



Sustainable procurement guidelines for office IT equipment

Product sheet

The copy-and-paste guide to sustainable tendering for office IT equipment

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Messages from the United Nations and UNEP

“...I would like to make a public commitment. We are already moving towards making our Headquarters in New York climate-neutral and environmentally sustainable. I would like to see our renovated headquarters complex eventually become a globally acclaimed model of efficient use of energy and resources. Beyond New York, the initiative should include the other UN headquarters and offices around the globe.

We need to work on our operations too, by using energy more efficiently and eliminating wasteful practices. That is why, today, I am asking the heads of all UN agencies, funds and programmes to join me in this effort. And I am asking all staff members throughout the UN family to make common cause with me.”



Ban Ki-Moon
UN Secretary General
New York, 5 June 2007
World Environment Day



Achim Steiner
Executive Director, UNEP
* Geneva, 8 October 2007
117th Assembly of the
Inter-Parliamentary Union

“Ban Ki-Moon is determined to put global warming at the top of the global political agenda and determined to build the trust so urgently needed if we are to succeed in combating climate change. Under his leadership, the UN is also determined to demonstrate its 'sustainability credentials' by action on the ground and by good housekeeping at home.

Reviews are underway across all agencies and programmes to establish a strategy for a carbon neutral UN and to make the refurbishment of the UN headquarters in New York a model of eco-efficiency.”*

UNEP is committed to take part in the fight for climate change and in showing leadership. We are committed to become carbon neutral by reducing our energy consumption and carbon footprint and by offsetting emissions.

Introduction to this document

Two sets of sustainability criteria are presented in the Sustainable Procurement guidelines

- Core sustainability criteria address the most significant environmental and social impacts, and are designed to be used with minimum additional verification effort or cost increases.
- Comprehensive sustainability criteria are intended for use by authorities procurers who seek to purchase the best environmental and socially-responsible products available on the market, and may require additional administrative effort or imply a certain cost increase as compared to other products fulfilling the same function.

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1 Introduction – Sustainable Procurement

Sustainable Procurement means buying products and services that have a high environmental relief potential and that have been produced in a socially-responsible way, e.g. respecting ILO core conventions. These products and services have a smaller ecological footprint. Sustainable procurement takes into account the costs and benefits that occur over the whole lifecycle of a product.

This Product Sheet can be used both by UN procurers and requisitioners for either identifying the most sustainable office IT equipment available on the market or for developing competitive tender documents. The following sustainability criteria in this Product Sheet are designed to achieve different levels of sustainability performance.

2 Scope

Office IT equipment as dealt with in this document covers two sets of products:

- Computers (covering both PCs and notebooks) and monitors
- Imaging equipment - covering copiers, printers, scanners, faxes, and multifunctional devices (MFDs)

3 Recommendations for tendering

This section provides some overall recommendations for UN procurers to use when drawing up their tender documents. Suggestions are made for all relevant sections of the tender documents. The follows diagram outlines the procurement process as set out in the UNDP Procurement Manual and highlights at which stages environmental and social procurement interventions should be integrated to ensure achieving a procurement outcome that takes sustainability issues into consideration.

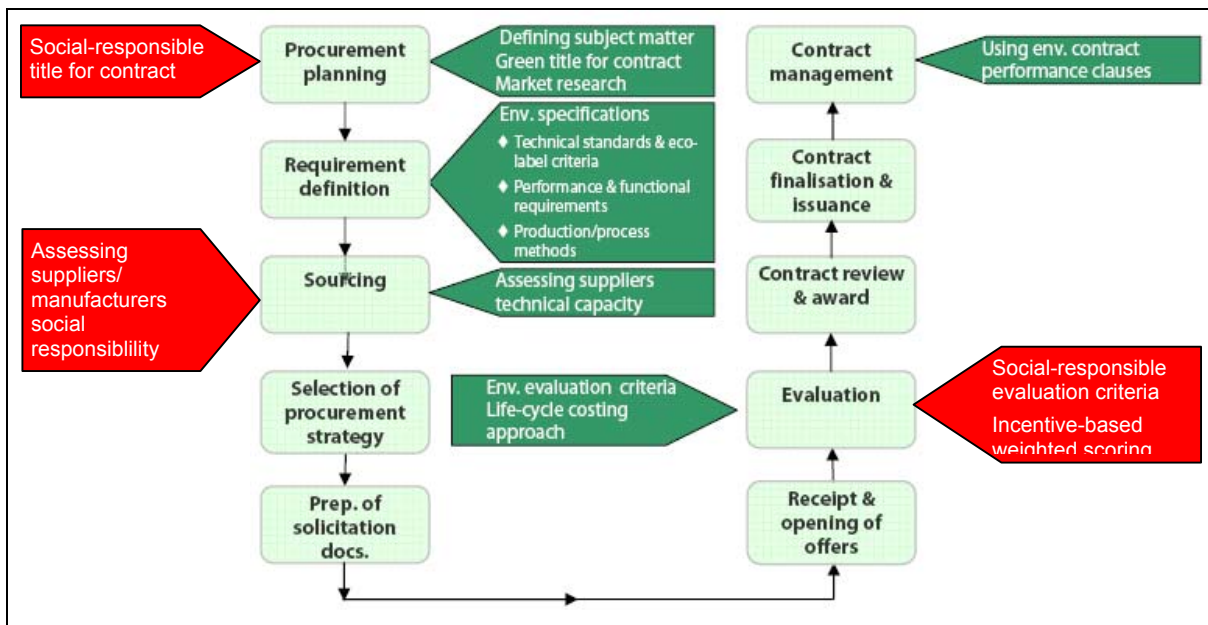


Figure 1: Environmental and social-responsible interventions in the procurement process (Source: UNDP Environmental Procurement Practise Guide 2008, adapted by ICLEI)

3.1 Procurement planning – subject matter

The subject matter of the contract defines what will be purchased. It can integrate sustainability objectives if there is a clear link and relevance to the purchase in question. As all conditions stipulated in the other sections of the tender need to maintain a clear link to the

subject matter of the contract, clear and explicit wording of the subject matter is a strong way to insure sustainable purchasing.

3.2 Requirement definition – specifications

These provide detailed information on the functionality, quality and specific characteristics of the product to be purchased and present a clear opportunity to introduce in detail the sustainability criteria of the UN purchasing entity. They provide the opportunity to set minimum environmental and/or social requirements which all bidders must meet.

3.3 Sourcing – selecting environmental and social-responsible suppliers and manufacturers

These assess the technical and professional qualifications of vendors to produce and/or supply the requested products. If sustainability requirements are part of the subject matter or the technical specifications, selection criteria can be inserted that assess the sustainability performance of bidders. They can assess the bidding company's (and subcontractors) operations as a whole rather than only the products purchased under the specific contract. They can address the availability of information on products, existing experience of the bidder, and security of supply. This can be a useful approach to improving the general environmental management and corporate social responsibility of companies contracted by the UN.

3.4 Evaluation – using lifecycle costing and bonus system

These are the criteria used to evaluate and compare the different offers. In sustainable procurement, it is essential to indicate that the contract will be awarded to the offer that gives "best value for money" – the technical term used if criteria other than just the price will be assessed when comparing offers. The evaluation criteria will then be used to evaluate the performance of an offer both in terms of price and other criteria. Tender documents must clearly set out the different evaluation criteria that will be used to evaluate bids (such as price, technical quality, environmental quality, social performance, etc.) as well as their relative weighting. In sustainable procurement, evaluation criteria can be used to encourage higher levels of sustainability performance than those demanded in the specifications, but without risking significant cost increases. Sustainability evaluation criteria should, altogether, account for at least 10 to 15 % of the total points available (see example matrix in the Annex).

3.5 Contract review and award – contract clauses

Contract clauses are binding on any company winning the bid, and should therefore be possible for any company to comply with. It makes sense to include sustainability criteria in the contract clauses only if they are not included in other sections of the tender. The Core and Comprehensive sustainability criteria presented below do not require additional contract performance clauses focussing on environmental and social impacts of the office IT equipment. Therefore contract performance clauses are limited to packaging and waste.

