Assessment of existing framework conditions

Description paper

Deliverable D4

Freiburg, June 2010

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Supported by

Intelligent Energy Europe

Coordinated by

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1 Introduction

Topten is a consumer-oriented online search tool, which presents the most energy efficient appliances in Europe in various categories of products. Crucial precondition for the meaningful and well accepted Topten market surveys are appropriate selection criteria.

Obviously the market offers in European member States differ significantly in terms of price level, configuration, finishing as well as shares of energy classes and energy consumption corresponding to levels of purchasing power and behavioural aspects (mentality, customs, etc.). From the perspective of the enhancement of the European wide Topten project, however, the higher the level of congruency within the national websites the higher will be awareness (consideration) amongst manufacturers since supply side markets are rather focused on the entire EU market or even on the international market (especially for consumer electronics and ICT).

Therefore, within the European wide Topten project as far as possible it is aimed at an aligned approach for technical specifications for all national Topten websites. Primary goal of this work package is to support and coordinate the harmonisation of several national approaches for selection criteria on an optimum level.

Aim of the herewith presented paper is to outline the framework conditions the topten criteria are developed in: obligatory political instruments like the Ecodesign of Energy-Using Products Directive on the one side and voluntary instruments like the EU Ecolabel on the other side. Both can be of great help concerning the identification of possible topten criteria and their specification. On the other side they can also make things more complicated in the case the processes are not finalised yet but still ongoing (e.g. Ecodesign) or a revision takes place (e.g. Ecoabel). Against this background the paper describes the framework conditions one has to be aware of when developing topten criteria. For the sake of completeness there is also a description of how to proceed in case there is no Ecolabel ect. available (see chapter 2.2). Beyond that the annex gives an overview on where to find up-to-date information on the mentioned approaches.

2 Framework conditions and their implication for the development of Topten selection criteria

Against the background of the existing framework conditions two general proceedings for the development of Topten criteria are possible: either the adoption of or derivation from existing product criteria (e.g. labelling criteria) or the development of new criteria based on an own product sustainability assessment.

2.1 Review of existing framework conditions - criteria and information sources of the different approaches

For the development of Topten product selection criteria, different approaches are of relevance and therefore different information sources can be used:

- Existing Topten selection criteria, e.g. of national Topten partners
- Information and criteria out of the European Ecodesign process on energy-using and energy-related products
- Existing labelling criteria, e.g.
  - European Energy Label
  - European Ecolabel
  - National Ecolabel, e.g. Blue Angel, Nordic Swan
  - Other, e.g. Energy Star Label, TCO Label, CFL Quality Charter

First, the listed information sources should be checked, if they provide criteria for the respective product group at all. In the next step, the actuality and the ambitious level of the existing criteria should be assessed.

Except for the Energy label, Ecolabel and Topten are voluntary award systems. Existing Topten criteria as well as labelling criteria (if up to date) have the advantage that they help to indicate *best products on the market*. For example, the German Blue Angel has the philosophy that only the best 20 to 30 percent of the products on the market fulfil the criteria. Ecolabel criteria are differentiated: besides power consumption, e.g. longevity, recyclable design, reparability, material and consumer information could be requirements. Therefore, for Topten it makes sense just to adopt or to make a selection of the labelling criteria.

In contrast, the European ecodesign process sets *minimum requirements* being legally binding for all products on the European market, e.g. the phase-out of least energy efficient products in a certain time frame. Therefore, those requirements are not directly applicable for the development of Topten selection criteria unless antedating the stepwise ecodesign requirements or adopting the proposed measurement methods.

However, previously to the decision on ecodesign requirements the Commission carries out so called preparatory studies to analyse the technical, environmental and economic aspects of the respective product groups. These studies usually provide comprehensive background information on product definitions, existing standards and labelling criteria, market data, market and technology trends (best available or even best not yet available technologies, BAT/BNAT), consumer behaviour, usage patterns, life time, life cycle costs, environmental impacts and proposals for policy options. Further, the Commission Regulations on ecodesign requirements often include indicative benchmarks, i.e. the best available technology on the market at the time of entry into force of the Regulation. They can also be used as indication for deriving Topten product selection criteria.

