

Annex 1
Of DT_ECO-01/2009

STUDY FOR THE COPYING AND GRAPHIC PAPER CRITERIA REVISION



1st Background Report


VERSION 13th March 2009

“Revision of EU Ecolabel criteria for the copying and graphic paper product group”

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1 Introduction

ISPRA, the Italian Agency for Environmental Protection and Technical Services, the technical support for the Italian C.B., has been entrusted by the European Commission for the development of the project entitled “**EU Ecolabel Criteria Revision for Copying and Graphic Paper**”.

ISPRA appointed Life Cycle Engineering (LCE) to act as technical support during the project development.

The overall aim of the project is to assess the need for updating/developing new criteria for the Copying and Graphic paper product group (PG) and, subsequently, to proceed with the revision of the current criteria.

The project is composed by 2 Work Packages (WPs).

WP1 focuses on the development of a Preliminary Report for the revision of the existing Copying and Graphic paper criteria.

The **Work Package 1 Preliminary Report** constitutes an informative platform for the whole project. This Preliminary Report aims at:

- Updating some basic market data, to highlight the share of the products belonging to this PG in the European market and the feasibility of Ecolabelled papers.
- Defining the available technologies and production methods, to assess if the existing criteria have been overcome by technological improvements, and if some new requirements need to be tightened.
- Analysing the existing EU and some specific national legislations as well as BAT documents influencing the Copying and Graphic paper sector, to assess if new mandatory requirements have been introduced, and if the criteria are, at least, as strict as the current legislation is.

WP2: based on WP1 results, the **Work Package 2** consists in the revision of the existing criteria for the award of the Ecolabel flower for the copying and graphic paper product group.

Work Package 2 is composed by 2 tasks

Task1

The aim of this activity is the revision of the Commission Decision 2002/741/CE criteria for the Copying and Graphic Paper product group. All the comments and proposals emerged from the WP1 Final Report have been included in the 1st Background Document, which is used as technical support to the 1st Draft Criteria Proposal that will be illustrated during the 2nd AHWG (27th March 2009). A 2nd Background Document and a 2nd Draft Criteria Proposal will contain the issues that will be raised during the 2nd AHWG meeting together with the comments received after.

These documents, appropriately updated with comments received meanwhile, will be presented during the EUEB of September 2009 and will constitute the base of discussion for the 3rd AHWG (October 2009, date to be confirmed).

Task 2

The Final Criteria Proposal with the relative 3rd background document will contain the decisions which will be taken during the 3rd AHWG meeting. The Final Report, containing the information and the conclusions of the whole WP2, and the Final Criteria Proposal, including the revision of the criteria for the Copying and Graphic Paper product group, will be the main outcome of this task. The Final Draft Criteria Proposal will be then presented to the EUEB of December 2009. After the approval of the criteria proposal by the EUEB the Eco-label User's manual for the applicant will be prepared.

Table 1.1 - Work Package 2 actions and timetable

TASK	ACTION	WHO	DEADLINE	Deliverables	Status
1	1 st Background document delivery 1 st Draft Criteria Proposal delivery	ISPRA/LCE	13 March 2009	1 st Background document 1 st Draft Criteria Proposal	OK
	2nd AHWG meeting	ISPRA/LCE	27 March 2009	1 st Background document 1 st Draft Criteria Proposal PPT presentation	NEXT
	Minutes of the 2 nd AHWG	ISPRA/LCE	within 2 weeks	Minutes	NEXT
	Management of AHWG comments	ISPRA/LCE	April -June 2009		NEXT
	2 nd Background document delivery 2 nd Draft Criteria Proposal delivery	ISPRA/LCE	July 2009	2 nd Background document 2 nd Draft Criteria Proposal	NEXT
	Management of comments	ISPRA/LCE	July-September 2009		NEXT
	Presentation of the draft Criteria at the EUEB meeting	ISPRA/LCE	23-24 September 2009	2 nd Background document updated with comments 2 nd Draft Criteria Proposal updated with comments	NEXT
	Management of comments	ISPRA/LCE	September-October 2009		
	3rd AHWG meeting	ISPRA/LCE	12-16 October 2009 (date to be defined)	2 nd Background document revised with comments 2 nd Draft Criteria Proposal revised with comments PPT presentation	NEXT
	Minutes of the 3 rd AHWG	ISPRA/LCE	within 2 weeks	Minutes	NEXT
	Management of AHWG comments	ISPRA/LCE	October-November 2009		NEXT
	2	3 rd Background document delivery Final Draft Criteria delivery	ISPRA/LCE	25 th November 2009	3 rd Background document Final Draft Criteria
Presentation of the final draft Criteria at the EUEB meeting		ISPRA/LCE	9 December 2009	3rd Background document Final Criteria Proposal	NEXT
User Manual for applicants and CBs		ISPRA/LCE	December 2009	User Manual	NEXT

1.1 COPYING AND GRAPHIC PAPER - CLASSES DEFINITIONS

For the aim of the study, the CEPI - Confederation of European Paper Industries – proposal for graphic paper definition is adopted, as the following scheme shows (Table 1.2).

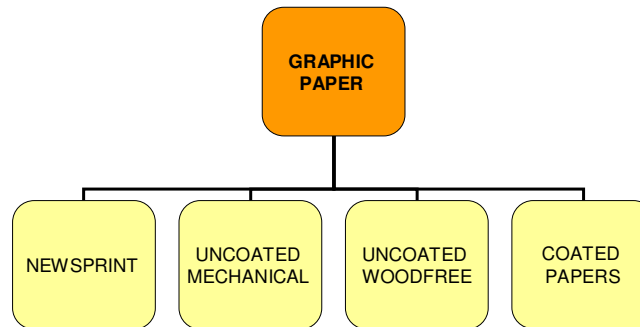


Table 1.2– “Graphic Paper “classes definitions by CEPI (Source: CEPI)

NEWSPRINT	Paper mainly used for printing newspapers. It is made largely from mechanical pulp and/or recovered paper, with or without a small amount of filler. Weights usually range from 40 to 52g/m ² but can be as high as 65g/m ² . Newsprint is machine finished or slightly calendered, white or slightly coloured and is used in reels for letterpress, offset or flexo-printing.
UNCOATED MECHANICAL	Paper suitable for printing or other graphic purposes where less than 90% of the fibre furnish consists of chemical pulp fibres ¹ . This grade is also known as groundwood or wood-containing paper and magazine paper, such as heavily filled super-calendered paper for consumer magazines printed by the rotogravure and offset methods.
UNCOATED WOODFREE	Paper suitable for printing or other graphic purposes, where at least 90% of the fibre furnish consists of chemical pulp fibres. Uncoated woodfree paper can be made from a variety of furnishes, with variable levels of mineral filler and a range of finishing processes such as sizing, calendering, machine-glazing and watermarking. This grade includes most office papers, such as business forms, copier, computer, stationery and book papers. Pigmented and size press “coated ” papers (coating less than 5g per side) are covered by this heading.
COATED PAPERS	All paper suitable for printing or other graphic purposes and coated on one or both sides with minerals such as china clay (kaolin), calcium carbonate, etc. Coating may be by a variety of methods, both on-machine and off-machine, and may be supplemented by super-calendering.

Current criteria for “copying and graphic paper” (Commission Decision 2002/741/EC) exclude “newsprint paper” explicitly from the product group. The inclusion of the *newsprint paper* in the EU Ecolabel criteria for “printed paper products” (criteria currently *in interservice consultation within the European Commission*) has been evaluated and excluded also from the scope of this new product group. Therefore, at the moment, newsprint paper couldn’t be awarded with the EU Ecolabel.

¹ For more details see the following paragraph (“Pulp- Definitions”).

Graphic and Copying paper has been included under CEPI definition of “Graphic Paper” (for descriptions see Table 1.2). This grade comprises the following subdivisions:

- *Newsprint* (not considered in this study)
- *Uncoated mechanical*
- *Uncoated wood free*
- *Coated papers*

Figure 1.1 shows the share of Copying and Graphic paper subdivisions in 2006: coated papers represent the main product (43%). Newsprint paper data were however reported for informative and comparative purposes and because of some stakeholders suggested the possibility to include also this and other paper grades in the criteria scope.

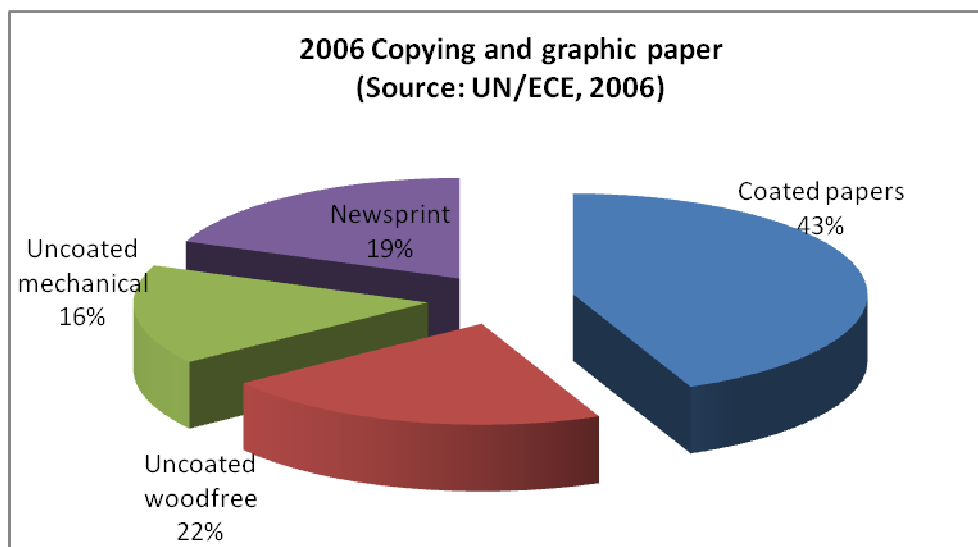


Figure 1.1 – Copying and Graphic paper production breakdown by subdivision in Europe (Source: UN/ECE, 2006)

1.2 PULPS - DEFINITIONS

In order to better explain the different pulp grade definitions set by CEPI the following schemes are reported (Figure 1.2, Figure 1.3, Figure 1.4, Figure 1.5, Figure 1.6)

Chemical pulp

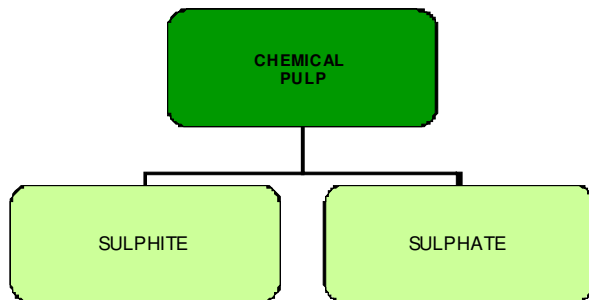


Figure 1.2 – Chemical pulp grades (Source: CEPI, 2006)

SULPHITE

Pulp produced by cooking wood chips in a pressure vessel in the presence of bisulphite liquor. End-uses range from newsprint, printing and writing papers, tissue and sanitary papers. Sulphite can be either bleached or unbleached.

SULPHATE

Pulp produced by cooking wood chips in pressure vessels in the presence of a sodium hydroxide (soda) liquor. The pulp may be unbleached or bleached. End-uses are widespread, with bleached pulp particularly used for graphic papers, tissue and carton boards. Unbleached pulp is commonly used in liner for corrugated board, wrappings, sack and bag papers, envelopes and other unbleached speciality papers.

Mechanical pulp

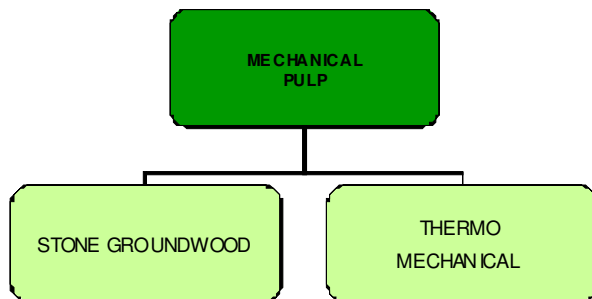


Figure 1.3 - Mechanical pulp grades (Source: CEPI, 2006)

STONE GROUNDWOOD

Pulp produced by grinding wood into relatively short fibres. This pulp is used mainly in newsprint and wood containing papers, like LWC (light-weight coated) and SC papers.

THERMO-MECHANICAL

Pulp produced in a thermo-mechanical process where wood particles are softened by steam before entering a pressurised refiner. TMP has mainly the same end-uses as stone groundwood. Variants of the above two processes produce pressurised stone groundwood pulp and refiner mechanical pulp.

Semi-chemical pulp

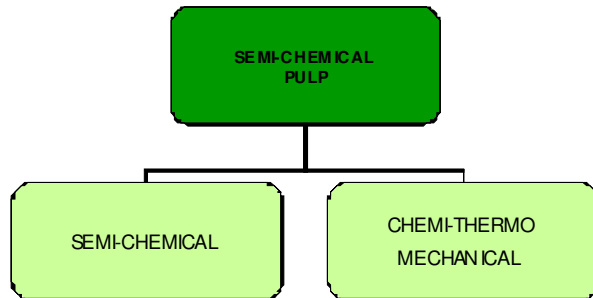


Figure 1.4 - Semi-chemical pulp grades
(Source: CEPI, 2006)

SEMI-CHEMICAL

Pulp produced in a two-stage process, which involves partial digestion with chemicals, followed by mechanical treatment in a disc refiner. This pulp is mainly used in the production of fluting medium for corrugated board.

CHEMI-THERMO MECHANICAL

Pulp produced in a similar way to TMP, but the wood particles are chemically treated before entering the refiner. This pulp has properties suited to tissue manufacture. Some CTMP is used in printing and writing grades. CTMP is classified under semi-chemical pulps in the Harmonised System of the Customs Co-operation Council. In the FAO, as well as in other industry statistics, such chemi-thermo mechanical pulps are grouped with mechanical pulp.

Other pulp

Pulp produced from fibres other than wood, such as sugar cane bagasse, wheat straw, kenaf, cotton rags and hemp.

Deinked pulp

Pulp made from recovered paper from which inks and other contaminants have been removed.

1.3 PAPER MILLS CLASSIFICATION

The paper mills classification depends on the papermaking processes which take place in the plant, as suggested by the BREF document:

- **Integrated paper mills**
Plants in which the pulp and the paper are both produced in the same productive site.
- **Non-integrated paper mills**
Plants that produce just the paper and that get the pulp from external supplier.

1.4 SUMMARY OF SOME IMPORTANT MARKET DATA

European Production

The total production of paper marked a slight increasing trend up to 2006: the grades used for packaging and other graphic functions (i.e.: Graphic paper excluding Newsprint) get the main share (Figure 1.5).

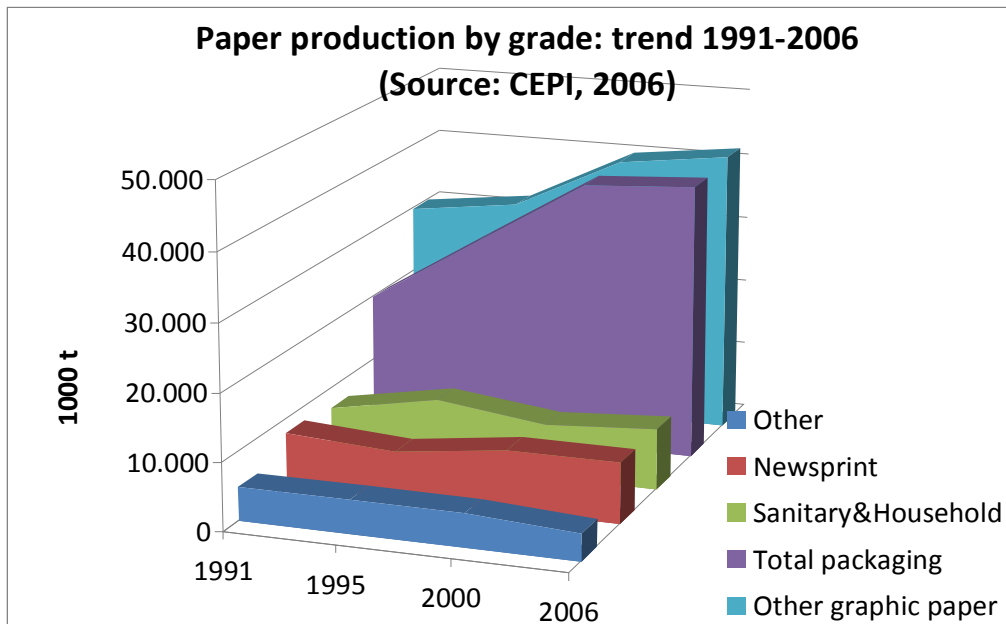


Figure 1.5 – Paper production by grade (Source: CEPI, 2006)

Recovered Paper

The recovered fibres are frequently used, most of all for newsprint and packaging products (case material). Only for the *graphic paper* production, the recovered paper use has very low value (10%) as Figure 1.6 underlines.

