



# LOOKING BACK, LOOKING FORWARD

## LESSONS IN CHOICE EDITING FOR SUSTAINABILITY

19 CASE STUDIES INTO DRIVERS AND BARRIERS TO MAINSTREAMING MORE SUSTAINABLE PRODUCTS

May 2006

# EXECUTIVE SUMMARY

The Sustainable Consumption Roundtable – a joint initiative of the National Consumer Council and the Sustainable Development Commission – was set up to advise Government on practical policies that could make it easier for people to consume more sustainably. Our final report to Government, *I will if you will*, was launched on 2 May, and the Government is committed to producing an action plan on sustainable consumption by the end of 2006.

One of our chief areas of focus was on how to improve the sustainability of the products people buy. Although leading businesses are increasingly taking responsibility for reducing the environmental impacts of their operations, few are looking at the lifetime impacts of the products that they develop and market to consumers. As we move to a more resource-constrained world, the ability of businesses to meet customer needs and to market their products will remain key - but they will need to do this in a way that results in fewer, not more, carbon emissions and natural resource demands.

This research report is divided into two sections: Looking Back and Looking Forward.

In Looking Back, we present evidence on the drivers behind market transformation in 19 case studies of consumer products where there has been a substantial or partial shift towards a more sustainable supply chain.

We examine these under three lifestyle areas: **the food we eat, how we run our homes and getting around**, which – together with holiday travel – account for four-fifths of our impacts on the environment. All the products analysed are significant in market terms in their own right but are also now made and supplied in a way that embraces at least some of the principles of a 'one-planet economy'. A panel reviewed the available evidence on the history of nineteen products' development and identified as far as possible what the principal driving forces were that led to the innovation and, more importantly, what link in the value chain was creating those driving forces.

In Looking Forward, we draw some conclusions for future product policy, and present the case for dedicated product roadmaps to deliver market transformation in priority products.

The evidence suggests that, historically, the green consumer has not been the tipping point in driving green innovation. Instead, choice editing for quality and sustainability by government and business has been the critical driver in the majority of cases. Manufacturers, retailers and regulators have made decisions to edit out less sustainable products on behalf of consumers, raising the standard for all.

Choice editing for sustainability is about shifting the field of choice for mainstream consumers: cutting out unnecessarily damaging products and getting real sustainable choices on the shelves. Consumers benefit from the assurance that the issues they care about are being dealt with upstream, rather than facing the demand that they grapple with those complexities themselves.

Based on consideration of our 19 case studies, we focus on eight observations:

1. There is not enough evidence that green consumers on their own are able to change mainstream product markets. These consumers may, in some cases, have played a role in as early adopter but the translation to the mainstream depends on a number of other factors.
2. The crucial requirement is for the product to perform up to the expectation of performance in the relevant market. The successful products studied were largely not

sold on a green or ethical platform, unless they appealed strongly to the emotions, as in the case of dolphin-friendly tuna. People do not eat sustainability, or drive it. They eat food and drive cars and product performance has to be the primary focus of marketing, even for sustainable products. If the marketing mix and price are within the expected norms of the relevant market then any 'good' attributes like sustainability suddenly become attractive to the consumer.

3. Providing information failed to get more than a minority of people buying the most energy-efficient dishwashers, fridges and washing machines, even when it pointed to savings on running costs. Inefficient machines were still the norm in the shops, and they were cheaper. But when labelling was combined with action on the part of regulators, retailers and manufacturers, rapid efficiency gains mean even the least-efficient new fridge freezer on sale today consumes only half as much energy as the least-efficient products on the market eight years ago.
4. Labelling of performance ratings from A-G is a key enabler for choice editing, but does not by itself drive significant market transformation.
5. Early announcement of legislation to set minimum standards drives a virtuous cycle of rapid innovation and further choice editing by retailers and manufacturers.
6. Voluntary industry initiatives are an important ingredient. In the case of dishwashers and washing-machines, manufacturers averted regulation by negotiating to remove models rated D or below voluntarily. But voluntary industry initiatives rarely play a leadership role.
7. Fiscal incentives only work if they close the price gap for more sustainable products or create significant tax rebates for their use. Incremental VAT reductions on products like CFLs and insulation do not by themselves create demand.

Where a sustainability issue acquires emotional resonance, consumers can lead some degree of market transformation. To date, this has generally been confined to food-related issues that align with people's emotional concerns for personal health and animal welfare. External events like non-governmental organisation (NGO) campaigns, a food scare or a climate-related event, can suddenly cause background concerns to be manifested in consumer behaviour change. Businesses that move in anticipation of this type of external influence, and sudden consumer awareness, can become market leaders.

Looking forward, we set out the case for Government and leading businesses to develop product roadmaps that build on the lessons above to achieve radical transformation of high-impact products – like cars, lighting and home entertainment – towards sustainability by set deadlines. These roadmaps will set out the interventions needed to create the business case for market transformation, and the Government needs to work closely with businesses that have demonstrated best practice to ensure that they do this effectively.

'Product roadmaps' may involve a variety of different interventions. Product labelling achieves little on its own, but enables a powerful set of drivers to promote change, such as procurement policy, regulation or voluntary agreements to set minimum standards, fiscal incentives and product charges.

Looking forward over timescales that businesses and people can respond to, the main elements of this will be:

1. understanding the issues and range of possible solutions
2. clear deadlines for achieving the desired level of transformation
3. labelling products as a basis for incentives and standard-setting
4. robust incentives tied to product sustainability
5. supportive public procurement specifications

6. raising the bar through progressive regulation.

In the case of lighting, for instance, there is an urgent need for investment to flow into improving the aesthetics and performance of low energy bulbs, so that they meet consumer expectations. While tungsten bulbs remain the norm on retailer shelves, however - hiding their lifetime costs behind a cheap price-tag - the incentive for investment in low energy lighting design remains small. A roadmap is urgently needed to give a defined timeframe to the phase-out of tungsten bulbs, giving business and investors the future market certainty that will drive radical improvements in the price and performance of the alternatives.

Switching from tungstens to low energy bulbs is a small step in the journey towards low-carbon living, but an important one, of benefit to both consumers and the climate. Retailers and manufacturers need to show that they can work effectively with the Government to transform this market, and others, to make them fit for a carbon-constrained society.

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# 'LOOKING BACK'

The choice of products in this research does not attempt to be comprehensive in analysis of 'more sustainable' products. The case studies were chosen by the Roundtable for the resonance of the lessons and conclusions that could be drawn from each product and to reflect a considered, if not exhaustive, cross section of consumer products. It is also worth mentioning that the selection of products was restrained to some extent by availability of datasets and information. In some cases the information was found to be patchy. We believe the information in these studies to be consistent and accurate, but acknowledge our reliance on secondary data (see notes, p. )

The case studies in the report were broken up into six sub-sections and the conclusions from each of these are summarised below.

## **THE FOOD WE EAT**

### **1 FOOD SECTOR**

The characteristics of shifts in the food sector generally differed from the key drivers in other manufactured products primarily because we have a far more emotional connection to food and what we consume. Therefore, health concerns and the welfare of animals are strong drivers of behaviour in purchases of more sustainable food. Few people will be surprised to learn that one of the best selling organic products is baby food. 'Greener' food products have also benefited from the wider renaissance of UK food culture in the last decade and the subsequent burgeoning choice and quality of food available to purchase.

## **HOW WE RUN OUR HOMES**

### **2 SMALLEST HOUSEHOLD PRODUCTS**

Market shifts in manufactured products is generally more 'rational' than food and in order for products to become mainstream it is imperative that the quality and availability of the more sustainable products is equivalent to ordinary versions. The role of business as innovators and retailers to ensure availability is therefore crucial. The most successful shifts were achieved when these sustainability aims were compatible (or most likely secondary) to existing business imperatives (such as cost savings) or wider consumer trends.

### **3 PRODUCT COMPONENTS**

Despite the impact of components such as CFC's ostensibly commanding high levels consumer concern, in reality sustainability improvements to product components have been largely invisible to consumers. As a result the only conclusion can be that greater sustainability in product components can only be achieved through a combination of Government and business action.

### **4 LARGER CONSUMER DURABLES**

This section looked at the energy efficiency of large household appliances, where the research concluded that the most successful shifts have been achieved through action on an EU level with a combination of labelling, setting minimum industry standards followed by voluntary industry agreements and initiatives to reduce the price differential. Consumer information through labelling is important as a basis for a shift but does not work by itself as a driver of mainstreaming.

### **5 HOME INFRASTRUCTURE PRODUCTS**

Although investments in the infrastructure of homes seem to be an area where large outlays require rational decision-making by consumers, in reality the public are relatively passive consumers of large and complex infrastructure purchases. The ultimate decision often lies with builders, installers, fitters, and retailers. The training and education of these professionals is key to mainstreaming these products. Indeed more often than not, strong Government intervention on product standards reassures rather than constrains consumer-purchasing decisions.

## GETTING AROUND

### 6 VEHICLE TECHNOLOGIES

Transport is another area where consumers are accustomed to strong Government or EU level intervention which is reinforced by the fact that safety and health are areas of high public concern. However, with personal transportation a controversial area with the electorate, successful shifts will need to be relatively painless for consumers with little impact on performance or cost.

## Learning from success – summary table of findings

	Product story and market share	Key Drivers
<b>The food we eat</b>		
Free range eggs	Four out of ten eggs sold in shops are now either free range or barn eggs. However, there is still a large market for cheaper battery eggs, particularly those destined for use in other foods or catering.	Combination of perceived consumer benefits - freshness, taste, animal welfare that overcome price premium.
'Dolphin friendly' tuna	In 1988, a campaigner filmed horrifying images of hundreds of dolphins dying in tuna purse nets, sparking a tuna boycott that spread rapidly from the US to other countries including the UK. Over 90 per cent of tuna sold is now classified 'Dolphin Safe'.	NGOs built awareness on an emotional issue. Solutions offered involved no quality or price compromise for consumers.
Fairtrade coffee	The UK, the proportion of Fairtrade market (roast and ground coffee) is now around 20 per cent of the market, up from 14 per cent in 2002.	Marketing mix is equal to competition and the price differential is within the price norm.
<i>Limited transformation.</i> Organics	While successful in terms of high growth in recent years, this is from a low base. Organic products have a market share of only 1.2 per cent in 2004 and around 56 per cent of organic food is imported from abroad.	Labelling has enabled the development of a niche market willing to pay premium for perceived higher quality. Barrier: Mainstream consumers do not yet perceive benefits to merit price premium. Marketed as niche luxury product.
<b>How we run our homes</b>		
Forest Stewardship Council wood	The Forest Stewardship Council (FSC) launched in 1993 with a forest certification and labelling scheme. Now 12 years old, the total global market has reached \$5bn of which the UK constitutes approximately a third of the demand.	Retailer leadership by B&Q, committing to edit out non-sustainable wood, creating the market for FSC as a new sustainable certification.. Little consumer pressure, but no perceived consumer compromise needed on

		price or performance.
Volatile Organic Compounds (VOC) in paint	In five years to 2003 there has been an estimated 21 per cent reduction in harmful VOC content of paint. The EU market share of water-based paints has risen to 70 per cent.	Mainstreamed in industry through retailer leadership followed by voluntary industry agreement. Little consumer awareness. Little consumer awareness, but no perceived consumer compromise needed on price or performance.
Ozone depleting chemicals	Ozone-damaging CFCs had been phased out in EU by 1995, five years after Montreal Protocol. Further choice editing now needed as HCFCs are potent greenhouse gas.	International legislation aided by availability of alternative technology (HCFCs) and industry-NGO initiatives by Unilever, Coca-Cola and Greenpeace on ice cream and drinks refrigerators.
A-rated cold appliances	Market share of A-rated models increased from 1 per cent to 76 per cent in five years to 2005. The least efficient new fridge freezer on sale today consumes only half as much energy as the least efficient products on the market 8 years ago. However, demand for second fridges has risen so that total energy consumption only reduced by 2.2 per cent <sup>1</sup> over the same period.	Labelling alone had limited effect, but enabled the key drivers which were EU legislation to raise minimum standard, price incentives via EEC, and choice editing by retailers. Consumers were happy to adopt A-rated appliances as they were offered at cost parity by familiar brands .
A-rated washing machines	The market share of A-rated machines rose from 0 to 85 per cent in 7 years to 2005.	Labelling alone had limited effect, but enabled the key drivers which were a manufacturer agreement to raise minimum standard, price incentives via EEC, and choice editing by retailers. Consumers were happy to adopt as they were offered at cost parity by familiar brands.
A-rated dishwashers	Market share of A-rated dishwashers rose from 0 per cent to 74 per cent in 7 years to 2005. Around one in four UK households have a dishwasher, relatively low compared to the rest of Europe.	Labelling alone had limited effect, but enabled the key drivers which were a manufacturer agreement to raise minimum standard, price incentives via EEC, and choice editing by retailers. Consumers were happy to adopt as they were offered at cost parity by familiar brands.
Condensing boilers	Moved from 16 per cent of the market to 95 per cent in two years from 2003. Space heating and hot water represent 80 per cent of domestic carbon emissions. 1.3m new boilers are replaced every year with boilers lasting on average ten to 14 years.	Announcement in 2003 that from 2005 Building Regulations would mandate minimum B-rating (86 per cent efficiency) for new and replacement boilers. This effectively banned all models other than condensing boilers. Low consumer awareness, but no perceived disbenefit.
Recycled paper	The proportion of recycled content in	Newspaper recycled content driven

	newspaper increased from under 30 per cent in 1990 to over 75 per cent in 2004. More widely, consumer demand for recycled products remains low due to higher price, poor availability, and perception of poor quality.	by an industry-led initiative without the need for high consumer awareness. Barrier: For recycling paper generally the marketing mix is less attractive to consumers than alternatives because of price and quality
Washing powder	Tablet powders have been calculated to reduce packaging by 26 per cent and reduce both detergent consumption and use of low degradable materials. Tablets and liquid tablets now account for around 40 per cent of the UK market.	Promotion by manufacturers on convenience.
Lightweight packaging	Packaging was the first priority waste stream to be legislated at EU level and there are business cost-savings from lightweight packaging. But consumer preference for convenience still drives higher levels of packaging - one retailer reports that 45 per cent of vegetables are now sold as pre-packaged.	EU legislative pressure.
Double glazing	Double-glazing started to take off during the 1970s fuel crisis. It has become mainstream despite the fact it is not generally cost-effective on energy savings alone, due to secondary benefits including easier maintenance, higher security and noise insulation, and improvement to property values.	Promotion and marketing by manufacturers, with many perceived consumer benefits, such as noise insulation, warmth, energy saving, and security.
Limited transformation: Energy saving light bulbs	Low energy light bulbs, such as Compact Fluorescent Lightbulbs (CFLs) have been on the market since the early 1980s but at current levels of uptake their market share is only predicted to be around 13 per cent by 2020.	Barrier: <i>Low consumer demand because CFLs perceived to offer poorer design and performance at much higher upfront cost than tungsten bulbs. Unless cheap tungsten bulbs are phased out, manufacturers will perceive little market for low-energy lighting and will not invest in innovation to improve design.</i>
<b>Getting around</b>		
Unleaded petrol	Unleaded petrol was introduced into the UK in 1986 and leaded petrol was phased out over 14 years, being banned finally in 2000. Industry objections over costs of change imposed significant delay on this phase-out. Fiscal support, making unleaded cheaper, won consumer support despite some early concerns about car performance.	Early legislation in US stimulated innovation on lead removal. EU and UK legislation, introduced in conjunction with fuel duty incentives, drove phase-out of leaded petrol by 2000. Cost and performance parity means no perceived disbenefit to consumers.
Catalytic converters	All new cars sold in UK from 1993 had catalytic converters, eliminating harmful	EU legislation, implemented in UK in 1993.

	<p>carbon monoxide, nitrogen oxides and volatile organic compound emissions. Initial concerns from some consumers about car performance disappeared, given the benefits to health, so the technology has proved uncontroversial.</p>	
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## THE FOOD WE EAT

### 1) FOOD PRODUCTS

#### KEY CONCLUSIONS

The research analysed market shifts in case studies of Free Range Eggs, 'Dolphin Safe' Tuna, Fair Trade Coffee and Organics. A greater emotional connection to food meant the characteristics of shifts in the food sector generally differed from the key drivers in other manufactured products.

- There is far more emotion involved in purchasing food than most other consumer products and, as a result, public health scares have had a significant impact on increasing the demand for all more sustainable food products. Similarly, the emotional concern for animal welfare was also very important in the two most successful shifts of 'dolphin friendly' tuna and free range eggs.
- Ethical and environmental food sourcing issues rose in consumer awareness once retailers and cafes and restaurants such as Starbucks started championing the products. Similarly the media and NGOs played a big role in putting across messages about food, in particular when it involved newsworthy stories about health and animal welfare.
- More sustainable food products have also benefited from market positioning as luxury or differentiated foods, and consumers are willing to pay a small price differential to buy more sustainable food products. However, where significant price differences remain this has prevented mainstreaming, such as in many organic products.
- All of the food products in the case studies have attracted some criticism, mainly about wider sustainability issues which has caused confusion in consumers about what is a truly sustainable product. In niche products such as fairtrade coffee and organics, the increasing demand and success of the product has caused problems with scaling up the supply chain.

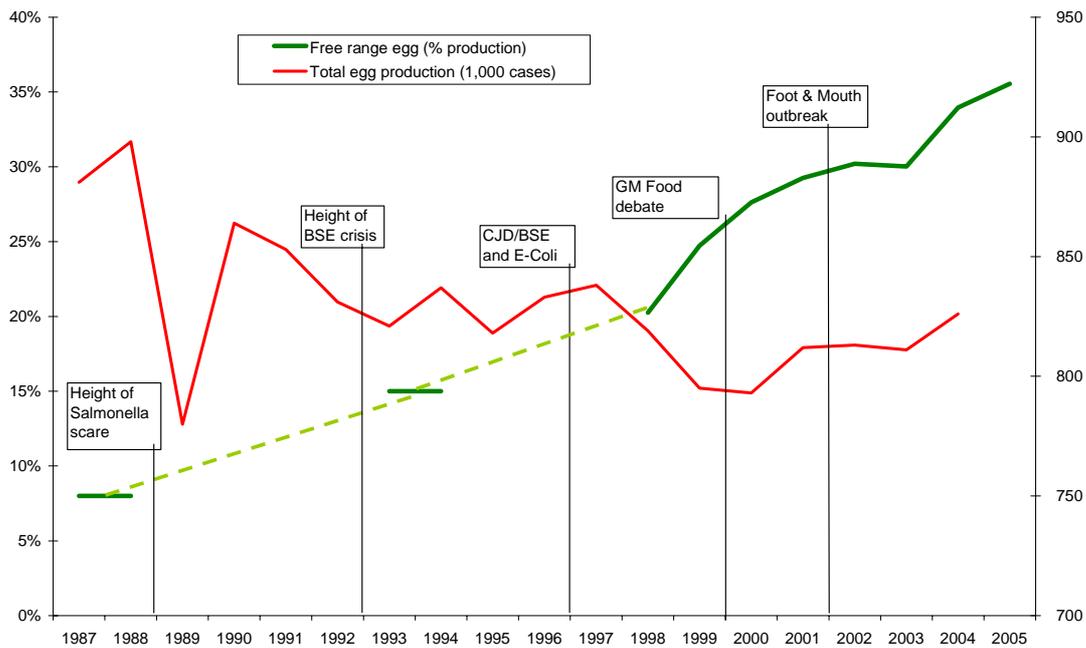
a. FREE RANGE EGGS - [Return to index](#)

Approximate market share grew from 7% in 1987 to 30% in 2005, (23% over 18 years) Shift occurred through producer response to salmonella health scare and reinforced by the public's concerns about animal welfare.

