Energy Saving Recommended: Delivering improved product standards, market presence and quality

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Abstract
CO_2 emissions from the home equate to 27 % of UK total emissions. In order for consumers to use less energy, and reduce their environmental impact, the Energy Saving Recommended (ESR) voluntary product labelling scheme for domestic energy saving products was established to direct the consumer to choose better products and make smarter choices. With over 2000 certified products, ESR is present across 5 sectors and covers 24 product categories; 9 sets of standards were reviewed and revised in 2005/6 and a further 13 were delivered in 2006/7. ESR is now implementing existing and developing new standards in consumer electronics – from integrated digital televisions and recorders, to intelligent mains sockets and set-top-boxes, as well as assessing the feasibility of endorsing domestic ICT equipment. The Energy Saving Trust, through its marketing activities, acts as an enabler to make energy saving action simpler, easier and cheaper for the consumer to undertake. Using a variety of communication strategies the trade is engaged through the provision of value added member benefits; a holistic approach is taken with key partners to integrate energy efficiency throughout their businesses. Merchandising support helps product standards to be implemented in the market place; evaluation and research work demonstrates that markets can be changed and shows a 1 in 3 label recognition rate. The credibility and integrity of the label are reinforced through compliance testing, in-store and online label monitoring and legal enforcement, frequent data checks and the integration of ISO best practice standards through the certification system.

Introduction
Carbon dioxide (CO_2) emissions from the domestic sector represent 27 % of the UK's total emissions (DEFRA, 2006). These emissions make a significant contribution to global warming and associated climate change and provide policy makers with a significant challenge. One of a number of tools within environmental policy used to counter this challenge are Environmental Product Information Schemes (EPIS) – systems which provide ecological information on products and services (Rubik & Frankl, 2005). EPIS cover mandatory and voluntary approaches, independent, third-party labelling and self-declared green claims by companies. EPIS highlight products' environmental credentials, quality and performance. The International Organisation for Standardization (ISO) provides' standards and operating principles for EPIS, and creates a benchmark for measuring best practice. The UK's ESR voluntary product labelling scheme is an example of an EPIS, encompassing its own compliance testing, enforcement activity and evaluation for environmental effectiveness and improvements in environmental quality.

The ESR Scheme was established at the request of the UK Department for the Environment and launched in July 2000. ESR is a voluntary product labelling scheme for domestic energy saving products (figure 1) and is classified as an ISO Type I-like environmental labelling scheme according to the Rubik and Frankl classification. Its broad aim is to signpost consumers to the most energy saving products in the market. Through Government funding, EST can use ESR as a tool to deliver

Figure 1. The Energy Saving Recommended Certification Mark

energy and carbon savings via its interaction with the various energy efficiency stakeholders in the UK

Effectiveness

The United Nations Environment Programme recently reported (2005) on an investigation into the current understanding on the environmental effectiveness of ecolabelling. After reviewing five ecolabelling programmes, including the Blue Angel programme and labels in the marine, forestry, organic and fair-trade sectors, the report concluded that there was not adequate data on their environmental effectiveness. None of the five selected ecolabelling programmes had a monitoring system in place to assess its environmental effectiveness. Furthermore, it concluded that this was a problem endemic across ecolabelling in general. Rubik and Frankl reached a similar conclusion after conducting a review of environmental effectiveness studies on eco-labelling programs for their 2005 publication. The notable exception was the study performed on the White Swan in 2000.

In the absence of studies into environmental effectiveness, reliance typically is placed instead on less reliable proxy indicators of effectiveness. The UNEP report identified two types. Quantifiable performance data covers for example the number of product categories, the frequency of criteria upgrade and the number of companies and products certified. Qualitative information on the credibility of the labelling scheme refers to the process undergone for developing the ecolabel and the names and types of organisations that endorse and support it. UNEP reported that, whilst effectiveness must be measured by environmental improvements, on a practical level success is often measured by proxy indicators of the label's scope of influence, rather than its impact. Quantifiable indicators of success include market share, adoption rates, consumer awareness and frequency in the upward revision of criteria. These are effectively the measures by which labels can bring about desired market transformation. Furthermore, the report concluded that the most successful ecolabels do not simply address consumer preferences but are designed as a complement to other policy initiatives. Product labelling needs to be integrated with other environmental policy instruments and to be part of a coherent policy-making structure. Effectiveness therefore also depends on the ecolabel's interaction with other policy initiatives and their success.

Product Standards

BACKGROUND

The ESR scheme has endorsement criteria established in 24 different product groups covering the five dominant sectors of the energy efficiency market in the UK home: heating, insulation, lighting, appliances and glazing. Over 2000 products, 123 manufacturers and 54 retailers are certified under the Scheme. All members of the Scheme and the certified products are available for public viewing on a database (www.est.org.uk/recommended). The validity and integrity of the data presented to the public is maintained through a six-weekly review of the certified products. This process involves making contact with each member every six-weeks and seeking confirmation that the certified products are in production and available for purchase in the UK.

In financial year 2005/6 nine product standards were revised. In financial year 2006/7 eight product standards have been either reviewed or revised and five new product standards have been established. See table 1. The standard-setting process is supported by a detailed procedure for justifying the endorsement of the product category. The procedure involves: specifying the energy savings endorsement would deliver; forecasting future sales with and without endorsement; explaining how product endorsement complements the wider national and international product policy agenda; and specifying details of stakeholder support e.g. manufacturers, suppliers, associations, NGOs etc. Once established, the Scheme has an objective to review the product endorsement criteria on an annual basis. The endorsement criteria review procedure involves addressing similar areas to that answered in the original justification. This ensures that the continued argument for endorsement remains valid. The Scheme has an objective, where product groups can be differentiated by their energy efficiency properties, to endorse the top 20 % of the market. The objectives set for the programme and the procedures established for their delivery, helps to ensure objectives are met.

