Environmental criteria for sustainable public procurement of

Networks, Data Centre Hardware and Telephone Services

Version March 2017

1. Scope/definition

This document deals with three ICT-related product groups at the same time. These product groups are interrelated in a way that is subject to continuous change. First of all, it is currently possible to digitise all electronic functions (equipment and software). Second, due to the increasing availability of electronic connections and the broadband transmission capacity of networks and infrastructure, it is possible to remove, relocate and share functions from existing equipment. For these reasons it was decided to create a consolidated criteria document. This document deals with three product groups:

- networks/infrastructure;
- data centre hardware;
- telephone services.

The following products (with their corresponding CPV codes) are part of the product group Networks, Data Centre Hardware and Telephone Services. This list of products is not intended to be exhaustive.

Products	CPV code
Networks/Infrastructure	
System and support services	72250000
Data processing services	72310000
Computer-related management services	72510000
Computer-related professional services	72590000
Computer networking services	72700000
Data centre hardware	
Data network support services	72315100-7
Data processing machines (hardware)	30210000-4
Telephone and data transmission services	64210000-1
Telephone Services	
Telecommunications services (no criteria have been developed for this purpose)	64200000

The scope of this product group does not include:

- cabling, repeaters and all other equipment not otherwise specified.

This document describes the environmental criteria. Information about the other elements of sustainable public procurement, such as social conditions and social return, may be found on the PIANOo website, on the specific product group page: https://www.pianoo.nl/document/10524/productgroep-netwerken-datacenterhardware-telefoniediensten.

2. Most significant environmental impacts

The table below lists the sustainability themes and describes the approach to each theme for the product group. The “Approach” column presents a statement indicating the influence of sustainable purchasing and its criteria on the “sustainability” of the theme. This column also includes a reference to any requirements, award criteria or points of attention/suggestions that may be useful in implementing the approach. The product group can also have an impact on other environmental themes but, for now at least, these are less relevant, of a much less significant level of concern or do not as yet have a suitable set of standard criteria.

Themes:		Approach:	No. of requirement/ Criterion
Energy and climate Energy consumption in the use phase, with corresponding CO_2 emissions Energy consumption in the production phase, with corresponding CO_2 emissions	⇨	• Procure energy-efficient services.	AS1, ME3, GC1, CB1, CB2
		• Procure energy-efficient equipment.	AS2, AS3, ME1, ME2, ME4, GC2, GC3
		• Procure energy-efficient equipment.	AS4
Supplies and raw materials Recycling, reuse	⇨	• Service for reuse and recycling.	AS5, ME6
		• Use recycled packaging material.	ME5, GC4
		• Bio-based procurement.	AS6

3. Points of attention/suggestions

Devoting attention to the opportunities and possibilities for the most sustainable procurement possible in the preparation phase will lead to specifications that are more ambitious or that differ from the standard technical specifications and award criteria set out in this document. The table below presents points for attention and suggestions for promoting sustainability in procurement within this product group.

No.	Points of attention/suggestions (AS)
AS1	**Evaluate reliability and availability of data connections** Assess the required reliability and availability of data communications. For non-critical applications, a reduced level of reliability may be sufficient. This can be combined with reduced power consumption.
AS2	**Consider "Best Practices"** Consider the best practices in "Energy savings in datahotels" (ECN 2008) or the Code of Conduct (European Commission JRC 2008): http://ec.europa.eu/information_society/activities/sustainable_growth/docs/datacenter.code-conduct.pdf and in the recognised measures "Commercial data centre", which can be found through Infomil website: http://www.infomil.nl/onderwerpen/duurzame/energie/erkende-maatregelen-0. These cover the following subject areas: cooling, electrical power supply (including UPS), the building, other installations, management and use of the data centre, ICT equipment and the monitoring of power consumption. There is also a climate control environmental label for data centres from which criteria may be adopted: http://www.milieukeur.nl/Public/Milieukeur_NonFood_schemas/MKSCHEMA_DCK6_NL.pdf.

