

**WR1403: Business Waste Prevention
Evidence Review
L2m4-2 – Labelling**



A report for
Defra

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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 before 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 using the Intervention mechanism of Labelling.

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

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Glossary

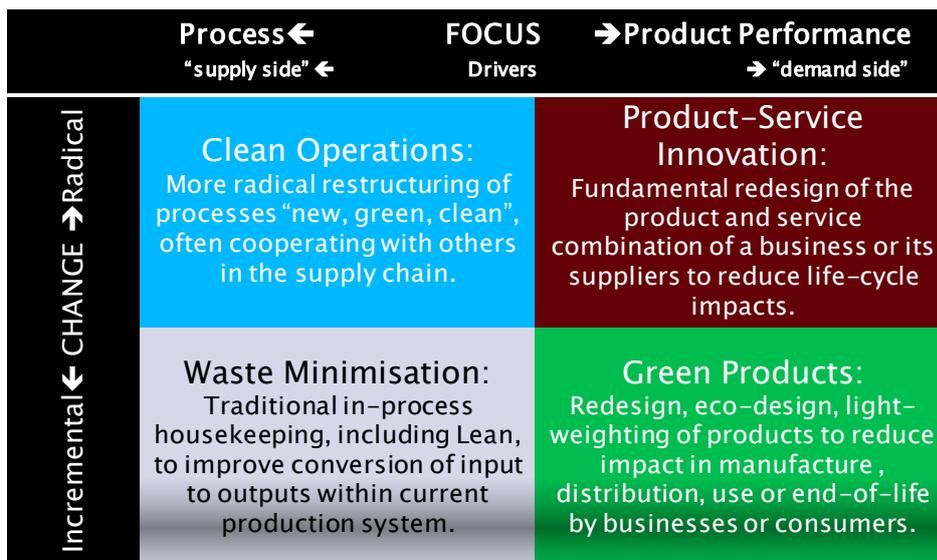
COD	chemical oxygen demand
ISO	International Standards Organisation
WRAP	Waste & Resources Action Programme

Units Conventional SI units and prefixes used throughout: {k, kilo, 1,000} {M, mega, 1,000,000} {G, giga, 10⁹}
{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 How Labelling Addresses Waste Prevention

In this review, we have used a broad definition of a label. Classically, labels that display environmental credentials, are self-contained, verified either independently or by the producer of the product and are often intended to differentiate the product from a competitor's. They can require performance benchmarks to be reached before a permit to display the label on the product is issued and as such are closely related to standards (both formal and informal). Labels are categorized as one of:

- Type I – where its use is permitted by a certifying body based on certain standards
- Type II – which requires a self declaration by a company on its environmental performance
- Type III – which involves disclosure of quantitative environmental data, but there is no judgment on the environmental performance of the product

A primary aim of labelling is as a driver to enable consumers and purchasers to differentiate similar products. The term 'product' is taken to mean any sold item whether it is a discrete finished item or a bulk intermediate material, or even a service. In the context of this document, labelling has been viewed as a means to inform purchasers regarding environmental or sustainability choices. In doing so, labelling provides three key functions:

- **Informing consumer choice:** Labelling is a way of informing customers about the environmental impacts of selected products, and the choices they can make. It allows people to discriminate between products. A label also makes the procurer more aware of the benefits of certain products.
- **Promoting economic efficiency:** Labelling is generally cheaper for all parties than regulatory controls. By enabling customers and manufacturers to make environmentally supportive decisions, the need for regulation is kept to a minimum.
- **Stimulating market development:** When customers choose labelled products, they have a direct impact on supply and demand in the marketplace. This is a signal which guides the market towards greater environmental awareness^a.

In addition to traditional labelling schemes, where they are used to differentiate between products, this report also references other classes of label that can enable waste prevention:

- Particular corporate brands may be synonymous with waste prevention and minimisation through active promotion.
- Informative labelling that encourages waste minimisation and prevention by influencing purchaser or user behaviour. The more well-known labelling schemes of this type such as that to aid recycling, are out of scope, and are more suited to the work of project WR1204.

