

## Recommended environmental criteria for ICT products

### 1. Criteria for ICT products

This document relates to the purchase of the following ICT products:

Product	CPV code (2007)
Desktop computers	30213000
Workstations	30214000
Laptops	30213100
Servers	48820000
Monitors, TFT/LED (flatscreen)	30231310
Docking station	No CPV code exists
Projector (video display device)	38652120
Printers and plotters	30232100
Photocopiers	30121100
Multifunction printers <sup>1</sup>	No CPV code exists
Computer scanners	30216110

### 2. Environmental challenges linked with ICT equipment

The most serious environmental challenges relate to energy consumption and chemical emissions in production, energy consumption in operations, and hazardous chemicals in products. Therefore, long service life, low energy consumption, efficient utilisation, reuse, long-term access to spare parts and safe recycling of materials are important targets for reducing environmental impact.

PC production has a massive environmental impact. A UN report<sup>2</sup> describes the consumption of resources during PC production as follows:

- 9 times its own weight in fossil fuel
- 580 kg of CO<sub>2</sub>
- 22 kg of chemicals
- 1 500 kg of water

Reference is also made to a report on ICT equipment, public procurement and environmental impact which was prepared for the European Commission in 2008<sup>3</sup>. This refers to - among other things - reports which show that energy consumption in the usage phase is three to four times greater than for production, and that laptop PCs use 50-80% less energy than desktop PCs when operating.

Other reports indicate that there may be major climate impact from production and gases (NH<sub>3</sub>) used in flatscreen monitors, for example.

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<sup>1</sup> Multifunction printers have two or more functions, such as a combination of printing, photocopying, faxing, telephoning and scanning.

<sup>2</sup> R. Kuehr, E. Williams (eds): Computers and the Environment – Understanding and Managing their Impacts. Kluwer Academic Publishers / United Nations University 2003. ISBN 1-4020-1679-24 (HB) Chapter 3.

<sup>3</sup> [http://ec.europa.eu/environment/gpp/pdf/toolkit/office\\_IT\\_equipment\\_GPP\\_background\\_report.pdf](http://ec.europa.eu/environment/gpp/pdf/toolkit/office_IT_equipment_GPP_background_report.pdf)

It is concluded that the environmental impact of production, the product itself and its use is significant. This document prioritises the following environmental factors and solutions:

Environmental factors		Solution	Requirements	Allocation criteria
<ul style="list-style-type: none"> <li>CO<sub>2</sub> emissions as a consequence of production</li> </ul>	→	<ul style="list-style-type: none"> <li>Longest possible service life per unit</li> <li>Climate-neutral production (but currently difficult to monitor in such a global industry)</li> </ul>	4, 5, 6, 7, 8, 9	1
<ul style="list-style-type: none"> <li>Reduced CO<sub>2</sub> emissions during use</li> </ul>	→	<ul style="list-style-type: none"> <li>Purchase of energy-efficient units, and switching them off when they are not in use</li> </ul>	1, 2, 3	
<ul style="list-style-type: none"> <li>Emissions of hazardous chemicals in the environment</li> </ul>	→	<ul style="list-style-type: none"> <li>Purchase of units containing minimal amounts of hazardous chemicals</li> <li>Safe recycling of products upon disposal</li> </ul>		2

### 3. Proposed procurement process

#### Requirement analysis

ICT equipment requirements are changing quickly, and this is a common reason as to why people dispose of equipment early. These changes may be caused by factors such as a requirement for new functionality, software upgrading, new operating procedures or changes to work patterns.

Some of the new ICT functions could themselves help to reduce environmental impact besides the actual acquisition, such as by using less paper (with a better monitor, for example), reducing the need to travel (by increasing the uptake of eCooperation, with sound and video) or reducing energy consumption (by virtualising servers or ensuring better control of HVAC systems). Selecting equipment solutions which later turn out to put the brakes on such development on account of a lack of functionality will both be inefficient for the organisation and involve unnecessary environmental impact.

Therefore, it is recommended that the purchasing manager carries out quality assurance of the requirements analysis by reviewing the points below in order to ensure a long and efficient service life; a factor which often saves money in the longer term.