Key Drivers	<ul style="list-style-type: none"> <li>• Small price difference</li> <li>• Quality same or better</li> <li>• Emotional issue of animal welfare</li> <li>• Clear issue and action</li> <li>• Strong media support</li> </ul> <p><b>BUT</b></p> <ul style="list-style-type: none"> <li>- Confusing messages (still intensive conditions)</li> </ul>
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Background<sup>2</sup> The size of UK free range egg market is £610m in retail sales and £160m in catering (ex-farm prices) The proportion of the market that is either free range or barn eggs is approximately 40% of retail sales and around 30% of total egg production. Two thirds of eggs are still produced in laying cage systems.

The chart below plots the market share of free-range eggs compared to total production since 1987, against the timings of major food scares. It shows that the proportion of free range has consistently increased, despite falling or static total egg production..



Consumers	<p>The Salmonella outbreak was attributed by many to the intensive farming conditions of battery eggs. The perception that battery eggs are unnatural and unhealthy has persisted despite Government and Industry effectively tackling the Salmonella issue – the switch towards eggs farmed in alternative ways has continued since the 1980s.</p> <p>The consumer acceptance of free-range eggs was reinforced by concern about the conditions of battery hens and a supportive media also contributed to the mainstreaming of the issue. Health scares and animal welfare issues, coupled with visual and often disturbing images of battery farming were, and still</p>
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	<p>remain, very newsworthy topics.</p> <p>This switch became mainstreamed because buying free range either improved the taste or made no difference. The price differential was also not large and as a result required little customer sacrifice.</p>
Retailers	<p>High consumer demand for the product and the associated higher margins has now spawned a wide range of egg types and production methods (woodland, corn fed, barn, organic etc.) The power of the retailers is considerable with supermarkets and multiple retailers selling over 80% of retail eggs in the UK.<sup>3</sup></p> <p>Supermarkets were quick to react to the salmonella health scare and offer customers a free-range choice of eggs. Retailers and some restaurants also use free-range egg products as part of public relations activity. For example retailer Marks and Spencer, and fast food retailer, McDonalds who have a free range only offer.</p>
Producers	<p>Egg producers have responded to the higher demand and higher margins offered by free-range and the mix of production methods have continued to shift towards free range year-on-year since 1988. The percentage of total production from barn and free range varieties is around 30%.</p> <p>There is however, still a large market for cheaper battery eggs particularly those sourced for secondary food production.<sup>4</sup></p>
Government	<p>There have been a number of campaigns to re-establish the safety of eggs following the salmonella outbreak. In 1998 there was the launch of Lion Quality Code of Practice with stringent food safety procedures including best before date. This Lion Code now covers 80% of eggs sold in the UK.<sup>5</sup></p> <p>From 2004 EU legislation has made it compulsory for eggs to be labelled according to method of production.<sup>6</sup></p> <p>There is an European Union directive proposing to introduce legislation by 2012 to give laying birds twice the space in cages that is provided in non-EU countries. Some non governmental organisations (NGOs) are protesting that this is not enough, as the birds remain unable to move around naturally.<sup>7</sup></p>

b. 'DOLPHIN FRIENDLY' TUNA - [Return to Index](#)

<p>No official figures but large majority of UK tuna was sold as 'dolphin-friendly' within one or two years. Shift achieved through visual NGO campaign advocated directly to consumers.</p>	
<p>Key Drivers</p>	<ul style="list-style-type: none"> <li>• Little price or quality differential</li> <li>• Good alternative supply chain of line caught tuna</li> <li>• Emotive issue of marine mammals</li> <li>• Clear issue and action</li> <li>• Strong media support</li> </ul> <p><b>BUT</b></p> <ul style="list-style-type: none"> <li>- Confusing messages (questionable sustainability of tuna fisheries)</li> </ul>
<p>Background<sup>8</sup></p>	<p>Initiated in 1986 by the Earth Island Institute and going mainstream in 1990 it is now estimated that over 90% of Tuna is now classified 'Dolphin Safe' as per IMMP (International Marine Mammal Project) guidelines.</p> <p>The issue came to the fore in 1988, when biologist Samuel LaBudde climbed aboard a Panamanian-flagged tuna fishing vessel in the Eastern Tropical Pacific. Using a video camera, LaBudde recorded the horrifying images of hundreds of dolphins dying in tuna purse nets. The video shocked the world, a tuna boycott started in the US and rapidly spread to other countries including the UK.</p>
<p>Consumers</p>	<p>The media played a strong role in fuelling consumer action with a sympathetic media campaign backing up NGO activity. There was almost an overnight change in mainstream consumer awareness from the graphical images of dolphins caught in tuna nets. The campaign was coordinated by the NGO, Earth Island Institute.</p> <p>The key issue was animal welfare and was particularly salient being marine mammals. UK consciousness of animal welfare meant it was quickly a mainstream rather than green consumer response.</p> <p>The campaign first materialised as a consumer boycott where consumers were given a clear link between the issue and products they bought and how and where to buy an alternative source. 'Dolphin friendly' tuna also did not change the quality or taste of the product as well as being a fairly small price differential.</p>
<p>Retailers</p>	<p>The Dolphin by-catch issue was only a huge issue for Pacific caught tuna, the EU supplies were primarily of the skip-jack variety which had fewer issues with Dolphin by-catch. As a result, there was a relatively strong supply chain of alternatively caught tuna which retailers were able to access fairly easily. The large retailers were able to respond quickly to negative publicity and consumer demand by shifting their mainstream range to be 'dolphin friendly'. This also ensured that consumers did not have to be without a staple foodstuff.</p> <p>The European Dolphin Safe Monitoring Organisation (E.D.S.M.O.) was formed in London in October 1999 and represents, protect and promote the Dolphin Safe International Monitoring Program provided by Earth Island Institute. Of the large retailers, only Co-op use the official 'dolphin safe' label in the UK, with other retailers choosing their own definitions and branding.</p>
<p>Producers</p>	<p>Some lack of producer buy-in continues to threaten the effectiveness of the campaign. In particular some South American nations continue to ignore Earth</p>

	<p>Island guidelines coming up with their own less stringent version of Dolphin safe standards. There have been several court cases about the non-classified products from South America and free access to US tuna markets.</p> <p>There continues to be concern too about the lack of a holistic sustainability message on issues such as declining stocks of tuna and by-catch of other endangered species that the 'dolphin friendly' labelling does not address.</p>
Government	<p>US Congress legislation introduced legal standard for 'Dolphin Safety' label in the Marine Mammal Safety Act amendment 1992. The act was supported by three major tuna brands in the US that supplied almost 100% of the market. As a result, there is no labelling required in the US as it is covered by trade legislation. The Bush administration weakened the standards in 2002 on the back of political pressure from Mexico and others, but the three key tuna brands in the US remain sourcing tuna through the original 'stronger' version.</p> <p>In 1992 the EU banned purse seine fishing nets used to encircle Dolphins and catch Tuna. In 2002 the EU introduced a watered down ban on drift nets that allowed shorter nets and other modifications. There is some potential for the EU to extend the eco-labelling scheme to cover food products, including fish, that may supersede the 'dolphin safe' issue.</p>

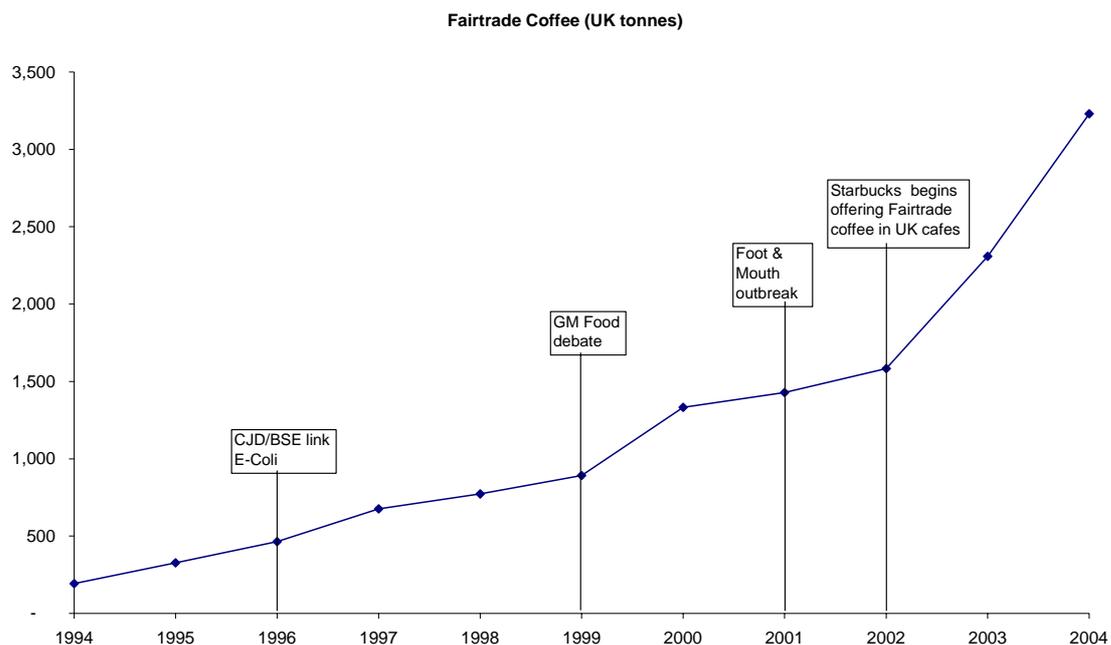
c. FAIR TRADE COFFEE - [Return to index](#)

Approximately 20% market shift achieved within 10 years. Initially ethical consumers but mainstreamed through retailers through Corporate Social Responsibility.

- Key Drivers**
- Relatively small price differential
  - Similar quality good including high quality packaging
  - Consumer trend for luxury and differentiated products
  - Businesses and retailer role in raising consumer awareness through fairtrade offerings
- BUT
- Confusing messages (no stated environmental standards)
  - Issues with scaling up of supply chain

**Background<sup>9</sup>** The first Fairtrade label was launched in the Netherlands in 1989 and was launched in the UK in 1994. 10 years later in 2004 turnover reached £49.3m (2004). Within the UK, the proportion of Fairtrade market (roast and ground coffee) is now thought to be around 20% of the market up from 14% in 2002.

The chart below plots the growth in tonnes of Fairtrade coffee in the UK; the graph suggests that, although the label is about prices paid to coffee producers, there maybe some correlation with food scares more generally.



**Consumer** Fairtrade coffee was initially sold by charities and other small outlets in the UK as a niche reaction against large brands and falling global market price for coffee. After overcoming some quality problems at the outset, demand for the products started to increase with new packaging. In 2005 recognition of the Fairtrade logo amongst UK adults was quoted as 50% up from 25% in 2003.<sup>10</sup>

There are a number of factors that have contributed to the mainstreaming of the fairtrade coffee product:

- As the brand has grown, advocates have succeeded in making a clear link

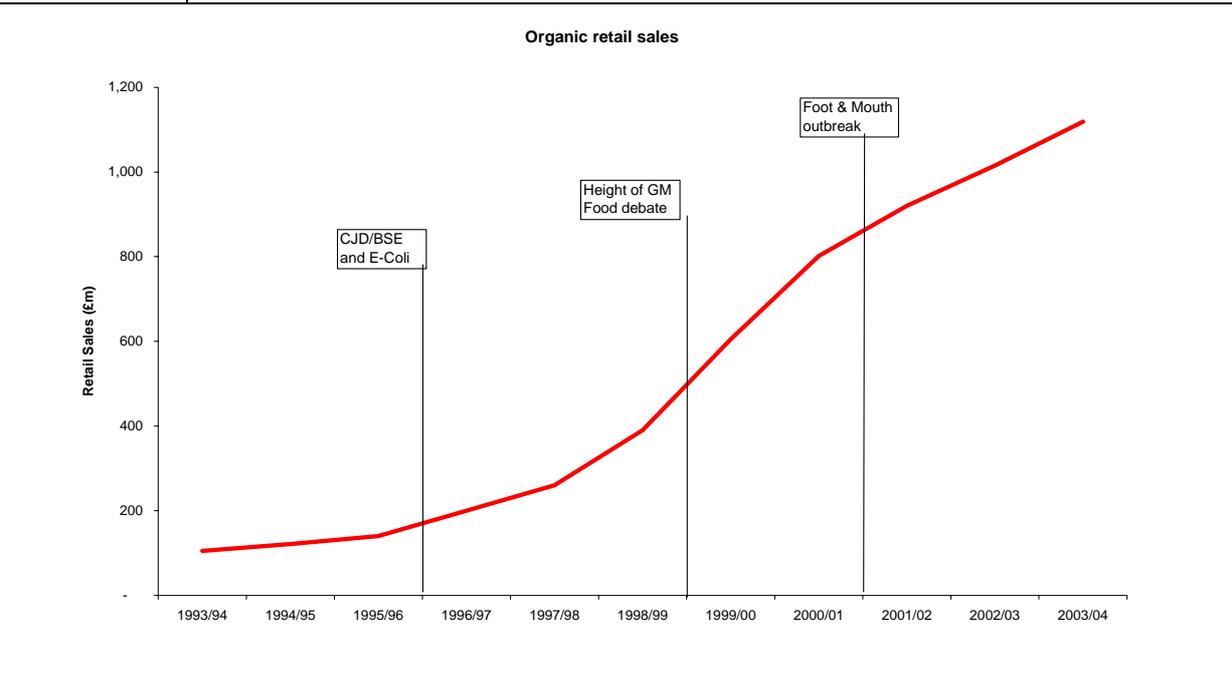
	<p>between exploitation of farmers and an everyday consumer product. Blame is put at the door of middle men and the system of global trade, not the producers or consumers.</p> <ul style="list-style-type: none"> <li>• Product is well marketed with brands and packaging that appeal and compete with existing brands.</li> <li>• Championed by businesses through CSR policies, Fairtrade coffee has also benefited from the consumer trend towards more sophisticated and differentiated coffee tastes.</li> <li>• Coffee is not what marketers call a 'known value' item meaning that price competition in the consumer coffee market is not very strong. The price differential also remains quite small, with Fairtrade not being much more expensive than other mainstream brands.</li> </ul> <p>There is however some confusion from consumers about the aims of Fairtrade, with some attributing far more to the label than is strictly true, particularly in the case of environmental protection.</p>
Retailer	<p>As essentially a 'market-based' solution to issues of under-development it is a popular and quick-win public relations move for many businesses and has helped to quickly raise consumer consciousness of the movement. Increasingly big retailers and coffee outlets are either giving customers a clear choice of fairtrade coffee or have chosen to have their range fairtrade only. Starbucks coffee shops offered Fairtrade in US cafes from 2000 and in the UK from 2002. Tesco launched own-brand fairtrade products in 2004. There is a now growing perception among large retailers that coffee ranges are incomplete without a fairtrade offer.</p> <p>The issue has now arisen that to ensure the quality and supply of Fairtrade products, retailers have to buy from large cooperatives and to some extent reintroducing the middleman in the coffee market. As a result, fairtrade has started to attract some criticism that it is moving away from the core principle of supporting small farmers.</p>
Producer	<p>A key benefit of fairtrade is that it has no impact on growing methods and does not require investment from small farmers to achieve it. Small developing country producers are the prime beneficiaries of the products as they obtain a higher assured price for their goods.</p>
Government	<p>In order to encourage and stimulate the market for these products within the UK, there is a clear role for procurement of fairtrade products in all levels of the public sector.</p> <p>On a macro level the UK Government should be working to address the cause rather than the symptom and the key problems remains power inequalities in the global markets. Agricultural subsidies and trade barriers protect many of agricultural industries in developed countries and these subsidy regimes are one of the causes of depressed global market prices of agricultural goods such as coffee.</p>

d. ORGANICS - [Return to Index](#)

Despite high growth organic products had a market share of only 1.2% in 2004. High prices and some message confusion means product range remains niche

<b>Key Drivers</b>	<ul style="list-style-type: none"> <li>• Perception of higher health and nutrition</li> <li>• Consumer trend for luxury and differentiation</li> <li>• Emotive issue of protecting nature</li> </ul> <p><b>BUT</b></p> <ul style="list-style-type: none"> <li>- Prices considerably higher</li> <li>- Issues with scaling up local and UK supply chains</li> <li>- Confused messages (pesticide usage)</li> </ul>
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<b>Background</b> <small>11</small>	<p>Organic food sales have increased ten fold since 1993 to £1.12 billion in 2003 and 04 with around 4 % UK farmland certified as organic. Despite reaching the billion pound mark, organic food still only represents around 1.2% food and drink retail market and around 56% of organic food is imported from abroad. Some areas though there is evidence of mainstreaming such as in baby food where the proportion is 50%.</p> <p>The graph below shows the growth of sales of organic food since 1993 and 4. The growth was particularly steep during and around the height of the GM food debate.</p>
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<b>Consumer</b>	<p>Consumers primarily buy organic for two reasons:</p> <ol style="list-style-type: none"> <li>1. Perceived health and environmental benefits including low pesticide residue and wider issues of animal welfare and environmental standards. Growing demand for organic food has been driven number of health scares about pesticides, nutrition and allergies. Although many claims are unsubstantiated by clear scientific evidence, this has led to strong growth of demand for organic food, particularly in areas such as baby foods.</li> <li>2. Organic food has an image as a niche and premium product which is reinforced by the high price tags and some consumers seek the product for this differential status. Popular television programmes and media on</li> </ol>
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	<p>health, obesity and school foods have significantly raised the profile of organics with all consumers, however the products are necessarily marketed at a much higher price putting organic produce out of reach of most ordinary consumers.</p> <p>As well as the issue of high prices, the media have also been quick to publicise stories about perceived failures of organic food including:</p> <ul style="list-style-type: none"> <li>• Consumers can be unsure about which type of 'greener' food (organic, local, fair-trade) is best for the environment or animal welfare where these are not corresponding. This is a particularly issue with local food as 56% of organic food is currently sourced from abroad.</li> <li>• Questions have been raised about the safety of some pesticides approved by the Soil Association and some evidence that counters the perceived health and taste benefits of organic produce.</li> </ul>
Producers	<p>Some organic products have experienced problems with supply. In some areas the high demand, such as for chicken pieces, have led to supply problems, sourcing from abroad and high prices. There have also been cases of over-supply (such as dairy and lamb) where prices have dropped to parity or below. Producers have been unable to get a premium price for goods that are more expensive to produce, leading some to revert back to standard production practices.</p> <p>Conversion rates to organic production have continued to increase despite the supply problems, however the growth is coming primarily from conversion of arable and horticultural farms as the benefits to meat and dairy farmers is less significant.</p>
Retailers	<p>The success of premium bespoke foods from farms shops and farmers markets alerted big retailers to the organic food movement. Food retailers quickly responded by stocking organic products and targeting green and middle class consumers with own brand organic ranges. Although all the large food retailers have organic ranges. The premium retailers such as Waitrose have experienced highest growth in demand.</p> <p>Currently 56% of organic food is imported from abroad, as international suppliers can supply larger volumes at cheaper prices to supermarkets. High food miles go against sustainability and supporting low impact, small-scale production. However, some large retailers such as Sainsbury have committed to increasing their proportion of UK sourced organic food.</p> <p>Ten percent of organic produce is still sold through alternative outlets with 16% sales growth, which outpaces that of organic ranges in supermarkets.<sup>12</sup></p>
Government	<p>There are a number Government initiatives in place to support organic production.</p> <p>EC Council Regulation 2092 and 91 came into force in 1993 regulating labelling inputs and practices in organic farming.</p> <p>The UK Government brought out an organic action plan in 2002 with a commitment to support organic produce through around £2bn public sector food procurement<sup>13</sup>. Interest in sourcing more organic ingredients for school meals has also increased following the 'Feed Me Better Campaign' launched in 2005. The UK</p>