In the event of European ecolabel criteria or ecodesign requirements currently being developed or revised there seem two possibilities in the context of the Topten selection criteria development: To delay the Topten criteria development process accordingly, or to provide technical expertise and input for the political processes in order to support harmonizing the criteria development for best products at European level.

In the following sections you find a short introduction and the status quo of the different information sources listed above.

2.1.1 Existing Topten selection criteria

Topten is a voluntary, international, non-profit project aiming at stimulating market demand for efficient products by creating a dynamic benchmark for the most energy efficient products on national markets. The home page www.topten.info is acting as a portal and presenting the most energy efficient appliances in Europe. Additionally, 16 national Topten websites are on-line, informing consumers on best products available on their local markets. They continuously present updated selections of best appliances, recommendations for users and selection criteria for a total of 166 product categories.

As national Topten systems partly vary in their choice of product categories, the following table gives an overview for which categories product selection criteria are available.

Table 1 Product categories and product groups covered by www.topten.info

	Product categories	**Product groups**
Europe, www.topten.info	Cars	Mini, small cars, compacts, middleclass, upper middleclass, van 5 seats, an 6 or more seats
	Households	Refrigerator inbuilt / freestanding, chest freezers / upright freezers, tumble driers, vacuum cleaners, coffee machines
	Lamps	Energy saving lamps, LED
	Office equipment	Computer monitors, laser printers, laser multifunctional, inkjet printers, inkjet multifunctional
	Consumer electronics	TV
	Building components	Circulation pumps, electric water heaters, air conditioners

Table 2 Product categories / product groups of national Topten websites going beyond www.topten.info

	Product categories / products beyond www.topten.info
Austria, www.topprodukte.at	Lamps: Halogen lamps Office equipment: projectors Households: ovens, dishwashers, washing machines Building components: wood heating, heat pump, hot water storage tanks
Belgium, www.topten.be	Green power
Czech Republic	---
Finland, www.topten.info/fi	Building components: Windows
France, www.guide-topten.com	---
Germany, www.ecotopten.de, www.office-topten.de	Building components: gas heating, wood pellet heating Office equipment: Personal computers, notebooks, copiers, scanner
Greece, www.ecotopten.gr	---
Italy, www.eurotopten.it	---
Luxemburg, www.oekotopten.lu	Households: hobs, cookers
Netherlands, www.top10.hier.nu	---
Norway, www.besteprodukter.no	---
Poland, www.topten.info.pl	---
Portugal, www.topten.pt	---
Romania, www.topten.info.ro	---
Spain, www.eurotopten.es	---
Switzerland, www.topten.ch	

2.1.2 EU Ecodesign requirements

In 2005, the Energy Using Products (EuP) Directive, sometimes also called the Ecodesign-directive was adopted (2005/32/EC)[1]. A major goal of the directive is to improve the energy efficiency of energy using products (EuPs) and thereby contribute to efforts to reach European targets for climate protection. The directive, however, does not only cover the energy use of products but rather aims to reduce the overall negative environmental impact of the products under consideration. In 2009, the EuP Directive 2005/32/EC was replaced by a new Directive (2009/125/EC)[2]. The most important amendment concerns the Directive's scope, which has been extended from "energy-using" to so-called "energy-related" products.

- Step 1: **Working Plan**: In association with the member states and involving market stakeholders and other interested parties, every three years the European Commission selects a set of product groups in a so called Working Plan.
- Step 2: **Preparatory studies**: For each appointed product group, the European Commission (DG Energy (formerly DG Transport & Energy), DG Enterprises & Industry, DG Environment) mandates preparatory studies. In order to create a scientific basis for the development of appropriate minimum requirements for energy-using or energy-related products, specific data are compiled that serve as background information.
- Step 3: **Working Document / Consultation Forum**: On the basis of the preparatory studies the European Commission develops a Working Document with draft Implementing Measures, i.e. requirements for the environmental performance of the selected products or product groups. In a so-called Consultation Forum, feedback from representatives of the member states and selected stakeholder parties to the draft implementing measures is possible.
- Step 4: **Regulatory Committee**: The Implementing Measure is then subject to an impact assessment and interservice consultation before being presented for vote to an assembly of EU member states representatives, known as the Regulatory Committee.
- Step 5: **European Parliament scrutiny**: The EU parliament has the opportunity to intervene before the Implementing Measure enters into force.