Clearly however, there are issues on the intention and agency of the business and whether the business can rightly claim the credit for these waste reduction activities (which are largely led from the user of the product).

There are two distinct phases of a products' lifetime that can be affected by labelling:

- when the product is being built
- when the product is owned by the purchaser/user.

Both types of labelling are prevalent and some labels address both phases.

^a http://www.iisd.org/business/markets/eco_label_benefits.aspx

Labels that affect production are concerned with:

- products that are sourced from sustainable reserves or produced by sustainable means
- techniques that are used in production which are less damaging than alternatives
- where materials used have a reduced toxicity.

Within the specific context of waste prevention there is little evidence that such labels exist. A possible reason for this is that it is difficult to prove waste prevention and that any actions have prevented waste.

Conversely, labels that encourage or describe waste prevention when it is owned by the user are more prevalent. It should be noted though that for waste prevention to occur, both the user/consumer and the manufacturer/producer must work in partnership to deliver waste prevention measures: The producer must develop a product that minimises waste whilst the consumer must intentionally purchase the product and, in some instances, use and dispose of it in its intended manner realise the advertised benefits (for example return the product for remanufacture).

Labels are used as differentiators in procuring goods and services. As a result, the decision to prevent waste is in the hands of the buyer. However, the relationship between the buyer and a business supplier can vary widely between the label being a differentiator of benefit to the supplier, and the point at which it becomes a matter of compliance in forcing a supply chain to move wholesale to a particular standard. Supermarkets reveal this sort of influence when they request certain environmental information to be displayed on packaging, such as carbon footprint labelling. Importantly, public sector procurers cannot issue the same constraints because they are prevented under the EU Procurement Directive from specifying a particular label although the criteria covered by a label may be used independently as tendering specifications.

There is evidence that appropriate labels do influence behaviour of procurers and can encourage a more sustainable buying practice. One study reported:

“eco-labels may have an important market impact when retailers specify they want to stock products with eco-labels or when they become a tool in identifying environmentally preferable products for government procurement and institutional purchasing.” (1)

However, it is not sufficient to deliver unverified claims; an accreditation process (along with a well defined series of criteria) is necessary to encourage procurers to purchase labelled products (1).

2 The Nature of the Evidence

We were unable to find strong evidence that waste prevention savings could be directly attributed to labelling. Studies have largely focused on consumers' attitude to labelling and its perceived benefits on products.

We found many instances where labels have been used in conjunction with other interventions to reduce waste, for example, by light weighting or packaging reduction. However, there is little evidence on the effect of the label.

The majority of identified labelling schemes address other environmental issues, namely energy efficiency, ethical food sourcing and sustainable timber (a list of examples can be found in **Appendix L2m4-2-B: Examples of environmentally-focused labels**). Of those which related to waste prevention, they generally focused on hazard reduction and recyclability of the product or packaging. As a result, this report extrapolates from these types of applications to speculate on the application to waste prevention.

There is an array of data on branding and labels available from marketing literature. This review does not focus on this information except where particular examples of a brand that have specific impacts on waste prevention. We are also aware of the active research area on consumer attitudes and awareness towards labels. This research focuses on consumer attitudes and as such is beyond the scope of the report (2).

3 Evidence of Waste Prevention

Within the scope and timing of our search, we found only a few examples of labels that explicitly targeted waste prevention and limited evidence on the effectiveness of labels to minimise waste prevention. There are many examples of labels that address environmental performance. The criteria and standards associated with them, either explicitly or by implementation of a particular clause, lead to waste prevention activities. Therefore, this section compiles a list of labelling activities that are likely to have an impact on waste prevention and, where there is no evidence of significant activity, some notable examples of labels in alternative areas which address areas of waste minimisation, clean operations, green products and product service innovation. In addition, we have included a number of related environmental labels within **Appendix L2m4-2-B: Examples of environmentally-focused labels**. It should be noted that it is often not possible to unambiguously determine a clear single approach taken in this field because of the complex interactions of messages and behaviours. Nevertheless, we have assigned approaches by the major tactic employed by businesses.