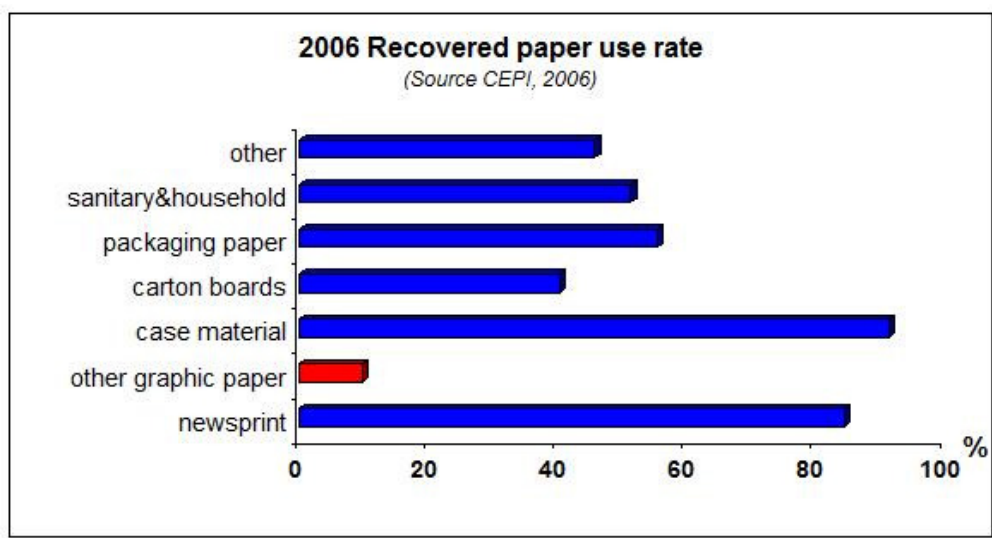


Figure 1.6- Recovered paper use in 2006 (Source: CEPI, 2006)

It has to be considered that this results could be influenced by the fact that not all the different qualities of recovered paper are always usable for all the scopes. It should be noted that unbleached paper (e.g. board) cannot be used for the production of printing papers. For copying and graphic paper only graphic paper waste can be used, i.e. the commonly called "household recovered paper" (e.g.: newsprint, magazines, catalogues, supplements, etc...).

The recycling of paper is used for those graphic paper qualities where it is most easy to use (e.g. newsprint). For higher paper qualities the processing of recovered paper needs, e.g., bleaching or more energy due to additional flotation. The alternative use of high quality recovered paper (wood free) is limited due to its availability and price, and it is mainly used for white tissue papers where fiber properties aren't that critical, but whiteness is required.

Market information about Ecolabelled Manufactures

With reference to copying and graphic paper, 12 producers have been awarded the European Ecolabel (Fig 1.7).

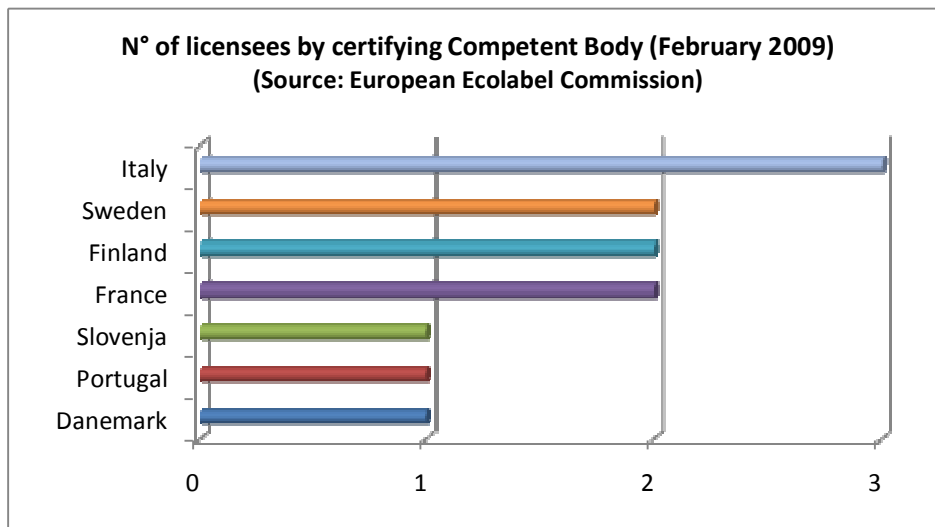


Figure 1.7 – Number of licensees by certifying country in February 2009
(Source: European Ecolabel Commission)

2 Technical analysis of existing criteria

This Chapter focuses on Pulp and Paper production processes to highlight how the existing criteria have been developed and to open the discussion about their revision. In particular the section summarizes the analysis of the main technical reference existing for the management of environmental aspects related to the European pulp and paper industries (BREF, 2001).

A revision of this document has just re-started in 2009 but, unfortunately, at the moment still no draft documents are available for consultation, the revision process therefore will not end before December 2010 (at least); a first draft document is however planned to be sent at the end of 2009¹.

2.1 MAIN ENVIRONMENTAL ASPECTS LINKED TO THE PAPER PRODUCTION

The paper industry requires natural and chemical raw materials use: cellulose, water and additives (e.g. for the graphic paper, the production process needs adhesive agents as resins, fillers, etc...). Production processes need energy for paper dehydration, paper drying and fibres processing. The different processes cause emissions to air and water, mainly SO_x, NO_x, AOX and organic compounds. The residual de-inking, the sludge depuration and the residuals chemical agents are the main production waste to manage. **No significant technical changes occurred in the production process since the last criteria revision**, as also CEPI² and ASSOCARTA³ consulted documentation has demonstrated. The following table (Table 2.1) shows the main environmental aspects involved in the pulp and paper manufacture. The main impact sources are specified.

Table 2.1 - Environmental aspects of paper and pulp production
 (Source: Italian guidelines for the BAT for paper industry, 2004)

Environmental aspects		Sources
Energy / Resources consumption	Raw Materials	Natural and chemical substances use
	Energy	Production process
	Water	Production process
Emissions	Air	Production process and energy use
	Water	Production process
Waste production		Production process

¹ Infos received from Mr Michael Suhr (European IPPC Bureau) new coordinator of the 2009 Bref Revision

² CEPI, 2006 and website www.cepi.org

³ ASSOCARTA, 2007 and website www.assocarta.it

2.2 CURRENT ECOLABEL CRITERIA

The current scheme of the criteria for copying and graphic paper is structured in 8 main criteria dealing with the following life cycle phases: raw materials, production process and use phase (Figure 2.1).

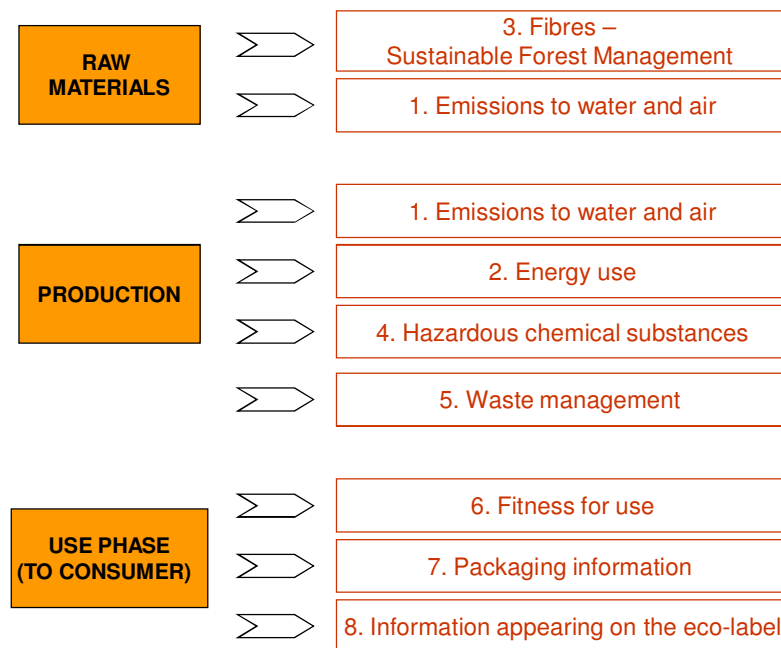


Figure 2.1 – Structure of the current Ecolabel criteria.

2.3 THE IPPC DIRECTIVE

The purpose of the IPPC (Directive 96/61/CE) is to achieve integrated prevention and control of pollution arising from the activities listed in its Annex I. The IPPC establishes a common set of rules for the release of the permits to industrial installations in Europe with the aim to promote the integrated pollution prevention and control.

Industrial plants for the production of:

(a) *pulp from timber or other fibrous materials;*

(b) *paper and board with a production capacity exceeding 20 tonnes per day,*

are included, as specified at the point 6.1 of the Annex I of the Directive.

Therefore, the European paper and pulp producers are subject to the IPPC directive rules and, in particular, they have to refer to the BREF, the Reference Document on Best Available Techniques (BAT), in order to reduce the environmental impacts associated to their productive processes.

2.4 BEST AVAILABLE TECHNIQUES (BAT) ANALYSIS

The term “best available techniques” is defined in Article 2(11) of the Directive as “*the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole.*”

The BREF document sets which range of emissions levels is expected from the use of best available techniques, and **shall not be considered as limits**.

The latest Reference Document on Best Available Techniques in the Pulp and Paper Industry dates back to 2001 and it is the same used in the development of the former criteria for this product group⁴.

The analysis highlights a close relationship between the resources/energy consumption and emission values reported in the BAT document and the Ecolabel criteria, as shown in the following chapter.

It has to be highlighted that mechanical pulping and also recycled fibre pulping is in most cases integrated to the paper mill. Therefore, BAT is given for integrated “pulp and paper mills” (except for CTMP). That means that there is no BAT for recycled fibers only, but for integrated pulp and paper production.

The Ecolabel reference values are provided, instead, also for the recycled pulp production as it is a separate process. The direct comparison of BAT values and EU ecolabel criteria is often not possible.

Emissions to air and water

The following tables (Table 2.2 and 2.3) refer to the emissions levels associated to the pulp and paper production process.

Table 2.2 shows the range of values for air and water emissions established by the BAT compared with the reference values imposed by the current Ecolabel criteria, expressed in Kg/tonne of product (pulp or paper, depending on the process considered).

When a correspondence between the BAT and the Ecolabel values exists, the Ecolabel always respects the range established by the Best Available Techniques.

The table takes into consideration also the BAT limits for the Phosphorus (Total P) emission to water, also if in the current Ecolabel criteria it is not still considered.

The phosphorus is an indicator of the potential eutrophication for the water ecosystems. The environmental relevance of the phosphorus could be considered for the criteria revision, as already done for the “Tissue paper” Ecolabel Criteria Revision under development. In accordance with the limits imposed for the other above-mentioned parameters, the reference values for the phosphorus should be included in the BAT ranges shown in the table below.

⁴ Note: the BREF and BAT document revision has just been undertaken in early 2009 and it will surely not come to an end before the end of 2010.

Since the reference document has not changed from the last revision of the Ecolabel Criteria for Copying and Graphic paper, the process and the existing limits still respect the BAT ranges. About this issue, it could be taken into account also the technical analysis results (treated in previous paragraph) about the technological developments occurred to assess the possibility of either a further lowering of the reference values or leaving them unchanged.

Moreover new emission reference values for copying and graphic paper could also take in account the final drafts of the Ecolabel Criteria for other Paper Products (Printed Paper and Tissue Paper), still in Interservice Consultation, trying to harmonize, for instance, the emission data for copying and graphic paper to those reported for the “Substrate” in the Printed Paper products draft.

Table 2.2 - Air and water emissions levels related to pulp and paper production (Source: BREF, 2001)

EMISSIONS (kg/ADT)			Water		Air				Water (New Proposal)
			COD		S		NO _x		Total P
			BAT	Criteria	BAT	Criteria	BAT	Criteria	BAT
PULP	CHEMICAL (kraft-sulphate)	Bleached	8,0 -23	18,0	0,2-0,4	0,6	1,0-1,5	1,6	0,01-0,03
		Unbleached	5,0 - 10						0,01-0,02
	CHEMICAL (sulphite)	Bleached and unbleached	20 - 30	25,0	0,5-1,0	0,6	1,0-2,0	1,6	0,02-0,05
	MECHANICAL (CTMP)	n.a.	10,0 - 20	15,0	n.d.	0,2	n.d.	0,3	0,005-0,01
	RECYCLED FIBRES ⁷	n.a.	n.d.	2,0	n.d.	0,2	n.d.	0,3	n.d.
PAPER	NON INTEGRATED PAPER MILLS	Uncoated fine paper	0,5 - 2	1,0	n.d.	0,3	n.d.	0,8	0,003- 0,01
		Coated fine paper	0,5 - 1,5						
	OTHER PAPER MILLS		n.d.	1,0	n.d.	0,3	n.d.	0,7	n.d.
	RCF PAPER MILL ⁵ (with deinking)		2,0 - 4,0	-	n.d.	-	n.d.	-	0,005-0,01

Table 2.3 shows the AOX emission levels: in the current criteria, the hurdle values for AOX just refer to pulp production while, in the BREF document, the AOX emissions levels refer also to the paper production.

In the existing criteria the hurdle is 0,25 Kg/ADT for each pulp used, while in the BAT the value depends on the kind of pulp (sulphate bleached or recycled).

⁵ The most of the recycled pulping are integrated: therefore the emission levels associated to recycled paper are given for integrated pulp and paper mills. (RCF= recycled fibre)

Table 2.3- AOX emission levels related to pulp production (Source: BREF, 2001)

EMISSIONS (kg/ADT)		AOX Kg/ADT		
		BAT	Criteria	
PULP	CHEMICAL (sulphate bleached)	< 0,25	0,25	
	NON INTEGRATED PAPER MILLS		< 0,005	-
PAPER	INTEGRATED PAPER MILLS	from mechanical pulp	< 0,01	
		RCF	< 0,005	

Energy Use

About the energy consumption, the BAT set range limits for fuel and electricity use. Table 2.4 refers to the **pulp** production and Table 2.5 to the **paper** production.

As Table 2.4 shows, the Ecolabel criteria reference values always comply with the ranges imposed by the BAT. Furthermore, the recycled fibres reference value for the electricity use is lower than the BAT minimum hurdle.

Referring to the fuel limits for the chemical pulp, in the BAT there are different ranges for sulphate and sulphite grades, while in the current criteria there is just a medium value for both of them (4.000 kWh/ADT).

Table 2.4- Energy consumption levels for pulp production (Source: BREF, 2001)

ENERGY USE			FUEL (kWh/ADT)		ELECTRICITY (kWh/ADT)			
			BAT	Criteria	BAT	Criteria	Criteria	
PULP	CHEMICAL	sulphate	2.770	3.878	4.000	600	800	800
		sulphite	4.432	4.986		600	800	
	MECHANICAL	n.a.	277	1.662	900	1.900	2.600	2.500
	RECYCLED FIBERS	n.a.	n.d.	n.d.	1.800	n.d.	n.d.	800

About the paper production, the BAT limits concern both the integrated and non integrated paper mills, while the current Ecolabel criteria impose reference values to non integrated paper mills only, as the Table 2.5 highlights.

Therefore, for the calculation of their energy consumption, the integrated paper mills have to refer to both “pulp” and “non integrated paper mills” BAT values as if they are 2 separate processes (Table 2.4 and Table 2.5).

The current Ecolabel reference values are in accordance with the BAT ranges and for the non integrated paper mills the fuel use values are even lower than the BAT minimum hurdles, as the Table 2.5 shows.

Table 2.5 – Energy consumption levels for paper production (Source: BREF, 2001)

ENERGY USE				FUEL (kWh/ADT)			ELECTRICITY (kWh/ADT)		
				BAT		Criteria	BAT		Criteria
PAPER	INTEGRATED PAPER MILLS	CHEMICAL sulphate	bleached	3.878	5.540	-	1.200	1.500	-
			unbleached	3.878	4.848	-	1.000	1.300	-
		CHEMICAL sulphite	bleached	4.986	6.648	-	1.200	1.500	-
			MECHANICAL pulp	coated	831	3.324	-	1.700	2.600
		printing	277	1.662	-	1.700	2.600	-	
		RECYCLED FIBRES	-	n.d.		1.800	n.d.		800
	NON INTEGRATED PAPER MILLS	uncoated	1.939	2.078	1.800	600	700	600	
		coated	1.939	2.216	1.800	700	900	800	
	RCF PAPER MILL	deinked	1.108	1.801	-	1.000	1.500	-	

Notes on the technical analysis

The argumentation made in the previous paragraph demonstrates that, at the moment, it seems necessary to consider also the technical analysis results on the current technological developments in order to evaluate the necessity of changing the reference values for the “emission to air and water” and for the “energy use” in the new Criteria for Copying and Graphic Paper. The reference document on which the current criteria are based on, in fact, has not been changed since the last criteria revision process.

On the other hand it has to be considered that an updated version of the BREF for the Pulp and Paper Industry might be soon available, (the BREF revision is starting in January 2009), so if this new document is published before the end of the current criteria review, a new update of the abovementioned values will be necessary.