By end of June 2010, the following product groups were covered by the European Ecodesign process:

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1 DIRECTIVE 2005/32/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 July 2005 establishing a framework for the setting of ecodesign requirements for energy-using products and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC of the European Parliament and of the Council

2 DIRECTIVE 2009/125/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (recast)

Table 3 Product categories covered by the European Ecodesign process

Lot no. / Product group	Website	Status Quo by end of June 2010	
		Preparatory study	Regulation mandatory from
TREN Lot # Simple Set-top Boxes	---	Completed	25/02/2010
TREN Lot 1 Boilers and combiboilers	http://www.ecoboiler.org/	Completed	---
TREN Lot 2 Water heaters	http://www.ecohotwater.org/	Completed	---
TREN Lot 3 Computers and monitors	http://www.ecocomputer.org/	Completed	---
TREN Lot 4 Imaging equipment	http://www.ecoimaging.org/	Completed	---
TREN Lot 5 Consumer electronics: TV	http://www.ecotelevision.org/	Completed	07/01/2010
TREN Lot 6 Standby and off-mode losses	http://www.ecostandby.org/	Completed	07/01/2010
TREN Lot 7 External power supplies and battery chargers	http://www.ecocharger.org/	Completed	27/04/2010
TREN Lot 8 Office lighting	http://www.eup4light.net/	Completed	13/04/2010
TREN Lot 9 Street lighting	http://www.eup4light.net/	Completed	13/04/2010
TREN Lot 10 Room air conditioning appliances	http://www.ecoaircon.eu/	Completed	---
TREN Lot 11 Electric motors / circulators / fans / water pumps	http://www.ecomotors.org/	Completed	16/06/2011 01/01/2013 --- ---
TREN Lot 12 Commercial refrigerators and freezers	http://www.ecofreezercom.org/	Completed	---
TREN Lot 13 Domestic refrigerators and freezers	http://www.ecocold-domestic.org/	Completed	01/07/2010
TREN Lot 14 Domestic washing machines and dishwashers	http://www.ecowet-domestic.org/	Completed	---
TREN Lot 15 Solid fuel small combustion installations	http://www.ecosolidfuel.org/	Ongoing	---
TREN Lot 16 Laundry dryers	http://ecodryers.org/index.php	Completed	---
TREN Lot 17 Vacuum cleaner (off-line)		Completed	---
TREN Lot 18 Complex set-top boxes	http://www.ecocomplexstb.org/	Completed	---
TREN Lot 19 Domestic lighting	http://www.eup4light.net/	Completed	01/09/2009
TREN Lot 20 Local room heating products	http://www.ecoheater.org/	Ongoing	---
TREN Lot 21 Central heating products using hot air to distribute heat (other than CHP)	http://www.ecoheater.org/	Ongoing	---
TREN Lot 22 Domestic and commercial ovens (electric, gas, microwave)	http://ecocooking.org/lot22/	Ongoing	---
TREN Lot 23 Domestic and commercial hobs and grills	http://ecocooking.org/lot23/	Ongoing	---
TREN Lot 24 Professional washing machines, dryers and dishwashers	http://www.ecowet-commercial.org/	Ongoing	---

Lot no. / Product group	Website	Status Quo by end of June 2010	
		Preparatory study	Regulation mandatory from
TREN Lot 25 Non-tertiary coffee machines	http://www.ecocoffeemachine.org/	Ongoing	---
TREN Lot 26 Networked standby losses of energy using products	http://www.ecostandby.org/	Ongoing	---
ENTR Lot 1 Refrigerating and freezing equipment	http://www.ecofreezercom.org/	Ongoing	---
ENTR Lot 2 Distribution and power transformers	http://ecotransformer.org/	Ongoing	---
ENTR Lot 3 Sound and imaging equipment	http://www.ecomultimedia.org/	Ongoing	---
ENTR Lot 4 Industrial and laboratory furnaces and ovens	http://www.eco-furnace.org/index.php	Ongoing	---
ENTR Lot 5 Machine tools	http://www.ecomachinetools.eu/typo/	Ongoing	---
ENTR Lot 6 Air-conditioning and ventilation systems	http://www.ecohvac.eu/	Ongoing	---