Independent peer review of the product standards is provided by the Endorsement Panel. The Endorsement Panel is a body of independent experts from a variety of fields including regulatory, policy, consumer support, certification and environment. The Panel meets on a quarterly basis to advise EST on the management of the Scheme and in particular considers and issues recommendations on the endorsement criteria proposals presented to them and on the general management of the Scheme. An important output of the standard-review process is the mapping of future standards of endorsement for the product groups. The aim is to inform the industry on where standards might be in one, two or three year's time to enable them to factor these standards into the product design and manufacturing process.

Over the last year significant milestones have been achieved and notable progress has been made in the development of product standards for the ESR scheme. The product sectors in which this has particularly been achieved is in heating and appliances, and for the latter, specifically consumer electronics, major and small domestic appliances and information and communication technology. The following sections detail the

Table 1. Energy Saving Recommended Product Standard Setting, Review and Revision 2005/6 and 2006/7

2005/6	2006/7
REVISIONS 1. Dishwashers 2. Electric Tumble Dryers 3. Integrated Digital Televisions 4. Intelgient Mains Controllers (Computer) 5. Natural Gas and LPG Boilers 6. Oil Boilers 7. Gas Central Heating Controls 8. External Wall Insulation 9. Retrofit Cavity Wall Insulation	NEW 1. Simple Terrestrial Set Top Boxes 2. Digital Television Recorders 3. Gas Tumble Dryers 4. Intelligent Mains Controllers (Consumer Electronics) 5. Kettles and Instantaneous Water Heaters
	REVISIONS 6. Luminaires 7. Compact Fluorescent Lightbulbs 8. Candle Effect Compact Fluorescent Lightbulbs 9. Halogen Bulbs 10. Natural Gas and LPG Boilers 11. Loft Insulation
	REVIEWS 12. Washing Machines 13. Cold Appliances

Table 2. Energy Saving Recommended Product Performance Criteria for Consumer Electronics Products

	Product Group	Product Performance Endorsemnet Criteria	Verification Method
1	Integrated Digital Televisions	Power consumption of ≤1.5W on standby mode and ≤250W on on-mode, measured according to BS EN 62087.	Manufacturer's self declaration
2	Simple Terrestrial Set Top Boxes	Passive Standby Power Consumption of ≤2W. On-mode power consumption of ≤6.3W for a Single RF Tuner and ≤8.3W for a Dual RF Tuner, measured according to BS EN 62087.	Manufacturer's self declaration
3	Digital Television Recorders	Passive Standby Power Consumption of ≤3W. On-mode power consumption of ≤60W, measured according to BS EN 62087.	Independent third party test report
4	Intelligent Mains Controllers (Consumer Electronics)	Products must be compliant with the following British Standards (where applicable) or other applicable British Standards or European Standards (or pre-standards): BS 1363-2:1995; BS 5733:1995; BS EN 61508-1:2002; ETSI EN 300 220-1; ETSI EN 300 220-3; and compliance with the European Directive (2002/95/EC) on the Restriction of the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment. In terms of energy performance, all products must operate with a passive standby power consumption of ≤1W.	Independent third party test report

progress made in developing product standards for the ESR scheme in these sectors.

CONSUMER ELECTRONICS

Scope and Product Standards

In December 2006, the ESR scheme introduced new standards for endorsing Simple Terrestrial Set Top Boxes and Digital Television Recorders. A month later, endorsement criteria were established for Intelligent Mains Controllers, devices which power down the energy consumption of consumer electronic products, either automatically, via turning off the product plugged into the "heart" of the multi-plug adaptor which powers down the other peripheral equipment plugged into the remaining multi-plug sockets, or via remote operation through a control or switch which, for multi-plug adaptors, powers down the energy consumption of the peripheral equipment when the product plugged into the "heart" of the multi-plug is switched off, or, for single socket products, powers down the energy consumption of the product plugged into it. These new product endorsements are in addition to the existing category of Integrated Digital Televisions, which was introduced in January 2006. The endorsement criteria, and the type of evidence we require to demonstrate conformity for the four groups, are summarised in Table 2.

Product Registrations

The ESR scheme now endorses 140 IDTVs from 11 manufacturers; including Alba, Daewoo, Hitachi, JVC, Panasonic, Philips, Samsung, Sanyo, Sharp, Sony and Toshiba. The predominant screen technology endorsed under the Scheme is LCD, with small numbers of CRT, Plasma and rear projection TVs endorsed. The endorsement of IDTVs is linked with DEFRA's Energy Efficiency Commitment. The EEC sets targets on energy suppliers to achieve improvements in energy efficiency by providing energy efficiency measures to households across Great Britain. EEC is primarily a carbon saving programme and, as such, is part of the Government's Climate Change Programme. Ofgem is responsible for administering the EEC (OFGEM, 2007). In order for manufacturers to supply IDTVs through EEC they must first be registered under the ESR scheme. There are discussions to expand this link between the ESR and EEC for the new recently introduced product groups of simple terrestrial set top boxes and digital television recorders. There are currently 2 simple terrestrial set top boxes certified under the ESR Scheme. The TVONICS MDR-200 consumes 1 W in passive standby, 3.3 W in active standby and 3.9 W in on-mode.

Table 3. Energy Saving Recommended Product Performance Criteria for Information & Communication Technology

	Product Group	Product Performance Endorsemnet Criteria
1	Intelligent Mains Controllers (ICT)	Automatic switch off of desktop computer peripherals when computer is switched off with ≤1W power consumption in standby mode and compliance with: BS 1363-2: 1995 and BS 5733: 1995.

The LOGIK LDR V2 consumes 1.6 W in passive standby, 3.6 W in active standby, and 4.1 W in on-mode. Currently there are no digital television recorders or intelligent mains controllers endorsed, although there are models undergoing approval testing.

