**Mapping and analysis of
sustainable product standards**

Final report

March 2008

ERM

Department for Environment, Food and Rural Affairs

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1   INTRODUCTION

1.1   PROJECT BACKGROUND

Sustainable Consumption and Production (SCP) is a key UK government priority, as set out in the 2005 UK Government Sustainable Development Strategy. It is recognised that a robust evidence base to support policy makers is central to responding to the challenge of delivering sustainable consumption and production policy and programmes.

Defra together with the Market Transformation Programme (MTP) has created a list of agreed mandatory product specifications for central government entitled "Quick Wins" that have been chosen according to a set of pragmatic criteria; however for future minimum product standards it plans to assess, evaluate, endorse and support sustainable product standards that already exist and that have been created in consultation with industry as it is deemed not feasible or appropriate for government to attempt to maintain a single list covering a wide range of products and to supply all the evidence for these standards.

In order to inform the Sustainable Procurement Operations Programme (SPOP) and the Sustainable Procurement Operations Board (SPOB), Defra commissioned ERM to investigate the range and robustness of existing, established sustainable product standards, databases for energy saving products and product lists. Defra plans, through the use of these standards, to give a clear steer to industry on future standards so as to encourage innovation.

1.2   OBJECTIVES

The main objectives of this study were to:

- Identify and assess sustainable product lists, standards, specifications and databases;

- Develop a methodology to categorise sustainable product standards according to their overall robustness and credibility, potential benefits, ease of use and applicability to the UK; and

- Provide a more detailed assessment for a set of product standards that can help towards the delivery of the Government's Sustainable Procurement vision of a zero-carbon, zero-waste, and water efficient public sector and supply chain that respects biodiversity.

1.3 REPORT STRUCTURE

The remainder of this report presents the methodology adopted to meet the study's objectives and the key findings of the project. It is structured as follows:

- *Section 2* presents the results of the high-level assessment and mapping exercise that ERM undertook in order to identify existing standards in the relevant product areas.

- *Section 3* provides an overview of the methodology that was used for classifying the standards into 3 classes/categories.

- *Section 4* presents detailed assessments for those standards that ranked highly during the classification and screening exercise.

In addition, two excel spreadsheet databases supplement this report containing (a) information relating to the high-level assessments and (b) the classification tool and results for each assessed standard.

2.1   SCOPE OF RESEARCH

Mapping of sustainable product standards was undertaken for nine priority procurement areas:

1. Construction (limited to buildings)
2. Health and Social Work
3. Food
4. Clothing and textiles
5. Pulp, paper and printing
6. Energy (procurement of electricity)
7. Consumables – office machinery and computers
8. Furniture
9. Transport - business travel and vehicles

The scope of the study was as follows:

- It was limited to existing sustainable product lists, standards, labelling schemes, specifications and databases that are accessible in the public domain. No proprietary standards, lists or databases were assessed.
- Although it was agreed that the scope would not extend to procurement guidelines (i.e. guidance documents outlining objectives and principles and/or tender scoring systems), several international and national sets of guidelines were identified and the product choices and criteria therein assessed where these were considered of significance to the exercise.
- During the high-level mapping exercise, sustainable product standards were identified world-wide with all schemes for which basic information were available. However, assessment of standards was restricted to those that were available in English language (including translations).

2.2   RESEARCH APPROACH

Considering the global scope of the study and the high number of identified standards, ERM developed a simplified common *pro-forma* methodology that was used during the high level assessment. The methodology intended to capture general information relating to the standards (i.e. name, whether eco-label, standard and eco-label etc.), *sustainability criteria* (issues and impacts that are addressed by the standard) and *robustness criteria* (i.e. consultation, accreditation process etc.).

Sustainability Criteria

An assessment was undertaken to understand if the standard includes specifications or requirements that cover/address any or all of the following relevant sustainability issues:

- Energy/Climate Change
- Waste
- Water
- Biodiversity
- Socioeconomic (mainly labour issues)

ERM considered it important to include this information as it would be useful to know if a standard that targets for example a certain product area known for its high climate change impact, includes energy related requirements etc. These impact areas were interpreted 'widely' as appropriate; for example, waste was understood to refer also to atmospheric pollution (other than GHG emissions) impacts.

Robustness Criteria

The following factors were assessed in order to describe the 'robustness' of the standard:

- Comprehensive consultation process
- Regular review or update (i.e. how 'live' or up-to-date the standard is)
- Independent accreditation/verification
- Whether the standard has been adopted/endorsed by governmental or other public sector bodies
- Overall robustness of the evidence base
- Life cycle considerations
- Measurable benefits

These factors were discussed with Defra in order to ensure adequate coverage of the relevant aspects of 'robustness' in this context and to gain a common understanding of how these might be understood and interpreted across a large number of different schemes.

The results were summarised in a single *pro forma* table for each standard and compiled in a master excel spreadsheet. An example is presented in *Figure 2.1.*

*Figure 2.1*   *High level assessment table template (incl. standard example)*

General Information	
Name	LEED (leadership in Energy and Environmental Design)
Type	Standard and Eco-label
Source	http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222
Country	USA
Responsible Body	U.S Green Buildings Council)
Type of responsible body	NGO
General Description and rationale	LEED is the nationally accepted benchmark for the design, construction and operation of high performance green buildings in the US.
Assessed Area	Construction
Other Applicable Areas (s)	

High Level Screening		
Aspect	**Flag**	**Comments**
Energy /GHG	Yes	Energy is the main focus, through LCA and energy efficient design
Waste	Yes	Waste through recycling of aggregates.
Water	No	
Biodiversity	Yes	Ecological enhancement promoted.
Socioeconomic	Yes	
Robustness	Has it been agreed through consultation?	LEED Rating Systems are developed through an open, consensus-based process led by LEED committees. Each committee is composed of a diverse group of practitioners representing the construction industry. There is
	Yes	
	Frequency of update or formal review	Average update and review every two years.
	2yrs.	
	Independent accreditation/certification body assuring the quality of standard ?	The U.S. Department of Energy, Energy Efficiency and Renewable Energy, Office of Building Technology, State, and Community Programs assure the quality of the Eco-Label.
	Yes	
	Adopted as official requirement by any government bodies?	State and local governments across the country are adopting LEED for public-owned and public-funded buildings; there are LEED initiatives in federal agencies, including the Departments of Defense, Agriculture, Energy, and State. It was an Govenment intiative that from January 1, 2006, all LEED for
	Yes	
	Robustness of evidence base	Lots of successful measurable projects since 2001 throughout the US
	High	
	Life Cycle Considerations?	Building and product LCA considered.
	Yes	
	Have the standards benefits been measured?	
	Yes	

Additional Relevant Information	
Potential For Innovation	
Links with government policy or other initiatives	Linked to BREEAM, HK-BEAM and Comprehensive Assessment Systems for Building Environmental Efficiency (CASBEE)
Other	

Other useful information that for some standards was readily available such as e.g. links or synergies with existing policy or initiatives and potential for innovation was captured under "*additional relevant information*".

2.3   *PROFILE OF COVERAGE*

ERM identified and assessed a total of 207 standards, databases and product lists globally. This number is not conclusive of the number of global existing standards overall but provided a rigorous starting point for the purposes of the study. Advice was sought across relevant ERM staff to ensure that key schemes had not been omitted for most of the nine product areas. *Figure 2.2.* presents a breakdown of the 207 standards identified by product area.

Figure 2.2   ***Standards assessed per product area***

Standards Assessed (by area)
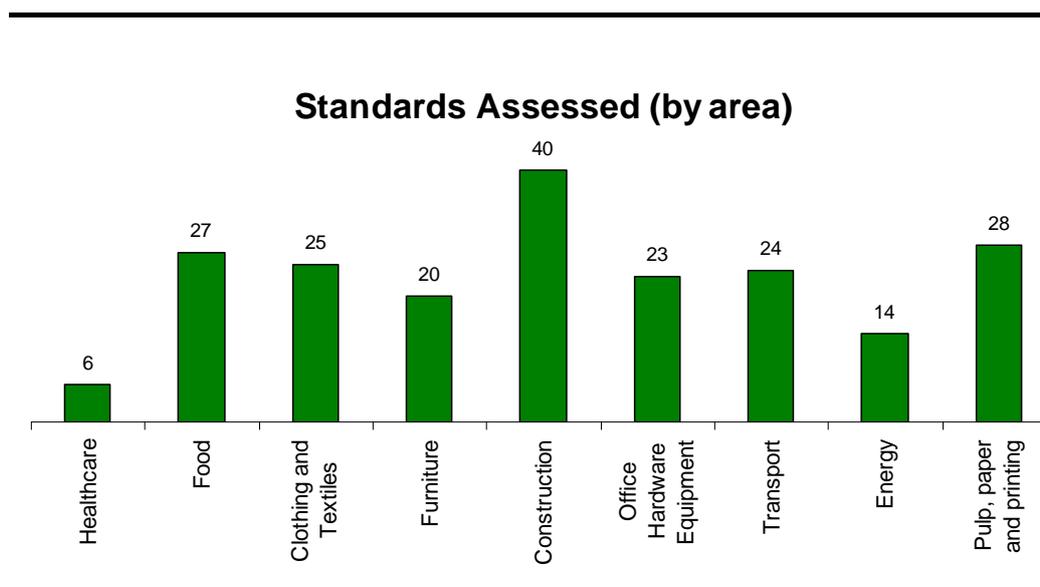
It can be seen that construction represented the product area for which the most standards were identified, followed by pulp, paper and printing and food. Relatively few relevant standards were identified for the healthcare and energy supply product areas.

Figure 2.3 shows the approximate number of standards by country or region.

Figure 2.3   ***Standards by Region or Country***

Standards by country

UK	USA	Canada	Australia	New Zealand	Japan	Asia	EU	Global / Other
13	21	10	8	7	8	28	63	57
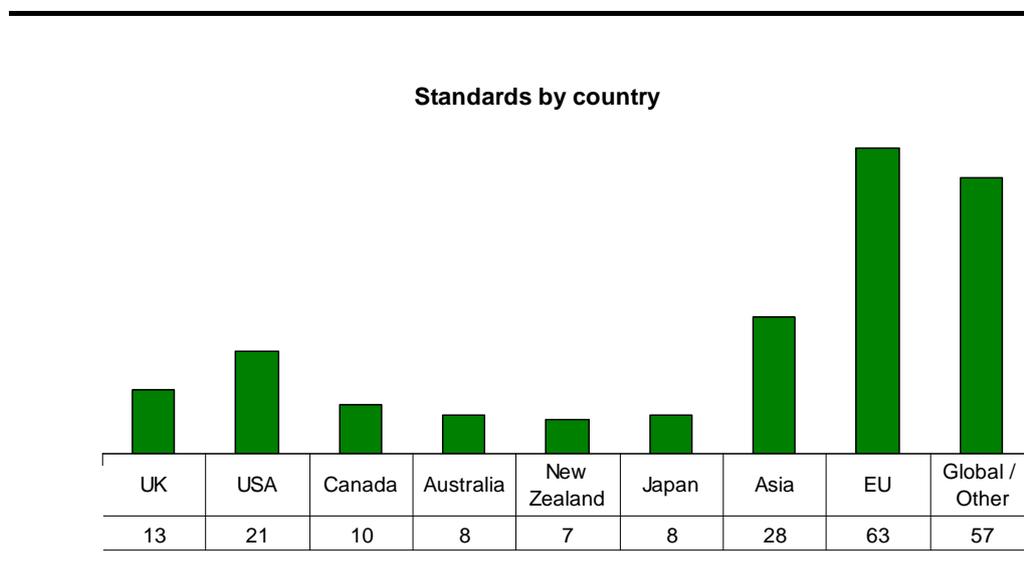
Europe has been at the forefront of sustainable standard development for many product areas as reflected in *Figure 2.3*.

A range of different schemes were assessed which broadly fell under the following 5 categories:

- Standards
- Standards (and associated eco-labels)
- Eco-labels
- Databases
- Product lists

The distribution of the above is presented in *Figure 2.4*

Figure 2.4   *Assessed items by type*

	Standards	Standards and Eco-label	Eco-labels	Databases	Product Lists
■ Series1	43	129	20	11	4
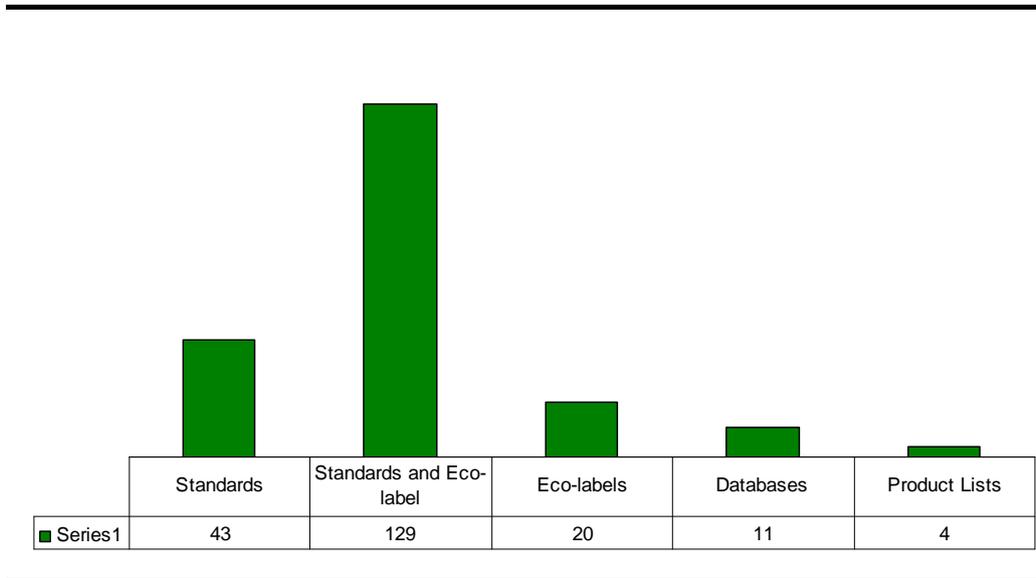
"Standards and eco-label" was the type of scheme most frequently identified and assessed. Entities that meet the requirements and are certified under this category can display the scheme's associated eco-label. That does not apply for "*standards"* that do not have an associated eco-label. It was noted that "*Standards"* are usually used for business to business and/or assurance purposes. Schemes under "*Eco-labels*" category were characterised as such because at large, their certification process references and depends upon existing/other standards.

3.1   BASIS FOR CLASSIFICATION

The ultimate aim of this study was to provide a more detailed assessment for a set of product standards that can help towards the delivery of the Government's Sustainable Procurement objective. This presented a challenge considering the high number of standards that were identified during the high-level assessment and assessing them all in detail was beyond the scope of this study. A logical process for determining which standards to further assess was therefore sought.

3.2   CLASSIFICATION METHODOLOGY

ERM developed and agreed with DEFRA a simple methodology that allowed for an effective evaluation and screening of the 207 standards for classification purposes into three "classes" broadly reflecting their potential suitability for adoption (according to potential benefits, robustness and credibility, ease of use and applicability to the UK).

The classification methodology 'tool' was applied to each of the standards, using the related information already available from the previous task along with additional research conducted within each product area.

The methodology developed comprised 15 'checklist' questions/assessment criteria that each standard was assessed against. These are presented below in *Table 3.1* along with some comments explaining the rationale for each question/criterion.

Table 3.1   Classification Methodology

Assessment Criteria	No.	Question	Comments and Rationale
Materiality of Potential Benefits	1	Does the standard go beyond existing EU or UK regulatory requirements?	If a standard does not meet or exceed minimum requirements then its materiality is questionable.
	2	Does the standard address the key impact(s) that are relevant to the product category?	For a standard to be complete and material it is important to address the major impacts that are relevant to the product category.
	3	Does the standard's product area fall within one or more current "priority areas of spend"?	A standard which falls within a priority area of spend would provide a bigger benefit in the event of adoption than for a standard that applies for a niche area of spend.
Robustness and Credibility	4	Has the standard been agreed through a comprehensive consultation process?	A consultation process that involves the relevant stakeholders during the standard development is a sign of robustness.
	5	Is an appropriate 3rd party certification or accreditation process in place?	3rd party certification or accreditation ensures the credibility of the standard.
	6	Is the standard subject to regular reviews and updating?	In order to ensure that standard is "*live*" and up to date. This criterion includes an element of proportionality (i.e. different best practice and subsequent evaluation for fast vs. slow evolving sectors).
	7	Is there overall buy-in for the standard? i.e. is it endorsed or supported by the relevant stakeholders?	Standards that enjoy support are preferable. It also provides an indication that standard is "alive" and could be more easily adopted and implemented.
Ease of Use	8	Is the standard in a format that can be easily accessed and used? (e.g. in English, available on-line etc.)	Applicable standards should be in English and publicly available.
	9	Is the standard in its current form overly complex, prescriptive or inflexible?	Overly prescriptive and inflexible standards could create practical implementation problems
	10	Would the potential effort required for adaptation justified by the apparent benefits?	It includes an element of proportionality and subjectivity.

Assessment Criteria	No.	Question	Comments and Rationale
Applicability to the UK	11	Is the issue(s) addressed by the standard in conformity with UK sustainable procurement objectives?	There are no or limited benefits from the use for standards that are not aligned with UK's sustainable procurement objectives
	12	Is the standard relevant to the UK's general situation (e.g. geography, climate, economy etc)?	Standards must be considered relevant to products in use (or becoming in use) in the UK market (for example, a standard may be applicable to building materials not used in the UK construction sector); where certain products or schemes are inherently linked to national or regional factors (e.g. energy resources which may not be available in the UK) this might also be considered of limited or no immediate relevance.
	13	Would the standard encourage activity beyond current UK standard practice?	Selected standards should encourage activity beyond current UK standard practice. For example a foreign standard could be addressing a valid sustainability issue, applicable to its standard's country of origin, however it may not apply at all or may have already been addressed in the UK
	14	Are there indications that supply would be able to meet market demand in event of adoption of the standard?	This includes a high level assessment of potential supply issues that relate to product availability and demand in the event of adoption. Product availability and assurance of supply will strongly affect the use of label types within procurement policies by public organisations and businesses, including retailers.
	15	Are there any obvious potential adverse economic impacts associated with adoption of the standard (e.g. significantly higher price, job losses, loss of competitiveness)?	In principle standard adoption should not have adverse economic impacts for the relevant UK sector. A high level assessment with respect to product price issues and potential loss of competitiveness and job losses for the relevant UK sector was undertaken

NB – see below for an explanation of the colours used

Each standard was assessed against the above criteria on a "pass" or "no pass" basis and for different *"pass"* or *"no pass"* combinations, the tool (which accompanies this report in excel format) categorised the standard into one of the three classes descried in *Table 3.2* below.

Table 3.2   ***Classes Categories***

Class	Comment
"Class 1"	Standards which could be used off-the-shelf (e.g. the technical specifications of the standard applies to products available in the UK, their performance parameters are appropriate and overall they are suitably ambitious for UK public procurement policy).
"Class 2"	Standards which could not be immediately use but could be adapted (e.g. the verification methodology is sound, in the public domain but, perhaps the criteria are set too low).
"Class 3"	Standards which are generally unsuitable for UK public procurement or could not be easily adapted.

