

## JRC TECHNICAL REPORTS

# Revision of the EU Green Public Procurement (GPP) criteria for Copying and Graphic Paper

*Technical Report 1.0  
Draft criteria proposal for  
the revision of ecological  
criteria*

Shane Donatello, Malgorzata Kowalska,  
Miguel Gama Caldas (IPTS, JRC)

Mark Hilton, Tanzir Chowdhury, Harry  
Croezen, Achim Schorb, Christina Tsiarta  
(EUNOMIA-led consortium).

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#### Contact information

Name:

Address:

E-mail:

Tel.:

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## Abstract

The GPP criteria for copying and graphic paper are under revision and new, updated criteria have to be defined in line with market advances, changes to legal and policy frameworks and technical innovation. The overall aim of this project therefore has been to assess the need for updating existing criteria and for developing new criteria for copying and graphic paper.

Background research undertaken in the draft Preliminary Report that is published in parallel with this Technical Report has been considered. The Preliminary Report provides a review of the current product group names, scopes and definitions, a summary of relevant legal and policy frameworks, market analysis, a life-cycle assessment (LCA) review and a technical analysis that are relevant to the paper industry.

The most significant changes to the new proposed GPP criteria are:

- A simplification of the structure of the criteria (i.e. no Option 1 and Option 2, and no distinction between "office use" and "professional purposes").
- Specific reference to the EU Timber Regulation (EC) No 995/2010 in the requirements for legally sourced fibres.
- The acceptance of either recycled fibres and/or virgin fibres from sustainably managed forests to comply with requirements for sustainably sourced fibres (reflecting the current practice with market leading labelling schemes).
- The introduction of requirements for paper producers to monitor and report on energy consumption associated with pulping and paper making processes.
- The introduction of requirements for paper producers to monitor and report on water consumption associated with pulping and paper making processes.
- The introduction of a requirement for producers to report on the presence of any Substances of Very High Concern (SVHCs) or to restrict them below 0.1% in the final paper product.

Feedback is requested regarding the proposed introductions of the reporting requirements of water consumption and energy consumption, how well industry is geared up to deliver this and if the existing Paper Profile approach would be supported as a simpler option for energy criteria (it reports on two metrics: purchased electricity and fossil-CO<sub>2</sub> emissions).

Another issue to be discussed in more detail is that of grammage. The typical range of grammage of copying and graphic paper is 70-85g/m<sup>2</sup>. There is a perceived opinion that the lower grammage paper requires fewer materials and is therefore associated with lower environmental impacts. However, to be sure about this, products of different grammages would need to be considered from an LCA perspective, examining all the inputs and outputs of the materials used during production and their associated emissions and impacts.

## 1. Introduction

Europe's public authorities spend around 14% (excluding defence and utilities) of the European Union's (EU) Gross Domestic Product (GDP) on public procurement every year, which amounts to ~€2 trillion annually (European Commission, 2016a). As major consumers, public authorities can use their purchasing power to contribute to sustainable consumption and production and stimulate eco-innovation and the development of 'greener' technologies (European Commission, 2015a). This is referred to as Green Public Procurement or GPP. GPP is a voluntary instrument meaning that public authorities can determine the extent to which they implement it. It has an important role to play in the EU's efforts to become a more resource-efficient economy by stimulating demand for more sustainable goods and services. The development of clear and verifiable environmental criteria for GPP aims to help public authorities ensure that the goods, services and works they require are procured and executed in a way that reduces their associated environmental impacts. GPP criteria have been developed by the European Commission, as well as by individual European countries at the national level.

The European Commission's communication on *Public procurement for a better environment* (COM (2008) 400) (European Commission, 2008a) defines GPP as:

*"a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured."*

Since the 2008 Communication from the European Commission, EU GPP criteria covering more than 20 products and services have been developed, including copying and graphic paper, which is the focus of this technical report.

In order to make the criteria development process more participatory, and coherent with related environmental policy instruments, such as the EU Ecolabel and GPP, a new criteria development plan, led by the Joint Research Centre's Institute for Prospective Technological Studies (JRC-IPTS), was put forward in June 2010 (European Commission, 2015b). The new process involves adopting an annual GPP work-plan in consultation with the informal GPP Advisory Group (GPP AG), comprised of representatives from Member States as well as other stakeholders from industry, public procurement professionals, and local authorities (European Commission, 2015c). The EU GPP work-plan is coordinated with the relevant EU Ecolabel work-plan to enhance the synergies between the two and streamline the process of developing and revising Ecolabel and GPP criteria for the same product groups, such as copying and graphic paper (European Commission, 2014a).

The GPP work-plan also outlines the process for revising the criteria and the stakeholders involved in doing so, which at a high level includes:

1. Drafting one preliminary report for the product group;
2. Drafting one technical report with the criteria areas for discussion and revision;
3. Holding two stakeholder consultation meetings (i.e. Ad Hoc Working Group meetings) and one written stakeholder consultation to inform the revision rounds;
4. Holding a consultation with the GPP advisory group; and
5. Adoption and publication of the EU GPP criteria.

As is the case with Ecolabel criteria, GPP criteria are revised periodically to reflect technical innovation such as evolution of materials or production processes, reductions in emissions and market advances. The Institute for Prospective Technological Studies (IPTS) based in Seville (Spain) of the Directorate General Joint Research Centre (DG JRC) is one of the European Commission's in-house science service hubs and is the body in charge of ongoing revisions to the EU Ecolabel criteria.

## 1.1 General background to GPP

The legal framework for public procurement is defined by the provisions of the Treaty on the Functioning of the European Union and by the two Directives on procurement; Directive 2014/24/EU on public procurement (repealing Directive 2004/18/EC) (European Commission, 2008a) and Directive 2014/23/EU (repealing Directive 2004/17/EC) (European Commission, 2004) on the procurement procedures of entities operating in the water, energy, transport and postal services sectors. The 2014 Directives in contrast with earlier EU Directives governing procurement, contained for the first time specific reference to the possibility of including environmental considerations in the contract award process.

Furthermore in 2008 the European Commission adopted a Communication on GPP (European Commission, 2008a), which as part of the Sustainable Production and Consumption Action Plan (European Commission, 2008b), (European Commission, 2008c), explained how environmental concerns should be taken into account at each separate stage of the contract award process. The objective of the Communication was to provide guidance on how to reduce the environmental impacts caused by the public sector consumption and how to use GPP to stimulate innovation in environmental technologies, products and services. At the EU level, the Commission set an indicative target that by 2010, 50% of all public tendering procedures should be green, where 'green' was defined as meaning compliant with endorsed common core EU GPP criteria. The Communication was accompanied by Staff working Documents which provided guidelines for public authorities on defining and verifying environmental criteria as well as legal and operational guidance.

In planning their procurement procedures, contracting authorities need to consider all stages of the process and examine where it is most appropriate to insert environmental considerations. Each of these procedures offers a number of stages where green considerations can be applied. For example this could be:

- **At the pre-procurement stage:** Prior to commencing the procurement, market dialogue may assist in identifying technologies or solutions with the potential to meet environmental objectives,
- **Via an open procedure:** All operators may submit tenders and all tenders meeting the pass/fail conditions specified by the public authority, will be eligible to have their tender assessed. The public authority will therefore have access to the maximum choice of potential environmentally friendly solutions for which to select;
- **Via a restricted procedure:** The number of operators invited to tender can be limited and an assessment of environmental technical capacity could take place at an earlier stage. The staged procedure can help the public authority determine the appropriate level of environmental performance to aim for. However through restricted procedure it is possible that offers with high environmental performance will be missed out; and
- **Via a negotiated and competitive dialogue procedure:** These procedures allow in particular for the effect of environmental requirements on cost to be better understood and controlled. However, both procedures require some level of skill and experience in engaging with suppliers if the best results are to be achieved.

As outlined in 'Buying Green' handbook, the basic steps for GPP are:

- Set priorities for the product and service groups you will address by consulting existing GPP criteria, ecolabels and other sources;
- Put in place information, training, networking and monitoring activities to ensure you reach your goals;
- Consider how green requirements will affect the procurement process for the goods and services you have chosen, and how you will implement them in line with legal obligations;
- Get an overview of the products and services available on the market by engaging suppliers and make a business case for GPP based on lifecycle costing;

- When tendering, define the subject matter and technical specifications for contracts in a way which takes into account environmental impacts throughout the life-cycle of the goods, services or works you are buying;
- Apply, where appropriate, selection criteria based on environmental technical capacity or environmental management measures and exclude tenderers who have committed serious breaches of environmental requirements;
- Set award criteria which encourage tenderers to deliver even higher levels of environmental performance than those you have specified, and apply these in a transparent way;
- Assess life-cycle costs when comparing tenders; and
- Set contract performance clauses which underline the environmental commitments made by suppliers or service providers, and provide appropriate remedies where they fall short. Ensure there is a system for monitoring these commitments.

GPP criteria are to be understood as being part of the procurement process and must conform to its standard format and rules as laid out by Public Procurement Directive 2014/24/EU (public works, supply and service contracts). Hence, EU GPP criteria must comply with the guiding principles of: Free movement of goods and services and freedom of establishment; Non-discrimination and equal treatment; Transparency; Proportionality and Mutual recognition. GPP criteria must be verifiable and it should be formulated either as Selection criteria, Technical specifications, Award criteria or Contract performance clauses, which can be understood as follows:

**Selection Criteria (SC):** Selection criteria refer to the tenderer, *i.e.*, the company tendering for the contract, and not to the product being procured. It may relate to suitability to pursue the professional activity, economic and financial standing and technical and professional ability and may- for services and works contracts - ask specifically about their ability to apply environmental management measures when carrying out the contract.

**Technical Specifications (TS):** Technical specifications constitute minimum compliance requirements that must be met by all tenders. It must be linked to the contract's subject matter (the 'subject matter' of a contract is about what good, service or work is intended to be procured. It can consist in a description of the product, but can also take the form of a functional or performance based definition.) and must not concern general corporate practices but only characteristics specific to the product being procured. Link to the subject matter can concern any stage of the product's life-cycle, including its supply-chain, even if not obvious in the final product, *i.e.*, not part of the material substance of the product. Offers not complying with the technical specifications must be rejected. Technical specifications are not scored for award purposes; they are strictly pass/fail requirements.

**Award Criteria (AC):** At the award stage, the contracting authority evaluates the quality of the tenders and compares costs. Contracts are awarded on the basis of most economically advantageous tender (MEAT). MEAT includes a cost element and a wide range of other factors that may influence the value of a tender from the point of view of the contracting authority including environmental aspects (refer to the Buying Green guide for further details), (European Commission (2016a)). Everything that is evaluated and scored for award purposes is an award criterion. These may refer to characteristics of goods or to the way in which services or works will be performed (in this case they cannot be verified at the award stage since they refer to future events. Therefore, in this case, the criteria are to be understood as commitments to carry out services or works in a specific way and should be monitored/verified during the execution of the contract via a contract performance clause). As technical specifications, also award criteria must be



linked to the contract's subject matter and must not concern general corporate practices but only characteristics specific to the product being procured. Link to the subject matter can concern any stage of the product's life-cycle, including its supply-chain, even if not obvious in the final product, *i.e.*, not part of the material substance of the product. Award criteria can be used to stimulate additional environmental performance without being mandatory and, therefore, without foreclosing the market for products not reaching the proposed level of performance.

**Contract Performance Clauses (CPC):** Contract performance clauses are used to specify how a contract must be carried out. As technical specifications and award criteria, also contract performance clauses must be linked to the contract's subject matter and must not concern general corporate practices but only those specific to the product being procured. Link to the subject matter can concern any stage of the product's life-cycle, including its supply-chain, even if not obvious in the final product, *i.e.*, not part of the material substance of the product. The economic operator may not be requested to prove compliance with the contract performance clauses during the procurement procedure. Contract performance clauses are not scored for award purposes. Compliance with contract performance clauses should be monitored during the execution of the contract, therefore after it has been awarded. It may be linked to penalties or bonuses under the contract in order to ensure compliance.

For each criterion there is a choice between two levels of environmental ambition, which the contracting authority can choose from according to its particular goals and/or constraints:

The **Core criteria** are designed to allow easy application of GPP, focussing on the key areas of environmental performance of a product and aimed at keeping administrative costs for companies to a minimum.