AS3	**Analyse and monitor total energy consumption** In the analysis and monitoring of the total energy consumption, subdivide the total power consumption into components. Some modern equipment includes features for reporting power consumption. This can also be accomplished through means of intelligent Power Distribution Units (PDUs), which are able to read this information. Furthermore, there are all kinds of "smart plugs" that can easily be placed between the electrical outlet and the equipment's electrical plug. Certain systems exist that can collect consumption data via wireless communications after which it can be analysed using separate software.
AS4	**Utilise hardware efficiently** Ensure efficient utilisation of the hardware (server, storage, network) and disconnect any non-essential components. Utilisation of resources of more than 80% is considered optimal. To date, an official utilisation benchmark does not yet exist, however. The key technologies that make efficient hardware utilisation possible are: • virtualisation: the separation of information and software from physical resources. For example, virtualisation software makes it possible to consolidate multiple processes on the same server, as a result of which it is possible to shut down part(s) of the equipment; • provisioning/move technology: the automated and dynamic allocation of physical resources to data and applications/the ability to transfer a data or application workload to another physical resource without any interruptions; • power management: the ability to use automated means for managing the power consumption of hardware and to completely or almost completely shut off the hardware.
AS5	**Service for reusing and recycling hardware** Promote high-quality reuse of end-of-life hardware, or recycling of these products where reuse is not possible. This can be outsourced as a service. Important points of attention are the evaluation of the value and the categorisation of the end-of-life hardware, deletion of data from all data-carrying hardware (AIVD requirement), maximizing service life and value of the hardware through reuse and recycling of hardware that cannot be reused.
AS6	**Consider bio-based procurement** In many cases, bio-based raw materials are preferable over fossil-based raw materials (such as plastics). Survey (in consultation with the market where possible) the possibilities, the pros and any cons of use of bio-based raw materials for your procurement needs and give them an appropriate place in your procurement documents. More information on bio-based procurement can be found via PIANOo SPP Theme Bio-based Procurement (https://www.pianoo.nl/themes/maatschappelijk-verantwoord-inkopen-duurzaam-inkopen/mvi-thema-s/biobased-inkopen), where the guide to bio-based procurement and the Guidelines to Bio-based Procurement have also been made available (https://www.pianoo.nl/themas/maatschappelijk-verantwoord-inkopen-mvi-duurzaam-inkopen/handreikingen-mvi-0/handreikingen-biobased-inkopen). If you include a requirement that the material used must be bio-based, ask for descriptions of the material used and documentation supporting claims such as "bio-based", "sustainable biomass" and "compostable". This will make the assessment easier and give the purchaser the opportunity to check upon delivery of the goods whether the items supplied are in fact those agreed. It is also important not to require the production of specific certificates because this may put producers to unnecessary expense when alternative evidence would also suffice.

4. Selection criteria

Not defined for this product group.

5. Technical specifications

No.	Technical specifications (ME)
ME1	**"Energy Star" criteria for UPS equipment** UPS equipment meets the requirements of the most recent version of the Energy Star standards for