ERM and Defra agreed a set of minimum *'pass 1'* criteria that are included in the orange coloured cells of *Table 3.1* (i.e. criteria No. 1, 2, 11, 12, and 13). The tool was designed in such a way that when a standard failed one of these five "*minimum criteria*" it was categorised as "Class 3". Effectively a standard would need to pass all of the above five criteria in order to qualify as a "Class 2" scheme. Finally, for a standard to qualify as "Class 1" it would need to pass all fifteen criteria.

Some of the limitations of the described methodology are noted as follows:

- **Lack of information**: The assessors had to resolve issues caused by a basic lack of information for certain standards whilst using the above methodology and attempting to answer one or more of the criteria with a simple "*Yes*"/ "*No*" answer. An early option considered was to employ a fourth category such as *"more research required"* or *"unable to classify"*. However, this option was rejected by both ERM and Defra as it seemed to open the possibility for a significant number of standards falling into this fourth category which would have been of little use for furthering the purposes of this study.

- **Subjectivity and Proportionality**: Overall, the classification results relied upon much judgement from the user; this was compounded by the requirement of comparing a wide range of scheme types according to a common methodology. Therefore a guiding principle used was the application of *proportionality* i.e. not applying criteria too literally or prohibitively such that unrealistic/unreflective classifications were arrived at e.g. certain products/applications might require a higher burden of underlying evidence based to be deemed 'robust'.

- **Practical Materiality Issues**: Classification was not based on the practical materiality of potential benefits as it was beyond the scope of the study to
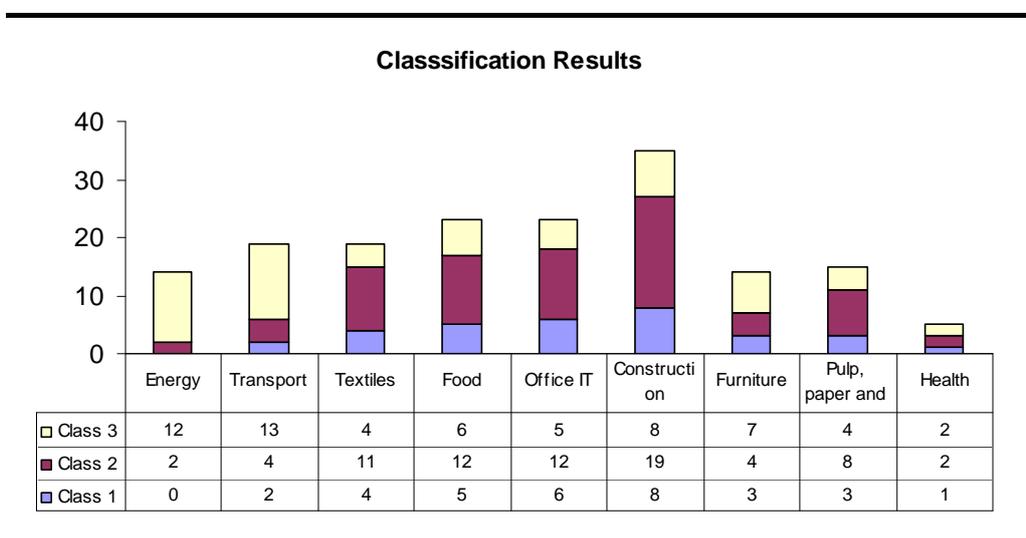
assess the way that certified members of the scheme actually implement relevant scheme requirements.

- **Economic Issues**: Supply and demand, price and other economic issues were assessed only at a high-level and where possible within the time constraints (subject to available information rather than primary research); therefore further detailed research may be required to determine with certainty the validity of the classification results based on that criteria.

3.3 *RESULTS*

The results of the screening and classification assessment are presented in *Figure 3.1* for each product area.

Figure 3.1 *Classification Results*

Classsification Results

	Energy	Transport	Textiles	Food	Office IT	Construction	Furniture	Pulp, paper and	Health
Class 3	12	13	4	6	5	8	7	4	2
Class 2	2	4	11	12	12	19	4	8	2
Class 1	0	2	4	5	6	8	3	3	1

The area found to present the most robust standards applicable for the UK was Construction followed by Office ICT equipment. This appears in accordance with expectations as sustainable construction is a well-established area of focus for many countries including the UK especially from an energy perspective. For example, in the UK, energy used in constructing, occupying and operating buildings represents approximately 50% of greenhouse gas emissions. [1]

Similarly for Office ICT equipment major energy savings can be achieved and relevant schemes have been present and evolving for almost two decades. On the other hand a high number of less applicable and/or non-adaptable standards for the UK were noted for areas such as energy and transport. This partially reflects the fact that existing standards tend to strongly reflect national or regional circumstances as well as often being unaligned with ongoing national policy development; therefore applicability for the UK was

(1) http://www.environment-agency.gov.uk/aboutus/512398/289428/654938/

limited. More detailed consideration of these trends and factors is presented in *Section 4* according to each product area.

DETAILED ASSESSMENT

4.1   INTRODUCTION

In this section a more detailed assessment of schemes, categorised as "Class 1" during the classification exercise described in *Section 3*, is presented. The detailed assessment was limited to two standards per product area (or one where two were unavailable). ERM selected and agreed with Defra the standards to be assessed for product areas where more than two "Class 1" standards were found. The analysis presented below is based upon a desk research and review of publicly available information.

Table 4.1   Standards chosen for further assessment

Area	Standards
Energy	• Eugene Green Energy Standard
Transport	• Blue Angel eco-label for Low-noise and low-pollutant municipal vehicles and buses • Nordic Ecolabelling – The Swan Label for Vehicle Tyres
Health	• Nordic Ecolabelling - The Swan Label for Peritoneal Dialysis (PD) and Intravenous (IV) sets
Food	• Marine Stewardship Council (MSC) - Principles and Criteria for Sustainable Fishing • Fairtrade - Fairtrade Labelling Organization (FLO)
Clothing and textiles	• EU Ecolabel for Textiles • Oeko-Tex
Construction	• The Code for Sustainable Homes • The Eco-Management and Audit Scheme
Office ICT equipment	• IEEE Standard 1680 and EPEAT • ENERGY STAR • ECMA 370
Furniture	• Environmental Choice New Zealand - Furniture and fittings
Paper, pulp and printing	• Forest Stewardship Council (FSC) • Nordic Ecolabelling - The Swan Label for Paper products

4.2   ENERGY

4.2.1   Product Area Background Information

Fourteen standards (including labelling schemes and procurement guidelines) were assessed within the energy category, all of which relate to the

procurement of renewable or 'green' electricity [2]. The main impact addressed through such schemes is the carbon intensity of electricity; however at present this is not interpreted in a quantitative manner; none of the schemes address or compare emissions from electricity supply (CO_2/kWh) using either a combustion-only or LCA approach. Rather, such schemes aim to promote or assure electricity generation from certain types of renewables, assuming that they are less carbon intensive than alternative sources (e.g. fossil fuels).

Of the fourteen standards assessed, eleven represent national labelling and certification schemes for green electricity products (tariffs and/or funds) - of which eight are European - and three represent international or European-wide schemes. The most significant of the latter is the Eugene Standard (see below), which serves as an international best practice standard to which national labelling schemes can be accredited.

The two key issues relevant to the environmental credibility of green electricity products are eligibility (i.e. which sources, technologies and project types?) and additionality (i.e. does procurement increase the use of renewables beyond what would otherwise have occurred?). Both issues have been, and continue to be, the subject of much debate. In the UK, there has been increased scrutiny from NGOs and consumer groups concerning the 'additionality' question in particular, with claims made that many existing green electricity are not additional (either to the Renewables Obligation or the prevailing market conditions incentivising renewables). This is a complex issue with a range of opinions as to how best to determine 'additionality'.

A central finding of the assessments is that most existing schemes strongly reflect national or regional circumstances. Despite a large and growing body of policy and regulation at EU-level, policy influencing national electricity supply is largely framed at the Member State level. This reflects differences in national resource availability, geography, energy supply routes, import dependency, status of energy market deregulation etc. Also, given the complexities and extensive stakeholders involved in the development of any change to energy policy and markets, the adoption of a scheme not tailored to, or designed for, the national (e.g. UK) situation would appear politically unacceptable. As such, national schemes are often of limited value in their application to other countries. Rather, framework standards such as Eugene, which offer flexibility within a clear set of principles, offer more practical applicability and value to those countries where standards/schemes do not exist.

For the reasons outlined above, most of the standards assessed were classified as "Class 3" standards considered to be of no apparent applicability to the UK. Only one standard (the Eugene Standard) was considered to be of relevance to the design of a UK labelling scheme (or, alternativelty, the procurement of UK

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[2] 'green' electricity usually refers to electricity generated from certain specicifed renewable sources; particular technologies, applications or sources may be considered as renewable but not 'green' e.g. large hydro, certain biofuels/waste etc.

products recommended by Eugene). In addition, the Procura guidelines were considered to be of some practical use – in the absence of a UK scheme - to public procurement officials when purchasing green electricity.

4.2.2 Eugene Standard

Description of scheme

The European Network for Green Electricity (Eugene) Standard [3] is an international benchmark for green energy tariffs, supported by a wide coalition of environmental and consumers groups. Its stated aim is to promote green energy labelling as a market tool to facilitate and stimulate additional generation of renewable and efficient energy services, and to foster a clean energy system. The Eugene network is membership-based non-profit organisation, comprised of several European green energy labelling bodies.

More specifically, the Eugene Network's objectives are:

- to co-ordinate green energy labelling initiatives at an international and national level;

- to develop an international standard for green energy and a harmonised labelling system;

- to convince governments and international institutions to adopt the Eugene Standard as the basis of their national or international green energy markets, and

- to encourage all energy consumers to invest in and only purchase environmentally credible green energy products.

The Eugene Standard contains a number of key aspects to which suppliers must adhere if they are to be accredited under the scheme. These include the following:

- *Eligible sources* – these are: geothermal, wind, solar electric, hydropower, biomass and natural gas-fired CHP. Each of these sources must comply with defined criteria, e.g. hydropower is only eligible if it operates so that the river system's principal ecological functions are preserved; energy crops used in power generation must be FSC accredited.

- *Additionality* – offerings must lead to the increase of green electricity generation compared to what would have occurred otherwise. There is a 'gold' and a 'silver' class of additionality to reflect differences in green markets across Europe. A key feature of the scheme is that additionality requirements must be met entirely over and above governmental renewable legislation.

(3) www.eugenestandard.org

- *Verification* – suppliers must conduct a verification process each year to substantiate their claims. The supplier must employ an independent certified public accountant to conduct this verification.

The minimum requirements under the 'gold' and 'silver' classes of the Eugene standard are shown below in *Table 4.2*.

Table 4.2   ***Minimum requirements under the Eugene standard***

Type of green power scheme	"Silver" class	"Gold" class	Notes
Supply	10% from new plants	30% from new plants	New plants defined in para. 3.2, 3.3, 3.4
Fund	Contribution of 0.005 € per kWh sold for funding of additional RE	Contribution of 0.015 € per kWh sold for funding of additional RE	Not including cost of Fund Administration
Eco-investment in Hydro	Contribution of 0.015 € per kWh sold for eco-investments	Contribution of 0.015 € per kWh sold for eco-investments	Not including cost of Eco-investment Administration. Green Hydro also has to fulfil basic requirements

Labelling schemes currently accredited to the Eugene standard include okPower (Germany) and Naturemade Star (Switzerland); schemes in Finland, Sweden and Netherlands are currently awaiting accreditation and several non-European countries (e.g. Chile) have adopted the standard as the basis for their own labelling schemes. In the absence of a national labelling scheme in the UK, a small number of UK green tariffs (Ecotricity, Good Energy and Airtricity) have been accredited to Eugene.

Robustness and credibility

The Eugene Standard was developed over several years through an extensive Europe-wide consultation process involving NGOs, green electricity suppliers and national labelling bodies. The EU-funded Clean Energy Network for Europe (CLEAN-E) project also assisted in the development of Eugene concerning how a common European standard can reflect national framework conditions. Eugene has also worked with ICLEI to develop advice for public procurement of green electricity [4].

The Eugene Standard requires independent third-party verification of partaking labelling schemes with accreditation based on a peer-review of the label's set of criteria against the Eugene Standard. For those countries where there is not yet a national label, Eugene is currently investigating the feasibility of accrediting international certification bodies that could implement the standard in co-operation with local environmental bodies.

Although no formal periodic review of the criteria is known, Eugene claims that the criteria are subject to ongoing review with a revision planned in early 2008. There is evidence that the scheme is active and well-known (and well regarded) internationally. Eugene also develops case study material, consumer tips, press releases and regular newsletter concerning latest developments in the green electricity market etc. Within the UK, both Ofgem and the Energy Saving Trust view the Eugene Standard as offering a high degree of assurance concerning the quality of green electricity products. Eugene is specifically referred to and reviewed within Ofgem's Revised draft Guidelines on Green Supply: "*The Eugene Standard can be very useful for green power suppliers to acquire new markets and satisfy customers' demands as the Eugene Standard guarantees that a labelled green power tariff is additional and contributes to further uptake of renewable energy*"[5].

Potential benefits

The potential benefits of Eugene relate to its three main concerns i.e. eligibility, additionality and verification.

Concerning eligibility, the renewable sources included are broad and there is no 'special provision' made for particular technologies (e.g. a % requirement for solar PV); there is therefore no evident contradiction with those technologies eligible under the UK Renewables Obligation and the market-based approach of the UK scheme (i.e. tradeable renewable certificates). Eligibility criteria rather concerns ecological impacts associated with particular projects/technologies (hydro, biomass). It is not foreseen that Eugene criteria would pose significant problems for application in the UK (i.e. through development of UK national label accredited to Eugene) although further assessment of the feasibility of all biomass sources being FSC accredited may require further research.

Concerning additionality, Eugene introduces the requirement that renewable generation must be above and beyond that required by national regulation. At present, UK green electricity products do not need to fulfil and additionality requirements (although advertised claims must be substantiated); therefore Eugene provides an assurance beyond what is currently available in the UK and would 'raise the bar' of environmental credibility. This is however a complex issue and the potential interpretation and definition of additionality in the UK context is subject to much debate and disagreement; many commentators including the EST conclude that retirement of ROCs provides the only guarantee of additionality (and some UK green suppliers now retire a small share of ROCs). The interpretation of Eugene's additionality criteria would likely require extensive consultation and interpretation in the UK situation.

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(1) http://www.eugenestandard.org/index.cfm?inc=cat&id=6

Finally, the requirement for verification of claims would offer an improvement on the current UK situation (which there is not required); the EST and others have long argued for a verification process to be applied to green electricity products. The benefits concerning transparency and assurance to purchasers would likely enhance the uptake of green tariffs and funds.

Ease of use

The Eugene standard was designed to incorporate the details and difference between (and allow for harmonisation of) national labelling schemes. It is therefore provided in a format which can be easily applied, with sufficient flexibility of application.

Two options present themselves for its application; (1) development of a UK labelling/accreditation framework in conformity with Eugene (and therefore accreditation to Eugene) and (2) use of UK green electricity products currently recognised by Eugene. In the case of (2), no additional effort is required and in the case of (1) the significant effort required would involve the development of such a national scheme; its potential accreditation to Eugene would not involve significant effort were the criteria to be met in its design.

Eugene has also developed an Interim Labelling Initiative (ILI) which aims to allow the labelling of green power products in those countries where no independent accreditation exists. The aim of the ILI is to promote quality green products until a recognised self-standing national scheme is established. Therefore, ILI is a pilot project of the Eugene Standard, which might be followed by the creation of a (national) labelling body.

Applicability to the UK

The standards required by Eugene are in conformity with UK sustainable procurement objectives and are in general conformity with UK policy objectives regarding the promotion of renewable electricity. Furthermore, Eugene provides a framework sufficiently flexible to allow for differences in national circumstances (policy, energy sources etc). This is partly evident through the fact that several UK green electricity products are currently recommended by Eugene.

However, depending upon the route chosen to 'adopt' or 'use' Eugene in the UK, there are two key complicating factors. These two factors have resulted in our classification of the Eugene standard as a "Class 2" rather than a "Class 1" standard. These are outlined below.

There is currently an ongoing process involving Defra and Ofgem (with an accompanying EST-led consultation) exploring the options for a national accreditation scheme (involving appropriate definition of 'additionality' etc); therefore the development of a national scheme in conformity with Eugene would necessarily involve alignment with this process. It is clear that a national scheme is being sought: Ofgem has recommended that there should

be a third party accreditation scheme, and most respondents to a recent Ofgem consultation on green tariffs agreed that there is a need for such a scheme [6] . The Energy Saving Trust, Defra and Ofgem have committed to working together to further consult on this.

Secondly, in the event of only those UK products currently recommended by Eugene being chosen in procurement decisions (and/or were a national scheme in conformity with Eugene to be developed), there is some evidence that supply may not be able to meet demand in the short- to medium-term. A recent Datamonitor survey [7] of 3,500 of the UK's largest energy buyers revealed that 28% of companies have a goal of purchasing green electricity in 2007, up 7% from 2006. Aggregate demand amounts to some 34 TWh of 'green' electricity. Yet the available renewable supply was only a third of this, at 12 TWh, in 2006. Several of the larger suppliers such as EdF, NPower, and British Gas are currently only able to meet existing green tariff contracts and are waiting for contracts to expire and new projects to become operational before talking on major new customers.

There is therefore currently a shortfall in supply of green tariffs; despite adequate economic incentives under the Renewables Obligation and growing consumer and business demand, constraints in the planning system (primarily) are restricting available supply. It is therefore unlikely that, in the UK market, the supply of Eugene Standard green electricity products adequate to meet significant increased demand would be available.

In conclusion, Eugene is widely recognised as the most robust existing framework within Europe for accrediting green tariffs and funds according to key relevant criteria (i.e. guarantee of renewable supply, additionality of benefits etc). In the absence of a UK accreditation/certification scheme, several UK green tariffs have been 'approved' under Eugene. However, in the context of the ongoing debate and consultation concerning the UK's potential development of a green tariff accreditation scheme, likely adoption of a scheme in conformity with Eugene is currently unknown. Furthermore, it is unlikely that Eugene-approved products available in the UK could meet demand in the short- or medium-term. The basic approach taken by Eugene may provide a good working basis for a scheme applicable to the UK, but buy-in and UK consultation would likely be required.

4.3   TRANSPORT

4.3.1   *Product Area Background Information*

Nineteen standards (including labelling schemes and procurement guidelines) were assessed within the transport category, covering a wide range of

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(6) There are currently many different 'quality labels' for green electricity in Europe such as the Eugene Standard, which seek to guarantee that a green tariff meets certain environmental standards.
(7) http://www.datamonitor.com/~d82dfaa9091b4a17b0baa39b44de6bbc~/industries/news/article/?pid=AB68C7A5-E867-4E52-9D20-C91E00083AEC&type=ExpertView

jurisdictions, product/service types and environmental impacts. Existing standards broadly fall into three categories:

- Road transport vehicle standards (cars, vans, buses, trains, emergency and special vehicles etc)
- Vehicle products and consumables (tyres, lubricants, fuels etc)
- Transport services (road transport and CO_2 offset-air travel)

The environmental impacts addressed through the standards are wide ranging, covering (directly or indirectly) CO_2 emissions and energy use, local atmospheric pollution (PMs, NO_X etc), noise levels and waste impacts arising from vehicle production and consumables.