Websites:

- http://ec.europa.eu/energy/efficiency/ecodesign/eco_design_en.htm (DG Energy)
- http://ec.europa.eu/enterprise/policies/sustainable-business/ecodesign/ (DG Enterprise & Industry)

2.1.3 EU Energy Label

In 1992, the first Energy Labelling Directive had been adopted (92/75/EEC)[3]. The scope of this Directive is restricted to household appliances. In 2010, the Labelling Directive was replaced by a new Directive (2010/30/EU) [4]. The most important amendment concerns the Directive's scope, which has been extended to energy-using products in commercial and industrial sectors, e.g. cold storage rooms and vending machines, as well as to energy-related products, i.e. that these products do not consume energy but "have a significant direct or indirect impact" on energy savings. Examples are window glazing and outer doors. Finally, with the new directive, the existing labelling scale from A-G will be further differentiated by adding the new classes A+, A++ and A+++ on top of class "A".

New products such as televisions, water heaters and boilers or vacuum cleaners are planned to be adopted under the new labelling rules.

[3] Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances

[4] DIRECTIVE 2010/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products (recast)

By end of June 2010, the following product groups were covered by the previous Energy Labelling resp. planned to be included by the amended Energy Labelling Regulation 2010/30/EU:

Table 4 Product categories covered by the European Energy Labelling Directive

Product groups covered by previous Energy Labelling Directives	**Product groups planned to be covered by amended Energy Labelling Directive 2010/30/EU**
Household electric refrigerators, freezers and their combinations (Directive 2003/66/EC)	Lot 13: Domestic refrigerators and freezers
Household electric ovens (Directive 2002/40/EC)	
Household air-conditioners (Directive 2002/31/EC)	Lot 10: Room Air Conditioning
Household dishwashers (Directive 1999/9/EC)	Lot 14: Domestic dishwashers
Household lamps (Directive 98/11/EC)	Lot 19: Domestic lighting part II “directional lamps”
Household washing machines (Directive 96/89/EC)	Lot 14: Domestic washing machines
Household combined washer-driers (Directive 96/60/EC)	
Household electric tumble driers (Directive 95/13/EC)	Lot 16: Laundry driers
	Lot 1: Boilers and combi boilers
	Lot 2: Water heaters
	Lot 5: Consumer Electronics: TV
	Lot 17: Vacuum cleaners

Website: http://ec.europa.eu/energy/efficiency/labelling/energy_labelling_en.htm

2.1.4 EU Ecolabel

The European Ecolabel is a voluntary scheme, established in 1992 to encourage businesses to market products and services that are kinder to the environment. The criteria are agreed at European level, following wide consultation with experts, and the label itself is only awarded after verification that the product meets these high environmental and performance standards. Ecolabel criteria are not based on one single factor, but on studies which analyse the impact of the product or service on the environment throughout its life-cycle, starting from raw material extraction in the pre-production stage, through to production, distribution and disposal. The criteria for each product group have been identified on the basis of comprehensive studies of the environmental aspects related to the entire life cycle of the product. These are normally valid for three years. The following list shows the criteria setting process which usually takes between 2 and 3 years:

- The European Union Ecolabelling Board (EUEB) decides to create of a new product group (proposed either by the European Commission or the EUEB).
- The European Commission gives a mandate to a leading Competent Body.
- The Competent Body sets up an Ad-Hoc Working Group (AHWG) bringing together all stakeholders: industry, experts, NGOs, public authorities, and other interested parties.