	Government's Environmental Stewardship scheme, re-launched in 2005, pays double per hectare for Organic Entry Level land over that of standard Entry Level Schemes. <sup>14</sup>
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## HOW WE RUN OUR HOMES

### 2) SMALLER HOUSEHOLD PRODUCTS

#### KEY CONCLUSIONS FROM SECTION

The research analysed market shifts in case studies of

- a. 'Energy Saving' Light Bulbs
  - b. Newspaper Recycled Content
  - c. Recycled Paper
  - d. Washing Powder Tablets
- In smaller goods, it is particularly imperative that in order to mainstream more sustainable products **price, quality and availability** of the is equivalent to ordinary versions.
  - The most successful shifts have been where sustainability was compatible with business imperatives (cost savings) or wider consumer trends, which then drove investment and development.
  - Where there is no strong market or business incentive for change, Government action such to provide incentives, support or legislation can be an effective substitute for market forces and encourage industry to improve the sustainability of their products.
  - Voluntary industry agreements are useful but generally do not act as a sole driver of product shifts. As the case study on recycled content of newspaper illustrates, many industry targets are not ambitious enough, being set far below what is achievable.
  - Single-issue products with a clear cause and effect are easier to promote than sustainability objectives as the inherent trade-offs in wider sustainability messages can cause confusion and attract criticism. Being upfront about possible trade-offs is crucial to shield products from criticism.

a. ENERGY SAVING LIGHT BULBS - [Return to Index](#)

<p><b>Launched in 1980, energy saving light bulbs have a market share of 11.5%. Despite cost saving arguments, the product remains niche due to quality issues and relative high prices.</b></p>																									
<p><b>Key Drivers</b></p>	<ul style="list-style-type: none"> <li>• Cost saving argument</li> <li>• Take up improved with legislative support</li> </ul> <p><b>BUT</b></p> <ul style="list-style-type: none"> <li>- Prices considerably higher</li> <li>- Numerous quality issues (large size, dim, etc....)</li> <li>- Limited retailer support</li> </ul>																								
<p><b>Background</b> <sup>15</sup></p>	<p>Low energy light bulbs, such as Compact Fluorescent Light bulbs (CFLs) have been on the market since the early 1980s but at current levels of uptake, there is only predicted to be a market share of around 13% CFLs by 2020. This is against the background trend of increasing numbers of smaller households with increasing numbers of lamps per room.</p> <p>Household lighting generally equates to between 10-15% of energy bills per year. A gross amount of £1.2bn in the UK. Each CFL light bulb saves around £7 a year and the average life of energy saving bulb is 12 years, although this figure has fallen as manufacturers have made more cosmetic changes to the bulbs.</p> <p>The graph below<sup>16</sup> shows that the proportion of energy saving light bulbs, although increasing following interventions on labelling and Energy Efficiency Commitments, remain below 15% market share.</p>																								
<div style="text-align: center;"> <p><b>Energy Efficient lamps per household</b></p> <table border="1"> <caption>Estimated data from the graph 'Energy Efficient lamps per household'</caption> <thead> <tr> <th>Year</th> <th>% Total lamps per household</th> </tr> </thead> <tbody> <tr><td>1980</td><td>0%</td></tr> <tr><td>1985</td><td>0.5%</td></tr> <tr><td>1990</td><td>1.5%</td></tr> <tr><td>1995</td><td>2.5%</td></tr> <tr><td>1997</td><td>3.5%</td></tr> <tr><td>2000</td><td>4.5%</td></tr> <tr><td>2001</td><td>5.5%</td></tr> <tr><td>2002</td><td>7.5%</td></tr> <tr><td>2003</td><td>9.5%</td></tr> <tr><td>2004</td><td>11.5%</td></tr> <tr><td>2005</td><td>11.5%</td></tr> </tbody> </table> </div>		Year	% Total lamps per household	1980	0%	1985	0.5%	1990	1.5%	1995	2.5%	1997	3.5%	2000	4.5%	2001	5.5%	2002	7.5%	2003	9.5%	2004	11.5%	2005	11.5%
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2005	11.5%																								
<p><b>Consumers</b></p>	<p>The money saving argument is strong but the key issue with consumers is that energy saving bulbs are not of equivalent quality of existing tungsten bulbs. Coupled with this, the potential cost savings from CFLs, even when priced as low as £2, are relatively small and insignificant to most householders.</p> <p>Current and projected lifestyle shifts include expanding household numbers as</p>																								

	<p>well as increasing the number of lamps per household. Without policy intervention the carbon dioxide emissions from the lighting sector are projected to continue rising.<sup>17</sup></p>
Manufacturer	<p>Manufacturers are working on improving the quality issues but at the same time this refinement is reducing the lifetime of the bulbs down from 12 towards 5 years. Generally, the higher cost of lamps means manufacturers find it sufficiently profitable to sell CFL lamps despite reducing the frequency of purchase.</p> <p>Attempts to significantly improve the energy efficiency of existing lamps have failed and manufacturers have concentrated predominately on finding true equivalent technologies to the tungsten light bulb.</p> <p>Because of this technology blockage, the Government have been reluctant to use the established route and built on the A-G efficiency label by setting minimum standards, encouraging industry agreements and legislate to remove poorly performing products. This is despite arguably that the necessity of removing the poor performing products would have ultimately driven innovation.</p>
Retailers	<p>The lack of consumer buy-in has meant that retailers are reluctant to aid the mainstreaming of CFLs. Neither the manufacturers nor the retailers have committed to any comprehensive marketing. There is potential for both a retailers and manufacturers to undertake some sort of commitment to increase shelf space and marketing spend on the CFL products. The most successful retailer of CFL bulbs so far has been Ikea sourcing low cost (£2) bulbs but that are also arguably of lower quality.</p>
Government	<p>There has been a large amount of legislation and regulation that impact on CFLs.<sup>18</sup></p> <ul style="list-style-type: none"> <li>• The Energy Information (Lamps) Regulations 1999 A-G labelling (EU Directive 98 and 11 and EC) applies to household lamps (filament and integral CFLs) and to household fluorescent lamps (incl. linear, and non-integral CFLs) covering approx 93% of the market</li> <li>• Energy Efficiency Commitments (EEC) have so far been a key driver of the CFL market with energy suppliers giving out CFL bulbs to social housing projects. The second phase of the energy efficiency commitment from 2005 may be more problematic because the 'quick win' methods of pushing CFL bulbs have been realised and further significant savings would require high volume and high cost.</li> <li>• The other significant policy driver is the Part L of 2002 building regulations (new build) requires on average 3 internal fixed fittings (efficiency &gt;40lm and W) plus one external fixed fitting (efficiency &gt;40lm and W, alternatively lighting controls) in new built dwellings. These are likely to remain a big driver for the product in the future as standards are improved.</li> </ul>

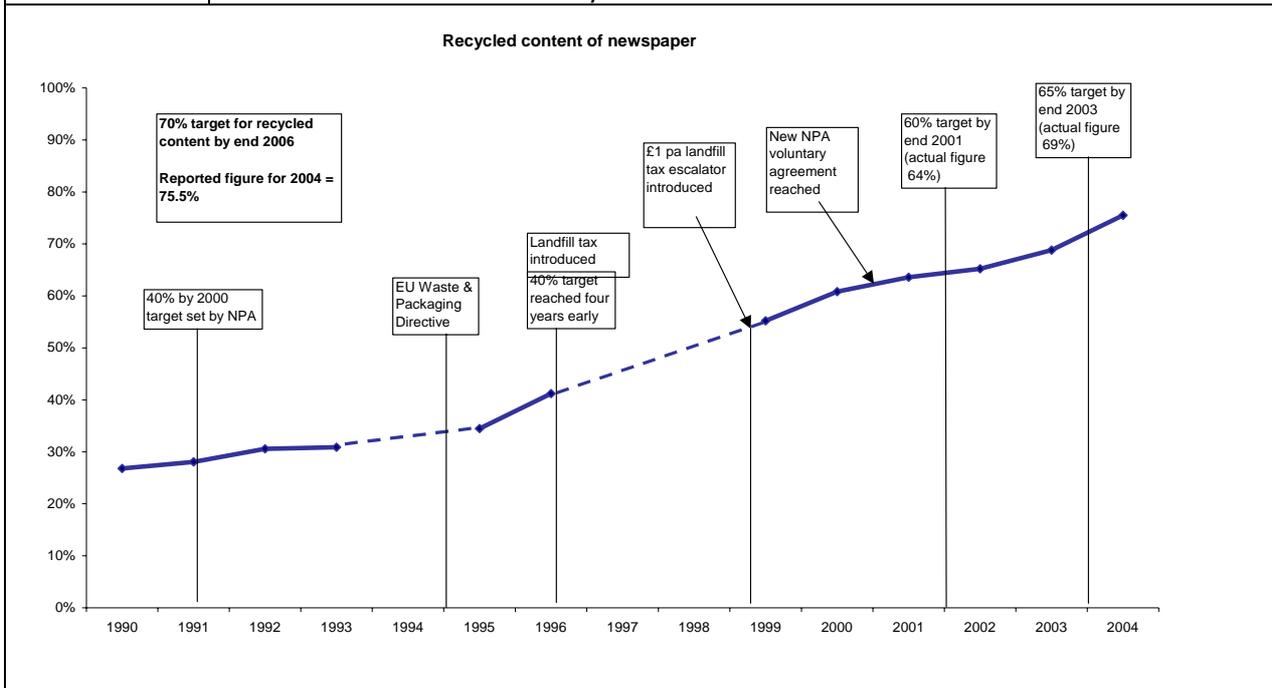
b. NEWSPAPER RECYCLED CONTENT - [Return to Index](#)

Recycled content rose from 27% to 75.5% in 15 years to 2004, due to technology product parity and supported by industry voluntary agreements and landfill tax

<b>Key Drivers</b>	<ul style="list-style-type: none"> <li>• Legislation including landfill tax escalator</li> <li>• Government negotiated voluntary industry agreements</li> <li>• Similar price and quality of product</li> </ul> <p><b>BUT</b></p> <ul style="list-style-type: none"> <li>- Voluntary targets not ambitious</li> <li>- Low consumer recognition</li> </ul>
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**Background** The proportion of recycled content in newspaper increased from under 30% in 1990 to a reported figure of over 75% in 2004.

The graph below shows the proportion of recycled paper used in newsprint plotted against the timings of various industry agreements with the UK Government to increase the proportion of recycled content. The data shows a consistent 'overshooting' of the targets, suggesting relatively un-ambitious target setting by both Government and industry.<sup>19</sup>



**Consumer** Although publicised in newspapers, there is fairly low consumer recognition of the high recycled content in newspapers.

**Business** The Newspaper Publishers Association have producer voluntary agreements in place with DEFRA and DTI that set targets and specifies the amount of recycled content. Details of industry agreements are outlined in the above graph. The graph also illustrates that although were undoubtedly a driver of higher recycled content, the targets set were fairly low and easily surpassed.

Other industries have followed the newspaper industry model, the direct marketing industry has a 30% recycled content target by end 2005. A new magazine agreement is currently being negotiated with the industry but due to quality issues

	of magazine paper, this will focus on encouraging consumer recycling rather than proportion of recycled content. <sup>20</sup>
Government	European level directives and initiatives on waste and packaging have encouraged much of the legislation and action in the UK on recycling and packaging. For example, paper waste is impacted by the landfill tax escalator which has also been a significant driver for paper mills to reduce waste by increasing recycled content.

c. RECYCLED PAPER - [Return to Index](#)

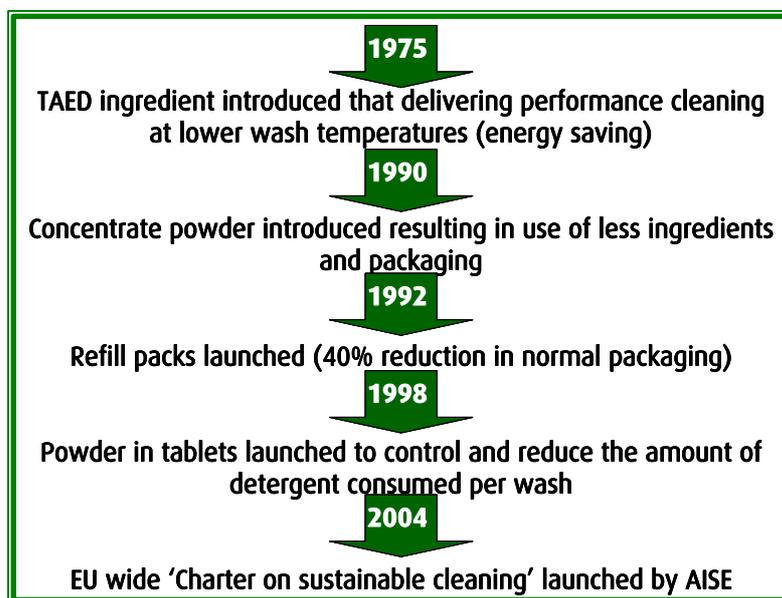
<p>Recovered paper as a proportion of UK consumption increased 20% to nearly 60% in 10 years to 2004, but consumer demand for recycled products remains low due to higher price, poor availability, confused messages and perceived lower quality.</p>																																																	
<p><b>Key Drivers</b></p>	<ul style="list-style-type: none"> <li>• Business action through CSR activity</li> <li>• Consumer product near equivalent quality</li> <li>• Emotive issue of forest protection</li> </ul> <p><b>BUT</b></p> <ul style="list-style-type: none"> <li>- Higher price and perception of lower quality by consumers</li> <li>- Retailers failure to stock or promote products</li> <li>- Confused messages (Sustainable forestry versus landfill)</li> </ul>																																																
<p>Background<sup>21</sup></p>	<p>The UK produces around 50% of its paper domestically, in which it uses approximately two thirds recovered paper. Paper use is split predominately between four areas tissue, newsprint, packaging and printing (printing currently has the lowest proportion of recycled content) The maximum level of recycled paper that can be used is expected to be around 80%, before quality issues such as fibre length become problematic.</p> <p>In 2004 around 50% of UK paper and board was recycled but because of falling paper making infrastructure, as the tonnages of collected recycled paper increases, the excess is now exported abroad, predominately to the far east.</p> <p>The graph below illustrates how the amount of recovered paper tonnage, UK paper consumption plotted against changes in landfill tax.<sup>22</sup> The graph shows a fairly shallow growth, although there is some indication of an up-turn in recovered paper in the last few years perhaps due to the increase of kerbside recycling collection.</p>																																																
<p>The graph displays three data series from 1994 to 2004. The left Y-axis represents 'Tonnes (Millions)' from 0.0 to 14.0. The right Y-axis represents percentage from 0% to 60%. The X-axis shows years from 1994 to 2004. Three vertical lines mark key events: 'Landfill tax introduced' at 1996, 'Yearly £1 landfill tax escalator announced' at 1999, and '£3 landfill tax escalator announced starting 2006' at 2006. The red line (UK paper consumption) rises from ~11.5 to ~13.0. The green line (Recovered paper) rises from ~4.2 to ~7.2. The orange dashed line (Recovered paper as % of UK consumption) rises from ~35% to ~55%.</p> <table border="1"> <caption>Approximate data from the graph</caption> <thead> <tr> <th>Year</th> <th>UK paper consumption (mt)</th> <th>Recovered paper (mt)</th> <th>Recovered paper as % of UK consumption</th> </tr> </thead> <tbody> <tr><td>1994</td><td>11.5</td><td>4.2</td><td>35%</td></tr> <tr><td>1995</td><td>11.5</td><td>4.5</td><td>38%</td></tr> <tr><td>1996</td><td>11.5</td><td>4.8</td><td>40%</td></tr> <tr><td>1997</td><td>12.5</td><td>5.0</td><td>40%</td></tr> <tr><td>1998</td><td>12.8</td><td>5.2</td><td>40%</td></tr> <tr><td>1999</td><td>13.0</td><td>5.5</td><td>42%</td></tr> <tr><td>2000</td><td>13.0</td><td>5.8</td><td>45%</td></tr> <tr><td>2001</td><td>12.8</td><td>6.0</td><td>47%</td></tr> <tr><td>2002</td><td>12.5</td><td>6.5</td><td>52%</td></tr> <tr><td>2003</td><td>12.5</td><td>7.0</td><td>56%</td></tr> <tr><td>2004</td><td>12.8</td><td>7.2</td><td>56%</td></tr> </tbody> </table>		Year	UK paper consumption (mt)	Recovered paper (mt)	Recovered paper as % of UK consumption	1994	11.5	4.2	35%	1995	11.5	4.5	38%	1996	11.5	4.8	40%	1997	12.5	5.0	40%	1998	12.8	5.2	40%	1999	13.0	5.5	42%	2000	13.0	5.8	45%	2001	12.8	6.0	47%	2002	12.5	6.5	52%	2003	12.5	7.0	56%	2004	12.8	7.2	56%
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<p>Consumer</p>	<p>There is very high consumer recognition of recycled paper products and a correspondingly high concern about forests, but a number of issues have got in the</p>																																																

	<p>way of it becoming a fully mainstream product, including:</p> <ul style="list-style-type: none"> <li>• Traditionally recycled paper has been more expensive and of lower quality. Although with new technologies and techniques this discrepancy has been significantly reduced, this perception remains.</li> <li>• Emotional messages such as 'recycling saves trees' are not really correct, the issue being more about resource use and landfill.</li> <li>• Consumer confusion over high profile stories about bleaching, detergents and energy use as well as competition from products coming from 'managed forests'. In fact the energy use and other impacts from production are equivalent to those for paper making from virgin pulp.<sup>23</sup></li> </ul>
Business	<p>The majority of paper and packaging used by large businesses is already recycled. The loop is beginning to close in business as the market for recycled office paper is buoyant due mainly to CSR policies to source recycled paper, which have proved to be a quick, low cost 'win'.</p>
Retailers	<p>Consumer confusion over quality, competing products and high prices have suppressed demand for the product. This lack of demand and some anecdotal evidence that visible recycled marks can actually reduce demand, mean retailers have few recycled paper offerings and are not keen to promote them.</p>
Government	<p>Household recycling is the responsibility of Local Authorities and European level directives and initiatives have encouraged much of the legislation and action of recycling and packaging. There is a Government target to increase recycling to 25% by 2005 and 6 and a commitment to two items of household waste kerbside collection by 2010. There are no separate paper recycling targets but the recovery rate for paper nationally (including business and households) is around 50%.</p> <p>Other than producer agreements on recycled content there is currently no direct legislation helping to encourage 'closing the loop' for domestic recycled paper usage.</p>

d. WASHING POWDER TABLETS - [Return to Index](#)

Tablet detergents (powder and liquid) have approximately 40% market share in 2005. The tablet innovation response to competition and the consumer trend for convenience, greater sustainability has been a less visible by-product

<p><b>Key Drivers</b></p>	<ul style="list-style-type: none"> <li>• Product parity of cost and quality</li> <li>• Consumer trend for convenience</li> <li>• Retailers and Industry high promotional spend on products</li> <li>• EU level voluntary industry agreements</li> </ul> <p>BUT - Low consumer awareness (not marketed as 'greener' product)</p>
<p><b>Background</b></p>	<p>Tablet powders have been calculated to reduce packaging by 26% and reduce both detergent consumption and use of low degradable materials. Unilever estimated an eventual saving of 250,000 tonnes of detergent across Europe following their introduction.<sup>24</sup> Tablets and liquid tablets now account for around 40% of the UK market.<sup>25</sup></p> <p>There have been a number of incremental but significant environmental improvements in laundry detergents in the last several decades which our outlined in the flow chart below.<sup>26</sup> Innovations in the 1990's included compact powder detergents, which grew to around 40% of the powder market in 1998. It has been calculated that this switch to compact powders has saved over 200,000 tonnes of ingredients and over 20,000 tonnes of packaging.<sup>27</sup></p>