The **Comprehensive criteria** take into account more aspects or higher levels of environmental performance, for use by authorities that want to go further in supporting environmental and innovation goals.

This report focuses on the GPP criteria for addressing the key environmental impacts of copying and graphic paper, which are:

- Forest destruction, degradation and potential loss of biodiversity;
- Non-renewable energy consumption during production;
- Chemical consumption during production; and

The GPP approach to managing these impacts is through:

- 1) Procurement of paper based on fibres from reclaimed material (recycled paper) and/or from virgin materials sourced from legally and sustainably managed forests;
- 2) Procurement of paper produced through processes characterised by low non-renewable energy consumption; and
- 3) Procurement of paper made without the use of certain hazardous substances (e.g. related to bleaching).

## 1.2 Examples of GPP criteria for copying and graphic paper

The Communication on Integrated Product Policy (IPP) (European Commission, 2003) encouraged Member States to draw up publically available National Action Plans (NAPs) for greening their public procurement. By October 2015, 23 Member States had done so (excluding Estonia, Greece, Hungary, Luxembourg and Romania). The NAPs include an assessment of the existing situation related to GPP implementation and set targets for the next three years, outlining measures to achieve them. They are the means by which Member States address the environmental and social impacts of public procurement.

Identification and prioritisation of product groups is usually performed by considering the level of government spend on a particular product group, along with the level of environmental impact it has.

**Table 1. Situations of GPP criteria for Copying and Graphic Paper in the EU-28+Norway**

Member States with a GPP NAP			Member States with no GPP NAP
Direct adoption of EU GPP criteria	Specific national GPP criteria and available	Specific national GPP criteria but not available	
Croatia	Austria	Belgium	Estonia
Cyprus	Bulgaria	Czech Republic	Greece
Ireland	France	Denmark	Hungary
Latvia	Germany	Poland	Luxembourg
Portugal	Italy	Finland	Romania
Slovakia	Lithuania	Sweden	
Slovenia	Malta		
	Netherlands		
	Norway		
	Spain		
	UK		

The data in Table 1 implies that the bulk of the EU-28 population is covered by specific national GPP criteria that have been set for Copying and Graphic Paper and that most of these are publically available. Real life examples of the implementation of GPP criteria for the procurement of Copying and Graphic Paper is of great interest and will play a major role in determining how best to revise the existing EU GPP criteria.

Some specific examples of case studies of real contracts that have been communicated to DG Environment are summarised in below:

**Table 2. GPP case studies involving Copying and Graphic Paper (CGP)**

Background	Criteria Used	Results
Bulgarian Ministry of Environment and Water (MEW), 2009. Purchase of 8000 packs of A4 paper.	ISO 9001:2000 or equivalent. 100% recycled paper ECF or TCF paper Blue Angel and/or Nordic Swan compliant. Lowest cost wins.	Costs were found to be comparable with those for virgin paper. Later recommended to include recycled paper requirements in a central framework agreement with the Ministry of Finance.
Centrale Regionale Acquisti, Lombardy, Italy – covering some 1600 public bodies. Setting of a €5.5 million framework agreement over 18 months.	<b>Technical specifications:</b> - TCF or ECF - Producers to be ISO 9001 certified or equivalent - External packaging to be 100% recycled content - Recycled paper products must be 100% recycled content with at least 85% from post-consumer - Non-recycled paper products must be made from 100% virgin fibres from sustainably managed forests. <b>Award criteria (20% weighting):</b> - Paper with a FSC, PEFC, Blue Angel, EU Ecolabel or Nordic Swan label - Advance notice of delivery by email - Use of green vehicles for delivery - Use of green pallets for delivery	Benefits of purchasing paper of 75gsm are reported due to fewer raw materials used (as opposed to the 80gsm standard).  Final results not reported but the quality of paper delivered is to be monitored with the support of an external laboratory during the duration of the contract.

Background	Criteria Used	Results
Public Procurement and Supply Directorate General, Hungary. A €14.5 million framework agreement lasting for 18 months, covering 1000 public authorities in 2010-2012 and specifically covering the supply of office paper, paper products, stationery and office supplies.	<b>Technical specifications for office paper:</b> - 100% recycled fibres - Compliance with criteria set out in EU Ecolabel or other Type I ecolabels that relate to paper production (i.e. TCF or ECF but not ISO 9001). <b>Verification:</b> Products carrying the EU Ecolabel or other type I ecolabels deemed to comply, otherwise dossiers demonstrating proof must be submitted.	A total of 16% of total expenditure within the framework was for green products. No increased administrative burden was noted. Furthermore, the availability of products meeting these criteria was found to be good.
Central Procurement Office, Wiesbaden, Germany. A two year framework for the supply of office stationery for 190 city authorities (starting Oct. 2012).	<b>Relevant technical specifications:</b> -100% recycled paper -Chlorine-free paper <b>Relevant verification:</b> Products carrying a relevant ecolabel, such as FSC or Blue Angel shall be deemed to comply.	No notable increase was noted in the supplies of eco-alternatives to paper although for other stationery some price premium was noted or a distinct lack of eco-alternatives was available from suppliers of the cheapest products.
Gloucestershire County Council, UK. Open procurement procedure using e-auctions for price evaluation under a national framework agreement established in 2012.	<b>Relevant technical specifications:</b> -100% recycled content -Use environmentally efficient delivery routes <b>Award criteria</b> 2% weighting for "overall environmental considerations".	Importance of minimising the need for procurement of office stationery in general was highlighted as the most sustainable solution. Then the added benefits of using centralised framework agreements were pointed out as well as guidance from e.g. the Marrakech Taskforce approach.
Brussels Environment (IBGE), Belgium. A 36 month framework contract to run an in-house store for the supply of green stationery and paper to up to 57 public organisations since 2011.	<b>Relevant technical specifications:</b> -Packaging to be at least 80% recyclable fibres -Paper to be 100% recycled (at least 80% from post-consumer sources) -Paper shall not contain glyoxal, optical brighteners, EDTA or DTPA. -Paper should be free of synthetic polymers, glue, water-proofing agents or colours with a CMR classification. -Formaldehyde content < 1mg/dm <sup>2</sup> of paper -Pigments or colours shall not contain Cu, Pb, Cr, Ni or Al or traces of Cd >20ppm or Hg, Pb, Cad or Cr > 4ppm. <b>Verification:</b> A relevant type I ecolabel such as EU Ecolabel, Blue Angel or Nordic Swan may be used as proof of compliance or other analytical certificates.	A total of 27 out of a maximum 57 organisations were using the in-house store for office stationery, selling €190,000 of office stationery, 56% of which were "green" products.
City of Ghent, Belgium. A €2 million, four year framework for the procurement of paper and office supplies starting in Feb 2013.	Relevant sustainability criteria: Preference for 100% post-consumer recycled paper, then a mixture of sustainable virgin fibres following the FSC and PEFC label requirements. Unbleached, ECF or TCF paper	The introduction of preferential consideration for green criteria relating to transport helped raise awareness amongst suppliers. Some problems occurred when trying to establish if paper was 100% post-consumer recycled and not simply 100% recycled (i.e. pre- and post-consumer).

The key findings from this case studies are that GPP with Copying and Graphic Paper is being actively used, that there are many companies offering products with green credentials (such as recycled content, FSC or PEFC labelling and bleached without the use of chlorine gas (i.e. ECF or TCF), and that there appears to be no notable price premium for "green" paper products.

### **1.3 Scope and Objectives**

The EU Ecolabel and EU GPP criteria revision periods are aligned to make the best use of synergies for the products covered by both sets of the criteria. The overall aim of this project therefore is to assess the need for updating and developing new criteria for the copying and graphic paper product group. This has involved evaluating the existing GPP criteria for copying and graphic paper and identifying which are still relevant, which need revising to better address existing concerns and whether any new criteria need to be introduced for areas of concern not currently captured.

As technological development progresses, new products and processes become available or economically viable. Furthermore, in some cases legal requirements have become stricter over the last couple of years (e.g. the use of hazardous substances in paper manufacturing or in waste disposal). These developments have to be mirrored in the EU Ecolabel criteria in order to represent today's market, the available innovations, products and processes and the latest legal requirements. These revisions should also be reflected in the EU GPP criteria, where applicable. The criteria must be kept up to date in line with market advances, otherwise they run the risk of becoming meaningless as a basis for highlighting good performance.

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## 2. Preliminary report summary

This section summarises the main conclusions of the PR, which presents background research carried out for the EU Ecolabel for three paper product groups: copying and graphic paper (CGP), newsprint paper (NP) and tissue paper (TP). The most relevant parts to EU GPP criteria for CGP are highlighted in this chapter.

The full preliminary report can be found on the BATIS platform for registered stakeholders and also at the project website:

[http://susproc.jrc.ec.europa.eu/Paper\\_products/](http://susproc.jrc.ec.europa.eu/Paper_products/) .

### 2.1 Paper product group names, scopes and definitions

The current scope and definitions for CGP are presented in the context of the terminology and classification systems of CEPI, ISO/TC 6 EN 643 and NACE. One way of classifying different paper grades is according to their intended use. In this respect, CGP falls under the category "*informative use*".

Another way of splitting different paper products, which is generally used when reporting market data, is based on the raw material inputs and finishing processes that apply to the paper product, for example:

- Uncoated mechanical pulp
- Uncoated wood-free pulp
- Super-calendered paper
- Lightweight coated paper
- Wood-free coated etc.

The existing scopes and definitions for CGP are presented and compared with the definitions set out in other relevant ecolabels, namely Nordic ecolabel, Blue Angel (Germany), Richtline (Austrian ecolabel) and Green Seal (US). Considerable differences exist between each of the different ecolabels for the scopes and definitions of CGP.

Stakeholder feedback from the scoping questionnaire was also presented which approximately one third of active respondents wanted a change in the CGP scope and definition for the EU Ecolabel that was published in 2011.

### 2.2 Policy context

The climate change strategy is arguably the most important policy because the pulp and paper industry is directly included with the EU Emissions Trading Scheme.

The recently released Circular Economy Package will make an additional case for improving waste paper recovery rates (which are already quite high in Europe) but also encourage a reduction in landfilling of wastes from the pulp and paper industry.

Forest related policies, in particular Forest Europe, to which all 28 EU Member States have signed up, will be important in developing a coherent approach to the assessment, monitoring and reporting of the state of Europe's forests. However, it could be argued that market-driven initiatives (predominantly FSC and PEFC) have already taken the lead on Sustainable Forest Management in Europe.

## 2.3 Market analysis

The market analysis revealed that there is a positive growth in the tissue and packaging paper production, which offset the decline in global graphic paper production (WAN-IFRA, 2014). The move towards digitalisation across most developed economies in North America and Europe has meant that the global paper and pulp mills industry contracted slightly over the past five years (-0.4%), but this has been partially offset by the manufacturing boom in many emerging economies (IBIS World, 2015).

The consumption of paper and board is strongly related to standards of living and the economic situation of user populations, so it is expected that global paper consumption will continue to grow as emerging economies grow, estimated at a rate of ~1.6% per year. It is also expected that global paper consumption will reach 500 million tonnes in 2025. Alongside emerging economies, demand in Eastern Europe is also growing at a fast rate (Finnish Forest Industries, 2013). Furthermore, urbanisation is associated with the increase in demand for hygienic products such as tissue paper, for which consumption is also expected to grow at an annual rate of 2.4% over the next five years.

The paper industry is dominated by a few players, with the top 20 companies generating ~40% of the total global paper and paperboard production. The biggest players are International Paper and Kimberly-Clark from the United States, Stora Enso and UPM-Kymmene from Finland, and Oji Paper and Nippon Paper Group from Japan. Europe is the second largest producer and the third largest consumer of paper and board, with North America being the leader, and Asia coming in at third place. The annual production of wood pulp in Europe is about 41.8 million tonnes/year, representing about 22% of the world's total pulp production (Forestry Commission, 2005). Furthermore, in 2014, the European pulp and paper industry consumed almost 147 million m<sup>3</sup> of wood chips and roundwood (CEPI, 2016).

Europe also plays a very important role in the recycled fibre (RCF) market. Along with North America, Europe has the highest recovery rate for paper (62% in 2013), followed by the Asia-Pacific region (51% in 2013). This is a reflection of the global increase in recycled paper collection, from 31 million tonnes to over 210 million tonnes between 1970 and 2010 (Agriculture & Agri-Food Canada, 1997). Europe also has the highest utilisation rate of fibres in the world (71.7% in 2013) (CEPI, 2014a).