Effectiveness

The length of time ESR has been involved in the consumer electronics sector, compared with other product groups such as domestic appliances, is relatively short. A complete picture cannot be drawn from applying the indicators of effectiveness and success proposed by the UNEP (2005) report. Indicators such as frequency of criteria upgrade and number of product categories will not yet be fully developed; market share in recently announced product categories will be low. However as detailed in the previous section, the adoption rate of ESR by IDTV manufacturers has been strong.

Future Direction

The criteria for IDTVs are currently undergoing a revision and we are likely to adopt a lower requirement for passive standby power consumption of, for example, 1 W; this is likely to be implemented this year. Furthermore, it is likely that the on-mode power consumption requirement will be updated to reflect a relative performance requirement using the W/cm^2 measurement. This method of assessing the energy efficiency of televisions is currently being considered by the EU Eco-Label and for DEFRA's Retailer's Initiative. This new way of assessing the energy efficiency of TVs is likely to be implemented when EN 62087 is revised later this year, following the adoption of new on-mode power consumption measurement procedures. In terms of expanding the ESR presence in consumer electronics, endorsement criteria are currently in the early stages of development for DAB digital radios.

Compliance Testing

During March 2007, 20 ESR IDTVs were purchased anomalously and subjected to product compliance testing. The products were assessed against the endorsement criteria for their product group, but also against the declarations of their energy consumption by the manufacturer at the time of registration. The results of the testing were not available at the time of writing.

INFORMATION AND COMMUNICATION TECHNOLOGY

Scope and Product Standards

The ESR scheme is currently assessing the feasibility of establishing product endorsement criteria for the main products within the Information and Communication Technology (ICT) sector. Before endorsement criteria can be drafted, work has been undertaken to assess the level of energy savings that can be achieved from ICT product endorsement. Furthermore research has been conducted with consumers, manufacturers and retailers to gauge the level of acceptance of the ESR label in this sector. Finally, research has also been conducted on the level of cross over between ESR and the EU Energy Star for office equipment in terms of label recognition. ESR already endorses one product group in this sector: the energy saving mains controller. The product is similar to that described above for the consumer electronics sector, but is specific to ICT equipment. See Table 3.

Consumer Research

During March 2007, Andrew Irving Associates, on behalf of EST, undertook research to explore attitudes and behaviour regarding the purchase and usage of ICT products in order to understand the current and potential importance that might be attached to energy efficiency. Specifically, the aims of the research were to explore (1) the opportunities for raising consumer awareness of energy consumption in the ICT market and (2) their likely response to the introduction of an ESR scheme for ICT products. Eight consumer focus group discussions and a number of in-depth interviews with manufacturers and retailers were conducted[1].

The research found that the majority of consumers effectively delegate the purchase decision to friends or relatives, opting for their specification; a minority considered themselves knowledgeable in ICT and confident enough to make their own purchase decision. There was no spontaneous reference to energy efficiency as a criterion when buying ICT equipment; price and specification were the main drivers. However, there were signs across the sample of a heightened awareness and action regarding energy efficiency and protecting the environment; consumers simply had not applied this thinking to ICT. In terms of user behaviour and ICT equipment, few had altered the product's factory settings in order to conserve energy and some left products on 24/7: either for convenience or resulting from a user's lack of confidence in restarting the product. Consumers responded positively to the concept of introducing an ESR label for ICT equipment; it corresponded with consumer's wishes to save energy, money, and the environment. They considered that the take up and support for the Scheme would be enhanced if it was (1) run by an independent, credible body, (2) included all leading brands, (3) featured products were of equivalent price and specification and (4) the Scheme was marketed effectively. Regarding the final point, consumers advised a dual marketing message of saving money and protecting the environment; for those less financially constrained, the message of a cumulative environmental benefit was appreciated.

In terms of the trade, retailers and manufacturers were broadly supportive of an ESR Scheme for ICT equipment; it complimented their push toward better performing product and enhancing their company's environmental profile. Trade interviews reinforced the observation that consumers had yet

1. The completion of this ECEEE paper pre-dated the delivery of the final research report; only top line findings were available at the time of writing.

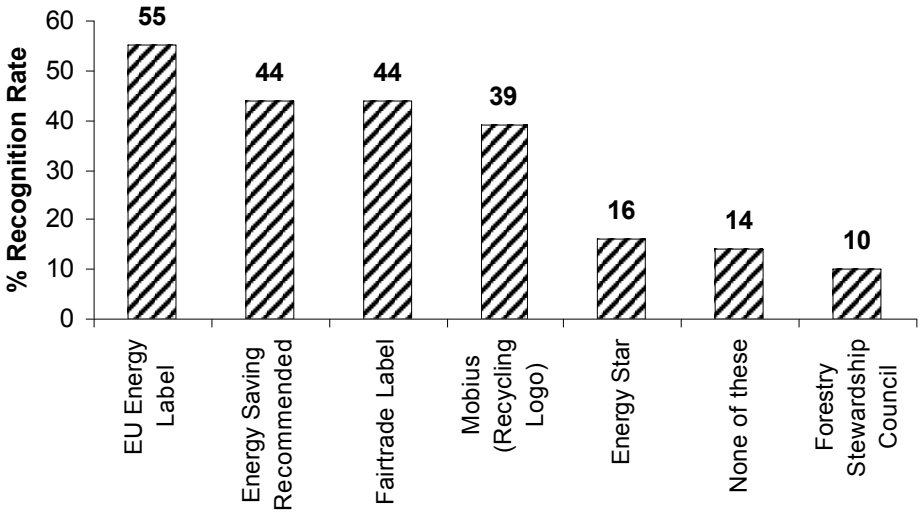

Figure 2. Consumer Recognition Rates of Environmental Product Labels (Drummond-Madell, 2007)

Table 4. Energy Saving Recommended Product Performance Criteria for Major and Small Domestic Appliances