3.1 Waste Minimisation

Most of WRAP's work on labelling has been in the food and drink retail sector under the auspices of the Courtauld Agreement which focused on reducing waste generated in the supply of food. Due to the consumer focus of the project, several aspects examined or used labelling to help reduce waste generation. In particular, WRAP has developed – with industry partners – labels to inform consumers of reductions in packaging (therefore setting it as a differentiator) and also to educate consumers and change their behaviour on ways to reduce food waste.

In 2009, 155,000 tonnes of food waste were prevented by this scheme, with an estimated value of £610 million. This was partly achieved through consumer engagement and education, and partly through the development of the brand or label 'Love Food Hate Waste'. There was a decrease in the amount of waste disposed of during the campaign's lifetime, although we cannot attribute the effect of the label versus other parts of the campaign was not conducted. Also, as is the case with most labelling, there is some question over the agency of such measures i.e. who is responsible for the savings, the consumer or the retailer / manufacturer, but it is clear that intervention by organisations such as WRAP has a positive impact on waste prevention (3). There is some self-reported evidence that the educational aspect of the project was successful, with an increase in the number of shopping lists used and a decrease in the amount of food wasted in the home (4).

Under the Courtauld Commitment, Sainsbury's looked to labelling to develop a mechanism to ensure that fresh vegetables were appropriately stored^a. They identified that:

- there is a wide range of labelling schemes
- there was no standardised communication being used by the industry.

A joint industry research initiative (funded by WRAP) was launched, which reported that, while 50% of consumers stored vegetables in the refrigerator, over 75% of those surveyed stored fruits outside the refrigerator. Based on this research, Sainsbury's developed a new packaging system (Figure 1).

^a <http://www.igd.com/index.asp?id=1&fid=1&sid=5&tid=153&foid=71&cid=1386> [accessed 6 June 2011]

Figure 1: Example of improving customer communication to help reduce packaging and food waste



Source: Sainsbury's presentation at IGD's Sustainable Packaging Conference 2008

The scheme appeared to be used as part of the evidence for establishing the On-pack Recycling Label Scheme which solely addresses the recycling of packaging. There does not appear to be any evidence that the scheme was taken any further than this limited trial.

With the help of the Food Standards Agency, new guidance was drawn up to assist food businesses in designing consistent and appropriate date marks for food products. As part of the process, an event was held to discuss changes to date marking on food to reduce waste. This led to updating guidance on information on 'use by' dates, which some of the food manufacturing industry felt were being inappropriately used leading to unnecessary food wastage. This updated guidance should help improve consumer behaviour with regard to the use of date marks.^a An updated guidance note was developed and a consultation on these changes was held between March and June 2010. Data provided in this consultation did not quantify any additional benefit from reduce food waste.^b In addition, it is not clear whether these changes have since been implemented.

3.2 Clean Operations

In December 2006, Toyota Industries launched its own certification program for environmentally friendly products. Certified products carry an ecolabel containing the mark shown below on the product itself, its packaging, catalogues, and other materials. The aims of the scheme are the pursuit of environmental considerations during product development and their subsequent promotion to Toyota's customers. To ensure that the purpose of the label was communicated correctly to their customers, Toyota became certified to the ISO standard: ISO14021, which sets out the correct procedures for self-declared environmental claims. Third party certification is also used to improve the reputation of the brand. The criteria for such labels are varied; waste prevention is not discussed but the scheme does encompass reductions in hazardous materials (5).

