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Background report to the guide for the use of the EU Ecolabel criteria in the green public procurement of absorbent hygiene products

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Contents

Abstract

Green public procurement (GPP) is a powerful tool to achieve environmental objectives by means of the incorporation of green requirements into public sector purchasing contracts. Public authorities, by promoting "green" purchases, incentivise environmentally beneficial outcomes and foster market innovation as well as the transformation towards a sustainable economy model.

In order to "green" the market, it is essential for producers to be able to make certifiable and credible green claims about their products and for customers to know what to ask for. While the EU Ecolabel policy can provide environmental references or standards for the former, the EU GPP policy can provide for the latter.

The EU GPP recommendations placed in this document are based on the EU Ecolabel criteria and intend to provide authorities with guidance on how to use ecolabels, and in particular the EU Ecolabel, in the procurement process. This report aims to bring these two policies together in order to find synergies between the supply-side EU Ecolabel policy and the demand-side EU GPP policy – specifically for the procurement of absorbent hygiene products such as baby diapers, sanitary towels, panty liners, tampons, nursing pads, or incontinence products.

In addition to a brief introduction to the EU Ecolabel policy, to the EU GPP policy and to procurement procedures as a whole, research is presented to support JRC recommendations to public procurers about exactly what green criteria to set when trying to procure environmentally friendly absorbent hygiene products.

The recommended environmental criteria are categorised into the five most appropriate areas (addressed in detail in 9 technical specifications and 10 award criteria) based on their link to the subject matter of the procurement, ease of verification (in cases where there is no EU Ecolabel) and relevance to the environmental impact., as follows:

1. Fluff pulp sourcing and manufacturing (referring to the impacts associated with upstream processes for cellulose fibre sourcing and processing, i.e., emissions and energy consumption);
2. Man-made cellulose fibre sourcing and manufacturing (referring to impacts associated with upstream processes for cellulose fibre sourcing and processing i.e., emissions and viscose process efficiency);
3. Cotton and other cellulose seed fibre sourcing and manufacturing (referring to the impacts associated with upstream processes for cotton fibre sourcing and processing i.e., bleaching);
4. Material efficiency in the production of the final product (in terms of the impact associated with material recovery in the core process);
5. Packaging (referring to the impact associated with materials circularity and resource efficiency in the downstream processes i.e., packaging recyclability and minimum content of recycled material).

Where relevant, further information about the why the criteria are relevant and what other ISO 14024 type I ecolabels may be considered as equivalent is provided.

Acknowledgements

The authors wish to thank corresponding policy officers from DG Environment for their support and feedback during the production of this report. Likewise, the authors wish to thank members of the EU Ecolabelling Board, the GPP Advisory Group and the JRC Editorial Board for their input and comments.

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Executive summary

In accordance with the provisions of Article 7(1)(f) of the EU Ecolabel Regulation (EC) No 66/2010, the aim of this report is to present and justify the selection of certain EU Ecolabel criteria that are considered to be the most relevant and appropriate for use by public authorities as Green Public Procurement (GPP) criteria in tenders for the procurement of absorbent hygiene products with good environmental performance.

Consequently, this report primarily targets public authorities seeking to procure such products, but is also of interest to suppliers and manufacturers of these products, since it provides a clear indication of relevant green "demand signals" recommended by the Commission. This report also incentivises peer-to-peer sharing of procurement initiatives by providing practical guidance that can be used as reference on how to formulate and verify green claims under the procurement contracts.

Altogether, the document provides 1) a general guidance on the key environmental considerations that should be incorporated into the public purchase (when defining life cycle-based environmental criteria), and 2) ready-to-use EU GPP criteria (and corresponding means of verification).

The report consists of a general introduction to EU GPP and EU Ecolabel policies and how they can and should work together to "green" the market. A brief summary of relevant background research conducted by the JRC is provided, with a focus on the following points:

- The scope and definition of products that criteria apply to, including reference to Common Procurement Vocabulary codes that should be used in calls for competition.
- Market considerations, including real examples of how the procurers purchase these products.
- The main environmental hotspots associated with absorbent hygiene products.

Based on the random review of tenders available on the Tenders Electronic Daily (TED) platform, the procurement of absorbent hygiene products primarily covers the needs of healthcare providers or related public administrations, including public home care services. Absorbent hygiene products are also purchased by correctional centres, kindergartens, schools, women's care facilities and other public institutions that require such products. The distribution of the free absorbent period products might also form part of a dedicated governmental campaign to take action against period poverty.

In the period 2015 – October 2023, the number of public tenders for baby care products (disposable nappies) is the highest among absorbent hygiene products, followed by sanitary paper products. The type of contract is mainly focused on the supply of products, while service contracts account for less than 1% of all notices. Service-related activities include 34% of contracts for the home delivery of incontinence products.

The main environmental hotspots were found to be associated with the upstream processes of sourcing and processing the materials for subsequent use in the manufacture of the final product. This is due to the high consumption of natural resources, electricity and chemicals.

Policy context

The report is a comprehensive introduction to EU GPP and EU Ecolabel policies, as well as how they can be integrated to ´green' the market for certain product groups.

Key conclusions

The following EU Ecolabel criteria are recommended to be used by procurers in calls for competition

1. Fluff pulp sourcing and manufacturing;
2. Man-made cellulose fibre sourcing and manufacturing;
3. Cotton and other cellulose seed fibre sourcing and manufacturing;
4. Material efficiency in the production of the final product;
5. Packaging.

After each suggested criterion, further information is provided to better inform procurers about why the criterion is relevant, if there are equivalent labels and how they diverge, in case of non-equivalency.

Brief justifications of why these EU Ecolabel criteria were considered as relevant and suitable for EU GPP criteria (based on relevance to the subject matter, ease of verifiability and environmental relevance) can be

found in Annex 1. For each selected criteria area, Annex 2 lays out an equivalency check, between the EU Ecolabel and selected ISO 14024 type I ecolabels.

Related and future JRC work

This background report is complementary to a more concise (10 page) Science for Policy Brief for the same subject. Readers of the Brief who wish to find more information are directed to this background report. It is planned to prepare similar *background report + Brief* combinations for several different products groups in the near future.

Quick guide

The core of this report is in sections 2.1 and 3.3, where the scope is defined and where EU GPP criteria recommendations are made. After each criterion, further information is provided to better inform procurers about the criterion and why it is important, if there are equivalent labels and what results from any tests generally mean.

Brief justifications of why these EU Ecolabel criteria were considered as relevant and suitable for EU GPP criteria (based on relevance to the subject matter, ease of verifiability and environmental relevance) can be found in Annex 1 to this report.

Any absorbent hygiene product carrying the EU Ecolabel can be automatically assumed to comply with all of the EU GPP criteria recommended in this report. Other ISO 14024 type I ecolabels may also demonstrate proof of compliance with some or all of the recommended EU GPP criteria in this report, but these need to be carefully checked. For reference, a side-by-side comparison of the recommended criteria in relevant ecolabels for similar products is presented in Annex 2 to this report.

1 Introduction

Every year, over 250 000 public authorities in the EU spend around 14% of EU Gross Domestic Product (GDP) on the purchase of services, works and supplies[1], accounting for roughly EUR 1.8 trillion annually (EC, 2016). Across the Organisation for Economic Co-operation and Development (OECD) countries, public procurement purchasing power makes up an average of 12% GDP, and up to 30% in many developing countries, worldwide[2].

Green Public Procurement (GPP) is defined in the European Commission's Communication "Public procurement for a better environment" (COM(2008) 400) as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured." Training toolkits[3] for public authorities are available to help understand the strategic thinking, legal aspects and needs assessment associated with procurement as well as how to engage with the market.

The new EU circular economy action plan (CEAP) recognizes public procurement as a driving force, capable of incentivising the demand for sustainable products and of steering the market transition towards circular economy principles. The CEAP also stresses the need to improve the coherence between public procurement and any other complementary regulatory or voluntary approaches of new and existing instruments that regulate products along various phases of their life cycle.

GPP is one of the pillars of Sustainable Product Procurement (SPP)[4]. Worldwide, governments (especially those in OECD-countries) initially implemented sustainable procurement by focusing on reducing the environmental impacts of purchasing, but now they are progressively leveraging their procurement in support of social equity and economic development (UNEP, 2022). Indeed, the public sector can use procurement to boost jobs, growth and investment, and to create an economy that is more innovative, more energy efficient[5] and more circular (ICLEI, 2017).

The EU Ecolabel is the official EU Ecolabel for environmental excellence of products (goods and services). According to Regulation (EC) No 66/2010 (EC, 2010), is to promote products (goods and services) with a reduced environmental impact during their entire life cycle. The EU Ecolabel criteria target the top 10 to 20 % of products on the market within a defined product group The development of a Manual for authorities awarding public contracts is foreseen in Article 7(1) point (f) of the EU Ecolabel Regulation (EC, 2010), which states the following:

"*The party which initiates and leads the development or revision of EU Ecolabel criteria shall, in accordance with the procedure set out in Part A of Annex I, produce the following documents:*

(a) a preliminary report;

(b) a proposal for draft criteria;

(c) a technical report in support of the proposal for draft criteria;

(d) a final report;

(e) a manual for potential users of the EU Ecolabel and competent bodies;

(f) *a manual for authorities awarding public contracts*"

[1] See: https://ec.europa.eu/info/policies/public-procurement_en

[2] See: https://www.unep.org/explore-topics/resource-efficiency/what-we-do/sustainable-public-procurement

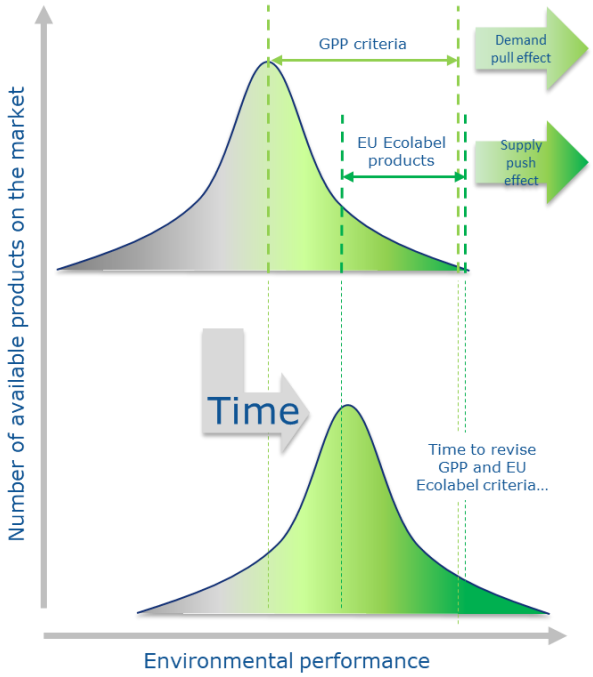
[3] See the GPP Training toolkits here: https://ec.europa.eu/environment/gpp/toolkit_en.htm

[4] Sustainable principle is based on environmental, social and economic considerations. Sustainable procurement strategy considers the life cycle value of the project, social impact and the economic benefits., for more information about sustainable public procurement, please see: SPP (UNEP)

[5] For example, Annex III to the Energy Efficiency Directive obliges central governments to play an exemplary role in the purchase of products, services or buildings with the highest energy efficiency class possible (without compromising cost-effectiveness, economic feasibility, technical suitability or the availability of competition)..

EU Ecolabel criteria on the supply side can work in combination with EU GPP criteria on the demand side to drive the market towards better products in terms of environmental performance. As shown in Figure 1 below, the EU Ecolabel enables suppliers to market their products with an ecolabel that can be used as an accurate, non-deceptive and science-based proof of the excellent environmental performance of their product. Public authorities can then directly specify some or all EU Ecolabel criteria in calls for competition, depending on how ambitious they want to be. The combined effect of both supply push with EU Ecolabel and demand pull from EU GPP, is to shift the market distribution towards greener products as shown below.