Contract clauses also include reference to penalties for non-compliance with the specifications or for cases where a supplier has provided a false written guarantee.

4 Sustainability criteria for selection and tendering

The following sustainability criteria can be inserted directly into tendering documents in the specific sections (subject matter, specifications, selection criteria, evaluation criteria and contract clauses). Sections highlighted in *[italics]* have to be adapted to the specific needs (e.g. Purchase of *[PCs, notebooks, monitors]*).

The criteria are split into two levels of ambition: the **Core criteria** (applicable globally) and the **Comprehensive criteria** (specified for certain regions). They are tailored for UN procurers to use when drawing up their tender documents. The criteria may also be used as a form of checklist for the selection of office IT equipment (see example checklist in the Annex).

To reflect the market availability of certain office IT equipment in different regions of the world the Comprehensive sustainability criteria have been adapted and divided into cluster regions, which helps UN procurers and requisitioners find the most appropriate criteria for their region. However, as the ICT sector is highly globalized, certain frontrunner legislation or verification schemes such as the WEEE Directive¹ and RoHS Directive² of the European Union or the EPEAT, ENERGY STAR®, TCO and Blue Angel eco-labeling schemes have a great impact on the overall production and availability of office IT equipment on the global market that meet these requirements³.

This means that UN procurers should be able to use the Comprehensive criteria sets outlined below, regardless of whether the supplier of the products is located in Nairobi, Tokyo or Paris.

4.1 Sustainability criteria for office IT equipment

4.1.1 Core criteria (globally)

The Core sustainability criteria for office IT equipment have been developed to address the most significant environmental and social impacts, and are designed to be used with minimum additional verification effort or cost increases. They have been developed on the basis of the indicative market availability of office IT products, the existing verification schemes and recommended environmental criteria analyzed in the Background Report “Sustainable procurement guidelines for office IT equipment”. Products that meet the below criteria are available on all global and regional markets (see further information in the Background Report section 10).

4.1.2 Comprehensive criteria I (Europe, North America, Latin America)

The following set of criteria represent the most comprehensive and ambitious approach that can be undertaken to achieve high sustainability performance for office IT equipment in Europe, North America and Latin America. These Comprehensive sustainability criteria are intended for use by procurers who seek to purchase the best environmental products available on the market, and may require additional administrative effort as compared to other products fulfilling the same function. The products fulfilling these criteria will have less environmental impacts and foster further implementation of socially-responsible procurement within the UN. Products that meet the below criteria are available on the market (see further information in the Background Report section 10).

¹ Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE)

² Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS Directive)

³ See Background Report “Sustainable procurement guidelines for office IT equipment” for further information on legislation and verification schemes.

4.1.3 Comprehensive criteria II (South-east Asia, East Africa, Middle-East)

The following set of criteria represent a more comprehensive and ambitious approach than in the Core criteria section that can be undertaken to achieve a certain sustainability performance for office IT equipment for South-east Asia, East Africa and the Middle-East. These Comprehensive sustainability criteria are intended for use by procurers who seek to purchase the best environmental products available on the (regional) market, and may require additional administrative effort as compared to other products fulfilling the same function. The products fulfilling these criteria will have a certain but limited environmental relief potential. Products that meet the below criteria are available on the market (see further information in the Background Report section 10).

4.1.4 Sustainability criteria for office IT equipment – overview

The following overview shall help UN requisitioners in the preparation of product or service criteria and UN procurers in the selection process to determine the most sustainable office IT equipment available on the market. For the detailed descriptions including verification schemes please follow the hyperlinks.

User note: The above mentioned categories (see sections 4.1.1, 4.1.2, 4.1.3) are presented on the right side of the table. You can see, which criteria to include in your tender documents when taking the “Core criteria” approach or the “Comprehensive criteria” approach.

Using the blue hyperlinks you will get to the detailed description of each criterion (including information on verification). If you want to come back to the overview table just follow the link “to the overview”.

Sustainability description and criteria	PC, notebooks, monitors			Imaging equipment		
	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
A – Procurement planning: subject matter						
A1 – [Purchase/ lease] of energy efficient and socially-responsible produced [PCs, notebooks and monitors] with a reduced content of hazardous substances	●					
A2 – [Purchase/ lease] of energy efficient and socially-responsible produced [PCs, notebooks and monitors] with low environmental and social impacts throughout the lifecycle		●	●			
A3 – [Purchase/ lease] of energy efficient and socially-responsible produced [printers, copiers, scanners and MFDs] with a reduced content of hazardous substances				●		
A4 – [Purchase/ lease] of energy efficient and socially-responsible produced [printers, copiers, scanners and MFDs] with low environmental and social impacts throughout the lifecycle					●	●
B – Requirement definition: specifications						
B1.1 – Product lifetime: guarantee/warranty	●	●	●	●	●	●
B1.2 – Product lifetime: upgradability	●	●	●	●	●	●

Sustainability description and criteria	PC, notebooks, monitors			Imaging equipment		
	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
B1.3 – Product lifetime: guarantee of availability of parts and components	•	•	•	•	•	•
B1.4 – Resource efficiency				•	•	•
B2.1 – End of life and disassembly: take-back guarantee and recycling	•	•	•	•	•	•
B3.1 – Energy consumption: maximum values	•	•	•	•	•	•
B3.2 – Energy consumption: Power Safe Mode	•	•	•			
B4.1 – Hazardous substances: exclusion	•	•	•	•	•	•
B4.2 – Hazardous substances: reduced mercury in background lighting of LCD monitors		•	•			
B5.1 – Noise: limit values for a 'declared A-weighted Sound Power Level'		•	○ ⁴		•	○ ⁵
C – Evaluation: award/ evaluation criteria						
C1.1 – Energy consumption: lower than ENERGY STAR®		•	•		•	•
C2.1 – Ease of disassembly		•	•		•	•
C3.1 – Ergonomics: work load ergonomics, visual ergonomics/image quality		•	•			
C4.1 – Hazardous Substances: background lighting of LCD monitors does not contain mercury		•	○ ⁶			
C4.2 – Hazardous Substances: low Volatile Organic Compound (VOC) emissions					•	
C4.3 – Hazardous substances: product components do not contain brominated flame retardants (BFRs)		•			•	
C4.4 – Hazardous substances: electric cable insulation materials of power and signal cables as well as all cover/housing parts do not contain halogens (including PVC)		•			•	
D – Sourcing: selecting environmental and social-responsible suppliers and manufacturers						
D1.1a – Social criteria: Production of the product according to international labor standards, self-declaration	•	•	•	•	•	•

⁴ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

⁵ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

⁶ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

Sustainability description and criteria	PC, notebooks, monitors			Imaging equipment		
	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
D1.1b – Social criteria: Production of the product according to international labor standards, independent third party certified, declaration of Honor		●	●		●	●
D1.2a – Corporate performance: written corporate environmental policy		●	○ ⁷		●	○ ⁸
D1.2b – Corporate performance: operational, third-party certified, environmental management system		●	○ ⁹		●	○ ¹⁰
D1.3 – Corporate performance regarding hazardous substances: set timeline for the phaseout of brominated flame retardants (BFRs) and plastics containing polyvinylchloride (PVC)		●	●		●	●
D1.4 – Emissions from transport of the product		●	●		●	●
E – Contract review and award: contract clauses						
E1.1 – Packaging: exclusion of PVC, identification of plastic parts, recycled content, exclusion of heavy metals	●	●	●	●	●	●
E1.2 – Advanced configuration and power interface ACPI mode (or equivalent)	●	●	●			
E1.3 – Fundamental Labour Standards (FLS)	●	●	●	●	●	●

⁷ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

⁸ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

⁹ We recommend to make a market research regarding SMEs in the region that have a certified management system in place before including this criterion.

¹⁰ We recommend to make a market research regarding SMEs in the region that have a certified management system in place before including this criterion.