^a <http://www.food.gov.uk/news/newsarchive/2010/mar/datemarking> [accessed February 2011]

^b <http://www.food.gov.uk/multimedia/pdfs/consultation/fsaguidancedatemarksfoodeng.pdf>

Box 1: Toyota and ISO 14001

The automotive manufacturer Toyota has a strong presence in Europe with nine production facilities in the UK, France, Poland, Czech Republic, Russia, Turkey and Portugal representing a total investment of around €7bn. In 1996, Toyota Manufacturing UK (TMUK) became the first UK based car maker to gain ISO 14001 accreditation for its management processes, later asking suppliers to gain the certification by 2003. In 2000, TMUK's sites at Burnaston and Deeside were earmarked as 'model sustainable plants' in which methodologies for achieving optimal environmental performance would be piloted. TMUK set a goal of zero waste to landfill by 2005, tackling it in three stages: reducing waste volume, reusing or recycling unavoidable waste, and treating any waste that could not be re-used or recycled to reduce its environmental impact.

Business Benefits

- TMUK has achieved its target of zero waste to landfill and, more recently, zero waste to incineration.
- Between 1993 and 2007, TMUK cut waste from UK car production by 60% to around 10kg per car and reduced the release of hazardous volatile organic compounds by 70% to 20g/m² of paint surface. However, whether these savings were directly correlated to the adoption of ISO 14001 is unclear. Greater efficiencies in water and electricity usage per vehicle have also been documented.
- Other benefits from implementing and maintaining an EMS may include marketing advantages by demonstrating to stakeholders that the company is committed to effective environmental management and reduced risk of international non-tariff trade barriers.

Drivers

- The EMS was implemented as part of Toyota's commitment to achieve zero waste to landfill. The car maker is generally regarded as setting benchmark standards in 'lean' manufacturing, in other words production processes in which waste and inefficiency are continuously driven towards minimal levels. Toyota Motor Europe's aim is to be 'green, clean and lean' and its long-term objective, as stated in its corporate 'Earth Charter' is production of the 'ultimate eco-car'.

Key Elements for Success

- Toyota is famous for its 'kaizen' philosophy of continuous improvement where new ideas are welcomed from anywhere within the global organisation. This approach works in synergy with ISO 14001 for which continuous environmental improvement is a key objective. New waste saving techniques are first proven at a local level within a single site and if effective the relevant procedures are then diffused to the rest of that particular location and then by degrees to the rest of the business.
- Through its environmental purchasing guidelines, Toyota used its power in the supply chain to influence business partners so that they make environmental protection a priority.
- Full commitment by top management to environmental protection is fundamental to the successful implementation of an EMS.
- Provision of skills training and awareness building is important. A valuable approach practised at the Burnaston plant was to take employees on 'eco tours' around parts of the factory they would not normally see such as the waste management facility which improved their understanding of waste.

Sources:

<http://www.iema.net/readingroom/casestudies?filter=163%2C189&aid=584>;

<http://blog.toyota.co.uk/behind-the-scenes-toyota-promotes-environmental-excellence-at-the-home-of-auris-hybrid>;

http://www.iso.org/iso/14001_decade_ims3_07.pdf

http://www.mrcmekong.org/envir_training_kit/English/Case%20Studies/PDF/CS19%20-%20Toyota%20Motor%20Vietnam.pdf

3.3 Green Products

In 2009 Young's re-launched its entire range of standard fish pies in a new format which uses 12% less packaging, a change which will affect 40 million packs a year.^a Whilst product sizes remained the same, outer cartons were redesigned to be smaller and lighter in weight, saving some 242 tonnes of board per year. Six other products in the Young's pie range also benefit with this 'smarter' packaging. As part of this process, there was significant in-store testing to ensure that the visibly smaller pack was properly communicated and did not negatively affect consumer perceptions of the product.

Figure 2: Example of labelling where the package size has been reduced



Source: Young's Foods

3.4 Product/Service Innovation

Off-road vehicle manufacturer Caterpillar has developed a remanufacturing brand for its approved parts. Remanufacturing (returning a used product to like new condition) is a strong theme within the product/service innovation approach to waste prevention. Through it, Caterpillar claims to have saved 43 million tonnes of material (6). Caterpillar offer a range of service-lead packages to users of their equipment, including leasing and extended servicing contracts. Key to these business models is the use of remanufactured components to reduce costs associated with keeping their products operating. Indeed, a recent study (7) suggested that the remanufacturing industry in the UK estimated the value to the economy at £5bn. Clearly this cannot all be attributed to the remanufacturing label but an important consideration for a certain portion of procurers. Other brands that are recognised as remanufacturers include Xerox, Rolls Royce and Bosch.^b