Check that the requirement specification from the applicant takes into account development over a period of four to five years; for example:

- eCooperation/eMeetings:** Many enterprises find that introducing IT-based cooperation tools can reduce the need for travel and hence shorten project implementation time, while at the same time enhancing the quality of decisions. Environmental impact is reduced. But eCooperation as a function makes demands of the end-user equipment and the ICT infrastructure. The value of eCooperation is maximised when everyone has access to the functionality. You should avoid having to replace new equipment or postponing the introduction of new functionality simply because PCs do not have sufficiently powerful CPUs, communications bandwidth or input/output functionality (e.g. Webcams) in order to comply with the enterprise's eCooperation strategy.

- **Heavier operating systems and applications:** There is a tendency for operating systems and applications to become heavier as the years go by: has this been taken into account in the requirement specification? Have less heavy operating systems been assessed? It may be worthwhile purchasing slightly more powerful systems than are required right at the moment or ensuring that the equipment can be upgraded.
- **Work forms, open-plan offices and home offices:** "Flexi solutions" are flourishing. Staff at many workplaces can work at home, they are not necessarily given a set desk in an open-plan office, they can move from the office to a "talk room" when the phone rings (or use Skype as a matter of form), they can take their PCs into meetings. If such scenarios are relevant, have they been taken into account in the requirement specification? E.g. good wireless setup, laptops, docking stations? It would be a nuisance to have to replace desktop PCs bought not long before, just because "everybody" wants a laptop nowadays... (and these use a lot less power than desktop PCs).
- **Dependency on paper:** The role of paper has altered a lot, from being a means of communication to a replacement for a computer monitor as it is often hard to read text on a screen. Good monitor solutions reduce the need for printouts, but they have to be adapted to suit individual requirements. Have user requirements been charted? Some enterprises have found that reformatting forms from portrait to landscape A4 uses the display area more efficiently and hence reduces the number of printouts run, the amount of paper used and the printer capacity required.
- **Paper efficiency:** When paper has to be used, it should be printed on both sides. This will result in a significant reduction in paper consumption<sup>4</sup>. Duplex printers should be purchased if a lot of printing is to be done. You should assess whether printers should be set up in a way which forces users to go over to the printer and authorise the printout before it is executed (known as "follow-me" printing). If the enterprise does mostly black and white printing with the occasional colour print, the printer should separate these automatically so that black and white pages are not printed using colour print.
- **Noise:** How important noise is depends on the positioning of the equipment, and therefore this should be assessed in each individual case. In this guide, we have chosen merely to set noise requirements for laptop and desktop PCs, given that these will be used in the work environment, and hence you should always ensure that there is a low noise level in order to ensure a long service life. Perhaps a printer/copier room with a door would be as efficient as a low-noise printer?

Check that this need cannot be met in any other way.

- **Purchasing used equipment:** There is a market for "nearly new" equipment which either has never been sold, or which has had to be disposed of due to a change in an enterprise's ICT strategy, standardisation of equipment as a result of mergers, or similar. Such solutions stimulate the reuse market regardless, and so the same requirements as for new equipment are not laid down there. Large volumes of the same model of renowned brands can be purchased, meeting performance requirements by a clear margin and at a low price. A number of serious organisations offer such products on the business market these days.
- **Purchasing servers:** Have you considered buying network-based services instead of machines, or hiring machines in a server farm? A server farm is a flexible solution which could reduce the need for operating resources at the department, giving greater uptime and lower risk? Many of these farms have such high energy costs that it is worthwhile for them to invest in efficient cooling systems and virtualisation (so that a lot of machines can be shut down at low load periods). Remember that

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<sup>4</sup> Paper production requires - among other things - a lot of energy, approx. 5 kWt/kg (i.e. 200 x A4 sheets), [http://ec.europa.eu/environment/gpp/pdf/toolkit/paper\\_GPP\\_background\\_report.pdf](http://ec.europa.eu/environment/gpp/pdf/toolkit/paper_GPP_background_report.pdf)

purchasers are responsible for ensuring that they have taken into account the overall costs from a lifelong perspective – and this should include power (for both cooling and the machines), the operating environment, construction area, ...