It has to be highlighted also that, as shown in the analysis, the Ecolabel reference values represent a “simplification” of those reported in the BAT: for this, in some cases, some modification could be made to the existing criteria, and the introduction of a limit to the Phosphorus emissions to water (not considered for now) could also be included.

2.5 SUSTAINABLE FOREST MANAGEMENT

In the wake of the UN Conference on Sustainable Development in 1992 (Rio Summit), concerned business representatives, social groups and environmental organizations moved on with the purpose to improve forest management worldwide. This is why different Organizations were born with the intent of providing internationally recognized principles, rules and standards to assure a socially and environmentally correct forestry management.

Subsequently these schemes have extended their aims also to the wooden products certification, in order to give the producers the possibility to demonstrate that their product are “environmentally and socially friendly” and to provide the consumers with easily intelligible tools to evaluate the consequence of their purchases.

Forest Management and Chain of Custody certification

The Forest Management certification aim is to put rules on how the forests have to be managed, to meet the social, economic, ecological, cultural needs to join the principles of sustainability. Always they include managerial aspects as well as environmental and social requirements.

On these bases the major certification schemes have developed rules, policies and standards that further define certain specific requirements.

Some of the points required by the principal forestry certification schemes are listed below: they could appear almost basic, but it has to be considered that in many places even these basic requirements are not fulfilled, and that here is where the Forest Management can have the biggest positive impact:

- Prohibit conversion of forests or any other natural habitat;
- Respect of international workers rights;
- Prohibition of use of hazardous chemicals;
- Respect of Human Rights with particular attention to indigenous peoples;
- No corruption – follow all applicable laws;
- Identification and appropriate management of areas that need special protection (e.g. cultural or sacred sites, habitat of endangered animals or plants)

Types of certification

a) Forest Management Certification (FM)

This is a certification scheme reserved to **forest managers or owners** who want to prove that their forest operation is socially beneficial and managed in an environmentally appropriate and economically viable manner, according to specific principles and criteria set by a recognized third party organization. This is commonly a *Business to Business* certification.

b) Chain of Custody certification (CoC)

Chain of Custody certificates traces certified timber through the production chain: this scheme is for **companies** that **manufacture, process** or **trade** in timber or non-timber forest products and want to demonstrate to their customers that they use responsibly produced raw materials. Chain of Custody certificate helps companies to strengthen their sourcing policies and comply with public or private procurement policies.

c) Controlled Wood

Some Organizations (i.e.: FSC) give, as well, the possibility of certifying wood products also if the timber or the raw material used comes from “not certified” forest. The so called “controlled wood” can be used for CoC certification scopes.

Obviously the companies who want to sell their wood as “controlled” have to respect some requirements (standards) provided by the certifying organization, in order to comply with some basic principles of sustainability.

Controlled Wood supports also the production of Mixed Sources by providing certified companies with tools to control the non certified wood in their product groups, to avoid the wood produced in socially and environmentally most damaging ways.

The non-certified portion has to comply with the Controlled Wood standards which enable manufacturers and traders to avoid unacceptable timber and timber products.

FSC Controlled Wood, in particular, specifies the following five unacceptable origins:

- Illegally harvested wood;
- Wood harvested in violation of traditional and civil rights;
- Wood harvested in forests in which High Conservation Values (areas particularly worth of protection) are threatened through management activities;
- Wood harvested from conversion of natural forests;
- Wood harvested from areas where genetically modified trees are planted.

The Controlled Wood must be independently verified before it is mixed with certified material to become part of a product that can be sold carrying a label.

Certified forest products markets 2007-2008

Hereafter are reported some hotspots available in the *UN/ECE Forest Products Annual Market Review, 2007-2008*:

- From 2007 to 2008, the world's certified forest area grew by 8.8%, reaching 320 million hectares, which is **8.3%** of the global forest area, and **13.4%** of the managed forest area.
- While the rate of increase in forest area certification has been slowing since 2006, chain of custody (**CoC**) **grew by 50%** in 2007, attaining 12,600 certificates worldwide in 2008.
- **Western European** countries have certified more than **50%** of their total forest area, North America more than one third, but Africa and Asia only 0.1%.
- Approximately 80-90% of the world's certified forest is located in the northern hemisphere, where two thirds of the world's round wood is produced; more than half (57%) of the certified forest is in North America.
- Canada and the US continue leading the UNECE region in hectares of forest area certified, while Australia and Brazil have the most certified area outside the UNECE region.
- In the tropical region, 40% of the certified forest remains under certification schemes that are not certified by independent third parties.
- Globally the United Kingdom, the US and Germany have the most CoC certificates, while outside the UNECE region, Japan, China and Brazil are top ranked.
- Green purchasing policies and public procurement policies remain key drivers for certified forest products (CFPs) and forest certification.
- Double certification by multiple schemes is increasing as the wood and paper industries achieve better market access.
- The most prominent market benefits for CFPs are market access and brand image; price premiums for CFPs are an exception in Europe and North America.

Table 2.6 shows the worldwide certified areas by scheme and regions. For this analysis the "FSC" (Forest Stewardship Council), the "PEFC" (Programme for the Endorsement of Forest Certification) and "Other schemes" (that refer to specific regional schemes ,as reported in the note below the Table) have been considered. In Europe, the certified forest areas cover over that 84 million hectares, representing 54% of the total EU forest areas and about the 26% of the worldwide total certified forests (319,9 million hectares).

It has to be noted that the global percentage of the industrial roundwood coming from certified forests on worldwide roundwood production is slightly over the 26%. Only North America and Europe reach an appreciable amount of production from certificated areas (14,6 ad 11%).

Figure 2.2 gives a picture of the worldwide managed and certificated areas.

Table 2.6 – Global supply of roundwood from certified resources (Source: UNECE, 2008)

	Total Certified forest Area (million ha)	Total Certified forest Area (%)	Estimated industrial roundwood from certified forests, on global roundwood production (%)
North America	181,7	38,6	14,6
South & Central America	15	1,6	0,2
Western Europe	84,2	54,1	10,9
Asia	2	0,4	0,1
Oceania	9,4	4,8	0,1
Africa	3	0,5	0
Russia	24,6	2,7	0,3
World	319,9	8,3	26,2

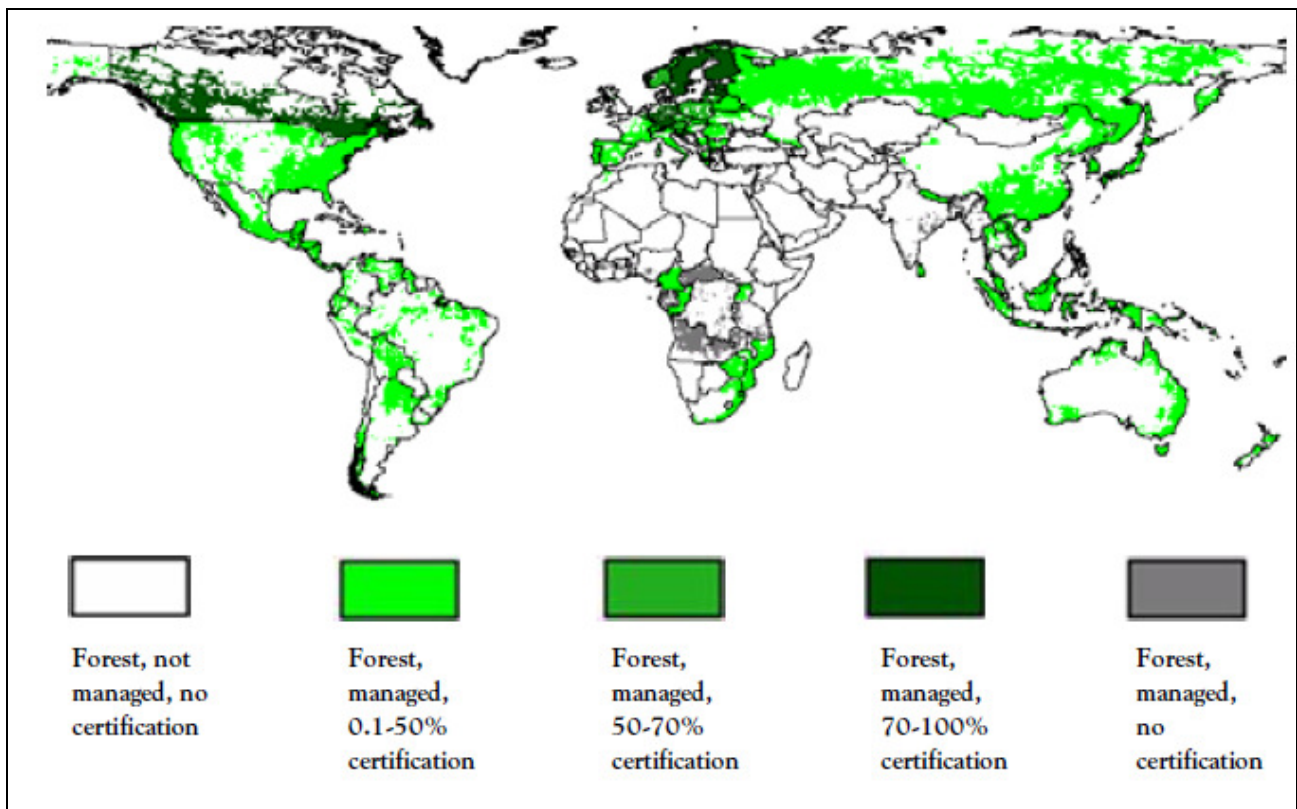


Figure 2.2 – Forest area certified relative to the forest area under management by countries. It is assumed that managed forest is at least 55% influenced by human activity. (source: UNECE, 2008)

The following table (Table 2.7) shows a picture of the situation of the Certified forest areas in the EU 25 updated to February 2007. It can be noticed that in the EU, the 46,6% on the average of forests are certified.

Table 2.7 - Certified Forest areas in EU (ISPRA elaboration, 2007)

Country	Forest area ⁶ (ha)	Certified area (ha) ⁷	% of forest certified
Austria	3.862.000	3.378.966	87,5
Belgium	667.000	258.425	38,7
Bulgaria	3.625.000	21.609	0,6
Czech Republic	2.648.000	1.987.765	75,1
Denmark	500.000	27.975	5,6
Estonia	2.284.000	1.063.913	46,6
Finland	22.577.834	22.577.834	100,0
France	15.554.000	4.272.065	27,5
Germany	11.076.000	7.768.111	70,1
Greece	3.752.000	31.526	0,8
Hungary	1.976.000	193.166	9,8
Ireland	669.000	438.360	65,5
Italy	9.979.000	657.180	6,6
Latvia	2.941.000	97.335	3,3
Lithuania	2.099.000	1.108.281	52,8
Luxembourg	87.000	21.630	24,9
Netherlands	365.000	140.324	38,4
Poland	9.192.000	6.579.417	71,6
Portugal	3.783.000	123.624	3,3
Romania	6.370.000	1.124.412	17,7
Slovakia	1.929.000	539.273	28,0
Slovenia	1.264.000	270.840	21,4
Spain	17.915.000	697.887	3,9
Sweden	27.528.000	17.387.744	63,2
United Kingdom	2.845.000	1.692.709	59,5
TOTAL	155.487.834	72.460.371	46,6

Considering, instead, the 30 EU 27 and EFTA 8 countries, the percentage of the Certified Forest areas grows up to around 50%.

In figure 2.3 is shown the share of the certified forest area and the growing trend since the 1998 concerning the three major schemes: i.e. FSC, PEFC and ATFS.

⁶ Global Forest Resources Assessment 2005 - F.A.O. <http://www.fao.org/forestry/site/fra2005/en/>

⁷ FSC database and PEFC database (update 22/02/2007)

⁸ European Free Trade Association

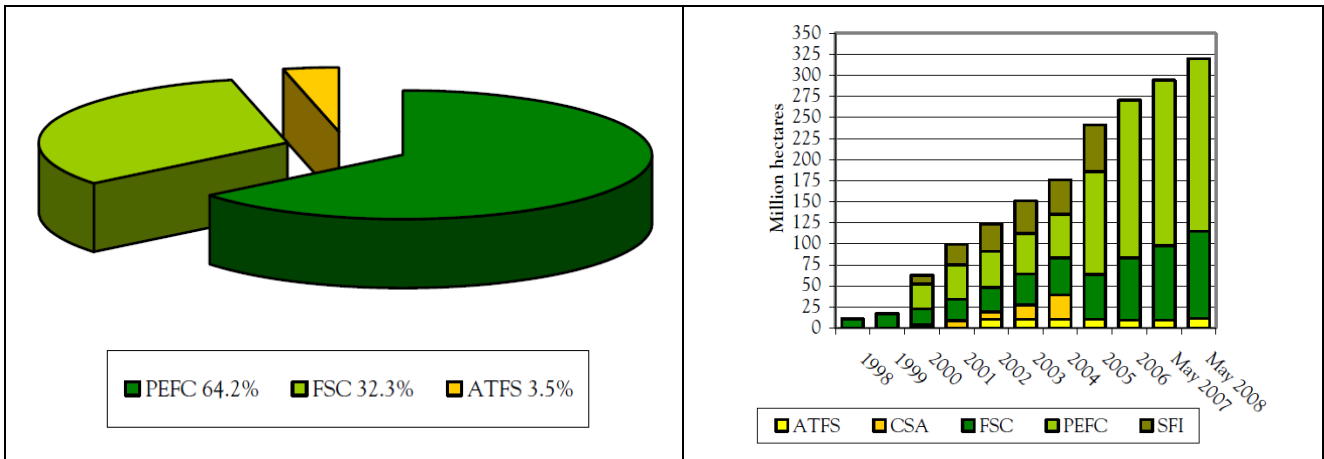


Figure 2.3 - Share and trend of the certified forest area concerning the three major schemes.

The request for CoC (Chain of Custody) certificates is often required within the main European Ecological Label criteria for the percentage of fibres for which the forestry certification is not compulsory.

Figure 2.4 shows the CoC certificates issued until 2008 in main European and extra European countries. PEFC, FSC certification schemes have been considered.

Germany, France and United Kingdom reached more than 1000 certificates in the considered period. It has to be highlighted how this typical business-to-business certification had a more rapid growth in the last decade than the CFPs.

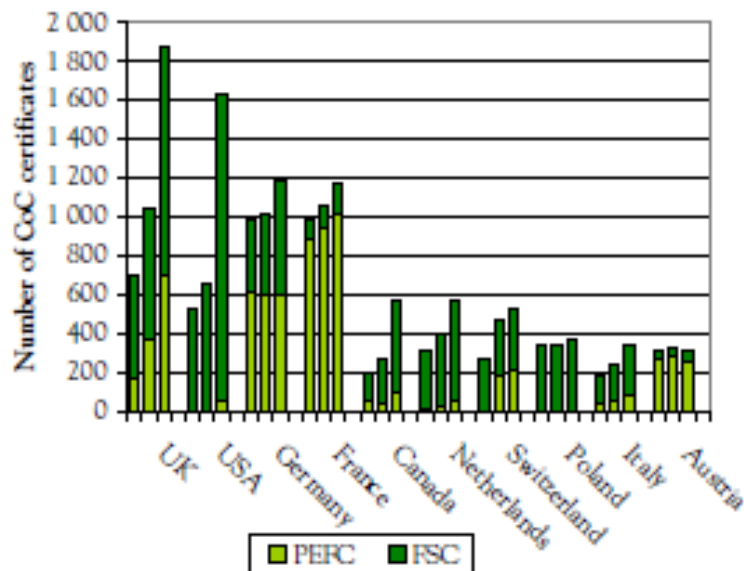


Figure 2.4 - Chain of custody certificate distribution within the UNECE region between 2006-2008⁹.

⁹ UNECE, 2008

2.6 GREEN PUBLIC PROCUREMENT FOR COPYING AND GRAPHIC PAPER

The European GPP criteria¹⁰

European GPPs criteria for *copying and graphic paper* have been developed by the European Commission in 2008 for the GPP Training Toolkit¹¹. They are included in Module 3 - *Purchasing recommendations*.

These recommendations cover the purchase of the products that encompass **unprinted paper for writing, printing and copying purposes (up to 170g/m²) sold in sheets or reels**.

Finished paper products, such as writing pads, drawing books, calendars, manuals, etc. have not been included.