4.1.5 Sustainability criteria for office IT equipment – detailed descriptions

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
A – Procurement planning: subject matter → see criteria overview (↑ to the overview)							
B – Requirement definition: specifications (↑ to the overview)							
B1 – Product lifetime/ resource efficiency							
B1.1 – Product lifetime: <i>guarantee/ warranty</i> <i>[Only for purchase]</i> The vendor of the product must provide a guarantee for a period of at least two years. An option to extend the guarantee period to five years must be given. The contractor must offer an on-the-spot support service for five years. <i>[Only for leasing]</i> The equipment shall be leased for [X] years. During this time the vendor must guarantee an on-the-spot support service including repair and removal of the equipment.	The offer of the vendor has to include the required guarantee/ warranty in the bid.	•	•	•	•	•	•
B1.2 – Product lifetime: <i>upgradability</i> Desktop PCs and notebooks must be designed so that: <ul style="list-style-type: none"> The memory is readily accessible and can be changed The hard disk and, if available, the CD drive and/or DVD drive, can be changed 	All products carrying the European Ecolabel, Nordic Swan, Blue Angel, the EPEAT label, the TCO label or the ECO DECLARATION (ECMA-370) (version 2006 or later, with point P7.7 & P7.8 marked “yes”) will be deemed to comply. Other appropriate means of proof will also be accepted.	•	•	•			
B1.3a – Product lifetime: <i>guarantee of availability of parts and components</i> For notebooks the availability of compatible batteries and power supplies and of the keyboard and its parts shall be guaranteed for at least 3 years from the time that production ceases.	All products carrying the European Ecolabel, Nordic Swan, Blue Angel, the EPEAT label, the TCO label or the ECO DECLARATION (ECMA-370) (version 2006 or later, with point P7.7& P7.8 marked “yes” and P7.9 (min. 3 years) and P7.10 filled out) will be deemed to comply. Alternatively the bidder must provide a written guarantee that this criterion will be met.	•	•	•			

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
<p>B1.3b – Product lifetime: <i>guarantee of availability of parts and components</i></p> <p>The bidder must guarantee the availability of spare parts for at least 3 years from the time that production ceases.</p>	<p>All products carrying the European Ecolabel, Nordic Swan or Blue Angel, the EPEAT label and the The ECO DECLARATION (ECMA-370)(version 2006 or later) with point P7.9 filled out properly will be deemed to comply. Other appropriate means of proof will also be accepted.</p>				•	•	•
<p>B1.4 – Resource efficiency</p> <p>Appliances <i>[with a printing function]</i> with a maximum operating speed of more than 21 sheets per minute for A4 size paper must be equipped with automatic double-sided copying (<i>duplex-unit</i>).</p> <p>All other devices with a lower maximum operating speed must at least offer a manual option (copiers) or an extra software-based option (printers, multifunction devices) for double-sided printing on A4/ letter size paper.</p>	<p>All products carrying the Blue Angel label and the ENERGY STAR® label will be deemed to comply. Products with the also ECO DECLARATION (ECMA-370) in compliance with the criterion deem to comply too. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body demonstrating that the criteria are met will also be accepted.</p>				•	•	•
<p>B – Requirement definition: specifications (↑ to the overview)</p> <p>B2 – End of life, disassembly, recycling</p>							
<p>B2.1 – End of life and disassembly: <i>take-back guarantee and recycling</i>¹¹</p> <p>The vendor must provide an end-of-life take-back guarantee and must provide appropriate proof of its capacity to secure the environmentally-friendly and social-responsible¹² re-use, recycling and/or disposal of waste.¹³</p>	<p>For monitors, all products carrying the TCO'03 label will be deemed to comply.</p> <p>For PCs, notebooks and monitors, all products carrying an EPEAT certificate (which meets criterion 4.6.1.1 “Provision of product take-back service” and criterion 4.6.1.2 “Auditing of recycling services”) will be deemed to comply.</p> <p>Other appropriate means of proof will also be accepted.</p>	•	•	•	•	•	•

¹¹ In some regions where such end-of-life requirements are legally compulsory for the producer and vendor this criterion need not be included. This includes e.g. parts of Europe where the WEEE Directive has been implemented in full, parts of the US (e.g. California) and Latin America – see background report.

¹² With social-responsible it is referred to the ILO Core Conventions used in the [sourcing section](#).

¹³ It is recommended to include a clause referring to this also in the contract clauses.

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
B – Requirement definition: specifications (↑ to the overview)							
B3 – Energy consumption							
B3.1 – Energy consumption: <i>maximum values</i> All products must meet the latest ENERGY STAR® criteria for energy performance. (in May 2008: ENERGY STAR® 4.0 Tier 1 as of July 2007) available at www.energystar.gov . ¹⁴	All products carrying the latest ENERGY STAR® label will be deemed to comply. Other appropriate means of proof will also be accepted.	•	•	•	•	•	•
B3.2 – Energy consumption: <i>Power Safe Mode</i> The product has to support the advanced configuration and power interface (ACPI) specifications (or equivalent), available at www.acpi.info .	Appropriate means of proof must be provided, such as a technical dossier of the manufacturer or a test report from a recognized body.	•	•	•			
B – Requirement definition: specifications (↑ to the overview)							
B4 – Hazardous substances							
B4.1 – Hazardous substances: <i>exclusion</i> ¹⁵ The product must not contain the following hazardous substances: <ul style="list-style-type: none"> • Lead • Mercury • Cadmium • Hexavalent Chromium • Polybrominated Biphenyl (PBB) • Polybrominated Diphenyl Ether (PBDE) 	Appropriate proof that these substances are not contained, such as a technical report, or certification that it meets the legal requirements of the European RoHS Directive (2002/95/EC) or equivalent must be provided.	•	•	•	•	•	•

¹⁴ The Computer specification V5.0 is in the process of being revised with an estimated effective date July 2009. US EPA are also revising the Computer Monitor specification (V5.0) also with an estimated effective date July 2009. Finally, they are in the process of revising the energy efficiency criteria levels for imaging equipment (V1.1) with an effective date of April 2009.

¹⁵ In some regions where these substances are already legally restricted this criterion need not be included. This includes e.g. Europe, through the RoHS Directive (2002/95/EC), parts of the US (e.g. California where legislation follows the RoHS Directive (see background report).

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
<p><u>Major exceptions:</u></p> <ul style="list-style-type: none"> Lead in solders for servers, storage and storage array systems (exemption until 2010) Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCD) Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 % and less than 85 % by weight. 							
<p>B4.2 – Hazardous substances: reduced mercury in background lighting of LCD monitors</p> <p>The background lighting of LCD monitors shall not contain more than 3 mg of mercury on average per lamp. The number of lamps shall be lower than 8.</p>	<p>All products carrying the European Ecolabel, the TCO (version '03 and later) or Blue Angel will be deemed to comply as well as an EPEAT certificate that indicates compliance with criterion 4.1.3.2 “Low threshold for amount of mercury used in light sources” or the ECO DECLARATION (ECMA-370) (version 2006 or later) with point P7.20 meeting the above mentioned limit values[0]. Other appropriate means of proof will also be accepted.</p>		●	●			
<p>B – Requirement definition: specifications (↑ to the overview)</p>							
<p>B5 – Noise</p>							
<p>B5.1 – Noise: limit values for a ‘declared A-weighted Sound Power Level’</p> <p>The ‘Declared A-weighted Sound Power Level’ (re 1 pW) of PCs or notebooks, according to paragraph 3.2.5 of ISO 9296, measured in accordance with ISO 7779, shall not exceed:</p>	<p><u>For PCs:</u> All products carrying the European Ecolabel, Nordic Swan or Blue Angel will be deemed to comply. Other appropriate means of proof will also be accepted.</p> <p><u>For notebooks:</u> All products carrying the European Ecolabel, Nordic</p>		●	○ ¹⁶		●	○ ¹⁷