^a http://www.wrap.org.uk/downloads/CC_Case_Studies_19_Aug_2010_final1.27f42c56.6249.pdf

^b <http://www.remanufacturing.org.uk>

3.5 Mixed Approaches

Internationally, schemes for nationally recognised ecolabels have been used for product differentiation for a number of years. Germany's Blue Angel (Box 2) and the Scandinavian Nordic Swan are two of the more well known and respected schemes. Other examples include the NF Environnement Label in France, which is managed by AFNOR and Umweltzeichen in Austria (8). The UK did not have an equivalent scheme until the implementation of the EU Ecolabel. Further schemes are listed in Table 1.

Box 2: Germany's Blue Angel ecolabel

Established in 1978, Germany's Blue Angel (Blaue Engel) was among the world's first ecolabels. Owned by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, it serves as a 'ecological beacon' marking out to the consumer those products which demonstrate environmentally superior performance. In 2009, the Blue Angel was divided into four classes depending on whether a product primarily protects the climate, health, water or – most relevant to waste prevention - resources. The scheme has several product groups addressing waste prevention including returnable transit and primary packaging. With the latter, the place of refilling may also be included enabling consumers to select those products with shorter transportation distances.

Business Benefits

- As with other ecolabels, products awarded the Blue Angel label may enjoy a market advantage over non-labelled competitors among consumers who are interested in purchasing environmentally-friendly products. A study found that 63% of companies displaying the Blue Angel on their products experienced some improvement in their market position.

Drivers

- A study in Germany found that environmental labelling received a positive response from 91% of customers. The most frequent reasons given for companies applying for the Blue Angel ecolabel were to respond to competition and to improve the marketability of the product.
- The Blue Angel label may also boost business-to-business sales, as guidelines used by procurement managers may favour such accreditations.

Key Elements for Success

- The Blue Angel ecolabel is guaranteed by, among others, the Environmental Label Jury, the German Federal Ministry for the Environment and the Federal Environment Agency.
- The label's extremely wide coverage is another success factor. Today 11,500 products and services in 90 categories offered by 1,050 companies display the Blue Angel.

Sources:

<http://www.blauer-engel.de/en/index.php>

<http://www.globalecolabelling.net/pdf/gen7.pdf>

http://www.blauer-engel.de/_downloads/publikationen/english/The-Blue-Angel-at-a-Glance.pdf

Table 1: Additional labels that require information on waste prevention activities as part of their criteria.

Label	Products/Waste prevention criteria	Country
B corporation^a	Not product or sector specific – focuses on generic questions about the company, criteria on toxicity, requires a bi-annual reduction in waste	USA
Eco-Logo^b	Product specific, with similar criteria as set out in the EU Ecolabel. Over 80 different products assessed.	Canada
Environmental Choice New Zealand^c	Product specific, with approximately 50% dedicated to cleaning products, with similar criteria as that set out in the EU Ecolabel. 45 different products come under the assessment scheme.	New Zealand
Fair wertung^d	Used to differentiate charitable denotations of clothes for reuse.	Germany
Green tick^e	Company specific with general criteria for their products. Includes clauses on resource efficiency (and hence waste prevention).	New Zealand
See what you are buying into^f	A wide ranging label that targets both environmental and ethical stance of a business. Includes information on their waste policy – waste prevention is part of the statement. Provides information rather than requiring certain standards to be met.	UK

Sources: See footnotes

In general, most of the identified waste prevention criteria are placed in the context of resource efficiency savings. For example, criteria within Green Tick require: “A Programme in place to maximise resource use efficiency with defined performance targets” and “Resources used at lowest practical for site/s with current technology per sales unit”. Whereas Environmental Choice – New Zealand requires waste minimisations and hazard reduction practices in place to be awarded the label. Specifications for waste prevention are much less common, possibly due to the difficulties in assessing any criteria and the more general focus on landfill diversion. Similarly, EU Ecolabel requires reduction in the use of hazardous substances, extended warranties and design for disassembly and repair. These all have an effect on reducing waste; however, waste prevention itself is not a focus of these labels.