<p><b>Consumer</b></p>	<p>51% of household cleaning expenditure in the EU is on fabric cleaners.<sup>28</sup> The mainstream tipping point was the synergy between product benefits and evolving consumer trend for performance and convenience. However, illustrative of the lack of green consciousness in the mainstream consumer (or lack of belief in the green consumer by business), the tablets were marketed as a convenience product rather than an environmental one. The emphasis was on the similarity of performance and quality rather than saving of energy or resources.</p>
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Manufacturer	<p>The cleaning products industry is highly competitive and therefore encourages constant product innovation. The industry is broken down into domestic and institutional parts, each having a small number of very large players and a long tail of smaller companies, particularly in the domestic side.</p> <p>The industry is self-regulated to some degree and takes most action on sustainability through its European industry body, AISE, which has 900 member companies. DEFRA and the Environment Agency have used AISE as an example of industry good practice on sustainability.<sup>29</sup></p>
Retailers	<p>Retailers were obviously key to the mainstreaming of these products. New cleaning products from key brand companies quickly become mainstream through large scale advertising and marketing campaigns. As market leading brands these new products are also stocked immediately in large retailers and quickly followed up with supermarket own brand versions.</p>
Government action	<p>Cleaning products are impacted by the legislation in the Urban Wastewater Treatment Directive (91 and 27 and EEC) but the largest impact is on the water industry rather than manufacturers. REACH legislation on a EU level is looking directly at chemicals and their impacts.</p> <p>There have been a number of EU level detergent regulations but strong and progressive industry body has meant most detergent manufacturers have proactively tackled sustainability issues like over-dosing and high temperature washes. For example October 2005 sees the latest round of regulations with new stringent bio-degradable criteria for surfactants but there has been a voluntary ban on these products since 1975 in the UK.</p>

### 3) PRODUCT COMPONENTS

#### KEY CONCLUSIONS

This section looked at four case studies for improving the sustainability of product components:

- a. Lightweight Packaging
  - b. Ozone Depleting Chemicals
  - c. Forestry Stewardship Council (FSC) certified wood products
  - d. VOC labelling
- Despite the issues of forestry, waste and ozone layer ostensibly being issues of high consumer concern, in reality sustainability improvements to product components have been largely invisible to consumers and have not impacted their ability to purchase products.
  - The case studies have had varying success depending on the extent to which sustainability aims and business imperatives were mutually reinforcing as in the case of packaging. There are no existing market based incentives that significantly change or remove problematic product components unless they coincidentally correspond with cost saving imperatives. However, regulation such as international agreements on CFC production has been very effective at driving innovation and investment in effective substitute technologies.
  - In the case of FSC and VOC labelling, the case for greater sustainability of supply chains and cost savings were not as persuasive, the key driver being CSR as a business objective to reduce environmental impact and deflect any future 'environmental' criticism or indeed legislation on the issue. Although FSC and low VOC are not currently mainstream with consumers, retailers have successfully raised the profile of both issues with manufacturers and suppliers.

a. LIGHT WEIGHT PACKAGING - [Return to Index](#)

There is no consolidated data available for packaging. EU regulation on waste and cost savings have driven a significant weight reduction in many areas though there is little consumer recognition of improvements.

**Key Drivers**

- Lighter packaging cost effective for businesses
- EU legislation on packaging and waste targets
- Visibility of household waste to consumers

**BUT**

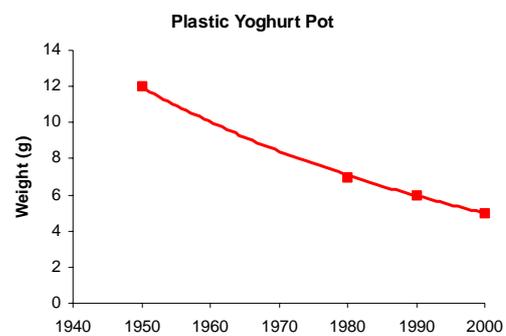
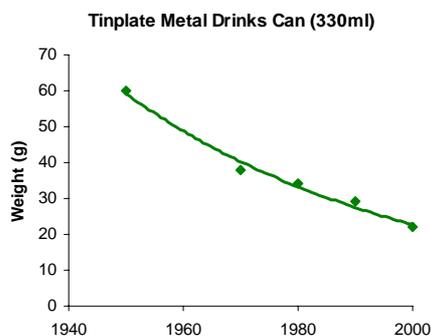
- Less packaging works against consumer trend for convenience
- EU packing regulation too complex, lacks strength and clear targets
- Health and safety regulation can be contradictory to waste reduction

**Background<sup>30</sup>**

Packaging was the first priority waste stream to be legislated at EU level but the key factor driving the level of packaging is lifestyles, including the increasing number of consumer goods and consumer demand for a quick convenient product.

Health and safety is another factor, particularly in food, where the penalties for over-packaging are far below those that could be caused by insufficient packaging or recycled and other material contaminating food products.

The graphs below illustrates that even prior to legislation, business needs have naturally been compatible with reductions in resource usage in packaging, although there is little consumer recognition of this. These weight reductions provide both cost savings as well as lowering carbon from transport and landfill savings.<sup>31</sup>



**Consumer**

There is general consumer dislike of waste and excess packaging due to the fact that household waste is problem visible and dealt with daily. Figures on waste collection illustrate clearly that the total amount of food and product packaging has increased rather than reduced over the last few decades. Consumers do recognise, on prompting, the benefits of packaging for convenience and hygiene, though there is little consumer awareness of the significant reduction in packaging weight that has occurred over the last few decades as illustrated in the graphs above.<sup>32</sup>

Despite professed concerns, research has shown that packaging is not a major issue for consumers and that they often do not notice packaging, implying it

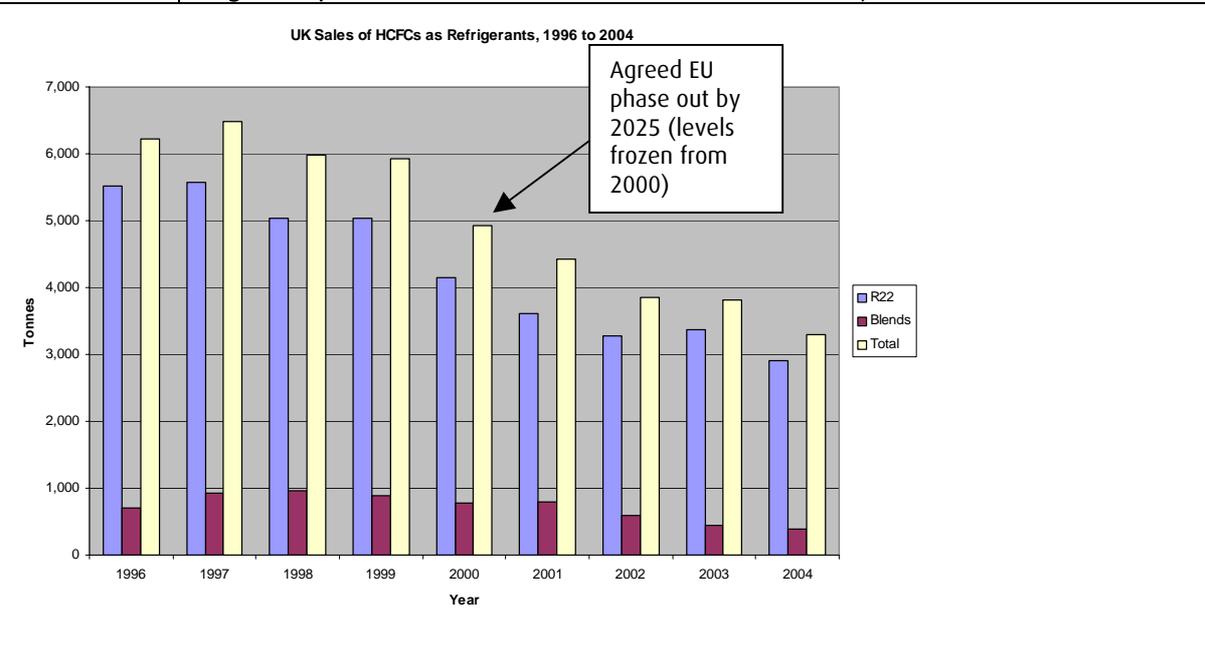
	would be difficult to engage consumers on this issue. There is some suggestion that while packaging remains in consumers' periphery and lifestyle shifts continue in the opposite direction little more can be done. Although politically, the household dustbin is a big topic.
Manufacturer	<p>Ease of transportation, spoilage prevention, shelf life extension and food safety and hygiene standards mean that often more packaging (rather than less) is easier and cheaper for manufacturers.</p> <p>Packaging also provides the space on which to put important labelling information and promotions, which can help to encourage people to eat more healthily. Manufacturers (particularly food) are often responsible for driving innovation in packaging, including reductions of resource use and piloting new technologies.</p>
Retailers	Retailers stock those goods that sell best, and in general packaged goods sell well and at a higher price. A major UK retailer revealed that 45% of vegetables were now sold as pre-packaged. <sup>33</sup>
Government <sup>34</sup>	<p>The EU Packaging Directive has been transposed into UK law through two very complex pieces of legislation. The DTI leads on the EU level negotiation and DEFRA on implementation. The regulations are enforced by Trading Standards.</p> <ol style="list-style-type: none"> <li>1. Producer Responsibility Obligations (Packaging Waste) Regulations 1997 on which are lead by the Department for the Environment Food and Rural Affairs (DEFRA). Producers pay money yearly based on the amount of packaging used. It is not a very significant cost.</li> <li>2. Packaging (Essential Requirements) Regulations 2003 (as amended), on which DTI lead. The UK, France and the Czech Republic are the only three Member States to actively enforce the Essential Packaging Requirements in domestic law. All packaging must meet these requirements and aims be integrated at the design stage: <i>"Packaging volume and weight must be the minimum amount to maintain necessary levels of safety, hygiene and acceptance for the packed product and for the consumer."</i> There is also, <i>"Packaging must be recoverable in accordance with specific requirements"</i></li> </ol> <p>The new Sustainable Development Strategy singles out retailers as being better sites for closing the loop by offering recycling and take back facilities for customers.<sup>35</sup></p>
NGO	Both INCPEN and WRAP have produced best practice guides and research on the issue of waste and packaging. There was previously a packaging watchdog that queried cases of over-packaging. This was disbanded although there are suggestions that this should be reinstated to raise consumer awareness of the issue.
EU legislation	The EU Commission issued a report in February 2005 looking at the experience of the Packaging Directives from 1994 - 2004 and setting out proposals for future revision. <sup>36</sup> Most recently the new legislation on packaging in the UK and EU has been industry focused, concentrating on waste streams in specific industries such as vehicles and electronic equipment.

b. OZONE DEPLETING CHEMICALS - [Return to Index](#)

CFCs phased out in EU by 1995, 5 years after Montreal Protocol. Strong international legislation, clear timetable and high consumer concern encouraged swifter action than originally scheduled.

<b>Key Drivers</b>	<ul style="list-style-type: none"> <li>• Strong legislation, international agreements with clear timetables</li> <li>• Availability of alternative technologies</li> <li>• High consumer recognition and concern</li> </ul> <p><b>But</b></p> <ul style="list-style-type: none"> <li>- Global warming potential of HCFCs, interim technology</li> <li>- Consumer confusion between ozone depletion and global warming</li> </ul>
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<b>Background</b> <small>37</small>	<p>Chlorofluorocarbons (CFCs) can remain in the atmosphere to up to 100 years. Although inert at low levels, higher in the atmosphere they can react with and breakdown the protective Ozone (O<sub>3</sub>) layer preventing a large majority of damaging ultra violet (UV) rays from the sun getting to the lower atmosphere.</p> <p>These ozone-depleting substances included chlorine and bromine compounds, such as CFCs, halons, and other chemicals commonly used in refrigerators, air conditioners, fire extinguishers, aerosol cans, cushions, packaging materials, insulation and cleaning solvents.</p> <p>The graph below shows the UK sales of Hydrochlorofluorocarbons (HCFCs) an interim substitute which still causes some damage to ozone layer (2025 EU target for phase out – Montreal timetable stated 2030)<sup>38</sup></p>
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<b>Consumer</b>	<p>There is high consumer awareness of the ozone hole and the impact of CFCs, particularly when the issue was at its height in the 1980s. Awareness has remained high, through well-advertised dangers of sun exposure and skin cancer through damaging levels of UV. However there is often confusion between the ozone hole and climate change.</p> <p>With international agreements in place, the perception is growing that the issue has effectively been managed. Consumers have also felt little impact</p>
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	from the legislation on the products they buy adding to the perception that CFCs are primarily an issue for business and industry.
Manufacturer	International legislation, agreements and a strict timetable have pushed businesses to develop new technology and substitutes for CFCs, HCFCs and other ozone depleting substances. The biggest sectors effected are chemicals, refrigeration (including air conditioning), solvents, some horticulture and fire protection.
Retailers	Retailers remain relatively unaffected by the legislation with replacement substances having little impact on prices or on consumer perception.
Government <sup>39</sup>	<p>Montreal Protocol 1987 outlined the phase out of ozone depleting substances with different timetables for developed and developing countries. The last scheduled phase out is of HCFC, the transitional replacement for the more damaging CFC. Other substances with greater ozone damage potential have been phased out over 10 years to 2005 in developing countries. Amendments have been tabled bringing in strict measures to encourage technology exchange with developing countries.</p> <p>The Montreal Protocol was implemented in UK via EU and C legislation and is directly applicable to UK law. The legislation is controlled by Department of Trade and Industry (DTI). The EU introduced a new round of ozone protection legislation in 2000 and brought some of the timetabled phase-outs ahead by a number of years.<sup>40</sup></p>

C. FOREST STEWARDSHIP COUNCIL (FSC) CERTIFIED WOOD - [Return to Index](#)

Low market share but high growth to approx £1bn sales in UK. Successful retailer and producer initiative but little consumer recognition and remains niche.

**Key Drivers**

- Retailer CSR policy to initiate labelling working with suppliers
- Product available in mainstream retail outlets

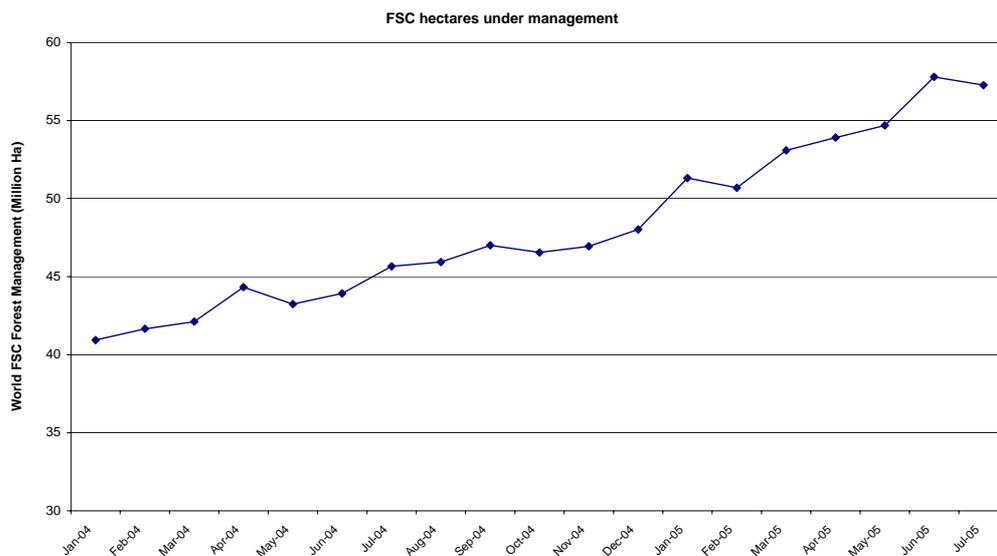
BUT

- Some price differential (especially hardwoods)
- Confusing messages (sustainability of forestry, competing claims)
- No real legislative backing
- Low consumer demand or recognition

**Background**

The Forestry Stewardship Council (FSC) launched in 1993 with forest certification and labelling scheme. Now 12 years old, the total global market has reached \$5bn of which the UK constitutes approximately a third of the demand. Data from 2002 put sales of FSC logo timber at around £636m, growing to £869m in 2003 reaching over £1bn in 2004.<sup>41</sup>

The graph below shows steady growth in FSC hectares under management worldwide in the last 18 months.<sup>42</sup>



**Consumer**

There is high consumer concern and media coverage about illegal logging, rainforest and tree protection, but there is correspondingly little recognition or active purchase of FSC wood by mainstream consumers in the UK. The recognition of the FSC label and products is low at 5% of the population.<sup>43</sup>

The poor level of recognition of FSC label products comes despite rainforests being an emotional issues for consumers and large retailers stocking the products. There have been increasing number of mentions of FSC in the media predominately in relation to hardwoods, where the price differential between FSC and non-FSC is largest.