Figure 1. Intended effect of voluntary EU GPP and EU Ecolabel criteria on overall environmental performance of defined product groups and services on greening of the market



Source: JRC own elaboration.

This report promotes synergies between EU Ecolabel and EU GPP policies for absorbent hygiene products by recommending selected EU Ecolabel criteria for public authorities to specify in calls for competition. This document provides:

1) A general guidance on the key environmental considerations that should be incorporated into public purchasing specifications (when defining life cycle-based environmental criteria;

2) Ready-to-use EU GPP criteria (and their verification).

At the same time, the report informs relevant producers and suppliers of key environmental criteria that could make their products and services more suitable for upcoming tendering processes that will look to incorporate green criteria.

This identifies EU Ecolabel criteria that are most suitable for inclusion in a public procurement process, considering three main principles:

1. Compliance with the existing public procurement rules, in particular regarding the link to the subject matter of the contract being awarded;
2. Verifiability of the criteria by public authorities, beyond the reliance on products having been awarded the EU Ecolabel;
3. Highest environmental relevance as per life cycle impacts and circular economy objectives (EC, 2020).

The recommendations proposed within this report consider the most dominant environmental impacts of the product group as suggested by the life cycle assessment. Where relevant, findings from background research undertaken when revising the EU Ecolabel criteria for absorbent hygiene products, or the final technical report which presents the current EU Ecolabel criteria, have been referred to for the proposed recommendations.

1.1 The procurement process and types of procedure

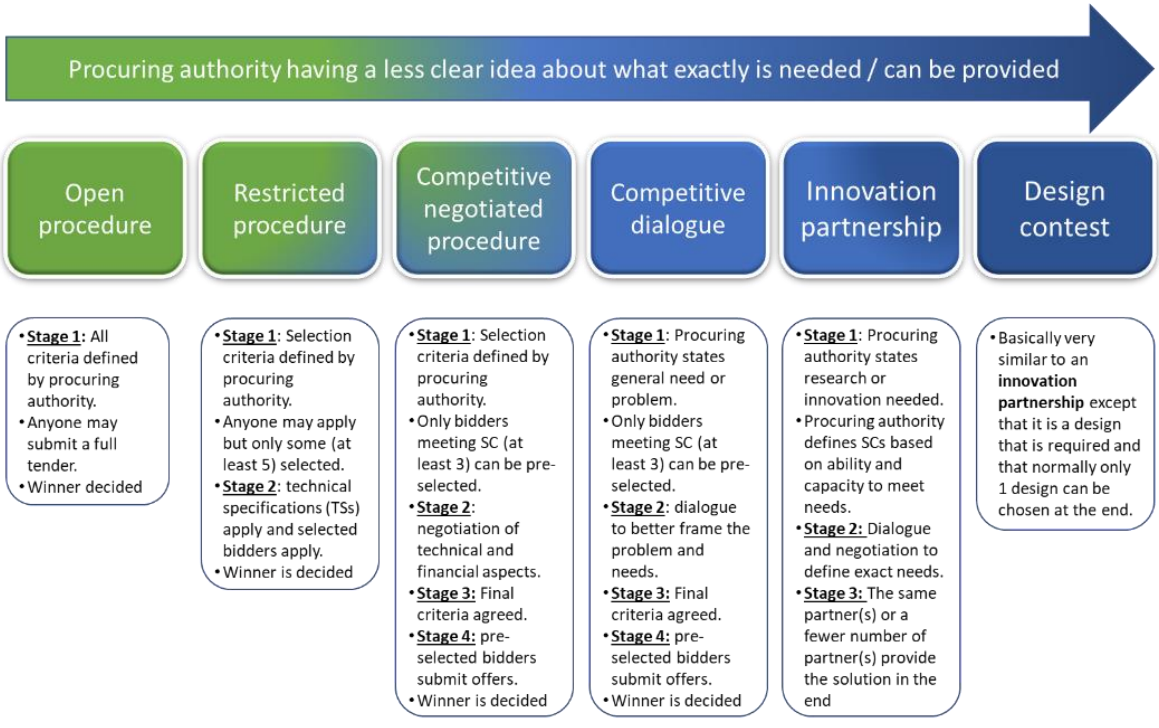
In general, procurement processes follow the sequence of:

2. Needs identification;
3. Choice of procurement method;
4. Allocation of financial resources/budget;
5. Preparation of procurement documentation;
6. Market engagement (optional)
7. Publication of documents for call for competition;
8. Receipt of and opening of offers;
9. Evaluation and verification of offers;
10. Announcement of winning offer;
11. Award and signing of contract.

The contents of this report are especially aimed at steps 4 to 8, to help inform procurers about what "green" requirements to set and how to evaluate compliance with these mandatory or optional "green" requirements.

There are a number of different procurement procedures that can be applied depending on the nature of the goods, works or services being procured and also different types of contracting techniques depending on the needs of the procuring authority. The main types of process are summarised below.

Figure 2. Broad overview of different procurement procedures that are used in the EU



Source: JRC own elaboration.

The introduction of environmental requirements to the procurement of absorbent hygiene products merits some degree of effort from the procuring authority to "prepare the market".

Engaging with the market or trying to prepare the market would essentially be a "stage 0" for the open and restricted procedures, but is already incorporated in the other types of the procurement process that include negotiation stages.

The benefits of market preparation are:

1. Economic operators who are better prepared for environmental issues are more likely to become bidders;
2. More bidders prepared on environmental issues means more competition;
3. More competition means more options for environmentally friendly products;
4. More environmentally friendly products mean a greener consumption.

Engaging with the market:

- Consulting with internal or external experts with a good knowledge of the market for the products to be procured and the current state of the art with green criteria in these products.
- Establishing dialogue with potential bidders and possibly holding information sessions to discuss the feasibility of applying certain green criteria in calls for tender.

Publishing a Prior Information Notice (PIN) about the environmental criteria you intend to apply in order to give potential bidders sufficient time to prepare (may also include producers applying for the EU Ecolabel)

1.2 Types of procurement criteria

Criteria differ in terms of when they apply in the evaluation process, in terms of being mandatory or voluntary in nature and in terms of who or what they apply to. The relative importance of each type of criteria will ultimately depend on how the call for competition is worded and structured by the contracting authorities. An illustration of how these criteria potentially apply in a procurement process is provided in Figure 3.

Exclusion criteria (ECs): These are mandatory criteria set in European and national procurement law that apply to the economic operators who are bidding (the bidders). Such criteria will relate to non-compliance with applicable laws, grave professional misconduct that could render the integrity of the economic operator as questionable, or significant/persistent deficiencies in performance of substantive requirements under prior contracts that led to termination or comparable sanctions. Additional mandatory exclusion criteria may also be defined. Any bids from bidders failing the ECs are not evaluated.

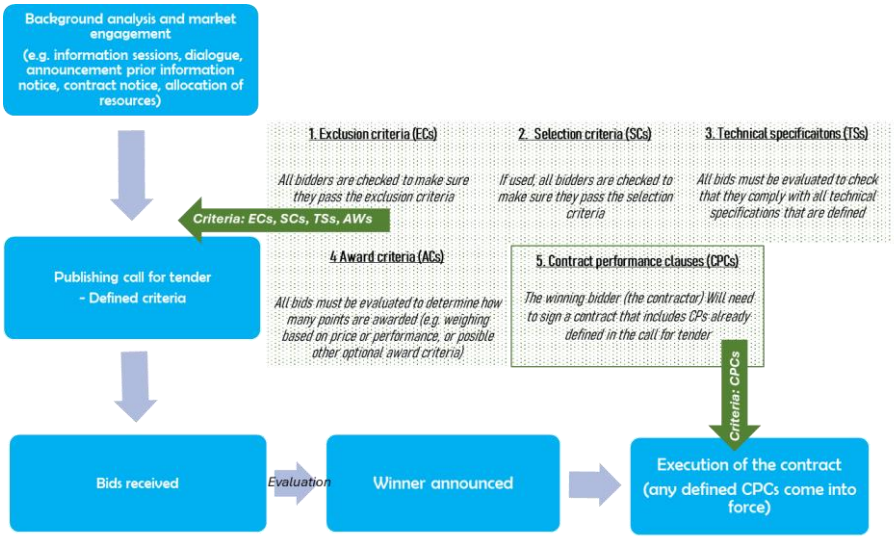
Selection criteria (SCs): These are optional criteria in terms of whether they are used or not, but when used, they take on a mandatory character. It is common that SCs are used to set requirements relating to the experience, capacity and professional ability of the bidders. In all cases, SCs must be proportionate, linked to the subject matter of the contract and not end up unnecessarily restricting competition (for example by presenting a barrier to SMEs).

Technical specifications (TSs): This is the mandatory core of public procurement criteria and defines the minimum requirements that all offers must meet. All TSs therefore relate directly to the subject matter of the contract. Care must be taken when setting TSs to be sure that there are sufficient products or services on the market that can meet these requirements. If not, then there is a risk that no/few offers will be received, which results in less competition.

Award criteria (ACs): These criteria are always present in one form or another. The most basic AC is that the winning bid will be the one with the lowest cost (i.e. 100 % weighting on price). But ACs also provide the opportunity to insert a number of additional optional requirements that are related to quality and that can be independent of TSs or complimentary to them. Like TSs, they also apply directly to the subject matter of the contract, and thus to offers received. The combination of less ambitious TSs with more ambitious ACs allows calls for competition to be published that reward the best products on the market without unnecessarily restricting the potential number of bidders. Awarding extra points for quality or environmental performance in ACs is a way for contracting authorities to make better quality or more environmentally friendly products more competitive with cheaper and less environmentally friendly alternatives.

Contract Performance Clauses (CPCs): CPCs defined in the call for competition aim to inform bidders of what conditions would apply to the winning bidder (i.e., the contractor). They are essentially mandatory requirements that would be incorporated into a formal contract signed with the eventual contractor.

Figure 3. Illustration of how the main different types of procurement criteria can apply



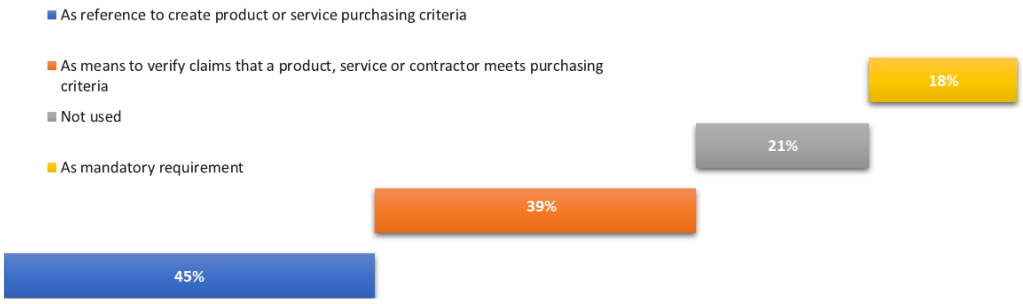
Source: JRC own elaboration.

1.3 Use of EU Ecolabel criteria in public procurement

The EU public procurement Directives 2014/24/EU and 2014/25/EU (EC, 2014a and EC, 2014b) define the possibilities of using labels (e.g., ecolabels) in public procurement. Labels can be used at different stages of the procurement process. At the verification stage, ecolabels provide a means of third-party verification, which can considerably help procurers to save time and effort while ensuring that high environmental standards are

The United Nations´s Sustainable Public Procurement and Ecolabelling (SPPEL) project combines ecolabelling with sustainable public procurement measures and encourages the supply and demand of sustainable products all over the world. The following figure shows an estimate derived from the SPP Global Review Stakeholders Survey 2021 on the use of ecolabels by procuring organisations worldwide (N=257) [6] (UNEP, 2022).