Different sets of criteria are provided for, as shown in Figure 4.6:

- **Paper based on recovered paper fibres, recycled paper;**
- **Paper based on virgin fibres.**

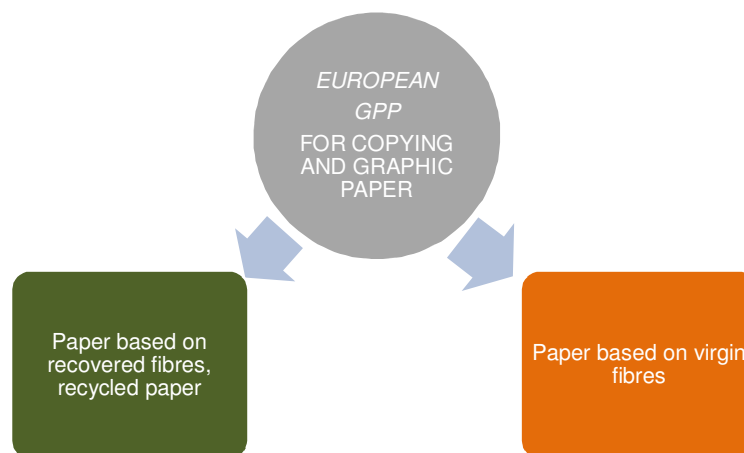


Figure 4.6- Two sets of criteria are available in the EU GPP for copying and graphic paper (Source: EU GPP, 2008)

¹⁰ EU GPP, 2008

¹¹ http://ec.europa.eu/environment/gpp/toolkit_en.htm

Both of them are divided into two sets of requirements:

- a. **Core criteria:** the designed to be used by any European contracting authority.
They address the most significant environmental impacts and are designed to be used with minimum additional verification effort or cost increases.
- b. **Comprehensive criteria:** intended for use by authorities who wish to purchase the best environmental products available on the market, and may require additional administrative effort or imply a slight cost increase as compared to the purchase of other products fulfilling the same function.

The European GPP criteria often refer to the available Environmental label of Type 1, i.e.: the European Ecolabel, the Nordic Swan and the Blue Angel. In particular, the criteria concerning the *paper based on post-consumer recovered paper fibres* are related to the **Blue Angel** label, while the criteria for *paper based on virgin fibres* make reference to the **European Ecolabel** and the **Nordic Swan** label.

Table 2.8 shows the requirements for each of the abovementioned label about the fiber used in the paper production.

Table 2.8 – Fibres requirements for EU Ecolabel, Nordic Swan and Blue Angel criteria.

	European ecolabel criteria (Current criteria)	Nordic Swan criteria	Blue Angel criteria
Fibres	<p>10% virgin fibres should be proven to come from sustainably managed certified forest</p> <p>The remaining virgin wood fibres shall come from forests that are managed so as to implement the principles and measures aimed at ensuring sustainable forest management.</p> <p>The origin of all virgin fibres used shall be indicated.</p>	<p>20% of the fibre raw material in the paper must come from certified forestry operation;</p> <p>OR</p> <p>At least 75% of the fibre raw material in the paper must be recycled fibre, wood shawing or sawdust</p> <p>OR</p> <p>A combination of a) and b) is permitted</p>	<p>100% post consumer recovered paper</p>

The specifications for the paper based on recovered fibers refer to *copying and graphic paper for normal office use and professional purposes*. In the core criteria it is specified that the total amount of fibers must be recycled, while the comprehensive criteria specify the amount of minimum post-

consumer recycled fibers as well. All the products carrying the Blue Angel label will be deemed to comply.

The GPPs recommend the limitation or the non use of any chlorine based substance (ECF or TCF); all the products carrying European Ecolabel, Nordic Swan or Blue Angel will be deemed to comply.

About virgin fibers, the criteria deal with the purchase of *office paper* based on virgin fiber stemming from legally and/or sustainably harvested sources (also fibers). The core criteria state that the virgin fibers shall come from legal sources: certificates of chain of custody (FSC, PEFC and any other internationally recognized scheme is accepted) as proof of compliance.

Table 2.9 shows a summary of the European GPP requirements.

Table 2.9 – European GPP criteria for paper (Source: EC Green Public Procurement Training Toolkit Module 3, 2008)

PAPER USED ON RECOVERED PAPER FIBRES (RECYCLED PAPER) [FOCUS ON BLAUER ANGEL]		PAPER BASED ON SUSTAINABLE AND/OR LEGAL VIRGIN FIBRES [FOCUS ON EU ECOLABEL/NORDIC SWAN]
100% recycled fibres <i>(for professional purposes: 75%)</i>	Core criteria	Virgin fibres from legal sources (certified by FSC, PEFC and other forest management system)
Elementary chlorine free (EFC). Totally chlorine free (TCF) also accepted.		Elementary chlorine free (EFC).
Need of Paper quality tests for the office machines suitability		Virgin fibres from legal sources (certified by FSC, PEFC and other forest management system)
100% recycled fibres with minimum 75% post consumer <i>(for professional use: 75% with minimum of 80% post consumer)</i>	Comprehensive criteria	
Meet the ecological criteria of Ecolabel, Nordic Swan, Blue Angel related to the paper production.		Elementary chlorine free (EFC). Totally Chlorine Free(TCF) also accepted.

Focus on the EU National GPP criteria

Some European countries developed national environmental criteria and guidance for the green procurement of paper products. They establish a set of *minimum standards* (compulsory requirements or recommendations) that the product has to comply with, especially to the use of recycled and/or virgin fibres, as shown in Table 2.10.

As already happens in the European GPP, also main national GPP criteria are based on the existing ecological labels for paper products.

Table 2.10 – Major National GPP requirements for copying and graphic paper.

Country	Type	Recycled paper criteria	Virgin fibres criteria	Reference/Legislation
Germany	Recommendations	<i>Copying paper</i> 100% recycled paper (based on Blue Angel)	n.a.	Papierprodukte-Ausschreibungsempfehlung -2007 (at www.beschaffung-info.de)
Italy	Mandatory (Under development ¹²)	<i>Copying paper</i> No minimum limit (assumed a technological maximum of 85% recycled)	n.a.	Decree of Ministry of Environment (DM 23/2003) "obliges all public bodies to purchase at least 30% of all purchased goods of recycled materials".
Finland	Recommendations	For paper products recommended to use Nordic Swan or EU ecolabel criteria	Recommended to use Nordic Swan criteria	Government Decision on Sustainable Public Procurement (to be finalized in March 2009)
Sweden	Mandatory	<i>For paper products:</i> 75% recycled paper OR 20% virgin fibres from certified forestry OR combination of both of them. (based on Nordic Swan criteria)	From legal sources (based on Nordic Swan)	SEMC, "Environmental Management Council's procurement criteria for paper products"-2007 (at http://www.msr.se/en/green_procurement/criteria)
France	Recommendations	<i>Office paper</i> values depending on the market availability	From legal sources (based on European Ecolabel)	GPEM/DDEN "Guide de l'achat public éco-responsable-Achat de papier à copier et de papier graphique"-2005 (at http://www.ecologie.gouv.fr/IMG/pdf/05-064.pdf)
UK	Mandatory	<i>For copying paper:</i> 100% recycled paper	From sustainable sources	Quick Wins 2007 (at http://www.defra.gov.uk/) See also CEPT of UK Government (www.proforest.net/cpet)

In the "Copying and Graphic Paper" GPP Background Report, the most important environmental impacts relating to pulp and paper production are listed, and for each of them the way to reduce these impacts are suggested.

It states, for instance, that it is possible to recycle high quality paper, such as graphic paper, several times for either the same, or lower quality uses, reducing the need for virgin fibers.

Concerning the water and energy consumption, the document refers to the BAT for the Pulp and Paper industry and to other studies¹³, declaring that the production processes for paper based

¹² D.M. 11 aprile 2008

¹³ UBA, 2000- IFEU,2006

(totally or mainly) on post-consumer recovered paper fibers (recycled paper) use much less energy and water than those for paper based (totally or mainly) on virgin fiber but may cause higher fossil CO₂ emissions.

Regarding chemicals used in the bleaching process, the document indicates how to develop and carry on the process in order to control of AOX levels, COD emission and other substances¹⁴.

2.7 VIRGIN VS. RECYCLED PAPER: CONSIDERATIONS

The following considerations are based on the results of a comparative analysis from different sources on the main environmental impacts, involving different pulp grades, summarised in the “Study for the Copying and graphic paper criteria revision”¹⁵

In many analysed cases the product with the less environmental impacts was the recycled unbleached paper. The paper production involving bleaching treatments, although recycled paper is used as raw material, has higher impacts, often in line with the virgin paper production.

The comparison gives a clear picture that recycling is only one aspect of paper's life cycle and can result higher emissions in some emission parameters compared to papers made of virgin fibres.

The LCA made by UBA “*Life Cycle Assessments for Graphic Papers Environmental comparison of recycling disposal processes for used graphic paper and of paper products for newspaper and magazine publishing and for photocopying*”¹⁶ has also been considered.

The assessment of 100 different processes of pulp and paper production in a life cycle on press paper is included in this study.

The key results of the project are listed below:

- As a whole, fibre/pulp and paper production produces the most significant environmental stress and consume the most resources;
- The environmental preferable option for waste graphic paper is increasing the material recycling of waste paper, then burning waste paper in low emissions CHP and the less preferable scenario is disposal to landfill;
- The environmental advantage of using waste paper as a raw material for producing newspaper and photocopy paper compared to exclusive use of wood concludes that 100% recycling newspaper and photocopy papers are considerably preferable in environmental terms. As well as using partial use of waste paper as a raw material for producing coated and super calendar glossy paper is considerably preferable in environmental terms to the exclusive use of wood;
- It is proved that fibres can be recycled up to six times when producing press paper;
- Reduction of the environmental burden from paper products is possible using technical measures and also potential low emissions could be achieved.

¹⁴ See pag. 66 of the EU GPP Training Toolkit Background Product Report for Copying and Graphic Paper (2008).

¹⁵ Cap. 4.7 - LCA COMPARATIVE ANALYSIS ON VIRGIN - RECYCLED PAPER PRODUCTION (pag. 61)

¹⁶ UBA, 2000

Table 2.11 - Possible reduction of the environmental burden in paper production (source: UBA, 2000)

Environmental burden	Possible improvements
Production of newspaper, SC paper, LWC paper, photocopy paper	Newspaper, photocopy paper can be produced from 100% recycled paper Glossy (SC and LWC) paper can be produced with 30% recycled fibre
Water pollution from Kraft pulp works / eutrophication potential : COD currently at 90 kg/t	COD could be reduced to: <ul style="list-style-type: none"> • 4 kg/t (Metsä-Rauma, Finland) • 6.9 kg/t (Alberta pacific, Canada) • 12 kg/t (Enocell, Finland) • 13 kg/t (Soedra Cell, Sweden)
Greenhouse effect, scarcity of fossil fuels, atmospheric pollutants	Examine energy production and consumption for optimization in order to reduce their contribution to the impacts
Transport related environmental stress	Pulp purchased locally
Intensity of land use	Continuing development of sustainable forestry, particularly in view of the vast quantities of wood consumed.

In the following table some improvements suggested by the EU GPP to the paper production process are shown.

Table 2.12 - Possible reduction of the environmental impact Virgin fibres-Recycled Fibres (EU GPP, 2008)

Virgin Fibres	Recycled Fibres
Water consumption : <i>Water consumption for the production of <u>non-recycled paper</u> is about: 25- 70 m³/t</i>	The water consumption for the production of <u>recycled graphic paper</u> is about 10-15 m ³ /t in plants working with best available techniques according to the BREF (including the preparation of recovered paper pulp).
Energy consumption for the production of paper based (totally or mainly) on <u>virgin fiber</u> is 5,000-10,700 kWh/t	Energy consumption for the production of <u>recycled paper</u> of 1,700-5,500 kWh/t.

From the last table emerges that, as the EU GPP Training Toolkit Background product report for Copying and Graphic Paper developed by ICLEI for the European Commission (2008) concluded, basing on the UBA 2000 study above mentioned, on the IFEU 2006¹⁷, and on and on the last BREF document (2001) : “production processes for paper based (totally or mainly) on post-

¹⁷ IFEU 2006, “Ökologischer Vergleich von Büropapieren in Abhängigkeit vom Faserrohstoff”

consumer recovered paper fibres (recycled paper) use much less energy and water than those for paper based (totally or mainly) on virgin fibre”...”however the production process of paper based (totally or mainly) on virgin fibre is still characterised [...] in many cases by a lower fossil CO₂ emission.”

“Both types of paper need to be purchased, as the amount of recycled paper cannot cover the total paper demand in Europe, and as there would be not recycled paper without having paper made from virgin fibres [...]. The key issue is recyclability, not the recycled origin of fibres”.

3 Comments and proposals on existing criteria overview coming from the stakeholders

The following modification proposals of the current criteria for copying and graphic paper product group are the feedbacks coming from questionnaires, meetings and other contacts that have occurred since the project started.

While reporting these proposals we will also refer to the [Appendix 4.1](#)¹⁸, at the end of this document, where we have reported some ISPRA elaborations based on real figures collected from EU and extra-EU pulp and paper producers.

Definition of the product group (Commission decision, Article 2)

The **product group is currently defined** as follows:

“Sheets or reels of unprinted paper which are used for printing or copying or writing or drawing. Newspaper, thermally sensitive paper and carbonless paper are not included in the product group”.

The necessity to better specify the “scope” of this product group emerged during the 1st AHWG meeting. It should be clarified if certain grades of paper can access or not to the labelling, e.g.: speciality coated paper, paper used for sacks and bags, newspaper (not printed) paper, etc...

Some comments suggested widening these criteria to newspaper and to all paper grades. As for newspaper, it would have seemed more appropriate to include it in the scope of “printed paper products criteria” (at the moment still in interservice consultation) but since this possibility has lately been removed, paper used to produce newspaper at the moment could not be awarded.

A scope extension to **monoglazed** paper grade has also been requested by some producers.

Some stakeholders propose a new definition for the product group, based on the manufacturing process used to produce the paper, and not on the final use of the product itself, as it currently happens.

They suggest a wider scope, e.g. "Graphic paper including all end-uses", for example: fine paper for various printing, packaging and office applications like copying and Magazine & Newspaper Paper with its various transition grades used for printing and other end uses for graphic paper.

The possible inclusion of a limit on grammage, as defined in the European GPP on copying and graphic paper, did not receive the agreement of most of the stakeholders. Anyway the EU GPP definition should be taken into account.

¹⁸ Analysis of emission and energetic consumption data

PROPOSALS

1) Some stakeholders propose the following definition as scope for the product group: ***"Graphic paper including all end-uses (e.g.: fine paper for various printing, packaging and office applications like copying and Magazine & Newsprint Paper with its various transition grades used for printing and other end uses for graphic paper).***

Simplifying, it could be ***"Graphic paper" or "Paper suitable for printing or other graphic purposes"***.

The reason for introducing a similar proposal is to give the possibility to manufacturers producing also newsprint paper to use EU Eco-label also on that, because, apart from the end use of the product, the production processes and the materials used are the same than for graphic paper. Furthermore, other environmental brands already give the possibility to award newsprint and magazine paper (i.e. the German Blauer Angel). Some manufacturers producing newsprint paper in several European countries, showed interest, during the consultations for the current revision project, in using the Ecolabel brand on their products: thus showing the need to get a geographically wider system for this grade that, at present, cannot be labelled at European level.

Mono Glazed (MG) papers instead are rather seldomly used for printing, i.e. those grades are sold to candy papers etc...The best long term solution in regards of MG and bag papers as well, would probably be to develop own criteria for packaging papers and converted paper products, because their production process can differ pretty much from that of copying and graphic paper.

An enlargement of the product group definition to the newsprint and magazine paper (still not printed), with the chance for the applicant to put the Ecolabel logo on the product near such a phrase, e.g.: "Printed on Ecolabel paper", would be a powerful tool to amplify the diffusion of the EU flower between the Member States and to widespread a better environmental consciousness among the consumers.

Moreover it would be an occasion to realign the PG scope with the CEPI definition of "Graphic paper" (see Table 1.5, page 11).

2) If an enlargement of the criteria scope should not be considered a possible solution, in order to make the definition clearer we could use the generic GPP definition¹⁹:





"Unprinted paper for writing, printing and copying purposes sold in sheets or reels - Finished paper products, such as writing pads, drawing books, calendars, manuals, etc. are not included."

In any case, in order to include or exclude any paper grade from this product group it seems fundamental to know which will be the exact and final definition of "Printed Paper Products" in the draft which is currently still in inter-service consultation.

¹⁹ EC green public procurement, 2008: page 26.

Criterion 1. – Emission to air and water

Criteria for copying and graphic paper: comparison among the main EU ecological labels.

EMISSION TO WATER AND AIR	EUROPEAN NATIONAL LABELS			
	Eco-label	Nordic Swan	Blauer Engel	DGQA
				
	a) COD : P _{cod} < 1.5 S : P _s < 1.5 NO _x : P _{nox} < 1.5 P _{tot} < 3 b) AOX < 0.25 kg/t c) CO ₂ < 1100-1000 kg/t (CO ₂ from fuel and electricity)	a) COD: P _{cod} < 1.5 S : P _s < 1.5 NO _x : P _{nox} < 1.5 P : P _p < 1.5 P _{tot} < 4 b) AOX < 0.4 kg/t c) CO ₂ < 300-1000 kg/t (CO ₂ just from fuel)	n.a.	a) COD: No more than 95% of legislation limits for water residuals. b) AOX: bleaching with chlorant compounds are banned.