Within Denmark, a trial was conducted to identify the benefits of the Nordic Swan (9). The results suggested that, for certain products, consumers preferentially chose items with the Swan logo over an alternative. Indeed, the inclusion of a label allowed a price premium of 10-17% over the equivalent unlabelled alternative.

The European Ecolabel (EU Ecolabel) is a voluntary scheme established in 1992 to encourage businesses to supply sustainable products and services. EU Ecolabelled products carry the ‘Flower’ logo, allowing procurers (both public and private) to identify them easily. The EU Ecolabel covers more than 20 different product groups including cleaning products, televisions and hotel accommodation, with further groups being added periodically. In the UK, Defra has overall responsibility for administration of the EU Ecolabel.^g

In the UK, the EU Ecolabel has been investigated several times for its impacts but it has been difficult to define empirically the effects of its use. This is partly a result of a lack of evidence regarding the public attitude to the label (1). A study into the effect of the label on the environment, described in Table 2, examined the possible effect of adoption of EU Ecolabelled products. As is mentioned above, the effects

^a <http://www.bcorporation.net/>

^b <http://www.ecologo.org/en/>

^c <http://www.enviro-choice.org.nz/index.html>

^d <http://www.fairwertung.de/index.html>

^e <http://www.greentick.com/index.html>

^f <http://www.seewhatyouarebuyinginto.com/>

^g <http://ec.europa.eu/environment/ecolabel/>

of the label on procurement has not been separated from the actual standards set by the scheme. In addition calculations did not consider waste minimisation, but this is obliquely considered under EU Ecolabel's 'extension of lifetime of products' criteria (particularly associated with televisions and other energy-using products). From a resource efficiency perspective, materials savings could equally be recognised as a waste prevention activity.

The EU Ecolabel also quantifies reduction of hazardous substances. Unfortunately, the savings presented in Table 2 are theoretical (based on coarse modelling of the uptake of EU Ecolabelled products against industry standards) and can therefore not be considered evidence of the effect of labelling on waste minimisation.

Table 2: Projected savings from adoption of the EU Ecolabel within the European Union

Resource saved /avoided per year	Amount saved per year by scenario		
	5% Take-up	20% Take-up	50% Take-up
Electricity, GWh	14,700	59,000	147,600
CO ₂ produced from energy use, million tonnes	9.3	37.3	93.2
Water use, million Megalitres	12.3	49.1	122.8
Reduced hazardous substance use, tonnes	13,800	55,400	138,400
Material savings (other than hazardous substances), million tonnes	0.5	2.1	5.3
Reduced discharges to water, tonnes COD	30,400	121,700	304,200
Reduced air pollution, tonnes	17,500	70,100	175,300

Source (10)

Indirect benefits of the EU Ecolabel were also discussed, which again do not provide quantifiable benefits but do provide contextual and behavioural effects of labelling (10). The categories of effect are summarised in **Appendix L2m4-2-A: EU Ecolabel additional benefits**.

Reviews of more established labels from the international arena have been conducted. A market study on the effects of the established Blue Angel scheme in Germany reported that, in general, the scheme was well regarded^a:

- 76 % of companies believe that the ecolabel has increased competition for environmental innovation in their sector.
- 38 % believe that the ecolabel has led to a clear improvement in the environmental quality of their products, while a further 28% agree with reservations.
- 56 % of companies are of the opinion that the Blue Angel scheme is "very beneficial" or "beneficial" to the environment.
- The most frequent reasons given for applying for the ecolabel were "responding to competition" and "improving the marketability of the product". Environmental labelling receives a positive response from 91% of customers.
- Nonetheless, only 25% have actually experienced a marked improvement in their market position, although a further 38% agreed that their position had improved "to some extent".