¹⁶ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

¹⁷ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
<p><u>For PCs:</u></p> <ul style="list-style-type: none"> 4.0 B(A) in the idle operating mode 4.5 B(A) when accessing a hard-disk drive <p><u>For notebooks:</u></p> <ul style="list-style-type: none"> 3.5 B(A) in the idle operating mode 4.0 B(A) when accessing a hard-disk drive <p>For devices with a printing function the 'Declared A-weighted Sound Level' (LWAd) according to ISO 9296, measured in accordance with ISO 7779, shall not exceed the limits set by the following formula:</p> <ul style="list-style-type: none"> LWAd: $0.035 \times \text{CPM} + 5.9$ (B). Where CPM = Copies per minute. The devices shall additionally not exceed 7.5 (B) LWAd except for devices with a CPM >71. 	<p>Swan or the ECO DECLARATION (ECMA-370) (version 2006 or later) with relevant fields filled out will be deemed to comply. Other appropriate means of proof will also be accepted.</p> <p><u>For imaging equipment:</u></p> <p>All products carrying the Nordic Swan or Blue Angel labels will be deemed to comply. Other appropriate means of proof will also be accepted.</p>						

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
C – Evaluation: award/ evaluation criteria (↑ to the overview)							
C1 – Energy consumption							
C1.1 – Energy consumption: <i>lower than ENERGY STAR®</i> <u>Additional points will be awarded:</u> If the product is more energy efficient than specified in the latest ENERGY STAR® standards for energy performance (in May 2008: ENERGY STAR® 4.0 Tier 1 as of July 2007) available at www.energystar.gov . ¹⁸ Scores will be given using a weighting matrix system. See example matrix in the annex.	Appropriate means of proof must be provided, such as a technical dossier of the manufacturer or a test report from a recognized body.		•	•		•	•
C – Evaluation: award/ evaluation criteria (↑ to the overview)							
C2 – Ease of disassembly							
C2.1 – Ease of disassembly <u>Additional points will be awarded:</u> <ul style="list-style-type: none"> • If one qualified person alone shall be able to dismantle it. • If connections are easy to find, accessible with commonly available tools, and as standardised as possible. • If plastic parts heavier than 25g have a permanent marking identifying the material, in conformity with ISO 11469: 2000. Excluded from this criterion are extruded plastic materials and the light-guide of flat panel displays. 	All products carrying the European Ecolabel, Nordic Swan or Blue Angel will be deemed to comply as well as an EPEAT certificate that indicates compliance with the criteria 4.3.1.1 - 4.3.1.5 and 4.3.2.2 or the ECO DECLARATION (version 2006 or later) with points 7.1, 7.2, 7.3, 7.4 & 7.6 in the category P7 (design, disassembly and re-cycling) marked “yes”. Alternatively the bidder must provide a written guarantee that this criterion will be met.		•	•		•	•

¹⁸ The Computer specification V5.0 is in the process of being revised with an estimated effective date July 2009. US EPA are also revising the Computer Monitor specification (V5.0) also with an estimated effective date July 2009. Finally, they are in the process of revising the energy efficiency criteria levels for imaging equipment (V1.1) with an effective date of April 2009.

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
<ul style="list-style-type: none"> If plastic parts are made of one polymer or compatible polymers, except for the cover, which shall consist of no more than two types of polymer, which are separable <p>Scores will be given using a weighting matrix system. See example matrix in the annex.</p>							
<p>C – Evaluation: award/ evaluation criteria (↑ to the overview)</p> <p>C3 – Ergonomics</p>							
<p>C3.1 – Ergonomics: work load ergonomics, visual ergonomics/image quality</p> <p><u>Additional points will be awarded:</u></p> <p>If the work load ergonomics, visual ergonomics and image quality meet the criteria of the latest TCO label.</p> <p>Scores will be given using a weighting matrix system, giving extra points. See example matrix in the annex.</p>	<p>All products carrying the latest TCO label or the latest TCO label will be deemed to comply. Other appropriate means of proof will also be accepted.</p>		•	•			
<p>C – Evaluation: award/ evaluation criteria (↑ to the overview)</p> <p>C4 – Hazardous Substances</p>							
<p>C4.1 – Hazardous Substances: background lighting of LCD monitors does not contain mercury</p> <p><u>Additional points will be awarded:</u></p> <p>If the background lighting of LCD monitors does not contain mercury (e.g. by using software-based solutions).</p> <p>Scores will be given using a weighting matrix system, giving extra points. See example matrix in the annex.</p>	<p>The vendor is required to submit independent certification or a self-declaration that this criterion is met, such as an EPEAT certificate that indicates compliance with the criterion 4.1.3.3 “Elimination of intentionally added lead in certain applications”, or the ECO DECLARATION (version 2006 or later) with point P7.20 marked “yes”.</p>		•	○ ¹⁹			

¹⁹ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
<p>C4.2 – Hazardous Substances: low Volatile Organic Compound (VOC) emissions</p> <p><u>Additional points will be awarded:</u></p> <p>If the vendor can provide proof that the imaging equipment meets the following maximum emission rates in the print phase:</p> <ul style="list-style-type: none"> • TVOC: 18 mg/h (colour), 10 mg/h (monochrome) • Benzene: < 0.05 mg/h (colour and monochrome) • Styrene: 1.8 mg/h (colour), 1.0 mg/h (monochrome) • Ozone: 3.0 mg/h (colour), 1.5 mg/h (monochrome) • Dust 4.0 mg/h (colour and monochrome) <p>Scores will be given using a weighting matrix system, giving extra points. See example matrix in the annex.</p>	<p>Products with the Blue Angel ecolabel deem to comply. Other means of proof, e.g. certificates from a qualified testing laboratory are accepted, too.</p>					•	
<p>C4.3 – Hazardous substances: product components do not contain brominated flame retardants (BFRs)</p> <p><u>Additional points will be awarded:</u></p> <p>If no product components contain any (or only traces of) brominated flame retardants (BFRs), whether in printed circuit boards or in cover/housing plastic parts or any other components. Scores will be given using a weighting matrix system, giving extra points. See example matrix in the annex.</p>	<p>The vendor is required to submit a comprehensive self-declaration issued by the manufacturer that this criterion is met. Products with the Blue Angel label deem to comply partly regarding the criterion on the cover/housing plastic parts (50% of available extra points).</p>		•			•	
<p>C4.4 – Hazardous substances: electric cable insulation materials of power and signal cables as well as all cover/housing parts do not contain halogens (including PVC)</p> <p><u>Additional points will be awarded:</u></p> <p>If no halogens (including PVC) are contained in electric cable insulation materials of power and signal cables as well as all cover/housing parts. Scores will be given using a weighting matrix system, giving extra points. See example matrix in the annex.</p>	<p>The vendor is required to submit independent certification or a self-declaration issued by the manufacturer that this criterion is met, such as the ECO DECLARATION (ECMA-370) (version 2006 or later) with points P7.12, P7.13 and P7.14 marked “yes”. Products with the Blue Angel label deem to comply too.</p>		•			•	

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
D – Sourcing: selecting environmental and social-responsible suppliers and manufacturers (↑ to the overview)							
<p>D1.1a – Social criteria: Production of the product according to international labor standards, self-declaration²⁰</p> <p>The vendor has to provide proof that the manufacturer of the product complies with the international working standards (ILO Core Conventions) throughout the whole supply chain listed below. The supply chain includes Original Equipment Manufacturers (OEMs), Electronic Manufacturing Services (EMS) firms and Original Design Manufacturers (ODMs). Furthermore it includes contracted labour (contract manufacturers) that may design, market, manufacture and/or provide goods and services that are used to manufacture and supply the final product.</p> <ul style="list-style-type: none"> • Freedom of Association and Protection of the Right to Organise (No. 87) • Right to Organise and Collective Bargaining (No. 98) • Forced Labour (No. 29) • Abolition of Forced Labour (No. 105) • Discrimination (Employment and Occupation) (No. 111) • Equal Remuneration (No. 100) • Minimum Age (No. 138) • Worst Forms of Child Labour (No. 182) 	<p>The vendor is required to submit appropriate proof that these requirements have been met. A <u>self-commitment/declaration</u> (such as an up-to-date Electronic Industry Code of Conduct (EICC) declaration) that the requirements are met, together with documentary support of the implementation and monitoring of measures deems to comply.</p>	•	•	•	•	•	•

²⁰ D1.1a and D1.1b present options with different ambition level. The procurer must select one of these according to policies and market availability of vendors meeting these criteria.