The current criterion can be divided into three sections concerning the parameters that have to be managed for the paper and pulp production. The producers have to assess their emissions expressed in term of points (P_i) by a specific calculation method and they have to refer to a specific table containing the reference values for the emissions.

Section (a): COD, S, NO_x

For each of these parameters, the emissions to air and water from the pulp and the paper production are expressed in terms of points (P_{COD}, P_S, P_{NO_x}) as detailed in the section.

Some comments highlight that the current calculation method is quite complicated and they ask for a **simplified method**.

Some paper producers have highlighted a problem about the NO_x and S calculation. In the assessment and verification of the criterion in fact they pointed out that *“the calculation of the points for COD, S and NO_x [...] shall include all emissions of S and NO_x which occur during the production of pulp and paper, including steam generated outside the production site, **except those emissions related to the production of electricity**”*.

The manufacturers, however, are rarely able to distinguish the emission values for S and NO_x when they apply the cogeneration system. The result could be an overestimation of the values that often can exclude them from the range of acceptable values for the Ecolabel accreditation. In these cases, the opportunity of using a calculation formula that provides a simplified allocation for the split of the contribution due to the generation of steam and to the production of electricity should be given to the applicant.

A proposal made by some producers is to exclude the mills that use Natural gas as fuel from the calculation of the **sulphur (S)** load point: P_S score. The combustion of Methane, in fact, does not produce any sulphur emission. In such a case, they suggested, the value of P_S could be set to zero.

Although this reasoning is true for the paper mill using natural gas, nevertheless it has to be considered that a contribution to sulphur can always occur from the production of the purchased pulps. Therefore the figure P_S can't be automatically set to zero, except for the only contribution of mills that use natural gas.

For some stakeholders it seems necessary to include also the **phosphorus (P)** to the list of the current parameters for the water emissions, with different values for **P total** and **P inorganic** (phosphorus comes both from the production process and the water biologic treatment).

From comments received during and after the 1st AHGW meeting it emerged that some matters should be considered about P:

- a. P can be measured in several ways which should be noted, so that additional measurements from the applicant aren't required just due to criteria. Most commonly used are Total P, inorganic P and PO_4 .
- b. P can originate from different sources: it depends on the used wood and/or it can be added to mill's biological waste water treatment plant as nutrient to keep biological sludge active.

The industry is concerned by the fact that, if a limit for P will be added, the possibility that mills having biological treatment plants must diminish their dosage too much, leading to weaker purification of waste water in general, has to be considered. It has to be noted that P is an expensive nutrient and mills try to optimize the dosage anyhow. In general, P discharged by the paper industry is minimal compared to discharge by communal waste water treatment plants or agricultural activities.

Some stakeholders affirm that producers have no control on this parameter, because it is often strictly dependent on the wood species (e.g. *Eucalyptus spp.* have a high natural concentration of P). The problems with phosphorus are confined to the pulp production, because it is not intentionally added to the following paper production process. So, in their opinion this criterion would add a complication without any added value.

For instance the adoption of this parameter could imply the exclusion of most of the Iberian producers and other producers using *Eucalyptus* pulps.

It is technically known that Eucalyptus based pulps present by nature higher concentrations of phosphorus, a fact reflecting the chemical characteristics of this type of wood, not of the production process. It is also known that the Eucalyptus pulp has been produced in Iberia for more than 50 years, with no record of environmental impact directly related with the phosphorus concentration levels.

Eucalyptus pulps are worldwide recognised as some of the best, if not the best raw materials to produce high quality office and graphical papers.

Adopting a strategy that sets phosphorus concentration levels that are inferior to the ones that are by nature typical from pulps produced from Eucalyptus, could be seen as a strategy to downgrade the quality of the papers produced, making European producers less competitive against overseas producers based on other high quality short fibres (like the Indonesian producers with acacia based paper), and to leave out from getting the Ecolabel the Iberian producers and other producers using Eucalyptus pulp in their papers.

According to third part information, it is estimated that a large proportion (>50%) of uncoated woodfree papers (UWF) produced in Europe, incorporate Eucalyptus pulp. Adopting a strategy that sets phosphorus concentration at levels that are lower to the ones that are by nature typical from pulps produced from Eucalyptus, could be seen by some stakeholders as a strategy to leave out the majority of the uncoated woodfree paper producers.

This issue emerges also in the BREF document (BREF, page 102: Table 2.39, note 4), where it is underlined that *“due to the higher content of phosphorus in the pulp wood, Eucalyptus pulp mills cannot achieve the values of “total P emission” mentioned in the table (i.e.: 0.04 - 0.06 kg P/ADt), for the production of bleached kraft pulp. Current mill data for P emissions to water range from 0.037 - 0.23 kg P/ADt. The average of the reported data is 0.11 kg P/ADt”*

Anyway the Consumers and Environmental associations would agree with the introduction of this new parameter.

Calculation Formula

A deep analysis was made on the calculation formula reported on the criteria text, and it has been noticed that it differs from the one adopted in the User's manual for Copying and Graphic Paper, especially when it has to be applied to a mix of different kind of pulps.

NOTE: for simplicity, the following discussion is made for the COD points calculation only but it applies in the same manner to all the other emission parameters.

a) Criteria's formula:

$$P_{\text{COD}} = \text{PCOD, pulp} \times \text{CODweighted reference, pulp} / (\text{CODweighted reference, pulp} + \text{CODreference, paper}) + \text{PCOD, paper} \times \text{CODreference, paper} / (\text{CODweighted reference, pulp} + \text{CODreference, paper})$$

b) User manual's formula:

$$P_{\text{COD}} = [\text{CODweighted ref pulp} / (\text{CODweighted ref pulp} + \text{CODrefpaper})] \times \text{CODpulp} / \text{CODweighted ref pulp} + [\text{CODrefpaper} / (\text{CODweighted ref pulp} + \text{CODrefpaper})] \times \text{CODpaper} / \text{CODrefpaper}$$

$$= (\text{CODpulp} + \text{CODpaper}) / (\text{CODweighted ref pulp} + \text{CODrefpaper})$$

By making some mathematical simplifications, the first formula should correspond to the second one that, moreover, matches up with the formula used in the tissue paper criteria draft, in the draft for Printed Paper Products (requirements for the substrate) and with the calculation method used by the Nordic Swan.

But, this does not happen, because an error seems to occur when using the following conversion, as indicated in the criteria text:

$$P_{\text{COD, pulp}} = \Sigma (\text{pi} \times \text{COD}_{\text{pulp, i}} / \text{COD}_{\text{reference, pulp}})$$

That, in order to perform the simplification, should instead have been:

$$P_{\text{COD, pulp}} = \Sigma (\text{pi} \times \text{COD}_{\text{pulp, i}}) / \text{COD}_{\text{weighted reference pulp}}$$

where $\text{COD}_{\text{weighted reference pulp}} = \Sigma (\text{pi} \times \text{COD}_{\text{reference, pulp}})$

as confirmed also by the Printed Paper and Tissue Paper criteria proposal and by the Nordic Swan Criteria²⁰

By using the “criteria formula” “as it is” the emissions for pulps are generally underestimated.

Checking the user manual for copying paper this sentence can be read:

“The equation in the criteria document for the calculation of the number of points for the pulp production is the principle of the calculation and is used directly in the cases where only one type of pulp is used (). When various types of pulps with different reference values are mixed, the real emission values of COD as well as the reference value for the pulp mixture in the denominator in the equation shall be the weighted share of each pulp type in the moist paper. For calculation details see examples 1-4 in Annex 2.” ... that would confirm the error above explained.*

Unfortunately this specification is not present on the current criteria, thus possibly leading to miscalculation of the load points P_i .

Thus, the correct calculation formula should be, in general, as the examples of the manual show:

$$P_{\text{COD}} = \frac{\text{COD}_{\text{total}}}{\text{COD}_{\text{ref, total}}} = \frac{\sum_{i=1}^n [\text{pulp, i} \times (\text{COD}_{\text{pulp, i}})] + \text{COD}_{\text{papermachine}}}{\sum_{i=1}^n [\text{pulp, i} \times (\text{COD}_{\text{ref pulp, i}})] + \text{COD}_{\text{ref papermachine}}}$$

This formula should apply for the calculation of each parameter, also P_s , P_{NO_x} , P_e and P_f .

²⁰ Nordic Ecolabelling Paper products – Basic Module, 1.0 9 October 2003; page 17

(*) Actually it should be added that the equation in the criteria document applies when only one type of pulp is present in the quantity of 100% of the pulp mix as the following example will show.

In the revision of these criteria we think that this last calculation method has to be used, and the former criteria corrected.

An example of the difference resulting by using the two different approaches is following proposed.

EXAMPLE

In order to better understand the problem, let's consider, just as a theoretical example, the following one:

An uncoated paper is produced at a non integrated paper mill and the pulp and paper emissions and input data used are the following ones:

	PULPS			PAPER MILL
	Kraft	CTMP	DIP (recycled)	
%	40	30	30	-
COD [kg/t ADT]	23	20	2	2
CODref value [kg/t ADT]	18	15	2	1

For simplicity, sake let's not consider at the moment the moisture content of the pulps, and let's pretend that it is possible to have separate emission values of COD for CTMP and DIP pulps (while generally the production of these pulps is integrated).

Then the weighted reference values are the following ones:

$$\text{COD weigh ref pulp [kg/t ADT]} = (18 \cdot 0.4 + 15 \cdot 0.3 + 2 \cdot 0.3) = \mathbf{12,30}$$

$$\text{COD weigh ref paper [kg/t ADT]} = \mathbf{1}$$

If we now apply the "Criteria Formula" then we have:

$$\text{PCOD criteria} = [(0.4 \cdot 23 / 18 + 0.3 \cdot 20 / 15 + 0.3 \cdot 2 / 2) \cdot 12.3 + (2 / 1 \cdot 1)] / (12.30 + 1) = (\mathbf{14.883} + 2) / 13.30 = \mathbf{1.27}$$

By using the "User Manual Formula" instead we get:

$$\text{PCOD user_manual} = [(0.4 \cdot 23 + 0.3 \cdot 20 + 0.3 \cdot 2) + (2)] / (12.30 + 1) = (\mathbf{15.8} + 2) / 13.30 = \mathbf{1.34}$$

So with the User Manual Formula we get an higher value due to a calculated higher emission of COD by the pulps (as you can see by comparing the numerators of the two results).

This discrepancy becomes higher if we consider that the pulp mix is not generally =100% because it also includes fillers and coatings.

So if we consider that the 3 above mentioned pulps have a different share (%), for instance:

Kraft	CTMP	DIP (recycled)
45	20	20

So that the total is 85% (and the remaining 15% is fillers and coatings) then the differences are higher since we get:

$$\text{PCOD criteria} = (11.96 + 2) / 12.50 = \mathbf{1.12}$$

$$\text{PCOD user_manual} = (14.75 + 2) / 12.50 = \mathbf{1.34}$$

Therefore the 2 formulas can give the same result only in the simplest case where just one pulp type is used and only if the % of this pulp is 100%.

In our example, in fact, if we consider using only 100% of the Kraft pulp then we have:

$$\text{PCOD criteria} = \text{PCOD user_manual} = 1.34$$

But if the % of the single Kraft pulp used is lowered at 85% then we have:

$$\text{PCOD criteria} = 1.09$$

$$\text{PCOD user_manual} = 1.27$$

If we now apply these two calculations to a real example that we evaluated:

"Uncoated paper produced using "chemical pulp (Kraft), mechanical pulp and recycled fibre (deinked pulp) in an integrated paper mill"

Then we have:

Calculation made using the "criteria formula"

$$\text{COD pulps} = 0.49 \text{ kg/ADT}$$

$$\text{COD weigh ref pulp} = 3.91 \text{ kg/ADT}$$

$$\text{COD paper} = 3.56 \text{ kg/ADT}$$

$$\text{COD ref paper} = 1 \text{ kg/ADT}$$

$$\text{PCOD} = (0.49 + 3.56) / (3.91 + 1) = 0.82$$

Calculation made using the “User manual formula”

COD pulps=2,4 kg/ADT

COD weighted ref pulp= 4,142 kg/ADT (including humidity, multiplying by 95/90)

COD paper= 3,56 kg/ADT

COD ref paper= 1 kg/ADT

PCOD = $(2,4+3,56) / (4,142+1)=1,16$

It can be noticed that the final results are quite different, and considering that the denominators of the formulas are almost the same, the main difference is in the COD emission of the Pulps at numerator:

COD pulps (criteria formula) = 0,49

COD pulps (user manual formula) = 2,4

PROPOSALS

Calculation Formula: amending the calculation formula (adopting the user’s manual one) .

It has however to be considered that by doing that, the modification proposal will produce higher values compared to those obtained using the current formula.

A compromise to avoid stricter limits could be maybe to increase reference values for copying and graphic paper, also if the graphics provided in the *Appendix 4.1 – Load points*, show that a slight tightening of the limits would not be a great problem for the most of the cases considered.

Every possible adjustment of the reference values should be discussed during the next AHWG.

Phosphorus

1) Basing on the references given in the BAT document (see page 16 of this document) and from the monitoring of a number of values provided by some producers (see Appendix 4.1), it is possible to suggest the introduction of the phosphorus parameter (P), in addition to those already included in criterion 1 (COD, SO_x and NO_x).

Pulp grade/paper	BAT range	Values from industries (kg/ADT)	P reference EU Ecolabel Tissue Paper Draft Criteria (kg/ADT)	P reference (kg/ADT) PROPOSAL
Chemical pulp (kraft and all others except sulphite)	0,01-0,03	0,01-0,07 (avg value 0,045)	0,045	0,04
Chemical pulp (sulphite)	0,02-0,05	-	0,045	0,04
CTMP	0,005-0,01	-	0,01	0,01
Unbleached chemical pulp ²¹	0,01-0,02	-	0,02	-
TMP/groundwood pulp	0,004-0,01	-	-	0,01
Recycled fibre pulp ²²	0,005-0,01	0,005	0,01	0,01
Paper (not-integrated mills where all pulps used are purchased marketpulp)	0,003- 0,01	0,003 (uncoated) – 0,009 (coated)	-	0,01
Paper (other mills)	-	0,002- 0,008	0,01	0,01

In case of introduction of this new parameter, an exception should be made for the pulps made using *Eucalyptus spp.* as fibre: the reasons are above explained. Basing on the consideration on the BREF/BAT made on page 37 , for the Eucalyptus chemical pulp a reference value of 0,11 kg/ADT could be introduced.

Obviously, the introduction of the fourth parameter will imply a new limit for the total load point: **(P_{total} = P_{COD} + P_S + P_{NO_x} + P_P)” = 4,0** that shall not to be exceeded.

2) Not introducing any parameter to limit the phosphorus emission to water could be a second option.

Emissions to air

In order to solve the allocation problem for S and NO_x emissions related to the production of electricity (that have to be excluded from the P_S and P_{NO_x} calculation), the same solution adopted in the Tissue paper last draft criteria can be proposed.

²¹ Only in the Tissue paper criteria

²² Value obtained from calculation on the basis of the total

“In case of a co-generation of heat and electricity at the same plant the allocation of the emissions of NO_x and S the electricity (the net electricity) and the heat generation (the net heat) according to following equation:

The share of the emissions from the electricity generation:

$$2 \times (MWh(\text{electricity})) / [2 \times MWh(\text{electricity}) + MWh(\text{heat})]$$

The electricity in this calculation is the net electricity, where the part of the working electricity that is used at the power plant to generate the energy is excluded i.e. the net electricity is the part that is delivered from the power plant to the pulp/paper production.

The heat in this calculation is the net heat, where the part of the working heat that is used at the power plant to generate the energy, is excluded i.e. the net heat is the part that is delivered from the power plant to the pulp/paper production.”

Furthermore, in case of integrated mills, pulp mills or paper mills using only natural gas for the production of paper the P_S value can be set to 0.

Section (b): AOX

The AOX current limit is **0,25 Kg/ADT** for each pulp only (not further limits on the pulp mix).

The applicant provides test reports using the following test method: AOX ISO 9562.

A revision and update of the reference norms for the assessment and verification is required: **more general test methods** to facilitate the applicant.

Considering that someone suggests to set **lower limits** for AOX emissions and in order to narrow the gap with the other Ecolabel paper products criteria, for the AOX limits the same values chosen for the last Tissue Paper draft (currently on interservice consultation) could be considered:

“The weighted average value of AOX released from the productions of the pulps used in the eco-labelled tissue product must not exceed 0.12 kg/ADT paper. AOX emissions from each individual pulp used in the paper must not exceed 0.25 kg/ADT pulp”.

Many participants to the 1st AHWG expressed concern with the proposal of a setting lower limits on AOX and with the introduction of a AOX control also at the paper mill.

They highlighted that the latest scientific literature shows that there's no environmental difference between modern ECF (Elementally Chlorine Free) and TCF (Totally Chlorine Free) bleached chemical pulps when biological waste water systems are used and that no environmental impacts are found when pulp's AOX is less than 0.5 kg/ADt, thus it cannot be shown unambiguously that TCF is substantially better for the environment than ECF.