In contrast, due to different funding arrangements in the Netherlands several years

	<p>of high profile promotion has led to 63% recognition of the logo and 26% of the population claiming to active seek FSC products. 2005 is the first year that the Netherlands has widened the issue to include protecting Northern Hemisphere forests, such as in the former USSR, and the protection of indigenous forest tribes.</p> <p>In the UK the contrasting low level of consumer recognition is beginning to be seen as a barrier to further progress on encouraging more retailers to stock FSC products, as a result there expected to be an FSC consumer campaign in Spring 2006.<sup>44</sup></p>
Producers	<p>Lack of major funding has meant FSC have focused on primarily supporting and providing information to timber producers. There has been some initial resentment and a misperception by producers that FSC are trying to stop logging altogether, so producers generally approach FSC reluctantly when they have been asked by retail buyers to become certified.</p> <p>However, as the graph illustrates there are in increasing number of acres with FSC certification and a number of large producer certifications have made a big impact on sales figures. A major soft wood exporter, SCA Timber, in Sweden have been FSC certified since 1999.<sup>45</sup></p>
Retailers	<p>One of the biggest drivers of the growth of FSC has been support from the big UK retailers. In particular, the home improvement retailer BandQ, who helped set up FSC as a business-led movement following Earth Summit in 1992. In 1995 BandQ set at 1999 target for all timber to be FSC certified. Some other major DIY retailers have followed suit.<sup>46</sup></p> <p>NGO pressure has also been very valuable, particularly on the paper and publishing industries in the UK to switch to more sustainable sources for their paper. Greenpeace was instrumental in Bloomsbury printing the sixth Harry Potter book from FSC managed wood. Similarly the BBC books committed in Sept 2004 to source their paper from independently certified sustainable sources. There is some perception of heading for a tipping point in press and printing which is especially valuable given that the proportion of recycled content remains low.</p>
Government	<p>There has been limited action by Government on promoting or supporting FSC although there is awareness and some limited guidance on procurement of FSC by Government Departments that is acting as a driver of demand.</p> <p>On a European level, EU FLEGT (EU Action Plan for Forest Law Enforcement, Governance and Trade)<sup>47</sup> is expected to move towards legislation requiring independent verification of timber source on an EU level, but nothing has been officially agreed. There is also potential for FSC wood to be integrated into the ISO (International Organisation for Standardization) accreditation process that sets the standards for wood products.</p>

D. VOLATILE ORGANIC COMPOUNDS (VOC) LABELLING - [Return to Index](#)

<p><b>In five years to 2003 there has been an estimated 21% reduction in VOC content of paint. Paint VOC issue mainstreamed in industry through retailer leadership followed by voluntary industry agreement</b></p>	
<p><b>Key Drivers</b></p>	<ul style="list-style-type: none"> <li>• <b>Retailers leadership through CSR and working with supply chain</b></li> <li>• <b>Voluntary industry agreement encouraged innovation</b></li> <li>• <b>Product information used to set standards and targets</b></li> </ul> <p>BUT - Low consumer recognition or demand</p>
<p><b>Background<sup>48</sup></b></p>	<p>DIY chain B&amp;Q launched a VOC labelling scheme for paints in 1998 developed in close consultation with suppliers. The paint industry in the UK has since recognised the system and agreed to use standard terminology, text and categories for all products. Manufacturers now choose to use one of two formats, either the globe label initiated by B&amp;Q (the manufacturer signs a licence agreement with the company) or a simple text box.</p> <p>The labelling carries an environmental warning phrase about the impact of VOCs and indicates the solvent level through 5 bands (low to very high) Water-based paints do not emit VOCs to the same level that oil-based paints do and are therefore less damaging to human health and the environment. Average EU market share of waterborne paints is 70% though water based paints still have around 5% VOC content</p>
<p><b>Consumers</b></p>	<p>VOC labelling schemes were designed to, amongst other things, enable the consumer to recognise how much solvent is in the paint they are buying. The aim being to encourage the consumer and trades to make a purchasing decision based upon a lower solvent level. However there is so far little consumer recognition of the VOC issue in paints although it is steadily increasing. Issues such as 'sick building syndrome' and urban smog are becoming more media friendly topics; this is as well as increasing recognition of the VOC labels.</p>
<p><b>Manufacturers</b></p>	<p>VOC-free paints are available but not widespread and the prices for these paints may be slightly higher despite the low consumer concern. However the labelling has encouraged manufacturers to start developing better water-based technology for paints. BandQ estimated that in 2003 there had been on average a fall of 21% per litre of paint VOC content since labelling began.<sup>49</sup></p>
<p><b>Retailers</b></p>	<p>The role of retailers has been key in this shift as the labelling itself was initiated by a UK retailer from a corporate objective to reduce VOC by 30%, rather than consumer demand. The retailers key dual roles have been to raise consumer awareness the most successful element has been working through the supply chain with manufacturers to achieve a solution.</p>
<p><b>Government</b></p>	<p>There are some areas where Government procurement, particularly of buildings could help to stimulate the market further for low or VOC free paints. Four EU states have legal measures to reduce VOC from the domestic sector.</p> <p>The most effective means to tackle the issue has through voluntary industry</p>

	agreement negotiated at the European level. This includes the 5 band VOC labelling of paints with an agreement to continuously reduce proportion of VOCs and introduce alternatives overtime. CEPE, the European Paint Manufacturers Association, has suggested self-regulation and a 40% reduction in VOC usage.
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### 3) LARGE CONSUMER DURABLES

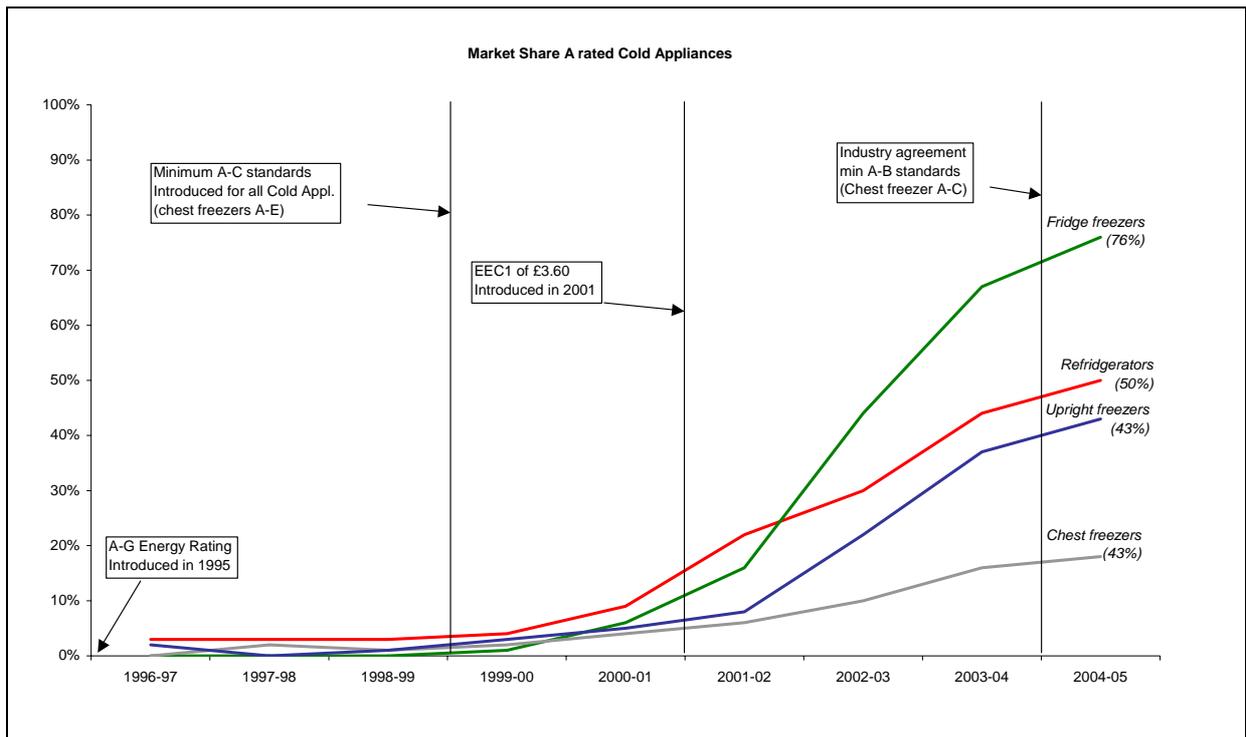
#### KEY CONCLUSIONS FROM SECTION

This section analysed market shifts through case studies of domestic white goods :

- a. A-rated Cold Appliances
  - b. A-rated Washing Machines
  - c. A-rated Dishwashers
- Government at an EU and UK level has been active in promoting market transformation towards energy efficient white goods, and the most successful shifts have been achieved through a combination of labelling and standard-setting, via regulation or voluntary industry agreement, and initiatives to reduce the price of the highest rated products.
  - The first round of the Energy Efficiency Commitment on energy suppliers from 2001 was instrumental in moving A-rated appliances towards price parity with less efficient models, allowing consumers to overcome the barrier of upfront price. It is important that sustainable choices are not significantly more costly than mainstream products, but consumers will accept a certain amount of price differential on infrequent larger purchases.
  - Thanks to a clear governmental commitment to setting standards for white goods, as in the case of cold appliances, strong voluntary industry agreements from appliance manufacturers averting the need for EU regulation in the case of washing machines and dishwashers. Although the swift increase in market share of A-rated models has been undeniably positive, the fast reaction also suggests that the rating structure and targets could have been more ambitious.
  - New A+ and A++ fridge-freezer models have now been legislated for, for instance, and are 23 per cent and 46 per cent more efficient respectively than A-rated products. Despite the opportunity under EEC for energy suppliers to promote A+ and A++ models, and product labelling within the Energy Saving Trust's Energy Saving Recommended Scheme, UK sales of A+ and A++ products accounted for only 3 per cent of sales during the six months to December 2005, compared to 18 per cent of sales in Belgium and the Netherlands. There is a challenge now to reinvigorate the pace of improvement in the UK market.
  - This is particularly important for fridge-freezers given that demand for second fridges has cancelled out much of the efficiency gain to date, so that while average unit energy consumption went down 16.2 per cent from 1996-2005, total energy consumption only reduced by 2.2 per cent.

a. A-RATED COLD APPLIANCES - [Return to Index](#)

<p><b>Market share of A-rated fridge freezers rose from 1% to 76% in 5 years to 2005. A-rated models were mainstreamed after EU legislation mandated labelling, and removed models below D-rating, and cost parity delivered through Energy Efficiency Commitment (EEC). Virtuous cycle ensued, with certain retailers opting to stock only A &amp; B-rated models and a manufacturer agreement to remove C-rated models.</b></p>	
<p><b>Key Drivers</b></p>	<ul style="list-style-type: none"> <li>• Strong international legislation (EU labelling and standard-setting Directives)</li> <li>• EEC price support reduced price differential</li> <li>• Retailer stocking policy</li> <li>• Availability from well-known brands</li> </ul> <p>BUT</p> <ul style="list-style-type: none"> <li>- Higher price for most efficient products</li> <li>- technological constraints on energy efficiency of chest freezers</li> </ul>
<p>Background <sup>50</sup></p>	<p>Data varies but approx 64% households had fridges in 2003 with 48% having a fridge-freezer. Cold domestic appliances on average use 18% domestic electricity. The proportion of households owning upright freezers was approx 25% and with chest freezers lower at 15%.</p> <p>The graph below shows the dramatic rise in the market share of A-rated cold appliances in the last 5 years. The results suggest that the key factor was price reduction through EEC rather than simply labelling which was introduced in 1995. After five years of labelling, cold products had a market share of between 0-5% in 1999-2000.<sup>51</sup></p>



<p><b>Consumers</b></p>	<p>Labels and minimum standards encouraged a certain level of awareness and shift amongst consumers but the growth rate was low until 2000. Higher priced A-rated appliances were equated with quality but were prohibitively more expensive for many mainstream consumers, although the acceptable price differential is larger with high cost and durable items.</p> <p>The main impetus for mainstreaming the products seems to have come from EEC, which worked to reduce prices of A-rated products and improve availability in retailers.</p>
<p><b>Manufacturer</b></p>	<p>Manufacturers reacted to market demand and EU pressure by developing increasingly energy efficient products and by initiating industry agreements to remove the less efficient appliances.</p> <p>The CECED (European association of domestic appliance manufacturers) tabled a voluntary agreement package to continue to increase the efficiency of appliances.<sup>52</sup></p> <ul style="list-style-type: none"> <li>• Limit production and import of appliances with an efficiency index of 75 (equivalent to Energy Efficiency Label C) except for Chest Freezers (which is 90 and label D) by the end of 2004</li> <li>• A fleet average energy efficiency target by 2006</li> </ul> <p>There were also additional soft targets on use and information. Further industry agreements that continue to improve energy efficiency are expected in the future.</p>
<p><b>Retailers<sup>53</sup></b></p>	<p>Energy Efficiency Commitment (EEC) added an extra £3.60 on electricity bills from 2001 and worked by subsidising the purchase price of more efficient cold appliances through retailer, manufacturer and energy supplier agreements. The Government also introduced extra Government incentives to suppliers in the first phase of the EEC, in the shape of 60% extra carbon savings on each appliance. This in particular enabled retailers to cut the price of efficient products in major retailers through various partnerships (for example between British Gas and</p>

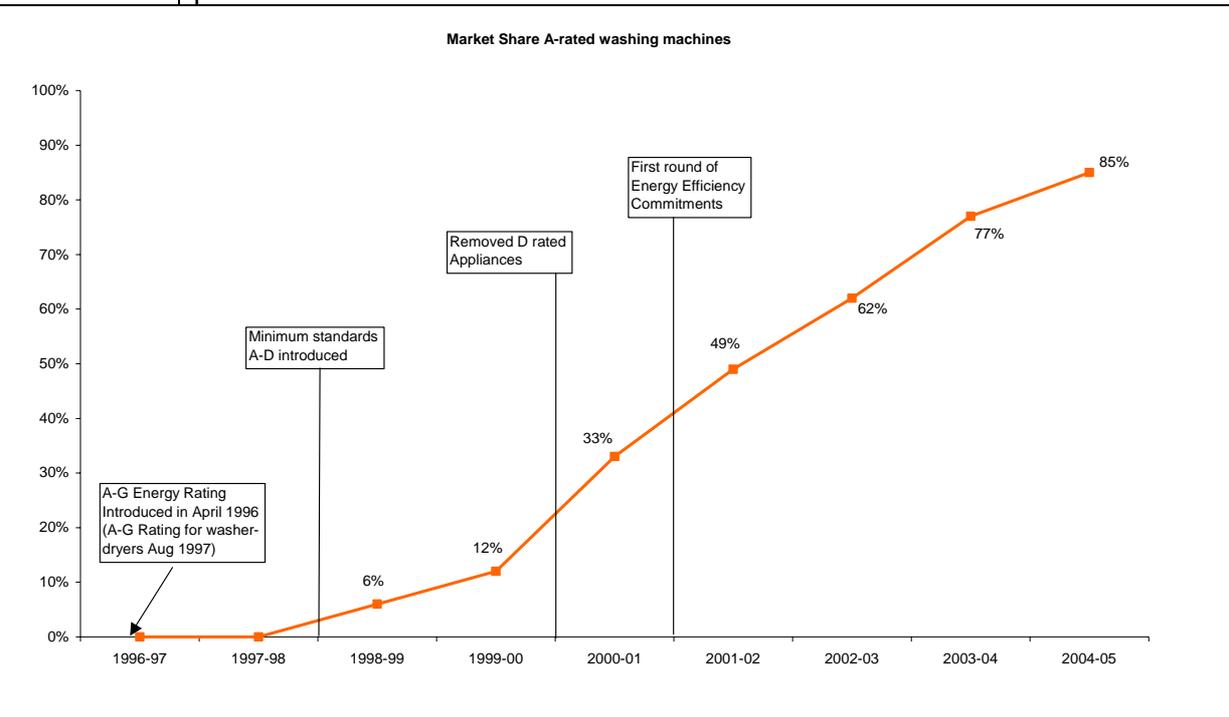
	<p>Comet with an appliance trade in <sup>54</sup>).</p> <p>The second phase of EEC initiated in 2005 and includes a charge of £8.64 and aims to encourage higher take up. However there is no extra carbon saving incentive.</p>
Government	<p>There have been a number of regulations on a European level to promote the energy efficient of white good appliances.</p> <ol style="list-style-type: none"> <li>1. Directives 92 and 75 in 1992 initiated the European Energy Label and was enacted in the UK from 1995. The legislation introduced the A to G energy efficiency classes for all major domestic cold appliances.</li> <li>2. Maximum Consumption Directive (EC Directive 96 and 57 and EC) initiated in 1999 stated that only cold appliances of energy classes A, B and C could be sold (as new) on the European market. The exception being chest freezers where D and E rated appliances are permitted due to technology constraints.</li> <li>3. The most recent EU Directive 2003 and 66 and EU divided the existing energy efficiency A rating category into 3 new categories (A, A+ and A++) effective from July 2004. This however did not remove any of the lower ratings.</li> </ol>

b. A-RATED WASHING MACHINES - [Return to Index](#)

Market share of A-rated models rose from 0% to 85% in 7 years to 2005. A-rated models were mainstreamed after EU legislation mandated labelling, a manufacturer agreement removed models below E-rating, and cost parity delivered through Energy Efficiency Commitment (EEC). Virtuous cycle ensued, with certain retailers opting to stock only A & B-rated models and a manufacturer agreement to remove D-rated models.

<b>Key Drivers</b>	<ul style="list-style-type: none"> <li>• Strong commitment to international legislation (EU rating directive, pressure on industry to reach agreement)</li> <li>• EEC price support reduced price differential</li> <li>• Retailer stocking policy</li> <li>• Availability from well-known brands</li> </ul> <p>BUT</p> <ul style="list-style-type: none"> <li>- Higher price for most efficient products</li> <li>- Messages on water usage and detergent impacts not included in energy ratings</li> </ul>
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<b>Background</b> <sup>55</sup>	<p>Wet goods (washing machines and dishwashers) use 14% of domestic electricity. Washing machines are now perceived as a necessity rather than a luxury and household ownership levels are estimated at between 80-95%</p> <p>The graph below plots the market share of washing machines and suggests that both industry agreements as well as price parity enabled through the EEC subsidies have both had an impact on the growing consumer demand for the A-rated product.<sup>56</sup></p>
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<b>Consumer</b>	The market share of A-rated washing machines has been consistently higher than in other large electrical appliances. Although the energy labelling by itself seems to have had very little effect when first introduced, the energy efficiency commitments and to some extent also the minimum standard regulations have driven continuing improvements in market share.
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<b>Manufacturer</b> <sup>57</sup>	Washing machine manufacturers responded quickly and early to the introduction of energy ratings. The voluntary removal of the lowest standard
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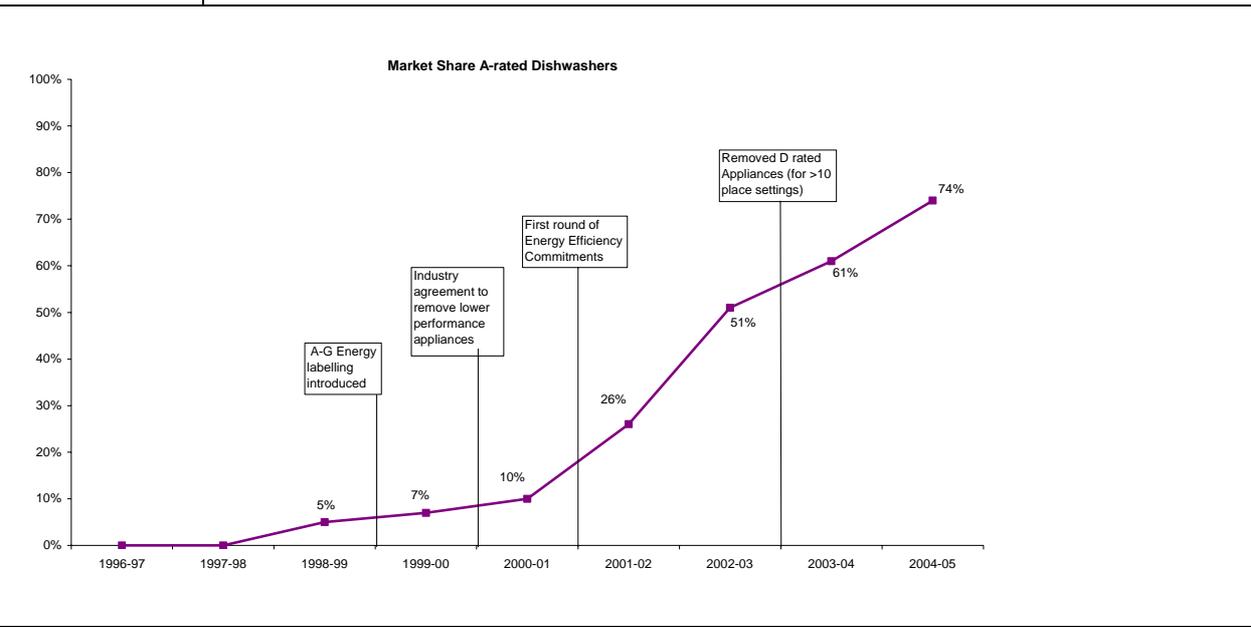
	<p>products seem to have started to have an impact on the take-up of a-rated goods even before the UK Government brought in EEC commitments.</p> <ul style="list-style-type: none"> <li>• The first CECED Industry Commitment removed energy efficiency classes E, F and G by December 1997. Energy efficiency class D was mostly removed by December 1999.</li> <li>• Second CECED Industry Commitment introduced commitments included 2008 targets for fleet production weighted average and commitments to actively promote machines with efficiency level of 0.17kg and kWh which are expect to support the eventual introduction of A+ revised labelling.</li> </ul>
Government	<p>European A-G Energy Label for washing machines was introduced in April 1996 and for washer dryers and wash and spin efficiency in August 1997. Recent attempts have been made to legislate for the introduction of an A+ rating but they have been opposed. Despite opposition some manufacturers have gone ahead with the revision to differentiate their product.</p> <p>As outlined in the earlier case study of cold appliances, washing machines also fall under the energy efficiency commitments.</p>

c. A-RATED DISHWASHERS - [Return to Index](#)

Market share of A-rated models rose from 0% to 74% in 7 years to 2005. A-rated models were mainstreamed after EU legislation mandated labelling, a manufacturer agreement removed models below E-rating, and cost parity delivered through Energy Efficiency Commitment (EEC). Virtuous cycle ensued, with certain retailers opting to stock only A & B-rated models and a manufacturer agreement to remove D-rated models.