However, it can now be observed that some Member States are reaching the saturation level of the paper recycling potential. Recovered paper cannot be efficiently used in all paper grades, nor can it be used indefinitely because of shortening up of the fibre length, and a decrease in its quality and usability. Fibre shortens every time it is used and at some point, usually after 4-6 cycles, it is too short to be used in papermaking. Therefore at the macro-scale level, to ensure product quality, a certain amount of virgin pulp input will always be needed.

With regards to the EU Ecolabel, the CGP is one of the most successful product groups in terms of licensed products on the market. As of September 2015, a total of 60 licences had been issued for CGP producers, covering a total of 3,921 individual products, as shown in below.

**Table 3. EU Ecolabel uptake for Tissue, Copying and Graphic and Newsprint Paper product groups**

Product Group	Number of Licences	Number of Products	Awarding Competent Bodies
Copying and Graphic Paper	60	3,921	Austria (6), Finland (5), France (8), Germany(20), Italy (1), the Netherlands (2), Norway (2), Poland (2), Portugal (1), Slovenia (1), Spain (4), Sweden (7) and United Kingdom (1)

## 2.4 Life-cycle analysis

The life cycle analysis revealed that the key environmental impacts associated with the pulp and paper products are:

- Forest destruction and potential loss of biodiversity from sourcing of raw materials (although this is not well captured by land use indicators, land classification factors or biodiversity indicators using current LCA methodology);
- Emissions to air during pulp and paper production (especially CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>x</sub>);
- Emissions to water during pulp and paper production (especially COD, AOX and P);
- Energy consumption during production (mainly fuel for pulp mills and electricity for paper mills);
- Water consumption during pulp and paper production
- Energy and ecotoxicity due to the production and uses of chemicals during pulp and paper production;

An illustration of the degree of importance of different normalised impacts for a representative graphic paper intermediate product is illustrated in Figure 1.

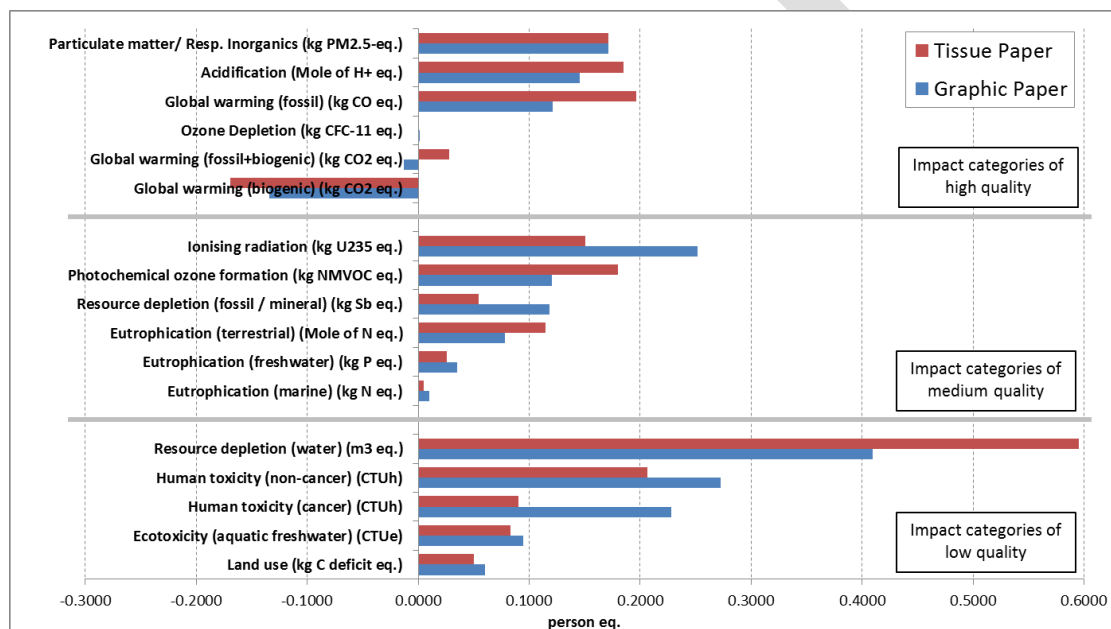


Figure 1. Identification of most relevant impact categories for a representative graphic paper intermediate product (source PEFCR screening study).

It should be noted that, due to the intermediate nature of the product, the data in Figure 1 does not include the use phase or End-of-Life (EoL). However, it is widely accepted that the use phase is negligible and that the EoL impacts are highly dependent on consumer behaviour and the local waste management infrastructure, which will influence whether paper ends up producing uncontrolled methane emissions in a landfill, is incinerated with or without energy recovery or is recycled.

Raw material acquisition was the dominant stage for global warming (biogenic), human toxicity and land use impact categories. This stage was also important for ozone depletion (mainly due to incomplete combustion of fossil fuels in chainsaws and logging machinery) and marine eutrophication (mainly due to nitrogen fertiliser



production and application). All other impact categories were dominated by the pulping and/or papermaking stages.

The life-cycle analysis also looked in more detail at the hotspots identified to determine at which life cycle stage, at the level of specific processes, the largest contributions to each impact category occurred. It was found that:

- The dominant life-cycle stage for each impact category is either related to virgin pulp production or the papermaking process.
- The energy use (fuel and electricity), chemical production and chemical use in both the pulping and papermaking stages were the sources of most impacts.
- The sourcing of wood (impacts on climate change and land use) and water resource depletion (for the pulping and papermaking processes) were also identified as important.
- The most significant impacts were related to human toxicity (non-cancerous effects), climate change, acidification, photochemical ozone formation, particulate matter/respiratory inorganics and ionising radiation.

The link between the LCA and non-LCA impacts and the revised EU Ecolabel criteria are presented in **Table 4** below.



**Table 4. Link between the hotspots identified (LCA and non-LCA impacts) and the revised EU GPP criteria**

Identified hotspots (LCA impacts)	Revised or new EU Ecolabel criteria	Comments on the related criteria
<b>Resource depletion (water)</b>	Criterion 3 – Water minimisation	New criterion proposed for water minimisation, to ensure reduced water abstraction for the pulping and papermaking stages.
<b>Acidification</b>	Criterion 2– Energy use Criterion 4 – Excluded / Limited Substances	It ensures a reduction in energy use, which is the main source of indirect emissions in the pulping and papermaking processes. It limits the hazardous substances and mixtures that can be included in paper, limiting environmental and health risks for consumers.
<b>Particulate Matter / Respiratory Inorganics</b>	Criterion 2– Energy use Criterion – Excluded / Limited Substances	It ensures a reduction in energy use, which is the main source of indirect emissions in the pulping and papermaking processes. It limits the hazardous substances and mixtures that can be included in paper, limiting environmental and health risks for consumers.
<b>Climate change (fossil/biogenic)</b>	Criterion 2– Energy use Criterion 1 – Fibres Criterion 4 – Excluded / Limited Substances	It ensures a reduction in energy use, which is the main source of indirect emissions in the pulping and papermaking processes. It ensures a reduction in energy use, which is the main source of indirect emissions in the pulping and papermaking processes. It limits the hazardous substances and mixtures that can be included in paper and pulp, limiting environmental and health risks for consumers.
<b>Photochemical ozone formation</b>	Criterion 2– Energy use Criterion 1 – Fibres Criterion 4– Excluded / Limited Substances Transport	It ensures a reduction in energy use, which is the main source of indirect emissions in the papermaking processes. Reduces use of virgin fibres and increases use of recycled/recovered fibres, thereby reducing the need to cut down trees which can contribute to ozone depletion. It limits the hazardous substances and mixtures that can be included in paper, limiting environmental and health risks for consumers. Out of the scope of this policy tool
<b>Human toxicity (non-cancer)</b>	Criterion 2– Energy use Criterion 4– Excluded / Limited Substances Paper mill infrastructure	It ensures a reduction in energy use, which is the main source of indirect emissions in the papermaking and pulping processes. It limits the hazardous substances and mixtures that can be included in paper and pulp, limiting environmental and health risks for consumers. Infrastructure improvements have no direct link to EU GPP criteria, which is the main reason for not developing EU GPP criteria
<b>Human toxicity (cancer)</b>	Criterion 2 – Energy use Criterion 4 – Excluded / Limited Substances Paper mill infrastructure	It ensures a reduction in energy use, which is the main source of indirect emissions in the pulping process. It limits the hazardous substances and mixtures that can be included in pulp, limiting environmental and health risks for consumers. Infrastructure improvements have no direct link to EU GPP criteria, which is the main reason for not developing EU GPP criteria
<b>Ionising radiation</b>	Criterion 2 – Energy use Criterion 4– Excluded / Limited Substances	It ensures a reduction in energy use, which is the main source of indirect emissions in the papermaking and pulping processes. It limits the hazardous substances and mixtures that can be included in paper and pulp, limiting environmental and health risks for consumers.

Identified hotspots (LCA impacts)	Revised or new EU Ecolabel criteria	Comments on the related criteria
<b>Eutrophication (freshwater)</b>	Criterion 2 – Energy use Criterion 4 – Excluded / Limited Substances Paper mill infrastructure	It ensures a reduction in energy use, which is the main source of indirect emissions in the papermaking and pulping processes. It limits the hazardous substances and mixtures that can be included in paper, limiting eutrophication and thereby environmental and health risks for consumers. Infrastructure improvements have no direct link to EU GPP criteria, which is the main reason for not developing EU GPP criteria
<b>Ozone Depletion</b>	Criterion 2 – Energy use Criterion 4 – Excluded / Limited Substances	It ensures a reduction in energy use, which is the main source of indirect emissions in the pulping and papermaking processes. It limits the hazardous substances and mixtures that can be included in paper and pulp, limiting environmental and health risks for consumers.
<b>Land use</b>	Criterion 2 – Energy use Criterion 1 – Fibres	It ensures a reduction in energy use, which is the main source of indirect emissions in the papermaking process. Reduces use of virgin fibres and increases use of recycled/recovered fibres, thereby reducing the need to cut down trees which can contribute to land use changes.
<b>Resource depletion (fossil / mineral )</b>	Criterion 1 – Fibres Criterion 4 – Excluded / Limited Substances	Reduces use of virgin fibres and increases use of recycled/recovered fibres, thereby reducing the need to cut down trees which can contribute to resource depletion. It limits the hazardous substances and mixtures that can be included in paper and pulp, limiting environmental and health risks for consumers.
<b>Eutrophication (terrestrial)</b>	Criterion 2 – Energy use Criterion 4 – Excluded / Limited Substances Transport	It ensures a reduction in energy use, which is the main source of indirect emissions in the papermaking process. It limits the hazardous substances and mixtures that can be included in paper, limiting eutrophication and thereby the environmental and health risks for consumers. Out of the scope of this policy tool
<b>Eutrophication (marine)</b>	Criterion 2 – Energy use Criterion 4 – Excluded / Limited Substances	It ensures a reduction in energy use, which is the main source of indirect emissions in the papermaking and pulping processes. It limits the hazardous substances and mixtures that can be included in paper and pulp, limiting eutrophication and thereby the environmental and health risks for consumers.
<b>Ecotoxicity (aquatic freshwater)</b>	Criterion 2 – Energy use Criterion 4 – Excluded / Limited Substances Paper mill infrastructure	It ensures a reduction in energy use, which is the main source of indirect emissions in the pulping process. It limits the hazardous substances and mixtures that can be included in paper and pulp, limiting the environmental and health risks for consumers. Infrastructure improvements have no direct link to EU GPP criteria, which is the main reason for not developing EU GPP criteria

## 2.5 Technical analysis

The technical analysis outlined the well-known main processes involved in the papermaking process, to include pulping, bleaching, paper production and conversion.

The environmental analysis revealed that best practice in paper production involves using low environmental impact processes and technologies, implementing more effective business strategies and producing products with improved quality. Combined with sustainable behaviours during the use phase, these can result in more eco-friendly products.

The list of best practices by impact category is presented below.

- Switching from fuel oil or coal to natural gas in onsite CHP and/or secondary boilers.
- Switching from natural gas to biomass in onsite CHP and/or secondary boilers.
- Use degasification units for bark/black liquor processing.
- Reducing bleaching chemical consumption with optimised sequences and/or enzymes.
- Washing of lime sludge to remove sulfur prior to the lime kiln.
- Increasing the quantities of fibres sourced from sustainably managed and third party certified forests and/or locally available recovered paper.