#### Disposal/reuse of equipment

- **Ensure that scrapped equipment has an optimal service life:** a lot of procurements are linked with the scrapping of old equipment. Several suppliers now have the option of buying/taking back old equipment for resale or recycling of the parts or materials. If this procurement paves the way for such options, this should be specified in the invitation to tender, but your attention is drawn to the fact that such alternatives may be demanding in respect of purchasing when evaluating the tenders.

#### Summary:

- The purchaser should check that the applicant has taken into account the following when preparing a requirement specification:
  - Whether the enterprise is adopting a four to five-year view for its ICT strategy
  - Whether significant changes to the enterprise's working patterns can be anticipated in future (e.g. new office solutions, more home offices)
  - Whether a choice of infrastructure has been assessed which could result in less stringent software requirements (e.g. choosing a different operating system).
- General information on environmental requirements:
  - The requirements set for the products in section 4.2, Technical specification, are mandatory. This means that only suppliers who have products meeting these requirements will have their tenders considered.
  - Criteria specified for the products in section 4.4, Allocation criteria, are discretionary; this means that tenders may be submitted for products which fail to meet these criteria. Suppliers are competing with regard to allocation criteria, and these are suitable for differentiating the products from one another with regard to ecofriendliness. Allocation criteria will be weighted in accordance with the regulation on public procurements, § 22-2, and weighting should be set to at least 20% so as to reflect the situation and be suitable for making the most ecofriendly products stand out.
  - This weighting **MUST** be specified over the EEA threshold value.
  - The environment should be a separate weighting criterion; not concealed as part of something else, such as quality.
- The product must be compliant with Norwegian rules, including the regulation on restriction of the use of chemicals and other products hazardous to health and the environment (the product regulation), (FOR 2004-06-01 no. 922)<sup>5</sup>.

## 4. Recommended requirements and criteria

Environmental requirements and criteria specified must be included in the invitation to tender for public procurements. This will form part of the invitation to tender, along with a number of other requirements and criteria.

<sup>5</sup> <http://www.lovddata.no/cgi-wift/ldles?doc=/sf/sf/sf-20040601-0922.html>

The basic principle of proportionality, as specified in the regulation on public procurements (forskrift om offentlige anskaffelser, FOA), § 3-1, fifth paragraph, means that the environmental requirements and criteria laid down must be viewed in relation to the contract to be entered into. According to the basic principles, the requirements must be relevant to the specific contract, and the documentation requirements laid down must also be proportional to the contract.

This means that any of the environmental requirements and criteria proposed must be adapted to suit the specific procurement. This also means that documentation requirements and quantities must be adapted to suit the scope and type of contract. Some contracts may be complex even if the contract value is not great. That is to say, it is necessary to assess, in entirely specific terms, whether the proposed requirements and criteria suit the procurement planned.

#### 4.1 Purpose of the contract

Purchase of ICT products for office use, with low environmental impact from a lifelong perspective.

#### 4.2 Technical specifications – mandatory requirements

The table below links requirements with products, i.e. describes which mandatory requirements are relevant to the respective ICT products:

Product	CPV code (2007)	Mandatory requirements
Desktop computers	30213000	2, 4, 5, 8
Workstations	30214000	4, 5, 8
Laptops	30213100	2, 4, 5, 7, 8
Servers	48820000	5
Monitors, TFT/LED (flatscreen)	30231310	3, 5, 7
Docking station	No CPV code exists	5
Projector (video display device)	38652120	5
Printers and plotters	30232100	1, 6, 9
Photocopiers	30121100	1, 6, 9
Multifunction printers <sup>6</sup>	No CPV code exists	1, 6, 9
Computer scanners	30216110	1, 6

1. This product must meet applicable energy saving requirements for document handling products (Imaging Equipment) in accordance with ENERGY STAR<sup>7</sup>
2. This product must meet applicable energy saving requirements for PCs in accordance with ENERGY STAR<sup>8</sup>.

<sup>6</sup> Multifunction printers have two or more functions, such as a combination of printing, photocopying, faxing, telephoning and scanning.