TCF bleaching causes very low AOX emissions, but uses more energy, chemicals and wood for tonne of pulp than ECF.

AOX per tonne of final paper would be only relevant for wood free papers as quality requirement sets the use of chemical pulp only. It was already shown (Figure 1.6) that the availability of suitable recovered fibre is very limited for wood free papers. All other grades have only a certain amount of chemical pulp and their AOX value would therefore be far below 0.12 kg/ADt. By taking the proposed 0.12 kg/ADt paper limit from Tissue papers into use would mean that 100 % BAT based chemical pulp won't be good enough as a raw material for wood free graphic paper grades.

Criteria supporting only TCF bleached pulps would be against Life Cycle approach as it would impact negatively to wood use and energy efficiency.

For this reason the proposal from some stakeholders was to maintain the requirement as it is now. BEUC and EEB instead are strongly in favour of using only TCF pulps since no studies are available on long term effluent effects of chlorine dioxide; if the ECF pulps are banned, then the AOX limit for pulp mix could be lowered since TCF pulps can achieve even 0,05 kg/ADT.

PROPOSALS

It has to be highlighted, however, that other Ecolabel criteria (i.e. EU Ecolabel Tissue last paper draft) impose limit both on each single pulp (0,25 kg/ADT) and on the pulp mix (0,12 kg/ADT), and that also the Nordic Swan imposes the double check both on the pulps (but the limit here is quite higher: 0,4 kg/ADT) and on the pulp mix (0,25 kg/ADT).

Moreover the introduction of an additional control on the emission values also at the output of the paper mills could be an upgrade for the current criteria.

For these reasons the following 2 possibilities for the next criteria could be foreseen:

- a) To leave the current requirement unchanged;
- b) To extend the control both to the single pulps and to the pulp mixes, keeping the current limit value (i.e.: 0,25) for the pulps and for the mix to put the limit to **0,15 kg AOX/ADT**, which represent an achievable limits, as the following graphic (taken from the Appendix 4.1) shows.

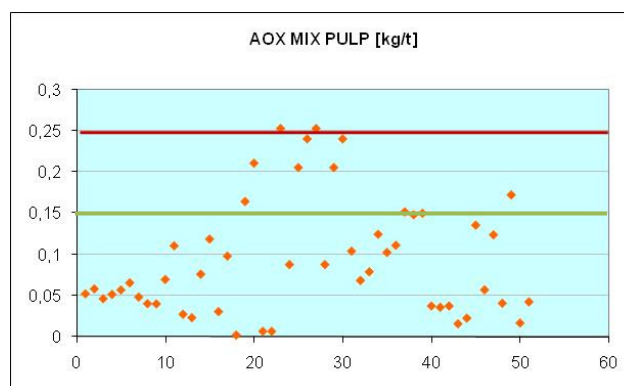


Figure 3.1 – AOX pulp mix real values from industries
(in red the current value for the single pulp; in green the limit proposal for the pulp mix)

It has to be underlined that (Appendix 4.1 – Pulps) most of the pulps exceeding the current limit value for the AOX (0,25 kg/ADT) originate from North America.

Section (c): CO₂

The current values for CO₂ emissions are:

- **1000 Kg/t** for integrated paper mills
- **1100 Kg/t** for non integrated paper mills.

In order to better comply with the emission values for the printed-paper, it was suggested to lower the gap between the emission levels for copying and graphic paper and printed-paper products.

The final “draft criteria” for printed-paper²³ establishes the following hurdles for CO₂ emissions: 1150 kg/t for integrated and 1250 kg for non integrated paper mills. Thus, the current limits should be raised. Some stakeholders instead suggested to lower the current CO₂ hurdles, because they seem too easy to reach.

Table 3.1 - Review table for criterion 1

Criterion	Theme	Existing requirements	New requirements proposal	Motivation
Emission to air and water	COD, S, NO _x	P _{COD} < 1,5	To simplify the calculation method	To facilitate the applicant
		P _S < 1,5	To put at 0 the Ps parameter value if the plant uses natural gas as fuel.	To avoid the providing of a useless data.
		P _{NOX} < 1,5		
		P _{TOT} < 3	To include the parameter phosphorus (P)	To supervise water pollution
	AOX	0,25 kg/ADT for each pulp	More general test methods; 0,15 kg/ADT?	To facilitate the applicant
			0,25 kg/ADT for each pulp + 0,15 kg/ADT pulp mix	To guarantee a best control on the quality of the water discharged
	CO ₂	1000 kg/t for integrated paper mills and 1100 kg/t for non integrated paper mills	To reduce the gap of values between this group and printed paper	Compliance with the limits for printed paper
			To lower the hurdles	Current limits are easy to reach

²³ The final draft Ecolabel criteria for printed-paper is dated October 2005. The suitability of these criteria are currently being discussed within the Commission services.

PROPOSALS





It has to be pointed out that the abovementioned “easiness” to reach the current values is relative and depends on the mill's location and local energy supply. Integrated mills with chemical pulp production at the site are able to reach the limits "easily" as chemical pulp mills burn all lignin (CO₂ neutral biomass). Non-integrated mills which rely on local energy supply, be it natural gas or coal can have challenges with existing limit already (Central and Southern Europe)²⁴.

Taking into consideration that both the limits for printed paper products and for tissue paper are much higher than the current for graphic and printing paper, it seems not necessary to tight up further the existing values.

The graphics presented in the Appendix 4.1 – “Limit values: CO₂ emissions”, demonstrate that the current limits are already stringent for the European paper industry.

Criterion 2. – Energy use

Criteria for copying and graphic paper: comparison among the main EU ecological labels.

ENERGY USE	EUROPEAN NATIONAL LABELS			
	Eco-label	Nordic Swan	Blauer Engel	DGQA
				
	a) electricity: $P_e < 1.5$ b) fuel : $P_f < 1.5$	a) electricity: $P_e < 1.75$ c) $P_{tot} = (P_e + P_{fuel})/2 < 1.5$	n.a.	n.a.

The current criterion can be divided in two sections concerning the electricity and the fuel consumption related to the pulp and paper production.

The producers have to assess their energy use **expressed in term of points (P)** by a specific calculation method and they have to refer to the table with a list of reference values.

Section (a): Electricity

Some comments highlight that the current calculation method is quite complicated and ask for a **simplified method**.

²⁴ A producer has informed us that its Chinese paper mill would fulfil all the other criteria, but can't apply as the only available energy is based on coal.

Section (b): Fuel

As for the electricity, some stakeholders commented that no changes in the fuel consumption reference values seem necessary.

The calculation method is seen by most of the stakeholders as quite complicated. A **simplification** has to be considered.

Some others suggested instead to lower the hurdles for both the electricity and fuel use, because the current limits are too easy to reach.

Table 3.2 - Review table for criterion 2

Criterion	Theme	Existing requirements	New requirements proposal	Motivation
Energy use	Electricity	$P_e < 1,5$	To simplify the calculation method	To facilitate the applicant
			To lower the hurdles	Current limits are too easy to reach
	Fuel (heat)	$P_f < 1,5$	To simplify the calculation method	To facilitate the applicant
			To lower the hurdles	Current limits are too easy to reach

Some problems in the allocation of the consumption emerged in case of “integrated mills”: the criteria, concretely, consider only the case of “non integrated” paper mills, giving different reference values for the pulp and the paper production, but do not contemplate the case of integrated production, therefore this might result in different approaches in calculating P_e and P_f for integrated mills.

Considering the results for fuel and energy consumption emerging from the graphics in Appendix 4.1, the reference values adopted seem already rather strict both for pulps and for paper production (coated and uncoated) and, therefore, there would seem to be apparently no reason for a lowering of them.

Calculation Formula

The same consideration made for the “emission to air and water” calculation formula can be made in this case. An error in the former writing of the criteria leads to a too complicated formula.

$$P_{E, pulp} = \sum (p_i \times E_{pulp, i} / E_{reference, pulp})$$

should probably have been:

$$P_{E, pulp} = \sum (p_i \times E_{pulp, i}) / E_{weighted reference, pulp}$$

$$\text{where } E_{weighted reference, pulp} = \sum (p_i \times E_{reference, pulp})$$

PROPOSALS

The formula in the criteria text has to be modified and corrected as follow:

$$P_E = \frac{\sum_{i=1}^n [pulp, i \times E_{pulp, i}] + E_{paper}}{\sum_{i=1}^n [pulp, i \times E_{ref pulp, i}] + E_{ref paper}}$$

It has to be considered that the modification proposal will produce higher values compared to those obtained using the current criteria formula. And this probably confirms that a further lowering of F_{ref} and E_{ref} could not be appropriate at this stage.

About the problem of the consumption allocation in case of integrated production of pulp and paper (since also in integrated paper mills it is possible to have separate consumptions of Electricity and Fuel), maybe the following approach can be used:

- 1) the electricity and fuel consumptions of pulps and paper will be used separately in the above mentioned formula to calculate P_e and P_f , and for the paper mill consumption an average value will be considered;
- 2) the electricity and fuel consumptions of the pulps will be considered = zero and for the paper mill the highest values of consumptions (those experienced when producing the integrated pulps) for Electricity and Fuel will be considered, thus allocating all the consumptions on the integrated paper mill (just as it happens with all the other emission parameters, COD, NOx, P...for integrated mills).





Moreover by using the User's Manual formula (the simplified one we are proposing above), in both cases, 1 and 2, results for P_e and P_f are the same (using the current criteria formula instead option 2 would always lead to higher P_e and P_f than option 1), and this would prove that this simplified formula is to be preferred anyhow.

The kind of approach to follow in these cases, anyway, has to be specified in the user manual, rather than in the criteria text.

Every possible adjustment of the reference values should be discussed during the next AHWG.

Criterion 3. – Fibres - Certified Forest Management

Criteria for copying and graphic paper: comparison among the main EU ecological labels.

FIBRES	EUROPEAN NATIONAL LABELS			
	Eco-label	Nordic Swan	Blauer Engel	DGQA
				
10% from certified forests	20% from certified forests or 75% recycled (not mandatory) or combination of both.	100% recycled fibres	90% recycled fibres (not mandatory)	

In the current criteria, *at least 10 % of virgin wood fibres from forests shall come from forests that are certified as being managed so as to implement the principles and measures aimed at ensuring sustainable forest management.*

For those virgin wood fibers from forests that are not certified as being from sustainably managed forests, the applicant shall provide the appropriate declarations, charter, code of conduct or statement, verifying that the above requirements are met.

Due to some comments, the percentage of the certified wood could be increased to 30-50%, but some stakeholders think that this increase sounds like a big jump from current 10% and that 20 % could be more acceptable like in current Nordic Swan criteria, in fact, they said, the % of certified forests in the world is only about 8% (as we also reported in Table 2.6) .

It was also suggested that the figures could be based on a certified “chain of custody” for a better traceability chain of the wood.

About the uncertified wood, it seems necessary to make a clarification about the current declaration requested and also to prohibit the use of wood from controversial sources (as done for the “wooden furniture”). The system of “chain of custody” could also act as a proof that requirements for non-certified wood are met.

Table 3.3 - Review table for criterion 3

Criterion	Theme	Existing requirements	New requirements proposal	Motivation
Fibres- Forest Certified Management	Wood fibres from certified forests	10% of virgin wood from certified forest	To rise the hurdle to: 30-50%	To widen the percentage of raw materials certified
	Fibres from uncertified forest	A declaration is requested	More clarifications about the declaration to be provided and to introduce a certified system to manage the requirements for uncertified wood	To standardize the requirements

The following hot spots have to be considered for the technical revision that will be developed during the Work Package 2:

- The criterion on certified fibres should not be separated from the one on recovered fibres.

Some proposals ask to setting of a minimum amount of recycled fibres “AND” certified fibres for the remaining percentage of materials used.

Other asked to leave to producers the possibility to either choose to use certified fibres “OR” recycled fibres.

- In order to have recycled fibres available, there must be also a production of paper from virgin fibres since fibres cannot be recycled indefinitely.

Some stakeholders underlines that Ecolabel should promote balanced use of fibres, not to discriminate use of renewable and recyclable fresh fibre. Setting recycled content targets for all paper grades would mean that less recovered paper is available for newsprint papers which would only lead to more competition in the already narrow recovered paper market and would not have any environmental benefit.

In some cases, the effect would be negative for the environment as more bleaching and flotation would be needed for higher paper qualities (see WP1 Final report “LCA comparison”; chapter 4.7).

On the other hand it should be also considered that:

- Copying paper is one of the fastest growing products in paper use and waste of copying paper in offices is huge (40% of office paper end in the bin at the end of the day²⁵). Behavioural research

²⁵ Xerox research: The Guardian, 14/10/2007. “Britain’s trillion page mountain stacks up”

for the printer manufacturer Xerox found office workers throw away 45 % of everything they print within a day, equivalent to more than a trillion pages every year ;

- Additionally the potential for recycled fibers is still huge in Europe with a strong increase of the amount of recovered paper on the European market;
- Recent news on collapsing recycling markets (because of less demand from abroad) are another strong argument that should push the European recycling market and to achieve further promotion of recycled fibers through the Ecolabel.

Regarding certification schemes it has to be noted that in the last years the major improvement has occurred in the amount of certified “Chain of Custody” systems more than in the “Forestry Certification” ones. A Chain of Custody system verifies the amount of certified fibre and ensures the legality of the remaining non-certified fibres.

On the basis of these considerations it seems to be necessary to find a solution requiring a minimal percentage of fibres that can be “certified” or “recycled”, remaining the oblige for the 100% chain of custody certification for the remaining virgin fibres.

Comparison with other EU Ecolabel criteria for Paper

The two principal references are the criteria for the Printed²⁶ and for the Tissue²⁷ paper. The requirements for each of them are following summarized:

Tissue paper (draft)

a) *The pulp and paper producer/s shall have a policy for sustainable wood and fibre procurement and a **system to trace and verify the origin of wood** and tracking it from forest to the first reception point.*

And

b) *The fibre raw material in the paper may be recycled or virgin fibre. **50% of any virgin fibre must, however, originate from sustainably managed forests** which have been certified by independent third party schemes fulfilling the criteria listed in paragraph 15 of the Council Resolution of 15 December 1998 on a Forestry Strategy for the EU and further development thereof.*

²⁶ Still to be approved

²⁷ Revision process concluded: to be voted in March 2009.

Point a) in practice, means that the producers shall demonstrate their compliance with the principles required by a certification scheme like a Chain of Custody (also if there is no explicit request for this in the “assessment and verification”);

Point b) instead refers to third part certification of “Forest Management”, such as the abovementioned FSC, PEFC, etc...

Printed paper products (draft)

Fibres may be wood fibres, or recycled fibres from recovered paper, or other cellulose fibres. Fibres from paper mill broke shall not be considered as recycled fibres.

*At least **10 %** of virgin wood fibres from forests shall come from forests that are certified as being managed so as to implement the principles and measures aimed at ensuring sustainable forest management.*

The remaining virgin wood fibres from forests shall come from forests that are managed so as to implement the principles and measures aimed at ensuring sustainable forest management.

[...]

In this case the requirement is for a Forest Management certification.

Considering also these criteria, especially the printed paper ones, it might be reasonable not to go too much over the above percentage for the copying and graphic paper product.

PROPOSALS

The references and measures that shall guarantee the social, economic, ecological, cultural principles of sustainability and to which the requirement must be inspired, are:

- a) The Pan-European Operational Level Guidelines for Sustainable Forest Management (Lisbon Ministerial Conference on the Protection of Forests in Europe (2 to 4 June 1998));
- b) The UNCED Forest Principles - Rio de Janeiro, June 1992 (Outside Europe);
- c) 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).

Regarding “Legal timber” then it is important to refer to the FLEGT(*) (EU Action Plan for Forest Law Enforcement Governance and Trade) –Regulation 2173/2005.

(*) http://ec.europa.eu/development/policies/9interventionareas/environment/forest/flegt_briefing_notes_en.cfm

According to the previous considerations²⁸ and to the comments received during the first year of consultation with the stakeholders, the aim of the first Draft Criteria Proposal is to find a suitable and commonly shared method to promote certified fibres as well as recycled ones.

What we are proposing is a method which leaves the applicant the possibility to choose in which way to comply with the criterion: whether providing proof that the fibres origin from certified / managed forest or using recycled raw materials or a combination of both.

Since we are moving through the first steps of the technical revision, about the limit values more proposals are made: the more appropriate limit will be decided after the next consultations.

A minimum percentage (30% or 50%) shall be achieved with a combination (in mass) of recycled and third party certified fibres.

For the remaining virgin wood used, it should come from forests that are managed so as to ensure sustainable forest management (e.g.: FSC and PEFC “controlled wood” certification could be a proof of compliance with this requirement) and/or a system to trace and verify the origin of wood and tracking it from forest to the first reception point should be required (e.g. CoC certification), for the legality of the timber a Flegt licence could be requested..