- Preparatory work is carried out, including feasibility and market studies, life cycle considerations, environmental studies, and improvement analysis.
- As mandated by the European Commission, the AHWG meets about three times a year in order to draft the criteria according to the results of the preparatory work.
- The draft criteria are approved by the EUEB.
- Interservice consultation within the European Commission.
- A vote is taken by a Regulatory Committee of national authorities.
- Conclusion of the adoption procedure by a Commission Decision.
- Publication of the Commission Decision in the Official Journal.

By end of June 2010, the following *energy-using* product groups were covered by the EU Ecolabelling[5]:

Table 5 Product categories covered by the European Ecolabelling scheme

Energy-using product categories	Product groups
Electronic equipment	Personal computers Portable computers Televisions
Household appliances	Light bulbs Heat pumps

Additionally, in 2008 DG Environment had finalised a study „Linking ongoing work on the Ecodesign of Energy-Using Products with development of EU Ecolabel. This study analysed how work conducted in support of the Energy Using Products Directive could be used to inform the development of EU Ecolabel criteria. The comparison concluded that in both cases, an evidence base of information is generated for the development of implementing measures and criteria. Both evidence bases share similar characteristics whereby they:

- Clearly set out a product group definition,
- Are life cycle based,
- Consider the EU market in terms of sales,
- Identify differences between technologies in a product group,
- Identify best practice,
- Identify consumers as being important in the delivery of environmental improvement,
- Involve stakeholder consultation.

[5] The following product categories are covered by the EU Ecolabel, but not being relevant for Topten: Cleaning, clothing, Do-it-yourself (paints & varnishes), floor coverings, furniture, gardening, lubricants, paper, services (campsite / tourist accommodation), other household items (mattresses).

However, an important difference between the EuP and ecolabel evidence bases exists in that the latter includes items that one may not ordinarily expect an activity designed to establish priority issues to identify. This includes e.g. the exclusion of certain chemical substances. In a subsequent second project phase, ecolabel criteria sets for four product groups were developed working with interfaces of the EuP evidence base.

Finally, ecolabel criteria for the product group “buildings” are currently being developed. This product group will comprise “buildings considered in their entirety, as well as small houses, new or existing, public or private, used for residential purpose and for use as offices”.

Table 6 Further EU Ecolabel product groups / criteria under development

Further EU ecolabel product groups / criteria currently being developed	
Laptops & desktops, Lighting, Washing machines, Refrigerators	Ecolabel – EuP project
Buildings	

Website: http://ec.europa.eu/environment/ecolabel/

2.1.5 German Blue Angel

The Blue Angel is the first and most well-known eco-label worldwide. Since 1978 it has set the standard for eco-friendly products and services selected by an independent jury in line with defined criteria. Today about 11,500 products and services in circa 90 product categories carry the Blue Angel eco-label. The following four institutions are in charge of the Blue Angel:

- The Environmental Label Jury is an independent decision-making body composed of representatives from environmental and consumer associations, trade unions, industry, trade, crafts, local authorities, science, media, churches and federal states.
- The Federal Ministry for the Environment Nature Conservation and Nuclear Safety (BMU) is the owner of the label. It regularly informs the public about the decisions of the Environmental Label Jury.
- The Federal Environmental Agency (UBA) with its “Eco-labelling, Eco-declaration and Eco-procurement” department acts as office of the Environmental Label Jury and develops the technical criteria of the Basic Award Criteria for the Blue Angel.
- RAL gGmbH is the label-awarding agency.

In the future consumers will be able to inform themselves even better about environmental and health aspects of products and services with the help of the Blue Angel. The BMU, the UBA, the RAL and the Environmental Label Jury have jointly resolved to highlight the message that the ecolabel communicates even clearer in its logo. Spotlighting the protection targets “Climate”, “Health”, “Water” and “Resources” in each Blue Angel label makes it even easier for manufacturers and distributors to communicate the environmental advantages of their products to the consumer.

For the energy efficiency focus of Topten, the climate protecting product groups are most relevant. Therefore, the following table only lists the *climate protecting* product groups being covered by the Blue Angel.