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
<p>D1.1b – Social criteria: Production of the product according to international labor standards, independent third party certified, declaration of Honor²¹</p> <p>The vendor has to provide proof</p> <ul style="list-style-type: none"> from an independent third party certification body or by a declaration of Honour <p>that the manufacturer of the product complies with the international working standards (ILO Core Conventions) throughout the whole supply chain listed below. The supply chain includes Original Equipment Manufacturers (OEMs), Electronic Manufacturing Services (EMS) firms and Original Design Manufacturers (ODMs). Furthermore it includes contracted labour (contract manufacturers) that may design, market, manufacture and/or provide goods and services that are used to manufacture and supply the final product.</p> <ul style="list-style-type: none"> Freedom of Association and Protection of the Right to Organise (No. 87) Right to Organise and Collective Bargaining (No. 98) Forced Labour (No. 29) Abolition of Forced Labour (No. 105) Discrimination (Employment and Occupation) (No. 111) Equal Remuneration (No. 100) Minimum Age (No. 138) Worst Forms of Child Labour (No. 182) 	<p>Compliance of proof of this criterion is a duly signed declaration of Honor or an independent third-party verified certificate.²²</p>		•	•		•	•

²¹ D1.1a and D1.1b present options with different ambition level. The procurer must select one of these according to policies and market availability of vendors meeting these criteria.

²² Please note that as of May 2008 for office IT equipment no independent third-party verified certificate exists guaranteeing the production of the product according to international labor standards. Nevertheless it is recommended to ask for this certificate when applying a bonus point system in the award/evaluation phase of the procurement management to increase awareness of, and demand for, such a certification. Organizations around the world are currently working on a suitable certification scheme. Organizations around the world currently work on a suitable certification scheme, taking into account experiences e.g. from the textiles and clothing sector. See the background report for further information.

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
<p>D1.2a – Corporate performance: written corporate environmental policy²³</p> <p>The vendor and the manufacturer of the final product are required to demonstrate the existence and public availability of a written corporate environmental policy, consistent with ISO 14001 (International Organisation for Standardisation), or equivalent.</p>	<p>Proof of compliance is the written corporate environmental policy, consistent with ISO 14001 (International Organisation for Standardisation), or equivalent..</p>		●	○ ²⁴		●	○ ²⁵
<p>D1.2b – Corporate performance: operational, third-party certified, environmental management system²⁶</p> <p>The vendor has to provide certificates from the manufacturer that they and all companies throughout the whole supply chain engaged in the design or manufacture of the product have an operational, third-party certified, environmental management system that meets one of three recognised systems: ISO 14001, European EMAS or U.S. EPA Performance Track.</p> <p>The supply chain includes Original Equipment Manufacturers (OEMs), Electronic Manufacturing Services (EMS) firms and Original Design Manufacturers (ODMs). Furthermore it including contracted labour (contract manufacturers) that may design, market, manufacture and/or provide goods and services that are used to manufacture and supply the final product.</p>	<p>A certificate of the third-party certified, environmental management system that meets one of three recognised systems: ISO 14001, European EMAS or U.S. EPA Performance Track. Deems to comply.</p>		●	○ ²⁷		●	○ ²⁸

²³ D1.2a and D1.2b present options with different ambition level. The procurer must select one of these according to policies and market availability of vendors meeting these criteria.

²⁴ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

²⁵ Limited market availability: Comprehensive market research is necessary for inclusion of this criterion.

²⁶ D1.2a and D1.2b present options with different ambition level. The procurer has to select one of them according to policies and market availability of vendors meeting these criteria.

²⁷ It is recommended to carry out market research regarding SMEs in the region that have a certified management system in place before including this criterion.

²⁸ It is recommended to carry out market research regarding SMEs in the region that have a certified management system in place before including this criterion.

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
<p>D1.3 – Corporate performance regarding hazardous substances: <i>set timeline for the phaseout of brominated flame retardants (BFRs) and plastics containing polyvinylchloride (PVC)</i></p> <p>The vendor must provide proof that the manufacturer of the products has set a timeline for the phaseout (by latest 2010) of brominated flame retardants (BFRs) and plastics containing polyvinylchlorid (PVC) in all product components and packaging.</p>	<p>The vendor is required to submit a self-declaration issued by the manufacturer that this criterion is met.</p>		•	•		•	•
<p>D1.4 – Emissions from transport of the product</p> <p>The transport of the product must have a low environmental impacts, measured in CO₂ emissions.</p>	<p>The vendor has to provide a self-declaration that declares the CO₂ emissions (kg/offer) spend for the delivery of the products from final production location to the end user.</p>		•	•		•	•

Sustainability criteria	Verification schemes	PC, notebooks, monitors			Imaging equipment		
		Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)	Core Criteria	Comprehensive criteria I (Europe, North America, Latin America)	Comprehensive criteria II (South-east Asia, East Africa, Middle-East)
E – Contract review and award: contract clauses (↑ to the overview)							
E1.1 – Packaging: exclusion of PVC, identification of plastic parts, recycled content, exclusion of heavy metals <ul style="list-style-type: none"> The packaging of the product shall not contain PVC All plastic parts heavier than 25g must be identified according to ISO11469 by material type At least 80 percent of the packaging by weight shall consist of materials that are readily recyclable (with available recycling options), can be composted, or can be disposed of in a municipal waste system. Heavy metals (e.g. used in colours) shall not be intentionally added to any packaging or packaging component. Those heavy metals present in recycled content are accepted. 	All products carrying the European Ecolabel, Nordic Swan, Blue Angel or EPEAT label (with criterion 4.8.2.2 met) will be deemed to comply. Alternatively the bidder must provide a written guarantee that this criterion will be met.	•	•	•	•	•	•
E1.2 – Advanced configuration and power interface ACPI mode (or equivalent) The vendor has to ensure that PCs and notebooks are all shipped with the ACPI power-save mode (or equivalent) enabled.	The ACPI is enabled at delivery of the product.	•	•	•			
E1.3 – Fundamental Labour Standards (FLS) The vendor has to ensure compliance with the Fundamental Labour Standards (ILO Core Conventions) as: <ul style="list-style-type: none"> Freedom of Association and Protection of the Right to Organise (No. 87) Right to Organise and Collective Bargaining (No. 98) Forced Labour (No. 29) Abolition of Forced Labour (No. 105) Discrimination (Employment and Occupation) (No. 111) Equal Remuneration (No. 100) Minimum Age (No. 138) Worst Forms of Child Labour (No. 182) 	Upon demand the vendor is required to submit appropriate proof that these requirements have been met. A <u>self-commitment/declaration</u> that the requirements are met, together with documentary support of the implementation and monitoring of measures deems to comply. Implementation note: The procurer has to set up a system for monitoring of compliance during the contract.	•	•	•	•	•	•

5 Using a lifecycle approach

Using a lifecycle approach means taking into account the costs incurred by the purchasing organization over the whole life of the product from purchase, through usage and maintenance costs to disposal. For office IT equipment the main costs to be considered are the purchase price, energy and materials consumption during use, and the disposal of the equipment (the latter does not apply to leasing).

As with any electricity-using product, purchasing energy efficient models is generally a win-win option – reducing running costs, and also reducing environmental impacts. Generally, the energy efficiency of the product also has relatively little impact on the purchase price, certainly if you are aiming for a model within the 25% most efficient on the market. The EU ENERGY STAR® website has a useful tool for calculating the possible financial savings of buying a more efficient product: <http://www.eu-energystar.org/calculator.htm>.

5.1 Lifecycle Costing (LCC) of computers, notebooks and monitors

The following graphics give an indicative overview of the lifecycle costs (LCC) for desktop PCs and notebooks comparing energy efficient and non-energy efficient products. A notebook is included in this comparison as it may also be an option to purchase notebooks instead of desktop PCs, as they can be used both at fixed workplaces and when travelling. The LCC is calculated over a period of five years, excluding disposal costs and using constant energy costs of 0,12 EUR/kWh.