<b>Key Drivers</b>	<ul style="list-style-type: none"> <li>• Strong commitment to international legislation (EU rating directive, pressure on industry to negotiate agreement)</li> <li>• EEC price support reduced price differential</li> <li>• Retailer stocking policy</li> <li>• Availability from well-known brands</li> </ul> <p>BUT</p> <ul style="list-style-type: none"> <li>- Higher price for most efficient products</li> <li>- More complex ratings for wash, energy and dry</li> </ul>
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<b>Background</b> <sup>58</sup>	The household penetration of dishwashers is estimated at around 25%, relatively low compared to the rest of Europe. The graph below shows the rapid mainstreaming of the a-rated appliances following industry agreements and EEC the started to reduce the price differential. <sup>59</sup>
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<b>Consumer</b>	Although they have now started to lose the 'luxury' tag, lack of space is the biggest reason household penetration remains low, as well as perception that dishwashers are noisy and energy and water intensive. As a result only relatively affluent households currently own dishwashers, and is perhaps also the reason that the market share of a-rated appliances has caught up quickly with the market leaders since 2000.
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<b>Manufacturer</b> <sup>60</sup>	Again manufacturers responded quickly to consumer demand for more efficient products. The latest CECED voluntary agreement removed ratings E, F and G for >10 place settings, and F and G for < 10 place settings, by 31st December 2000. It also included the removal of energy efficiency class D (for > 10 place settings) by 31st December 2003
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Retailers	The low household penetration in the UK mean retailers see dishwashers as a growth area for sales. It is therefore important that as market penetration inevitably rises, the energy efficiency is driven as high as possible before consumers become locked into paying the bills for low performance products. The Energy Efficiency Commitment should help to improve price parity of the best performing products.
Government	The newness of the technology and low market penetration of dishwashers (24%) might also account for the slow enactment of labelling and voluntary initiatives for dishwashers. The European A-G Energy Label for dishwashers was introduced in August 1999 almost five years behind those for cold appliances, rating appliances for energy, wash and drying performance.

## 5) HOME INFRASTRUCTURE PRODUCTS

### KEY CONCLUSIONS FROM SECTION

This section analysed the mainstreaming of large home infrastructure products which require significant outlay by consumers.

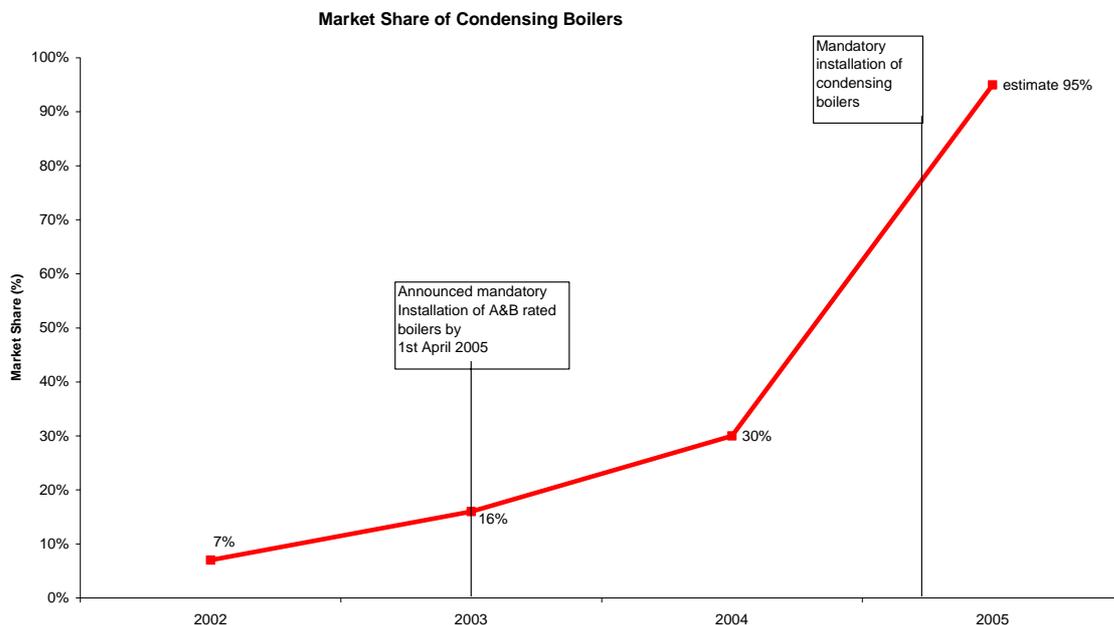
- a. Condensing Boilers
  - b. Double Glazing
- The general public are relatively passive consumers of these large infrastructure purchases, the decision lies with the installers, fitters and retailers. The training and education of these professionals is key to mainstreaming these products.
  - In the case of double glazing, the secondary benefits on house prices and in maintenance were as important as the primary objective of energy efficiency and warm homes.
  - Strong Government regulation was also instrumental in both cases, but in particular condensing boilers where secondary benefits were not as persuasive. The passivity of the general consumer in purchasing these products means that strong intervention is considerably more politically acceptable and in many cases expected in order to reassure consumers.

a. CONDENSING BOILERS - [Return to Index](#)

Moved from 7% of the market to nearly 100% in three years through strong regulation initiated after softer measures proved ineffective

<b>Key Drivers</b>	<ul style="list-style-type: none"> <li>• Strong regulation in UK and EU clear targets and timetables</li> <li>• Consumer cost saving</li> </ul> <p>BUT</p> <ul style="list-style-type: none"> <li>- Higher purchase price and perception of quality issues</li> <li>- Supply chain issues with education and training of installers</li> </ul>
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<b>Background</b> <sup>61</sup>	<p>1.3m new boilers are replaced every year with boilers lasting on average 10-14 years. The primary functions of heating and hot water account for a large proportion of domestic energy consumption. <sup>62</sup></p> <p>Relative to other household appliances, boilers are expensive and long lived (~15-20 years), although the difference in efficiency between best and worst is only a factor of 1.3, the considerable amount of energy used in heating makes this a considerable contribution to carbon reduction targets and explains why the Government took strong action to shift the market.</p> <p>The graph shows the very quick rise in the market share of condensing boilers from 2002 fuelled purely by regulation. The new regulations effectively banned any other boiler product from April 2005 and mean the figure should now be moving close to 100%. <sup>63</sup></p>
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<b>Consumer</b>	<p>There was some resistance to compulsory AandB rating from consumers, as perception was that condensing boilers were poor quality and considerably more expensive products. The cost differential is now lower and payback period shorter. However the biggest factor was not the consumers' reluctance (who in fact rarely directly purchase boilers) but the installers.</p> <p>The key issue for installers on condensing boilers was a lack of skills and</p>
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	education and some damaging myths about ease of fitting, usage and repair, despite the class of boiler being mainstream elsewhere in Europe.
Manufacturers	There was some technology leadership but until 2002 most manufacturers perceived standard non-condensing boilers as their core products. The new condensing boiler regulations therefore required dramatic business shift. A number of manufacturers have criticised Government as to the swiftness of this change as it was too fast to effectively integrate into their product development cycles and business planning timetables.
Government <sup>64</sup>	<p>There are a number of pieces of legislation specifically for boilers as well as legislation covering wider energy use of buildings:</p> <ul style="list-style-type: none"> <li>• The Boiler Efficiency Directive 92 and 42 and EEC was a form of Eco-labelling for boilers and introduced a minimum standard of 80% efficiency (between D and C ratings) as rated by SEDBUK, a UK Government sponsored database of the average annual efficiency. Buildings regulations Part L1 was introduced from 1<sup>st</sup> April 2005 allowing only SEDBUK A and B rated boilers (With a minimum of 86% efficiency) to be fitted with a few exceptions. Oil boilers are to comply with these ratings by 1<sup>st</sup> April 2007.<sup>65</sup></li> <li>• The Home Energy Conservation Act 1995 (HECA) required all UK Local Authorities with housing responsibilities to submit an energy conservation report identifying cost-effective measures to improve the energy efficiency of residential accommodation. 12% improvement has been measured up to March 2003. The Energy Performance of Buildings Directive (2002 and 91 and EC) will introduce ratings a minimum standards for new buildings or renovation. The boiler type and efficiency will be part of this overall rating. These home energy ratings will be based on the UK Governments Standard Assessment Procedure (SAP)</li> </ul>

b. HOME DOUBLE GLAZING - [Return to Index](#)

Ownership steadily increased from below 10% to above 70% over 30 years. Retailer promotion and benefits other than energy savings (such as property value increases) encouraged the shift

**Key Drivers**

- Consumer cost savings but secondary benefits predominate (warmth, maintenance, security and noise reduction)
- Visibility and impact on property values
- Retailers and installers promotion and availability
- Legislation through building regulations

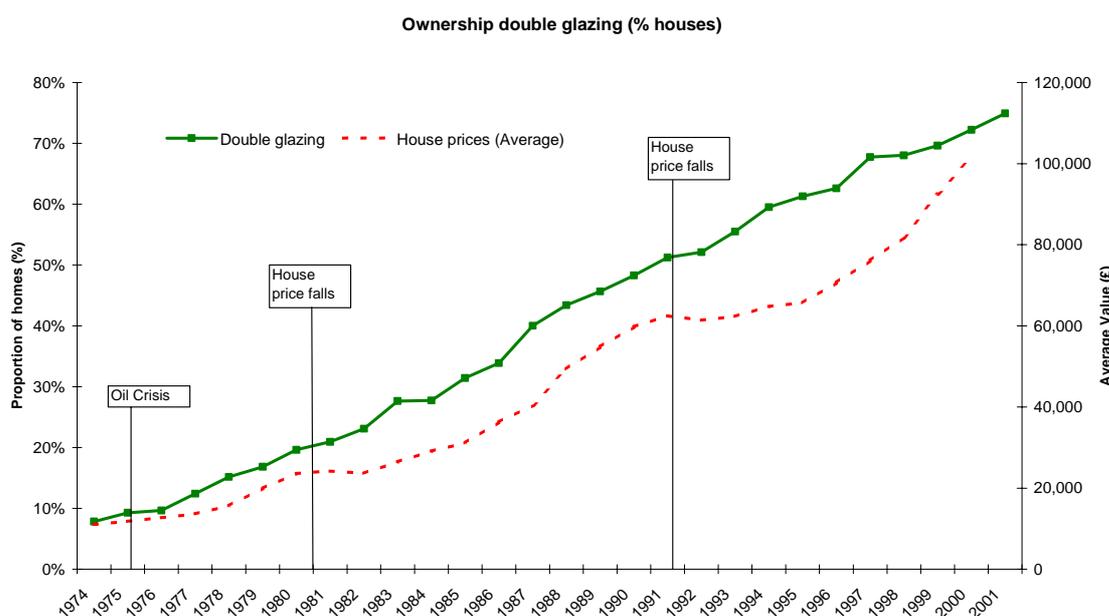
BUT

- Expensive relative to energy benefit and compared to other efficiency measures
- Heat retention in warmer summers

**Background information**

Double-glazing has become mainstream despite the fact the double-glazing is not generally cost effective for energy savings alone. Properly maintained double glazed windows should last for over 30 years.

The graph below shows the continuously rising proportion of houses that contain some level of double-glazing, as well as historic house prices. The figure masks some disparities in the proportion of windows double-glazed, for example in 2001 just over 52% of homes had at least 60% of windows double-glazed. <sup>66</sup>



**Consumer**

The uptake of double-glazing started to accelerate during the 1970s fuel crisis. This period also corresponded with notoriously poor building construction standards.

The reasons for mainstreaming of the product most often lie in the secondary benefits that include easier maintenance of the plastic framed windows, higher security of the stronger glass as well as the perceived improvement to property values. The positive impact on property values is enhanced by the high visibility of the feature (to both estate agents and house buyers)

	<p>compared to other energy saving features such as insulation.</p>
Manufacturers <sup>67</sup>	<p>Pilkington who provide 95% of the glass in the UK is the dominant firm in actual glass manufacturing. After this there are around ten large manufacturers of plastic systems followed by numerous small specialist companies and fitters. The fragmentation of the industry means it very difficult to organise industry agreements or to enforce regulations.</p> <p>There have and continue to be numerous innovations in glass technology such as self-cleaning glass, low-e coatings, argon fills and aero-gels etc... However many of these new technologies are prohibitively expensive for retail consumers and there is a general reluctance from fitters and manufacturers to offer complicated options that may erode their profit margins.</p> <p>There is some solar control glazing but the feeling is that it is generally more efficient to bring cooling into building design and through the use of shading devices. More energy efficient low-e glass coatings are becoming more common, but the glass also retains more heat, which has implications if the UK were, as predicted, to experience much hotter summers.</p>
Retailers	<p>Not being an off the shelf product, the retailers and fitters of replacement windows – like boilers - have considerable power over the consumer choices. The typical telephone based ‘hard sell’ of replacement windows has contributed to the high visibility and take up of the product. As the market nears saturation however these ‘hard sell’ companies have moved into fashionable window replacements and many are done before the end of useful life.</p>
Government <sup>68</sup>	<p>Rather than bringing in compulsory standards the Government has acted through building regulations, supporting rather than driving the double glazing shift.</p> <p>Minimum standards for new and replacement windows were introduced in 2002 through the Part L1 and Part J of the building regulations in England and Wales and Scotland respectively. House builders can trade off U-value (a measurement of heat conductivity of windows) and other energy efficiency products to achieve overall building rating and many builders find it more convenient to use higher value windows over other forms of insulation.</p> <p>There is currently only a voluntary A-G rating standard for windows and doors developed by British Fenestration Rating Council (BFRC) which also measures levels of heat loss and solar gain – unlike U values. From 2006 this BFRC standard will be recognised as a valid alternative to U values. These A-G ratings are expected to be less stringent and more popular as a result. The Energy Savings Trust recommended value C ratings and above.<sup>69</sup></p> <p>Although technically covering glazing, the EEC has had very little impact to this point as replacement windows have relatively poor cost effectiveness when compared with other smaller measures such as CFL bulbs.</p> <p>Home energy efficiency information packs assessing the efficiency of homes for sale is expected to have further impacts on take up from 2006.</p>

## GETTING AROUND

### 6) VEHICLE TECHNOLOGIES

#### KEY CONCLUSIONS

This section analysed market shifts through case studies of

- a. Unleaded Petrol
  - b. Catalytic Converters
- Greener car technologies have been mainstreamed primarily through strong regulation initiated on an EU level. UK Government's hand was been strengthened by a history of emissions control and public concern about the health impacts of vehicle emissions.
  - The US political leadership was key to developing a successful product to reduce vehicle emissions. The US used a system of progressive forward-looking legislation that set minimum emissions standards. As the technology was already advanced through US legislation, this resulted in a painless introduction of unleaded petrol and catalytic converters in Europe
  - Fiscal incentives through the level of fuel tax was also instrumental in mainstream unleaded petrol, however the differentiation only started to have an impact after reaching two pence per litre.
  - Two important lessons for Government arose out of these case studies, first the importance of legislative leadership. The US legislation was instrumental in encouraging innovation though setting very ambitious targets for industry, some considerably higher than could be achieved with existing technology. Secondly, the importance of accurate costing of infrastructure changes. The over-estimated cost of infrastructure change was a key issue in the lateness of Europe in bringing in unleaded fuel and catalytic converters.

a. Unleaded Petrol - [Return to Index](#)

Unleaded petrol took 50% market share in approximately six years. The change was mainstreamed because of product parity and the market initiated through strong EU regulations

**Key Drivers**

- Strong progressive legislation in US stimulated innovation on lead removal
- EU and UK legislation and introduced in conjunction with strong fiscal and regulatory measures
- Reinforced by catalytic converter technology
- Health issue of lead pollution

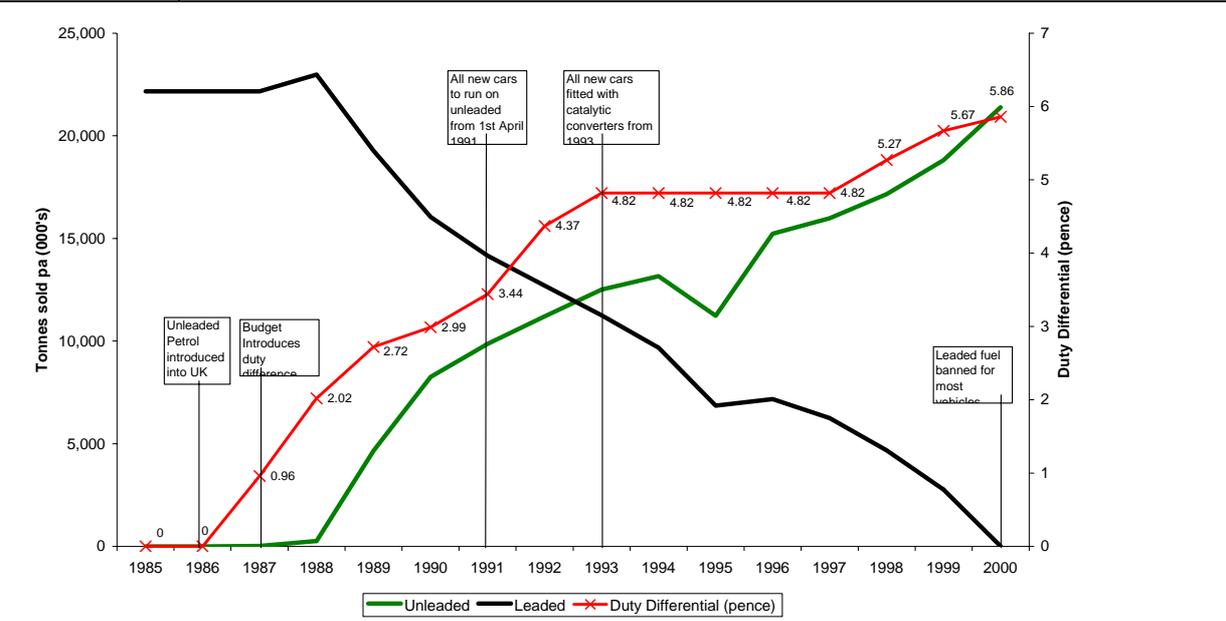
**BUT**

- Simplistic message did not change other unsustainable trends (congestion and CO<sub>2</sub> emissions)
- Policy and technology leadership developed in US, not the UK market

**Background**

Unleaded petrol was introduced into the UK in 1986 and leaded petrol was phased out over 14 years, being banned finally in 2000.

The graph below shows the falling proportion of leaded fuel and increase in unleaded between 1985 and 2000. The red line illustrates the duty differential between the two fuels, the proportion of unleaded fuel only started to increase once the duty difference hit two pence.<sup>70</sup>



**Consumer**

Consumer response to the new product was generally positive after some concerns about car performance. Performance concerns were overpowered by well-publicised health implications of lead air pollution. Although the consumer reaction was not against cars or traffic itself as a cause, only the fuel type and emissions.