	Product Group	Product Performance Endorsemnet Criteria	Verification Method
1	Cold Appliances	EU Energy Label A+ and above	Manufacturer's self declaration
2	Dishwashers	EU Energy Label AAA (Energy, Clean, Dry) plus the water requirement as specified within the EU Eco-Label <0.625 s + 9.25 (where *s* is the N° of place settings)	Manufacturer's self declaration
3	Washing Machines	EU Energy Label AAA (Energy, Wash, Spin)	Manufacturer's self declaration
4	Electric Tumble Dryers	EU Energy Label B and above; EU Energy Label C permitted when combined with an automatic drying sensor	Manufacturer's self declaration
5	Gas Tumble Dryers	Gas tumble dryer primary energy consumption and carbon emission equal to or better than the equivalent B-rated Electric Tumble Dryer	Manufacturer's self declaration
6	Kettles and Instantaneous Water Heaters	Products should demonstrate a 20% reduction in energy consumption over that consumed by an average kettle. Verified, for example, through consumer trials in the home. Products must consume ≤1W in passive standby and have a minimum boiling volume of ≤250ml. Applicants should demonstrate due diligence in considering design and usability of the product. Products must conform to British Standards applicable to this class of product, including BS EN 60335-1 and BS EN 60335-2-15.	The results should be conducted and assessed by an independent third party test house, accredited by UKAS (or equivalent)

to appreciate the issue of energy consumption in ICT equipment. However, it was noted that domestic ICT users could be benefiting from the environmental product specifications filtering out of the commercial ICT market, with the increasing importance placed on specifying low energy consumption. Retailers would like a Scheme that is easy to operate, has simple endorsement criteria and short certification lead times. Manufacturers would like international standards used wherever possible and for verification to be based on self-certification.

The move into the ICT sector raises a potential overlap with the EU Energy Star for office equipment. Further research was conducted during autumn-winter 2006/7, as part of EST's quarterly national attitude and behaviour tracker, to ascertain consumer recognition of the ESR logo and the EU Energy Star. 1,172 consumers were shown a number of environmental product labels and asked which logos they recognised. The results are shown in figure 2. It can be seen that 44 % of consumers recognised the ESR logo compared with 16 % for the EU Energy Star, inferring there is less likely to be confusion between labels based on the lower recognition of the EU Energy Star. The scale of the challenge facing environmental product labelling schemes is demonstrated by the near 15 % of respondents who did not recognise any of the logos displayed.

MAJOR AND SMALL DOMESTIC APPLIANCES

Scope and Product Standards

In January 2007, the ESR scheme introduced new standards for endorsing kettles and instantaneous water heaters and gas-fired domestic tumble dryers. These new product endorsements are in addition to the existing categories of cold appliances, washing machines, dishwashers and electric tumble dryers. The endorsement criteria, and the type of evidence we require to demonstrate conformity for the six groups, are summarised in Table 4.

Product Registrations

The ESR scheme now endorses 178 cold appliances, 142 dishwashers, 68 washing machines, 38 electric tumble dryers, five gas tumble dryers and currently no kettles. These products are provided by 15 manufacturers and suppliers including Beko, Bosch, Coolectric (supplying Liebherr branded products in

Table 5. ESR in Major Domestic Appliances: Indicators of Effectiveness and Success (after UNEP, 2005)

Product Group	Indicator	Result
Effectiveness	No of product categories	6
	Freq. of criteria upgrade	Cold Appliances - July 04 & Dec 06; Washing Machines - July 04 & Dec 06; Dishwashers - May 05 & May 07; Electric Tumble Dryers - Nov 05 & May 07
	No of companies and products certified	14 Manufacturers & 1 supplier; 33 retailers (14 multiples, 19 independent); 431 Products
Success	Market share	Cold Appliances (05/06) 3% A+ Sales; 1.8% ESR A+ Sales Washing Machines (05/06) 22.5% AAA Sales; 10.3% ESR AAA Sales
	Adoption rates	15 "mass market" manufacturers members 13 "specialist" manufacturers non-members
	Consumer awareness	Consumers asked which logos they recognised: 44% recognition rate for ESR 55% EU Energy Label; 16% EU Energy-Star Drummond-Madell, 2007; N = 1172

Table 6. EU Energy Label Performance Test: Full Cotton Load at 60°C

	Capacity (Kg)	Claimed (Energy, Wash & Spin)	Claimed Energy Consumption (kWh/cycle)	Measured (Energy, Wash & Spin)	Measured Energy Consumption (kWh/cycle)	Pass / Fail	Failed On	Variance (%)
WM 1	6	AAA	1.14	ABC	1.10	Fail	Spin Dry	21.5
WM 2	6	AAA	1.02	BAB	1.26	Fail	Energy	23.1
WM 3	7	AAA	1.19	AAB	1.20	Fail	Spin Dry	18.2
WM 4	7.5	AAA	1.10	AAB	1.12	Pass		
WM 5	5	AAA	0.95	BBB	1.10	Fail	Energy	15.8

the UK) Crosslee, Electrolux, Hoover Candy, Lec, LG, Indesit, Miele, Servis, SMEG, Sovereign, Whirlpool and Vestfrost. The 15 manufacturers cover 24 brands between them.

Effectiveness

In the UK, the sales penetration of EU Energy Label A+ performance cold appliance product is minimal. Using GfK sales figures from financial year 2005/6, only 3 % of product sold in the UK was rated A+. This compares to 18.3 % in the Netherlands, 17.9 % in Belgium, 11.6 % in Germany, 11.5 % in France and 9 % in Italy. What are the reasons for this disproportionate account? The low sales of A+ rated product are likely to be a symptom of the equally low availability of A+ rated product in-store for sale. In September 2006 80 multiple retailer stores in the UK were surveyed for the availability of ESR A+ rated product. Despite at the time of the survey there being greater than 100 ESR certified cold appliances, on average across the 80 stores, less than 2 A+ rated products were found per store.