	energy performance. See www.eu-energystar.org. *Verification* The tenderer may be asked to submit documentation demonstrating compliance with the criteria above. Products in the Energy Star database (see http://www.eu-energystart.org/db-currentlists.htm) are in compliance. All products with a relevant EU Ecolabel are assumed to be in compliance. Products with a different Type 1 environmental label or an environmental declaration meeting this criterion will be assumed to be in compliance. Other appropriate forms of documentation will also be accepted, such as a technical file from the manufacturer or an approval report of an accredited institution (for example, an ISO 17025-accredited institution authorised to issue approval reports) showing that the products meet the criteria. *Explanation* As from 7 May 2014, UPS equipment must meet the Energy Star standards version 1.0. A Type I environmental label refers to environmental labels based on an independent test using pre-determined environmental criteria which are based on a "life-cycle approach". Examples in the Netherlands include the Milieukeur label and the EKO label. Other examples include the EU Ecolabel (Europe), Blaue Engel (Germany) and Nordic Swan (Scandinavia). For further information on the type I environmental label, see http://www.nen.nl/NEN-Shop/Norm/NENENISO-140242000-en.htm. For information on ISO 17025 in reference to performance of trials and calibrations, see: http://www.nen.nl/NEN-Shop/Norm/NENENISOIEC-170252005-nl.htm
ME2	**"Energy Star" requirements for broadband equipment** Broadband equipment must meet the requirements as described in Appendix C.2 of the most recent version of the Code of Conduct on Energy Consumption of Broadband Equipment (European Commission). See https://ec.europa.eu/jrc/en/publication/eu-code-conduct-energy-consumption-broadband-equipment-version-6. *Verification* The tenderer can be asked to produce a user guide or product leaflet demonstrating that this requirement is met.
ME3	**Energy consumption of networks/infrastructure: services – Housing** A data centre that is used for data housing, at least the portion that is used for implementing the contract, must have a yearly average Data Centre infrastructure Efficiency (DCiE) value of at least 50%. *Explanation* The DCiE is the ratio consisting of the annual electricity consumed by the IT equipment divided by the annual electricity consumed by the entire data centre. This number reflects the share of the power consumed by the IT equipment. A higher value means a higher data centre efficiency. The commonly used parameter EUE (Energy Usage Effectiveness) is equal to 1/DCiE. *Verification* The tenderer may be asked to substantiate, with documentation, compliance with a DCiE of 50% or greater.
ME4	**"Energy Star" requirements for servers** *Servers meet the requirements of the most recent version of the Energy Star criteria. See www.eu-energystar.org.* *Verification* The tenderer may be asked to submit documentation demonstrating compliance with the criteria above. Products in the Energy Star database (see http://www.eu-energystart.org/db-currentlists.htm) are in compliance. All products with a relevant EU Ecolabel will be assumed to be in compliance. Products with a different Type 1 environmental label or an environmental declaration meeting this criterion will be assumed to be in compliance. Other appropriate forms of documentation will also be accepted, such as a technical file from the manufacturer or an approval report of an accredited institution (for example, an ISO 17025-accredited institution authorised to issue approval reports) showing that the products meet the criteria.

	Explanation As from 7 May 2014, computer servers must meet the Energy Star standards version 2.0 For an explanation of type I environmental label, see: http://www.nen.nl/NEN-Shop/Norm/NENENISO-140242000-en.htm. For information on ISO 17025 in reference to performance of trials and calibrations, see: http://www.nen.nl/NEN-Shop/Norm/NENENISOIEC-170252005-nl.htm.
ME5	**Use recycled material for packaging** Any cardboard boxes used must consist of at least 80% recycled material. If plastic bags or sheets are used in the consumer packaging, they must have a recycled content of at least 75%. This technical requirement will not apply if bio-based material is chosen. *Verification* The tenderer may be asked to provide a sample of the product packaging with the application, together with an accompanying declaration stating that this criterion has been met. *Source: EU GPP*
ME6	**Removal and processing of packaging, components and equipment** The tenderer will guarantee that it will arrange the free collecting and recycling of packaging. In addition, the tenderer will offer the opportunity for old equipment to be exchanged, removed and processed, in such a way that the participant can also satisfy all the relevant statutory requirements (in particular relating to privacy and data security). Those requirements are described in the Civil Service Baseline Information Security (BIR) standards. Exchange, in this context, means the sale of surplus movable property to the contractor from which new similar immovable property is simultaneously purchased. The offering of the opportunity to exchange will be determined in a mini-competition for each application. *Verification* The tenderer may be asked to submit a declaration in which it states that these criteria have been met.

6. Award criteria

No.	Award criteria (GC)
GC1	**Most energy-efficient network/infrastructure: services – Housing** The greater the degree to which a data centre used for data housing, or at least the portion that is used for implementing the contract, has a yearly average Data Centre infrastructure Efficiency (DCiE) value higher than 60%, the higher the tender will be rated, in accordance with the following formula: *Number of points = (DCiE-60%) * [x] points* *Explanation* The DCiE is the ratio consisting of the annual electricity consumed by the IT equipment divided by the annual electricity consumed by the entire data centre. This number reflects the share of the power consumed by the IT equipment. A higher value means a higher data centre efficiency. Based on (Energy savings in datahotels; more with less, ECN 2008), it may be expected that the tendered DCiE will vary between 50% and 90%, so that a number of points between 0 and 30* [x] can be earned here. The purchaser must determine the value of [x]. It is recommended that the purchaser assesses whether the higher DCiE affects the pricing. The commonly used parameter EUE (Energy Usage Effectiveness) is equal to 1/DCiE. *Verification* The tenderer may be asked to substantiate, with documentation, compliance with the criteria