### 1. Fibre sourcing: virgin, recycled and non-wood:

- Use of wood from sustainably managed sources; and
- Optimize the use of fibre from recycling;

### 2. Fuel and electricity consumption, CO<sub>2</sub> emissions and climate change:

- Substitute coal or fuel oil for natural gas, substitute natural gas for biomass
- Replace traditional boilers with Combine Heat and Power (CHP) units;
- Upgrade recovery boiler units to gasification combined cycle technology

### 3. Water consumption:

- Optimize the closure of water circuits; and
- Minimise water consumption, use of water savings techniques;

### 5. Emission to water:

- Use environmentally benign bleaching sequences;
- Minimize the use of poorly biodegradable organic substances;
- Optimise the dosing of N and P to wastewater treatment processes;

### 5. Emission to air:

- Reduce sources that contribute to acidification (sulphur); and
- Modernise recovery boilers, replace with gasification combined cycle units;

### 6. Solid waste:

- Implement integrated waste management plan, minimise waste generation and maximise recycling and waste recovery;

The analysis of best practices undertaken in the preliminary report will be expanded further following the first AHWG meeting, to reflect input from the stakeholders.

### 3. Scope and definition

The following section presents the proposed revisions to the scope and definition for copying and graphic paper. Where revisions or additions have been proposed, these have been highlighted **in yellow**.

Table 5. Existing and proposed scope and definition for copying and graphic paper

Existing scope and definition
<p><b>Copying and graphic paper: This encompasses unprinted paper for writing, printing and copying purposes (up to 170g/m<sup>2</sup>) sold in sheets and reels.</b></p> <p><b>Finished paper products such as writing pads, drawing books, calendars, manuals, etc. have not been included.</b></p>
Proposed scope and definition
<p><b>Copying and graphic paper: The product group shall comprise sheets or reels of not converted, unprinted blank paper. It will include paper used for copying, writing and printing.</b></p> <p><b>Finished paper products such as writing pads, drawing books, calendars, manuals, etc. are excluded from the scope.</b></p>

#### Rationale

The current EU GPP criteria for copying and graphic papers make specific reference to an upper grammage limit (170g/m<sup>2</sup>) when defining the product group.

The generic term 'paper' actually includes both paper and board. Broadly speaking, paper products have a lower grammage than board products but there is some overlap. A better way to distinguish between paper products is by their intended functional use. Board is used mainly in packaging while paper can be used to store, collect and distribute information (i.e. Copying and Graphic Paper and Newsprint Paper). Following the CEPI definition uncoated printing and writing paper is:

*"paper suitable for printing or other graphic purposes where less than 90% of the fibre furnish consists of chemical pulp fibres (CEPI, 2014a). According to the consultation conducted by IPTS the typical grammage of office printing paper is approx.70-85 g/m<sup>2</sup>"*

The preliminary report (section 2.1) raised the problem of possible constraints of the scope based on the grammage restrictions. Given the fact that the origin of the current limit value of 170 g/m<sup>2</sup> is unclear and rather artificial, it is proposed to refer to the final product functionality only (i.e. copying, writing and printing), and withdraw the reference to the paper grammage.

Finished paper products such as writing pads, drawing books, calendars, etc are excluded from the current GPP scope. These products are also excluded from the scope of EU Ecolabel Copying and Graphic Paper but are covered in separate dedicated Decisions for EU Ecolabel Printed Paper (Decision 2012/481/EU) and EU Ecolabel Converted Paper (Decision 2014/256/EU). So it is proposed to maintain the same separation with EU GPP criteria, which is already the case with the existing EU GPP criteria.

*Discussion point:*

**Q. Should any upper limit for grammage be introduced and if so why?**

## 4. Proposed GPP criteria

The existing GPP criteria (available [here](#)) have been initially considered in light of the background research reported in the draft Preliminary Report (available [here](#)) and recent experience with the development of similar EU GPP criteria for other product groups. The proposed and existing criteria are compared below.

An overview of the existing and proposed criteria is provided below.

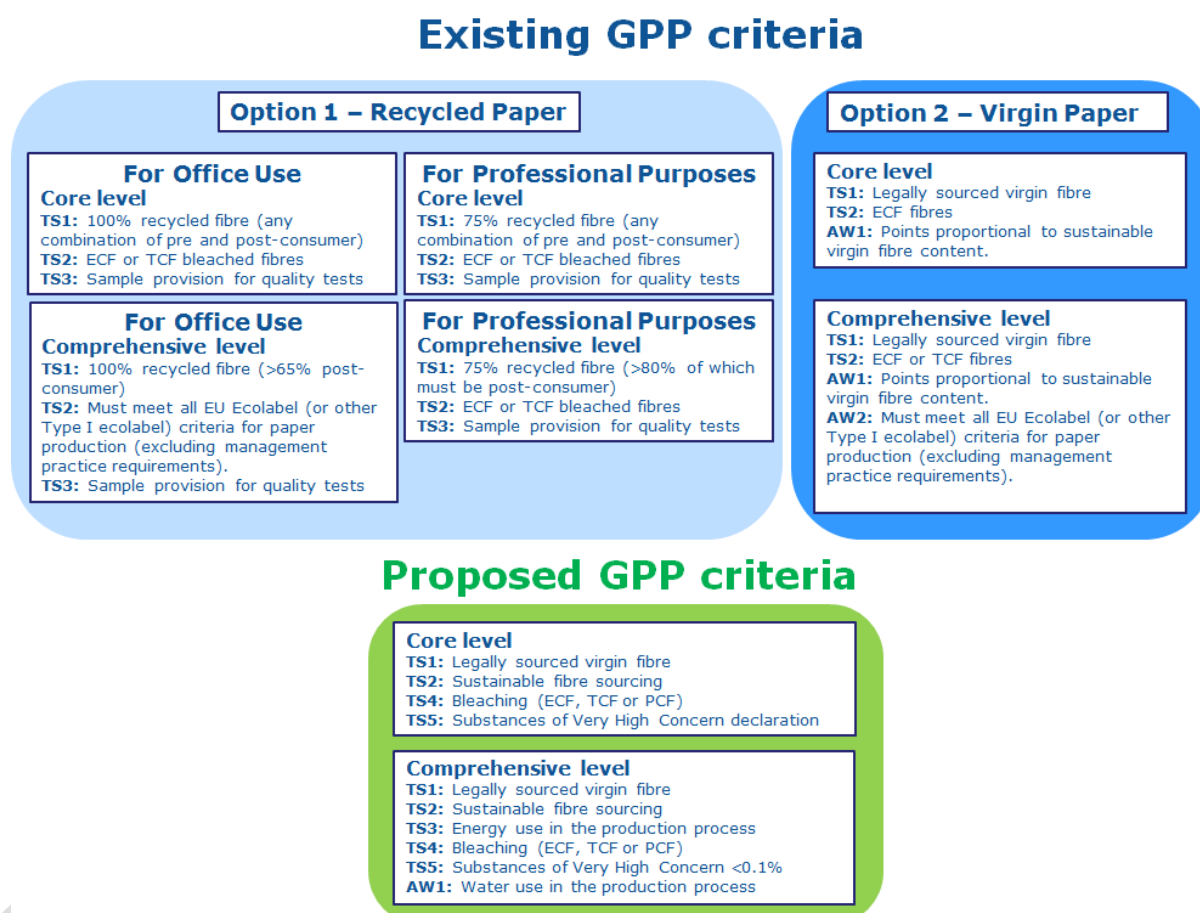


Figure 2. Comparison of existing and proposed EU GPP criteria structures

The existing EU GPP criteria structure is quite complex. There are two broad categories of criteria grouped under (i) Recycled paper and (ii) Virgin paper. The precise reasons for this distinction are unclear but appear to mirror the different stances taken in type I ecolabels for this product group, with Blue Angel having mandatory recycled fibre contents and the EU Ecolabel and Nordic Swan making requirements for virgin fibres. The option for recycled paper is further subdivided into "office use" and "professional purposes" although the added value of this distinction is unclear.

The proposed EU GPP criteria avoid such distinctions by considering virgin fibres from sustainably managed forests as equivalent to recycled fibres. No distinction is made between paper for office use and paper for professional purposes.

The proposed criteria cover the same issues as the existing criteria but also extend into new areas (energy and water consumption) which are closely related to the main environmental impacts associated with pulp and paper production. The next sections in

this chapter present each proposed criterion (together with the existing criterion where applicable) and provide supporting rationale for the proposed criteria.

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## 4.1 Fibre sourcing

### 4.1.1 Background technical aspects, discussion and rationale

#### Illegal logging

According to research undertaken by the Chatham House in 2015 (Alison Hoare, 2015), more than 80 million m<sup>3</sup> of timber was harvested illegally in 2014 by nine producing countries<sup>1</sup> (measured as roundwood equivalent (RWE) volume). This is equivalent to one-third of their total production of timber, releasing 190 million tonnes of carbon dioxide into the atmosphere. The reasons provided by the report is that new markets for timber have diluted the impact of policies introduced by some developed countries. Half of all the trade in illegal wood-based products is now destined for China, the largest consumer as well as a major processing hub. At the same time, domestic demand for timber has been rising in producer countries, providing a market for both legal and illegal timber. Furthermore, more forest is being cleared for agriculture and other land uses. As much as half of all tropical timber traded internationally now comes from forest conversion, of which nearly two-thirds is thought to be illegal. Finally, logging by small-scale producers has soared in many countries. Such activity is often illegal and remains beyond the scope of many policy and regulatory efforts.

Impacts of illegal logging include the loss and degradation of forests; loss of habitat and biodiversity; implications for climate change adaptation and mitigation; loss of government revenue leading to loss of employment and of exports; distorted global prices as illegal timber is often cheaper; lack of recognition of land and resource use rights of forest communities with knock-on effects on their livelihood; and even the funding of national and regional conflicts (Illegal Logging Portal, 2016).

#### Legal fibres

The requirements for legal sourcing of timber and timber products in 2008 were largely covered by valid Voluntary Partnership Agreements (VPAs) under the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan, as well as valid licenses under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) are considered to comply with the requirements of the Regulation. This is reflected in the wording of the existing GPP criterion.

In March 2013, the EU Timber Regulation (EC) No 995/2010 (EUTR) came into force. The EUTR aims to counter trade in illegally harvested timber and timber products, covering a range of timber products including solid wood products, flooring, plywood, pulp and paper. It does not include recycled products as well as printed papers such as books, magazines and newspaper but it does apply to both imported and domestically produced timber and timber products and sets out three key obligations:

- It prohibits the placing on the EU market for the first time of illegally harvested timber and products derived from such timber;
- It requires EU traders who place timber products on the EU market for the first time to exercise due diligence (i.e. undertake a risk management exercise so as to minimise the risk of placing illegally harvested timber or timber products containing illegally harvested timber on the EU market through access to information, a risk assessment and risk mitigation); and

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<sup>1</sup> These are Brazil, Cameroon, the Democratic Republic of the Congo [DRC], Ghana, Indonesia, Laos, Malaysia, Papua New Guinea [PNG] and the Republic of the Congo.

- It requires economic operators (traders) to keep records of their suppliers and customers to facilitate the traceability of timber products.

Although a basic legal requirement, by requiring compliance to be demonstrated as part of EU GPP criteria, this will help raise awareness among both procurers and suppliers about the requirements of the EUTR. There is a particular need for paper producers to conduct due diligence when dealing with market pulps supplied from Asia, Africa or South America in countries which have high incidences of illegal logging.

### **Sustainable fibres**

Sustainable forestry and the adverse environmental impacts of deforestation originally came to the fore around 1990. Since then, a political commitment at the ministerial level in Europe to the definition, monitoring, understanding and promotion of sustainable forestry has become well established under the voluntary Forest Europe initiative, to which 46 European countries have now signed up.

The environmental impact of wood harvesting from forests or plantations can vary significantly depending on how the whole process is carried out and how the forest or plantation is managed in the long term. In terms of LCA impact categories, the harvesting of wood has a strong influence on global warming potential and land use as well as impacts on biodiversity.