Figure 4. Global use of Ecolabels by procurement entities



Source: JRC own elaboration based on UNEP, 2022.

In general, labels can be required as means of proof in public procurement, provided that all of the following conditions are fulfilled (taken from Article 43 of Directive 2014/24/EU and Article 61 of Directive 2014/25/EU, with some additional text added in square brackets [] for clarity):

a) the label requirements [set in GPP criteria] only concern [*proof of compliance with*] criteria which are linked to the subject matter of the contract and are appropriate to define characteristics of the supplies or services that are the subject matter of the contract;

[6] In Europe, 35% organisations used ecolabels as a verification means (UNEP, 2022)

b) the label requirements are based on objectively verifiable and non-discriminatory criteria;

c) the labels are established in an open and transparent procedure in which all relevant stakeholders, including government bodies, consumers, social partners, manufacturers, distributors and non-governmental organisations, may participate;

d) the labels are accessible to all interested parties [*i.e., manufacturers or service providers can apply for the label and contracting authorities can access the underlying label criteria*];

e) the label requirements are set by a third-party over which the economic operator applying for the label cannot exercise a decisive influence.

Contracting authorities setting requirements that can be met by works, supplies or services bearing a specifically cited label (e.g., the EU Ecolabel) shall accept any other labels (e.g., Nordic Ecolabel, Blue Angel etc.) as proof of compliance as long as points a), b), c), d) and e) above are valid, and works, supplies or services with these other labels are proven to meet the relevant specified requirements of that specified label.

The EU Ecolabel scheme fulfils the above points from b) to e). As regards point a), it is possible that some EU Ecolabel criteria relate to broader aspects of the organisation (e.g., training of staff) that might only be indirectly linked to the subject matter of the contract. While all GPP criteria for AHP presented in this report could be considered as fulfilling the requirements of point a) on the link to the subject matter of the contract, this also depends on precisely how contracting authorities define the subject matter of their own calls for competition. Consequently, compliance of GPP criteria with point a) above must be checked on a case-by-case basis.

For more detailed guidance, please refer to resources such as the EU public procurement directive (EC, 2014a), the Buying Green Handbook (EC, 2016), and the Public Procurement Guidance for Practitioners (EC, 2018) published by the European Commission.

Contact us if you have any comments or experiences to share about the public procurement of absorbent hygiene products.

2 Product-specific information

The research for developing EU Ecolabel criteria for Absorbent Hygiene Products (Preliminary Report: Pérez-Camacho et al., 2023 and Technical Report: Faraca et al., 2023) is also relevant to this EU GPP report because it addresses the same product group and scope.

2.1 Scope and definition

This GPP report applies to absorbent hygiene products (AHPs) falling within the scope and definition described under Article 1(1) of the Commission Decision 2023/1809, as follows: '*The product group 'absorbent hygiene products' shall comprise any article whose function is to absorb and retain human fluids such as urine, faeces, sweat, menstrual fluid or milk, excluding textile products. The product group 'absorbent hygiene products' shall include products for both private and professional use'.*

Reusable hygiene products made of textiles do not fall within the scope of the AHPs, as they are to be regarded as textile products. As per Article 1, the product group is not meant to contain products that fall under Medical Devices Regulation (EU) 2017/745[7]. If the manufacturer has an intention to cover a medical purpose, incontinence products may fall under the Regulation.

In addition, products whose purpose is not to absorb and store human fluids but rather to clean certain parts of the human body [*such as wet wipes, cotton swabs and make-up remover wipes*] are not covered by the EU Ecolabel scope for AHP. As far as tissue products are concerned, although they are often grouped together with AHPs under a general category of hygiene (or sanitary) products, they are not included in this product group due to their different purpose use (functionality). EU Ecolabel criteria for tissue paper products fall under the scope of Commission Decision (EU) 2019/70[8]. The procurer can find the EU GPP recommendation based on EU Ecolabel criteria for tissue paper and tissue paper products in the dedicated report.[9]

The scope of the product group is determined by product functionality and includes five key product categories.

1. Diapers/nappies;
2. Sanitary Pads or Towels;
3. Panty liners;
4. Tampons,
5. Nursing Pads (breast pads), and
6. Adult incontinence products

Main definitions

To comprehend terminology used throughout the document, it's important to consider several definitions that describe the main materials or components of the final product. The complete list of applicable definitions can be found in Annex I of Commission Decision (EU) 2023/11809.

— *Cellulose pulp* means a fibrous material mainly composed of cellulose and obtained from the treatment of lignocellulosic materials with one or more aqueous solutions of pulping and/or bleaching chemicals;

[7] Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EE, OJ L 117, 5.5.2017, p. 1–175

[8] Commission Decision (EU) 2019/70 of 11 January 2019 establishing the EU Ecolabel criteria for graphic paper and the EU Ecolabel criteria for tissue paper and tissue products, OJ L 15, 17.1.2019, p. 27–57

[9] Kowalska M, Delre A, Donatello S., and Wolf. O, 2023, Background report for authorities awarding public contracts, based on EU Ecolabel criteria. For the green public procurement of graphic paper, tissue paper and tissue paper product. EUR xxx EN, Publications Office of the European Union, Luxembourg, 2023, ISBN xxx, doi:xxx JRCxxx.

— *Component* means one or several materials and chemical products that together fulfil a desirable function in the absorbent hygiene product, such as an absorbent core, adhesives, or an outer barrier film;

— *Composite packaging* means a unit of packaging made of two or more different materials, excluding materials used for labels, closures and sealing, which cannot be separated manually and therefore form a single integral unit;

— *Grouped packaging,* also known as secondary packaging, means packaging conceived so as to constitute a grouping of a certain number of sales units at the point of sale whether the latter is sold as such to the end user or it serves only as a means to replenish the shelves at the point of sale or create a stock-keeping or distribution unit, and which can be removed from the product without affecting its characteristics;

— *Man-made cellulose fibres*, also known as regenerated fibres, means fibres produced from the raw material cellulose which include viscose, modal, lyocell, cupro and triacetate;

— *Packaging* means items of any materials that are intended to be used for the containment, protection, handling, delivery or presentation of products and that can be differentiated into packaging formats based on their function, material and design, including:

(a) items that are necessary to contain, support or preserve the product throughout its lifetime without being an integral part of the product which is intended to be used, consumed or disposed of together with the product;

(b) components of, and ancillary elements to, an item referred to in point (a) that are integrated into the item;

(c) ancillary elements to an item referred to in point (a) that are hung directly on, or attached to, the product and that perform a packaging function without being an integral part of the product which is intended to be used, consumed or disposed of together with the product; etc.;

— *Sales packaging*, also known as primary packaging, means packaging conceived so as to constitute a sales unit consisting of products and packaging to the final user or consumer at the point of sale;

— Separate component, also known as additional component, means a packaging component that is distinct from the main body of the packaging unit, which may be of a different material, that needs to be disassembled completely and permanently from the main packaging unit in order to access the product, and that is typically discarded prior to and separately from the packaging unit. In the case of absorbent hygiene products, it is any component with protective or hygiene function that is removed before the use of the product, e.g. the individual wrapping or film where some absorbent hygiene products are contained within the sales packaging (mainly for tampons and sanitary pads), the release liner and paper in baby diapers and sanitary pads, or the applicator for tampons;

— *Super absorbent polymers* mean synthetic polymers designed for absorbing and retaining large amounts of liquid compared to their own mass.

Common Procurement Vocabulary (CPV) codes

When procurers publish a call for competition, a CPV code should be used when describing the subject matter of the call. Other CPV codes may also be used at a secondary level. For the digital public procurement communication, the use of CPVs is an efficient and user-friendly way to identify and describe work, goods or service that are being a subject of the acquisition. Consequently, it is worthwhile to check how products included in the scope of EU Ecolabel criteria sit within the hierarchy of CPV codes as established by Regulation (EC) No 213/2008[10].

The CPV codes consist of a main vocabulary and a supplementary vocabulary. The main vocabulary is based on a tree structure comprising codes of up to nine digits associated with a wording that describes the

[10] See: Commission Regulation (EC) No 213/2008 of 28 November 2007 amending Regulation (EC) No 2195/2002 of the European Parliament and of the Council on the Common Procurement Vocabulary (CPV) and Directives 2004/17/EC and 2004/18/EC of the European Parliament and of the Council on public procurement procedures, as regards the revision of the CPV. OJ L 74, 15.3.2008, p. 1–375

supplies, works or services forming the subject matter of the contract. Furthermore, the numerical code has 8 digits, subdivided as follows:

- the first two digits identify the divisions (XX000000-Y),
- the first three digits identify the groups (XXX00000-Y),
- the first four digits identify the classes (XXXX0000-Y),
- the first five digits identify the categories (XXXXX000-Y).

Each of the last three digits gives a greater degree of precision within each category, while a ninth digit serves to verify the previous digits. The goods codes contain parts or combinations of information, such as the main name of a product and its type, and sometimes other details.

The higher-level codes encompass a broad range of products and therefore the use of more detailed CPV codes could streamline the product identification. The supplementary vocabulary may be used as an aid to further detail the contract subject matter. For supplementary vocabulary, the identification is made up of an alphanumeric code with a corresponding wording allowing further details to be added regarding the specific nature or destination of the goods to be purchased. This comprehends two letters (the first defines the section such as products, the second defines the group), followed by two digits that define attributes, and a check digit, for example, the procurement entity interested in buying ecolabelled disposable diapers for babies will choose: 33751000-9 Disposable nappies, CA57-1 *Ecolabel,* EA01-5 *For babies* (EC, 2008). Table 1 outlines a selection of CPV codes that are considered as particularly relevant to absorbent hygiene products.

The use of the CPV is mandatory in the European Union as from 1 February 2006.

For more information on how to appropriately use the standard codes, see: Guide to the Common Procurement Vocabulary

Table 1. Relevant CPV codes that could involve EU Ecolabel absorbent hygiene products

High level	Medium level	Detailed level
Division 33: CVP 33000000-0 Medical equipment, pharmaceuticals and personal care products		
CVP 33700000-7 Personal care products	CVP 33750000-2 Baby care products	CVP 33751000-9 Disposable nappies
		CVP 33752000-6 Nursing pads
	CVP 33770000-8 Paper sanitary	CVP 33771000-5 Sanitary paper products
		CVP 33771100-6 Sanitary towels or tampons
		CVP 33771200-7 Paper napkin liners
		CVP 33772000-2 Disposable paper products*
Division 85: 85000000-9 Health and social work services		
85100000-0 Health services	CVP 85142000-6 Paramedical services	CVP 85142400-0 Home delivery of incontinence products

*Not considered for the further analysis as representing a miscellaneous group of disposable paper products for sanitary or hygiene use.

Source: EC, 2008.

Table 1 shows that the absorbent hygiene products belong to Division 33 (CVP 33000000-0) *Medical equipment, pharmaceuticals and personal care products*, sub-divisions of personal care products, further segmented into *baby care products* and *paper sanitary*. The Division 33 does not acknowledge a specific sub-category for the incontinence product. A home delivery service of incontinence products pertains to Division 85: *Health and social work services*, sub-division CVP 85142000-6 *Paramedical services*, further segmented into CVP 85142400-0 *Home delivery of incontinence products*.