<sup>7</sup> [http://www.eu-energystar.org/en/en\\_045b.shtml](http://www.eu-energystar.org/en/en_045b.shtml)

<sup>8</sup> [http://www.eu-energystar.org/en/en\\_044b.shtml](http://www.eu-energystar.org/en/en_044b.shtml)

3. Flatscreens must meet applicable energy saving requirements for monitors in accordance with ENERGY STAR<sup>9</sup>.
4. If the memory specified is up to half of the maximum equipment level of the machine, and if the machine has more than one memory slot, at least one memory slot must be left empty so that any later upgrading is possible<sup>10</sup>.
5. Parts for repair, replacement or upgrade are guaranteed to be available for at least three years following manufacture of the product.
6. Parts for operation, repair, replacement or upgrade are guaranteed to be available for at least five years following manufacture of the product.
7. Select one of the following requirements. See the footnote<sup>11</sup> for guidance.
  - a) The surface of the display must not be shiny<sup>12</sup>
  - b) The surface of the display must be shiny
8. The product's "declared A-weighted noise level" (cf. 1 pW) in accordance with § 3.2.5 of ISO 9296, measured in accordance with ISO 7779, must not exceed:
  - a) For desktop PCs: 4.0 B(A) (equivalent to 40 dB(A)) in idle operating mode and 4.5 B(A) (equivalent to 45 dB(A)) when accessing a hard disk drive
  - b) For laptops: 3.5 B(A) (equivalent to 35 dB(A)) in idle operating mode and 4.0 B(A) (equivalent to 40 dB(A)) when accessing a hard disk drive

9. For products with a printer function, the declared noise output LWAd in accordance with ISO 9296, measured in accordance with ISO7779, must not exceed the levels specified in the following formula:

LWAd:  $0.035 \times \text{SPM} + 5.9$  (B), where SPM is the number of pages printed per minute

In addition, the product must not exceed 7.5 (B) LWAd, with the exception of products where the PPM is in excess of 71 pages per minute.

#### **Documentation requirements:**

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<sup>9</sup> [http://www.eu-energystar.org/en/en\\_044b.shtml](http://www.eu-energystar.org/en/en_044b.shtml)

<sup>10</sup> One requirement when purchasing laptops is that only one of two memory slots must be used if you are to have specified memory which is up to half the maximum capacity. This is so that it is possible to avoid removing memory already purchased in the event of any upgrades to more memory. Be aware that if users are to use graphics-intensive operating systems such as Vista Aero, a particularly large amount of memory is required. Remember also that some mini machines have only one memory slot: in this instance, it is important to specify enough memory if you are procuring these models.

<sup>11</sup> For standard office use, it is recommended that you avoid shiny displays and select matt displays for both desktop and laptop PCs. This is because shiny displays cause reflections, which can make it hard to see what is on screen under varying lighting conditions. Compliance with point a) is recommended for this type of use. If the display is to be used for media (viewing and editing video/images), you should comply with point b) as this will give sharper, clearer images and more faithful colour reproduction.

<sup>12</sup> Any display which is not shiny will be measured in various ways according to different standards, such as:

- a. The display is defined as Class I in accordance with ISO 13406-2, or
- b. The display is compliant with the requirements of ISO 9241-7, or
- c. The display has a gloss value of  $\leq 60$  (measured in accordance with [TCO'03 Displays Flat Panel Displays Ver.3.0, B.2.5](#))

1. Requirements 1 - 3: All products which are qualified to ENERGY STAR level (in accordance with the applicable version) are considered to meet these requirements. Alternative documentation may include a technical specification from the manufacturer or a test report from a recognised enterprise, indicating that the requirements are met, printout for products in question from the ENERGY STAR database<sup>13</sup>. Possibly also self-declaration,
2. Requirements 4 - 9: Completed self-declaration form<sup>14</sup> signed by the person tendering on behalf of the tenderer/supplier.

### 4.3 Qualification requirements (mandatory supplier requirements)

None

### 4.4 Award criteria

The weighting of allocation criteria requires expertise and experience of procurement. You are advised against using allocation criteria unless the client has the relevant expertise and experience.