For lubricants and biofuels, criteria or labelling most often require a certain share of renewable material in the product to come from (specified) eligible sources. For vehicles, the main impacts addressed are the emissions of CO_2 and other exhaust gases. In relation to CO_2, they refer to use of voluntary energy-efficiency classifications (e.g. the UK Fuel Economy Label) and to the procurement of alternative fuel vehicles. For other exhaust emissions (except for diesel vehicles for which it is compulsory to be fitted with particle filters to reduce PM emissions) guidelines usually indicate preference for compliance with stricter EURO standards.

Of the nineteen standards assessed, eleven are European-based schemes and include national public sector procurement guidelines for which little information in English was found in the public domain. Where detailed standards/criteria have been developed, these tend to refer closely to national, regional or (in the case of EU Member States) EU-level regulations. The majority of the standards were classified as "Class 2" or "Class 3" schemes; Common factors preventing a higher classification were insufficient information, low criteria levels (compared to relevant regulation or standard UK practices), and/or criteria largely reflecting national (non-EU) circumstances. The following eco-labels were classified as "Class 1" schemes with potential for adoption in the UK:

- Blue Angel eco-label for Low-noise and low-pollutant municipal vehicles and buses
- Nordic Swan eco-label for vehicle tyres

Of these, the Blue Angel and Nordic Swan schemes have been considered in more detail. Owing that the fast-moving nature of biofuels policy/debate coupled with a proposed EU Directive relating to biofuels labelling, the potential adoption of an existing biofuels scheme has not been considered at present.

4.3.2 *Blue Angel eco-label for low-noise and low-pollutant municipal vehicles and buses*

Description of scheme

The Blue Angel is the world's oldest, and a well established and recognised, national ecolabelling scheme; it is sponsored and administered by the German Federal Environmental Agency and the quality assurance and product labelling institute RAL Deutsches Institut für Gütesicherung und Kennzeichnung e.V. The development of the criteria for products and services are decided by an independent Environmental Label jury based on product-specific expert review and consultation.

The criteria developed for *Low-Noise and Low-Pollutant Municipal Vehicles and Buses (RAL-UZ 59)* aim to reduce atmospheric pollution and noise emissions caused by commercial vehicles/multi-stop delivery trucks, municipal vehicles and buses, particularly in urban, conurbation and special protection areas [8]. Criteria are defined for noise emissions (limit values for low-noise vehicles, operating noise and occupational safety); pollutant emissions (driving engine, separate engine for auxiliary units and greenhouse gas potential) and paint work. The Blue Angel eco-label is awarded regardless of the type of fuel used. The fuel must, however, have been granted the EC Type Approval.

Robustness and credibility

The Blue Angel ecolabel is well established as a robust a credible scheme subject to a rigorous process of criteria development and review. As noted above, the development of the criteria are decided by an independent Environmental Label jury based on product-specific expert review and consultation and third party verification is undertaken by labelling institute RAL. Although the formal arrangements (if any) relating to criteria review are not known, revision of standards are frequent and appears proportional to the requirements of each product type etc; the most recent version of the *Low-Noise and Low-Pollutant Municipal Vehicles and Buses* criteria is dated February 2008.

The Blue Angel is a well regarded and established ecolabel for a large number of products and services. It has exerted a major influence in the development of sustainable procurement and ecolabelling and has a good reputation in Europe and elsewhere as a high standard. A recent study by *Umweltbewusstsein* shows that the Blue Angel remains the best-known eco-label in Germany with 83 percent of respondents indicating awareness of the Blue Angel. Also, the number of people who pay attention to the Blue Angel when making purchases was found to be one of the highest among existing labels at 49 percent [9].

The label can be used by any certified manufacturers in any county and there is a significant uptake of the scheme worldwide; in the UK at present there are 25 products using the Blue Angel label provided by 6 label users [10]. There is

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(8) http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm
(9) Source: Umweltbewusstsein 2004 (Study on environmental awareness, 2004), Chapter 7.3 Konsumverhalten im Alltag
see http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm
(10) http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm

evidence that the Blue Angel label for *Low-Noise and Low-Pollutant Municipal Vehicles and Buses* has become recognised as the most credible existing standard or label addressing the urban environmental impacts from these particular vehicle classes. The criteria are known to have been applied within Germany and have also been referenced for use in some UK public procurement guidelines e.g. Lewisham Council [11].

Potential benefits

The potential benefits arising from the procurement of vehicles conforming to the criteria are significant. In urban areas, buses are responsible for a relatively large proportion of carbon monoxide (CO), nitrogen oxides (NOx) and particulate emissions, which are the cause of major respiratory and other health problems. They also contribute to a loss of biodiversity and stunted plant growth [12].

Exhaust pollutant limits required under the criteria are based on Euro V or EEV (Enhanced Environmentally friendly Vehicles), both of which go beyond existing legal requirements for new vehicles (currently Euro IV; Euro V from Oct 2009).

Table 4.3   ***EURO IV, EURO V and EEV emissions limits (g/kWh and smoke in m^{-1})***

	Effective date	Carbon monoxide (CO)	Hydrocarbons (HC)	Nitrogen oxides (NO$_X$)	Particulate matter (PM)	Smoke
EURO IV	2005	1.5	0.46	3.5	0.02	0.5
EURO V	2009	1.5	0.46	2.0	0.02	0.5
EEV		1.5	0.25	2.0	0.02	0.15

Source: European Commission
Note: data based on European Stationary Cycle (ESC) and European Load Response (ELR) tests

State-of-the-art noise reduction technologies are also required which limit interior and exterior noise. The maximum noise limited specified are based on specifications developed by the German Environment Agency and significantly exceed existing mandatory European noise limits for low noise heavy vehicles and/or current standard practise in the UK and other EU Member States.

In addition, the Blue Angel criteria specify no use of ozone-depleting substances and vehicle paintwork to be free of heavy metals and with less than 130 grams of solvent per square metre. The global warming potential from refrigerants used in air conditioning systems is also restricted. According to Blue Angel, the current criteria for refrigerants are at present relatively low (i.e. not strict) because of ongoing testing of the use of alternative refrigerants;

(11) http://www.lewisham.gov.uk/NR/rdonlyres/44EF75C5-E537-4DD0-ADF8-EFA36DF97C50/0/LewishamGreenprocurementGuidelowres.pdf
(12) http://www.iclei-europe.org/fileadmin/template/projects/procuraplus/New_website/Detailed_Product_Information/Buses-_Procura__Key_Criteria.pdf

if these tests show goods results future updates of the criteria are likely to place increased demand on the GWP of refrigerants (e.g. GWP < 15).

Ease of use

The Blue Angel criteria are easily accessible online and presented in a clear and concise manner. The criteria relating to *Low-Noise and Low-Pollutant Municipal Vehicles and Buses* are not considered overly prescriptive or complex (in terms of their ease of use and understanding within the vehicle industry). For the procurer, the manufacturer's Blue Angel status provides the guarantee that the criteria have been met by the vehicle.

Although with increasing use of competitive tendering for public bus services many public authorities are no longer responsible for directly purchasing buses, it is estimated that public procurement accounts for around 20% of the annual bus market in the UK [13]. Given the ease of use to purchasers in using the Blue Angel criteria when making procurement decisions, the potential benefits appear to justify the effort.

Applicability to the UK

The procurement of vehicles awarded the Blue Angel label has clear applicability to the UK in respect of ongoing efforts at the national and local policy level to reduced urban pollution and noise levels. Although there is increasing use of low-carbon EEV vehicle procurement across the UK, the Blue Angel standard would represent a clear step beyond standard practise (generally EURO IV diesel for buses at present).

According to ICLEI [14], most of the major bus manufacturers in Europe are now able to offer EEV buses for sale with normal engine models at a small marginal price increase (typically around €5,000, with an additional filter check each year). Given that the usual purchase price of a diesel bus is in the region of €200,000, and that the purchasing price only accounts for a small proportion of the total costs over the buses lifetime (including fuel, maintenance and disposal), this is a very small cost mark up [15]. For example, a pilot project in the cities of Berlin and Frankfurt an der Oder, initiated by The German Ministry of the Environment, has demonstrated that over the lifetime of a bus, the cost difference between EURO III and EEV was negligible (about 0.01%) [16].

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(13) Select Committee on European Scrutiny Twentieth Report, December 2005. See http://66.102.9.104/search?q=cache:LqL0etl7F74J:www.publications.parliament.uk/pa/cm200506/cmselect/cmeuleg/34x x/34xx04.htm+EEV+EURO+IV+EURO+V+buses&hl=en&ct=clnk&cd=1&gl=uk
(14) http://www.iclei-europe.org/fileadmin/template/projects/procuraplus/New_website/Detailed_Product_Information/Buses-_Procura__Key_Criteria.pdf
(15) ibid.
(16) http://www.iclei-europe.org/fileadmin/template/projects/procuraplus/New_website/Detailed_Product_Information/Buses-_Procura__Key_Criteria.pdf

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In an Explanatory Memorandum of 30 January 2006, the Minister of State at the Department of Transport (Dr Stephen Ladyman) estimated that if public procurement was assumed to account for 20% of the annual bus market in the UK, the overall cost of meeting the EEV standard as compared with the current EURO IV standard might be just under £2 million a year. He added that this would be likely to fall, as the technology becomes more widespread, and as the EURO V standard (where the cost differential would fall from around £3,500 per vehicle to between £1,000 and £2,000) enters into force in 2009 [17].

However, the only vehicles currently awarded the Blue Angel according to these criteria are the Mercedes-Benz CNG and new 'BlueTech' diesel Citaro buses. While the supply of EEV and EURO V buses are available to meet potential demand increase, it has not been able to assess the ability of those awarded Blue Angel status to meet short-term increased demand from the UK public sector; however, given the slow penetration rates of new buses into the UK fleet (compared to many other products) it would appear likely that there would be sufficient market signals for demand to be met.

4.3.3 *Nordic Ecolabelling – The Swan Label for Vehicle Tyres*

Description of scheme

The Nordic Swan voluntary eco-label was introduced by the Nordic Council of Ministers in 1989 to encourage production methods that limit environmental impacts; five countries are now party to the scheme: Sweden, Denmark, Iceland, Norway and Finland. The Nordic Ecolabelling Board, NMN determines which product groups can be covered by the Swan and agree the criteria they must meet. The criteria cover a large range of product groups and are based on evaluation of the environmental impacts during the actual products' life cycle. Secretariats in the five participating countries are responsible for implementing the scheme on national level including the managing and granting of licence applications.

The Swan criteria for vehicle tyres have been developed with the objective of minimising the environmental impact resulting from tyre manufacture and use. The criteria stipulate maximum chemical usages (polycyclic aromatic compounds, impurities etc.) in tyre manufacture and waste requirements. In addition ecolabelled tyres must meet specified limits to ensure they have a low noise level, low rolling resistance and good durability enabling reuse/retreading. Safety requirements are also imposed [18]. The product group covers new and retreaded tyres of passenger vehicles and bus and truck vehicles for road use during summer and winter.

Robustness and credibility

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(17) Select Committee on European Scrutiny Twentieth Report, December 2005. See http://66.102.9.104/search?q=cache:LqL0etl7F74J:www.publications.parliament.uk/pa/cm200506/cmselect/cmeuleg/34xx/34xx04.htm+EEV+EURO+IV+EURO+V+buses&hl=en&ct=clnk&cd=1&gl=uk
(18) http://www.svanen.nu/sismabmodules/criteria/getfile.aspx?fileid=92757001

The Swan criteria are developed by product-specific expert groups from the participating countries comprising representatives from government, environmental organisations, and relevant trade and industry stakeholders. Before the NMN finalises the criteria proposals, they are circulated for extensive consultation review (usually six weeks). As a Type 1 eco-label under ISO 14024, the development of the criteria requires that interested parties should be given the opportunity to participate and that their comments are fully evaluated.

Alongside the Blue Angel and EU Flower eco-label, the Nordic Swan is perhaps the most well-known European eco-label; 67 % of people in the Nordic countries recognise and understand the purpose of the label and it has become increasingly used outside of northern Europe. The cross-stakeholder nature if the criteria development with close cooperation and technical input from industry has ensured a high level of 'buy in' from consumers, policy-makers, business and NGOs. Most consumers consider that the label ensure a brand is reliable and of high quality.

Five tyre manufacturers are currently accredited to the Swan label (AGI Dack, Fighter, Hankook Tire Co. Kumho Industrial Co, and Mac Ripper) representing a wide range of tyre product types. Volvo Cars has also urged its five tyre suppliers to draw up a plan for the development of a winter tyre bearing the Swan ecolabel. The City of Stockholm recommends the Nordic Swan criteria (or equivalent criteria to be met where tyres are not accredited) in their guidelines developed for public procurers.

The Swan criteria are updated regularly with revised standards presented at least one year prior to the expiry date for each product area (although during the period of validity minor corrections may be adopted) [19]. The current version of the criteria for vehicle tyres is valid from June 2001 to June 2009 and incorporates minor revision last made in December 2006. The tyre criteria formally note the ongoing need to supplement requirements of rolling resistance, noise, emissions, durability and safety factors as appropriate.

The tyre criteria requires that the laboratory carrying out the relevant analysis must be impartial and qualified; the quality assurance procedures of the laboratory must follow the general requirements of Standard EN 45001 or EN-ISO/IEC 17025 or have official GLP approval (the testing of rolling resistance, noise levels and safety considerations can be performed by some other competent test body).

Potential benefits

Tyres are among the few chemical products that have such widespread use, while significant variation still occurs regarding the environmental impact from various tyre products. It is estimated that up to 10,000 tons of rubber

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(19) This does normally not affect existing approved licences

particles are spread along Sweden's roads alone annually when the rubber in tyres is worn down. The rubber contains toxic substances which can accumulate in the tissue of animals and lead to disease. The most significant toxic impact involves highly aromatic oils (PCA compounds) that can comprise up to 20% of the contents of a tyre.

The design of tyres can also have a significant impact upon fuel efficiency, and therefore vehicle emissions from the combustion of fuels including CO_2. A tyre that has low rolling resistance can reduce fuel consumption by several percentage points. Increased durability can enable the tyre to be reused after its first life, thereby limiting the use of landfill and resource use. Traffic noise, which is the most common form of acoustic pollution, is primarily generated from the friction of tyres against the road. By selecting tyres with low noise levels, noise pollution can be limited for other travellers and the surroundings.

The Swan criteria address a wide range of environmental impacts associated with tyre use, via the following:

- Passenger vehicle tyres:
    - *Requirements regarding PCA compounds*
    - *Limits to concentrations of lead and cadmium impurities of zinc oxides*
    - *Limits to quantity of organic solvents*
    - *Limits regarding tyre rolling resistance*
    - *Tyre noise limits*
    - *Manufacturing waste (manufacturers and ret readers must sort at source any waste that can be used in material and energy recycling)*

- Bus and truck tyres:
    - *Requirements regarding PCA compounds*
    - *Substances classified as hazardous to the environment and health (protective agents added to tread rubber)*
    - *Limits to concentrations of lead and cadmium impurities of zinc oxides*
    - *Limits to quantity of organic solvents*
    - *Limits regarding tyre rolling resistance (for new and retreated tyres)*
    - *Tyre noise limits (for new and retreated tyres)*
    - *Manufacturing waste (manufacturers and ret readers must sort at source any waste that can be used in material and energy recycling)*

The criteria were developed to effectively promote current best practice for tyre products available on the Nordic market. It is not known in detail the extent to which the range of criteria go beyond regulatory requirements or standard practise in the UK. Whilst the noise limits are now similar to current EU limits (from 2007) in the range of 70-75 db(A) - depending on tyre width – other criteria are understood to be good or best practise.

Those aspects of the criteria which seek to minimise waste and enhance durability are likely to be additional to ongoing developments to reduce tyre waste. For example, the End of Life Vehicles Directive will provide a

significant driver to ensure that vehicle tyres are recovered and recycled, as the Directive sets recovery and recycling targets of 85% and 80% of the average weight of a vehicle respectively to be met by 1 January 2006. These targets increase to 95% and 85% respectively in 2015. Tyres constitute around 3% of the weight of a vehicle and it is expected that these targets are likely to lead to the almost complete recovery of value from used tyres arising from vehicles covered by the Directive [20].

Ease of use

The criteria are easily accessible online and presented in a clear and concise manner. The criteria relating to tyres are not considered overly prescriptive or complex (in terms of their ease of use and understanding within the vehicle industry).

For the procurer, the manufacturer's Nordic Swan status provides the guarantee that the criteria have been met by the product, which can be easily used when refitting or bulk buying tyres for public sector vehicles.

The following information is made available with a Swan ecolabelled vehicle tyre:

- The environmental properties of the tyre.
- Factors with a bearing on the safety and durability of the tyre.
- Instructions for using and caring for the tyre.

Applicability to the UK

The objectives of - and potential benefits associated with - the Swan criteria for vehicle tyres are in broad conformity with UK environmental and sustainable procurement policy aims.

The criteria addressing enhanced durability of tyres (as well as control of toxic substances) serve to limit the disposal rate of tyres. The UK produces 450,000 tonnes of used tyres each year which must be reused or disposed of [21]. The Government in partnership with the tyre industry through the Used Tyre Working Group (UTWG) is investigating alternative disposal, recycling and recovery options for those tyres displaced from landfill. Additionally, in relation to national climate change policy objectives, the reduction of the rolling resistance of tyres increases vehicle fuel efficiency thereby reducing CO_2 emissions.

The reduction of noise from tyres is in line with the development of Government's policy framework to manage and limit noise levels, noting the proposed EC Directive on Environmental Noise and Ambient Noise Strategy,

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(20) However, the Directive only applies to smaller vehicles such as cars and vans and not to commercial vehicles such as lorries and buses which also give rise to significant tonnages of tyres
(21) http://www.environment-agency.gov.uk/business/444251/444707/288582/?lang=_e

as well as the proposed National Ambient Noise Strategy (NANS). These issues are particularly significant going forward given that UK vehicle ownership is expected to grow between 30% and 60% over the next 20 years [22]. Although no evidence has been found to the contrary, the ability of tyre manufacturers active in the UK market to meet short-term demand from the public sector for Swan labelled tyres is not known.

4.4   HEALTH AND SOCIAL WORK

4.4.1   *Product Area Background Information*

Products used specifically in the healthcare sector can be broadly categorised into three categories:

- medical devices (mainly electronic products);
- medical instruments (e.g. thermometers, sphygmomanometers); and
- other (non electronic) healthcare products used in healthcare facilities (e.g. packaging materials, syringes, catheters, tube systems, IV bags).

The main concerns relating to medical devices are the presence of hazardous substances in these products (similarly with other electronic devices that are regulated under the RoHS - Restrictions of Hazardous Substances - and WEEE EU directives). As of yet there are no robust standards in place for medical devices (in terms of energy efficiency, materials, eco-design or other) as product reliability and patient safety concerns are treated as priorities for this category. This sensitivity is reflected through the exemptions that medical devices have received from EU directives such as RoHS and EuP (Energy-using Products). It is also important to note that medical devices are regulated separately at a European level by the Medical Devices Directive (93/42/EEC) [23].