The disposable paper products [*of paper sanitary sub-division*] will represent a miscellaneous group of paper products for sanitary or hygiene use such as paper cups, disposable paper plates, paper bad linings, tissue paper products, etc. Indeed, some AHPs might theoretically be allocated to this group. However, due to the

abundance of products that can be classified as disposable paper products, this product category is not taken into account for further analysis.

All in all, the list of CPV codes above (Table 1) is not an exhaustive and only includes the most relevant ones or these found on the Tenders Electronic Daily (TED) Platform to be commonly used for the procurement of the AHPs acquisition.

2.2 Market analysis

This section provides an overview of the European market for absorbent hygiene products and its trends on a quantitative and qualitative level for the different categories of absorbent hygiene products. The PRODCOM categories describing AHPs provide highly aggregated information. Unless otherwise stated, the Euromonitor International data (Euromonitor International, 2021) was primarily used to gain insight into AHPs market segmentation and product distribution across Europe.

The PRODCOM codes do not correspond directly to the CPV codes described in Table 2. The correlation between CPV and product-related PRODCOM codes is shown below in an approximate manner.

Table 2. Comparison of CPV and PRODCOM codes and a description of absorbent hygiene products that have relevance to the EU Ecolabel

CPV	PRODCOM
33750000-2 Baby care products — 33751000-9 Disposable nappies — 33752000-6 Nursing pad 33770000-8 Paper sanitary — 33771000-5 Sanitary paper products — 33771100-6 Sanitary towels or tampons — 33771200-7 Paper napkin liners 85142000-6 Paramedical services — 85142400-0 Home delivery of incontinence products	17.22 Manufacture of household and sanitary goods and of toilet requisites 17.22.12 Sanitary towels and tampons, napkins and napkin liners for babies and similar sanitary articles and articles of apparel and clothing accessories, of paper pulp, paper, cellulose wadding or webs of cellulose fibres — 17.22.12.10 Sanitary towels (pads) and tampons, napkins (diapers), napkin liners and similar sanitary articles, of wadding — 17.22.12.20 Sanitary towels (pads), tampons and similar articles of paper pulp, paper, cellulose wadding or webs of cellulose fibres — 17.22.12.30 Napkins (diapers) and napkin liners and similar sanitary articles of paper pulp, paper, cellulose wadding or webs of cellulose fibres, (excluding toilet paper, sanitary towels, tampons and similar articles) — 17.22.12.90 Household, sanitary or hospital articles of paper, etc., n.e.c.

Source: EUROSTAT and EC, 2008.

PRODCOM Code 17.22.12.90 (*Household, sanitary or hospital articles of paper, etc., n.e.c.*) may or may not include AHPs, and due to the high degree of aggregation, a large number of products may fall under this category. As a result, it is not included in the market analysis in this section.

Total sold production value and volume in the EU in 2022

The data for selected PRODCOM codes (Table 2) were extracted from EUROSTAT and analysed using various indicators to provide a comprehensive overview of the AHP's European market performance. To this end, Table 3 includes estimations of production, export, import, and apparent consumption in monetary and unit values for selected absorbent hygiene product categories in 2022 [*Numbers in bracket informs about %share*].

Based on PRODCOM's statistical data, the total production value of absorbent hygiene products for the selected categories in 2022 is about 7 billion euros, which corresponds to about 3 billion kg (2.3 EUR per kg mass unit). According to Euromonitor International's disaggregated market data, the total EU market share for absorbent hygiene products under the EU Ecolabel in 2020 amounts to EUR 6 billion in the EU-27 and the UK

(EUR 3.5 billion for baby diapers and EUR 2.5 billion for feminine hygiene products) (Euromonitor International, 2021).

Among the selected product categories, napkins and similar products made of cellulose fibres (PRODCOM 17.22.12.30) dominate the market share for production (76% for value and 83.8% for volume) and for an apparent consumption (80%). The product also has the highest share of import and export value and quantity. Sanitary towels, tampons and the like (PRODCOM 17.22.12.20) accounted for around 18,4% of the total production value and 12.4% of the total production volume, which corresponds to a share of around 12% of apparent consumption and a price of EUR 3.4 per mass unit. For all product categories, exports exceed imports.

Table 3. Estimation of production, export, import and apparent consumption in monetary and unit value for absorbent hygiene products in 2022

	PRODCOM codes			Total
	17.22.12.10	17.22.12.20	17.22.12.30	
Short description	Sanitary towels, tampons, napkins and the like	Sanitary towels, tampons and the like made of cellulose fibres	Napkins and napkin liners for babies and the like	
PRODVAL [m EURO]	404.56 (5.7%)	1314.37 (18.4%)	5432.36 (76.0%)	7151.28 (100,0%)
PRODQNT [MT]	120.33 (3.9%)	385.49 (12.4%)	2609.41 (83.8%)	3115.24 (100.0%)
IMPVAL [m EURO]	11.06 (3.3%)	118.16 (35.6%)	203.02 (61.1%)	332.24 (100.0%)
IMPQNT [MT]	1.58 (2.1%)	20.07 (26.8%)	53.11 (71.0%)	74.77 (100.0%)
EXPVAL [m EURO]	86.23 (3.5%)	789.94 (32.1%)	1582.25 (64.4%)	2458.43 (100.0%)
EXPQNT [MT]	9.38 (1.7%)	82.19 (15.3%)	447.36 (83.0%)	538.93 (100.0%)
Apparent consumption [m EURO]	329.39 (6.6%)	642.58 (12.8%)	4053.12 (80.7%)	5025.10 (100.0%)
Apparent consumption [MT]	112.54 (4.2%)	323.37 (12.2%)	2215.17 (83.6%)	2651.07 (100.0%)

Where:

PRODVAL means the value of sold production
PRODQNT means the quantity of sold production
EXPVAL means the value of export
EXPQNT means the quantity of export
IMPVAL means the value of import
IMPQNT means the quantity of import

Apparent consumption means a value of (sold production + imports) – export

Source: EUROSTAT

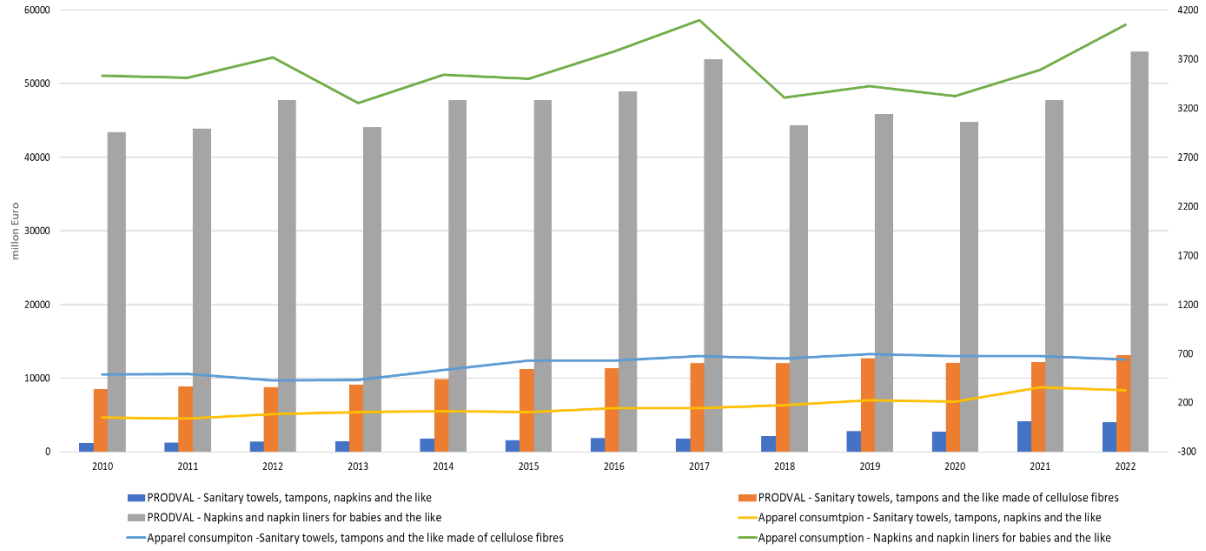
Historical trends in sold production and apparent consumption value in the EU from 2010 to 2022.

Figure 5 shows the development of the market trends between 2010 and 2022, when the production value sold for sanitary towels and the like increased by 25% and sanitary towels, tampons and the like by 77% (both PRODCOM categories counted together).

The AHPs market share is dominated by baby diapers, but it is also possible to observe the steady growth in the sales production value of the feminine care products (PRODCOM code 17.22.12.10 and 17.22.12.20). The apparent consumption of napkins closely follows the fluctuation of sold production value, which may indicate the dominant intra-European consumption of the stock. Due to an increase in production value and apparent consumption during the same period, this correlation becomes particularly noticeable in 2017 and 2022.

According to AHPs suppliers, most imported AHPs comes from North Africa or the Middle East. The Middle East is most likely also the recipient of exported AHPs. Pérez-Camacho (2023) indicates that the European region is a net exporter of menstrual products such as sanitary towels and the majority of baby nappies used in the EU are manufactured in Europe. However, it must be taken into account that some of the resources used to manufacture these products come from outside Europe (Cabrera and Garcia, 2019, Faraca et al., 2023). According to the manufacturers of fluff pulp, 90% of the production of this material takes place in North America, with an average transport distance of 2 000 km from Europe (Mendoza et al., 2019).

Figure 5. Sold production value and apparent consumption per PRODCOM product code between 2010 and 2022

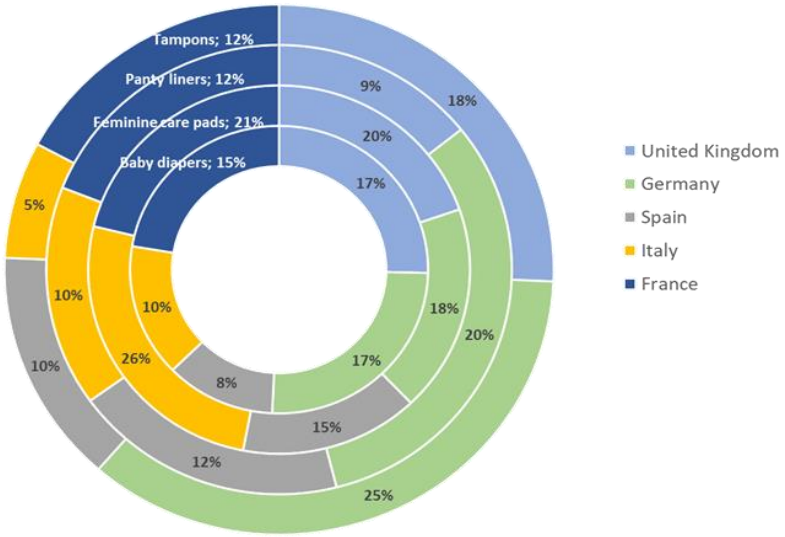


Source: JRC own elaboration based on EUROSTAT.

Sales volume in Europe per product type and country

Pérez-Camacho (2023) provides an overview of the sales volume of absorbent hygiene products on the European market, based on the product segment and country.

Figure 6. Countries with the highest share of sales of selected absorbent hygiene products – Top 5



Source: JRC own elaboration based on Euromonitor International: Tissue and Hygiene industry edition 2021.

In 2020, total sales of AHPs in Europe amounts to just over EUR 6 billion, which corresponds to a volume of around 59 billion units. The majority of sales volume is represented by baby nappies (almost 60%), with sanitary towels (almost 25%) and panty liners (almost 10%) following closely behind. Tampons account for less than 9% of total sales (Euromonitor International, 2021). Figure 6 displays the percentage market share for the selected absorbent hygiene products across the countries with the highest sales. The sales figures are closely related to the population of the respective Member State. Regardless of which country is analysed, the difference between the share of population in the EU-27 (and the UK) and the total share of AHP sales in 2020 is never greater than 2%. This proves the strong correlation with the population size and therefore the demand for feminine hygiene products, newborns and/or incontinence in the elderly.