Additional points will be given for each of the criteria met. The table below links allocation criteria with products, i.e. describes which allocation criteria are relevant to the respective IT products:

Product	CPV code (2007)	Allocation criteria
Desktop computers	30213000	1, 2
Workstations	30214000	1, 2
Laptops	30213100	1, 2
Servers	48820000	1, 2
Monitors, TFT/LED (flatscreen)	30231310	2
Docking station	No CPV code exists	2
Projector (video display device)	38652120	1, 2
Printers and plotters	30232100	2
Photocopiers	30121100	2
Multifunction printers <sup>15</sup>	No CPV code exists	2
Computer scanners	30216110	2

1. Parts for repair, replacement or upgrade are guaranteed to be available for at least five years following manufacture of the product.
2. Plastic parts weighing more than 25 g do not contain flame retardant substances or mixtures which are allocated any of the following risk phrases in accordance with EEA Directive 67/548/EEC:
  - R45: may cause cancer.
  - R46: may cause heritable genetic damage

<sup>13</sup> [http://www.eu-energystar.org/no/no\\_database.htm](http://www.eu-energystar.org/no/no_database.htm)

<sup>14</sup> The self-declaration is regarded as environmental information and must be available to the general public; cf. the Environmental Information Act.

<sup>15</sup> Multifunction printers have two or more functions, such as a combination of printing, photocopying, faxing, telephoning and scanning.

- R60: may impair fertility
- R61: may cause harm to the unborn child

**Documentation requirements:**

1. A completed self-declaration form signed by the supplier's manager.
2. All products certified in accordance with the European environmental label, the Nordic Swan, the Blue Angel or the TCO 05 label will be accepted. Other relevant proof will also be accepted.

## **4.5 Contract requirements**

**The supplier must comply with these functional requirements:**

1. Packaging: If a Norwegian supplier (manufacturer or importer) uses packaging, documentation must be produced by the time the contract is entered into at the latest, indicating that the supplier is a member of a recycling arrangement or meets the obligation by means of its own recycling arrangement with its own arrangement for final handling where the packaging is dealt with in an environmentally aware manner (Grønt Punkt Norge AS or similar arrangement).
2. If superfluous equipment (cabling, telephone sockets, etc.) is supplied, this must be disposed of by the supplier and dealt with properly as electronic waste or reused if the client so requires.
3. For every new model supplied to the client following commencement of the contract, a self-declaration form must be completed by the supplier and enclosed with the consignment or made available by electronic means.
4. The client reserves the right to ask for documentation from the supplier in order to verify the contents of the self-declaration form: such as an environmental label/licence, IT Ecodeclaration, ECMA 370 form or other technical documentation.
5. Documentation (for the user and the operations manager) must be enclosed for all equipment which shows how the equipment is to be used and the relevant setup in order to minimise environmental impact (e.g. duplex printing for printers and power saving for PCs). Where possible, equipment must be supplied already set up to be environmentally efficient.

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## **5. Background documentation**

The following background documentation is available:

3. Training pack with a set of criteria from the EU Commission:
  1. About the training pack: [http://ec.europa.eu/environment/gpp/toolkit\\_en.htm](http://ec.europa.eu/environment/gpp/toolkit_en.htm)
  2. Background documentation for office equipment:  
[http://ec.europa.eu/environment/gpp/pdf/toolkit/office\\_IT\\_equipment\\_GPP\\_background\\_report.pdf](http://ec.europa.eu/environment/gpp/pdf/toolkit/office_IT_equipment_GPP_background_report.pdf)
  3. Product documentation for office equipment:  
[http://ec.europa.eu/environment/gpp/pdf/toolkit/office\\_IT\\_equipment\\_GPP\\_product\\_sheet.pdf](http://ec.europa.eu/environment/gpp/pdf/toolkit/office_IT_equipment_GPP_product_sheet.pdf)

**Background to the work**

In June 2007, the government launched an action plan for environmental and socially aware procurement. State procurements in particular are being targeted. This action plan came into force on 1 January 2008. ICT equipment is one of the selected product areas in this action plan. A recommended set of criteria must be prepared for the range of products/services selected. The task of preparing these criteria has been allocated to a Panel for environmentally aware procurement.