^a <http://www.globalecolabelling.net/pdf/gen7.pdf>

These results suggest that labelling is a positive way to improve environmental sustainability of products, largely by ensuring that the businesses product is not adversely differentiated by not having the ecolabel. Again, however, there was little evidence presented of the effect of the label on waste minimisation.

Box 3 illustrates the use of labels in Japan's Top Runner Programme where high-performing products are identified as benchmarks within a peer group. This label is a prestigious achievement for companies and, we infer, offers some competitive advantage.

Box 3: Japan's Top Runner programme

Introduced in 1999 and administered by Japan's Agency for Natural Resources and Energy, the Top Runner programme aims to reduce energy consumption in the civil and transportation sectors by stimulating the continuous improvement in energy efficiency of products. Currently, 23 product classes are covered ranging from passenger vehicles and air conditioners to vending machines and even electric toilet seats! Rather than targeting retailers or end-users, Top Runner focuses on the supply-side, with manufacturers and importers required to meet minimum environmental standards. Appliances are tested, with the best performing model serving as a baseline for other manufacturers to meet or exceed. The next time officials set standards, the best available models will thus be even more efficient. In this way, standards are ratcheted up and energy conservation advances through the replacement of machinery and equipment by consumers. The European Union has adopted a similar mechanism to phase out non-energy efficient light bulbs. Although focused on energy efficiency, the Top Runner scheme might equally well be applied to waste prevention.

Business Benefits

- The Top Runner scheme has improved many appliances and products. For instance, between 2001 and 2007, the energy efficiency of computers and magnetic disk units increased by 80.8% and 85.7%, respectively, surpassing expectations. These improvements will give Japanese manufacturers a competitive edge in the international marketplace.

Drivers

- Japan's scheme works because although businesses realise they will one day have to comply with new more stringent and legally-binding standard (the hidden "stick"), innovation is driven primarily by the "carrot" of competitive advantage. It should be noted, however, that the scheme has been criticised for rewarding incremental rather than transformative change.
- As part of a voluntary "e-Mark" programme, certain products within the Top Runner scheme which meet the latest minimum requirements can display a label communicating this to retailers and consumers.

Key Elements for Success

- The Top Runner scheme is a non-confrontational approach to environmental protection. Although minimum standards once established become compulsory, the voluntary nature of progress towards better environmental performance harnesses businesses' own in-house expertise.
- Primary stakeholders are themselves involved in setting targets so awareness and commitment levels are high, while targets are not overly ambitious. Moreover, Japan has a culture of close cooperation between business and regulators.
- The scheme's iterative and flexible nature allows failures to be addressed and remedied.
- The "free-rider effect" is an advantage because businesses already performing well at the start of a cycle become free-riders in needing to invest less additional effort during the subsequent compliance period.
- Name-and-shame sanctions are effective deterrents in Japan.

Sources

http://www.asiaeec-col.eccj.or.jp/top_runner/index.html ;
<http://www.enecho.meti.go.jp/policy/saveenergy/toprunner2010.03en.pdf>
<http://www.aid-ee.org/documents/018TopRunner-Japan.PDF>

4 Behavioural Aspects

There is little or no evidence on the effect of labels on business behaviours, but some evidence of the effect consumer behaviours. Although this is strictly beyond the scope of this study, a couple of examples are provided here. One study (11), which examined lightweighting of glass bottles for food and drink retail, probed the effect of including a label explaining the new lighter bottles. Its purpose was to mitigate any negative impressions of using lighter materials such as a perceived reduction in quality. Only 6% of participants responded that knowledge of lightweighting would discourage them from buying a product. 52% said they would positively purchase a product if it was lightweighted while 42% stated that such information would not influence their purchasing decisions. It should be noted that these purchasers considered themselves environmentally conscious. Again, though, the benefits of these waste prevention activities were not quantified.

In another example, a Carbon Trust-commissioned survey that found 67% of all consumers said 'carbon footprints' (through labelling) would influence their choice of product (12).