In relation to other healthcare products such as medication delivery related products and equipment (e.g. intravenous bags and sets) the main concern relating to environmental impacts appears to be the presence of PVC (Polyvinyl Chloride) and associated plasticiser DEHP (di, 2-ethylhexyl phthalate) in these products.

Medical waste streams are considered to pose risks to human health and the environment mainly due to the "special" waste treatment (mainly incineration) that is required, which can result in generation of dioxin emissions [24]. While it is true that uncontrolled incineration of PVC can produce dioxins, it remains a subject of debate whether dioxin emissions from

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(22) http://www.environment-agency.gov.uk/business/444251/444707/288582/?lang=_e

(23) The directive covers a very broad range of products, including among others first aid bandages, active implants and dental materials.

(24) Potentially infectious medical waste (also known as "Red bag" waste) is usually disposed through incineration. An alternative is autoclaving and subsequent landfill disposal.

hospital incinerators can be directly attributed to the PVC presence in the waste stream.

An additional issue associated with PVC is the presence of DEHP. DEHP is a plasticiser that softens PVC and makes tubes and catheters flexible. According to some studies DEHP may present a hazard to human development and fertility especially to male neonates.

A criteria document from the Nordic Swan eco-label for *disposable products for peritoneal dialysis (PD) and intravenous (IV) infusion treatment* was published in December 2007. The criteria document approved as part of the Nordic eco-labelling scheme is assessed below.

4.4.2   *Nordic Swan eco-labelling of disposable products for peritoneal dialysis (PD) and intravenous (IV) infusion treatment*

Description of scheme

The Nordic Eco-Labelling Board the body responsible for the swan labelling system was established in 1989 by Sweden & Norway with other Nordic countries joining later on such as Finland in 1990, Iceland in 1991 and Denmark in 1997. The swan Nordic Eco-Labelling Board helps private consumers and professional procurers to make environmentally informed choices and encourages manufacturers to develop environmentally preferable products under the Swan label.

In 2006, Nordic Swan began developing criteria for the healthcare industry and more specifically for disposable products for use in intravenous (IV) infusion or peritoneal dialysis (PD) treatment under the EU Medicinal Products Directive (2001/83/EC) and the Medical Devices Directive (93/42/EEC). These were finalised in December 2007 and will be valid up to 2010.

Robustness and credibility

The Nordic Swan operates to the ISO 14024 standard "Environmental labels and declarations - Guiding principles." This requires environmental labelling specifications to include criteria that are objective, reasonable and verifiable. It requires that interested parties have an opportunity to participate and have their comments considered. It also requires that environmental criteria shall be set, based on an evaluation of the environmental impacts during the actual product's life cycle. The Swan label is a Type 1 ISO accredited standard, meaning that its underlying criteria are set by an independent body and that it is monitored by a certification and auditing process. As such it represents the highest levels of transparency and offers a reliable, independent information source of procurement guidance.

The Swan checks that products fulfil certain criteria using methods such as samples from independent laboratories, certificates and control visits. Manufacturers must use samples and documentation to prove that their

products meet the criteria with regard to the environment, health and performance. As product development progresses and new scientific discoveries are made, the Swan's criteria are raised in order to reflect on contemporary issues and ensure that definitions of good environmental practice are up to date. To ensure that a Swan-labelled product reflects latest environmental market and policy factors, criteria are reviewed approximately every three to five years and labelled products must conform to the new, revised criteria. However, in relation to the specific product group criteria, the exact review process and timeframe is not clear.

Potential benefits

The main requirement for Swan-labelled disposable peritoneal dialysis and IV infusion products is that they do not contain PVC or plasticisers such as DEHP. The requirement to exclude chlorinated plastics such as PVC has been selected on the basis of the Swan's objective of reducing problems in: 1) PVC waste handling and disposal and 2) patient exposure to Di (2-Ethylhexyl) Phthalate.

In relation to waste handling and disposal of PVC the European Commission commissioned a research study in 2004 with the aim of providing an overview of the publicly available information on Life Cycle Assessments (LCA) on PVC and competing materials. [25] The study concluded that PVC is as good a material as any other as long as special precautions are taken in different stages in the lifecycle. However, it is noted that no comparative LCA studies exist for materials used in medical applications and little environmental progress in medical products has taken place so far. Therefore, taking this into consideration, together with the large amount of waste produced by hospitals the report concludes that *"the potential of comparative LCA studies identifying methods for environmental improvement is expected to be high"*.

In relation to the potential health issues associated with patient exposure to DEHP, it is important to note that EU legislation in this product area is extensive and imposes strict requirements as to the safety of the healthcare and medical products. Also a recent report published by the EC Scientific Committee on Emerging and Newly-Identified Health Risks states that there is limited evidence indicating a relation between DEHP exposures and certain effects in humans.[26] However, the report also recognises that potentially high exposure during medical treatments can raise concerns, even in the absence of clinical or epidemiological evidence for harmful effects in humans.

Finally, an assessment has been performed by the scheme on the potential benefits and has concluded that gains in one area do not entail a problem in a second area.

(25) European Commission, Life Cycle Assessment of PVC and of principal competing materials, 2004, http://ec.europa.eu/enterprise/chemicals/sustdev/pvc-executive_summary_lca.pdf
(26) EC Scientific Committee on Emerging and Newly-Identified Health Risks, Preliminary report on the safety of medical devices containing DEHP plasticised PVC or other plasticizers on neonates & other groups possibly at risk, 2007, ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_008.pdf

Ease of use

No specific issues or problems have been identified with respect to ease of use. Criteria for certification are simple and clear, available on-line and in English. The number of requirements has been kept low and templates have been created relating to the procedures and instructions needed for the manufacturers and their suppliers in order to make it less time consuming to document and to fulfil the requirements relating to chemicals.

Applicability to the UK

The scheme maintains that for healthcare products such as disposable products for peritoneal dialysis (PD) and intravenous (IV) infusion treatment there are safe and economically viable alternatives to PVC and phthalates.

In terms of pricing issues the alternative polymers are at present approximately 10-20% more expensive although the scheme maintains that these may have a longer service life and can be cost-competitive due to less material needed for the same size and kind of bag.

Nonetheless in the event of high demand (e.g. an NHS wide adoption) it might be difficult for companies providing non-PVC products to meet demand in the short-medium term as they are currently not the main market suppliers. Additionally adoption of the label assuming a similar high demand scenario could potentially favour one or two companies (supply of PVC based bags represents the market majority in the UK market) thus indirectly promoting monopolistic situations which could potentially result in loss of jobs related to the manufacturing of existing PVC products. At the time of writing this report no products have been certified under the label. [27]

4.5 FOOD

4.5.1 Product Area Background Information

The number and overall robustness of the assessed standards and eco-labels shows that great emphasis has been placed on the development of a framework by NGOs, Governments and industry associations to recognise companies that operate in an environmentally and/or socially responsible manner.

Major sustainability issues that sustainable food standards address are presented in *Table 4.4.*

Table 4.4   **Sustainability issues addressed by sustainable food standards**

Sustainability Issue	Rationale

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(27) However the criteria documents were published quite recently (December 2007)

Sustainability Issue	Rationale
Water consumption	• High consumption of surface and ground water for irrigation purposes
Water Pollution	• Pollutants include pesticides, salts, fertilizers and sediments • Agriculture is the largest single non-point source of water pollution
Climate change impacts	• Destruction of forests for agricultural purposes • High use of energy intensive nitrogen and other fertilizers
Food and packaging waste	• Waste disposal issues
Biodiversity loss	• Destruction of forests for agricultural purposes
Soil degradation	• Intensive agricultural practices can result in soil degradation with subsequent decline in soil productivity
Unsustainable fishing	• Depletion of fish stocks • The latest UN Food and Agriculture Organization (FAO) figures from 2006 show that catches of the world's top ten species cannot increase further and many of them need rebuilding simply to feed current demand
Social Issues	• Support for local farmers and produce • Fair wages to workers (especially in developing countries) • Child labour • Animal welfare

Source: ERM

Additional environmental impacts can result from unsustainable catering practices, transportation and consumption.

In relation to some of the above issues there are many relevant directives and other regulations developed at a European level such as the Council Directive 98/58/EC on the protection of animals, a number of specific pieces of legislation concerning genetically modified organisms (GMOs) and the EU Regulation on organic production of agricultural products (Council Regulation No 2092/91).

Standards and labels can be categorised based on their area of focus in the following three categories:

• social and labour issues (e.g. Fairtrade, UTZ, Ethical Trade Initiative);

• organic and biological farming and products (Soil association, Organic Guarantee System); and

• those that cover the broader area of sustainability (i.e. sustainable agriculture, sustainable fishing etc.) and can sometimes include components of the other 2 categories.

Within all these categories there are standards or sub-standards and eco-labels that are product specific for example for coffee, tuna, cereals and food packaging such as the Green Seal, the EcoLogo and the International "Dolphin Safe" Standards.

The two standards that were selected for further assessment are the Principles and Criteria for Sustainable Fishing from the Marine Stewardship Council (MSC) and the Fairtrade Standard and label from the Fairtrade Labelling Organization (FLO) which are presented in the following sections.

4.5.2 Principles and Criteria for Sustainable Fishing - Marine Stewardship Council (MSC)

Description of scheme

The Marine Stewardship Council (MSC) is an independent, global, non-profit organisation with offices in the UK, USA, Australia, Japan and the Netherlands. Though operating independently since 1999, the MSC was first established by Unilever, the world's largest buyer of seafood, and the World Wildlife Fund (WWF), the international conservation organisation, in 1997. It is now a fully independent, global charitable organisation with its international headquarters in London.

The MSC's mission is to improve the health of the world's oceans and contribute to creating a sustainable global seafood market. At the centre of the MSC is a set of Principles and Criteria for Sustainable Fishing which is used as a standard in a third party, independent and voluntary certification programme. The MSC has also developed a label for seafood products that are certified as sustainable under the MSC Certification Program.

Robustness and credibility

Under the MSC Certification Program a fishery is assessed against the MSC Standard (i.e. Principles and Criteria for Sustainable Fishing) and the certification is performed by independent, accredited certifiers for fisheries for chain of custody.

The MSC Principles and Criteria for Sustainable Fishing that are in the centre of the certification program were developed following an international consultation with stakeholders around the world. They also take into consideration other international conservation instruments and reflect the results of eight regional workshops and two expert drafting sessions.

In 2005, the Food and Agriculture Organization of the United Nations (FAO) published a Code of Conduct for Responsible Fisheries - a set of voluntary guidelines for the eco-labelling of fish products - and as of 2007 the label of Marine Stewardship Council (MSC) was the only label in the UK that met the FAO standard.

There is extensive buy-in for the standard both from business and the public. MSC has worked with the largest British food retailers (i.e. Tesco, Sainsbury's, M&S, ASDA, Waitrose etc.) to label fish products and a number of them have included MSC as one of their top priorities when buying seafood. Also, according to a research conducted by RSM (a UK-based marketing research firm), 95% of the public in the UK were found to agree that labelling is the most effective way to communicate sustainability; 90% agreed that they would be more likely to buy seafood that is labelled as environmentally responsible. [28]

Potential benefits

The MSC, jointly working with a team of fisheries researchers, has created a project aimed at developing a framework for monitoring and evaluating the environmental benefits arising from the Marine Stewardship Council (MSC) certification programme. In 2006 a report conducted as part of the above framework was released showing that all certified fisheries have shown some environmental gain resulting from the certification process. [29]

Ease of use

No apparent problems or issues have been identified related to ease of use for this standard. The criteria are clear, concise and not overly complicated, and the standard is widely accepted and met by the UK sector; therefore no significant adaptation would be required.

Applicability to the UK

Unsustainable fishing is a major concern in the UK fish and fish products industry due to declining fish stocks and tighter fish catching quotas. Promoting MSC could potentially help the UK sector move towards more sustainable practices. Therefore the standard does have a clear applicability to the UK and it is aligned with UK sustainable development objectives. Additionally, this could potentially benefit the fish sector globally because the UK is a net importer of seafood, importing three times as much as the UK fleet catches. [30]

As of September 2007 there were 857 MSC-labelled seafood products sold in 34 countries worldwide. Over 7% of the world's edible wild-capture fisheries are now engaged in the program, either as certified fisheries or in full assessment against the MSC standard for a sustainable fishery. MSC certified fisheries represent more than 42% of the world's wild salmon catch and 32% of the world's prime whitefish catch for human consumption indicating that

(28) The UK Marketplace for Sustainable Seafood, April 2007, www.seaweb.org/resources/documents/SCAUKMPReport.pdf
(29) Environmental benefits resulting from certification against MSC's Principles & Marine Resources Assessment Group Ltd et al Environmental benefits resulting from certification against MSC's Principles & Criteria for Sustainable Fishing, May 2006,
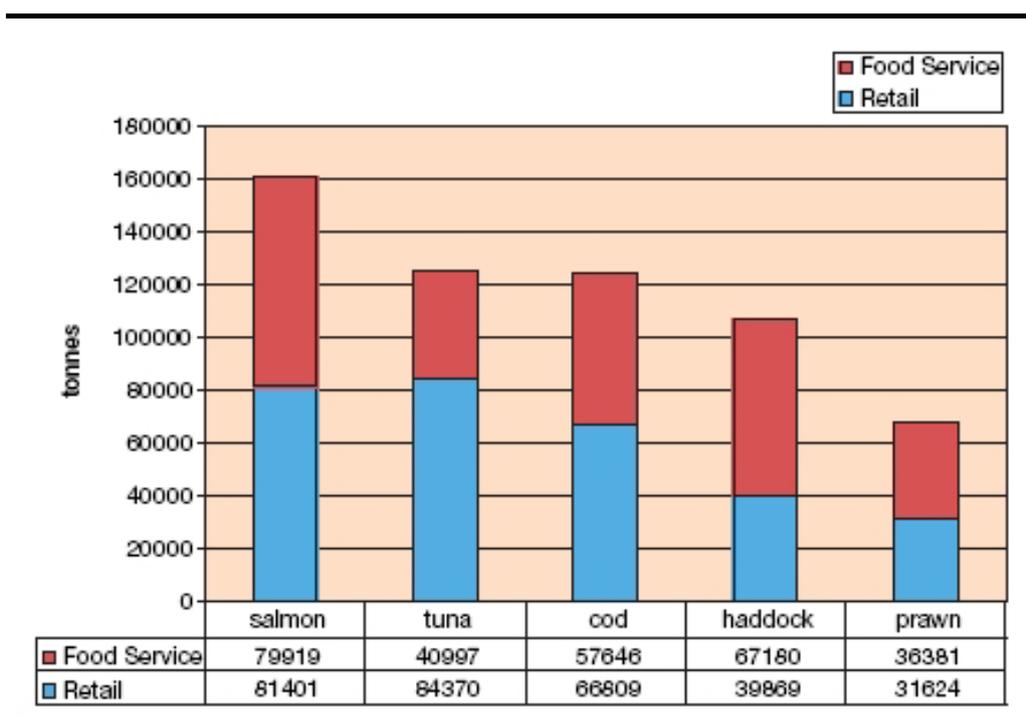(30) The UK Marketplace for Sustainable Seafood, April 2007, www.seaweb.org/resources/documents/SCAUKMPReport.pdf

availability of MSC-certified product supply does not seem to present a major concern.

According to the standard there is little or no cost premium for MSC-certified fish although the cost of certifying a fishery could be relatively high for certain fisheries (£15k to £250k), noting that fees depend on the size of the fishery. [31]. The costs associated with certification could be an important consideration for some fisheries, particularly SMEs. In addition, costs would ultimately be incorporated into product price, with subsequent impacts on purchasers.

The UK's cross industry seafood body, the Sea Fish Industry Authority (Seafish), estimates that about 10 species account for 75% of all of the seafood sold in the UK with Salmon, Tuna and Cod being the first choices (see *Figure 4.1*). While there are benefits that can potentially be realised by promoting the MSC standard there are also equally important benefits in encouraging consumption of other fish species that do not face as much pressure from unsustainable fishing practices as the top 5 UK product choices.

Figure 4.1   *Fish Consumption in the UK for the top 5 product choices*

	salmon	tuna	cod	haddock	prawn
Food Service	79919	40997	57646	67180	36381
Retail	81401	84370	66809	39869	31624

Source: Seafood Choices Alliance, the UK Marketplace for Sustainable Food, April 2007

4.5.3   *Fairtrade Standard and Mark - Fairtrade Labelling Organization (FLO)*

Description of scheme

The Fairtrade Mark is a consumer label which appears on products as an independent guarantee to assure that disadvantaged producers in developing

(31) http://www.msc.org/assets/docs/fishery_certification/InfoSheet4_Costs.pdf

world are paid fairly for their products. The Fairtrade Foundation, which manages the Fairtrade Mark in the UK, was set up by the Catholic Fund for Overseas Development (CAFOD), Christian Aid, Oxfam, Traidcraft Exchange, New Consumer and the World Development Movement.

The Foundation uses the internationally recognised fair trade standards shared with similar initiatives in 17 other countries which together comprise the Fair Trade Labelling Organisation International (FLO). The mark demonstrates that internationally recognised standards of fair trade have been met and items covered by the mark include among others coffee, tea, chocolate, bananas and honey products. The Foundation works with 350 producer groups worldwide, representing 4.5 million producers in 36 countries.

Robustness and credibility

There is robust consultation with the relevant stakeholders during the development or regular update of the Fairtrade Standards. Certification under the scheme is undertaken by an independent international certification company.

Potential benefits

Fairtrade addresses all the key sustainability aspects (i.e. energy, waste, water, biodiversity, social issues) with relevant requirements that a product/producer needs to meet. Fairtrade social benefits are tangible and include a guaranteed minimum price for the producer as well as direct market access and prepayment and assurance of compliance with labour conventions. Benefits have been measured in the form of premiums for farmers' Fairtrade sales for various product groups by impact studies undertaken by the Standard and Labelling Organization on a case study basis. [32]

Ease of use

The standard is easily accessible, in an easy to use format (i.e. English, on-line) and there is a global accreditation and certification system that streamlines the labelling process. We expect that no adaptation would be required in the event of standard adoption.

Applicability to the UK

There is a price premium associated with Fairtrade products of around 10-15% although Fairtrade certification for certain products can prove additional to this price premium and partially help with the delivery of commitments associated with tackling the social impacts of products.

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(32) http://www.fairtrade.net/impact_studies.html

No supply issues have been identified in relation to potential adoption as an increasing number of Fair Trade products are available on the European market (which represents about 60-70% of global Fairtrade sales) and the market is growing at about 20% per year. [33]

The Office of Government Commerce (OGC) has produced a guidance note for UK Government Departments on how to account for fair and ethical trading issues in public procurement - particularly in relation to Fairtrade products. This note outlines the action that can be taken under the EU procurement directives and according to the guidance:

"There is scope within the Government's procurement policy and the EU procurement rules to encourage, in non-discriminatory advertisements and specifications, the inclusion of fair trade options in tenders for catering and canteen services and supplies contracts." [34]

According to this definition of the government's procurement policy, fair trade options alone cannot be specified by public bodies but can still be supplied to government – or local authorities – if they are offered as part of the best 'value for money' bid. In this sense it is up to each government department to decide how best to meet its catering needs, taking account of any fair or ethical trading objectives. This is because specifications framed in terms of fair/ethically traded requirements or similar "social" labels do not define the end product in terms of characteristics or performance as required by the EU rules to protect against producer discrimination.