In this way the label would guarantee:

- The use of recycled material, or, at least
- The warrantee that the forests of origin of the wooden material are managed in an environmentally, socially, appropriate and economically viable manner (Forestry Certification);
- The assurance that, also if the origin of the virgin wood is not third party certified, the management of the forests respect some basic criteria (CoC, Controlled wood, FLEGT...), excluding the following unacceptable sources:
 - Illegally harvested wood;
 - Wood harvested in violation of traditional and civil rights;
 - Wood harvested in forests in which High Conservation Values (areas particularly worth of protection) are threatened through management activities;
 - Wood harvested from conversion of natural forests;
 - Wood harvested from areas where genetically modified trees are planted.

²⁸ See also chapter 2.5 “Sustainable forest management” and 2.6 “Green public procurement for copying and graphic paper”

Criterion 4. – Hazardous chemical substances

Criteria for copying and graphic paper: comparison among the main EU ecological labels.

HAZARDOUS CHEMICAL SUBSTANCES	EUROPEAN NATIONAL LABELS			
	Eco-label 	Nordic Swan 	Blauer Engel 	DGQA 
	a) chlorine: no bleaching gas; b) APEOs: banned c) Residual monomers < 100ppm d) Surfactans in de-inking formulation:biodegrad. e) Biocides : no bio-accumulative f) Azo-dyes: no aromatic amines in 2002/61/CE g) Dyes: no environmental risk phrases h) Pigments : no Pb,Cu, Ni, Cr,Al i) Ionic impurities: limits	a) chlorine: no bleaching gas b) APEOs: banned c) Residual monomers < 100ppm d) Surfactans in de-inking formulation:biodegrad e) Biocides: no bio-accumulative f) Azo-dyes: no aromatic amines in 2002/61/CE g) Dyes: no environmental risk phrases EDTA : to supervise	a) Chlorine: banned b) APEOs: banned e) Biocides: banned for Annex II EC 2032/2003 f) Azo-dyes: banned aromatic amines in 2002/61/CE g)Dyes: no risk phrases for human safety h) Pigments: no Pb,Cu, Ni, Cr,Al Others: Formaldehyde < 0.5 mg/dm ² PCP < 0.15 mg/kg Glyoxal: NO Bleaching optics: NO EDTA: NO COV): to supervise	a) Bleaching optics: banned b) EDTA: banned c) APEOs: banned d) Heavy metals: banned Cd, Cr, Hg, Pb, Ni, Zn.

The criterion states that:

The applicant shall supply a list of the chemical products used in the pulp and paper production, together with appropriate documentation (such as MSDSs). This list shall include the quantity, function and suppliers of all process chemicals used.

The criterion has nine sections:

Section (a) Chlorine

The chlorine gas used as bleaching agent is banned.

Section (b) APEOs

APEOs can't be added to cleaning chemicals, de-inking chemicals, foam inhibitors, dispersants or coatings.

Section (c) Residual monomers

The quantity of residual monomers can't exceed 100 ppm; for acrylamide the maximum value is 1000 ppm.

Section (d) Surfactants in de-inking formulations for return fibres

100g/ADT is the hurdle for biodegradable surfactants.

Section (e) Biocides

The use of biocides with bio-accumulative components is prohibited.

Section (f) Azo-dyes

Azo-dyes cannot be used. For the specific list of aromatic amines see the Commission Decision 2002/741/CE.

Section (g) Dye stuffs

Commercial dye formulation with specific risk phrases don't have to be used (please see the Commission Decision 2002/741/CE).

Section (h) Metal complex dye stuffs or pigments

Dyes or pigments (that are based on lead, copper, chromium, nickel or aluminium) can't be used.

Section (i) Ionic impurities in dye stuffs

For the specific limits please see the Commission Decision 2002/741/CE.

It was suggested to specify what is meant for “**process chemicals**”, in order to make clear which chemicals substances have to be included in the list (i.e.: all cleaning agents?).

In order to make this point clearer, the term “process chemicals” could be substituted by “all substances used in the production process”.

A revision of the *assessment and verification* is required. In particular, it is suggested **to delete the request of declarations of compliance** with the requirements.

Also the necessity to revise all the requirements on chemicals to comply with the more recent normative (e.g: REACh, etc...) has emerged.

During the 1st AHWG it has been demanded that only totally chlorine free (TCF) paper can be awarded with the EU Ecolabel and the introduction of an additional requirement for EDTA and for optical brightener limitation. But some stakeholders, as already mentioned, remarked that even if TCF bleaching doesn't cause AOX emissions it nevertheless uses more energy, wood and chemicals for tonne of pulp than ECF.



Some stakeholders also required the restriction to the use of chemicals that may fulfil the criteria for Substances of Very High Concern in REACH (CMR, PBT, vPvB, endocrine disruptors).

PROPOSALS

In many cases some producers add fragrances and aromatic essences to their product (copying and/or graphic paper). For this reason it could be significant the introduction of a criterion to regulate the use of these substances, as already made in the EU Tissue Paper Criteria (ref. EU Ecolabel Tissue Paper Criteria Proposal, criterion 4 (f) , maybe updating it with comments made by some CBs (DK) aiming at restricting the use of unnecessary substances/preparations to those that don't cause any health or environmental risk.

Criterion 5. – Waste management

Criteria for copying and graphic paper: comparison among the main EU ecological labels.

WASTE MANAGEMENT	EUROPEAN NATIONAL LABELS			
	Eco-label	Nordic Swan	Blauer Engel	DGQA
				
	Yes	Yes	n.a.	n.a.

The criterion states that:

“The waste management system shall be documented or explained in the application and include information on at least the following points:

- *procedures for separating and using recyclable materials from the waste stream,*
- *procedures for recovering materials for other uses, such as incineration for raising process steam or heating, or agricultural use,*
- *procedures for handling hazardous waste (as defined by the relevant regulatory authorities of the pulp and paper production sites in question).*

It was suggested to facilitate the applicant **providing ISO 14001 or EMAS** certification instead of the current declaration of compliance with the criterion.

On the other hand it was also suggested to delete this criterion because not so relevant, in order to simplify the Ecolabel system.

Table 3.4 - Review table for criterion 5.

Criterion	Theme	Existing requirements	New requirements proposal	Motivation
Waste management	Waste management	To provide a declaration with the description of the waste management	To provide any declaration	To facilitate the applicant
			In place of current declaration, to provide ISO 14001 /EMAS certification as proof of compliance with the criterion	To facilitate the applicant and the assessors





Considered the large amounts of recyclable/reusable materials produced by pulp/paper mills, it does not seem that the management of this environmental aspect is “not relevant” at all.

Nevertheless, also if the waste management is almost always considered as one of the main environmental aspect to be considered for the establishment of an Environmental Management System, it is not a mandatory request for these kinds of certification. Starting from this preamble, thus, providing an ISO14001 or EMAS cannot be considered as a sufficient condition for considering the criterion complied.

The best way to verify the requirement is still to ask for the description of the “waste management procedures” specified in the criterion. In case a company is ISO or EMAS certified, it will be easier for them to provide the required documentation.

Criterion 6. – Fitness for use

Criteria for copying and graphic paper: comparison among the main EU ecological labels.

FITNESS FOR USE	EUROPEAN NATIONAL LABELS			
	Eco-label	Nordic Swan	Blauer Engel	DGQA
				
	Yes	n.a.	n.a.	n.a.

The criterion states that the product shall be fit for use and “*the applicant shall provide appropriate documentation and/or test results*”





It was suggested to modify this criterion because it has **no specific relevance for the paper products**.

However, from other comments it doesn't seem necessary to modify the criterion, because of its relevance.

BEUC wants to keep the criterion and suggests to use DIN standards as the Blue Angel (DIN EN 12281: 2003 for use in copying machines, DIN 6738: 1999 for archiving).

Criterion 7. – Information on the packaging

Criteria for copying and graphic paper: comparison among the main EU ecological labels.

USER INFORMATION	EUROPEAN NATIONAL LABELS			
	Eco-label	Nordic Swan	Blauer Engel	DGQA
				
	Yes	n.a.	n.a.	n.a.

The criterion states that the following text must appear on the Ecolabel product:

- *This product qualifies for the Flower because it meets requirements that, amongst others, limit emissions to water (COD, AOX), to air (S, NO_x, CO₂), and limits the use of energy, fossil fuels and hazardous substances."*
- *"For more information on the Flower, please visit the web-site: <http://europa.eu.int/ecolabel>"*
- *"Please collect used paper for recycling".*
- *In addition, the manufacturer may also provide a statement indicating the minimum percentage of recycled fibres.*

Some comments received are in favor of a simplification of the communication message on the product packaging: they suggest to put just the Ecolabel logo and license number on the packaging without the current additional text.

Anyway the logo and the general rules for its creation are defined by the Ecolabel Regulation 1980/2000 – Annex 3 and they can't be changed just in single product groups Criteria.

The requirement to put on the packaging the % of virgin or recycled fibers, if a mandatory criterion on this issue were included in the revised criteria, was made, together with the proposal to add an information on the country of origin for fibers in the criterion.

Table 3.5 - Review table for criterion 7

Criterion	Theme	Existing requirements	New requirements proposal	Motivation
Information on the packaging	Information on the packaging	To put the logo, license number and Ecolabel phrases on the packaging	To put jut Logo and license number without additional text on packaging	Not to confuse the consumers
			To add the % of recycled fibers	More information to consumers
			To add the origin of recycled fibers	information to consumers

Criterion 8. – Information appearing on the eco-label

The criterion establishes that:

Box 2 of the eco-label shall contain the following text:

- "low air and water pollution
- low energy use
- harmful substances restricted".

As for the criterion 7, a simplification of the communication on the packaging is advocated, because, as suggested by some stakeholders, the consumers could be confused by too many written information.

4 Appendix

4.1 ANALYSIS OF EMISSION AND ENERGETIC CONSUMPTION DATA

The following results are the outcomes of analysis made using data coming from some European and two extra-EU paper producers that are particularly careful towards environmental aspects of the production processes. The primary data cannot be here showed because covered by confidentiality. For this investigation both EU Eco-labelled and not labelled products were taken into account, in order to give a picture as complete as possible of the current European situation about the main environmental parameters considered in the Ecolabel criteria.

The calculation of the “load points” has been made using the calculation formula provided in the user manual attached to the Commission Decision 2002/741/EC²⁹ (the simplified one).

At the end of the chapter two tables summarizing results obtained from the direct data provided by the producers compared with the BAT ranges (2001) and with the EU Ecolabel criteria for Copying and Graphic Paper, are provided. As already pointed out the Bref revision process for Pulp and Paper has just started, and it won't end before the end of 2010, therefore at this stage we were obliged to use the 2001 bat ranges. However, from the impression we received speaking with the people involved in the Bref revision, no major changes are expected from Bref 2010 compared to Bref 2001. Maybe the revised BAT ranges will become slightly stricter because of some technological progress, but as already expressed in the previous paragraphs of this report, since in these years no technical breakthrough nor general improvements or optimization of processes and treatment plants seem to have taken place, basing on the old values should not result into a big mistake for our revision study for Copying and Graphic Paper.

Information about primary data

Below some information on the data used for the analysis are shown:

Reference	n°	Origin	Notes
Paper Mills	38	36 Europe + 2 extra EU	14 Ecolabelled + 24 not Ecolabelled for C&G paper
			14 integrated + 24 non integrated
Pulps	Kraft	138	93 Europe + 22 USA & Canada + 23 Other Countries
	CTMP	4	Europe
	TMP	3	Europe
	Recycled	13	Europe
			31 certificate PEFC/FSC (22,5% on tot.)
			-
			-
			-

Data have been considered “significant” from 4 values of emission/consumption onwards.

NOTE: due to the lack of data, some figures (in yellow) could be unreliable.

²⁹ See Chapter 3., Criterion 1 for further explanations

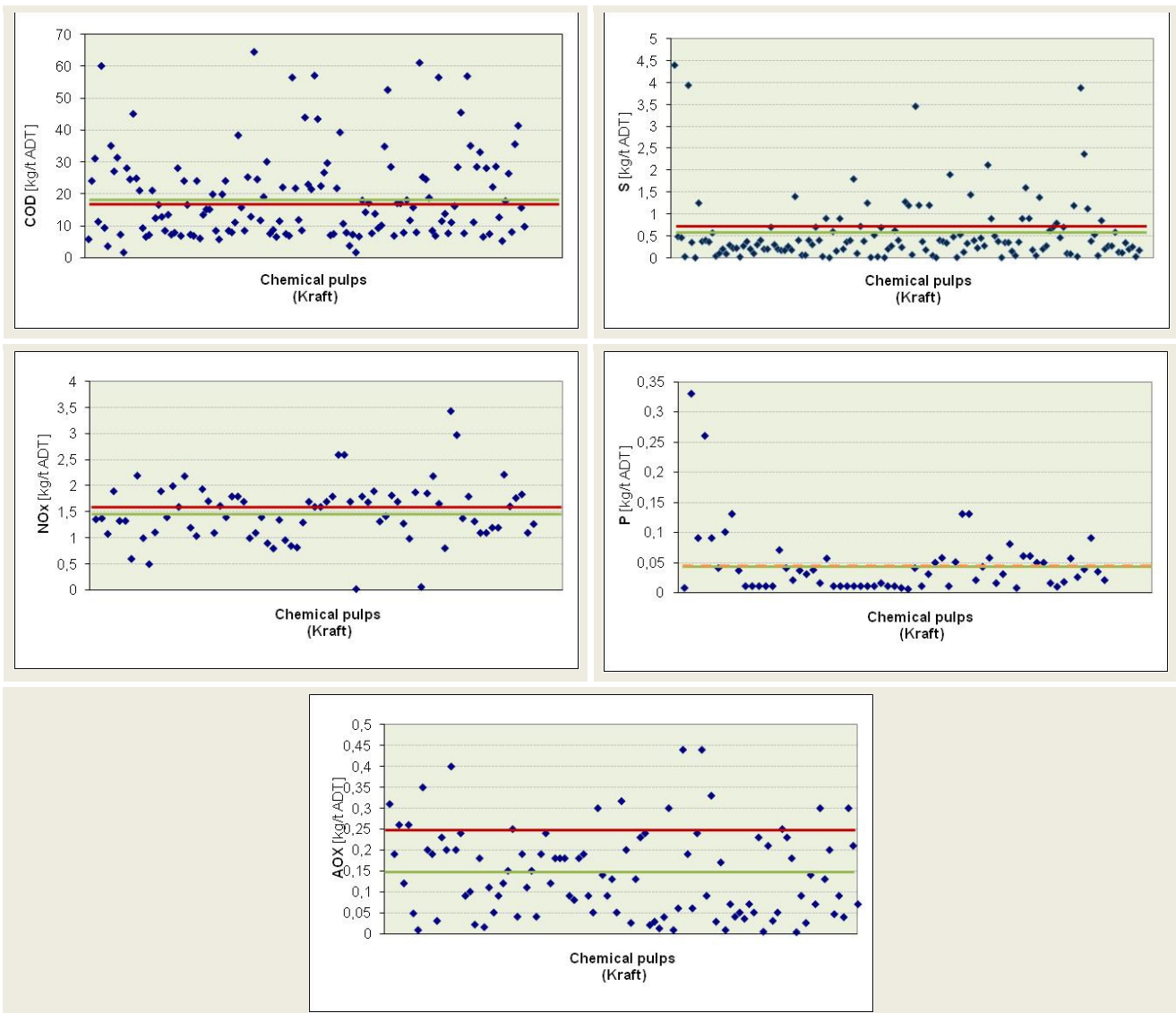
PULPS

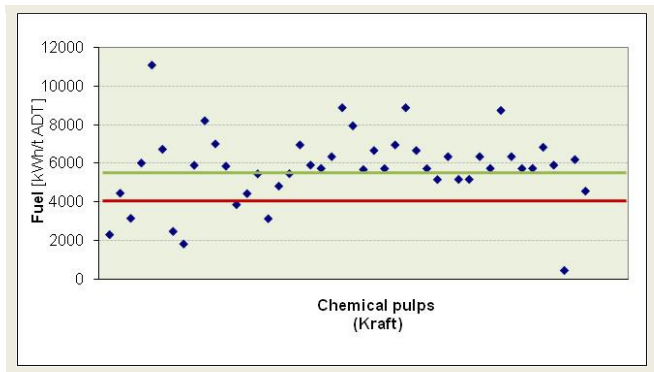
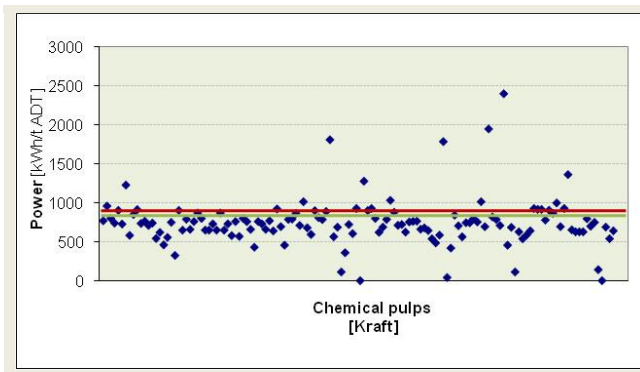
In the following tables the results concerning 3 of the 4 kind of pulps analyzed are shown: the TMP pulp has not been considered because of the few amount of data found/received.