	above.
GC2	**Most energy-efficient UPS equipment** Points are assigned for every 5% of energy consumption lower than the specifications in technical specifications ME1 Energy Star requirements for UPS equipment. *Verification* The tenderer they be requested to submit a technical file from the manufacturer. A test report showing the energy consumption of the products will also be accepted.
GC3	**Most energy-efficient servers** Points are assigned for every 5% of energy consumption lower than the specifications in technical specification ME5 Energy Star requirements for servers. *Verification* The tenderer they be requested to submit a technical file from the manufacturer. A test report showing the energy consumption of the products will also be accepted.
GC4	**Recycling packaging** The greater the provision made by the tenderer for better recycling of the packaging, the higher this component of the tender will be rated. The tenderer may earn points by: - avoiding multi-layers, black plastic and combination packaging; - using packaging that is readily recyclable; - collecting and recycling a higher percentage of the packaging it supplies. *Verification* The tenderer may be asked to state: - whether multi-layers, black plastic and combination packaging are used; - whether the packaging is readily recyclable, where "readily recyclable" is defined as: can be separated by hand into elements of a single material and/or packaging that are suitable for multiple use; - what percentage of the packaging it supplies is collected and recycled. The tenderer may be asked to provide a sample of the packaging. It may also be asked to send a statement in which it indicates 1) what percentage of the packaging used is collected or taken away 2) how the packaging used is processed during the waste phase and, 3) in the case of recycling, which recycler recycles the material.

7. Contract provisions

No.	Contract provisions (CB)
CB1	**Energy consumption of Networks/infrastructure: services – Hosting** The data hosting contractor reports quarterly (or in accordance with a higher frequency mutually agreed upon) on the electricity consumed by the equipment involved in the performance of the contract, to the contracting authority. Consumption is specified in terms of hourly values. *Explanation* This provision is designed to provide the contracting authority with insight into the possibilities of influencing the power consumed by the ICT activities. It is recommended that the purchaser specify the reporting format in mutual consultation, depending on what the contracting authority can and wants to do with the data. Some providers have access to a software platform for this purpose.
CB2	*(Optional)* **Energy consumption of Networks/infrastructure: services – Housing**

	The higher the degree to which during any one contract year, an improvement in the DCiE is achieved in relation to the DCiE at the outset of the contract, the more the contractor is entitled to a bonus for the next [contract period] in accordance with the following formula: *Bonus (in €) = { DCiE(improved) - DCiE(start of contract) } * [x]* Improvements in the DCiE must be supported by a report prepared by an independent expert. *Explanation* The DCiE is the ratio consisting of the annual electricity consumed by the IT equipment divided by the annual electricity consumed by the entire data centre. This number reflects the share of the power consumed by the IT equipment. A higher value means a higher data centre efficiency. This provision encourages the contractor to improve the annual weighted Data Centre Infrastructure Efficiency (DCiE). Based on (Energy savings in datahotels; more with less, ECN 2008) and the minimum DCiE requirement, it is expected that the proposed DCiE will vary between 50% and 90%, so that the theoretical maximum improvement that can be achieved is 40%. If, for example, 1,000 is chosen as the value "x", then an improvement of 40% in the DCiE as described above yields a bonus of € 400. The commonly used parameter EUE (Energy Usage Effectiveness) is equal to 1/DCiE. *Verification* To qualify for this bonus, the DCiE at the outset of the contract can be established. Depending on the nature of the service, the representative contract period for the bonus can be established. Information such as the monitoring data collected in the context of participation in the Long-term Agreement on Energy Efficiency (MJA) or the Code of Conduct can serve as the expert's report.