Table 7 Climate protecting product categories covered by the German Ecolabelling scheme Blue Angel

No.	Product category
RAL-UZ 47	Solar-powered Products as well as Mechanical Clocks and Torches
RAL-UZ 61	Low-emission and Energy-saving Gas-fired Calorific-Value Heating Devices
RAL-UZ 73	Solar Collectors
RAL-UZ 78	Workstation Computers
RAL-UZ 81	Electronic Ballasts for Fluorescent Lamps
RAL-UZ 87	Low-Energy Hot-Air Hand Driers
RAL-UZ 89	Low-Noise and Fuel-Saving Automobile Tires
RAL-UZ 100	Car Sharing
RAL-UZ 103	Soda Makers
RAL-UZ 108	Small Gas-Fired Cogeneration Units
RAL-UZ 109	Small Liquid-Fired Cogeneration Units
RAL-UZ 111	Wood pellet stoves
RAL-UZ 112	Wood-Pellet-Boilers
RAL-UZ 116	Photovoltaic Products
RAL-UZ 118	Energy-Efficient Heat Pumps using Absorption and Adsorption Technology or operating by use of Combustion Engine-Driven Compressors
RAL-UZ 121	Energy-Efficient Heat Pumps using an Electrically Powered Compressor
RAL-UZ 122	Office Equipment with Printing Function (Printers, Copiers, Multifunction Devices)
RAL-UZ 124	Energy-Efficient Hot Water Storage Tanks
RAL-UZ 127	Digital Projectors
RAL-UZ 131	Digital cordless phone
RAL-UZ 133	Water boilers, electric kettles
RAL-UZ 134	Power strip with master/slave switching
RAL-UZ 135	Netbooks
RAL-UZ 136	Espresso Machines /Coffee machines with high pressure
RAL-UZ 137	Washing machines
RAL-UZ 138	Refrigerators
RAL-UZ 139	Gas cooker and gas-fired cooking appliances
RAL-UZ 140	External Thermal Insulation Composite Systems (ETICS)
RAL-UZ 142	Household Energy Meters
RAL-UZ 143	Electric Household Ovens
RAL-UZ 144	DVD-Recorder, DVD-Player, Blu-ray Disk-Player
RAL-UZ 145	Television Sets
RAL-UZ 146	Compact Hi-Fi systems
RAL-UZ 147	Household Cooker Hoods

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

2.1.6 Nordic Swan

In 1989 the Nordic Council of Ministers initiated the Nordic Ecolabel. The Swan is the official Nordic eco-label and is the collective effort of 5 countries: Norway, Sweden, Denmark, Finland and Iceland. The purpose was to give consumers in the Nordic countries a tool to make environmentally-sound product choices. Today there are 65 product groups and over thousands of Nordic ecolabelled products and services on the Nordic market.

Criteria are developed by using a life-cycle analysis. That means that the environmental effects a product has are judged from several aspects: energy and water usage, kinds of chemicals used, recycling and reuse of waste products.

By end of June 2010, the following *energy-using* product groups were covered by the Nordic Swan Ecolabel[6]:

Table 8 Energy-using product categories covered by the Ecolabelling scheme Nordic Swan

Product categories	Product groups
At work	**Appliances => Dishwashers, washing machines** Cleaning Consumables (=> Coffee filters, toner cartridges) Food and Lodging **Furniture => Lighting** **Office machines => computers, copiers, printers** Papers **Sound and image => TV** Textiles
Building and energy	Building materials **Heating => boilers, fireplaces, heat pumps, pellets** **Houses** Kitchen and bathrooms Paints and varnishes
Home	Bathroom **Cleaning and washing => washing machines** Clothes and textiles Furniture **Home office => computers, printers, toner cartridges** **Kitchen => (coffee filters), dishwashers** **Sound and image => Digital boxes, TV** Toys

Website: http://www.svanen.nu/Eng/

6 The following product categories are covered by the Nordic Svan Ecolabel, but not being relevant for Topten: Cars & boats, park & garden, services, other

2.1.7 EU Energy Star

The Energy Star is an international voluntary labelling scheme for appliances that meet certain standards regarding energy efficiency. It was originally set up by the US EPA (Environmental Protection Agency) in 1992. In 2001, the European Union signed an Agreement with US EPA to introduce the Energy Star in Europe as well (only for office equipment), thereby recognising each other as Partner in the Energy Star programme. This allows potential partners in the European Union to sign up through the European Commission, who is responsible for the EU Energy Star Programme.