From stakeholder consultation, the increasing trend of UK consumer preference toward frost free in cold appliances was apparent. Having subsequently reviewed the prevalence of frost free and ESR certified product, the results demonstrated a low incidence of a combination of A+ rated energy performance with frost free functionality. At the time of the study, only 15 % of ESR chest freezers, freezers or fridge-freezers had frost free. Focusing down on the last category, the popular fridge-freezer, only 2 ESR certified products had frost free. If it is a choice between performance and function, based on the anecdotal evidence discussed above, it appears consumers are opting for the latter. But is it as simple as that? Technically it's feasible to produce product with both performance and functionality, but is cost a barrier; are consumers asking for A+ performance? Of the countries noted above with higher sales penetration of A+ rated product, do their consumers have the same desire for frost free; are there products in their market that deliver both performance and functionality?

Future Direction

The proportion of the washing machine market covered by the present endorsement criteria stands at approximately 20 %. At current rates of growth, our objective of endorsing the top 20 % of the market is likely to be exceeded in the next year. Therefore at the next review in 12 months time, the criteria are likely to be strengthened. A roadmap for the likely future endorsement criteria for washing machines was drawn up and published in December 2006. The future ESR endorsement criteria for washing machines may include some or all of the following: (1) off-mode standby electricity power consumption, (2) water consumption performance requirement, (3) "A" rated wash performance at 40°C i.e. specifying a cotton full load A-rated wash performance at 40°C and (4) improved provision of consumer information within the product's instruction booklet. For example, this might include a description of the impact on energy consumption of selecting different wash programmes.

In order to explore the feasibility of introducing point 3 of the roadmap above, a testing programme was devised to evaluate the performance of five EU Energy Label AAA rated washing machines against (1) their own Energy Label declarations tested using the regular full cotton load at 60°C, (2) a test at 40°C using a full cotton load, (3) a test using the products "quick wash" setting with 40 % capacity and (4) a "part-load" test using a 40°C cotton programme with 40 % capacity. The results are presented in Tables 6 to 9 in the order described above and demonstrate the challenge that lies ahead.

Table 7. EU Energy Label Performance Test: Full Cotton Load at 40°C

	Measured (Energy, Wash & Spin)	Measured Energy Consumption (kWh/cycle)	Pass / Fail	Failed On	Variance (%)
WM 1	ACB	0.81	Fail	Wash	-5.4
WM 2	ABB	0.88	Fail	Spin Dry	17.7
WM 3	ADB	0.59	Fail	Wash; Spin Dry	-8.3; 15.6
WM 4	ACB	0.53	Fail	Wash	-4
WM 5	ADB	0.69	Fail	Wash	-7.2

Table 8. EU Energy Label Performance Test: Quick-wash with 40% Capacity

	Capacity (Kg)	Measured (Energy, Wash & Spin)	Measured Energy Consumption (kWh/cycle)	Pass / Fail	Failed On	Variance (%)	Claimed Energy Consumption (kWh/kg)	Measured Energy Consumption (kWh/kg)
WM 1	2.4	BCB	0.54	Fail	Wash; Spin Dry	-5.4; 16.9	0.19	0.23
WM 2	2.4	BBB	0.54	Pass			0.17	0.22
WM 3	2.8	ADC	0.51	Fail	Wash; Spin Dry	-8.3; 21.4	0.17	0.18
WM 4	3	ACA	0.49	Fail	Wash	-4.0	0.15	0.16
WM 5	2	BDC	0.40	Fail	Wash; Spin Dry	-7.2; 22.9	0.19	0.20

Table 9. EU Energy Label Performance Test: Part-load Test with 40 % Capacity using a 40°C Cotton Programme

	Capacity (Kg)	Measured (Energy, Wash & Spin)	Measured Energy Consumption (kWh/cycle)	Pass / Fail	Failed On	Variance (%)	Claimed Energy Consumption (kWh/kg)	Measured Energy Consumption (kWh/kg)
WM 1	2.4	DAB	0.70	Pass			0.19	0.29
WM 2	2.4	CAB	0.63	Fail	Spin Dry	17.7	0.17	0.26
WM 3	2.8	BAC	0.58	Fail	Spin Dry	24.4	0.17	0.21
WM 4	3	BAA	0.58	Pass			0.15	0.19
WM 5	2	CAB	0.54	Pass			0.19	0.27

Only one of the five washing machines tested met the energy, wash and spin performance claims given on the energy label. Two of the appliances failed on the energy consumption declaration, WM 2 and WM 5.

When tested using a full cotton load at 40°C, which anecdotal evidence suggests is becoming more common amongst consumers compared to the standard 60°C wash, none of the products tested achieved all of their Energy Label energy, wash and spin performance declarations. Four of the appliances failed to achieve their A-rated wash performance declaration.

Operating on the quick wash programme, only one appliance passed the test, the WM 2, which was the only product not to fail the 40°C full cotton load test on wash performance. However, this product exhibited the greatest variance, 32 %, from its stated kWh/kg energy consumption declaration, in order to achieve the wash performance during the quick wash test. A similar result was witnessed on the standard cotton full load test at 60°C, where WM 2 failed to meet its energy consumption declaration by a variance of over 23 %. The remaining four products failed to achieve their Energy Label wash performance declaration in the quick wash test.

All products achieved their stated wash performance declarations on the 40°C cotton programme part load test, with three appliances passing all declarations. WM 2 and WM 5, which failed to achieve their declared energy consumption during the full cotton load test at 60°C, were significantly over their kWh/kg energy consumption declaration, along with WM 1.

Compliance Testing

EST commissioned product compliance tests on 23 ESR certified major domestic appliances in order to determine the level of conformance of the products with the relevant endorsement criteria. 12 cold appliances, five washing machines, three dishwashers and three electric tumble dryers were included within the testing, in a way that incorporated every certified manufacturer and supplier within the ESR scheme, but relied on random product sampling within the stratified random sampling framework. The results were not available at the time of writing the report.