Nonetheless, a recent resolution of the European Parliament [35] provides a definition of Fair Trade in terms of characteristics and performance in order to be more clearly identified and verified in tender documents. Additionally, the full rules in EU procurement law apply only for values exceeding £93,738 for central government and £144,371 for other public bodies. Subsequently there is an opportunity for many smaller UK public bodies that purchase products in quantities that fall under these thresholds to adopt Fairtrade.

4.6   CLOTHING AND TEXTILES

4.6.1   Product Area Background Information

ERM found a number of standards and labels for this product area that can be categorised into:

- Standards associated with raw material production of clothing and textiles that encourage fibre recycling and usually have a focus towards organic

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(33) Fair Trade in Europe, 2005, FINE
(34) OGC, Guidance on Fair and Ethical Trading,
http://www.ogc.gov.uk/documents/Guidance_on_Fair_and_Ethical_Trading.pdf
(35) A6-0207/2006, Parliament Resolution on Fair Trade and Development, July 2006

production (cotton) certification (As such there is some overlapping between the food and clothing categories); and

- Standards that are focused mainly on the processing of textiles and clothes by setting limitations or bans on use of certain chemicals and substances.

Major sustainability issues that clothing and textiles standards address are summarised below in *Table 4.5*.

Table 4.5   ***Sustainability Issues Addressed by Sustainable Clothing and Textiles Standards***

Sustainability Issue	Rationale
Water pollution	- Cotton is a highly pesticide intensive crop - Textile processes such as bleaching, dyeing, and finishing can result in wastewater effluents high in concentration of heavy metals
Water consumption	- Surface and ground water for irrigation purposes - Textile processes such as bleaching, dyeing, and finishing are water intensive
Energy consumption and climate change impacts	- Washing (water heating) and drying of clothing - Textile processing is energy intensive - Use of energy intensive nitrogen and other fertilizers for cotton production, N_2O emissions during the production of petrochemical based materials such as Nylon, Polyester etc. - Destruction of forests for agricultural purposes
Biodiversity loss	Destruction of forests for agricultural purposes
Social issues	- Fair wages to workers (especially in developing countries) - Child labour - Animal welfare - Health impacts (of users) due to residues of certain harmful chemicals (e.g. formaldehyde)

A number of standards address key sustainability issues for this product category such as water pollution requirements, energy and water consumption requirements, packaging and waste minimisation as well as social issue such as child labour and observation of the ILO conventions.

It is worth noting from a life cycle perspective that the largest impact of a clothing product arises during its use (i.e. washing). Few existing standards assess this issue in detail. Promotion of materials that are easier to clean (lower temperature washing), to dry and iron could add robustness in existing sustainable textile standards.

The two standards that were selected for further assessment are the EU Ecolabel for Textiles and the Oeko-Tex 100 Plus Standard; these are presented in the following sections.

Description of scheme

On March 23, 1992, the Council of Ministers of the European Community (EC) adopted a regulation that created a European Union (EU) "eco-label award scheme. The European ecolabel aims to recognise manufacturers of products and/or services which are a genuinely better choice for the environment during their entire life cycle and help purchasers to make reliable choices.

The EU Eco-label is run by the European Commission and administered at the national level by Competent Bodies, which are representative, organizations chosen within EU member states. A manufacturer, retailer or service provider who meets the criteria for a product group and who applies for the award of the Eco-label, can market his eco-labelled product throughout the 25 Member States of the European Union.

Robustness and credibility

The label demands ecological criteria which have been established according to scientific and technical guidelines with widespread participation from independent and neutral bodies and is awarded only to those products with the lowest environmental impact in a product range.

There is a robust consultation process in place that takes into consideration all relevant stakeholders. More specifically the European Union Eco-labelling Board (EUEB) develops ecological criteria for product groups in close collaboration with the Commission. Representatives from industry, commerce, environmental and consumer organisations and trade unions also have considerable input during the development of the criteria and international observers are regularly invited and informed by the Commission and by the members of the EUEB. Proposed criteria are then submitted to and subsequently voted upon by the Regulatory Committee. The Regulatory Committee comprises governmental experts of Member States and criteria cannot be adopted before a majority in the voting process is achieved.

Potential benefits

Clothing and textiles account for approximately 5-10 per cent of environmental impacts in Europe. In the UK clothing and textile consumption is high at approximately 2 million tonnes (value £38 billion) per year and additionally the sector saw considerable growth of 34% during 1996-2005. As such, there are major potential benefits in relation to the adoption of a sustainable clothing and textiles standard.

According to the results of a study commissioned by the European Commission, the EU Ecolabel can present significant environmental benefits in terms of a lower consumption of energy, water and raw materials as well as the minimisation of emissions to the environment during production and use.

The study also maintains that the scheme has the potential to achieve all the above while at the same time to be highly cost-effective. [36]

Ease of use

In order to ensure robustness and materiality of the benefits that certified products would have, the label includes specific criteria that impose limitations on toxic residues in fibres, the use of substances harmful for the environment and health, air and water pollution during fibre processing and additional limitations on textile performance and durability during its use. While the above requirements are somewhat stringent and prescriptive they achieve the required balance necessary between ease of use vs. robustness and potential for market/product innovation.

Applicability to the UK

There is at present no significant demand for Blue Flower labelled textiles, and many manufacturers use Oeko-Tex 100 (assessed in section 4.6.3) in order to show high quality and safety of their products. Currently there are no UK companies, and only a limited number of European companies, currently certified under the EU ecolabel scheme within this product category. The scheme maintains that its aim is to apply to 30% of the market and would therefore seem potentially adoptable (in terms of supply potential) by public sector procurement; nonetheless adoption of the standard could potentially entail supply availability concerns in the short-term.

Furthermore The EU Ecolabel for textiles is currently undergoing a process of revision, part of which will align it more with Oeko-tex criteria that are analysed in more detail below.

4.6.3   Oeko-Tex 100 Standards

Description of scheme

The International Oeko-Tex Association, a grouping of 14 textile research and test institutes in Europe and Japan with representative agencies and contact offices in over 30 countries worldwide, is responsible for the Oeko-Tex family of standards.

There are currently three standards available:

- Oeko-Tex Standard 100
- Oeko-Tex Standard 1000
- Oeko-Tex 100 plus

(36) AEAT, The Direct and Indirect Benefits of the European Ecolabel, 2004,
http://ec.europa.eu/environment/ecolabel/pdf/market_study/benefitsfinalreport_1104.pdf

- **Oeko-Tex Standard 100:** The Oeko-Tex Standard 100 was the first to be presented to the textile and clothing industry in 1992 and the first [companies with Oeko-Tex certification](#) included manufacturers were mainly based in Germany, Austria and Switzerland. The Oeko-Tex Standard 100 is a globally uniform testing (for harmful substances) and certification system for textile raw materials, intermediate and end products at all stages of production. Effectively the Oeko-Tex Standard 100 evaluates and screens for any harmful substances present within processed textiles intended to come into contact with consumers.

- **Oeko-Tex Standard 1000:** Subsequently in 1995 Oeko-Tex International introduced the Oeko-Tex Standard 1000 for production ecology. The Oeko-Tex Standard 1000 effectively is a testing, auditing and certification system for environmentally-friendly production sites throughout the textile processing chain.

- **Oeko-Tex 100 plus:** Finally, the Oeko-Tex 100 plus standard is aimed for products that hold the 100 standard and come from facilities that hold the 1000 standard. The 100 plus standard builds on the level of awareness of the Oeko-Tex Standard 100 label.

Robustness and credibility

Global uniform and scientifically-based criteria are developed and used for the certification of products. The member institutes of the International Oeko-Tex Association revise the criteria through technical working groups and expert bodies and extend the requirements where this is necessary for the textile manufacturing chain due to product developments, research findings and legislation. National toxicological institutes that are regulated and accredited by appropriate national body undertake certification under Oeko-Tex Standards in each country.

There are currently over 7,500 textile and clothing manufacturers throughout the textile processing chain in around 80 countries certified according to the Oeko-Tex Standard 100. With over 60,000 certificates issued and millions of labelled articles in almost all product sectors, the "Confidence in textiles" label is the best known and most widespread label for textiles in the world.

Potential benefits

Clothing and textiles account for approximately 5-10 per cent of environmental impacts in Europe. In the UK clothing and textile consumption is high at approximately 2 million tonnes (value £38 billion) per year and additionally the sector saw considerable growth of 34% during 1996-2005. As such, there are major potential benefits in relation to the adoption of a sustainable clothing and textiles standard.

Beside the health benefits (i.e. consumers, farm and factory workers not exposed to hazardous chemicals) that the Oeko-Tex 100 Standard presents

there are also commercial benefits such as cost savings for manufacturers because it is potentially easier under the scheme to choose suppliers and to avoid duplicate testing.

Additionally, Oeko Tex 1000 as an environmental management system similar to ISO 14000 and EU Eco-Management and Audit Scheme (EMAS) presents environmental benefits during the energy intensive and waste generating textile processing phase. Companies that are certified according to the Oeko Tex 1000 standard claim to have increased production efficiency (i.e. cost reductions and waste, water and energy consumption minimisation). Furthermore the scheme presents some additional advantages when compared to EMAS, the main one being that it does not only demand procedures but also gives clear criteria and limiting values for certification.

Ease of use

The standard is available in English and there is an appropriate body in the UK facilitating the certification process. In terms of requirements there is a long list of chemicals that are forbidden to be used in production (for Oeko-Tex 1000) or be detected in textile fibres (for Oeko-Tex 100). The requirements are generally consistent with equivalent criteria that are included in other ecolabelling schemes such as the EU Ecolabel. As was the case for the EU Ecolabel, the above requirements are somewhat stringent and prescriptive (although not as strict as the EU Ecolabel requirements) although they achieve the required balance necessary between ease of use vs. robustness and potential for innovation.

Applicability to the UK

As noted earlier there are currently over 7,500 textile and clothing manufacturers throughout the textile processing chain in around 80 countries certified according to the Oeko-Tex Standard 100; therefore a potential adoption of the standard should not present any supply restraint concerns. The scheme is also clearly aligned with the UK's sustainable procurement objectives and covers the products that are included in the *sustainable clothing roadmap.*

4.7 CONSTRUCTION

4.7.1 Product Area Background Information

More than a quarter of the UK's carbon dioxide emissions come from energy required to operate buildings. This includes energy that used for lighting, small power, heating and cooling. Therefore it is vital to ensure that buildings are constructed in a way that minimises the use of energy and reduces emissions to the atmosphere.

The construction and use of buildings throughout their lifecycle creates other environmental impacts as well. Examples include water depletion through

water use, waste generation, eco-toxicity and use of polluting materials. All of these impacts can be significantly reduced through the integration of higher sustainability performance standards within the design of buildings.

In order to assess the robustness and usefulness of the standards and eco-labels should be brought forward for further detailed assessment and analysis, judgement was made on how the key environmental impacts where being addressed in each of the standards and labels.

The key environmental impacts for the construction industry were deemed to be:

- Embodied energy of building materials
- Environmental aspects of building materials
- Key energy efficiency aspects of mechanical and electrical systems
- Building life cycle
- Construction impacts of buildings
- Post construction management
- Waste management of building aggregates,
- Sustainable management and procurement of key building materials, and;
- Socio-economic impacts.

The overall robustness of each standard and label can vary significantly. For instance, a noticeable number of standards and labels don't take into account life cycle of the buildings materials and their components.

Furthermore, countries can have different sustainability targets and objectives, so standards and eco-labels are set to address and achieve different benchmarked targets. In this sense, understanding a country's overall policy and objectives on sustainability and the environment, can help formulate a better judgement in relation to the applicability to the UK.

Forty standards have been assessed (including labelling schemes and standards), all of which relate to the environmental impacts of the construction industry. It was noticed that mainly Eco-labels/standards focus on carbon emission reductions throughout the construction process and life cycle of the buildings.

There was an array of classifications of the standard and eco-labels assessed resulting in a fairly equally balanced classification between class 1, 2 and 3. There was a general trend that class one standards where developed in either the UK or Europe. We can presume that due the fact that the UK and Europe have had higher sustainability targets over a longer duration, this resulted in enabling standards and labels to be tried and tested. Numerous labels where found to be extremely robust and useful in the Standard's country of origin, however some of them were categorised as class 2 as they have been developed and based on already existing equivalent schemes in the UK and Europe. Many standards and labels had also been tailored to suit each country's own climatic features and therefore potential applicability to the UK

presented some challenges. A lot of standards and labels fell into class 3 on the basis of the UK's regulatory benchmark being set higher than the standard's performance metrics and objectives.

The two standards that were selected for further assessment are:

- the Code for Sustainable Homes; and
- the EU Eco-Management and Audit Scheme (EMAS).

4.7.2   *The Code for Sustainable Homes*

Description of scheme

The Code for Sustainable Homes has been developed to enable a step change in sustainable building practice for new homes.

The Code for Sustainable Homes was based and developed on EcoHomes 2006. The code replaced EcoHomes in England in April 2007 and is planned to replace EcoHomes in Wales in April this year. It has taken EcoHomes to the next level and enables developers to reach zero carbon energy design.

The Code measures the sustainability of a home against key design categories, rating the 'whole home' as a complete package. The minimum standards for the Code of compliance have been set above the requirements of Building Regulations.

 New residential properties can achieve a rating on a scale of one to six 'Code Levels' depending on the standard achieved. Code level six is arguably deemed to achieve zero carbon emissions, however the evidence base of exactly what is regarded as zero carbon is still up for debate.

The key design categories included within the Code are:

- Energy
- Water
- Materials
- Surface water run-off
- Waste
- Pollution
- Health & Well-being
- Management
- Ecology

The Code builds on the EcoHomes system, and apart from the above design categories, it also includes new areas of sustainability design, such as lifecycle considerations and life style considerations.

Compliance with the Code was made mandatory for publicly funded homes in England from April 2007, but is still voluntary in the short term within the

private sector. It is being discussed by the government making the Code for sustainable homes mandatory within the UK.

Homes are assessed at design stage in a similar manner to that of the EcoHomes system, but additionally require verification at post-completion stage.

Robustness and credibility

The Code for Sustainable Homes is the first standard that has been tried and tested that enables the design of buildings to achieve zero carbon emissions. It has been prepared by the Government in close working consultation with the Building Research Establishment (BRE) and Construction Industry Research and Information Association (CIRIA), and through consultation with a Senior Steering Group consisting of Government, industry and NGO representatives.

It is one of the few standards that actually cover the full life cycle consideration of the building materials and its components. The code for sustainable homes uses a database called the green guide to specification that enables the code to address the full Life cycle of each material and component and also address their embodied energy. A lot of Eco-labels and standards do not yet cover this, thus making the standard extremely robust.

Unfortunately, the Code only covers residential 'new builds' and not any other commercial or industrial buildings. The code also only covers in detail new buildings and does not cover refurbishment. There is potential for innovation to cover existing buildings outlining how they might achieve an applicable grade.

The code has been designed to co-exist and compliment the Energy Performance of Buildings Directive (EPBD), however it is unclear if the code will lessen the need for the EPBD certificates for new 'applicable' buildings as it contains its own label and certification.

The code is tried and tested and there is a good robust evidence base available in the form of projects that have successfully achieved code level 6.

Potential benefits

There are many potential benefit of applying the code as standard practice in the UK mainly associated with overall decrease in the use of energy. The code can also benefit the public transport industry. It could encourage more people to leave their cars at home and travel by public transport, thus indirectly contributing to emissions reductions from mobile sources.

The life cycle of building materials and components has been taken into consideration in order that embodied energy within the overall construction would be lower.

There are economic benefits as well as the end-user would also save money on the general running of the property by having reduced energy bills. The UK will be a leading example of raising the benchmark and having a robust tool to achieving those targets.

However the standard is only applicable to new build domestic buildings and not commercial premises so may be of restricted application to GPP.

Ease of use

The standard is easy to follow and is more robust than its predecessor (EcoHomes). It is fairly flexible; however some of the codes materials calculations are fairly complicated. As similar standards have been in existence in the UK for approximately ten years now, developers have had experience with some of the criteria.

The code is readily available and can be assessed via the web. It has a technical guidance document which enables the criteria to be easily followed and adhered to.

Applicability to the UK

The implementation of the code as regulatory practice would accord with the introduction of regulatory requirements for new builds to achieve zero carbon in 2011 (Wales) and 2016 (England). It could however have adverse economic impacts on the housing market, as it is predicted that to achieve ' Zero Carbon buildings' there will be a 30% increase in build cost. Nonetheless the shift to this target is unavoidable, therefore the Eco-label itself would not give rise to any additional adverse economic impacts.

The code was developed in the UK and therefore is tailored to conform to the UK's sustainability objectives and targets.

Other comments

The code for sustainable homes is likely to be adapted as a template in order to achieve zero carbon on commercial and industrial buildings. It is also likely that the code will become a whole array of code documents making it a family standard similar to that of BREEAM.

In the event of adoption, the government would need to find the resources to help with the implementation of the code as the zero carbon target is expected to have a financial impact on the housing market by an approximate 30% extra build cost; however the shift to this target is unavoidable, therefore the implementation of the Eco-label itself would not give rise to adverse economic impacts.

If the code is introduced in the UK as mandatory practice and more emphasis is put on using public transport, then prices of using public transport could decrease and as a result services could become more efficient.

4.7.3 *The Eco-Management and Audit Scheme*

Description of scheme

The Eco-Management and Audit Scheme (EMAS), is a voluntary initiative, designed to improve organisations' environmental performance. It is applicable to all business sectors and has been adopted by local authorities.

EMAS requires organisations to improve their environmental performance by using fewer raw materials, consuming less energy and producing less waste. Its aim is to encourage companies to develop environmental programmes and management systems voluntarily, and to report publicly by way of statements (usually on a three-year cycle).

In addition, it is a requirement of the scheme that participating organisations regularly produce a public environmental statement that reports on their environmental performance. It is this voluntary publication of environmental information, whose accuracy and reliability has been independently checked by an environmental verifier; this verification gives EMAS and participating organisations enhanced credibility and recognition. [37]

The scheme covers the management processes of an organisation and is applicable as organizations achieve a rating under EMAS throughout the construction industry for their services. EMAS also covers the procurement of energy efficient goods including that of construction, when new buildings are constructed.

Germany was one of the first countries to register and encourage the use of EMAS. *Error! Reference source not found.*The UK was relatively late on integrating EMAS into its standard practice although it now plays a fundamental role in the UK's government procurement process.

Robustness and credibility

EMAS was initially established by European Regulation 1836/93 [38] and has been in operation since late 1995. The scheme is strongly backed by EU Governments and the environmental regulators. Organisations who participate are recognised as making strong commitments to the environment and to improving their economic competitiveness.

Potential benefits

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(37) http://www.emas.org.uk/aboutemas/mainframe.htm
(38) which has been replaced by Council Regulation 706/1

Minimising the amount of waste that is produced, reducing energy consumption and making more efficient use of resources can all lead to financial cost savings, in addition to helping to protect and enhance the environment.

Ease of use

The standard is not available as a free document on the web and must be purchased by organisations that would want to use it.