Positive impacts on climate change due to the sequestration of carbon in the wood biomass and in forest/plantation soil are obvious although these short term positive impacts are meaningless in the long term if the harvesting operation results in net deforestation or forest degradation.

The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (IPCC, 2014) quotes forestry and land use as the second most important source of anthropogenic carbon dioxide (fossil fuel combustion being the first). These conclusions are supported by other independent scientific studies, *e.g.*, the work carried out by van der Werf et al., (2009). The subject is sufficiently important to have been addressed specifically in an IPCC special report (IPCC, 2000) and the development of the "United Nations Reducing Emissions from Deforestation and forest Degradation" [UN-REDD](#) initiative.

Land use impacts are generally negative due to the need for building access roads and clear-cutting operations but the latter impact can be minimised over the longer term when the harvested area is replanted and the forest or plantation is managed in a manner that maintains or enhances the levels of growing stock in the forest/plantation. Land use change relating to forestry operations can in some limited cases be positive (due to land reclamation or the conversion of intensive agricultural land to plantations) but can also be negative (due to the conversion of naturally regenerated or primary forests to plantations).

Threats to biodiversity caused by forestry activities are evident if care is not taken to maintain minimum levels of deadwood and a minimum spread of different tree species and ages in the forest unit.

### **Recycled fibres versus sustainable virgin fibres**

The use of recycled fibres in paper products instead of virgin fibres reduces demands on forest resources, process energy and water consumption (The UBA, 2013), (The UBA, 2015). Consequently, paper recovery should be maximised. Nevertheless, the technical requirements of the final product and market availability should be taken in to account when considering any mandatory minimum recycled fibre content.



Europe is the global leader in recovery and utilisation rates of secondary fibres (71.7% in 2013) (CEPI, 2014b). The recycling rate has increased significantly from around 40% in 1990 to 62% in 2005, but has started levelling off in the last five years. This is likely due to a combination of factors. Some Member States may now be reaching the saturation level of the paper recycling potential. Flows of recovered paper are increasingly leaving Europe for China, where they are incorporated into packaging which, at the end of its life, is not typically suitable for recycling into Copying and Graphic Paper. Actual consumption rates of Copying and Graphic Paper are starting to decline in Europe, translating into a lower quantity of recovered paper entering the system (for a given reutilisation rate).

Although the use of recovered fibres is both economically and ecologically sound, for some paper grades a certain amount of virgin fibre input will be required to reach technical parameters. 70% fibre from reclaimed material and 30% virgin fibre is therefore specified as accepted under some of the ecolabel schemes.

Unlike metals, and to some extent plastics, paper fibres cannot be recycled indefinitely. After being recycled on average 4-6 times, a reduction in the strength characteristics of the recycled paper pulp occurs due to a lower swelling capacity of fibres amongst other factors. As such, from a techno-economic perspective, there is an optimum level of recycled fibre in the product as a whole (PIRA International, 2005).

According to the European Recovered Paper Council, the average number of times a paper fibre is collected and recycled was 3.5 in Europe in 2012 (compared to 2.4 for the global average). So there is a continual need for fresh virgin fibres to enter into the paper cycle. Some industry stakeholders have confirmed a perceived reduction in recovered fibre quality which makes the production of good quality, high recycled fibre content paper products more challenging in Europe.

### Ambition level

The dominant market schemes for ensuring a minimum content of recycled fibre and/or virgin fibre from sustainably managed sources are FSC and PEFC. Although there are some differences in how each scheme operates and the precise criteria to be met for each label, both schemes have a common general threshold of 70% which applies to all of their labels (except for the "FSC 100%" label).

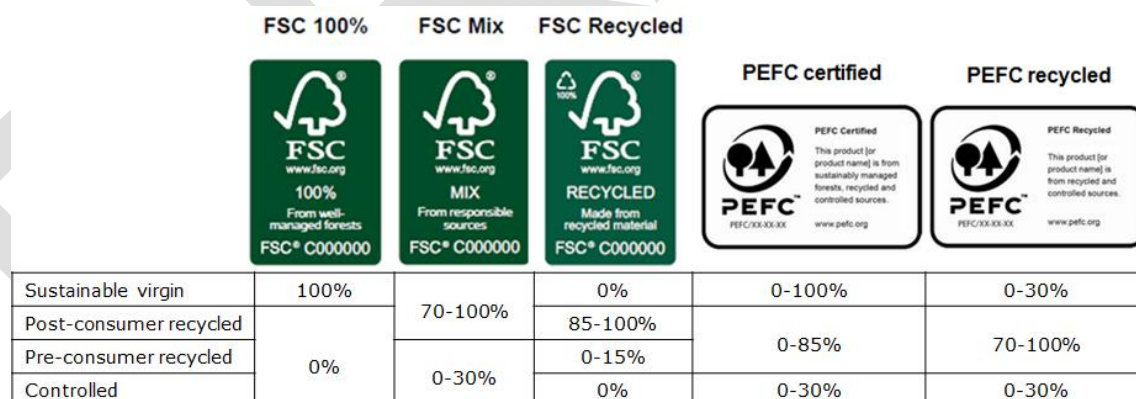


Figure 3. FSC and PEFC label requirements.

By setting a threshold of 70% as the ambition level for sustainable fibres (either sustainable virgin and/or recycled), the ambition level matches well with those of existing labelling schemes that predominate in the market today.

## 4.1.2 Technical Specification 1: Sourcing of legal fibres

Table 6. Existing EU GPP criteria for legal sourcing of fibres

Core level	Comprehensive level
<p><i>Technical Specification - Purchase of office paper based on virgin fibre stemming from legally and/or sustainably harvested sources (also potentially containing a percentage of recovered fibres):</i></p> <p>The virgin fibre for pulp production shall come from legal sources.</p> <p><i>Verification:</i> Certificates of chain of custody for the virgin fibre certified as FSC, PEFC or any other sustainable forest management standard where the percentage of certified wood is indicated, will be accepted as proof of compliance for that percentage. The legal origin of wood can also be demonstrated with a tracing system being in place. These voluntary systems may be 3rd party certified, often as part of ISO 9001:2008 and/or ISO 14001:2004 or EMAS management system. If wood stems from a country that has signed a Voluntary Partnership Agreement (VPA) with the EU, the FLEGT license may serve as proof of legality. For the non-certified virgin fibre, bidders shall indicate the types (species), quantities and origins of fibres used in the pulp and paper production, together with a declaration of their legality. As such the fibres shall be able to be traced throughout the whole production chain from the forest to the product. In specific cases, where the evidence provided is not considered sufficient to prove compliance with the requested technical specifications, contracting authorities may ask suppliers for further clarifications or proof.</p>	

The existing criterion above only applies when paper containing virgin fibres is involved in the procurement process and so does not apply to paper made from 100% recycled fibres. The proposed criteria are provided below.

Table 7. Proposed EU GPP criteria for legal sourcing of fibres

Core criteria	Comprehensive criteria
<p><b>TECHNICAL SPECIFICATIONS</b></p>	
<p><b>TS1. Legal harvest of timber for pulp production</b></p> <p>The virgin fibre for pulp production shall have originated from timber that has been legally harvested in accordance with Regulation (EU) 995/2010 (the 'EU Timber Regulation').</p> <p><b>Verification:</b></p> <p>At the latest by the time of the award of the contract, the contractor shall provide information on:</p> <ol style="list-style-type: none"> <li>The operators<sup>2</sup> or the traders<sup>3</sup> (as defined in Regulation (EU) 995/2010) who will supply either the paper products, the pulp or the timber for pulp production: Furthermore, where applicable, evidence of the means whereby traders further down the supply chain ensure traceability, in accordance with Article 5 of Regulation (EU) 995 of 2010, shall be provided.</li> <li>Evidence of the risk assessment and mitigation procedures put in place by the operator(s) first placing on the EU market the paper products, the pulp or the timber for pulp production, in accordance with Article 6(1) (b) and (c) of Regulation (EU) 995 of 2010 This may include certification or other third party verified schemes.</li> </ol> <p>Timber covered by valid EU FLEGT or CITES licenses shall be considered to have been legally harvested according to Regulation (EU) No 995/2010.</p>	

Summary of rationale:

- Proof of legal sourcing of fibres is required to ensure against contributing to the adverse environmental impacts caused by illegal logging and deforestation.

<sup>2</sup> 'operator' means any natural or legal person that places timber or timber products on the market

<sup>3</sup> 'trader' means any natural or legal person who, in the course of a commercial activity, sells or buys on the internal market timber or timber products already placed on the internal market

- Direct reference is now made to the EU Timber Regulation (EC) No 995/2010, which was not in force when existing EU GPP criteria were originally published in 2008.

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### 4.1.3 Technical specification 2: Sourcing of sustainable fibres

Table 8. Existing EU GPP criteria for sustainable fibres

Core level	Comprehensive level
<p><b>Technical Specification - recovered paper fibres:</b></p> <p><b>Normal office use:</b> Paper must be made from 100% recovered paper fibres. Recovered paper fibres include both post-consumer recycled fibres and pre-consumer recycled fibres from paper mills, also known as broke. Post-consumer recycled fibres may come from consumers, offices, printing houses, bookbinders, or similar.</p> <p><b>Professional purposes:</b> Paper must be made from at least 75% recovered paper fibres. Recovered paper fibres include both post-consumer recycled fibres and pre-consumer recycled fibres from paper mills, also known as broke. Post-consumer recycled fibres may come from consumers, offices, printing houses, bookbinders, or similar.</p> <p><b>Verification:</b> All products carrying any type I ecolabel, such as the EU Ecolabel can serve as means of proof if it is specified that the paper is made from 100% recovered paper fibres. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body will also be accepted.</p>	<p><b>Technical Specification - recovered paper fibres:</b></p> <p><b>Normal office use:</b> Paper must be made from 100% recovered paper fibres, with a minimum of 65% post-consumer recycled fibres. Recovered paper fibres include both post-consumer recycled fibres and pre-consumer recycled fibres from paper mills, also known as broke. Post-consumer recycled fibres may come from consumers, offices, printing houses, bookbinders, or similar.</p> <p><b>Professional purposes:</b> Paper must be made from at least 75% recovered paper fibres, with a minimum of 80% post-consumer recycled fibres. Recovered paper fibres include both post-consumer recycled fibres and pre-consumer recycled fibres from paper mills, also known as broke. Post-consumer recycled fibres may come from consumers, offices, printing houses, bookbinders, or similar.</p> <p><b>Verification:</b> All products carrying any type I ecolabel, such as the EU Ecolabel can serve as means of proof if it is specified that the paper is made from 100% recovered paper fibres. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body will also be accepted.</p>
<p><b>Award criteria – Sustainable forestry sources:</b> Additional points will be awarded in proportion to the amount of virgin wood fibres for pulp production coming from forests that are verified as being managed so as to implement the principles and measures aimed at ensuring sustainable forest management, on condition that these criteria characterize and are relevant for the product. In Europe, these principles and measures shall at least correspond to those of the Pan-European Operational Level Guidelines for Sustainable Forest Management, as endorsed by the Lisbon Ministerial Conference on the Protection of Forests in Europe (2 to 4 June 1998). Outside Europe they shall at least correspond to the UNCED Forest Principles (Rio de Janeiro, June 1992) and, where applicable, to the criteria or guidelines for sustainable forest management as adopted under the respective international and regional initiatives (ITTO, Montreal Process, Tarapoto Process, UNEP/FAO Dry-Zone Africa Initiative).</p> <p><b>Verification:</b> All products carrying the EU Ecolabel will be deemed to comply. Other national type I ecolabels fulfilling the listed criteria can also be accepted. Certificates of chain of custody for the wood fibres certified as FSC, PEFC or any other equivalent means of proof, will also be accepted as proof of compliance. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body will also be accepted.</p>	

Table 9. Proposed EU GPP criteria for sustainable fibres

Core criteria	Comprehensive criteria
<b>TECHNICAL SPECIFICATIONS</b>	
<b><i>TS2. Sourcing of fibres for pulp production</i></b>	
At least 70% (w/w) of the total amount of fibres for pulp production shall either be recycled fibre or virgin fibre originated from timber harvested from sustainably managed forests (to be further specified).	
<b>Verification:</b>	
At the latest by the time of the award of the contract, the contractor shall provide a declaration of compliance with the requirements of this criterion. The declaration of compliance shall be supported by the following elements, as appropriate:	
<b>For recycled fibres</b>	
Data allowing for the reliable tracing back of the recycled fibres to their point of origin, <i>i.e.</i> , the point of collection of the reclaimed materials that originated them. Without prejudice against other adequate means of proof, a valid Chain-of-Custody certificate issued by a Chain-of-Custody system that has been third-party independently certified shall be accepted as data tracing the fibres to their point of origin.	
Recycled fibres can have originated both from pre-consumer or post-consumer reclaimed materials. Fibres originated from any of the post-consumer grade of paper and board for recycling defined in EN 643 will be considered recycled fibre. Fibres originated from mill broke (own or purchased) will not be considered as recycled fibres, according to ISO 14021 definitions, as mill broke is a material capable of being reclaimed within the same process that generated it.	
<b>For virgin fibres originated from timber harvested from sustainably managed forests</b>	
Several Member States use their own criteria to define sustainable management of forests and have different processes in place to determine whether certification schemes provide sufficient assurance. The European Commission is currently evaluating the options for proposing a common approach on sustainable virgin fibres for the EU GPP criteria, bearing in mind the new public procurement framework following the entry into force of the procurement reform in April 2016.	