5 Conclusions

5.1 Learning

- **There is evidence that labelling does reduce the overall environmental impact of products.** However, there is sparse evidence of the effect of labelling on improving waste prevention. This is largely because either waste prevention is not the primary measure, or reductions in waste generation are difficult to measure accurately.

5.2 Insights

Labels are most valuable when they have clearly defined standards to back up the environmental claims.

Although the effects of waste prevention are not direct, we infer that labels have driven down hazardous waste since this is the target of much of the rationale of, for example, EU Ecolabel.

The understandable difficulties associated with measuring, controlling and evidencing waste prevention means that developing a label for use on a product is likely to be difficult. In contrast, using labels to inform users of waste prevention activities (either during use or at the end of life) appears to be a more achievable aim.

5.3 Research Gaps

- Waste prevention has not been a focus for the majority of studies examining the effect of labelling on the production phase of a product's lifetime. **Further research is needed into the effect of producer's compliance with labels on waste prevention**, particularly for EU Ecolabel where the agenda and remit closely match that of waste prevention.
- Whilst we have found evidence that labels can be used to reduce waste by purchasers, **there appears to be little research on effectiveness of labels in preventing waste during manufacture.**

6 Bibliography

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Appendix L2m4-2-A: EU Ecolabel additional benefits

- The use of the Ecolabel criteria by another ecolabel scheme. Criteria may be copied directly or used as a reference point before local adaptation.
- The use of the Ecolabel criteria in public procurement calls for tender.
- The use of the Ecolabel criteria in private procurement calls for tender.
- The use of the Ecolabel criteria by companies as a benchmark for their own products or as a target to improve their environmental performance.
- The use of the Ecolabel criteria to generate environmental product declarations, or recommendations on how to make green claims.
- The use of the Ecolabel criteria and procedures/structures to generate minimum environmental requirements applicable to all products of a product category on the market.
- The use of the Ecolabel criteria in the “new approach” as a basis for establishing whether companies have complied with “essential requirements”.
- The use of the Ecolabel logo, ecolabel criteria and related discussion, to raise stakeholder awareness of the environmental impact of products (stakeholders include manufacturers retailers, consumers, environmental NGOs and public administrations).
- The use of the Ecolabel and its criteria as a basis for establishing fiscal measures to promote green products, (e.g. criteria for energy rebate schemes)

Appendix L2m4-2-B: Examples of environmentally-focused labels

The National Association of Paper Merchants (NAPM)

Paper and board accredited with the NAPM Recycled Paper Mark must be manufactured from a minimum of 50%, 75% or 100% genuine recovered fibre, no part of which should contain mill produced waste.

The Forest Stewardship Council (FSC)

The FSC logo means that wood and paper products come from well managed forests and have been produced in an environmentally sound and socially responsible manner. Requirements include forests are logged in a responsible manner; water supplies are protected; free and informed consent of the traditional landowners is obtained; the rights of forest workers and forest communities are respected and endangered species and their habitats are conserved.

The PEFC Council (Programme for the Endorsement of Forest Certification schemes)

PEFC promotes sustainably managed forests through independent third party certification. The PEFC provides an assurance mechanism to purchasers of wood and paper products that they are promoting sustainability

Fairtrade

An independent consumer label gives: “a better deal for workers and producers from poor and developing countries, ensuring that workers receive a fair wage”. It also promotes environmental and social standards in international trade in areas related to the production of a wide variety of goods.

Carbon Trust Footprint Label

Introduced by the Carbon Trust, it shows the measure of a product’s carbon footprint, with a commitment from the business to reduce this figure.

The EU Energy Label

This scheme rates products from A, (the most efficient) to G (the least efficient). For refrigeration the EU energy label goes up to A++. By law, the label must be shown on all refrigeration appliances, electric tumble dryers, washing machines, washer dryers, dishwashers, electric ovens, air conditioners, lamps and light bulbs.

Energy Saving Recommended

A label for the most energy-efficient products, enabling consumers to identify the most energy efficient products in the category.

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