DOMESTIC HEATING

Gas Boilers – Future Standards

The performance requirement for domestic gas fired boilers under the ESR Scheme is based on the SAP seasonal efficiency calculation and the resulting SEDBUK rating; currently ESR endorses SEDBUK A-rated boilers. In order to continue to endorse the top-20 % of products within this group, standards need to be uplifted. SEDBUK considers the space heating performance of the boiler but for combination boilers does not consider the water heating efficiency. Future standards, to be implemented later in 2007, will require combi boilers to be tested for their water heating efficiency according to tapping cycle 2, EN13203. In addition, an off-mode electrical standby power consumption requirement of ≤ 10 W will be estab-

Table 10. Domestic Combination Boiler Testing: Water & Space Heating Efficiency Comparison (Gastec, 2007)

Boiler Model	Fuel	SAP Seasonal Efficiency[1] (Gross %)	SEDBUK[1] Rating	Tapping Cycle Number					
				2			3		
				Q Gas[2] kJ[3]	Q Useful[2] kJ	Efficiency Gross %	Q Gas[2] kJ	Q Useful[2] kJ	Efficiency Gross %
1	NG	87.1	B	30,812.7	21,857.5	63.8	51,309.2	42,776.0	76.6
2	NG	87.7	B	28,157.0	21,807.0	69.7	48,721.6	42,797.9	79.1
3	NG	90.8	A	26,488.7	21,695.4	73.7	45,788.8	42,708.1	84.0
4	NG	90.3	A	27,748.5	21,775.3	70.6	47,461.8	42,736.0	81.0
5	LPG	88.0	B	27,125.7	21,781.1	73.9	47,910.3	42,730.9	82.1

Notes: 1. Taken from the SEDBUK (2007) database; 2. Measured over the duration of the tapping cycle; 3. Based on the Net Calorific Value [NCV] of the gas at 15°C, 1013.25 mbar; NG = Natural Gas; LPG = Liquefied Petroleum Gas; Q Useful is the total energy delivered to the water immediately after the DHW heat exchanger, over the test period [kJ]; Q Gas is the total energy delivered by the gas over the test period [kJ, Net]

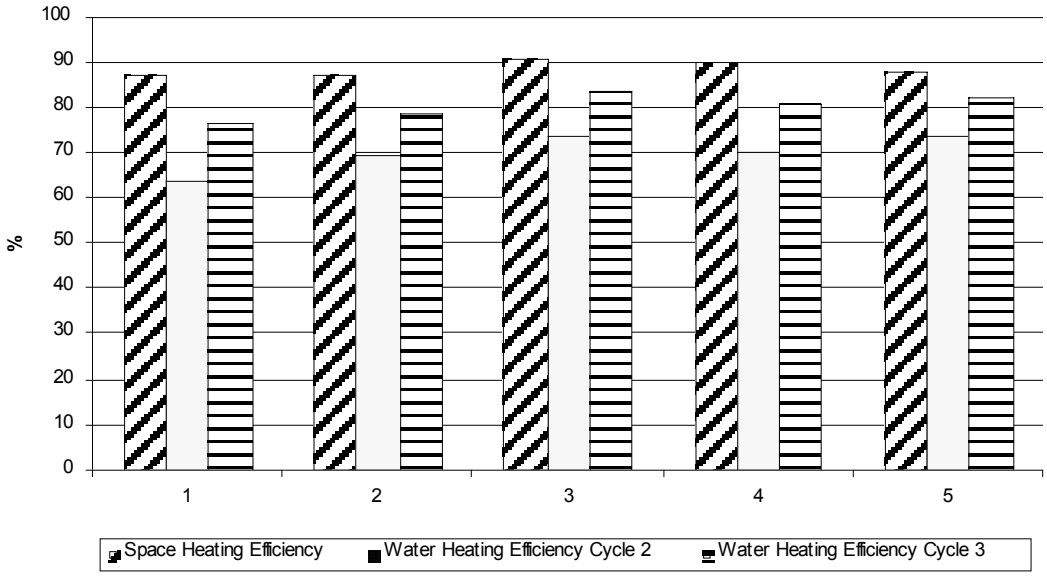

Figure 3. Domestic Combination Boiler Testing: Water & Space Heating Efficiency Comparison

lished. Five boilers have already been tested against the new water heating efficiency requirements; the results are tabulated and represented in Table 10 and Figure 3. A comparison of the space and water heating efficiencies for each of the five boilers reveals an emerging trend that water heating efficiencies lag significantly behind those of space heating efficiency.

Product Labelling

RECOGNITION

The purpose of the ESR label is to enable consumers to easily identify the most energy efficient choice in their purchasing decisions and therefore recognition of the logo is key. According to the EST National Attitude and Awareness tracker 44 % of consumers recognise the ESR label (Drummond Maddel, 2007). This is compared to 16 % spontaneous awareness of comparable schemes such as the EU Energy Star. In fact, recognition of the EU Energy Label in this research is only 10 % higher, which is a small percentage considering that the EU Energy Label is a legal requirement compared to the voluntary status of the ESR label.

Furthermore, out of the messages consumers remembered receiving from EST, the ESR label on products ranked joint highest as the key item being promoted.

This high recognition is partly through the promotion of the ESR Endorsement Scheme through consumer marketing, but also through trade marketing, where the label is being effectively used within the purchasing process to help convert awareness into action. From a supply chain perspective evaluation work demonstrates that 66 % of the trade audience are aware of the ESR label and those involved in the scheme believe it increases the sales of endorsed products.

It is the joint combination of consumer marketing and provision and promotion of ESR products through the supply chain which has resulted in the tangible recognition of ESR as a brand. In the white goods sector, 57 % of people who bought an appliance over the last 3 months looked to see if it had an ESR label on it (Drummond Maddel, 2006). Awareness of low energy appliances is low amongst those who did not know to look for the ESR logo but interest is high – 83 % were either very or quite interested in choosing an ESR appliance next time.