**Manufacturers and Oil companies**

There was already significant demand from the US for unleaded petrol, having brought in legislation decades earlier ensuring that there was a good supply of unleaded available. One of the reasons for the delay in UK action on lead content was because of what turned out to be an inaccurately high cost

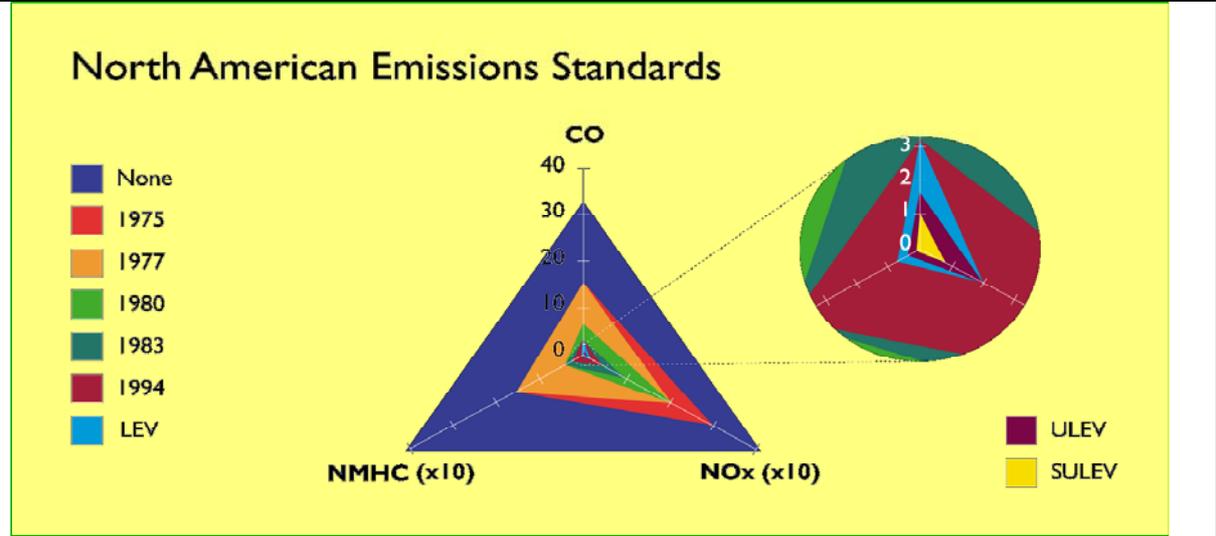
	<p>estimate from industry of changing the petrol retailing infrastructure.</p> <p>Consumer demand for 'cleaner and greener' and higher performance differentiated fuels has continued since unleaded was introduced. Oil companies have since introduced a number of innovative fuel types including premium petrol products and lowering the level of harmful additives such as sulphur.</p> <p>Car manufacturers have also worked to develop cleaner technologies as emission standards are raised in the EU and US for both petrol and diesel engines. There are also plans to introduce new in service emissions testing.</p>
Government <sup>71</sup>	<p>There is a long history of legislation on urban pollution before the issue of lead emissions from vehicles.</p> <ul style="list-style-type: none"> <li>• Initiated legislation to minimise use of lead in petrol at EC level in 1978</li> <li>• Unleaded petrol was introduced in 1986.</li> <li>• During the 1990s fuel tax variations were used to incentivise conversion to unleaded petrol and diesel.</li> <li>• All new cars were to run on unleaded from April 1991 and new cars registered from 1993 had catalytic converters (and therefore only ran on unleaded petrol).</li> <li>• Leaded petrol was finally banned in 2000.</li> </ul>

b. CATALYTIC CONVERTERS - [Return to Index](#)

Market shift was immediate as strong EU regulation of emissions meant all new vehicles in the UK had catalytic converters fitted from 1993

<p><b>Key Drivers</b></p>	<ul style="list-style-type: none"> <li>• Strong progressive legislation in US stimulated emissions reduction technology</li> <li>• Later strong EU legislation introduced VOC limits that mainstreamed CAT technology</li> <li>• New car emissions requirements reinforced switch to unleaded</li> </ul> <p>BUT</p> <ul style="list-style-type: none"> <li>- Policy and technology leadership developed in US market</li> <li>- Simplistic message did not change other unsustainable trends (congestion and CO<sub>2</sub> emissions)</li> </ul>
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<p><b>Background</b> 72</p>	<p>The UK has a long history of urban air pollution control including the dramatically successful Clean Air Act which stopped the killer smogs in London. Introduction of catalytic converters was delayed in the UK because of the objections raised to the introduction of unleaded fuel (leaded fuel poisons the catalysts). The Government's hand was then strengthened by consumer concern about the impact of emissions from vehicles following the introduction of unleaded petrol around a similar issue.</p> <p>Catalytic Converters (CATs) now eliminate more than 99% of the three regulated emissions - carbon monoxide (hinders breathing and impairs coordination), nitrogen oxide (contributes to acid rain and ozone) and volatile organic compounds (contribute to low level ozone formation).</p> <p>The diagram below supplied by Johnson Matthey illustrates how the progressive legislation worked to dramatically reduce the emissions.</p>
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<p><b>Consumer</b></p>	<p>There was some initial concern again from consumers about car performance but given the level of concern about health, the technology was relatively uncontroversial and mostly popular.</p>
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<p><b>Manufacturers</b></p>	<p>CAT technology was developed in conjunction with US regulation of vehicle emissions starting in 1970s; new standards were brought in as a response to</p>
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	<p>public health issues surrounding urban smog. These standards were then continuously raised in a cycles. As a result the technology was already advanced when the UK and EU enacted legislation almost 20 years later.</p> <p>When introduced in Europe, Catalytic converters were often retrofitted to existing car designs that didn't optimise the use of the technology, consequently the CATs slightly increased the fuel consumption and Carbon Dioxide (CO<sub>2</sub>) emissions, but have now improved dramatically.</p> <p>Since their introduction, competitive pressures then forced the whole UK industry to dramatically improve their designs and fuel consumption. However, unregulated emissions such as small particulates have seen very little improvement during this period and are only now being addressed.</p>
Government	<p>1991 and 441 EU Directive on road vehicle emissions set standards that required catalytic converters be fitted to all new cars from 1992 and introduced limits for emissions of VOCs. This was enacted in the UK from January 1993.</p> <p>As CATs have removed the most damaging emissions the new issue is Carbon Dioxide. The new voluntary A-G car labelling schemes are therefore based only on carbon dioxide and fuel economy.</p>

# 'LOOKING FORWARD'

## Choice editing for sustainability

Looking back, the evidence suggests that, historically, the green consumer has not been the tipping point in driving green innovation. Instead, choice editing for quality and sustainability by government and business has been the critical driver in the majority of cases. Manufacturers, retailers and regulators have made decisions to edit out less sustainable products on behalf of consumers, raising the standard for all.

Choice editing for sustainability is about shifting the field of choice for mainstream consumers: cutting out unnecessarily damaging products and getting real sustainable choices on the shelves. Consumers benefit from the assurance that the issues they care about are being dealt with upstream, rather than facing the demand that they grapple with those complexities themselves.

Seven key lessons can be derived for product policy, looking forward:

1. There is not enough evidence that green consumers on their own are able to change mainstream product markets. These consumers may, in some cases, have played a role in as early adopter but the translation to the mainstream depends on a number of other factors.
2. The crucial requirement is for the product to perform up to the expectation of performance in the relevant market. The successful products studied were largely not sold on a green or ethical platform, unless they appealed strongly to the emotions, as in the case of dolphin-friendly tuna. People do not eat sustainability, or drive it. They eat food and drive cars and product performance has to be the primary focus of marketing, even for sustainable products. If the marketing mix and price are within the expected norms of the relevant market then any 'good' attributes like sustainability suddenly become attractive to the consumer.
3. Providing information failed to get more than a minority of people buying the most energy-efficient dishwashers, fridges and washing machines, even when it pointed to savings on running costs. Inefficient machines were still the norm in the shops, and they were cheaper. But when labelling was combined with action on the part of regulators, retailers and manufacturers, rapid efficiency gains mean even the least-efficient new fridge freezer on sale today consumes only half as much energy as the least-efficient products on the market eight years ago.
4. Labelling of performance ratings from A-G is a key enabler for choice editing, but does not by itself drive significant market transformation.
5. Early announcement of legislation to set minimum standards drives a virtuous cycle of rapid innovation and further choice editing by retailers and manufacturers.
6. Voluntary industry initiatives are an important ingredient. In the case of dishwashers and washing-machines, manufacturers averted regulation by negotiating to remove models rated D or below voluntarily. But voluntary industry initiatives rarely play a leadership role.
7. Fiscal incentives only work if they close the price gap for more sustainable products or create significant tax rebates for their use. Incremental VAT reductions on products like CFLs and insulation do not by themselves create demand.

## Product Roadmaps

'Product roadmaps' represent a policy approach for addressing high-impact products. Looking forward over timescales that businesses and people can respond to, the main elements of this

will be:

- 1 understanding the issues and range of possible solutions
- 2 clear deadlines for achieving the desired level of transformation
- 3 labelling products as a basis for incentives and standard-setting
- 4 robust incentives tied to product sustainability
- 5 supportive public procurement specifications
- 6 raising the bar through progressive regulation.

One example could be for homes. Reducing VAT on loft insulation, for instance, will not of itself prompt people to go out looking for it. Linking property taxes, like stamp duty or council tax, to A-G home energy ratings would, however, transform the market for energy-saving measures and micro-generation.

When it comes to products like cars, the evidence shows that we need to move beyond applying labels from A-G, important first step though this was. As MORI told the Department for Transport, 'Environmental performance is not paramount in car buyers' minds when choosing a car - and this is a barrier to the potential impact of introducing the labels in showrooms.' As we saw when looking back on transformation in the white goods market, labelling starts working when it is made the basis for real incentives and standard-setting. The UK's rate of resource use is currently around three times greater than can be reasonably sustained by one planet. Although we cannot calculate specifically whether or not individual products contribute or detract from this 'one planet' goal, it is assumed that the majority of consumer products have not been developed with the objective of minimising their ecological footprint, in manufacture or in-use.

On pages x-y we set out suggestions on measures that might form part of product road maps to mainstream five more sustainable future products. These five products were chosen to cover a range of sectors and the road maps aim to be both specific to each product, as well as broadly illustrative of policies that could be used by Government, business and consumers to mainstream sustainability in a whole range of other consumer goods and technologies.

## Other lessons from looking back

### Global products for good

Many of the conclusions drawn from Roundtables 'looking back' research can be applied to the future. However, there does need to be recognition that the policy context and market conditions may well be different in the coming decade than they have been in the previous one. New consumer trends and changing demographics will determine which areas of consumption have the biggest impact on sustainability. With product supply chains usually spanning several continents, it is important that the UK thinks globally and for example uses its important niche market to influence product standards and development internationally, particularly in the rapidly expanding Asian economies. Environmental concerns and sustainability issues will move higher up the list of political priorities as global environmental problems become more pronounced. There is likely to be much greater urgency to address the issues of global warming in order to maintain the UK leadership position on climate change.

### Accurate policy cost assessments

Many objections to stronger policies to embed sustainability in products are based on the fact they are deemed to be prohibitively expensive. However, the costs are often estimated to be higher than they are in reality. Harvard Business School Professor Michael Porter believes that the

cost of addressing environmental regulations often do not account for the value that environmental innovation can add to a firm's productivity and other capabilities. 73 Much of the data for these policy cost estimates come from industry and it is unrealistic to expect that an industry potentially effected by legislation will be anything other than very conservative when estimating the cost of Government intervention. As a result, Government need to ensure that all policy cost estimates are accurate and in particular take into account the following:

- There are a number of examples of where estimate cost of implementing a proposed policy were far higher than the actual cost when the policy was introduced as the cost of change is over-estimated. The cost of introducing unleaded petrol was claimed to be prohibitive, and as a result the policy took several years to be agreed. But in the event, as petrol forecourts change fuel storage tanks regularly, it was a much lower cost to add unleaded petrol the available range of fuels.
- Revisions to product standards are often scheduled to take place a some point significantly in the future, although the policy cost estimates will be made based on the technology that is available at the time the policy is written. Estimates can fail to sufficiently discount for the fact that technology progresses and cost falls over time. More often than not, changing something today will be significantly costlier than changing it in a few years time, especially when there are early signals to innovate.
- Policy costings also need to include estimates of the opportunity cost of not acting immediately. A good example of this being buildings. Achieving a high level of energy efficiency in a new building is considerably cheaper than retrofitting an existing building to the same standard. Other examples are for products such as domestic air conditioning where its usage in the home becomes impossible to control and reverse once it has been integrated into the building infrastructure.
- The Departmental structure of Government means that few estimates take a sufficiently holistic perspective of costs and benefits. The costs of poor air quality are born by the health service and insurance companies, not by the Department of Transport. Some consumer products, can raise awareness and have knock on behavioural impacts. These costs or savings are often not taken into account. Estimates need to take an entirely holistic perspective and embody real joined up thinking across Departments.

## Progressive regulation

Where sustainability does not correspond with cost efficiencies or the consumer does not instantly empathise with an issue, no other policy drivers of sustainability have proved as successful as progressive legislation in raising product standards. The dramatic vehicle emission reductions achieved from catalytic converters were for example a direct result of challenging, progressive US legislation.

The 'looking back' findings emphasised the value of outcome-led progressive legislation to move the market step-by-step towards greater sustainability objectives such as lower emissions, fuel efficiency or durability. Legislation needs to signal clear future objectives through a realistic timetable of continuously rising standards, as well as procedures and timescales for monitoring and follow up legislation. As in the EU Emissions Trading Scheme and the Energy Efficiency Commitments, this then allows businesses and the market to determine the most cost effective way to deliver on the agreed standards or targets.

It is imperative however that the market believe that Government will work to ensure that sustainability targets are met. Unambiguous commitments to strong progressive legislation, in a given reasonable timeframe, enables business to integrate these requirements into their product design and investment cycles to enable them to meet the standards set for the future.

This is not to say that businesses cannot or will not take action on integrating greater sustainability into products before Government undertakes regulation on the issue. There are always going to be dynamic businesses that are ahead of the market, conforming to the sustainability wish-list and hoping to use a first mover advantage to develop a market leadership position. However, if there is no overriding requirement for other businesses to follow suit, and the issue does not resonate with consumers, sustainability will remain an exception rather than the rule. Even worse, the higher costs involved could undermine the profitability of those businesses brave enough to move forward and put their heads above the parapet.

### **Voluntary agreements**

Progressive legislation is a very effective tool to raise product standards but the inertia of the political process means that can be difficult to mould legislation effectively around sectors such as electronics where the technology moves forward month-by-month. Voluntary initiatives and codes in contrast are significantly more flexible. The relative ease and low cost are also appealing. However in many cases they have proved ineffective, having no power over those choosing not to comply. As the case study of recycled content of newspaper illustrates, consensus agreements can be wholly under-ambitious. An OECD report on negotiated agreements from 1999 found it was impossible to confirm whether or not negotiated approaches were effective tools of environmental policy. 74

There needs to be a new system of product policy that is both effective and able to react and adapt quickly enough to improve sustainability in fast moving areas of consumer products. It is also critical to avoid 'lowest-common denominator' industry standards on sustainability and rather than building consensus agreements, targets should be set by Government in conjunction with the 'best in class' rather than the laggards or conservative industry associations.

### **Emerging products**

Product policy should also work to integrate higher sustainability standards at the product development and pre-market stage. This is especially important for long-life products that can lock-in consumers to unsustainable behaviour. There is currently no process that can effectively deal with product issues swiftly before problematic products come to market, one example being the massive potential energy demand of new domestic air-conditioning units. One pertinent example of how this might be achieved for sustainable development is using the example of Health and Safety. In a speech in 2004 the Prime Minister announced, "I want to see the day when consumers can expect that environmental responsibility is as fundamental to the products they buy as health and safety is now."<sup>75</sup> In contrast to sustainable development, health and safety standards are supported by legislation, regulations and reinforced by the very real threat of company liability, unlimited fines and jail sentences. Directors and employers have a 'Duty of Care' to their employees and staff, the company and the directors personally open themselves up to prosecution either through negligence or omission of this duty.

### **EU-level standard-setting**

Following the adoption of the Energy-using Products (EuP) Directive in July 2005, it is looking increasingly likely that further regulation on product standards will be initiated in the near future on an EU level. The EuP provides a important step forward in European Product policy and provides a cohesive framework for the eco-design of electrical and electronic devices or heating equipment. The primary aim is to ensure national disparities on eco-requirements for products do not become obstacles to intra-EU trade, but implementation should also introduce minimum eco-standards for products and sectors that have, "important environmental impact and volume of

trade in the internal market and clear potential for improvement, for example where market forces fail to make progress in the absence of a legal requirement." <sup>76</sup>

Furthermore the Commission are currently undertaking a review of the thirteen year old framework directive on energy labelling to supplement the EuP Directive. The results are expected in early 2006 and it is hoped that this will extend the usage of the A-G ratings. It is also hoped that any new Directive will integrate a mechanism to continuously upgrade standards to ensure that the A label continues to represent the highest performing 20-30% of the market, even as efficiency across the sector improves.

The UK Government should be working to ensure that any EU level requirements are set sufficiently high to make a real improvement to the sustainability of products as well as to help prepare UK industry for its introduction by stimulating investment and innovation in sustainability and particularly energy usage of products. UK businesses should also be taking up the opportunity to react early to invest in and stimulate good eco-design in products to build up competitive advantage.

## PRODUCT ROADMAP TOOLS FOR PRIORITY PRODUCTS

This section applies the lessons and conclusions from the nineteen 'looking back' case studies, and presents some tools for consideration in relation to product roadmaps for mainstreaming sustainable products in five priority consumer product sectors:

- sustainable fish products
- energy saving light bulbs
- digital set top boxes
- micro-generation technologies
- low carbon cars

These products were chosen by the Roundtable for their resonance and the importance of the messages rather through any exhaustive selection process. Each consumer sector is, or has the potential to push the UK further away from the 'one planet living' objective. The products were also chosen as highly visible and iconic areas of consumption to build on the important findings from separate research that found even passively acquired micro-generation technology had a positive ripple effect on the households and raising awareness of more sustainable consumer behaviour.

It will obviously take far more than five more sustainable domestic products to shift our lifestyles. All products and sectors will have to reduce their impacts before it is possible to lead a mainstream lifestyle that is conducive to one planet living. As a result, the suggested policies are intended to be both realistic and actionable but also meant to be indicative and by no means exclusive suggestions of consecutive small positive actions and policies that could stimulate cumulative change across an entire industries.

## SUSTAINABLE FISH PRODUCTS

**Aim: Utilise the momentum currently driving better food in the UK to stimulate full scale shift towards greater sustainability across in the entire food sector.**

There is growing evidence that we are approaching a turning point in the way we view food in the UK. Public concern over food and health issues surrounding obesity, salt levels and additives have been climbing for several years. Culminating in 2005 in the healthier school meals initiatives that the Government is now embarking upon.

In supermarkets, organic foods and fairtrade coffee take up an increasing amount of shelf space, joining the existing 'dolphin friendly' tuna and free range eggs. Local food and farmers markets are also undergoing a renaissance. Add to this a growing concern about the way our climate is changing. The public are increasingly recognising that we will need to start doing and consuming things differently. Soon. Now.

The palpable force behind better food in the UK is a unique opportunity to shift the course of our food sector away from mass produced, high impact, low quality produce. We need to act now to ensure we do not lose the chance to move towards a food sector that works to optimise, rather than detract from, the health of the population, wider environment and society.

### **Stimulating Supply**

#### **1. Defining Sustainable Fisheries**

It is agreed that fisheries is an area of dire over-exploitation and unsustainable practices but what is lacking for consumers is a clear and unambiguous message on what actually constitutes a sustainable fishery. The existing Marine Stewardship Council (MSC) standard and logo is utilised widely is not recognised or supported by a number of NGOs and countries. It is imperative that the NGOs and fisheries start to agree a common position on what fish are in jeopardy and which areas are over-fished and the most sustainable solution. Given the continuing and damaging absence of an agreement between NGOs and the industry, the role of Government must be to put considerable resources into facilitating a consensus vision and goal for sustainable fisheries.