Potential and real-life examples of procurement exercises

The procurer might use the real-life good practice examples as an aid to identify the elements of tendering process that raise the demand for "green" products and guide the market transition towards sustainability.

Consequently, this section aims to review good practice case studies available on the DG Environment website[11], the TED platform[12], and identified in the relevant literature (UNEP, 2022)

Consistent implementation of such measures will reap the full potential of public procurement. Embedding green purchase into procedures or criteria encourages innovation, supply chain traceability and resources management while shaping a sustainable transformation at the production and consumption level. More practical information about the best practice in Green Public Procurement might be found in dedicated brochure.[13]

Some real-life examples of GPP criteria for the absorbent hygiene products with some specific details are summarised in Table 4. Most of the case studies from the table address a long-term and rather generic strategy for the implementation of sustainable procurement goals for city or region. Only a very limited number of relevant tenders, and fewer criteria, were focused specifically on absorbent hygiene products.

The limited number of the examples is a natural outcome when considering that EU GPP criteria have not been specifically developed for this product group. The authors view the limited number of specific case studies as a multifaceted opportunity for this report to 1) raise procurers' interest in the green acquisition of AHPs, 2) gain a better understanding of sustainability opportunities in the green acquisition of AHPs, 3) provide practical guidance for innovation practise for AHPs, and 4) stimulate further reflection on the practical implementation of the GPP recommendations placed in this document.

Table 4. Summaries of real-life procurement exercises

Procuring authority	Subject matter of contract	Relevant green requirements for absorbent hygiene products
Across Member States	EMAS and the Healthcare Sector 149 organizations in the healthcare field have successfully implemented and received EMAS registration.	No direct requirements
Paris-Saclay University (FR)	Provision of free access to reusable menstrual products for students in precarious financial situations. The Diversity and Equal Opportunity unit identified 5.000 potential beneficiaries among 30.000 students.	All sustainable development and social responsibility criteria are weighted at 10% or 15% and composed of sub-criteria: 1- Applied measures in terms of professional integration of people in difficulty (10 or 5 points) 2 - Applied measures in terms of environmental protection (5 points).
Government of Ireland	Framework agreement of EUR 814.000 to take action against period poverty.	The agreement includes a number of key green and sustainability elements, re-usable and more sustainable

[11] See: https://ec.europa.eu/environment/gpp/case_group_en.htm
[12] See: https://ted.europa.eu/TED/main/HomePage.do?lg=en
[13] See: https://ec.europa.eu/environment/gpp/pdf/GPP_Good_Practices_Brochure.pdf

Procuring authority	Subject matter of contract	Relevant green requirements for absorbent hygiene products
(Ministers of State Naughton and Smyth, 2023)[14]	The agreement contains four lots dedicated to period equality (menstrual) products, which include: • Tampons • Sanitary pads • Menstrual underwear • Menstrual cups • No-cost dispensers	disposable product options are included in the range of period products available to order.
City of Stavanger (NO)	Personal care medical consumables are listed among other products. The framework agreement contract lasts for two years and can be extended for up to four years. The medical consumable market was sufficiently developed to meet both the social and green criteria outlined in the tender documents.	The SPP procurement process incorporates environmental, social, and governance (ESG) requirements. Green criteria: To meet selection criteria, tenderers must possess an environmental management system that meets ISO 14001, EMAS, or any equivalent, like the Norwegian 'Eco-Lighthouse' certification scheme. *Technical specifications:* 1. Mandatory use of environmentally friendly products e.g., by referring to products with an environmental label. 2. For packaging – mandatory take-back scheme [*to collect used products or materials from consumers and reprocess them to manufacturing cycle*] during the agreement period proved by a membership in a return scheme such as Grønt Punkt Norge AS or equivalent, or by operating the own scheme for packaging processing. *Award criteria:* The contract was given away based on both price (40% weight) and other sustainability factors, such as environmental criteria (30% weight) and social responsibility criteria ("ethical trade") (30% weight). Green award criteria focus on transport emissions: – Using vehicles that are either zero-emission or fossil-free for the main delivery (weighted 90%). – Urgent deliveries require vehicles that are both zero-emission and fossil-free (weighted 10%). Green requirements focused on the choice of materials, logistics and waste management. To ensure due diligence of social aspects, it is necessary to have at least a basic ethical approach to track and assess risks for worker and human rights abuses throughout the supply chain.
Province of Zeeland (NL)	Sustainable procurement plan for 2021-2024 from the Province of Zeeland: Using the Sustainable Development Goals as a guide. Each procurement made by the Province of Zeeland during the period 2021-2024 will contribute to the SDGs targets and be shared on the Sustainable Procurement Platform	No direct requirements – GPP guideline The guide for implementing and monitoring Sustainable Development Goals (SDGs).
Cyprus University of Technology (CY)	Environmental Policy Office responsible for GPP implementation across the university with the objective to transform procurement and related procedures into more sustainable activities and cultivate increased environmental consciousness amongst the university community.	No direct requirements - example relevant for the management of green purchases by an entity. The University's Green Public Procurement Consulting Committee (GPPCC) consists of a spectrum of representatives, from academics to administration staff. This committee is responsible for providing input on environmental aspects in the highest value tenders.

[14] See: Department of Public Expenditure, NDP Delivery and Reform, Nov, 2023, available at: https://www.gov.ie/en/press-release/adbc1-ministers-of-state-naughton-smyth-publish-framework-agreement-that-allows-the-public-sector-to-easily-purchase-period-products/

Procuring authority	Subject matter of contract	Relevant green requirements for absorbent hygiene products
Basque Government (ES)	The greening of public tendering procedures, which includes green criteria, will involve at least 50% public procurement of over 20% of tenders by 2020 for over 20 priority groups.	No direct requirements.
Veneto Region (IT)	Ensuring that public buyers in the region are committed to GPP	No direct requirements GPP training programs and knowledge sharing. Suppliers are engaged in the whole process - market analysis and in-depth study of the criteria to be included in tenders.
Sardinia (IT)	Sardinia's Regional Action Plan to encourage the GPP practice among all public entities in the region and achieve the adoption of GPP policies by all provincial governments and park authorities, in 50% of the region's municipalities, and in 30% of all other public bodies by 2013.	No direct requirements All tenders for goods/services published for the day-to-day operation of the regional administration must include minimum GPP criteria.

Source: DG Environment

Based on the random screening of tenders available on the TED platform, the AHPs procurement foremostly satisfies the needs of health care providers i.e., public institutions caring of sick, frail, disable, or aged persons such as hospitals, clinics, care centres, or alike public administration bodies including public home care service. Besides, AHP will also be purchased by penitentiary institutions, kindergartens, schools, women's care facilities, and or any other public establishment, which might require the provision of the menstrual products – for example - dispensers' machines in schools, universities, or administrative offices.

The distribution of the free absorbent period products might also form part of a dedicated governmental campaign [*ethical or social procurement often in co-operation with non-governmental organisations*] to take action against period poverty or/and to facilitate equal rights and ensure dignity to access menstrual products, or else in case of natural disasters (Jaafar et al. 2023, Scotland Act 2021[15], Paris-Saclay University, Government of Ireland, UNICEF[16]). Indeed, public poverty is a growing concern as it is estimated that currently, 1 in 10 menstruating females cannot afford sanitary products. The French Institute for Public Opinion assessed that period poverty affects 1.7 million women in France. The healthy Ireland Survey 2022 found that 24% of woman (and 35% of 15–24-year-old) have experienced at least one indicator of period poverty, whereas 6% reported issues with the affordability of wider hygiene products[17].

Absorbent hygiene products represent goods of a common and recurrent use. For a domestic use, these are purchased individually off the shelf in small quantities. By contrast, the acquisition by state administration will most likely bunch absorbent hygiene products into lots embedded into extensive framework [*or centralised*] contracts that accommodate the purchase of a vast range of products (often 'on-demand' contracts). Based on lessons learnt from the real-life examples, the centralised procurement provides goods and services at more competitive prices, as well as streamlines the administrative procedures.

In case of health care sector, the governing body [*hospital public procurement administration*] will most likely collect the purchase requests across the entities (or sub-entities). In practice, one centralised contract might procure a numerous AHPs lots [*with different or equal performance characteristics*] as requested by an individual sub-entity. Under this scenario, the *quasi-decentralised* institutional structure specifies demand, whereas a centralised governance manages the procurement process [*centralised budgeting*]. While the requesting body will most likely focus on the performance criteria [*without detailing how it needs to be acquired*], the implementation of green requirements will rely on the centralised governance [*that manages spendings and supervise the administrative procedure*]. This procurement model accommodates specific needs of the receiving body avoiding a 'one-size-fits-all' purchase e.g., demand for diverse size of incontinence products. However, the methodological organisation will require a strategic co-operation across the entity. To bring expected results, the planning phase must be supported by a collaborative knowledge and capacity

[15] See: https://www.gov.scot/policies/poverty-and-social-justice/access-to-free-period-products/

[16] See: https://www.unicef.org/wash/menstrual-hygiene

[17] See:https://www.gov.ie/en/press-release/adbc1-ministers-of-state-naughton-smyth-publish-framework-agreement-that-allows-the-public-sector-to-easily-purchase-period-products/

sharing across all involved departments, institute or any other, from the preliminary assessment to the execution of the contract i.e., '*work together and combine forces*.

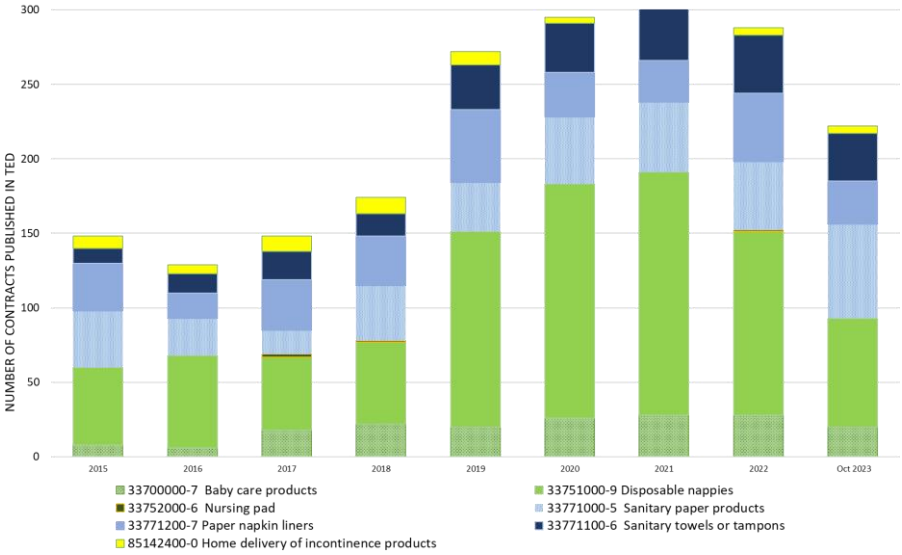
Participation of all actors involved (supply and demand side) remains crucial to ensure comprehensive implementation of sustainable consumption and production patterns. As with any green criteria that are not widely used across the market, it is necessary to increase awareness of them amongst procurers and in turn, to specify and explain expectations for the product performance to potential bidders. As previously mentioned, market engagement prior to calls for tender being published, and/or active dialogue on expected criteria during negotiation triggers the market and enhance the efficiency of the green acquisition procedure. The best practice examples always stress the need to engage with the market prior to setting green criteria as generating more complete knowledge of the market performance will provide a better understanding about potential sustainability opportunities and trade-offs.