The results show that LCC for conventional and energy efficient products are similar.

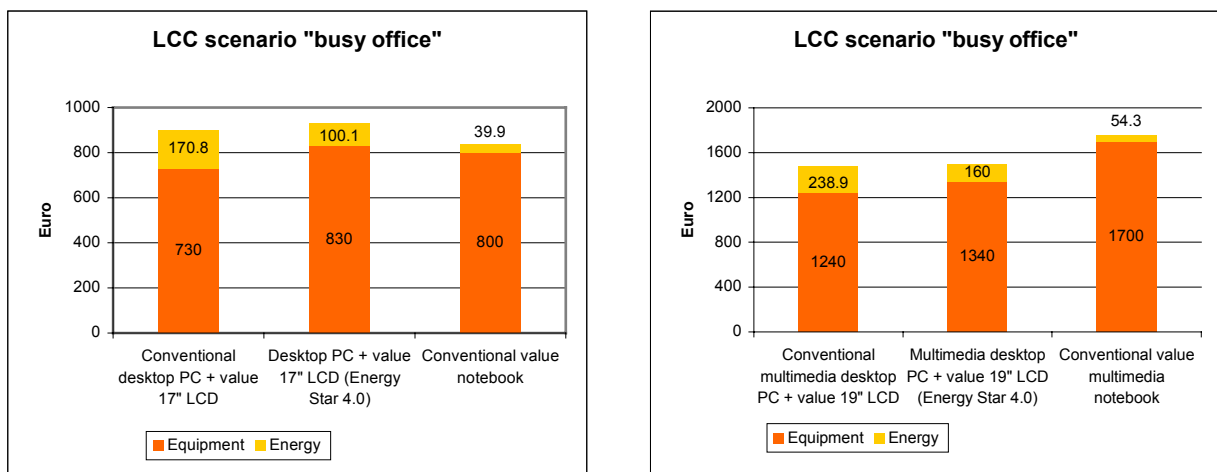


Figure 2: LCC scenario "busy office" for desktop PC and notebooks, prepared using the ENERGY STAR® LCC calculator - http://www.eu-energystar.org/en/en_008b.shtml

When including eco-labeled products into the LCC comparison for different product types it is clearly visible that they do not have a major influence on the overall LCC (see 3rd column in the following figure).

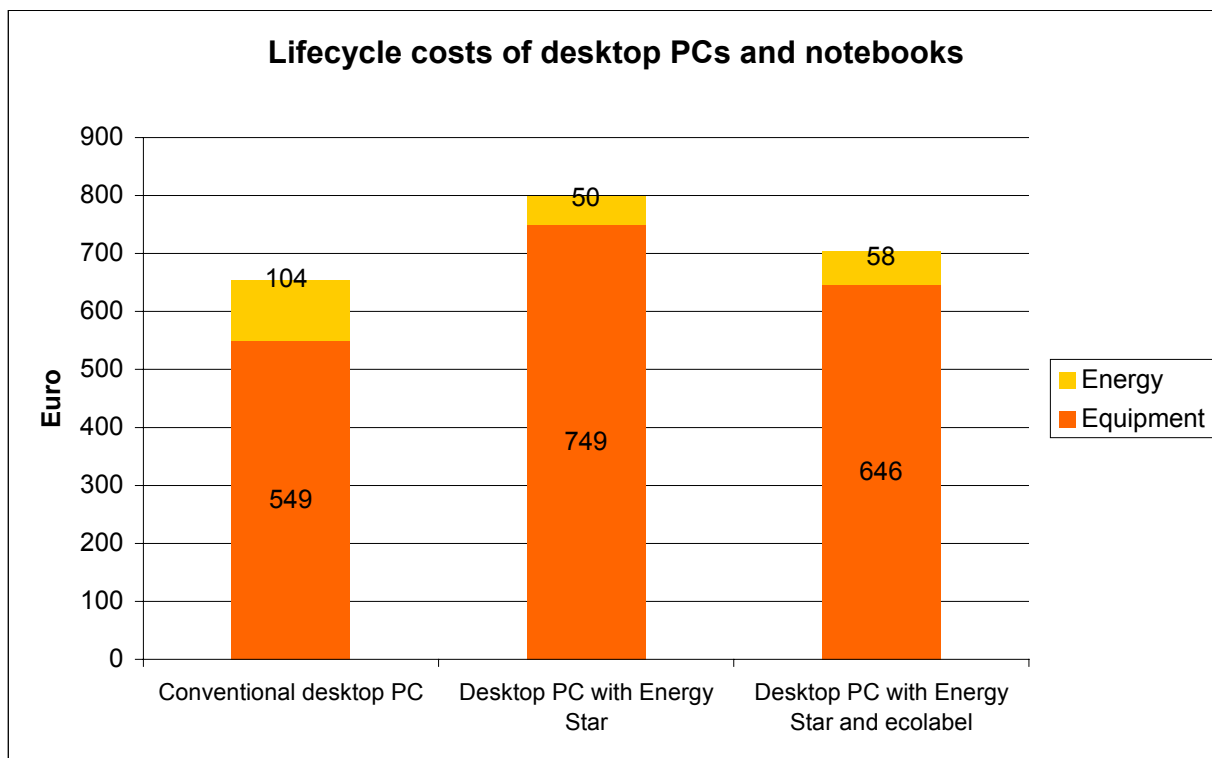


Figure 3: Comparison of lifecycle costs over five years (energy costs and purchase price) of conventional desktop PC (without monitor), desktop PC with ENERGY STAR® (without monitor), and desktop PC with ecolabel Blue Angel (without monitor). Source: Öko-Institut 2008

Another European Commission study on the Costs & Benefits of GPP in 2007²⁹ examined the cost implications of purchasing green (eco-labeled) IT devices – computers, monitors and imaging equipment products.

For computers the differences between the green and the non-green version are calculated to amount to between 3% higher to 7% lower costs for the green version. However, there are a number of uncertainties that might have significant influence on the results: Usage behavior, costs for repair, influence of the on-site service for the overall product lifetime, and rapid changes in the market (e.g. due to prices and variability of components) lead to rapidly changing product composition and product prices.

For notebooks the differences between the green and the non-green version are calculated to amount to between 6% and 24%, with the green version being more expensive than the non-green version. The energy savings of the green version have no major influence on the overall costs, with a typical saving of €8 over 4 years.

29 Study on costs/benefits of Green public procurement in Europe, Öko-Institut & ICLEI 2007, available at: http://ec.europa.eu/environment/gpp/index_en.htm.

5.2 Lifecycle Costing (LCC) of printers, copiers and multifunctional devices

The following figure gives an indicative overview of the lifecycle costs (LCC) for multifunctional devices comparing energy efficient and non-energy efficient products. The LCC is calculated over a period of five years, excluding disposal costs.

The results show that energy efficient products with a duplex function have reduced LCC in comparison to conventional products.