#### **2. Targets and objectives**

The Government then need to construct, in close consultation with all stakeholders, a practical and achievable road map, with timetables, targets and milestones towards achieving the goal of sustainable fisheries. The next stage is for Government to work in partnership with the fisheries industry and manufacturers to encourage reformulation, and redesign products to support these objectives. Government also need to indicate their willingness to legislate in order to drive change should agreed targets not be in within a given timeframe.

The goal and roadmap should:

- Initially utilise the existing MSC standard and framework to avoid replication of considerable effort.
- Not allow the sustainability standard to act as a trade barrier to exports from developing countries.
- Encourage local sourcing, although with the caveat above.
- Consider development of traffic light labelling system based on environment, social and economic footprints.

## Stimulating Demand

### **1. Choice Editing: The Role of Retailers**

The role of retailers as choice editors is a consistent message in the Roundtables work on consumer products. Reputable retailers would not stock goods produced by child labour or in sweat shop conditions. Given the dire state of many fish stocks, Corporate Responsibility should immediately extend to fisheries. The Roundtable call on retailers, restaurants, print and TV media to simply stop selling and promoting endangered and unsustainable fish products.

In the likely absence of spontaneous action from retailers, NGOs and UK Government should also be using their influence to encourage a voluntary industry agreement between food retailers on the issue of sustainable fisheries and start negotiations on the withdrawal of the most unsustainable fish products from shelves. Making this an industry wide initiative would enable businesses to act on a level playing field and not undermine their profitability or competitive position. In order to encourage action by fisheries and retailers, the European Commission should signal its willingness to legislate should progress not be achieved within a given timescale.

### **2. UK Government**

Fish contribute important nutrients to the human diet, therefore removing fish altogether from the diet without finding an alternative source of these essential nutrients cannot be a sustainable solution. The Government need to find answers to these questions by joining the expertise of the Food Standards Agency, the Department of Health and other Government stakeholders such as the school meals review board to reach a solution that effectively make the links between health and sustainability.

To help develop the market and to exemplify good practice, state funded institutions including schools, hospitals, prisons as well as local and central government offices should only procure and sell sustainable fish products.

### **3. Information for Consumers**

Consumer concern and action is an important but secondary driver of more sustainable products. In a recent survey by the National Consumer Council the majority of consumers agreed that if cod were an endangered species, it should not be available to buy.<sup>77</sup> Industry, Government, NGOs and the media need to then work together to communicate messages on sustainability of fisheries and drive change through to consumers to change attitudes and behaviour. There also needs to be an authoritative source of information on all issues of sustainable development including which fish products to buy and which to avoid, which could be another role for the Environment Direct website.

As illustrated in the 'looking back' food case studies, consumers have a far more emotional connection with food than they do with other products. Therefore a strong information campaign with a consistent message should yield results. However the campaign must first ensure that all stakeholders are engaged as these messages can become easily undermined if endangered fish such as North Sea cod or monkfish remains for sale in the local supermarket, or being cooked by celebrity chefs on the television.

## ENERGY SAVING LIGHT BULBS

**AIM: To create an investment case for improved design in low energy lighting, by phasing out cheap tungsten bulbs or closing the upfront price gap**

It has been estimated that it would take 25 years to transform the domestic lighting sector to make it more energy efficient.<sup>78</sup> The Compact Fluorescent Light Bulbs (CFLs) are currently the only low energy use domestic alternative to incandescent bulbs that are able to utilise existing light fittings. Unfortunately, due to a number of quality problems (dim light, large bulbs etc..) the CFL technology has failed to effectively challenge the dominance of existing technology and have grown in twenty years to a market share of just over 10%. The low margins and profits from bulbs in the domestic lighting sector has also meant that few lighting companies have been eager to sink new funding into product innovation. Given that the existing technology is likely to remain dominant into the foreseeable future, Government must now act to address this market failure and encourage innovation to develop a more optimum solution.

It is important however that there is emphasis on wider sustainability issues. For example, although CFL are the most energy efficient technology currently available, but they can be problematic for waste disposal, the bulbs are larger and heavier than other versions and the bulbs also contain highly toxic mercury. The waste issue is one which falls heavily in favour of the smaller, lighter Light Emitting Diodes (LED) technology with no toxic material usage. However as of the moment LED technology is still in development phase with efficiency equal to or even below that of tungsten bulbs. However, LED technology is projected to overtake CFL in efficiency by 2015.<sup>79</sup>

### Stimulate supply

#### **1. EU legislation - Minimum Standards**

Prioritise in Europe the need to build on the energy label for domestic lighting by pushing for the introduction of EU minimum standards that are progressive (standards steadily increasing over a stated period) and forward looking, for example with the aim that all bulbs sold to consumers in Europe 2015 will have a minimum B-rating. This would effectively ban the sale of incandescent bulbs in the EU and establish the imperative for companies to innovate. The target will stimulate investment and development of new energy saving technologies such as Light Emitting Diodes.

#### **2. Stimulate Innovation**

The Government need to also set in motion a number of different initiatives to stimulate and encourage innovation, research and investment in more sustainable solutions to domestic lighting. However, the market support should be only a short term measure, arguably the continuing subsidies benefiting the CFL technology have hindered rather than helped the technology to market maturity.<sup>80</sup> The aim being to position the UK as a leader in sustainable technologies.

- Initiate/sponsor prestigious international competitions on energy efficient lighting, particularly in the development of LED technology.
- Provide dedicated UK Government research grants, tax incentives or Enhanced Capital Allowances for R&D and product development.
- Initiate an Innovation Challenge Fund funded from the Non-Fossil Fuel Obligation or Landfill tax revenues or dedicate part of the new Energy Efficiency Commitment. The aim should be in particular to encourage new market entrants, particularly SMEs, into the domestic lighting sector.

### **3. Voluntary Initiatives**

Finally, there needs to be dedicated resource within the UK and in Europe that works towards building voluntary industry agreements on improving the standard and provision of domestic lighting. These agreements should set targets for change in advance of the legislation and should include:

- Manufacturer agreement to remove the lowest performance bulbs from the market by 2008
- Retailer agreement to champion in-store promotions and information to encourage further take up of energy efficient products.

### Stimulate Demand

#### **1. Building regulations**

To help stimulate demand, the UK Government need to signal progressive and forward-looking standards for energy efficiency of lighting in the Part L of the UK building regulations within the same timescale as the minimum standard regulations. (B rating only by 2015). This should include dedicated fittings that cannot be used with tungsten bulbs.

#### **2. Government Procurement**

Government need to achieve 'best value' out of public procurement of lighting and develop the market and supply chains for LED technology. Setting challenging sustainability standards for lucrative forward supply contracts would encourage companies to develop supply chains and lower costs. One suggestion would be to use the supply contract for lighting all the London Olympic stadium and accommodation in 2010.

#### **3. Fiscal policies**

Once a viable alternative to the existing dominant technology has been developed, the Government need to act in advance of a phase out target to introduce a product levy that starts to close the considerable cost gap between tungsten incandescent bulbs and more sustainable lower energy usage bulbs. There are a number of economic instruments that can be used to address the domestic lighting market inertia and start eroding the market share of the dominant inefficient technologies.

## DIGITAL SET-TOP BOXES

**AIM:** To minimise energy usage by digital appliances on 'stand-by' mode in advance of analogue switch off scheduled for 2008

Consumer electronics is the fastest growing area of domestic energy consumption, projected to nearly triple between 2000 and 2010<sup>81</sup>. The digital switch over from 2008 will cause a bulge in digital technology, after which the new set-top-box platforms will become increasingly complex, driven by the dual trends of HDTV (High definition television) and consumer electronics connectivity or convergence (such as a mobile phone, camera, television, computer in one), both of which are likely to drive energy usage higher rather than lower. To further exacerbate this trend, an increasing number of consumer electronics such as digital set-top boxes are rarely switched off completely and operate in stand-by mode when not in use.

### Stimulate Supply

#### **1. European Commission's Code of Conduct**

At the EU level, the Commission's Code of Conduct (CoC) on set-top boxes should be built on and expanded to cover all new and imminent digital platform technologies. The CoC should be developed to provide ambitious and forward-looking targets for in use and stand-by energy usage and should fully integrate the targets of the 1 watt stand-by Gleneagles initiative. These minimum standards should rise significantly over a given timeframe.

All rhetoric by policy makers should encourage manufacturers to comply to the code's standards. European Commission and Council need to also signal their willingness to use the new EuP Directive to initiate minimum efficiency requirements for set-top boxes sold in Europe should the targets in the CoC not be met.

#### **2. Platform Power Management**

Mobile phones are an important example of the lowest power design philosophy, due to the need to conserve battery power and this energy limitation needs to be simulated for all consumer electronics. Manufacturers, such as Microsoft, are already required to release information to software providers and rival companies about interfacing with their products (interoperability). Intellectual property holders (such as the new HDMI - High-Definition Multimedia Interface Platform) however rarely release information that goes beyond the basic audio and visual transportation information as the crucial information on power management may be excluded to protect competitive advantage and intellectual property.

The UK and EU need to work through membership of G8 and other international bodies to develop fully international and multi-industry standards to mandate interoperability of products. The standards should then require that this information be used in all networks to ensure optimum power management such that all functions need to be required to run at minimum energy possible for that activity. This means that all product functional blocks or externally connected products automatically go to their lowest power state if they are not contributing to the required activity.

#### **3. Technology Transfer**

New mechanisms need to be developed to encourage technology transfer and uptake. For example, one manufacturer of plasma televisions has technology available that makes plasma televisions 40% more energy efficient. However the manufacturer has absolutely no reason to share this information with their competitors. Incentive policy mechanisms need to be developed to encourage better dissemination of technology and best practice. These incentives

need to ensure that manufacturers benefit financially from their technology investments and could include carbon credits proportional to the energy savings or a climate change levy rebate.

### Stimulating Demand

#### **1. Digital Tick Logo**

The best practice model for set top boxes was forced off the market, and there is currently no digital adapters meet the CoC specifications. However, it is more than possible to hit and achieve these targets but early signalling is required to drive innovation to achieve them. As the Catalytic Converter case study in the 'looking back' research illustrates, Government should not be shy of specifying a performance level that does not yet exist.

The Government sponsored digital tick logo, identifies the consumer electronics products that will operate post switchover between 2008-2012. The Government must be seen to exemplify the need to reduce domestic energy consumption by only endorsing those products that conform to the 1 watt stand-by initiative or the Code of Conduct [once it is updated to reflect the Gleneagles agreement]

Furthermore, prior to switch over, the Government has proposed extra help for low-income families. If this comes in the form of product subsidies it is imperative that these must only be for those products that comply to the Code of Conduct requirements and the 1 watt initiative. Otherwise the Government will be 'locking in' low income consumers to the higher energy costs of inefficient products.

#### **2. Procurement – forward-signalling**

In order to achieve best value from procurement, all electronic equipment purchased by Government bodies and departments should be purchased with the aim of supporting and advancing the CoC and G8 1 Watt Initiative. This should be done by stipulating that suppliers of electronic equipment will be chosen partly on their ability to provide equipment with either 1 watt or the lowest available stand-by and in-use energy consumption.

#### **3. Consumer Information**

Labelling and consumer information will not change how products are manufactured or purchased but it does provide important information from which further action can be taken. Given the sluggish process of most voluntary initiatives and all EU level regulation, UK Government should immediately and independently collate and publicise (through Environment Direct or Energy Savings Trust) the in-use and stand-by power usage of all new consumer electronic equipment available using an independently verified typical application configuration.

This basic product information will start to allow comparisons to be drawn between manufacturers and products, and stimulate competition on this basis. For consumers, this information should be translated life costs of running equipment and compared with equivalent products. Environmental awards, including the Energy Savings Recommended label should be given to the top performing products.

## MICROGENERATION

**Aim:** To guarantee a market for micro-generation technologies delivering cost-effective carbon reduction in buildings without picking winners

There are numerous micro-generation technologies available in the UK but the market remains niche and fragmented, resulting in technologies that are too expensive for the majority of householders to consider. In order to engage householders in meeting the UK carbon reduction targets, the Government should take action to stimulate both supply and demand for the technology in order to bring the products into the mainstream.

### Stimulating Supply

The first step needs to be proactive use of planning, building regulations and public procurement to deliver economies of scale and stimulate a more mature market in micro-generation technology.

#### **1. Planning Policy**

A number of local authorities in the UK have already started to include on-site renewables requirement for large scale developments. The DCLG should call on all local authorities to introduce the requirement for large new developments to generate at least 10% energy on-site.

#### **2. Public Procurement**

The Government should use its buying power to stimulate the market by announcing a 'carbon neutral' public sector target by 2020. A micro-generation feasibility study should be conducted for all new public buildings and funds should be targeted to retrofit public buildings, including PFI. Prioritisation should be given to visible technology in schools and hospitals to raise awareness among the general public.

#### **3. Building Regulations**

Building Regulations have an important role to play in driving investment in technological innovation. The Government should clearly signal a timetable of rising future building standards for the level of carbon emissions from new buildings. This should be beyond what can be met by existing technologies to encourage innovation. Furthermore we support the voluntary Code for Sustainable Buildings having a carbon neutral level, as this will stimulate increased demand for micro-generation products.

### Stimulating Demand

#### **1. Home energy ratings**

The new home energy ratings from 2007 will be an important method to increase awareness of both energy efficiency and micro-generation to home owners. These ratings could be used to incentivise owners through modifying the council tax bandings so they are partly based on the energy rating of homes. Implementing the Lyons review of council tax banding is now likely to be delayed until around 2009 and this will give two years for the system of energy ratings to stabilize as a policy before bandings are changed.

#### **2. Energy suppliers**

Energy suppliers are an important vehicle for stimulating demand for micro-generation. Government should require suppliers, through a micro-generation commitment similar to the existing Energy Efficiency Commitment, to achieve a specified level of energy saving through the installation of micro-generation technologies in homes. The Micro-generation Commitment

should be tradable with other suppliers and other market players. As with the EEC, suppliers would be penalised for non-compliance at the end of the commitment period.

### **3. Funding**

The high upfront capital cost of micro-generation and other energy saving measures is a currently a drag on demand. With a Micro-generation Commitment funding, the upfront cost should be made possible through energy supply financing agreements, in the form of long term deals for repaying the capital cost of the technology through energy bills over a specified time period.

### **4. Smart Metering**

Energy meters in visible locations, need to be installed in each household with micro-generation to stimulate further interest in energy consumption. We recommend that this should be part of a required package of measures in delivering the micro-generation commitment.

## LOW CARBON CARS

**Aim: To mainstream and develop the market and supply chains for alternative vehicle power technology**

Less than 0.1% of new cars sold in 2003 emitted less than 100g/km CO<sub>2</sub>. The Government has set a Powering Future Vehicles target for 10% of new cars sold in the UK by 2012 to emit below this figure. There has currently been little progress towards this target and a number of policy drivers need to be put in place to achieve this over the next 7 years.<sup>82</sup>

### Stimulating Supply

#### **1. Progressive Regulation on CO<sub>2</sub> Emissions Standards**

The voluntary A-G CO<sub>2</sub> emissions labelling initiative hit UK car showrooms from September 2005, the EU wide label is likely to be running from 2008. However as the 'looking back' research concludes, although setting and measuring a baseline is the starting point for action, labelling on its own achieves very little towards shifting a market or encouraging the take up and development of new technology. It is imperative therefore that:

- The European Commission need to build on the voluntary and EU labelling to prescribe progressive future targets for CO<sub>2</sub> emissions from domestic vehicles. This should include removing the lowest performing standards by 2012.
- The voluntary A-G labels should be rolled out to cover second-hand vehicles.
- In-use fuel economy rating should be reassessed at the annual MOT, those not achieving the banding should be re-adjusted and the yearly road tax should be increased to reflect the new banding.

#### **2. Public procurement**

Some recent studies of this by DTI and Defra<sup>83</sup> show that currently the criteria against which public bodies purchase commercial vehicles and particularly car derived vans do not feature carbon efficiency as an important consideration. Rather they accept as a given the carbon efficiency of vehicles currently on the market. The Government need to establishing specifications for carbon efficiency that go beyond the basic requirements of legislation and are linked explicitly to a forward commitment to purchase, at a future time, vehicles that meet these specifications will be a powerful driver for vehicle developments.

One example could be through setting emissions standards for all new taxis in London that effectively made hybrid engines mandatory from 2007. There would be multiple benefits including significantly reducing CO<sub>2</sub> emissions and air pollution in UK cities but importantly it would also stimulate scale up in hybrid engines and realise economies of scale. The police, NHS, Local authorities, City authorities could all tailor vehicle supply contracts so that they specify challenging energy efficiency and emissions specifications without specifying the technology or the manufacturer.

### Stimulating Demand

#### **1. Road pricing and access restrictions**

The reason its so difficult for small tax or even large tax differences to influence our car usage is the importance we attach to freedom of movement. The tax differences on petrol in Europe and North America and the huge differences in prices at the pump do not have a major effect on car ownership or usage for this reason. However restrictions on access for polluting cars is an extremely effective approach. For example restricting access to city centres such as London to

low emission and eventually zero emission vehicles goes to the heart of car ownership benefits and is less socially divisive than charging for access. Therefore, road pricing implementation should be brought forward from 2020 and the per mile charges should be graded as per the energy usage of each vehicle to stimulate demand.

## **2. Widening Road Tax Bandings**

The incentive for purchasing a low emission vehicle is currently not large enough to incentivise individuals or companies to shift their purchasing habit to reduce the road tax costs. The road tax bandings should be significantly widened to increase the fiscal incentive to purchase more energy efficient vehicles.

## **3. Cost estimates**

The cost of changing fuel supply infrastructure or of developing new vehicles is frequently quoted as a reason for not requiring these changes. As the case study on unleaded petrol illustrates there is a propensity to overestimate the costs of changing vehicle infrastructure in the UK. The Department for Transport need to build realistic cost projections that do not over rely on industry estimates or underestimate the costs that will be incurred in a business-as-usual scenario due to the ongoing need for replacement and improvement of infrastructure or vehicles over time.

## Acronyms

<b>AISE</b>	International Association for Soaps, Detergents and Maintenance Products
<b>BFRC</b>	British Fenestration Rating Council
<b>CAT</b>	Catalytic Converter
<b>CECED</b>	European Association of Domestic Appliance Manufacturers
<b>CEPE</b>	European Paint Manufacturers Association
<b>CFC</b>	Chlorofluorocarbons
<b>CSR</b>	Corporate Social Responsibility
<b>CFL</b>	Compact Fluorescent light bulb
<b>DEFRA</b>	Department for the Environment Food and Rural Affairs
<b>DTI</b>	Department of Trade and Industry
<b>EC</b>	European Community
<b>EEC</b>	Energy Efficiency Commitment
<b>EU</b>	European Union
<b>EU FLEGT</b>	EU Action Plan for Forest Law Enforcement, Governance and Trade
<b>FSC</b>	Forestry Stewardship Council
<b>GM</b>	Genetically Modified
<b>HCFC</b>	Hydrochlorofluorocarbons
<b>HECA</b>	Home Energy Conservation Act 1995
<b>IMMP</b>	International Marine Mammal Project
<b>ISO</b>	International Organisation for Standardization
<b>LED</b>	Light Emitting Diodes
<b>NGO</b>	Non-Governmental Organisation
<b>ODPM</b>	Office of the Deputy Prime Minister
<b>REACH</b>	EU regulatory framework for Registration, Evaluation and Authorisation of Chemicals
<b>SAP</b>	Standard Assessment Procedure
<b>SEDBUK</b>	Seasonal Efficiency of Domestic Boilers in the UK
<b>TAED</b>	Tetra Acetyl Ethylene Diamine (low temperature bleaching activator)
<b>UK</b>	United Kingdom
<b>US</b>	United States
<b>UV</b>	Ultra Violet
<b>VAT</b>	Value Added Tax
<b>VOC</b>	Volatile Organic Compounds

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