Search of Tender Electronic Daily (TED) for relevant procurement tenders

TED is the online version of the 'Supplement to the Official Journal' of the EU, dedicated to European public procurement. TED publishes 735 000 procurement notices a year, including 258 000 calls for tenders which are worth approximately €670 billion. Any contract notices for service and supplies that exceed the minimum 140 000 EUR threshold must be published online on the TED platform[18].

This section displays the results of TED searches by business sector i.e., CVP codes that are associated with absorbent hygiene products. The outcomes presented below come from counting any "contract notices – light regime" or "contract or concession notice – standard regime" or "design contest notice" for the relevant CPV codes (*see:* Table 1) from 01/01/2015 to 31/10/2023.

Figure 7. Trends in relevant contract notices published on TED for absorbent hygiene products and materials (data until October 31, 2023)



Source: Own elaboration based on Tenders Electronic Daily (TED).

The robustness of the statistical analysis of data subtracted from TED is largely dependent on the procurer's accuracy in assigning CVP(s) to a product type. After considering the way the CPV codes are defined, it is clear that any analysis looking at public contracts for products and service will not distinguish in detail between different types of the AHPs as addressed by EU Ecolabel scope (and detailed by Faraca et al., 2023). As a

[18] See: https://ted.europa.eu/TED/main/HomePage.do?lg=en

result, the authors suggest that this section should be taken as an indication or added value to describe how the public administration is procuring absorbent hygiene products.

displays a collection of different CPV codes in single columns for each year, with baby care products in different shades of green, the sanitary paper products in different shades of blue, and home delivery of incontinence products in yellow.

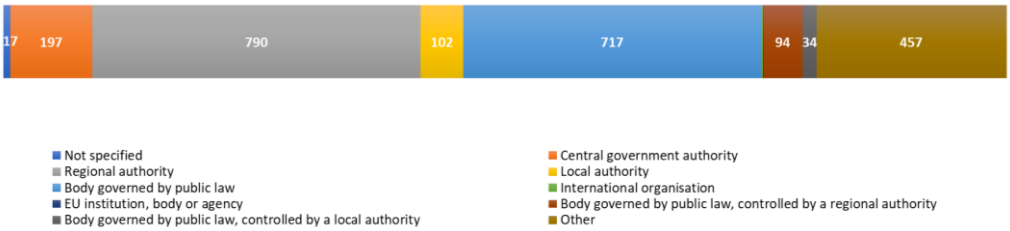
A contract notices for medium level CVP e.g., baby diapers, might aggregate contracts from the lower CVP codes levels. To avoid double counting[19] Figure 8 subtracts the number of detailed (or lower level) CVPs notices from the total number of notices for the related medium CVP category (highlighted by the patterned areas).

For the selected CVP codes, a total of 4142 contracts appeared in the search for the period 2015 to October 2023. For all AHPs-related CVPs, the total number of TED - published notices were in the region of 130 to 117 per year from 2015 to 2018, and in the quasi-constant region of 260 from 2019 to 2022. The sudden increase in the procurement of absorbent hygiene products starting in 2019 in particular for disposable nappies [*incontinence products for adults are often ascribed to this CVP code]* might acknowledge the beginning of the COVID outbreak and therefore higher health care service's demand that continued during the years 2020 - 2022. Additionally, this might also be attributed to the expected rise in birth rates [*for example, precautionary storage of products*] so called post-COVID baby-boom[20] coupled by national measures to mitigate a falling number of newborns across Member States. The COVID outbreak might also explain the increase in public purchase of liner napkins, tampons and sanitary towels [*higher number of hospitalised female patience*] in 2019.

During 2015 – October 2023, baby care products (disposable diapers) notices make the highest number among the three main CVPs divisions, followed by sanitary paper products. The type of contract is primarily focused on product supply, whereas service contracts make up less than 1% of all notices. However, the separate calculation for each CVP indicates that service-related activities include 34% of contracts for the supply and provision of continence delivery, i.e., home delivery of incontinence products (CVP 85142400-0), and 5% for sanitary paper products (CVP 33771000-5). For incontinence products, these may be delivered directly to patients' homes, to a residential/nursing home settings or in bulk to an acute hospital store.

Additionally, as already mentioned the distribution of the free absorbent period product might form part of dedicated governmental campaigns. Figure 8 illustrates the distribution of the procurement of absorbent hygiene products across different governmental bodies between 2015 and October 2023. The contracts have been mainly executed by the regional authority (33%) and bodies governed by public law (30%).

Figure 8. Procurement of the absorbent hygiene products-related CVP codes across different governmental bodies between 2015 and Oct 31, 2023



Source: JRC own elaboration based on Tenders Electronic Daily (TED).

[19] The superior [medium level] CVP divisions comprises baby care products (further classified as disposable diapers and nursing pads), and sanitary paper products (further structured into paper napkin liners and sanitary towels and tampons)

20'*Contrary to some initial expectations, the coronavirus pandemic did not bring a lasting baby bust. The Nordic countries, the Netherlands, Germany, and the United States experienced an improvement in their birth dynamics in 2021 compared with the prepandemic period*' see: Sobotka et al. 2023. Pandemic Roller-Coaster? Birth Trends in Higher-Income Countries During the COVID-19 Pandemic. Population and Development Review. https://doi.org/10.1111/padr.12544

Random checks of the contract notices consistently showed that the appearance of the CPV codes identified as being most relevant to absorbent hygiene products were relatively minor parts of broader procurement exercises such as framework contracts for the material supply with around 30-50 lots i.e., a bunch of distinctive AHPs distributed across different lots within the same contract notice. Some framework contract notices represented a centralised approach, for instance, centrally (or regionally) procured framework contracts when the contracting authority is purchasing on behalf of other contracting authorities or when the purchase proceeds under the joint tender between different entities such as hospitals in the same city or region. In both cases, this allows authorised (or listed in the notice) public bodies to benefit 'on-demand' from the Framework during the defined period of time (usually between 12 and 24 months) without additional procurement cycle(s). Unfortunately, the high aggregation of AHPs into multiple lots under one contract limits the possibility to perform precise monetary analysis per products-relevant lots. This would best be performed case-by-case for each contract notice and lots within.

While screening the contract notices on the TED Platform, the authors observed the following chief similarities related to:

1. Incontinence products – The authors have not identified any CVP code which is specific to the incontinence products, these are usually identified as personal care products (CVP 33700000-7) or baby care products (33750000-2) or disposable nappies (CVP 33751000-9) – which in the authors´ opinion is a comprehensive assignation. However, we also noticed a considerable lack of uniformity in how the incontinence product is CVP-assigned, for example, as disposable non-chemical medical consumables and haematological consumables (CVPs 33141000), or panties (CVP 18313000), or dressings (CVP 33141110), among others. Still, for the searching criteria used, the contract notices always mentioned personal care products under additional CVP code. The supplementary vocabulary, such as EA04-4 ´For men´, EA05-7 ´For elderly person´, or EA06-0 ´For women´ could bring about more specific description of the incontinence products (EC, 2008).

2. Automatic dispensers of sanitary products - Public education bodies or public administration offices use a generic CVP 33771000-5 (Sanitary paper products) code for the purchase of wall mounted vending machines and regular servicing to maintain stock levels and address any faults.

3. Award criteria – Price dominates the award criteria (weighting between 40 to 100% across screened contract notices), followed by quality and delivery time. We also identified several GPP criteria, such as: CO2 compensation, totally chlorine free (TCF) pulp, or environmental management system in place.

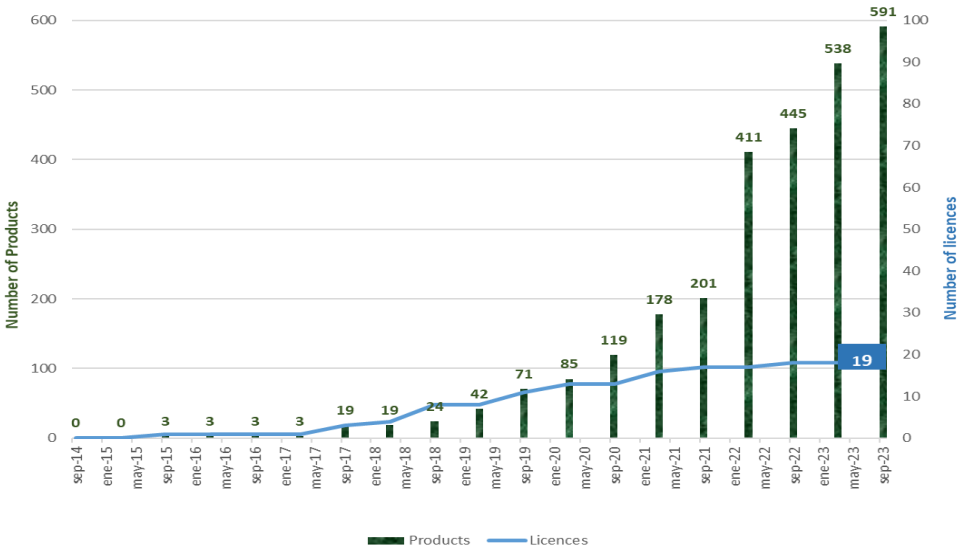
Availability of EU Ecolabel products on the market

Given that this report relies on EU Ecolabel criteria to build GPP recommendations, by outlining the availability of [*EU Ecolabel*] licensed absorbent hygiene products, we can roughly estimate the current market performance.

In September 2023 there were 591 EU Ecolabel absorbent hygiene products covered by 19 licenses. The numbers of licenses will always be considerably less than the number of licensed products. One license must be associated with at least one licensed product, and potentially hundreds or thousands of products may be grouped under the same license.

The current EU Ecolabel criteria laid down in Decision (EU) 2023/1809 of 14 September 2023 are the second adopted version of EU Ecolabel criteria for the absorbent hygiene products. The statistical assessment has been performed until September 2023, for this reason Error! Reference source not found. only refers to the uptake of products verified against the former criteria document i.e., Commission Decision 2014/763/EU - valid until 31 December 2023.

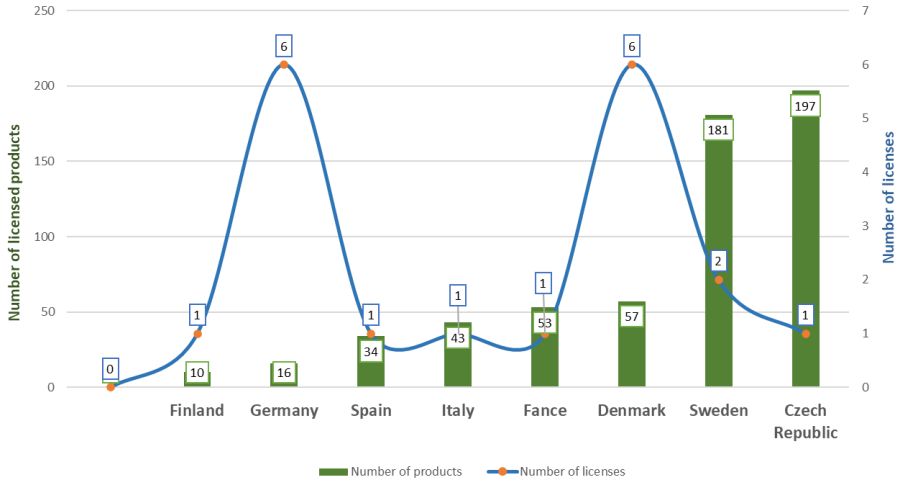
Figure 9. Trends in EU Ecolabel licenses and licensed absorbent hygiene products over the last 8 years



Source: JRC own elaboration from DG Environment.

