slightly more receptive, though consultees stressed the importance of providing tailored support services, aimed primarily at the head office level, and for the advice on basic services to be both credible and efficient" (1 pp. 28-29).

Staff Turnover
The high rate of staff turnover in the hospitality sector may also block attempts to embed waste prevention behaviour. Discussing barriers to recycling in the hospitality (and leisure) businesses, an unpublished internal assessment for WRAP in 2007 noted that the "large proportion of casual labour … employed by the sector and the significant international component can mean that communicating waste policies and ensuring that employees participate in recycling is more time consuming and challenging than in other sectors" (10). This barrier would equally apply to the dissemination of good practice in waste prevention. Similarly, a 2004 LDA report raises "the relatively high employment turnover in the restaurant industry at all levels" as a barrier to resource efficiency adding that managers "frequently receive profit-related pay and therefore tend to focus on short-term revenue-making operations rather than medium-term cost-saving policies". The authors suggest though that the situation may be different in restaurant chains "which tend to have more formal operational policies formulated by their headquarters" (1 p. 27). The same message is reinforced by the organisers of the London 2012 Olympic Games which recognise that that "[o]ne of the main limitations on achieving high-quality operations in the hospitality sector is the transient nature of contract staff and minimal time for training" (45 p. 62).

4.4 Enablers

Voluntary agreements and commitments do not appear to have been used to enable waste reduction in the hospitality sector. Rather, the focus of such interventions is on landfill diversion. For instance, the 2009 Defra strategy on packaging sees 'voluntary agreements' as a means to increase collection rates for glass packaging from pubs, clubs and restaurants (46 pp. 6-7). The following factors have though been identified as enabling pro-environmental behaviour, if not waste prevention, in business:

- external business support
- leadership from within
- external leadership.

External Business Support
Research published in 2006 on resource efficiency business support in the north west of England indicates that companies in the service sectors, especially smaller ones, were less aware of BREW[a] partner organisations than were larger companies or those from the production and manufacturing sectors (38 p. 3). Similarly, a 2004 ESRC study observes "very little in the way of government or industry-led environmental initiatives targeting the [restaurant] sector in the UK, in contrast to the construction industry" (16 p. 12). The same research suggests that the restaurant sector [if not hospitality generally] would respond well to external business support. Restaurateurs surveyed in London and Leeds called for "much more dialogue and support from government so that restaurants were better able to respond proactively rather than reactively to policy measures". Businesses were frustrated "at the government's lack of partnership and consultation with the restaurant industry. Some highlighted that it was often difficult to receive advice from local authorities, and that government rarely listened to the views of restaurateurs when making policy decisions" (16 p. 3). This is perhaps supported by the argument of some that the restaurant sector is a low priority in the Government's *Tomorrow's Tourism* initiative (16 p. 48).

However, as the previous sections make clear, a number of delivery bodies have enabled waste prevention behaviour; notably WRAP and Envirowise. Additional examples include:

[a] The Business Resource Efficiency and Waste Programme, which ran between 2005 and 2008, was established to return to business £284m of the money raised over that period through the landfill tax escalator. (http://www.defra.gov.uk/environment/business/support/)

- The Envision resource efficiency project in the southwest of England, which supported companies to implement an EMS or make environmental improvements. According to a comprehensive review, businesses in the hospitality industry "where there is a strong consumer focus" particularly welcomed the support, as the interventions helped in attracting customers (40 p. 78).
- The betre (Business excellence through resource efficiency) waste minimisation project in West Sussex. A 2008 evaluation notes that events associated with the project targeted hotels because they constituted an "often neglected sector" (47 p. 283).
- A local authority in New Zealand which funded an external consultant in 2008/9 to advise a backpackers' hostel on a number of resource efficiency measures (7).
- England's Resource Efficiency Club (REC) Programme which between 2005 and 2008 included support for the hospitality sector; although waste prevention activity in the sector was relatively minor (less than 1% of REC activity) compared with other sectors, notably food and drink (7% of REC activity) and construction (6% of REC activity) (48 p. 4).
- The London Development Agency included food service among five sectors targeted in BREW pilot projects it was supporting, however no evidence of true waste prevention was immediately apparent (35). The support may have been prompted by a 2004 report for the LDA which found that none of a sample of restaurant-owners interviewed "had had any experience of environmental support services" (1 p. 28). However, the report's authors doubted that smaller businesses would be receptive to resource efficiency advice anyway, given the pressures under which they operate.
- In France, the IDEAL79[a] resource efficiency initiative launched in 2004 which motivated limited waste prevention activity in hotels, although savings metrics are not documented (19 p. 10).
- The Wastewatch charity instigated the 'Waste Alert Clubs' scheme in London providing information packs, consultation visits, workshops and waste materials exchange for a small fee to small businesses including pubs, clubs and restaurants. Five clubs, with over 274 members in 2000, collectively divert 835 tonnes annually from landfill and save around £234,000 a year through reduction, reuse, exchange and recycling (21 p. 59).

Please refer to **L2m4-7: Waste Minimisation Clubs** and **L2m4-8: Other Business Support** for background information on the role of business support in waste prevention.

Leadership from Within

The importance of individuals, ideally in senior management roles, championing waste prevention has been identified in some studies. For example, 'executive-level commitment' and 'understanding' were key ingredients for success according to the facilities engineer at Harrah's mega-resort in Las Vegas, interviewed in a 1992 paper on waste minimisation in the hospitality sector. This was reinforced by evidence from other leading companies in the sector where waste minimisation activities were "energized by commitment from the organization's top. Support [was] demonstrated via endorsement, recognition, and resources" (8 p. 259). The same paper describes how for Hard Rock Café management "a strong element of pride and intensified morale are associated with waste minimization programs, wherein executives and employees work together responsibly for an important environmental and social cause" (8 p. 257).