Chemical pulps (Kraft pulp)

The following graphics report the emission/consumption data related to 138 **Kraft pulps**.

The **green line** indicates the average value of the real figures collected, while the **red line** corresponds to the reference value for the various parameters used in the current Ecolabel criteria (or to the limit value for AOX).





Other pulps

Below the average emission/consumption data associated related to CTMP and Recycled pulps are shown.

For each parameter the Ecolabel reference value (limit value for AOX) is also indicated.

		COD [kg/ADt]	S [kg/ADt]	NO _x [kg/ADt]	P (Total) [kg/ADt]	AOX [kg/ADt]	Fuel [kWh/ADt]	Electricity [kWh/ADt]
CTMP	Avg.	14,7	0,0004	0,108	-	0,012	1111	1358
	<i>Ecolabel</i>	<i>15</i>	<i>0,2</i>	<i>0,3</i>	-	<i>0,25</i>	-	-
Recycled pulp (deink)	Avg.	3,5	0,005	0,295	0,003	0,008	610	736
	<i>Ecolabel</i>	<i>2</i>	<i>0,2</i>	<i>0,3</i>	-	<i>0,25</i>	<i>1800</i>	<i>800</i>

15% of the pulp exceeds the AOX limit of 0.25 kg / ADT (18 pulp on 122 cannot be used, 5 of them are also certified PEFC/FSC). Of those 18, 10 originate from America (Canada, Chile, USA), and 4 from Russia, France, Norway, Spain

PAPER

The results for the emissions and consumptions associated, respectively, to different kind of paper mills and to different pulp grade are shown, in order to compare them with the reference values used in the criteria.

Emissions

<i>Mills</i>		COD [kg/ADt]	S [kg/ADt]	NO _x [kg/ADt]	P (Total) [kg/ADt]	AOX [kg/ADt]
<i>Integrated paper mills</i>	Avg.	4,7	0,2	0,5	0,008	0,04
	<i>Ecolabel</i>	<i>1</i>	<i>0,3</i>	<i>0,7</i>	-	-
<i>Non integrated paper mills</i>	Avg.	1,7	0,17	0,47	0,01	0,01
	<i>Ecolabel</i>	<i>1</i>	<i>0,3</i>	<i>0,8</i>	-	-

Consumption

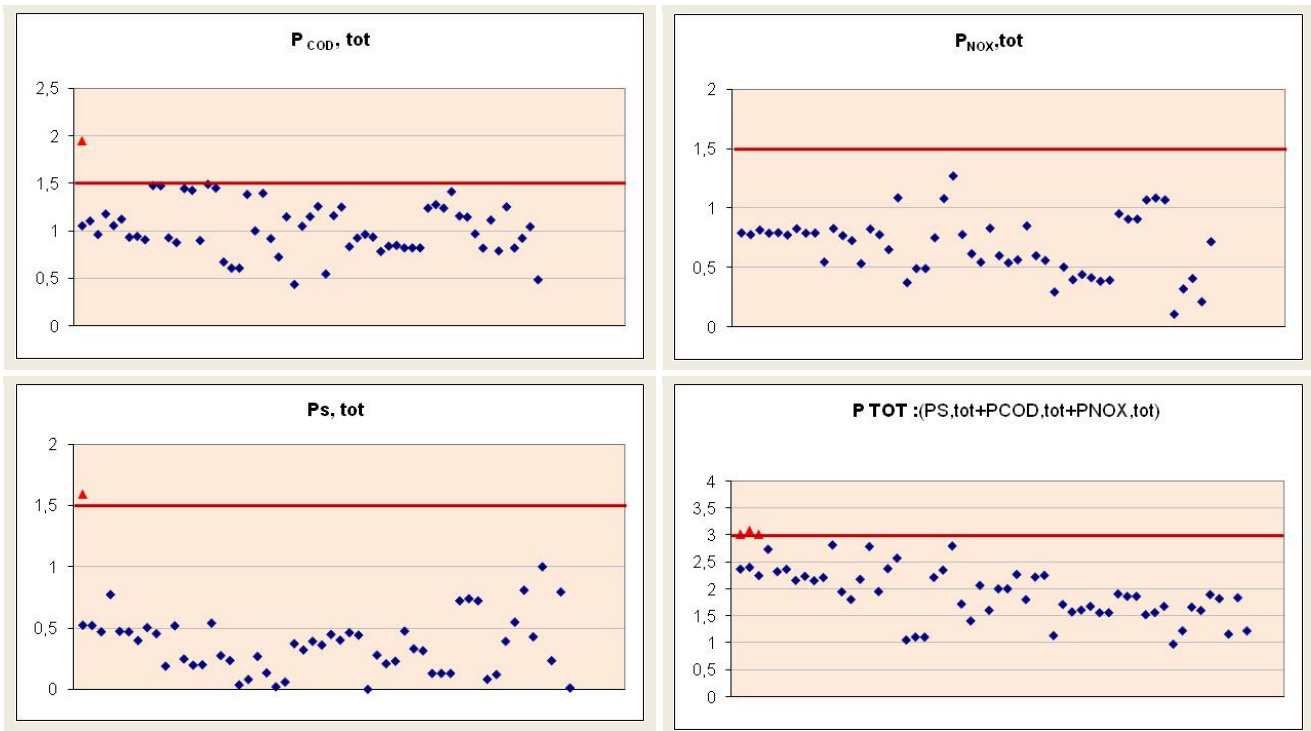
<i>Paper Grade</i>	Mills	Fuel [kWh/ADt]	Electricity [kWh/ADt]
<i>Coated paper</i>	Integrated mills ³⁰	2450	2027
	Non integrated mills	734	684
	<i>Ecolabel</i>	<i>1800</i>	<i>600</i>
<i>Uncoated paper</i>	Integrated mills	1560	1111
	Non integrated mills	2270	824
	<i>Ecolabel</i>	<i>1800</i>	<i>800</i>

LOAD POINTS

The following tables show the load points calculated for the different parameters managed by the criteria 1 (COD, S, NO_x and total number of points) and 2 (Fuel and Electricity consumption): for each graphic the **red line** represents the limit value imposed by the current Ecolabel criteria.

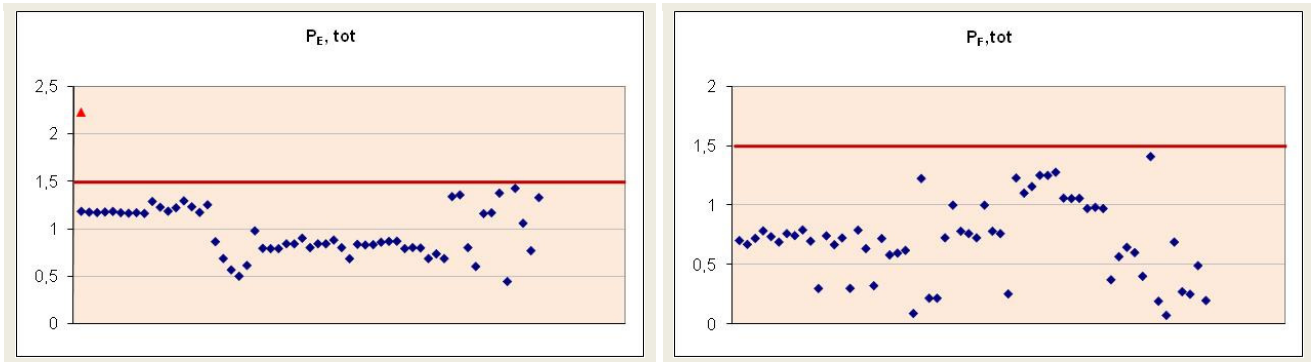
Each point represents the final scoring point referred to a specific productive mix (pulps) + the respective pulp mill emission/consumption.

P_{COD}, P_{NO_x}, P_S



³⁰ It includes also the pulp production.

P_F, P_E



LIMIT VALUES

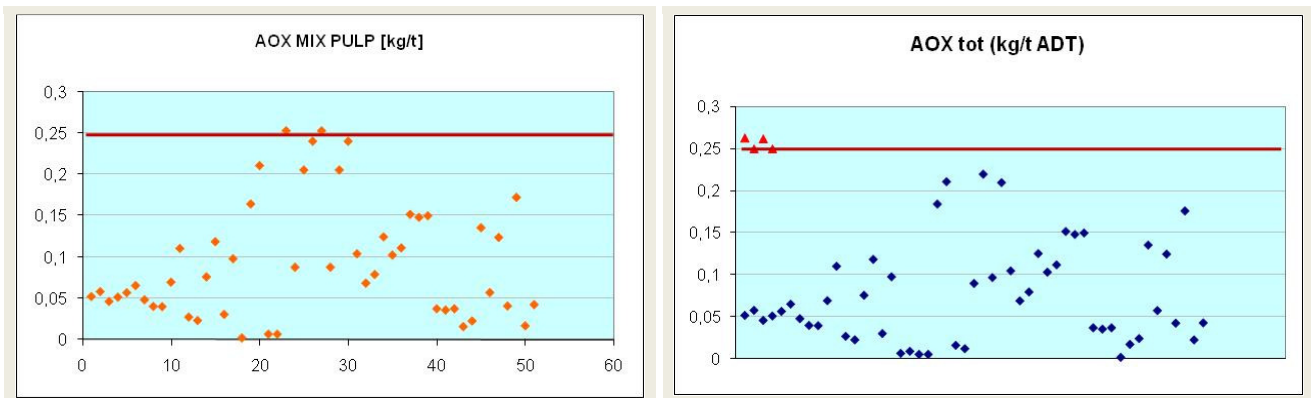
The emission values for AOX and CO₂ from pulp and paper production are shown in the following sections

AOX

Since the current criteria impose limits on each single pulp only, for the relative graphics please, refer to the section “Pulp” above.

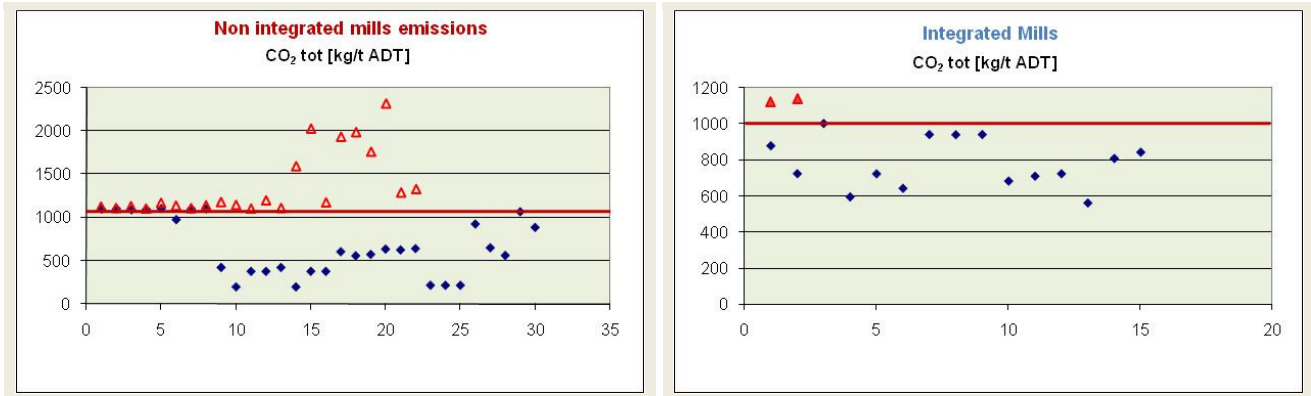
Below two other graphics, which could be useful to evaluate the possibility of modifying or extend the requirement, are shown:

- “AOX MIX PULP”: it represents the total AOX emissions from the pulp mix considered in our analysis. Keeping the current limit, almost all the mixes would comply with the criterion;
- “AOX tot”: the values refer to the AOX discharged from the pulp mixes and form the whole paper mill process. With the current limit of 0,25 kg AOX/ADT, four Paper mills would exceed the hurdle;



CO₂ EMISSIONS

The emission values were calculated, as specified in the *criterion 1 (c)*, both for Integrated and Non integrated mills.



The limit of 1100 kg CO₂/ADT for non integrated mills represents a problem for many paper mills (figures include the pulps emissions).

Table 4.1 - Summary of the results obtained from the direct data provided by the producers compared with the BAT ranges and with the EU Ecolabel criteria for Copying and Graphic Paper – Emissions to air and water.

	BAT	EU Ecolabel Criteria	Real Figures			BAT	EU Ecolabel Criteria	Real Figures			BAT	EU Ecolabel Criteria	Real Figures			BAT	Real Figures		
	COD kg/t ADT	COD kg/t ADT	COD kg/t ADT			S kg/t ADT	S kg/t ADT	S kg/t ADT			NOx kg/t ADT	NOx kg/t ADT	Nox kg/t ADT			P kg/t ADT	P kg/t ADT		
	ref value	ref value	average	min	max			average	min	max			average	min	max		average	min	max
PULP																			
Chemical pulp (sulphate)																			
- bleached	8-23	18	19,254	1,600	64,389	0,2-0,4	0,6	0,556	0,002	4,400	1-1,5	1,6	1,489	0,020	3,440	0,01-0,03	0,045	0,005	0,330
- unbleached	5-10					0,2-0,4					1-1,5					0,01-0,02			
Chemical pulp (sulphite)																			
- bleached	20-30	25				0,5-1	0,6				1-2	1,6				0,02-0,05			
CTMP	10-20	15	14,663	2,650	24,000		0,2					0,3				0,005-0,01			
TMP/groundwood pulp		3					0,2					0,3							
Recycled fibre pulp		2	3,530	1,100	9,800		0,2					0,3	0,295	0,140	0,580		0,003	-	-
PULP & PAPER (integrated)																			
Bleached sulphate pulp		1					0,3					0,7							
Unbleached sulphate pulp																			
Bleached sulphite pulp																			
TMP and newsprint	2-5							0,152	0,004	0,300			0,650	0,400	0,900	0,004-0,01	0,006	0,006	0,015
TMP and LWC	2-5		4,600	2,600	7,300								0,100			0,004-0,01			
TMP and SC	2-5		3,600													0,004-0,01			
RCF paper mill (with deinking)	2-4		5,386	3,782	6,989											0,005-0,01			
PAPER (non-integrated)																			
Uncoated fine paper	0,5-2	1	1,787	0,014	5,310		0,3	0,026	0,002	0,050		0,8	0,450	0,060	0,720	0,003-0,01	0,002	0,002	0,008
Coated fine paper	0,5-1,5		1,508	0,200	3,100			0,243	0,020	0,800			0,485	0,090	0,980	0,003-0,01	0,013	0,003	0,048
SC																			
LWC																			

Table 4.2 - Summary of the results obtained from the direct data provided by the producers compared with the BAT ranges and with the EU Ecolabel criteria for Copying and Graphic Paper – AOX limits + Fuel and Electricity consumption.

	BAT	EU Ecolabel Criteria	Real Figures			BAT	EU Ecolabel Criteria	Real Figures			BAT	EU Ecolabel Criteria	Real Figures		
	AOX kg/t ADT	AOX kg/t ADT	AOX kg/t ADT			Heat kWh/t ADT	Fuel kWh kWh/t ADT	Fuel kWh kWh/t ADT			Power kWh/t ADT	Power kWh/t ADT	Power kWh/t ADT		
			average	min	max			average	min	max			average	min	max
PULP															
Chemical pulp (sulphate)	<0,25	0,25	0,148	0,003	0,440	2800-3900	4000	5746	433	11091	600-800	800	744	1	2401
- bleached															
- unbleached						4400-5000	4000				600-800	800			
Chemical pulp (sulphite)						300-1700	900				2000-3000	2500	1358	1080	1653
- bleached						300-1700	900				2000-3000	2500			
CTMP															
TMP/groundwood pulp															
Recycled fibre pulp			0,008	0,004	0,014		1800	610	358	1211		800	736	551	896
PULP & PAPER (integrated)															
Bleached sulphate pulp						3900-5600					1200-1500				
Unbleached sulphate pulp						3900-4900					1000-1300				
Bleached sulphite pulp						5000-6700					1200-1500				
TMP and newsprint	<0,01					0-800					2000-3000				
TMP and LWC	<0,01					800-3300		2450	1630	3960	1700-2600		2028	990	2970
TMP and SC	<0,01		0,002			300-1700		1560			1900-2600		1240		
RCF paper mill (with deinking)	<0,005		0,059			1100-1800					1000-1500		984	948	1020
PAPER (non-integrated)															
Uncoated fine paper	<0,005		0,007	0,001	0,034	1900-2100	1800	2271	304	4735	600- 700	600	824	93	1411
Coated fine paper	<0,005		0,009	0,002	0,020	1900-2200	1800	734	299	1304	700-900	800	684	559	1086
SC							1800					600			
LWC							1800					800			

NOTE: most mechanical pulping is in integrated. Therefore, the emission levels associated with the use of BAT are given for integrated pulp and paper mills (except CTMP).

4.2 CONTACTS

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