As of September 2023 (Figure 10), the major number of EU Ecolabel absorbent hygiene products can be found in the Czech Republic (197 products under 1 license), followed by Sweden (181 products under 2 licenses), Denmark (57 products under 6 licenses), and France (53 products under 1 license). More information about the current licenses can be found in the EU Ecolabel catalogue.

Figure 10. Distribution of EU ecolabelled products across Member States



Source: JRC own adaptation from DG Environment.

2.3 Environmental hotspots

Absorbent hygiene products are designed to wick moisture away from the body and prevent potential leakage by using a moisture-repellent cover. All this while maintaining softness, breathability and skin-friendly (health and comfort) properties. Absorbent hygiene products are products for personal use that are in constant demand worldwide because [*probably*] everyone uses them at different stages of their life, either for incontinence as newborns or adults and/or for female menstrual hygiene.

Table 5. Raw materials for possible use in multi-layered absorbent hygiene products

Product Layer	Material	Function
Upper layer (top sheet)	• Propylene (PP), Polyethylene (PE), Polystyrene (PS), PP/PE • Biobased polymers • Cellulose-based fibre e.g., viscose (rayon) • Cotton	Skin contact and comfort Hydrophilic layer used to keep skin dry and quickly transfer fluids to the absorbent core with a minimal rewet.
Acquisition and optional distribution layer	• Propylene (PP), Polyethylene (PE), Polystyrene (PS), • Fluff pulp – cellulose fibre • Petroleum or biobased super absorbent polymers (SAPs) granulates such as sodium polyacrylate • Nonwoven e.g., PE (for an optional distribution layer) • Cotton	To temporarily retain the body fluids and help to move it away from the body contact while evenly distributing the liquid in the area.
Absorbent core layer	• Fluff pulp • Cotton • Protein fibres • Petroleum or biobased super absorbent polymers (SAPs) granulates • PP and/or PE, PS and copolymers • PLA combined with polyolefin resins • Biobased PE and/or PP	To absorb and retain fluids. Generally, it consists of cellulose fibres blended with super absorbent polymer (SAP).
Bottom layer	• Waterproof polyethylene or polypropylene film laminated with polypropylene non-woven • Biobased polymers • Adhesives (for feminine pads) • Silicone paper • Velcro straps	External layer. A microporous barrier that prevents leakage. Adhesives help to attach sanitary towels to underwear or use of touch fasteners (e.g. Velcro scraps) helps to fix it (stay-in place) around the body.

Source: JRC own elaboration.

Tampons are usually made of a limited number of materials such as rayon blended with cotton fibres or exclusively cotton (organic or non-organic (AHPMA, 2021)) covered with a thin layer of non-woven fabric or perforated film to reduce the loss of fibres and makes the tampon easy to insert and remove once used. The retrieval string necessary to remove the tampon is typically composed of cotton or other fibres and may be coloured (Ajmeri and Ajmeri, 2011).

Disposable AHPs other than tampons are complex multi-layer products where each layer serves a distinct purpose. The incontinence products for babies and the elderly, as well as the sanitary towels, have many similarities in terms of functional design and the type of materials used – mainly a combination of synthetic

materials (petroleum or biobased) and natural-based fibres such as cotton or wood. The final product consists of a top layer, an absorbent core layer (including an absorption and distribution layer) and a bottom layer.

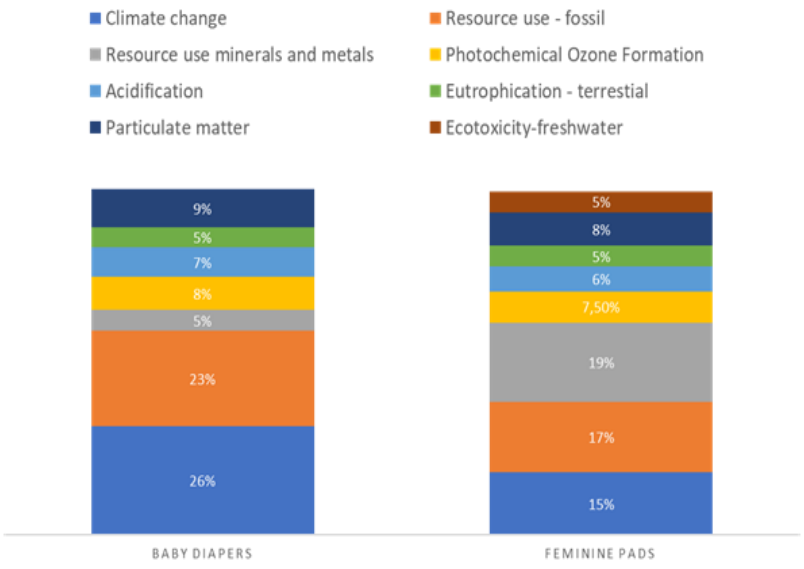
Nursing pads are also multi-layered products consisting of an inner, liquid-permeable layer, followed by a normal absorbent layer of fluff pulp. This is followed by a layer consisting partly of a superabsorbent. Outside this layer there may be another layer of cellulose, and the outermost layer is a layer of liquid-impermeable material[21].

Table 5 presents the indicative range of raw materials that could be found in absorbent hygiene products.

Pérez-Camacho et al. (2023), using the Product Environmental Footprint (PEF)[22] methodology, conducted an LCA study to evaluate the environmental impacts of average disposable baby diapers and sanitary towels. Furthermore, the authors conducted a comprehensive review of the available LCA literature, material innovations and best practices that were relevant to the absorbent hygiene products.

Various authors (Pérez-Camacho et al. 2023, Plotka-Wasylka et al. 2022, UNEP 2021, Nealis 2021, Mendoza et al. 2019, and Cordella et al. 2015) recognise the raw material acquisition (sourcing and production) as the main contributor to the life cycle impact of hygiene products. This is due to the extensive use of natural resources, electricity and chemicals. The elementary flow relies on energy and material resources as inputs, and waste and emissions as outputs. Figure 11 highlights the most important impact categories for producing baby diapers and feminine pads. Procures that wish to learn more about life cycle assessment of absorbent hygiene products should refer to Preliminary report for the revision of EU Ecolabel criteria for absorbent hygiene products.

Figure 11. The most relevant impact categories of baby diapers and feminine pads



Source: Adapted from Pérez-Camacho et al., 2023.

As already mentioned, the multi-layer absorbent hygiene products, i.e., incontinence care products for adults, baby nappies, breast pads, panty liners and feminine pads (i.e., sanitary towels) share some similarities in terms of material supply chains, properties and production processes - therefore environmental hotspots. Figure 12 provides a schematic overview of the raw material flows and life cycle phases in the production of absorbent hygiene products, including tampons. Processing of input materials is divided into 3 key categories

[21] See: Larson, L. Hansen, G., Marcussen, J., Bo Madsen, L.,1998. Breast Pads. EP0840582A1. European Patent Office (1998) available at: https://patents.google.com/patent/EP0840582A1/en

[22] The Product Environmental Footprint (PEF) is a LCA-based method to quantify the environmental impacts of products (goods or services) that are more reproducible, comparable and verifiable, compared to existing alternative approaches. For the details of the methodology, see: https://eplca.jrc.ec.europa.eu/permalink/PEF_method.pdf

i.e., natural origin materials (marked by the yellow arrow), extracted materials: fossil and minerals (marked by the orange arrow), and packaging (marked by the green arrow).

Figure 12 is to be read vertically for the manufacture of certain materials (components of an end product), with the life cycle running from top to bottom. The most environmentally relevant inputs at each stage (either electricity, fuel or transport) come in at the left, pass through the relevant production process and come out as environmental impacts on the right-hand side. The manufacturing process of absorbent hygiene products is schematically separated into life cycle phases i.e., upstream process, core process, and downstream process.

Upstream processes

The upstream process comprises the acquisition, processing and distribution of raw materials for the production of input materials (feedstock) that are transferred (supplied) to the core process. This also includes the production and distribution of packaging i.e., polyethylene packaging and bags as well as cardboard packaging. The weight of raw material sourcing is between 76% (climate change) and 102% (resource use - fossils) for baby diapers and between 91% (eutrophication, terrestrial) and 100% (resource use – fossils and resource use - minerals and metals) for sanitary napkins. Resource use – fossils exceed 100% due to negative values in the EoL.

For baby nappies, the key environmental impact of raw materials sourcing includes the production of superabsorbent polymers (SAPs), fluff pulp and polypropylene (PP), low-density polyethylene (LDPE) and polyethylene terephthalate (PET) granules. In particular, SAPs generate the greatest impact, accounting for 40% of all raw materials, mainly due to its high energy consumption.

The production of viscose, fluff pulp, PET, LDPE and PP granulates is the most significant processes involved in obtaining raw materials for sanitary towels. In particular, production of LDPE[23] granulates and film extrusion of LDPE for packaging are the most relevant processes in some impact categories, mainly in Resource Use – fossils (17%), Climate Change (11% granulates, 6% extrusion) and Ecotoxicity – freshwater (14%).

The information in Figure 12 illustrates the upstream processes for making the raw materials that end up in absorbent hygiene products. In terms of mass, fluff pulp is the most significant material component.

Core process

The core process i.e., final product manufacturing stage, comprises a series of industrial operations in which the raw materials from the upstream stage are processed and then assembled (combined) into an absorbent hygiene product.

For incontinence products and sanitary towels, each layer is made of functional raw material bonded together to work complementary to each other and guarantee the serviceability of the final products. The process starts with building of an absorbent core layer - typically mixing fluff pulp in air-laid process (air-jets blowing) with SAPs powder in a core former, which also shapes the layer. Then the absorbent core is attached to a permeable (hydrophilic) top layer that comes with a direct skin contact. This is mainly made from polypropylene, polyethylene and/or polyester-based nonwoven fabrics produced through a process known as meltblown (e.g., using high-velocity hot air to convert polymers into a nonwoven web of very fine fibre). The top layer is usually perforated to facilitate the pass off to the absorbent core. The second layer of nonwoven fabric sheets of polypropylene might be added to act as a wicking material and distribute fluid throughout the pad (distribution layer), which might also contain superabsorbent polymers (SAPs)

Currently, thermal bonding is widely used to seal the layers as it offers high production rates, lower energy utilisation, and is more environmentally friendly since there are no residues to be disposed of. The last step consists in lamination with an impermeable synthetic bottom layer with the added fastening system, straps with adhesives for sanitary pads to stick the product to the underwear, and tapes or fasteners for incontinence products to secure them in place around the body, so they don't leak or slip.

Tampons consist of nonwoven fibres that are rolled up or folded into the desired shape to ensure even distribution of the liquid. A sheath of nonwoven fabric or a perforated sheath can be added to the non-woven

[23] LDPE packaging has a higher contribution in the most relevant processes compared to baby diapers because of the higher share of packaging materials compared to the product mass in sanitary towels.

and the string is also added to ensure removal from the body. The product can also be secured in plastic or cardboard applicators.

For all single-use AHPs, the final production step is the packaging (wrapping) of each individual product to prevent contamination of the product (usually plastic or paper film) and is then packaged in secondary packaging - paper boxes or plastic bags.

The manufacturing phase requires the use of energy, chemicals, water and minerals and accounts for only a small part of the impact in almost all impact categories.

During the production process, some material scraps are discarded on the manufacturing line due to errors in the process (pre-consumer waste). Cordella et al. (2015) quantified that 4% scrapped product is used back in the process. The pre-consumer waste[24] from the production of absorbent hygiene products are considered as high-grade recyclable (Płotka-Wasylka et al., 2022) and the minimum purity of such materials is in excess of 95% (Wille, 2018).