The standard is fairly flexible and can be tailored in as a bolt on standard to ISO 9001. Additionally, it focuses on continual improvement and gives the organisation the opportunity to set its own achievable targets. The targets set sometimes are difficult to measure and report, therefore making the measurable targets difficult to document. For the same reason, the Standard can sometimes be construed as ambiguous and can be subject to personal interpretation.

Applicability to the UK

Ultimately the implementation of this Standard could potentially give rise to higher capital costs; however certain organisations could win back the expenditure through financial savings through operating efficiently and effectively and PR benefits.

Also, policy studies that were carried out and included a review of 843 organisations across the industry concluded that there was no evidence to suggest any correlation between EMS and environmental performance. In fact the waste industry maintained that the introduction of EMS actually lowers environmental performance.

There is therefore contradicting evidence available to support the use of the standard. A full further investigation into the pros and cons would be required to make a more informed judgement regarding its potential benefits.

4.8 OFFICE ICT

4.8.1 Background Information

Office ICT and hardware standards address environmental issues categorised as follows;

- The recycling potential of the hardware
- The embodied energy within the components,
- Energy efficiency during operation.

These three main issues are addressed by various standards with the most common being recognisable labels so that when consumers purchase products

they can identify with a branding that the product that they are buying is environmentally friendly.

There is a large diversity within the product group ranging from Mobiles, computers, plasma screens to scanners and faxes. Due to this diversity the key environmental impacts of this product group can vary between products, however there are common impacts that are applicable across all product groups;

- Energy consumption
- Hazardous constituents
- Metals contained within batteries
- Waste reduction- reuse/recycling and the guarantee of spare parts
- Noise emissions

The most significant environmental impact associated with office ICT products relates to energy consumption over the lifetime of the product.

The standards were assessed against key impacts that are only applicable to the specific product that the standard addresses.

Whilst assessing the robustness and usefulness of the standards, it was taken into consideration how many of the product groups the standard/label addressed. For example many standards and labels were only applicable to personal computers; therefore the usefulness of this type standard was limited to only one product type.

Standards and labels classification was fairly diverse across the three classes. Typically, standards categorised as class 3 lacked the evidence base that the standard went past current UK standard practice. Class 2 standards were generally characterised by lacking to address all of the key environmental issues.

The three standards that were chosen for further assessment are:

- IEEE Standard 1680 and EPEAT Database;
- Energy Star;
- ECMA 370

4.8.2   IEEE Standard 1680 and EPEAT

Description of scheme

A non-profit organization, IEEE is the world's leading professional association for the advancement of technology. IEEE 1680 was initiated by and developed with support from the U.S. Environmental Protection Agency (EPA) and will help purchasers within businesses and other organizations to reduce the environmental impact of the computers they buy, use and discard. It is the first U.S. standard to supply environmental guidelines for institutional

purchasing decisions involving desktop and laptop computers and monitors. IEEE 1680 "Standard for Environmental Assessment of Personal Computer Products" evaluates electronic products in relation to 51 total environmental criteria (23 required and 28 optional) in eight categories - materials selection, environmentally sensitive materials, design for end of life, end-of-life management, energy conservation, product longevity and life-cycle extension, packaging, and corporate performance.

IEEE Standard 1680 is the over arching standard whilst EPEAT is an environmental database that sits behind the standard as a database tool.

EPEAT is an environmental procurement tool designed to help institutional purchasers in the public and private sectors evaluate, compare and select desktop computers, notebook computers and monitors based on their environmental attributes. At the same time it helps manufacturers promote their environmentally preferable products that conform to a comprehensive set of environmental criteria in 8 environmental performance categories. The operation of EPEAT and the environmental criteria are contained in a public standard IEEE 1680. Products are also ranked in EPEAT according to three tiers of environmental performance - Bronze, Silver, and Gold. All registered products must meet the required criteria, and achieve Bronze status. The Green Electronics Council, who manage EPEAT, maintain a registry of computer products that meet IEEE 1680 criteria and in order to maintain the credibility of the system EPEAT regularly select products from the registry and verifies that the declarations are accurate. If EPEAT finds that a declaration is not accurate, the manufacturer must correct it or the product will be removed from the registry.

The EPEAT system and the environmental criteria for computers and monitors were originally developed in a 2-year multi-stakeholder process that was facilitated by the Zero Waste Alliance on a grant from the US EPA.

Robustness and credibility

Each IEEE standard follows a set path from concept to completion, which adheres to the principles of due process, openness and consensus. Consistent with these principles the standard sets specifications and procedures based on current scientific consensus.

IEEE also specifies Energy Star to be met under IEEE standards. This makes the standard more robust and also credible as it incorporates another label that is also well known and recognised. The IEEE standard is also linked to EMAS and ISO14001 through the corporate performance.

The IEEE only covers ICT and not other office equipment. It covers desktop personal computers, notebook personal computers and personal computer monitors.

EPEAT periodically reports on the environmental benefits from the purchase of EPEAT-registered products. The first EPEAT environmental benefits report was published in July 2007.

Potential benefits

The IEEE standard provides guidance on the following criterion;

- Product longevity / life cycle extension
- Reduction/elimination of environmentally sensitive materials
- Materials selection
- Design for end of life
- Product longevity / life cycle extension
- Energy conservation
- End of life management
- Corporate performance
- Packaging

Clear benefits to the individual organisation that adheres to this standard can be seen from the introduction of this criterion. This is through reduction in energy bills through less use of small power, PR benefits including those associated with EPEAT and ISO14001 and other benefits (including health and wellbeing benefits).

Ease of use

It is fairly difficult to review the full criteria outlined within the IEEE standard as they are not freely available on the web and must be purchased. However based on the limited available knowledge it is believed the standard is mildly complicated. Most sections involve linked standards and databases like meeting EnergyStar and EPEAT and EMAS.

It is necessary to own a copy of the IEEE 1680 standard in order to declare a product under EPEAT. It is also worth noting that the standard contains essential information that is not available on through the EPEAT web site

Applicability to the UK

As the standard sets criteria for the adherence to other standards, labels and databases it becomes more difficult to implement within the UK. Its economic implications are not clear and therefore further investigation into associated costs needs to be carried out.

There is however a good evidence base to show environmental and organisational benefits of the implementation of this standard and the standard does go well beyond current practice within the UK.

Other comments

The IEEE standard is linked to Energy star. Under the energy consumption criterion it is a requirement that all products shall comply with the latest version of the U.S Energy Star.

EPEAT has clear available instructions available to purchases, manufactures a resellers.

<h3>4.8.3 ENERGY STAR</h3>

Description of scheme

In 1992 the US EPA introduced Energy Star as a voluntary labelling programme designed to identify and promote energy-efficient products to reduce greenhouse gas emissions. Computers and monitors were the first labelled products but since then the EPA expanded the label to include additional office equipment products, residential heating and cooling equipment and other product categories. [39]

This standard covers all aspects of energy efficiency through the purchase of goods. This Eco-Label covers not only computers but also a variety of office equipment making it cover numerous of the *"priority areas of spend"*. It is linked with EPEAT as a requirement to the IEEE standard 1680*.*

Robustness and credibility

EPA produces an annual report which defines measurable achievements from the previous year. These reports are available on their website and can be used in order to define measurable targets; it is unclear however where the statistics come from.

The standard covers most priority areas of spend for the product area that adds an additional element of robustness.

Potential benefits

Energy Star states that *"the computer specification is expected to save consumers and businesses more than $1.8 billion in energy costs over the next 5 years and prevent greenhouse gas emissions equal to the annual emissions of 2.7 million vehicles."*

Assuming that the above are realistically achievable through the use of this label for office ICT and hardware then there are clear benefits for considering the standard.

Benefits of using Energy star for each individual computer can be easily measured on a tool available on the web, and this tool defines the criteria presented in Table 4.6;

[39] http://www.energystar.gov/index.cfm?c=about.ab_history

Table 4.6   ***Summary of benefits for computers***

Summary of benefits for computers
Initial cost difference
Life cycle savings
Net life cycle savings (life cycle savings - additional cost)
Simple payback of additional cost (years)
Life cycle energy saved (kWh)
Life cycle air pollution reduction (lbs of CO_2)
Air pollution reduction equivalence (number of cars removed from the road for a year)
Air pollution reduction equivalence (acres of forest)
Savings as a percent of retail price

Ease of use

It is extremely easy for consumers to access the registered products under energy star on the web and there are a high number of manufacturers providing Energy Star certified products.

The criteria for the product to become labelled under Energy Star are not clear; therefore it is difficult without further investigation to judge the complexity of the criteria for businesses to register their products.

Applicability to the UK

Energy Star appears to be easily applicable to the UK. There are already manufacturers that supply to the UK that are registered on this scheme and there is extensive stakeholder buy-in. Additionally, benefits resulting from procurement of Energy Star ICT equipment can be individually assessed in terms of savings by using the on line tool described above.

In conclusion, there are obvious benefits to the environment, consumers and organisations associated with use of this scheme, and this label is more detailed for manufacturers and less complex for consumers. The benefits are also easily measured.

Other comments

EPA has finalized a revision to the Energy Star specification for TVs. Effective as from November 1, 2008, TVs that carry the Energy Star label will be up to 30% more efficient than conventional models and will save energy while they are on and when they are off (stand by and active modes). Although it is not common for organisations to own TV's, they are sometimes used for visualisation purposes.

Although Energy Star appears to have extensive buy-in from industry, it is worth noting here that other standards that use Energy Star as a criterion, for example, IEEE Standard 1680 may not have such extensive stakeholder buy in due to their being too prescriptive.

4.8.4   ECMA 370

Description of scheme

This standard was developed by Ecma International, an industry association founded in 1961 and working on issues related with the standardization of Information and Communication Technology (ICT) and Consumer Electronics (CE).

ECMA 370 specifies environmental attributes and measurement methods for ICT and CE products according to known regulations, standards, guidelines and currently accepted practices. The report is also applicable to products used as subassemblies, components, accessories and/or optional parts. The standard addresses only company programs and product related attributes and not manufacturing processes and logistic aspects.

The objective of this Standard is the use of accurate and verifiable environmental self-declarations that:

- increase potential for market forces to stimulate environmental improvements in products;
- prevent or minimise unwarranted claims;
- reduce marketplace confusion;
- facilitate international trade; and
- increase the opportunity for purchasers, potential purchasers and users to make more informed choices.

The fundamental difference of this standard from other existing schemes is that is focuses on two different aspects;
- The environmental attributes of the products
- The environmental profile of the company

Figure 4.2　　***Example of the eco declaration scheme;***

Source: http://www.ecma-international.org/publications/files/ECMA-ST/ECMA-370-Annex-A.doc

Robustness and credibility

It is unclear how many organisations have successfully implemented this standard and the potential benefits associated with the implementation of this standard. The fact that this standard has been adopted by the General Assembly of December 2006, confirms this standards credibility.

The implementation of this standard is controlled via a third party that is chosen and adopted by the individual organisation in order to determine the correctness of the Eco declaration.

Potential benefits

There are obvious benefits to both individual organisations and the environment. The individual organisations can feel more in control as their eco declaration can be monitored and controlled via third party accreditation for their environmental management systems.

As the standard is applicable for all countries globally and not prescriptive to individual countries, there is an obvious benefit of this standard as there will be continuity across the globe for the environmental attributes of the products.

The standard also covers the majority of the priority areas of spend and covers a lot of products throughout ICT and office hardware.

The benefits of this standard appear to be obvious to the organisation; however this is not the case for the user of products in compliance with the standard.

Ease of use

The standard appears to be fairly complicated and prescriptive in comparison to Energy Star but less so than IEEE Standard 1680. The standard has clear guidance relating to its environmental attributes but not on the environmental performance of the individual organisations.

With each organisation using its own third party accreditation, it is difficult to monitor the consistency of the standard.

Applicability to the UK

As this standard focuses on the environmental performance of the individual organisations the mandatory use of this standard will give rise to all the issues that are associated with the implementation of ISO14001.

This standard does not seem to go past Energy Star and is not very clearly defined and designed for use by consumers.

Other Comments

There has been a document issued that compares the criteria of Ecma to that of TOC, Blue Angel and Nordic Swan, but not of EPEAT or Energy star. The comparison can be viewed at;
http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/iteco_comp_print.pdf

4.9   FURNITURE

4.9.1   Product Area Background Information

A total of nineteen standards (including labelling schemes and procurement guidelines) were assessed for the furniture product area. These standards all seek to address, in one way or another, the impacts of furniture manufacture, procurement and disposal on the environment. The main environmental impacts addressed through such schemes varied according to the type of furniture they were designed for (i.e. guidance aimed at timber furniture very much focussed on the sustainability of the source timber, guidance aimed at metal furniture focussed on different issues i.e. increased use of recycled metal), and the region in which they operate. It is notable that at present, climate change issues are not addressed in a quantitative manner and none of these schemes address or compare emissions from electricity supply (CO_2/kWh) using either a combustion-only or LCA approach.

Of the nineteen standards assessed, eleven represent national labelling and certification schemes for furniture and fittings, seven of the labels are European in origin - and four represent international or European-wide schemes. The most significant are the FSC, Nordic Swan and Environmental Choice New Zealand, which serve as international best practice standards to which national labelling schemes should be referred.

The most important environmental issues related to furniture manufacture are dependent on the materials from which furniture is constructed. Key impacts include:

- Provenance of timber is perhaps the issue most commonly considered by furniture standards, i.e. is the timber used, sustainably sourced in terms of local biodiversity and local cultures.

- Recyclability of the furniture at the end of its useful life is an increasingly important issue as furniture becomes viewed as a throw away fashion item subject to disposal before the end of its useful life – some surface treatments (on metal furniture in particular) and compound materials i.e. MDF preclude recycling.

- Impacts caused by the extraction of raw materials used for their manufacture (wood, alloys) which can be energy and water intensive; and which may involve the depletion of finite materials or have a negative impact on local biodiversity and communities.

- Carbon footprint – the globalisation of furniture manufacture and the increasing tendency toward metal, plastics and vinyl furniture as opposed to solid wood items has led to consideration of GHG implications during the manufacture and transportation of furniture goods.

- Human rights and labour implications – the popularity of cheap, 'semi disposable' furniture replaced as and when fashions change, has led to the outsourcing of much manufacture to the developing world and specifically to countries with poor labour laws (workers are often exploited, and may even suffer serious health impacts).

- The toxicity of any coatings used on metal, plastic and fibreboard furniture i.e. paints, lacquers and varnishes both during production and use, is another key issue due to potential offgassing of VOCs (Volatile organic compounds) – which can be inhaled by humans.

- Durability of a furniture product is a key issue. Certain materials are cheap to buy and degrade quickly; as a result they have quick replacement cycles. This rapid turnover relies on consumers wanting to keep up with changing fashions and replacing items regularly, which poses considerable waste impacts for the environment from their disposal.

- The ecotoxicity of chemicals used as flame retardants within furniture has also caused major concern as these chemicals have spread into the body tissues of humans and other large mammals with fears for their long term impact on human and ecosystem health.

- 'Over' packaging of furniture and poor information provision to consumers as to how they can recycle the associated packaging is another problematic environmental concern, and can create a large waste footprint for an item of furniture.

Most of the twenty standards assessed typically focus on only one or two of these environmental impacts each. Only a very small minority address all of the key issues in any meaningful way. Thus a central finding of the assessments is that most existing schemes strongly reflect national or regional circumstances and their local environmental priorities. As such, national schemes are often of limited value in their application to other countries.

For the reasons outlined above, most of the standards assessed were classified as "Class 3" standards, considered to be of no apparent applicability to the UK. Only three standards (FSC, the Nordic Swan and Environmental Choice New Zealand) were considered to be "Class 1" for furniture. Because the Nordic Swan and FSC labels have already been considered in detail as Class 1 standards for paper and pulp products, only Environmental Choice New Zealand will be discussed within the context of furniture.

4.9.2   *Environmental Choice New Zealand*

Description of scheme

The New Zealand Ecolabelling Trust is a voluntary environmental labelling programme, which operates to international standards and principles and is a member of the Global Ecolabelling Network (GEN). Initiated and endorsed by the New Zealand Government, Environmental Choice provides a credible and independent guide across a range of different product types, for consumers who want to purchase products with reduced environment impacts. The scheme commenced in 1992 and operates independently from the government although the label is government owned and endorsed and since 1992, has received NZ$1.35 million in direct and indirect government support.

The stated objectives of the scheme are to:

- Improve the quality of the environment by encouraging more sustainable processes through e.g. the design, production, marketing, & use of products which have a reduced environment impact during their entire life cycle.

- Offer a credible national and/or regional (e.g. Australasian) programme for environmental labelling;

- Work towards compliance with recognised international programmes and principles;

- Foster and develop international relationships with relevant recognised international networks and other ecolabelling programmes/initiatives;

- Establish mutual recognition agreements with other similar programmes;

- Work towards the harmonisation of national and/or international product specifications;

- Provide a clear, credible and independent guide to help consumers (including business consumers) identify products and services that are less harmful to the environment;

- Provide a market incentive to manufacturers, suppliers and retailers of environmentally preferable products and services;

- Encourage manufacturers, suppliers and retailers to develop products and processes that are in compliance with published product specifications;

- Promote responsible procurement policies by central and local government, other organisations and business; and

- Establish and maintain strategic relationships with government, business and non government organisations which have common environmental and product performance interests.

The Environmental Choice standard for furniture and fittings was last revised in February 2007 and contains a number of key criteria to which suppliers must adhere to be accredited. The requirements include environmental criteria and product characteristics as well as testing requirements. Key components of the standard include:

1. *Inclusivity*. The assessment legally has to include all materials in the item of furniture that contribute more than 10% of the weight of the product. The assessment must cover the materials which contribute a minimum of 90% by weight of the total weight of the item of furniture. The furniture or fitting product may not contain more than 5% by weight of any single material that is not assessed.

2. *Bold scope*. In some instances the standard poses very strict limits on manufacturers and as a result, has led to significant behaviour change and associated environmental impacts. For example the following substances cannot be added to a furniture or fitting product during production: arsenic, cadmium, chromium, copper, lead, mercury. Similarly no substances can be used in the production processes that are classified as carcinogenic, harmful to the reproductive system or genetically harmful.

To gain accreditation to the standard manufacturers must:

- Meet all relevant laws and regulations that are applicable during the product's life cycle.

- Provide information on the materials used in the product, and the percentage each material contributes to the total product weight.

- Have effective energy management policies and procedures and/or an energy management programme.

- Guarantee all parts subject to wear for at least five years from sale.

- Provide information to purchasers on sustainable disposal, recycling, disassembly and recycling.

- Confirm that arsenic, cadmium, chromium, copper, lead and mercury are not added during the production process.

- Confirm that materials that are classified as carcinogenic, harmful to the reproductive system or genetically harmful are not used in the product.

- Strictly limit the use of halogenated organic binding agents, halogenated organic flame retardants, phthalates, aziridine or polyaziridines, as well as pigments and additives that contain lead, tin, cadmium, chromium VI, mercury or their compounds.