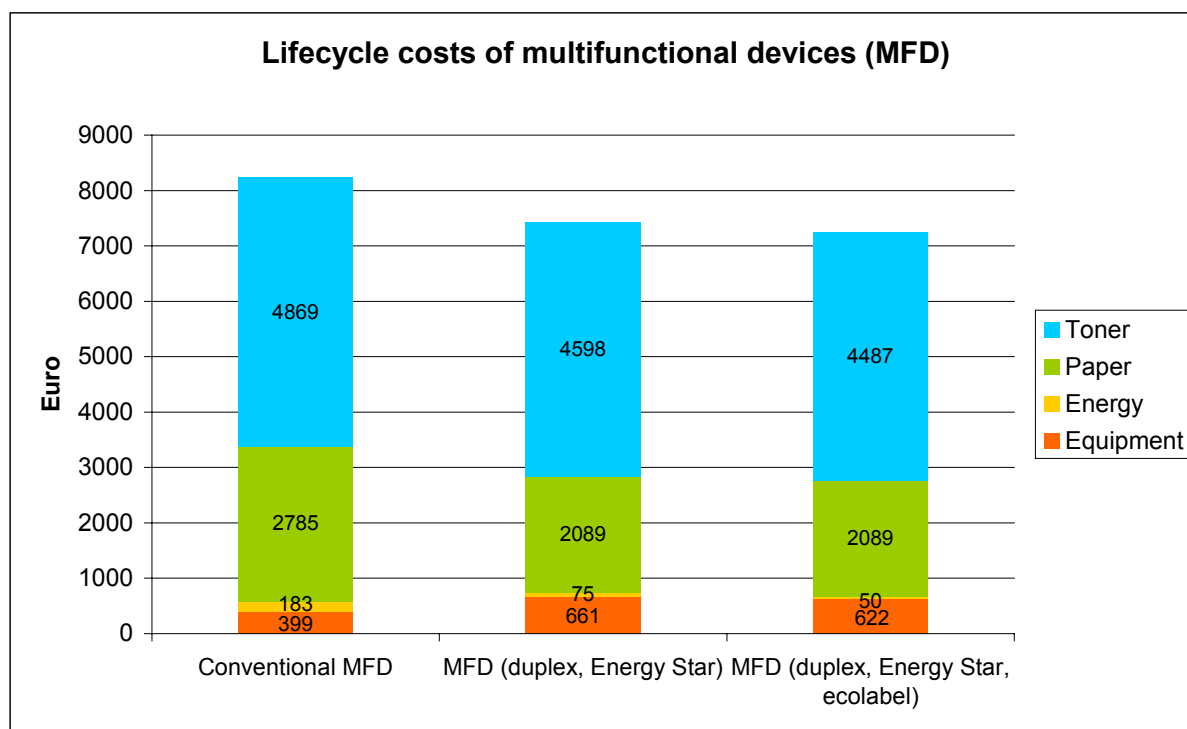


Figure 4: Comparison of lifecycle costs over five years (energy costs and purchase price) of conventional MFDs (without duplex), MFD with duplex and ENERGY STAR®, MFD with duplex, ENERGY STAR® and ecolabel Blue Angel. Source: Ökoinstitut 2008

The main results summarized in the European Commission study on the Costs & Benefits of GPP for printers and copiers are as follows:

- The green version of single-function Ink Jet printers as specified in the Costs and Benefits study (i.e.: automatic duplex unit and meeting ENERGY STAR® requirements) are more expensive than the conventional ('non-green') version. This is mainly due to the quite high price of the automatic duplex unit (between 38 and 45 % higher than the non-green version). As the printing volume is quite low, these higher costs cannot be compensated for by the lower paper consumption.
- In contrast, the LCC of the green version of the single-function Electro-photography³⁰ (EP) printers as specified in the Costs and Benefits study (i.e. automatic duplex unit and meeting ENERGY STAR® requirements) is between 7 and 11% lower than the LCC of

³⁰ Electro-photography (EP) is a marking technology characterised by illumination of a photoconductor in a pattern representing the desired hard copy image via a light source, development of the image with particles of toner using the latent image on the photoconductor to define the presence or absence of toner at a given location, transfer of the toner to the final hard copy medium, and fusing to cause the desired hard copy to become durable. Colour EP is distinguished from monochrome EP in that toners of at least three different colours are available in a given product at one time.

the non-green version. Even though the purchase price of the printers with automatic duplex unit is between 20 and 25% higher than the price of the non-green version, the lower costs during the use phase overcompensates this difference due to the much lower paper consumption.

- With about 38% for multifunctional EP devices, the most important cost saver is the use of the duplex function. Large multifunctional EP devices come with a duplex unit, so no extra costs have to be assigned to this function. It is more critical whether users actually use the duplex function or rather abstain from using it. Cost savings due to a better electricity standard are negligible.

In all cases it can be seen that the use of recycled paper leads to cost reductions as the price for recycled paper in Germany is lower compared to the price for conventional paper. Combining the use of the green version of the printers with the use of recycled paper leads to lower additional costs in case of the IJ printers and to higher savings in case of the EP printers.

5.3 Disposal costs

Disposal costs (or resale) at the end of the useful life of the product may also have a significant impact on the LCC of office IT equipment, particularly due to the electronic nature of the product and the inclusion of hazardous substances. However, the actual costs incurred by the purchasing organization in disposal will very much depend on local disposal regulations and responsibilities, such as take-back systems – whether these costs must be borne by the supplier, for example. As such it is difficult to provide an overview of the influence of disposal in the typical LCC for these products, and little data is available. It is advisable to be fully aware of local systems and regulations, and to take these into account in costing.

6 Further aspects

This section introduces ideas for improving the overall environmental and social performance of the complete office IT system required. These further aspects are more based on a systemic and strategic level than on an individual product level.

6.1 Thin client solutions

A thin client is a computer workspace designed to be especially small so that the bulk of the data processing occurs on the server. Although the term thin client usually refers to software, it is increasingly used for computers, such as network computers and Net PCs that are designed to serve as the clients for client/server architectures. A thin client is a network computer without a hard disk drive, whereas a thick client includes a disk drive.³¹

Depending on the office's requirements it is worthwhile looking into the benefits of a thin client base network. This option can be generally taken into consideration where a certain number (>15 personal workplaces) is reached and where users do not need their computer to work on video, audio or graphic files but for normal office applications, databases, internet, etc.

The benefits include:

- Lower energy consumption: Thin clients "consume anywhere from 6 to 50 watts — far less than the 150 to 350 watts used by typical PCs," according to Forrester report, titled "Green Benefits Put Thin-Client Computing Back On The Desktop Hardware Agenda."³² However, more powerful servers and communications are required that consume additional energy. Real energy savings depend on the overall network system and have to be assessed case by case.
- More efficient use of computing resources: A typical thick-client will be specified to cope with the maximum load the user needs, which can be inefficient at times when it is not used. In contrast, thin clients only use the exact amount of computing resources required by the current task – in a large network, there is a high probability the load from each user will fluctuate in a different cycle to that of another user (i.e. the peaks of one will more than likely correspond, time-wise, to the troughs of another).
- Lower noise. The removal of fans in thin clients reduces the noise produced by the unit. This can create a more pleasant and productive working environment.
- Higher resource efficiency: Thin client solutions need less hardware and can remain in service longer resulting in a longer lifecycle and better LCC performance. "Unlike PCs and laptops, which commonly have a three- to four-year replacement cycle, thin clients last an average of seven years. They slow down technology's inevitable slide into obsolescence because they have fewer points of failure and rarely need upgrades."³³

6.2 Sustainable Facility management

As with any product, for office IT equipment it is critical to analyse the actual needs of each working place before tendering for the products.

This includes focussing on possibilities for extending the lifecycle of Desktop PCs, notebooks and imaging equipment and the downsizing of equipment to the real needs. An example

31 Definition used from www.webopedia.com/TERM/t/thin_client.htm

32 See <http://www.forrester.com/Research/Document/Excerpt/0,7211,43638,00.html>

33 See <http://www.forrester.com/Research/Document/Excerpt/0,7211,43638,00.html>

would be that a normal working place in an office does not need to have a computer that is suitable for high-end graphic, audio and video applications.

Questions to ask during the analysis can include:

- What performance (resolution, black/white, colour) of imaging equipment is needed at which working space?
- How many print jobs are carried out realistically during a certain period of time (e.g. one month)?
- Where can working places share office IT equipment?
- How can individual office IT equipment be shared with other users, reducing the overall amount of office IT equipment needed?

6.3 User behavior

Office IT equipment meeting the above mentioned sustainability criteria is normally supplied together with a series of software-controlled measures to reduce energy consumption. The IT administrator can examine the individual work place settings and adjust them to high energy performance levels by including certain settings related to stand-by and sleep modes, hard-disk shut down, CPU performance, pre-set double-sided printing, and ready-to-print timeframes, etc.

User behaviour should also be addressed by regular training programmes for office staff that include raising awareness for reducing print jobs and power settings on their personal computer.