An Envirowise case study on waste prevention at the Fairmont St Andrews hotel and golf resort in Scotland cites the involvement of a motivated facilities manager and 'Green Team' (9 p. 3). Further evidence comes from the 2004 ESRC study mentioned previously, which points out that a rare example of voluntary pro-environmental behaviour was demonstrated by an organic restaurant in Leeds whose owner "was particularly environmentally conscious" and "where every attempt had been made to reduce the environmental impacts of the firm. The restaurant was run by three partners who were all driven by a strong ethic to be environmentally and socially responsible". In terms of waste, however, interventions centred on the use of reclaimed, recycled or biodegradable products – and landfill diversion (16 p. 37).

[a] Initiatives Durables Et Alternatives Locales pour la prévention de la production des déchets en Deux-Sèvres (Sustainable and Alternative Local Initiatives for the prevention of the production of waste in Deux-Sèvres)

The importance of 'personal values' in enabling recycling behaviour at work among hospitality (and leisure) sector employees was also cited in an unpublished internal assessment for WRAP, but again waste prevention is not a focus (10).

External Leadership

Outside organisations can act as enabling factors. As discussed in Section 0, staff turnover is recognised by organisers of the London 2012 Games as a barrier to good practice in the hospitality sector. To tackle the issue, LOCOG has established a Food Advisory Group engaging "representatives from the food and hospitality industry, regulators, NGOs and London 2012 commercial partners: Coca Cola, McDonalds and Cadbury". LOCOG describes these companies as *"leaders in sustainability practices within the food service sector"* who will advise *"on levels of sustainable catering delivery, … [and] will also work to encourage their respective parts of the industry to take up the challenges and raise the bar of what is both possible and viable"* (45 p. 62).

No evidence is yet available as to the success or otherwise of this approach, but see Box 6 for other ways in which LOCOG is approaching the prevention of waste at the 2012 Olympic Games.

5 Conclusions

5.1 Learning

- Despite recent growth in the UK hospitality sector, **overall waste arisings are in decline,** although the reasons for this are uncertain. The sector is extremely diverse and fragmented, with 85% of hospitality waste in England generated by companies with fewer than 50 employees. The waste closely resembles household waste in composition, with a sizeable proportion of food and packaging waste depending on the specific type of business. While energy savings offer 60% of a total of £184m low or no-cost resource efficiency opportunities to the sector, preventing waste is important and offers 38% of the total.

- **Top level figures show that a considerable proportion of the waste from the sector is recycled or diverted from landfill** (65% in England). However, evidence of waste prevention is fragmented and anecdotal, although there are multiple examples from every sub-sector. The absence of trade associations or other data aggregators for these activities is a notable feature of the industry.

- **In terms of approaches to waste prevention, many of the examples can be categorised as waste minimisation**. Initiatives were found to reduce packaging by serving products in reusable containers, reusing products, packaging and raw materials (e.g. cooking oil) or redistributing surplus food to charities (e.g. the FareShare scheme). Evidence for clean operations was found for the use of bulk packaging (e.g. bulk soap dispensers) or purchasing remanufactured goods. As in other sectors (e.g. food & drink manufacture), green products took the form of light-weighted packaging or refillable packaging systems. In some cases the service itself may have been redesigned as was the case for restaurant menus. Product/service innovation centred on leasing of various types of catering equipment, although no quantified evidence of waste prevention was available.

- **Cost-saving appears to be a motivating factor as do customer and media pressure.** Interestingly, customer expectations – or at least a business's perception of them – have been cited as a barrier too. Other motivators may include standards, labels, award schemes and peer pressure. Given the small size of many hospitality companies, barriers to waste prevention behaviour may include a lack of influence in the supply chain and the perceived cost of implementing waste saving measures (even though doing may actually save the company money). The high rate of staff turnover can also hinder efforts to embed waste prevention practices.

5.2 Insights

The fact that hospitality waste closely resembles that from the household sector in its composition and pattern of arising, points to the relevance of lessons from Defra's work on promoting household waste prevention.

In the absence of trade association-led initiatives in the hospitality sector, labelling systems linked to award schemes may be a more promising avenue because the greatest pressure is likely to come from environmentally-conscious customers. Although such schemes have proliferated in recent years (e.g. Ireland's Green Hospitality Award, EU Ecolabel), few require businesses to demonstrate waste prevention as defined in this report.

It should be emphasised that the hospitality industry is highly fragmented, and the waste prevention activities of the local fish and chip shop or bed and breakfast can be as important as those of international hotel chains or branded fast food outlets. In reality, the hospitality sector is perhaps too large and diverse to be treated as a single entity; more useful learning might emerge from investigations

into its discrete subsectors: i.e. separate reports on large hotels, restaurant chains, small and medium-sized enterprises (SMEs) and so on.

5.3 Research Gaps

- **Research on waste management in the UK hospitality sector is extremely scarce compared with other business sectors** and could benefit from a coordinated and aggregated overview, for example by trade bodies. Some detailed work has been conducted on the motivators and barriers to general pro-environmental behaviour in certain subsectors of the sector (e.g. hotels), but almost nothing has been done on waste prevention beyond a handful of case studies published by WRAP, Envirowise and others.

- **Future research might examine more closely the impact of high rates of staff turnover on waste prevention behaviour and the role of leadership both within and without companies.** Investigating the outcome of such schemes as Visit Britain's *Tomorrow's Tourism* initiative (16 p. 47) could also be useful.

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