- Strictly limit the use of formaldehyde in adhesives and formaldehyde emissions. Environmental Choice New Zealand intends to monitor technology and market demand for lower formaldehyde emission products, with the expectation that a lower limit (likely to be the E0 Ultra-low limit, currently 0.5 mg/l) will be set when this is shown to be technically and practically achievable

- Where wood is used, the product must be made from recycled wood or a minimum of 30% by weight of the wood in the furniture or fitting must be from plantations licensed under the Forest Stewardship Council or equivalent schemes and the licensee must endeavour to ensure that raw materials do not come from forest environments that are protected for biological and/or social reasons. Environmental Choice intends to monitor levels of forestry certification, with the expectation that the 30% minimum requirement will be increased when a higher level is attainable.

- Wood used in the furniture or fitting product must not be treated with fungicides or insecticides that are classified by the World Health Organisation (WHO) as type 1A (extremely hazardous pesticides) or type 1B (highly hazardous pesticides).

- Strictly limit the use of wood preservatives, with encouragement of wood preservatives that do not contain biocides, the avoidance of preservatives on indoor furniture and the encouragement of durable timber that doesn't need artificial preservatives. All compatible preservatives must not be classified as ecotoxic, toxic or allergenic by inhalation.

- Where wood panelling is used, at least 40% of all wood purchased for the panels must consist of sawdust/ wood chips and /or waste wood from wood processing operations, forest harvesting waste and/or untreated demolition and/or recycled fibre. The surface treatment products must not be classified as toxic or allergenic by inhalation.

- Where metal is used, it must be possible to separate the metal from other materials in the product without the use of special tools to encourage recycling.

- Where plastics are used, all plastic parts in the product shall be documented with the type of plastics to aid recycling. Environmental Choice intends to monitor recycled plastic availability and content in licensed products with the expectation that a minimum recycled content

limits will be set in the future.

- Where plastic is used, it must be possible to separate all recyclable plastic parts from other materials in the product without the use of special tools, to encourage recycling. Plastic parts must not be treated or coated in a way that would prevent recycling.

- Where leather and textiles are used, they must meet the Environmental Choice NZ requirements for textiles.

- In terms of glass, no lead glazing, crystal glass, mirror glass, wire reinforced glass or laminated glass shall be used – as this is not recyclable. Additionally, all glass parts of the furniture or fitting must be able to be easily replaced.

- The standard also sets strict limits on materials used as padding in terms of Chlorophenols, PCB or organic tin compounds, aniline based amines, pigments dispersed in alkyl phenols, chloro-organic bleaching agents, azo dyes, emissions of nitrosamines, and HFC, HCFC and CFC blowing agents.

- A minimum of 90% of total waste from production of the padding materials is to be recyclable.

- In terms of metals, any surface treatment chemicals must not be classified as ecotoxic, toxic or allergenic by inhalation. Metals must not be coated with cadmium, chrome, nickel or tin or their compounds. In exceptional cases, metal surfaces may be treated with chromium or nickel where this is necessary on the grounds of heavy physical wear or in the case of parts that require particularly tight connections. This exemption does not include parts that are intended to come into frequent contact with skin. The content of organic solvents in treatment substances must not exceed 5% w/w of which the content of aromatic solvent must not exceed 1% w/w.

- Where adhesives are used in the furniture or fitting, no adhesives that are classified as toxic can be accredited. If there is more than 50g (wet adhesive) in the finished product, the adhesive must not be classified ecotoxic. The adhesives may contain a maximum of 5% organic compounds with boiling point < 260°C. The adhesive must not contain alklyphenolethoxylates, alkyldphenols or halogenated solvents.

Robustness and credibility

Environmental Choice New Zealand operates to the ISO 14024 standard "Environmental labels and declarations - Guiding principles." which requires environmental labelling specifications to include criteria that are objective, reasonable and verifiable. It also requires that interested parties have an opportunity to participate and have their comments considered and that environmental criteria are based on an evaluation of the environmental impacts during the product's life cycle. The specification has been prepared based on an overview level life cycle assessment, information from standards

for similar products from other national labelling programmes, and relevant information from other Environmental Choice New Zealand specifications.

All claims made by a manufacturer seeking accreditation must be independently verified; conformity with this requirement must be demonstrated by providing a written statement, signed by the Chief Executive Officer or other authorised representative of the applicant company. All Environmental Choice New Zealand standards are subject to a regular programme of review. As information and technology change, product category requirements are updated and amended as appropriate. The standard for furniture and fittings was last updated in 2007, and will be valid for five years, with the review process taking place during the last year of the standard's life.

Potential benefits

The criteria are considered to represent best practice globally in terms of the environmental performance of furniture, and its adoption would bring numerous environmental benefits as well as human health benefits to producers and consumers of furniture products. The standard takes a comprehensive view of the environmental issues posed by the manufacture of furniture and makes a credible attempt to address each of them in a way that few other global standards currently do.

The criteria are based upon a ful LCA of the environmental impacts of different furniture types, and have identified that the sourcing and production of raw materials (including the associated use of hazardous substances), represent the most significant environmental impacts during the furniture's life cycle. This offers an opportunity to reduce the environmental impact from furniture production which, whilst reducing manufacturers' profits from deliberate obsolescence, is relatively low cost and offers considerable benefits to consumers. Finally, the requirement for verification of claims would offer an improvement on the current UK situation (at present there is none required for so called 'green' furniture products).

Ease of use

Prior to granting a licence, Environmental Choice prepares a plan for monitoring of ongoing compliance with the standard. This plan reflects the number and type of products covered by the licence and the level of sampling appropriate to provide confidence in ongoing compliance with criteria. As part of the plan, Environmental Choice requires access to relevant quality control and production records and the right of access to production facilities. Relevant records may include formal quality management or environmental management system documentation (for example, ISO 9000 or ISO 14001 or similar). The monitoring plan requires the licence holder to advise Environmental Choice immediately of any non-compliance with any requirements of this specification which may occur during the term of the licence.

Whilst the criteria set a high benchmark for performance they also offer clear guidance and the information required to prove and verify that a product complies with each. Some suppliers have cited confidentiality issues as obstacles preventing them seeking accreditation; Environmental Choice New Zealand maintains the confidentiality of identified confidential information provided and accessed during verification and monitoring of licences.

In terms of ease of use of the label on marketing materials, clear guidance is provided on the use of the logo i.e. wherever it appears, the Label must be accompanied by the words "Furniture and Fittings" and by the Licence Number e.g. 'licence No1234'. Another advantage which translates into ease of use is that the standard covers the whole range of furniture and fittings in one standard, with clear guidance for items composed of different materials under 'one roof'. This potentially offers an improvement on the current situation in the UK where there is a (potentially confusing) range of different standards, standard bodies and sources of best practice advice.

Applicability to the UK

The standards required by the Environmental Choice label are considered to be in conformity with UK sustainable procurement objectives. Additionally, New Zealand and the UK have numerous similarities in terms of climate, economy, consumer income and environmental policy objectives.

The cost impacts associated with adoption of the requirements are unknown to the assessor. Similarly, there is no publicly available information as to whether UK suppliers would be able to meet demand – although it should be noted that New Zealand authorities have not faced any difficulties in terms of a supply meeting domestic demand. Furthermore, as most furniture used in the UK and New Zealand is now produced in the developing world, it is likely that many shared supply chains are already in existence and that these have adequately met the higher standards set in New Zealand. The basic approach taken by the Environmental Choice standard may provide a good working basis for a scheme applicable to the UK, but buy-in and extensive UK consultation would likely be required.

4.10 PULP, PAPER AND PRINTING

4.10.1 Product Area Background Information

Standards assessed in this category address the impacts of the manufacture, procurement and disposal of pulp, paper, printing and stationery products on the environment. The main environmental impacts addressed through such schemes varies depending on the end product they were designed to assess (i.e. guidance aimed at paper pulp is very much focussed on the sustainability of the source timber whereas guidance aimed at toner cartridges is focussed on very different issues i.e. toxicity and sustainable disposal), and the region in which they operate.

Of the 22 standards assessed, nineteen represent national labelling and certification schemes. Fifteen of the labels are European in origin and eight represent international or European-wide schemes. The most significant of these are the FSC, Nordic Swan and Environmental Choice New Zealand, which serve as international best practice. It is clear from the number of assessed standards and eco-labels that a great deal of emphasis has been put into the development of frameworks to help green procurement in this area. Indeed paper products were some of the first products to be eco-labelled.

The main geographic focus for standards for green procurement of paper includes Europe, North America, Australasia and the Far East. There are also limited tools available in the Eastern European block, South and Central America and Africa. Eco-labels created in countries with large paper production industries tend to focus more on limiting emissions to air and water than in encouraging recycled paper content – for obvious economic reasons.

Standards for pulp and printing are less common than for paper, and it would seem that the development of these is still at an early stage. Standards for paper products usually cover the following issues: recyclability and recycled content; sustainable forestry; and (reduction of) chemical emissions to water. Standards which cover emissions to air and GHG emissions are rare. Standards for disposable paper products like napkins and toilet paper are usually stricter on recycling criteria than office paper standards – it is common for 100% recycled paper to be requested for these products.

Pulp, paper, stationery and printing products can pose a significant environmental burden during their manufacture, use and disposal. The necessity to take action results from the increasing amount of paper consumption world-wide. Despite increased use of information technology and the so called 'paperless office', the global per capita consumption of paper exceeds 200kg/year. With population growth, rising standards of living and a declining rate of illiteracy paper consumption per year is expected to rise by a further 31%[40]. Another forecast (from the ICEM World conference for the Cellulose and Paper Industry) estimates an increase in demand of nearly 50%, to a total demand of 420 million tonnes in the period 1997-2010.

The most serious associated environmental impacts / issues can be subdivided into those associated with forestry, printing and the paper manufacturing process. These are outlined briefly below:

Forestry

Sustainable management of forests is an issue of much concern and debate internationally. A number of schemes have been developed to define

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(1) [40] Fischer Weltalmanach 2001, 1277

principles, criteria and measures of sustainable management and provide processes for sustainable forest management to be independently assessed and assured.

A list of environmental impacts associated with forestry is presented below:

- One of the reasons for rain forest deforestation is land reclamation for the planting of fast-growing trees used for cellulose and paper production.

- Industrial logging in virgin or primary forests i.e. Amazonia, which involves the substitution of complex ecosystems with monoculture plantations, leads to a loss of biodiversity and raises the difficulty of guaranteeing that the wood derives from legal forestry operations.

Illegal logging occurs when timber is harvested in violation of national laws. The World Bank concluded in 1999 that in many countries illegal logging is comparable in size to legal logging operations [41] and is often associated with poor environmental and labour practices.

- Plantations if planted with non-indigenous, fast growing species are also responsible for negative environmental impacts such as loss of biodiversity, release of carbon sequestered in the soil (and a corresponding impact on climate change), disruption of local water cycles, risk of pests and diseases and loss of soil productivity. According to the IPCC, the forestry industry and deforestation activities in particular, are the single biggest contributor of GHG emissions of all human activities.

One of the most widely known schemes in this category is the Forest Stewardship Council which is also certified by the Central Point of Expertise on Timber Procurement (CPET). [42] It is worth noting that the Centre Point of Expertise on Timber recently approved four forest certification schemes in addition to the Forest Stewardship, the Council Canadian Standards Association (CSA), the Malaysian Timber Certification Council (MTCC), the Programme for the Endorsement of Forest Certification (PEFC) and the Sustainable Forestry Initiative (SFI)

Printing

The print industry uses hazardous substances. It also consumes energy and water in significant quantities and produces toxic wastes. Significant environmental impacts of printing inks may include:

- the release of volatile organic compounds (VOCs), heavy metals and other toxic substances during their manufacture;

- the release of VOCs and exposure to toxic and/or hazardous substances during their application/use;

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(41) Timber Trade Federation. http://forestsforever.org.uk

(42) The Central Point of Expertise on Timber Procurement (CPET) is a service of the UK Government. CPET has been set up by the Department for Environment, Food and Rural Affairs (Defra), and is operated by ProForest, a company with wide experience in advising on responsible purchasing

- the release of VOCs, heavy metals and other toxic and/or hazardous substances in the removal and/or disposal of ink or printed product; and

- the use of non-renewable resources.

Conventional solvent-based inks emit VOCs as they dry. VOCs can be highly flammable, can result in toxic and narcotic effects when inhaled and can contribute to the formation of tropospheric ozone and smog. Packaging of inks may also have environmental impacts, depending upon the type of packaging used and disposal options. Reducing, reusing and/or recycling packaging will conserve valuable resources and reduce the volume of packaging entering the waste stream.

Paper

Paper manufacturing can, potentially, result in a significant burden being placed on the environment:

- Process effluents can contain high concentrations of natural organic materials which deplete oxygen from receiving waters, adversely impacting plant and animal life.

- Sulphur, organochlorines and other hazardous substances, particularly halogenated organics, used in or resulting from the manufacturing process (e.g. from bleaching or for cleaning of equipment) can be persistent. They can, potentially, bioaccumulate and have toxic effects on the environment if discharged in effluents.

- Non-biodegradable detergents (surfactants) may also accumulate and be toxic or otherwise harmful in the environment if discharged.

Environmental impacts through cellulose and paper production can be reduced by increasing the proportion of used fibres, using wood fibres rather then cellulose, reducing the demand on whiteness, and processing only raw materials originating from sustainable forest management.

Most of the standards assessed in this product area were classified as "Class 2" standards and considered to be of limited applicability to the UK usually because they addressed only one or a small number of the key relevant environmental impacts or they failed to provide the necessary robustness in terms of verification. Only three standards (FSC, the Nordic Swan and Environmental Choice New Zealand) were considered to be "Class 1". All three labels can be applied to both recycled and non-recycled paper products.

The Nordic Swan and FSC labels are discussed further in this section. It should also be noted that the FSC label only certifies that paper is made of a minimum of 30% FSC certified wood fibres, or that the paper is 100% recycled. It doesn't specify any other environmental aspect of paper production. However, it is considered an important standard in ensuring that forestry and paper production has the minimum impact on forest ecosystems and biodiversity loss and represents a gold standard in this sphere.

Description of scheme

FSC is an international forestry certification body founded by the World Wildlife Fund (WWF). It is an international non-profit, multi-stakeholder organization established in 1993 to promote responsible management of the world's forests. Its main tools for achieving this are standard setting, independent certification and labelling of forest products. This offers customers around the world the ability to choose products from socially and environmentally responsible forestry. The FSC Principles and Criteria are the only internationally recognized standards for responsible forest management, and apply to all tropical, temperate and boreal forests and many to plantations and partially replanted forests. Though mainly designed for forest management for timber products, they are also largely relevant for non-timber products (e.g. Brazil nuts, paper, and furniture) and other environmental services such as clean water and air and carbon sequestration.

FSC was established as a response to concerns over deforestation and destruction of virgin rainforests. FSC was the first worldwide certification system established for forests and forest products and can be regarded as one of the most important initiatives of the last decade to promote better forest management. Forest management according to FSC's internationally recognized standards delivers environmental services to local and global communities, including clean air and water, and contributes to mitigating impacts of climate change. FSC directly or indirectly addresses issues such as illegal logging, deforestation and global warming and has positive impacts on economic development, environmental conservation, poverty alleviation and social and political empowerment.

FSC is an international association of members. It is a platform for forest owners, timber industries, social groups and environmental organizations to come together to find solutions to improve forest management practices. FSC works to ensure the permanent existence of forest areas through responsible forest management and conservation. The FSC logo guarantees that the product comes from responsible sources and can be found on a wide range of timber and non-timber products from paper and furniture to medicine and jewellery. The FSC paper ecolabel certifies that paper is made of a minimum of 30% FSC certified wood fibres, or that the paper is 100% recycled. However it does not specify any other environmental aspect of paper production.

FSC is regarded by NGOs as the most stringent timber related certification scheme and superior to industry led schemes such as the SFI and PEFC. While private and industrial landowners in Europe have rapidly accepted FSC certification, its adoption has grown more slowly in other parts of the world such as North America and Asia.

FSC has ten Principles and associated Criteria that form the basis for all FSC forest management standards. FSC International sets the framework for developing and maintaining international, national and sub-national standards. This shall ensure that the process for developing FSC policies and standards are:

- *Transparent:* The process for developing policies and standards is clear and accessible.

- *Independent:* Standards are developed in a way which balances the interests of all stakeholders - social, environmental and economic - ensuring that no one interest dominates.

- *Participatory:* FSC strives to involve all interested people and groups in the development of FSC policies and standards.

The FSC Principles are a complete package and their sequence does not represent an ordering of priority. To be accredited, forestry operations must meet ten principles:

- Principle 1: Compliance with all applicable laws and international treaties.

- Principle 2: Demonstrated and uncontested, clearly defined, long–term land tenure and use rights.

- Principle 3: Recognition and respect of indigenous people's rights.

- Principle 4: Maintenance or enhancement of long-term social and economic well-being of forest workers and local communities and respect of worker's rights in compliance with International Labour Organisation (ILO) conventions.

- Principle 5: Equitable use and sharing of benefits derived from the forest.

- Principle 6: Reduction of environmental impact of logging activities and maintenance of the ecological functions and integrity of the forest.

- Principle 7: Appropriate and continuously updated management plan.

- Principle 8: Appropriate monitoring and assessment activities to assess the condition of the forest, management activities and their social and environmental impacts.

- Principle 9: Maintenance of High Conservation Value Forests (HCVFs) defined as sites with environmental and social values that are considered to be of outstanding significance or critical importance.

- Principle 10: In addition to compliance with all of the above, plantations must contribute to reduce the pressures on and promote the restoration and conservation of natural forests.

Robustness and credibility

Forest management certification is the basic building block of the FSC system. The forest owner, or representative of a group of forest owners and operators,

initiates the certification process by requesting an independent certifier to inspect the forest and to see if the management meets the FSC requirements for certification. Only a FSC accredited certification body can evaluate, monitor and certify companies to FSC standards.

FSC accredited certification bodies certify and audit each individual forest management operation. If the forest management is in full compliance with FSC requirements, the FSC certificate is awarded. If the forest management is not fully compliant, pre-conditions are noted which must be fulfilled before the FSC certificate can be awarded. If minor non-compliances are noted, the certificate can be issued with conditions that have to be met within a clearly determined timeframe. Once certification is awarded, FSC accredited certification bodies audit each FSC certificate at least once a year. If during these audits the certification body finds that a company has non-compliances with FSC requirements, corrective action is required or else it will lose its FSC certificate.

Once a forest is certified it is important to be able to trace the products that come from it throughout the supply chain to ensure that any claims on the origin of the product are credible and verifiable. The FSC chain of custody is a tracking system that allows manufacturers and traders to demonstrate that timber comes from FSC approved cources. The company is responsible for initiating the certification process by requesting the services of an independent certification body to inspect its internal tracking procedures. Only FSC-accredited certification bodies can evaluate, monitor and certify companies to FSC standards.

All operations that want to produce an FSC certified product or want to make corresponding sales claims must comply with FSC's international standards for chain of custody. An operation must specify the range of products they wish to sell as FSC certified and promote with the FSC trademark. The certification body inspects the operation to ensure that controls are in place to identify eligible sources for the specified product range and to prevent certified and recycled material from mixing with material from unacceptable sources. If an operation complies with FSC standards, the company is issued an FSC chain of custody certificate. Major failure to comply with the standard will normally disqualify the candidate from certification or lead to de-certification.