There is also evidence to support further expansion of the certification mark into new areas. 78 % of the consumers we asked thought there should be an energy label for electrical goods such as set top boxes, hi-fi, DVD players and digital televisions in the same way that that there is for white goods and 35 % agreed either strongly or slightly, that they would be prepared to pay a price premium for efficient products of this type, if an ESR label was present.

Figure 4. Examples of partnership activity and Energy Saving Recommended

APPLICATION AND MONITORING

Application of the ESR logo through the supply chain is a constant role for the Scheme to maintain in order to ensure recognition. Without this there would be considerable attrition to the visibility of the logo. There are a number of changing factors which affect this including; changes to Scheme members, criteria changes and product turn over through range changes.

These are tackled by the following methods:

- Working with retail partners to ensure staff awareness of the ESR Endorsement Scheme and the benefits of using the ESR label as a sales tool for customers wanting the environmental choice.
- Working with Manufacturers to investigate applying the ESR label to relevant products at source, or on product packaging.
- In store monitoring to assess the application of the label and to document any misuse of the certification mark.
- In store merchandising teams to assess and correctly apply the ESR label to relevant products following key changes or prior to marketing activity.
- This is of course supported by on going communications to the consumer through trade channels and consumer marketing to create demand.

In addition to the work that takes place in store, monitoring of the label also takes place through a regular press and online audit, which documents the application of the label and allows for appropriate follow up action to take place. This ensures that only products that are eligible for endorsement are supported and maintains integrity for the brand.

In 2006/7 brand guidelines for trade partners were developed to ensure clear, transparent communications in terms of the procedure for label usage and guidelines for best practice applications.

Market Presence

PARTNERSHIPS

Historically the promotion of the Scheme with trade partners has taken place through tactical activity such as joint promotion of relevant products online, press advertising or newspaper promotions and through signposting in store, all of which have proved successful in terms of building recognition of the label to where it is today. In some instances the Scheme can act as a lever to use one part of the supply chain to put pressure on the other. For example a Recommended Retailer who wanted to partake in a joint promotion of ESR products put pressure on their manufacturer to make sure that the products supplied where endorsed by the Scheme. As well as tactical activity through key partners it was felt that the Scheme could

use this influencing ability to take a more holistic approach to the trade partnership, with the aim to make energy efficiency a core part of their business.

CASE STUDY OF IN-DEPTH TRADE MARKETING RELATIONSHIP – B&Q

What was the identified problem?

Within the Trade Marketing team at the EST most of the marketing activity to date had been short term tactical activity and some projects required support funding from EST Trade Marketing budget in order to see them to fruition. Although most of the projects had delivered wide ranging marketing activity, the impact of this was felt to be not as great as the potential that the supply chain channel promised. Also all activity was measured in numbers of marketing campaigns rather than in terms of carbon saving or consumers taking actions to reduce CO_2 emissions.

What was the identified opportunity?

There was an opportunity to dramatically increase the impact of any marketing activity of the supply chain channel. This could be measured in advertising equivalency value terms, real carbon savings, volume and value of product sales affected as a direct result of EST involvement, return on investment for time rather than financial input and a much greater adoption of ESR products within the portfolio.

What was the objective?

The objective was to engage a target organisation in helping to promote energy saving in the home to consumers whilst providing means to actually take action for maximum benefit with minimum financial investment by EST. It was felt that rather than engaging with middle managers to implement marketing campaigns with partners that the Chief Executive should be approached with a robust, attractive and commercially compelling proposition so that the whole target organisation could be engaged.

Why target B&Q?

From EST's perspective:

- B&Q had a huge reach into the market place (reported 5 M customers, 68,000 staff, around 400 stores throughout Great Britain, strong CSR credentials and a large number of relevant suppliers that they could influence).
- A large number of products sold address energy saving measures i.e. loft insulation, low energy lighting, draft proofing, boilers, TRVs, heating controls, washing machines, dishwashers, tumble driers etc.
- B&Q were market leaders in the home improvement/DIY sector
- B&Q CEO identified the opportunities presented by Energy Saving at the same time and wished to work more strategically with EST.

From B&Q's perspective:

- Increased sales revenue, volume and profit
- Increased credibility from a CSR perspective.
- Increased customer traffic into their stores and online.
- Increased understanding of the issues surrounding energy saving

What was done?

A meeting was held between B&Q Marketing directors and EST to discuss the opportunity to work together and what form that may take. It was proposed initially that pilot activity involving local energy advice via EST's advice network and based on a whole house approach could work for mutual benefit.

A trial promotion on energy efficient products was put together in three stores over a set period to assess the appetite amongst B&Q's customers. The pilot activity took place from the 17th to 20th May 2006 and involved the following elements:

- Discount in trial stores of selected energy efficient products
- In store communications including shelf promotion where products were displayed, leaflets, display stand, posters and competition
- Staff briefing and joint staff attendance to offer advice during the event
- Press advertising in local news papers announcing activity

Outputs

The pilot allowed for testing of specific tactics and communication streams as well as the over-arching creative idea. This resulted in clear feedback and much learning to take forward to future activity. There were approximately 150 entries to competitions and 2 weeks after the event ran, 30 % of B&Q customers claimed to recall the activity with 10 % who claimed to buy energy efficient products during this time.

The key output of the activity was not necessarily the physical results from the promotion but that that the foundations of the relationship between both parties had been laid. B&Q were able to show added value through the relationship and exploration of energy saving as an area back to their business and the pilot was the start of further activity between both parties.

Following the pilot EST made more contacts within B&Q whilst developing the pilot activity, many more opportunities presented themselves. Various discussions with the CSR team, marketing and PR teams, the buyers and category managers soon resulted in B&Q adding new products to their range directly related to energy saving. A Micro wind turbine, solar thermal panels and an energy tracker used to monitor the electricity used by products in the home were added to the range for an October 2006 launch.