7 Information sources

7.1 Ecolabels and other criteria sources

- Agreement between the Government of the United States of America and the European Community on the co-ordination of energy-efficiency labelling programs for office equipment (ENERGY STAR[®] criteria), http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_381/l_38120061228en00260104.pdf
- ENERGY STAR[®], www.energystar.gov
- Blue Angel - Computers RAL-UZ 78, http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm
- Blue Angel - Office Printing Devices RAL-UZ 122, http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm
- Blue Angel - Reprocessed Toner Modules RAL-UZ 55, http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm
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- EPEAT, www.epeat.com
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- www.epeat.com
- <http://www.greenpeace.org/international/campaigns/toxics/electronics/how-the-companies-line-up>. – indicative environmental performance by company

Annex

This Annex provides additional information to assist procurers in addressing sustainability aspects in both competitive tendering and selection of brands/models.

It includes:

- An example weighting matrix for the evaluation of competing bids, and the final awarding of the contract taking into account sustainability criteria;
- A checklist for pre-assessments of sustainable office IT equipment;
- ENERGY STAR® 4.0 limit values for office IT equipment.

7.4 Example weighting matrix

In the evaluation of bids complying with the technical specifications, the sustainability criteria outlined above should be given a weighting of at least 20%.

[This text should be included as an annex in tender documents]³⁴

Sustainability of the offered products and services (bonus points/ weighting of criteria)		
Sustainability evaluation criteria for PCs, notebooks, monitors and imaging equipment	Bonus points (max. 35)	Product Scoring Name:
1. Energy consumption – <i>is lower than the maximum levels of the latest ENERGY STAR® requirements (March 2008: version 4.0, Tier 1)</i>	Max. 10 points: over 75% lower: 10 points 50-75% lower: 7 points 25-49% lower: 5 points 10-24% lower: 2 points <10% lower: no points	
2. Ease of disassembly	Fulfillment of criteria = 5 points Non-fulfillment of criteria = no points	
3. Hazardous Substances – <i>low Volatile Organic Compound (VOC) emissions</i>	Fulfillment of criteria = 5 points Non-fulfillment of criteria = no points	
4. Hazardous substances – <i>background lighting of LCD monitors does not contain mercury</i>	Fulfillment of criterion = 5 points Non-fulfillment of criterion = no points	
5. Hazardous substances – <i>product components do not contain brominated flame retardants (BFRs)</i>	Fulfillment of criterion = 5 points Non-fulfillment of criterion = no points	
6. Hazardous substances – <i>electric cable insulation materials of power and signal cables as well as all cover/housing parts do not contain halogens (including PVC)</i>	Fulfillment of criterion = 5 points Non-fulfillment of criterion = no points	
SUM		

³⁴ The following evaluation criteria should be considered alongside other evaluation criteria such as price. It is not necessary to include additional calculations on the Lifecycle Costing (LCC) of the products as the main sustainability criteria reflect the LCC already. When evaluating the price the only factor to consider is the purchase price including freight.

7.5 Checklist for selection of sustainable products

The following checklist is designed to help UN requisitioners in the preparation of product or service criteria and UN procurers in the selection process to determine the most sustainable office IT equipment available on the market. It is recommended to first read the Product Sheet and the Background Report “Sustainable procurement guidelines for office IT equipment” as these documents explain each applied sustainability criteria more comprehensively.

Checklist for selection of products that meet sustainability standards			
Sustainability criteria	Applicable for desktop PCs, notebooks, monitors	Applicable for imaging equipment	Product Scoring Name:
B – Requirement definition: specifications			
B1.1 – Product lifetime: guarantee/warranty	X	X	
B1.2 – Product lifetime: upgradability	X	X	
B1.3 – Product lifetime: guarantee of availability of parts and components	X	X	
B1.4 – Resource efficiency		X	
B2.1 – End of life and disassembly: take-back guarantee and recycling	X	X	
B3.1 – Energy consumption: maximum values	X	X	
B3.2 – Energy consumption: Power Safe Mode	X		
B4.1 – Hazardous substances: exclusion	X	X	
B4.2 – Hazardous substances: reduced mercury in background lighting of LCD monitors	X		
B5.1 – Noise: limit values for a 'declared A-weighted Sound Power Level'	X	X	
C – Evaluation: award/ evaluation criteria			
C1.1 – Energy consumption: lower than ENERGY STAR®	X	X	
C2.1 – Ease of disassembly	X	X	
C3.1 – Ergonomics: work load ergonomics, visual ergonomics/image quality	X		
C4.1 – Hazardous Substances: background lighting of LCD monitors does not contain mercury	X		
C4.2 – Hazardous Substances: low Volatile Organic Compound (VOC) emissions		X	
C4.3 – Hazardous substances: product components do not contain brominated flame retardants (BFRs)	X	X	
C4.4 – Hazardous substances: electric cable insulation materials of power and signal cables as well as all cover/housing parts do not contain halogens (including PVC)	X	X	
D – Sourcing: selecting environmental and social-responsible suppliers and manufacturers			
D1.1a – Social criteria: Production of the product according to international labor standards, self-declaration	X	X	
D1.1b – Social criteria: Production of the product according to international labor standards, independent third party certified, declaration of Honor	X	X	
D1.2a – Corporate performance: written corporate environmental policy	X	X	
D1.2b – Corporate performance: operational, third-party certified, environmental management system	X	X	

D1.3 – Corporate performance regarding hazardous substances: set timeline for the phaseout of brominated flame retardants (BFRs) and plastics containing polyvinylchloride (PVC)	X	X	
D1.4 – Emissions from transport of the product	X	X	
E – Contract review and award: contract clauses			
E1.1 – Packaging: exclusion of PVC, identification of plastic parts, recycled content, exclusion of heavy metals	X	X	
E1.2 – Advanced configuration and power interface ACPI mode (or equivalent)	X		
E1.3 – Fundamental Labour Standards (FLS)	X	X	

7.6 ENERGY STAR® 4.0

7.6.1 ENERGY STAR® 4.0 requirements for desktop PCs, notebooks and monitors

Tier 1 Requirements – effective July 20, 2007

- Power supply efficiency requirements:
- Internal Power Supply: 80% minimum efficiency at 20%, 50% and 100% of rated output and Power Factor >0.9 at 100% rated output.
- External Power Supply: Must fulfil the ENERGY STAR® requirements for External Power Supply (www.energystar.gov/powersupplies)
- Operational Mode Efficiency Requirements

Product Type	Tier 1 Requirements
Desktops, Integrated Computers, Desktop-Derived Servers and Gaming Consoles	Standby (Off Mode): <2.0 W Sleep Mode: <4.0 W Idle State: Category A: < 50.0 W Category B: < 65.0 W Category C: < 95.0 W
Notebooks and Tablets	Standby (Off Mode): < 1.0 W Sleep Mode : < 1.7 W Idle State: Category A: < 14.0 W Category B: < 22.0 W
Capability adder for sleep and Standby	
Capability	Additional Power Allowance
Wake on LAN (WOL)	+ 0.7 W for Sleep + 0.7 W for Standby

- Power Management Requirements Products must be shipped with the display’s Sleep mode set to activate within 15 min of user inactivity and Computer sleep mode to activate within 30 min of user inactivity
- All computers shall have the ability to enable and disable Wake on LAN
- User Information Requirement including information about the Power management, how to properly wake from sleep mode and about ENERGY STAR®

Tier 2 Requirements – effective January 2009

- To be decided

7.6.2 ENERGY STAR® 4.0 requirements for imaging equipment

LED/Laser technology		
	Printing speed spM	Energy consumption TEC
Monochrome print	<= 20	TEC = 0,20 kWh x spM + 2 kWh
	21 – 69	TEC = 0,44 kWh x spM – 2,8 kWh
	> 69	TEC = 0,80 kWh x spM – 28 kWh
Colour print	<= 32	TEC = 0,20 kWh x spM + 5 kWh
	33 – 61	TEC = 0,44 kWh x spM – 2,8 kWh
	> 61	TEC = 0,80 kWh x spM – 25 kWh
Bubble-jet technology		
	Paper format	Power consumption in sleep-mode
	<= A3	3 Watt
	>= A2	13 Watt