The FSC 'Mixed Sources' label allows manufacturers to provide FSC labeled products that include both FSC certified material and material that complies with the FSC Controlled Wood standard or is recycled. Besides addressing international concerns on illegal logging, FSC Controlled Wood includes a balanced consideration of key social and environmental issues which ensures a minimum performance level on the ground. Thus it is ensured that certified material does not mix with material from unacceptable sources - illegally harvested, or resulting from forest conversion areas where high conservation values are threatened, genetically modified trees are used or social conflicts occur.

In the past the FSC has been criticised for a lack of neutrality amongst its certifiers. In the mid 1990s the FSC would contract with local NGOs to coordinate certification, sometimes using their own foresters. These NGOs had often been campaigning against the timber operators they were now certifying for many years and were biased against accrediting these operations. This practice hurt the FSC's growth in North America. However, there is a growing body of evidence that actually the FSC may not be tough enough to ensure the integrity of all certified operations[43]. One of the underlying reasons for the issuing of so many controversial certificates is because the accredited certification bodies which are now no longer NGOs but largely private for profit consultancies contract directly with the forestry companies that they are supposedly independently assessing. Certifiers compete with others for business, and this encourages a 'race to the bottom' of certification standards, as forestry companies are likely to seek certifiers that have the laxest standards.

Despite such concerns, the FSC system is widely considered to be the best standard available for the sustainable sourcing of timber and pulp products; furthermore, creating a replica / comparable brand for similar product areas would likely be confusing to consumers and weaken the integrity of the FSC label. It can be argued that there is however a need for greater control of the verification process to ensure that consultancies do not devalue the rigour of the standard by seeking to win custom from forestry companies by being overly lenient.

Potential benefits

In the US, until recently less than 3% of timberland has been certified by FSC. Although FSC has yet to gain a large foothold in key markets such as the US market, it has had a disproportionately large impact. It has established a gold standard for timber and pulp certification in the region, which has put significant pressure on industry to either join it or develop an alternative, high quality standard. Furthermore the standard has been adopted by large industry players which either have experienced real market pressure, or those who also cater for the more discerning European market. Furthermore, taking into account the FSC's impact on the development of the SFI (Sustainable Forestry Initiative) and PEFC ((Programme for the Endorsement of Forest Certification), then the FSC's impact is much broader than its direct adoption suggests.

In recent years the US has increasingly adopted the FSC. FSC's current unprecedented growth rate over the last five years is a response to market demand for FSC certified timber and non-timber forest products. In December 2007, some 93 million hectares – the equivalent of roughly 10% of the world's production forests were certified to FSC in 78 countries. More than 7500 FSC

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(1) http://www.fsc-watch.org/ for numerous examples of certified projects which fail to meet the FSC standard

Chain of Custody certificates are active in 84 countries. An ever-increasing number of companies are committing to FSC including home-improvement or DIY companies, publishers, and retailers amongst many others. Demand in Europe and North America is growing and helping drive the increased growth of FSC certified areas in other regions and markets.

Ease of use

Some voices within the timber industry claim that suppliers would be unable to keep pace with demand should FSC become a legally required standard, although this is not backed up by credible evidence. Certainly the drive for many plantations to become accredited has been consumer led. For example, after global publisher Time Inc. told International Paper, which has major plants across the Northern USA that it wanted to move all of its publications to certified paper by 2006, this spurred the state of Minnesota to certify all of its state forests under the FSC. Other large public sector forestry bodies are also considering the issue.

In terms of the costs of FSC certification, the expenses for a successful certification of forest management include the costs for an enhancement of sustainability and the costs for audits. According to an evaluation by the Savcor company [44] (a large service provider in forestry) the costs for direct audits in Nordic countries can effectively become marginal. They are decreasing with increasing audited territory due to economies of scale, and can differ between €2.50 and €0.25 per ha. However, the preparation of the first audit or the pre-audit can require a considerable amount of resources. A forest management plan must be compiled, which requires submission of data on tree species and other plants, age distribution, annual increment etc. While this information is often easily available in European countries (where forests have been managed for many decades) such surveys may never have been undertaken in the large forests of developing countries. Altogether, the Savcor company estimated the effective costs for FSC certification in Nordic countries between €2.6 and 19.1/ha.

Applicability to the UK

FSC operates as a global network. While the FSC International Centre is based in Germany it has a decentralized network of National Initiatives and Regional Offices that develop standards and promote FSC certification in many countries around the world. National Initiatives are the foundation of the FSC network making FSC more accessible and locally appropriate. FSC UK is one of the longest established branches of the FSC family and is sensitive to UK-specific issues and priorities. FSC International and the UK Forestry Commission conducted a review in 2004 of UK forestry norms to take into account FSC guidelines and European Community Standards and found no significant structural barriers to its broad implementation. Finally the UK

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(44) http://www.skog.no/skog_data/Attachments/288/Report_slides_101005.ppt

Government have approved various sustainable wood labels for procurement, as of Dec 2006, including FSC among others. [45]

It should be noted that the FSC standard for paper does not represent a complete solution for ecolabelling paper products as it only considers the origin of fibre content within paper products not the other environmental impacts associated with paper manufacture. Other standards better address these issues, namely the Nordic Swan ecolabel (see *Section 4.10.3* below). However, it is considered that there is significant value in considering the strengths of both of these labelling systems in tandem when assessing the adoption of standards within this product area within UK procurement practices.

4.10.3   *The Nordic Swan Label for Paper Products*

Description of scheme

The Nordic Swan is an ecolabel used in the Nordic countries; Sweden, Denmark, Finland, Iceland and Norway. The Swan is the official Nordic ecolabel, introduced by the Nordic Council of Ministers. It was established in 1989 and has expanded to cover products as diverse as cosmetic products to houses.

In this product area, Swan label criteria have been developed for copy and printing paper, paper envelopes, printing companies, coffee filters, grease-proof paper, packaging paper, sanitary products and tissue paper. The Swan label is applicable to both recycled and non-recycled products and focuses on energy consumption and emissions, as well as toxicity of the production process.

Additional paper products may be added at a later stage if and when supplementary modules with criteria are developed for the products in question. Swan labelled paper products may be made of wood fibre, fibres from other plants and recycled paper. Only paper that has traceability from the paper manufacturer to retail dealer can be Swan labelled. This means that a trade name can not be used both on a Swan labelled paper and a paper that is not Swan labelled.

Requirements imposed are based on a life cycle assessment of the product and concern raw materials, production, use and waste. In the case of copy and printing paper this is achieved by using fibres from sustainable forestry, by limiting the use of environmentally harmful chemicals, by producing low emissions to air and water and by reducing production energy consumption. Criteria for Swan labelling of paper products encompass a wide range of requirements, most of which relate to pulp and paper production.

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(45) http://www.proforest.net/cpet/evidence-of-compliance/category-a-evidence/approved-schemes

Products seeking accreditation under the Swan label are assessed against a wide range of criteria in this category, including the following:

- Manufacturers must provide detailed product information and provide samples of the product for laboratory analysis. A technical description of the paper and its composition needs to be submitted which must include the name and production site of ingoing cellulose pulp, the proportion of the various ingoing cellulose pulps (t 90% pulp/tonne paper) and the qualities in which the paper is available. The documentation must specify whether the paper is coated or uncoated and the surface weight in which the paper is available.

- All national legislation, rules and industry agreements on the recycling of products and their packaging must be met in the Nordic countries in which the ecolabelled product is on sale.

- Ecolabelling before carrying out any changes that may be of relevance for the fulfilment of the ecolabelling requirements. Examples of such changes are changing the supplier of raw materials, a new production method, and the use of new chemicals.

- The production processes must comply with stringent GHG emissions limits and embodied energy consumption limits. The consumption of electricity and fuel must be documented in the form of calculations based on bills and electricity meter readings. Where waste heat / other waste products are used to generate energy onsite and the selling to the grid of spare electricity / waste heat are activities that are encouraged by the label. Developments on the electricity market are being followed and assessed by the Nordic Ecolabelling Board, with regard to establishing criteria pertaining to the source and production method of electricity. It is likely that if, for example, "green certificates" become all the more common for electricity produced from renewable energy sources, that the standard will in the future require manufacturers to buy a certain proportion of "certified green electricity" in relation to the quantity of pulp and paper produced.

- The paper manufacturer must report the proportion of electricity used in the production of paper that derives from renewable energy sources (not fossil fuels or nuclear power).

- A description of the production technology used in the paper machine needs to be submitted and this has to include all stages of the process, from the beating of the pulp raw material/recycled paper to winding the paper onto rolls (for example beating pulp, grinding, the addition of chemicals, drying, finishing, description of the water circulation system, including sampling points for emissions).

- The paper manufacturer is responsible for ensuring that the production of paper for ecolabelled products complies with all requirements as to safety, working conditions, working environment legislation, environmental legislation and conditions/licences relating to the specific production facility in the individual country in which ecolabelled products are

produced.

- The raw material - if wood based, must not come from forestry environments that are protected for biological and/or social reasons. The origin of the raw material must be documented with full chain of custody. Annually at least:
    - 20% of the fibre raw material in the paper must come from certified forestry operations, or
    - at least 75% of the fibre raw material in the paper must be recycled fibre, wood-shavings or sawdust, or
    - a combination of the above.

- The standard sets strict limits on emissions of phosphorus (P), sulphur (S) and nitrogen oxides (NOx) to air and water and also poses limits on chemical oxygen demand (COD).

- The weighted average value of AOX released from the pulps used in the Swan labelled paper product must not exceed 0.25kg/tonne paper.

- All waste types generated in the factory area must be sorted at source and the various waste fractions shall be recycled or reused to as great extent as possible. The waste fractions and the way in which they are processed shall be reported. The applicant must state if the waste is classified as environmentally harmful in accordance with national legislation. Combustible waste containing wood with a positive thermal value must not be discarded.

- The emission figures for paper manufacturing shall be reported on an annual basis, by 1 April of the following year at the latest, for each year of the licence period or as long as the paper is used for Swan-labelled products. Any environmental reports shall be submitted by 1 May the following year.

- Pulps used in Swan-labelled paper must not be bleached using chlorine gas. The residual quantities created during the production of chlorine dioxide from chlorate are not defined as a component of chlorine gas bleaching.

- The pulp mill must specify the quantity of DTPA/EDTA used per tonne of 90% pulp and emissions of DTPA/EDTA to the recipient environment. A plan for the reduced use of EDTA/DTPA must also be submitted.

- Chlorate emissions from chemical pulp production must be measured and reported to Nordic Ecolabelling annually. Measurements shall be performed twice per year and the measurements must be separated by at least four months.

- Details must be provided on the sampling programme for waste water and emissions to air, including: sketches of emission points, emission figures for the last 12 months (monthly or annual reports), information on the frequency of measurement and methods of analyses of AOX, COD, P, S, NOx, chlorate and chelating agents. Additionally annual reports containing emission figures must be submitted to Nordic Ecolabelling annually.

- Documentation showing that the laboratories and test institutions used perform the analyses in an impartial and competent way.

Robustness and credibility

The Nordic Swan operates to the ISO 14024 standard "Environmental labels and declarations - Guiding principles." which requires environmental labelling specifications to include criteria that are objective, reasonable and verifiable and that interested parties have an opportunity to participate and have their comments considered. It also requires that environmental criteria shall be set, based on an evaluation of the environmental impacts during the actual product's life cycle.

The Swan checks that products fulfil certain criteria using methods such as samples from independent laboratories, certificates and control visits. Manufacturers must use samples and documentation to prove that their products meet the criteria with regard to the environment, health and performance. Approximately every three to five years, the criteria are reviewed; the latest version of the criteria relating to paper products is valid from 2006 to 2010.

Potential benefits

The Swan is well established in the Nordic countries and elsewhere. In terms of environmental benefits, the Swan label is an official ecolabel which outlines absolute requirements. Swan labelled copy and printing paper is amongst the least environmental hazardous within its product group which clearly demonstrates to procurers and consumers that the product fulfils strict environmental requirements. The Swan label ensures that Swan paper products are 'greener' even than those certified by Blue Angel and the EU Ecolabel, by requiring higher standards in the categories of CO_2 emissions, electricity consumption, fuel consumption, and emissions to air of sulphur, nitrogen oxides, phosphorus and chemical oxygen demand in water. The Blue Angel however sets a higher standard relating to the sourcing of raw materials (Blue Angel requires that the product be made from 100% post consumer recycled waste paper).

Ease of use

The Swan is a stringent and established standard which can easily be adopted/recognised by procurers when purchasing paper products.

For manufacturers, the criteria are clearly set out in three documents:

- The Basic Module of the label (Swan labelling of paper products - Basic Module) contains requirements regarding forest management, emissions, energy and waste in pulp and paper manufacturing.

- The Chemical Module (Swan labelling of paper products - Chemical Module) covers requirements of chemicals used in the production of pulp and paper.

- Supplementary requirements contained in the supplementary guidance for the product category must also be fulfilled.

Because several documents need to be consulted, this standard is not as easy to use as others that have been assessed within this product area. However the guidance given is transparent, and the evidence required to verify that each criteria has been met is clearly stated. Another potential drawback in this area is that considerable knowledge of chemistry, monitoring of emissions to water and air, and recording of energy consumption is needed to adhere to the standard. Much of this information is however likely to be recorded as standard by manufacturers in the EU because of the EU ETS (Emissions Trading Scheme) and other compliance regimes.

Applicability to the UK

The environmental impacts addressed by the Swan criteria are considered to be in alignment with UK policy and sustainable procurement objectives as well as being of direct relevance to the UK market for paper products.

The national agencies for the Swan label are also responsible for the European Flower ecolabel in the Nordic countries. The Swan is also a member of Global Ecolabelling Network, GEN which is an association of ecolabelling organizations world-wide. This means that the Swan is essentially based upon global standards and has the potential to be translated into other countries where GEN approved standards or the EU ecolabel is in use. Additionally, it is likely that UK manufacturers may have much of the source data needed for verification to Swan standards, in house, due to their commitments under the EU ETS and Climate Change Levy.

CONCLUSIONS

5.1   OVERVIEW

The research and analysis of available standards carried out under this project identified a significant number of existing standards considered robust and applicable for possible adoption (or adaptation) in UK public procurement. These standards, categorised as "Class 1" schemes, were identified in most of the nine assessed product areas. However, the mapping exercise and subsequent analysis indicated a lack of appropriate standards in the key areas of energy (electricity procurement) and health. These 'gaps' are summarised below along with potential responses.

Most of the standards identified as "Class 1" scheme are based in Europe and often closely reflect EU policy aims and/or regulatory frameworks, suggesting that their adoption could be easier than for schemes based in other regions. The presence of existing Europe-wide green product and procurement initiatives also suggest that such schemes may have an advantage in respect shared policy linkages, common aims and greater ease in updating and/or revising standards as and when needed. Although Europe has developed a significant body of well established environmental standards, labels and schemes, often perceived as best practise worldwide, the research identified several "Class 1" standards based in regions other than Europe.

The study has sought to identify those standards which appear to offer greatest potential for application in the UK through public sector procurement. It is recommended that further attention be given to the practicalities of adopting such schemes and a more detailed assessment of their policy and market implications/impacts be made. In order to refine this process, it may be of benefit to identify product sub-categories of interest that match specific procurement policy objectives. Once identified, the work carried out in this study could play a role in matching such sub-categories with potentially applicable standards and criteria. Nonetheless, any potential standard adoption or adaptation should ideally be accompanied by a detailed impact assessment for each option.

5.2   EXISTING GAPS AND POTENTIAL RESPONSES

As highlighted earlier in the report, areas in which a lack of applicable standards was identified are energy (electricity procurement) and health. The identified gaps along with some possible options for further consideration for these areas are presented below:

5.2.1   Energy

Several fundamental reasons exist for the lack of applicable schemes in this product area. The research undertaken indicated that most existing schemes relating to the certification/labelling of green electricity products (i.e. green

tariffs and funds) strongly reflect national or regional circumstances. In addition, despite the development of policy and regulation at EU-level, policy influencing national electricity supply is largely framed at the national level, reflecting important differences in national resource availability, geography, energy supply routes, import dependency, status of energy market deregulation etc.

Finally, it was noted that in view of the complexities and extensive stakeholders involved in the development of any change to energy policy and markets, the adoption of a scheme not tailored to, or designed for, the national (e.g. UK) situation would appear politically unacceptable. As such, those existing national schemes identified and assessed in the study were considered to be of limited value in their application to other countries. Only one scheme, the Eugene Standard, was considered to be of relevance to UK procurement of electricity at present. In the absence of a UK accreditation/certification scheme, several UK green tariffs have been 'approved' under Eugene and therefore such schemes could in principle be endorsed.

However, two factors were identified as problematic in this context: in the context of the ongoing debate and consultation concerning the UK's potential development of a green tariff accreditation scheme, the likely adoption of a scheme in conformity with Eugene is currently unknown. Although public procurement decisions could be made according to suppliers meeting Eugene standards, this may pre-empt a nationally agreed solution to accreditation of green supply. Furthermore, it is unlikely that Eugene-approved products available in the UK could meet demand in the short- or medium-term.

The basic approach taken by Eugene may therefore provide a good working basis for a scheme applicable to the UK, but buy-in and UK consultation would likely be required. The development of procurement guidelines (and/or scoring systems based on key sustainability criteria) building upon the Eugene standard may offer an alternative given current UK policy and market conditions.

5.2.2   *Health*

Although there is a fairly robust standard in place that addresses disposable healthcare products (i.e. Nordic Swan label for IV and PD bags) and some guidance on thermometers, sphygmomanometers and syringes there seems to be a lack of standards for medical devices. Medical devices and associated equipment are currently a significant area of spend for the NHS and the UK generally and as such it presents an opportunity to encourage and work closely with industry towards the development of sustainable standards.

Furthermore the level of purchasing power that the UK public sector has over the manufacturers of the sector should provide the necessary leverage in order to effectively promote the development of such standards. The main consideration during the development of applicable standards should be

patient safety however it is expected that improvements in terms of energy efficiency that do not conflict with the above principle can be made.

5.3   OPTIONS FOR USE OF CRITERIA FROM EXISTING STANDARDS

Although existing standards have been identified as being robust and having the potential to significantly drive the delivery of procurement objectives, it has been found that few standards in their current form could fulfil all of the intended procurement policy objectives for the UK.

Some existing standards may not adequately address the key environmental impacts associated with a product area relevant to the UK; alternatively, criteria developed for an impact area of importance to policy objectives could currently be set too low or too high, thus entailing e.g. adverse materiality or price/supply issues.

In such cases, there are options for stretching or altering an existing standard such as:

1. working with the administrative body of the scheme to modify the standard or;
2. adopting partially a standard whilst including criteria requirements from other standards that more closely reflect government policy and/or sustainable procurement objectives.

The first option presents challenges such as the additional effort that would be required for the modification and continuous update of the standard, possible unwillingness of the administrative body of the scheme to accept certain modifications/specifications and probably an overall longer process.

The second option avoids these challenges. A relevant example where criteria are used from different schemes is the energy saving recommended scheme run by the Energy Saving Trust for dishwashers. This scheme uses the criteria AAA from the EU Energy label for energy, cleaning and drying performance; however since water consumption is an important impact for this product category the appliance should also meet the EU Eco-label water consumption criteria for dishwashers.

However, in the case of established processes, consideration should be given to regularly ensuring the standard is in conformance with the policy objectives and that the criteria are in balance.

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