Summary of rationale:

- The use of fibres from recovered paper has multiple environmental benefits and helps contribute towards Circular Economy goals.
- The use of virgin fibres from sustainably managed forests helps prevent environmental impacts caused by deforestation and forest degradation.
- To encourage the optimum use of local resources for producers across the EU, no minimum requirement for recycled content is stipulated but instead a requirement is set for a minimum content of "sustainable fibres" which can consist either of recycled fibres or virgin fibres from sustainably managed forests.
- The ambition level of 70% fits well with existing market labelling schemes for fibre sourcing, which should help minimise the verification efforts of procurers.

## 4.2 Energy use

### 4.2.1 Background technical aspects, discussion and rationale

Energy use has been identified as one of the main environmental hot-spots associated with pulp and paper production. In fact it is the main source of (direct and indirect) emissions to air and water resulting from the paper production process, and can contribute to global warming, acidification, photochemical ozone formation, ionising radiation and human toxicity (non-cancerous and cancerous).

The production of pulp and paper requires [the](#) use of electricity and steam. According to the International Energy Agency (IEA) Report (International Energy Agency (IEA), 2008), the pulp and paper industry is the fourth largest industrial consumer of energy, responsible for about 6% of the world's total industrial energy consumption (using 6.4 EJ or  $6.4 \times 10^{18}$  J) in 2005.

Energy use is responsible for between 16% and 30% of paper and pulp production costs. In 2011, about half (55%) of the energy used by the industry came from biomass and the majority of the rest (36.2%) from natural gas (European Commission, 2013).

The energy consumption associated with the production of paper based mainly on virgin fibre is between 5.0 and 10.7 MWh/t. Paper made from recovered fibres has a lower specific energy consumption mainly due to the omission of a pulping process. Typical ranges for recycled paper production are 1.7-5.5 MWh/t (European Commission, 2008f).

The energy consumption levels can vary widely depending on the raw material composition, type of process, paper grade, equipment, measurements points installed and whether pulp and paper are produced in the same plant (integrated plant) or if the pulp for paper production is bought on the market (non-integrated plant). The dynamic nature of energy demand should be taken into account when comparing energy consumption data (Blum, Maur, and Öller, 2009). Refining, grinding, and pressing are generally the processes of the high energy demand. The most energy demanding step of paper manufacturing is the drying section.

While it is clear that energy use data will be closely monitored by producers, due to the cost implications of this data, it is uncertain how readily producers would be able to share data or can provide data that is specific to the output of a certain paper machine and final product type (for facilities which produce multiple product types). There is also concern that data requirements could be complicated by missing data from suppliers of minor market pulp additions (typically less than 10% of total pulp used) which are used in blends to optimise the final paper properties.

A good idea of the data which can be provided can be found by looking at the [Paper Profile](#) environmental reporting initiative. In terms of energy, the Paper Profile requires the reporting of fossil CO<sub>2</sub> emissions (kg / tonne paper) from process fuel burned onsite and the reporting of purchased electricity (kWh / tonne paper).

It should be noted that the Paper Profile approach does not consider total energy consumption but rather gives a measure of how dependent a producer is on fossil fuels and imported electricity. So it is conceivable that a good result in the Paper Profile could be masked by the use of large quantities of biomass to meet site heat and electricity requirements.

## 4.2.2 Technical Specification 3: Energy Use

There are no existing EU GPP criteria relating to energy use except indirect references to "Products which meet the ecological criteria of the EU Ecolabel directly related to paper production (and not the management practices of the factory)."

Table 10. Proposed criterion for Energy Use

Core criteria	Comprehensive criteria
<b>TECHNICAL SPECIFICATIONS</b>	
	<p><b>TS3. Minimising energy consumption during pulp and paper production.</b></p> <p>Pulp and/or paper production sites shall have a system in place for the minimisation of energy consumption from grid electricity and fossil fuels. The system should allow for sub-metering and foresee the use of renewable energy sources such as solar panels and wind power. For pulp production, it is deemed sufficient that 90% of the pulp used has been manufactured in sites having such a system.</p> <p><b>Verification:</b></p> <p>The tenderer shall deliver energy minimisation and management plans that detail the system for reducing energy consumption at the pulp and/or paper production site and include information on at least the following points:</p> <ul style="list-style-type: none"> <li>- How the use of energy is minimised in the first instance (i.e. at each stage of the manufacturing process);</li> <li>- Procedures and management systems for monitoring and tracking energy use (including ISO50001);</li> <li>- Continuous improvement objectives and targets.</li> </ul> <p>Where appropriate, Environmental Management System (e.g., ISO 14001 or EMAS) and Energy Management System (e.g., ISO 50001) procedures can be used as part of the evidence.</p> <p>Products carrying a type I ecolabel fulfilling the above criterion will be deemed to comply.</p>

### Summary of rationale:

- Energy use is one of if not the single largest source of environmental impacts associated with pulp and paper production and so should be addressed somehow.
- The dynamic ways in which paper factories can operate to produce different grades and specifications as well as the wide range of different pulping processes makes it extremely difficult to consider any benchmark for good energy performance.
- General reporting and continuous improvement fit well with the EMAS philosophy and should help increase awareness amongst producers of areas for improvement.

### Discussion points:

**Q:** Should the criterion on energy minimisation be a technical specification or an award criterion?

**Q:** Would an award criterion on fossil CO<sub>2</sub> emissions and purchased electricity, as per the Paper Profile requirements, be more adequate?



## 4.3 Water use

### 4.3.1 Background technical aspects, discussion and rationale

In the paper industry, water is used practically at all stages of the production process, including wood debarking, chipping, pulping, bleaching, paper recycling, and finishing. The consumption levels will vary depending on the grade/type of paper to be produced and the techniques applied.

According to Savant et al. (Savant, Abdul-Rahman, and Ranade, 2006) the pulp and paper sector is the third largest emitter of wastewater (after the metals and chemicals sectors). A key environmental challenge of the pulp and paper industry therefore is how to optimise the closure of water circuits. Care must be taken about problematic levels of non-process elements (i.e. contaminants in the process water) that will build up in concentration as water circuits close. Examples include tannins, lignins, resins, chloride and phosphate.

Water consumption per tonne of non-recycled paper produced is between around 25 and 70 m<sup>3</sup>/t, whereas for recycled paper, it is 10 and 15 m<sup>3</sup>/t of production. Furthermore, some 80% of the total water resource depletion is due to water abstraction for the pulping (51%) and papermaking (29%) stages. It should also be noted that by implementing of closed water circuits, other natural resources used in paper production such as chalk, carbonates and titanium dioxide, can be recovered and the need for new raw materials minimised (Villanueva and Eder, 2011), (European Commission, 2008f).

In some cases mills have been able to go completely closed-cycle on major elements of their processes (Bajpai, 2005) although this will not be possible due to technical limitations in most mills. Nonetheless, all mills can follow a progressive approach towards reducing water consumption, as illustrated below.

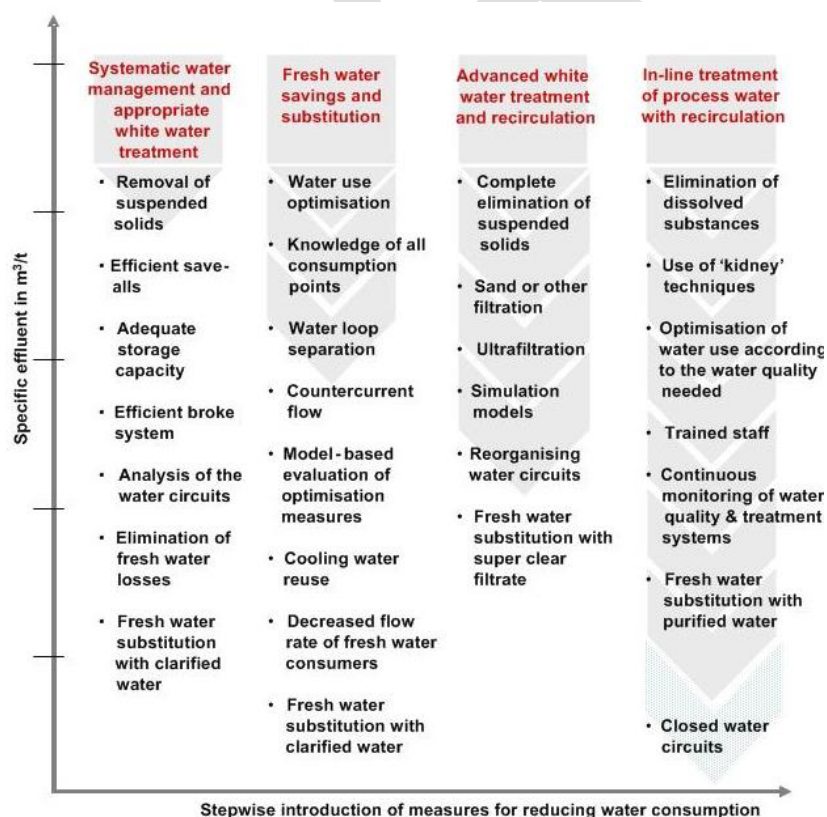


Figure 4. Steps towards lower water consumption from paper production



The recently published BREF document for pulp, paper and board production makes reference to benchmark ranges of specific wastewater production rates for different types of pulp and paper mills. However, as with energy use, it is uncertain how exactly specific consumption rates should be calculated for sites where multiple paper products and production lines co-exist. Some examples of actions to take to reduce water consumption are listed below.

Table 11. Techniques to reduce water use at source

Technique		Applicability
a	Dry debarking	Restricted applicability when high purity and brightness is required with TCF bleaching
b	Handling of wood logs in such a way as to avoid the contamination of bark and wood with sand and stones	Generally applicable
c	Paving of the wood yard area and particularly the surfaces used for the storage of chips	Applicability may be restricted due to the size of the wood yard and storage area
d	Controlling the flow of sprinkling water and minimising surface run-off water from the wood yard	Generally applicable
e	Collecting of contaminated run-off water from the wood yard and separating out suspended solids effluent before biological treatment	Applicability may be restricted by the degree of contamination of run-off water (low concentration) and/or the size of the waste water treatment plant (large volumes)

There is an important difference in water management between integrated and non-integrated pulp mills. In non-integrated pulp mills, the market pulp is dewatered and dried to 10% moisture content (ADT: pulp calculated at 90 % dryness, i.e. air dry). When used in the destination paper mill, the market pulp has to be completely suspended in water to ensure homogenous distribution of fibre.

In order to reduce fresh water use and generation of waste water, BAT suggests closing down the water system to the degree technically feasible, in line with the pulp and paper grade manufactured, by using a combination of the techniques given below:

- Monitoring and optimising water usage.
- Evaluation of water recirculation options.
- Balancing the degree of closure of water circuits and potential drawbacks; adding additional equipment if necessary.
- Separation of less contaminated sealing water from pumps for vacuum generation and reuse.
- Separation of clean cooling water from contaminated process water and reuse.
- In-line treatment of (parts of) process water to improve water quality to allow for recirculation or reuse.
- Reusing process water to substitute for fresh water (water recirculation and closing of water loops). Applicable to new plants and major refurbishments. Applicability may be limited due to water quality and/or product quality requirements or due to technical constraints (such as precipitation/incrustation in water system) or increase odour nuisance.