The Energy Star in the USA covers a wide range of products, ranging from new homes, most of the buildings sector, residential heating and cooling equipment, major appliances, office equipment, lighting to consumer electronics. The Energy Star in the EU is so far only applied to office equipment (monitors, computers and operating systems, fax machines, scanners, copiers and printers).

In December 2006, the new EU-US Energy Star Agreement for office equipment has come into force being valid for a second period of five years. The criteria cover the energy consumption both in the standby and in the use phase and claim to distinguish the best 25 % of the appliances per product group. The previous criteria have been much less dedicated and covered a range of about 80% of the market.

Table 9 Product categories covered by the European Energy Star labelling scheme

Product categories (Consumers)	Product groups
Displays	LCD, LED, OLED, Plasma
Computer Equipment	Desktop Computer Notebook Computer Integrated Desktop Computer Thin client Small-scale server Work station Game console
Imaging Equipment	Printer (Technologies: Direct Thermal, Dye Sublimation, Impact, Ink jet, High Performance Ink Jet, Electrophotography (= Laser, LED, LCD), Solid Ink, Thermal Transfer) Multifunctional device Copier Scanner Digital duplicator Fax machine Mailing machine

Website: http://www.eu-energystar.org/en/index.html

2.1.8 TCO

TCO Development, a company owned by TCO[7], maintains an international environmental labelling system, TCO Certification. The label addresses safety issues such as "emissions, ergonomics, ecology, and energy" for information and communication technologies, as well as for office furniture. The label also sets requirements in process of manufacturing equipment and concerning the use of hazardous materials. The criteria documents are set in consultation with users, manufacturers, researchers and other experts. The certifications are named after years:

- **TCO'99**: This version certified displays, desktops, keyboards, and printers. TCO'99 will be phased out. Products certified according to TCO'99 will have a maximum life time to December 31st 2011.
- **TCO'01** certifies mobile phones.
- **TCO'03** regulates displays: Cathode Ray (CRT) and Flat Panel Displays (FPD).
- **TCO'04** defines office furniture.
- **TCO'05** defines notebook and desktop computers, which are successors of TCO'99 for computers. Thus, TCO'05 is the latest standard for desktop computers.
- **TCO'06** defines Media Displays. These displays are particularly suitable for monitoring tasks, computer games or watching films or TV programmes. A display intended for office use should be certified as TCO'03 Displays and the multifunction display can be certified as TCO'03 Displays and TCO'06 Media Displays.
- **TCO'07** defines headset standards.
- **TCO Certified** includes criteria for displays, notebooks, desktops, All-in-One PCs, phone headsets, and projectors. TCO Certified is combining features such as high performance and ergonomic design with the toughest environmental requirements on the market. TCO Certified is a third party verified program, where every product model is tested by an accredited, independent laboratory.
- **TCO Certified Edge** is reserved for those products going beyond existing ecolabelling programs on the market today. TCO Certified Edge is a supplement award open for those products that already meet the TCO Certified criteria on environment and usability; additionally they must include minimum of 65% post consumer recycled plastic.

[7] The Swedish Confederation of Professional Employees (Tjänstemännens Centralorganisation or TCO) is a national trade union centre, the umbrella organisation for eighteen trade unions in Sweden

Table 10 Product groups covered by the TCO labelling schemes

Product categories (Consumers)	Product groups
IT products	Displays Media displays Desktops Notebooks All in One PCs Keyboards Printers Mobile phones Headsets Projectors

Website: http://www.tcodevelopment.com/

2.1.9 Further: CFL Quality Charter

The European Quality Charter for CFL was initially developed in 1998 on the initiative of the European Commission and Eurelectric to support the 'European Wide Initiative for the Promotion of Efficient Lighting in the Residential Sector'. The European CFL Quality Charter aims at promoting the manufacturing, marketing and sales of high quality CFLs in the European Union as well as raising consumer awareness and confidence in the CFL, by assuring that certain quality and performance levels are reached. The European CFL Quality Charter is a voluntary set of criteria established by the European Commission DG JRC in collaboration with a number of private and public organisations. The European CFL Quality Charter is revised regularly to keep up with technological development.