As part of the relationship that was becoming ever stronger unprecedented access to B&Q was granted. EST was invited to:

- An internal product launch week 25th to 28th July 2006 for 2,500 store managers and staff majoring on energy saving products.
- Input to the B&Q strategic plan featuring energy saving as a key initiative

Figure 5. Selection of communications material

- Participate in a workshop with all B&Q buyers on 14th September
- Produce a letter for the white goods buyer to send to suppliers requesting ESR products supplied as standard.
- Feature in an integrated marketing campaign from the end of September 2006 to the end of October 2006.
- Parliamentary reception on the 25th October
- Internal product launch 5th to 8th December 2006 for 2,500 store managers and staff featuring appliances and energy saving.

In addition EST was part of an integrated marketing campaign which followed in October 2006. B&Q invested heavily into the campaign which featured EST contact details and information widely. In addition the ESTs advice network details were also featured and given the opportunity to operate in B&Q stores. It was a national campaign airing in all UK regions on all terrestrial stations (ITV, C4, C5), some digital and some satellite channels. There was an interactive 'press red' element on Sky where viewers go through to a separate screen, order the B&Q Energy Efficiency brochure, and go into a draw to win a wind turbine. The response to this was 3 times the amount which Sky had estimated.

B&Q also produced a large quantity of 20 page brochures heavily featuring EST for distribution in press and in-store. There was a press advertising campaign element as well as PR featuring the B&Q CEO being interviewed widely. Campaign tactics included: internet, press advertising, TV advertising, interactive TV, literature, POS, posters, staff training, EEAC participation, PR, direct mail, government lobbying event in parliament and radio coverage.

Conclusion

The integrated campaign was a great success. Within the first month B&Q's main product focus had become the fastest growing highest revenue stream for them. In addition the EST Web addresses featured in the B&Q adverts received double the expected number of hits and the local authority planning departments received a heavier than normal contact rate as a result of the renewable energy element to the campaign. In terms of lessons learnt from the joint activity, the key ones are to allow enough time for the relationship to develop, and to keep the long-term goals in mind and work toward them. The example of the B&Q relationship marks a key change in the way that trade partnerships are handled. This has resulted in a change of function of the trade partnerships team – both in terms of how the team is focussed and also how partners are identified and marketing activity planned, delivered and measured and is probably the biggest change in terms of marketing approach since the Scheme launched in 2000.

Future Marketing features

In addition to the approach outlined above, there are number of other developments in hand which will also shape the future marketing of the Scheme. We are looking to improve our presence online on partner's sites as well as potentially through shopping channels and on sites where consumers go to make theory purchasing decisions.

In addition we have started marketing the Scheme to Independent Electrical Retailers (IERs) so that smaller organisa-

tions with ESR products can feel supported by the Scheme. While they are more disparate and harder to target compared to multiple retailers, IERs are an important medium for us in communicating our messages. IERs tend to operate at the higher end of the market (they cannot compete with the prices of Comet and Curry's on entry level products) therefore they tend to stock a high number of A+/++, A and AAA products and we identified a need to enable IERs to promote the benefits to sell these products. Label monitoring had indicated that a high number of IERs were using the label in their promotions indicating a willingness to be involved. A bespoke marketing toolkit was created to support IERs and as an incentive for them to join the Scheme in order to be kept abreast of Scheme developments ensuring correct use of the label. This has recently been broadened to include IERs in the lighting sector and as a result of such activity there are now 26 IERs signed up to the ESR Scheme which represents over a third of its retail members.

Summary

Visibility is vital for any successful certification scheme and marketing is a large part of the ESR Scheme. This encompasses a complete journey through the supply from start to finish. Labelling, monitoring, application and partner marketing are key in order to provide the consumer with a differentiator and at the end of the day a vehicle which enables them to reduce carbon dioxide through their purchasing decision. Climate change as an issue has reached its tipping point which presents both opportunities and challenges for the marketing of the Scheme going forwards. The case study which marks a step change in direction along with further improved features will be instrumental in ensuring the successful expansion of the Scheme.

Next Steps

In November 2006, a roadmap for the future direction of ESR's certification system was agreed. The requirements of various ISO standards for environmental labelling (ISO 14020 and ISO 14024) and for quality management systems (ISO 9001) were contrasted against the current ESR certification system. This internal process was paralleled by an external peer review and benchmarking study performed by an international certification body. Furthermore, during this time, EST secured the internal commitment to establish a certification system compliant with EN 45011: the standard which specifies how certification bodies should operate product certification schemes.

In addition to the steps to improve the quality of the product certification outlined above, the Scheme is also currently assessing the feasibility of expanding the Scheme into homes, renewables and transport. Currently a case for each of the three new areas is being prepared for consideration; no formal commitment has yet been made.

In effect, whilst also describing the current position of the ESR Scheme, this paper has also been about the future: about the expansion into ICT, about the future standards in consumer electronics, major domestic appliances and heating products, about the new plan for partner marketing and the future plans for ESR's certification system.

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Glossary

CSR	Corporate Social Responsibility
DEFRA	Department for Environment, Food and Rural Affairs
DIY	Do-It-Yourself
EEAC	Energy Efficiency Advice Centre
EEC	Energy Efficiency Commitment
EPIS	Environmental Product Information Schemes
ESR	Energy Saving Recommended
ICT	Information and Communication Technology
IDTV	Integrated Digital Television
IER	Independent Electrical Retailer
ISO	International Organisation for Standardization
OFGEM	The Office of Gas and Electricity Markets
POS	Point of Sale
SAP	Standard Assessment Procedure
SEDBUK	Seasonal Efficiency of Domestic Boilers in the UK
TRVs	Thermostatic Radiator Valves
UNEP	United Nations Environment Programme