In most cases a systematic approach to water minimisation will result in economical advantages and well improve environmental performance of the final product. Considering the existing technical solutions that enable to reduce the total quantity of water consumed, it seems reasonable to propose a new criterion that would demonstrate the implementation of the water management plan that considers possible way and long-term planning to reduce water consumption.

### 4.3.2 Award criterion 1: Water use minimisation

There are no existing EU GPP criteria for this area. A proposal is given below.

Table 12. Proposed EU GPP criterion for water use minimisation

Core criteria	Comprehensive criteria
<b>AWARD CRITERIA</b>	
	<p><b>AW1: Minimising water consumption during pulp and paper production.</b></p> <p>Pulp and/or paper production sites shall have a system in place for the minimisation of water use from mains supply and other sources such as boreholes and river abstraction. This should be in keeping with the conditions prevalent at the site/s in question, i.e., be more stringent in areas of higher water scarcity. For pulp production, it is deemed sufficient that 90% of the pulp used has been manufactured in sites having such a system.</p> <p><b>Verification:</b></p> <p>The tenderer shall deliver water minimisation and management plans that detail the system for reducing water consumption at the pulp and/or paper production site and include information on at least the following points:</p> <ul style="list-style-type: none"> <li>- How the use of water is minimised in the first instance (i.e. at each stage of the manufacturing process);</li> <li>- How the reuse/recycling of water is maximised;</li> <li>- Procedures for monitoring and tracking water use; and</li> <li>- Continuous improvement objectives and targets.</li> </ul> <p>Where appropriate, Environmental Management System (e.g. ISO14001 or EMAS) procedures or permit information (e.g. under Directive 2015/75/EU on industrial emissions – formerly Integrated Pollution Prevention and Control) can be used as part of the evidence.</p> <p>Products carrying a type I ecolabel fulfilling the above criterion will be deemed to comply.</p>

Summary of rationale:

- The pulp and paper sector is a one of the major industrial consumers of water at the global level.
- When comparing normalised LCA impact categories according to PEF rules, the single largest impact was water resource depletion.
- There is a considerable technical potential for reducing water consumption levels based on current and recent technological innovations, although the degree to which this is possible will depend on the type of pulp and paper produced.

## 4.4 Bleaching

### 4.4.1 Background technical aspects, discussion and rationale

The existing GPP criteria (under Criterion 1 and 2) restrict the use of chlorine gas as a bleaching agent. These restrictions are proposed to be kept and some background information is provided to help procurers better understand the situation with what are known as ECF (Elementary Chlorine Free), Total Chlorine Free (TCF) and Process Chlorine Free (PCF) paper – the former two of which in particular have been often cited in calls for tender and procurement frameworks.

#### Bleaching

The main objective of pulp bleaching is to obtain the paper sheet of the required brightness (or whiteness, as applicable). The bleaching techniques use for mechanical and chemical pulps are different in its concept. Chemical pulps are bleached with lignin removal whereas mechanical with its preserving. Mechanical pulp bleaching is often referred as brightening as the main objective is to remove the colour-causing groups known as chromophores (conjugated groups responsible for absorbing visible light). The most commonly used bleaching agent for mechanical pulp is alkaline hydrogen peroxide, followed by sodium dithionite. The brightness gained is temporary and paper suffers the effect of "yellowing" or brightness reversion through the exposure to air and light.

Chemical pulp bleaching aims at removal of residual lignin, thus the process is often called delignification. The process is usually in multistage being composed of four or more steps depending on the requirement towards the final product.

In the recent past, the appearance of new environmental regulations that have placed restrictions on emission levels from cellulose industry, coupled with rising environmental awareness in wider society, have promoted changes in the pulp bleaching techniques. Historically chemical pulp was bleached with the use of elementary chloride  $\text{Cl}_2$  (C) or hypochlorite (H) with extraction (E) in between. Due to concerns with the formation of organic halide chemicals, especially dioxins, these techniques have been substituted by elementary chlorine-free (ECF) and more recently totally chlorine-free (TCF) pulp bleaching sequences.

#### ECF and TCF bleaching

A number of Life Cycle Assessments (LCAs) comparing alternative bleaching sequences have been published (e.g. Hostachy (Hostachy, 2010); Métais and Hostachy (Métais & Hostachy, 2011); Ryyänen and Nelson (Ryyänen & Nelson, 1996); and Zhi Fu et al (Zhi Fu, Chan, & Minns, 2004). Ryyänen and Nelson (Ryyänen & Nelson, 1996) concluded that the difference in environmental performance between ECF and TCF bleached pulp is minor as did the ÅF-CTS Oy report on the subject of the best technology for the Tasmanian Resource Planning and Development Commission in 2006 (ÅF-CTS Oy, 2006).

Various industry sources, including Stora Enso (Stora Enso, 2015a), describe the advantages of well-managed ECF production over TCF;

*"the environmental impact of ECF bleaching is the same or lower than that of the TCF process. It requires less energy and typically produces better yields and stronger wood fibres than TCF bleaching. Strong fibres lead to high material efficiency as the product can be manufactured with less raw material. ECF bleached fibres are also a better candidate for recycling [being stronger], making the entire lifecycle of fibres more sustainable".*

ECF bleaching is currently the dominant method reaching in 2012 the chemical bleached pulp market share of 93.9%, contrasted with 4.7% for TCF bleached pulps (Bajpai, 2015). Studies of effluents from mills that use oxygen delignification and extended delignification to produce ECF (elemental chlorine free) and TCF pulps suggested that the environmental effects of these processes are low and similar (Paper Task Force, 1995) Most European TCF pulp is produced in Sweden and Finland.

In terms of environmental impact, the focus has been on discharges to water. Mondi Group (Mondi Group, 2016) state that

*"it is now possible to demonstrate that the discharges to watercourses, from both ECF and TCF, are of no environmental concern",*

but do acknowledge the advantage of TCF in terms of the guarantee of zero AOX emissions. Other references note that TCF bleaching also enables recovery of a larger part of dissolved organic material from bleaching, reducing the effluent load (Shen, Zhou, & Lu, 2012), and enables total closure of the recovery cycle (P Bajpai, 2005).

**Table 13. Effluent Quality and Considerations (from the Confederation of Paper Industries in the UK (CPI, 2013)).**

### EFFLUENT QUALITY AND CONSIDERATIONS

	TCF	ECF
AOX (adsorbable organic halides)	none	Some AOX content from bleaching process but substances are different to those produced by chlorine gas and are non persistent. Modern effluent plants reduce this content to a level which is insignificant.
Molecular weight of compounds in effluent	Low molecular weight compounds such as glyoxal and vanillin	Generally high molecular weight (and therefore less toxic) compounds detected.
Short-term single species toxicity	TCF and ECF equal	TCF and ECF equal
Chronic single species toxicity	Slightly higher but below toxicity level of natural peat bog water and municipal effluent	Slightly lower and below toxicity level of natural peat bog water and municipal effluent
Overall environmental watercourse impact	TCF and ECF equal and both below toxicity level of natural peat bog water and municipal effluent	TCF and ECF equal and below toxicity level of natural peat bog water and municipal effluent
Results of biological tests on effluent of mills having both TCF and ECF plants	TCF and ECF equal	TCF and ECF equal
Endocrine disruption	There is some evidence of endocrine disrupting substances in the effluent of both processes but these are believed to originate from wood or naturally-occurring chemicals and the impact from the two processes is indistinguishable.	

The ECF process is regarded as being Best Available Technology with no significant difference between TCF and ECF (EPA, 2006, JRC, 2015).

Processed chlorine free (PCF) bleaching refers mainly to recovered fibre, and reflects lack of the use of chlorine based bleaching chemicals during processing. Recycled content may however have originally been bleached with chlorine or chlorine derivatives

Consequently for GPP, the criterion on chlorine has essentially remained the same as previously, although more explicit wording is propose: to allow the use of ECF, TCF and PCF bleaching sequences.

## 4.4.2 Technical specification 4: Bleaching

Table 14. Existing EU GPP criteria for bleaching restrictions

Core level	Comprehensive level
<p><b>Technical Specification – hazardous substances:</b></p> <p>The paper must be at least Elementary Chlorine Free (ECF). Totally Chlorine Free (TCF) will also be accepted.</p> <p><b>Verification:</b> All products carrying the EU Ecolabel will be deemed to comply. Other national type I ecolabels fulfilling the above criterion can also be accepted. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body will also be accepted.</p>	
	<p><b>Technical Specifications - Ecolabel:</b> The ecological criteria of the EU Ecolabel, or other type I national ecolabels directly related to paper production (and not the management practices of the factory) must be met. Full criteria documents for EU Ecolabel available at: <a href="http://ec.europa.eu/environment/ecolabel/">http://ec.europa.eu/environment/ecolabel/</a></p> <p><b>Verification:</b> All products carrying the EU Ecolabel will be deemed to comply. Other national type I ecolabels fulfilling the listed criteria can also be accepted. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body will also be accepted.</p>

Table 15. Proposed EU GPP criteria for bleaching restrictions

Core criteria	Comprehensive criteria
<b>TECHNICAL SPECIFICATIONS</b>	
<p><b>TS4: Bleaching</b></p> <p>Chlorine gas (Cl<sub>2</sub>) shall not be used for fibre bleaching during pulp and paper production. Elemental chlorine free (ECF) bleaching, totally chlorine free (TCF) bleaching and process chlorine free (PCF) bleaching (where recycled fibres are processed from waste paper – see note below) are all accepted.</p> <p><b>Verification:</b></p> <p>The tenderer shall provide a declaration that elemental chlorine has not been used in the production process, supported by appropriate means of proof, such as a technical dossier of the manufacturer, or their pulp supplier if different or a test report from a recognised body. Products carrying the EU Ecolabel will be deemed to comply. Other national type I ecolabels fulfilling the above criterion will also be accepted.</p> <p><b>Note:</b> While this requirement also applies to the bleaching of recovered fibres, it is accepted that the fibres in their previous life-cycle may have been bleached with chlorine gas or other chlorinated compounds.</p>	

Summary of rationale:

- Bleaching with chlorine gas (elemental chlorine, Cl<sub>2</sub>) is associated with the generation of organic halide contaminants with very hazardous environmental profiles.
- The substitution of chlorine gas for chlorine dioxide (ClO<sub>2</sub>) in the ECF bleaching process greatly reduces the potential for such chemicals to form and modern technologies can result in negligible emissions.
- Another alternative is to use a totally chlorine free (TCF) bleaching process with hydrogen peroxide and oxygen or ozone which results in zero emissions of organic halides.

## 4.5 Substances of Very High Concern (SVHCs)

### 4.5.1 Background technical aspects, discussion and rationale

There were no existing GPP criteria relating to the presence of SVHCs in paper products.

There are currently (May 2016) 168 substances listed on the ECHA Candidate List. These substances are referred to in Article 57 of REACH and are prioritised according to the procedure mentioned in Article 59 of REACH as substances of very high concern and subject to being phased out or restricted to very limited uses only.

The aim is to restrict the presence of substances that are proven to be carcinogenic, mutagenic, toxic for reproduction, persistent, bioaccumulative and toxic (PBT); very persistent and very bioaccumulative (vPvB); and/or those with endocrine disrupting properties. This is less demanding than the Eco-label requirement that requires all substances with these characteristics, and Candidate List Substances (that are suspected of having these effects)

None of these substances should be present in any EU Ecolabel product and their presence in products specified under GPP criteria is highly undesirable.

As per articles 7 and 33 of REACH, suppliers are required to communicate to the recipient of the product or, upon request, to the final consumer, information about any SVHCs that are present in the product in concentrations greater than 0.1%. However, one criticism of these REACH requirements is that only a declaration of the "presence" of SVHCs above 0.1% by weight is required, but no declaration of "non-presence" above 0.1% by weight. Consequently a lack of a declaration is assumed as proof of compliance when in fact it could be due to ignorance of the supplier.

To encourage pulp and paper suppliers to be more proactive in this area, and to increase awareness amongst procurers, it is proposed to include some reporting requirements specifically in EU GPP criteria, following the examples set out in EU GPP criteria being developed for other product groups.