Website: http://re.jrc.ec.europa.eu/energyefficiency/CFL/index.htm

2.2 Own Product Sustainability Assessment (PROSA)

In case no further support documents are available for the accordant product group, an own assessment of the product sustainability has to be carried out to derive Topten criteria.

Öko-Institut has developed a methodological guideline for structuring the process (see www.prosa.org) and applied the PROSA methodology in various product specific studies[8] preparing basic award criteria for the German Environmental Label Blue Angel. In the following, the basic principle of the approach is presented:

- Step 1: **Product definition**: Detailed description and definition of the analysed product(s) (e.g. definitions from existing standards) and functional unit.
- Step 2: **Analysis of market and context**: market trends, technology trends, consumption trends, and environmental trends.
- Step 3: **Benefit analysis**: The benefit analysis is used to analyse and evaluate the utility of products and services from the perspective of users. The benefit/utility ultimately determines consumers' purchase and use decisions. The method is used to analyse practical utility (e.g. performance, durability, functional reliability, reparability, convenience etc.), symbolic utility (e.g. external appearance, design, prestige, safety, enjoyment etc.) and societal utility (e.g. poverty reduction, information and education, climate protection, biodiversity, qualified jobs etc.). PROSA provides corresponding checklists.
- Step 4: **In-depth sustainability assessment**:
  - Screening and analysis of environmental hotspots throughout the product life cycle
  - Screening and analysis of economic hotspots throughout the product life cycle (e.g. purchase costs, usage costs, costs for consumables, repair and maintenance costs, and costs for disposal).
  - Screening and analysis of social/societal hotspots throughout the product life cycle
  - If necessary, assess further aspects like safety, toxicology, noise etc.
- Step 5: **Development of product selection criteria**: on the basis of the prior analyses, criteria for the most relevant sustainable hotspots can be developed. If necessary, stakeholder involvement can be organised to gain broad acceptance for the proposed criteria.

Information sources: Literature review (inter alia EuP preparatory studies, national consumer test magazines), discussions with product manufacturers and other technical experts, own calculations etc.

[8] Quack, D.; Gröger, J.; Grießhammer, R.: Top 100 – Ecolabel for climate-relevant products (in progress). Commissioned by: German Environment Ministry (BMU), Berlin / Project Management Jülich

3 Annex

More general information on environmental labels, the ecodesign process, the PROSA methodology and other information sources can be found on the following websites:

- www.buy-smart.info/about-labels/about-labels2: The project Buy Smart, funded by the European program "Intelligent Energy Europe", provides free consultation and information material on green procurement, inter alia a comprehensive overview of applied ecolabel in different product categories.
- www.eup-network.de/home/: This website gives a current overview of the subject ecodesign, inter alia detailed information on the Ecodesign Directive and explanation of technical terms, the product groups covered by the working plan so far and related documents (preparatory studies, working documents, regulations) as well as news and events related to the ecodesign process (new documents, stakeholder meetings, Consultation Forum meetings etc.).
- www.prosa.org: PROSA (Product Sustainability Assessment) is a method for the strategic analysis and evaluation of product portfolios, products and services. The goal is to identify system innovations and options for action towards sustainable development. By reducing complexity to key elements, the PROSA guideline[9] can support the decision-making process for the development of product criteria.
- www.international-testing.org/index.html: International Consumer Research & Testing – ICRT – is an international consortium of more than 45 independent consumer organisations world-wide that carry out joint research and comparative testing in the consumer interest. ICRT members[10] co-operate in a programme of continuous testing on a wide range of popular consumer products such as digital cameras, mobile phones, TVs, cars, washing machines, dishwashers, vacuum cleaners and light bulbs.

[9] PROSA Guideline: www.prosa.org/fileadmin/user_upload/pdf/leitfaden_eng_final_310507.pdf

[10] List of national members' websites: www.international-testing.org/About%20ICRT/members.htm