### 4.5.2 Technical Specification 5: Reporting / restriction of SVHCs.

Table 16. Proposed EU GPP criteria for SVHC reporting / restriction

Core criteria	Comprehensive criteria
<b>TECHNICAL SPECIFICATIONS</b>	
<p><b>TSS. REACH Candidate List substances</b></p> <p>The tenderer shall provide a declaration identifying REACH Candidate List Substances of Very High Concern (Article 57 of Regulation (EC) No 1907/2006) that may be present in the final product at a concentration greater than 0.1% (w/w).</p> <p><b>Verification:</b></p> <p>Upon delivery of the final product, the tenderer shall provide a valid REACH Article 33(2) declaration.</p>	<p><b>TSS. REACH Candidate List substances</b></p> <p>The paper product shall not contain REACH Candidate List Substances of Very High Concern (Article 57 of Regulation (EC) No 1907/2006) in concentrations greater than 0,1% (w/w).</p> <p><b>Verification:</b></p> <p>Upon delivery of the final product, the tenderer shall provide a declaration that the substances referred to are not retained in the final product, above the concentration limits specified, supported by appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body. Products carrying the EU Ecolabel will be deemed to comply. Other national type I ecolabels fulfilling the above criterion can also be accepted.</p>

#### Summary of rationale:

- The existing legal requirements for REACH and the reporting of the presence of SVHCs are not well understood.
- Recipients of intermediate products (like pulp or mother reels) are not always aware of their legal rights to obtain this information and pass it on to their customers when requested.
- End consumers (or procurers in this case) are not always aware of their legal rights to request this information, so it is included in order to raise awareness throughout the supply chain.

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## 5. Points for further discussion

### 5.1. Grammage

#### ***Discussion point for stakeholders: Criterion on grammage***

The grammage (mass per unit area), is one of the important quality factors in paper industry. Currently, the grammage of copying and graphic paper is restricted under the scope 170 g/m<sup>2</sup>. Copy paper, which is used in copiers, printers and other imaging equipment, is the most relevant product from a public procurement perspective, being expected to represent the bulk of public paper purchases. This kind of paper typically consists of grammages between 70 g/m<sup>2</sup> and 85-90 g/m<sup>2</sup>.

Copy paper contains significant quantities of fillers and may be coated in order to ensure adequate mechanical properties and use-phase properties, e.g to avoid ink bleed-through from one side to another and so enable double-sided printing. Generally speaking, fillers and coating pigments are mainly in the form of China clay and calcium carbonate. The main purpose of fillers is to replace expensive fiber (many fillers cost less than fibre), provide surface for effective light scattering (for opacity, and brightness parameters), and usually also to enhance printing properties (smoothness). Fillers take an essential role in strength properties development. In some cases paper optical properties are improved by filler addition at the expense of paper strength (Koivunen et al, 2010). Other additives used are mainly starch and aluminium compounds, e.g. the traditional chemical papermakers' alum (aluminium sulphate). Around 1.1 % of the raw materials used for paper and board production are synthetic chemical additives (speciality chemicals) (JRC, 2015). Papers coated with waxes, polyolefins and other synthetic materials are difficult to recycle (Renil, 2015).

According to Ferrarri et al (Ferrari et al, 2012) one of the the key environmental impact during paper manufacturing is generated by the production of potato starch and rosin additives. The same study shows that lowering the paper grammage does not necessarily reduce the environmental impact, which is rather related to the pulp mixture used in the process. To ensure required paper properties the reduction of grammage fiber content present in a paper sheet needs to be compensated by the additives. In this sense the trade-of between the lowering of paper grammage and increase in the quantity of fillers used needs to be considered.

Questions:

*Q: Do you consider that establishing the grammage threshold is substantiated?*

*Q: Do you agree to withdraw the paper grammage upper limit and refer to product functionality?*



## 6. Life Cycle Costing

Life cycle costs looks at the cost of the product to the business over the whole of its life – not just the purchase cost. It allows the full cost of ownership to be assessed, which includes the purchase cost, ongoing maintenance and disposal costs. Depending upon the procurement policy, it can also include externalities such as environmental costs. These are environmental impacts such as GHG emissions that are monetised in order to be compatible with the life cycle costing methodology. Figure 5 shows the basis model for Life Cycle Costing (LCC).

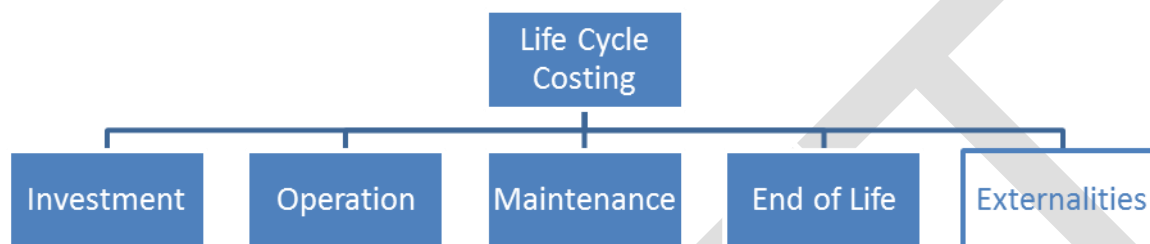


Figure 5. Life Cycle Costing Model

Operation, maintenance and end of life are not expected to be significant in the LCC of paper products. Changes to the paper quality or the mechanical properties of the paper may have an influence over how it behaves when put through any sort of printing process, however no such changes are anticipated. Similarly, an increase in paper weight could have an impact on disposal costs, however this is also not expected to be an issue. We can therefore identify the key costs applicable to paper products:

- Purchase cost
- Costs for Disposal
- External environmental costs

The initial investment in the paper product and its 'build-in' environmental impacts in the form of externalities are of most interest in the LCC of GPP for paper products. It is important to address any GPP requirements that will impose a cost premium on the product during its purchase and a reduction in the external environmental costs may also be possible with the introduction of more stringent environmental criteria.

The possible effects of the proposed and existing GPP criteria on the LCC identified above are summarised below:

### 6.1 Compliance with EU timber Regulation

Compliance with regulation 995/2010 on (illegal) timber is a new criterion for GPP of paper products. Introduction of this criterion will not have any effect on either the disposal or environmental costs. There is also no evidence to suggest that there should be any additional purchase cost for products that do not contain illegal wood. By definition one would expect that the majority of the market would already comply with this criterion.

### 6.2 Fibres

Experience from the GPP case studies given in section 1.2 generally revealed no notable price premium for copying and graphic paper that had a minimum sustainable fibre content that was sufficient to comply with FSC, PEFC or type I ecolabel requirements.

## 6.3 Energy use

Energy costs account for between 16% and 30% of paper and pulp production costs with the most energy-demanding step of paper manufacturing being the drying process. Different pulp types also have different energy requirements, but it is not true to say that the lower energy required for some pulps (mechanical compared with Kraft for example) will translate into cost savings overall. The commonplace introduction of heat recovery and CHP plants on site has reduced the energy demand. There are also greater energy efficiencies from integrated mills that produce both pulp and paper, although this only accounts for 18% of the EU market. A reduction in energy can therefore, not only have a direct impact on product costs, but also GHG emissions so any limits or reductions that are specified as part of the GPP would have a beneficial effect in both these LCC areas.

In the new energy use criterion the requirement is for a system in place for the minimisation of energy use. This does not necessarily translate to an energy (or GHG) reduction, but is a statement of commitment to this purpose. Capital investment decisions for improving energy consumption rates during production are likely to be made on the basis of return on investment periods due to savings in operational energy costs or be part of a wider strategic plan and would not tend to be compensated for by higher sales prices for products. It is therefore unlikely that this criterion will impact product cost.

## 6.4 Water use

There are also costs associated with water abstraction and waste water treatment and direct savings can be made in raw material costs for fibre, fillers and additives and energy consumption where process- integrated measures reduce loads at the source. Changing to a less harmful process can result in considerable costs due to the requirement for more complex technology.

As with the energy consumption situation, capital investment decisions for reducing water consumption rates during production are likely to be made on the basis of return on investment periods due to savings in operational water costs and would not tend to be compensated for by higher sales prices for products.

## 6.5 Use of hazardous substances

The new criterion seeks to minimise the use of hazardous substances in pulp and papermaking and to ensure that no chlorine gas is used as a bleaching agent in the production process. Given that chlorine gas bleaching has already been virtually eliminated in Europe, it is unlikely that this criterion will have any impact on product cost.

## 6.6 Market effects

Whilst there are a number of factors that can affect LCC, from a purchasing point of view the variations in price have been found to be largely due to price difference between brands and the economies of scale that can be generated from large purchases (Öko-Institut and ICLEI, 2007). More recently, the UK government (DEFRA, 2010) also found that the cost difference was negligible in most cases and the price can vary based on the way suppliers and manufacturers decide to place their products on the market i.e. subsidising more expensive products to maintain competitiveness. Therefore it is not generally possible to define a causal link between the GPP criteria and the price of the product due to the way the market works to stay competitive.

## 7. Conclusion

The existing EU GPP criteria for Copying and Graphic Paper have been presented in light of the recently introduced Public Procurement Directive 2014/24/EU, different GPP National Action Plans for EU Member States and some examples of case studies where green criteria have been successfully implemented into public procurement contracts and frameworks.

Proposals for changes to the existing criteria are presented, with reference to proposals being made in parallel for EU Ecolabel Copying and Graphic Paper where relevant. Supporting rationale for each proposal is provided, with particular focus on links to environmental benefits and ease of assessment and verification as far as possible.

The proposed criteria structure can be summarised as follows:

**Table 17. Proposed criteria**

Technical specifications	Award criteria
TS1: Sourcing of legal fibres	
TS2: Sourcing of sustainable fibres	
TS3: Energy use minimisation	
TS4: Bleaching chemical restrictions	AW1: Water use minimisation
TS5: SVHC restrictions	

This first version of the GPP technical report presents technical evidence and initial proposals to form the basis for the discussions planned to take place at the 1<sup>st</sup> Ad-hoc working group (AHWG) meeting planned on 9 June 2016 in Seville. Further iterations of this report will continue to be developed through to the end of the criteria revision process, which is expected to occur in the autumn of 2017.

Any comments made by the stakeholders in attendance at the meeting will be summarised in a second iteration of this GPP technical report and responses will be proposed to address these points. Where relevant, these comments will be incorporated into subsequent revisions to the criteria text for the EU GPP criteria for copying and graphic paper.

The deadline for comments on this report is the 1<sup>st</sup> July 2016.

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## List of abbreviations and definitions

AHWG	Ad Hoc Working Group
AOX	Adsorbable organic halogenated compounds
APEO	Alkylphenoethoxylate
BAT	Best Available Techniques
BREF	Best Available Technique Reference Document
BTU	British thermal unit
CO <sub>2</sub> e	Carbon dioxide equivalent
CEPI	Confederation of European Paper Industries
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DG JRC	Directorate General Joint Research Centre
DTPA	Pentetic acid or diethylenetriaminepentaacetic acid
ECF	Elementary Chlorine Free
EDTA	Ethylenediaminetetraacetic acid
EMAS	Eco-Management and Audit Scheme
EPA	United States Environmental Protection Agency
EU	European Union
EU ETS	Emissions Trading System
FAO	Food and Agriculture Organisation
FLEGT	Forest Law Enforcement, Governance and Trade
FSC	Forest Stewardship Council
GDP	Gross Domestic Product
GNP	Gross National Product.
GPP	Green Public Procurement
IEA	International Energy Agency
IPP	Integrated Product Policy
IPTS	Institute for Prospective Technological Studies
ISO	International Standardisation Organisation
kWh	Kilowatt hour
LCA	Life Cycle Assessment
LCC	Life Cycle Costing
MEAT	Most Economically Advantageous Tender
MS	Member State
NAP	National Action Plan
OBA	Optical Brightening Agent

PAM	Polyacrylamide
PBT	Persistent, Bioaccumulative and Toxic Substances
PCF	Totally Chlorine Free process of making paper and pulp
PEFC	Programme for the Endorsement of Forest Certification
RCF	Recycled Fibre / Secondary Fibre
REACH	Registration, Evaluation, Authorisation & restriction of CHemicals
RWE	Round Wood Equivalent
SFI	Sustainable Forestry Initiative
TCF	Totally Chlorine Free
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
vPvB	Very Persistent and Very Bioaccumulative Substances
VPA	Voluntary Partnership Agreement
WWT	Wastewater treatment

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