Downstream processes

The downstream process includes product distribution (from the manufacturing site to the retail stores and from there to the final client), use phase and end-of-life (EoL) of product and packaging.

Products distribution typically has contributions around 5%, but in Acidification and Eutrophication – terrestrial it is around 10%- mainly due to the truck transport of products.

Retail is assumed to have negligible impacts in the AHPs lifecycle, equally the use phase has zero burdens as the product is ready to be used and disposed of after use.

In general, used AHPs are treated with household waste and landfilled or incinerated without further recycling. It is technically possible to correctly collect, shred, separate, and sterilize the diaper material but the process is complex, expensive and uncommon (Nealis, C. 2021). Therefore, at the moment, the recovery of resources from post-consumer AHPs waste is negligible and lies within research and innovation to develop new techniques (or improve existent) and offset health and safety concerns, while converting waste into valuable feedstock. As of 2023, the authors have not identified any comprehensive, national long-term strategy for the management of post-consumer AHPs waste– besides landfills and incineration. Khoo et al. (2019) mentioned the recycling processes from Knowaste company (UK), Fater company (Italy) or Super Faiths Inc. (Japan). The European project from the BBI JU[25] studied the possibility of recycling the cellulosic fraction of post-consumer AHPs waste for producing biobased building blocks, polymers and fertilisers[26] (EMBRACED project, 2021).

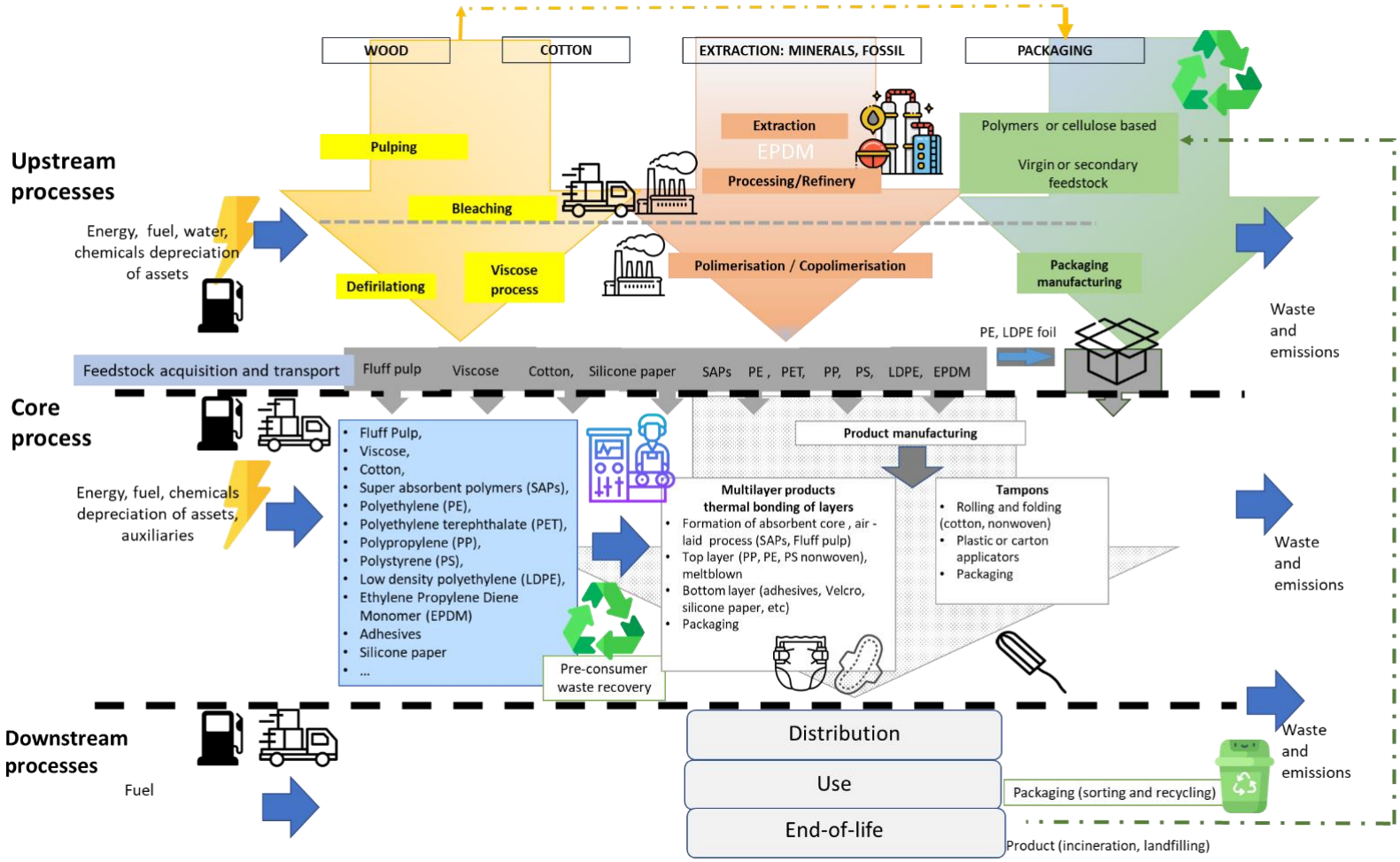
Despite the AHPs being a predominately single-use product the EoL stage shows only a small share of an overall life cycle impact in almost all impact categories. The end-of-life contributes 19% to the climate change impact of baby nappies, as the emissions come from landfilling the product. This may not be the case for sanitary towels as long as the packaging material is recovered in the end-of-life phase (the mass of the packaging is relatively high compared to the mass of the product itself). Packaging recycling can therefore partially offset the impact of landfilling.

[24] Rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it, is not considered recycled material.

[25] See: Biobased Industries Joint Undertaking (BBI JU), available at: https://www.bbi.europa.eu/

[26] See: EMBRACED project, 2021, available at https://www.embraced.eu/project (accessed 10/11/2023).

Figure 12. Overview of the main processes and life cycle stages for the manufacturing of absorbent hygiene products



Source: JRC own elaboration

All in all, the disposable AHPs contribute to the release of the greenhouse gases (GHG) during their entire lifecycle. In the upstream process, since the use of non-renewable fossil resources, whereas in the core phase, due to the energy required for the production and fuels for transport, and at the end-of-life phase due to landfilling or incineration.

Theoretically, single-use diapers could benefit from the use of post-consumer secondary material, mainly recycled nonwoven. However, due to the health and safety concerns it is not a common practice (Pérez Camacho, 2023, Somers et al., 2021, Płotka-Wasylka et al., 2022, Wille, D. 2018). In fact, Nordic Ecolabelling for Sanitary Products (v.6.9.) specifies that, with the exception of recycled plastic, the use of recycled material (e.g., in cotton, paper and fluff) is not allowed in the sanitary product (Nordic Ecolabelling, 2016). In the EU Ecolabel criteria, recycled materials inside the AHP are not explicitly prohibited, however their inclusion is not common market practice.

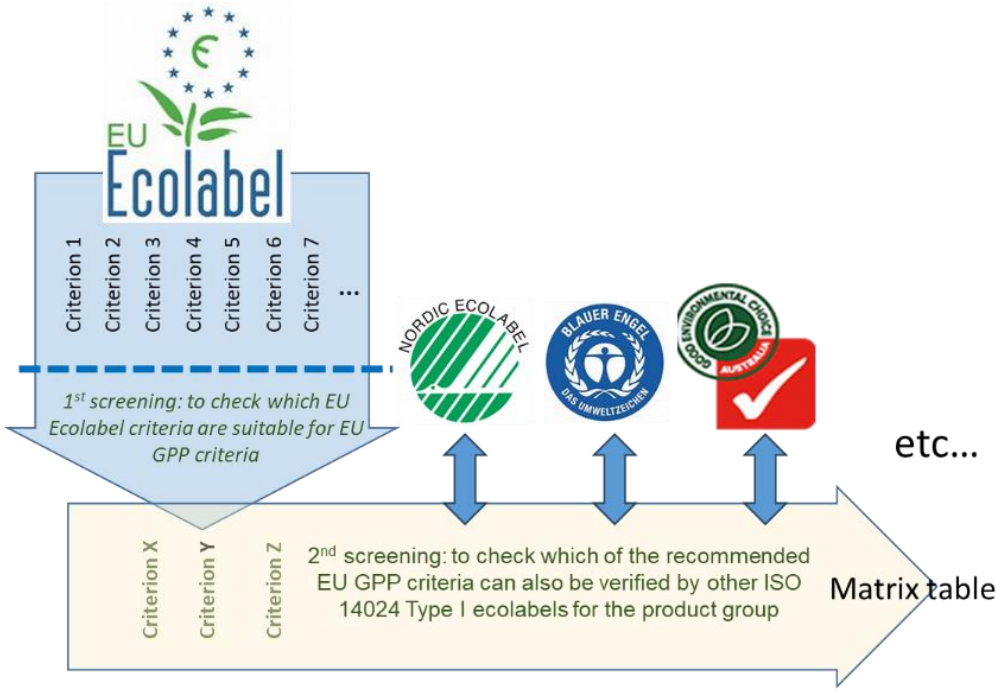
Pérez Camacho et al. (2023) analysed the environmental surplus of substituting disposable AHPs with their reusable alternatives and conclude that this often represents a compromise in different impact categories.

The limited (if any) recovery of materials in the EoL phase, coupled with extensive use of primary materials places a single-use AHP in line with an outdated linear economy model with high resource consumption. Reducing the overall environmental impact of the AHP should therefore, in the first place, focus on the environmental hotspots, improving process efficiency and circularity of the raw materials supply, while maximising waste recovery in the pre-consumer phase (both upper – and core processes), and reuse/recycling of packaging material in the EoL phase. Further enforcement of ecodesign measures, particularly in the upstream process where most environmental impacts occur, could serve as a roadmap for steering the AHP value chain towards circular economy goals. In this sense, the EU Ecolabel criteria could serve as a well-established and industry-verified guidance.

3 Identification of EU Ecolabel-based criteria for the public procurement of absorbent hygiene products.

A twofold screening exercise was undertaken to identify criteria that are most suitable for recommendation as EU GPP criteria: first the screening of the existing EU Ecolabel criteria for AHPs (valid until 31 December 2029) against their suitability to be used in EU GPP criteria; and secondly, the screening of other relevant ISO 14024 type I ecolabels to verify if they have equivalent criteria to be used as an alternative means of verification.

Figure 13. Illustration of two-part screening exercise conducted during the development of this EU GPP report



Source: JRC own elaboration.

3.1 Screening exercise: part 1 – EU Ecolabel

The suitability of each EU Ecolabel criterion set out in Annex I to Commission Decision (EU) 2023/1809[27] to be used in the EU GPP recommendations .was analysed and screened against these the three following parameters:

- Be clearly linked to the subject matter of the procurement contract being awarded;
- Be verifiable by public authorities (in cases when products do not carry the EU Ecolabel);
- Be of high environmental relevance from the perspective of LCA analysis and/or fit with circular economy objectives.

Screening of each of the EU Ecolabel criteria has been carried out and results and recommendations are summarised in Annex 1.

To this end, the selection of the proposed GPP recommendations is the result of (1) a cross-analysis of the environmental hotspots and improvement potentials identified within the EU Ecolabel revision and (2) an assessment of the suitability of the EU Ecolabel criteria for use in the procurement contracts.

[27] Commission Decision (EU) 2023/1809 of 14 September 2023 establishing the EU Ecolabel criteria for absorbent hygiene products and for reusable menstrual cups (OJ L 234, 22.9.2023, p. 142).

The EU Ecolabel criteria are then compared with the baseline assessment such as (a) highly recommended, (b) recommended or (c) not recommended. The criteria that are rated as 'highly recommended' at least twice are prioritised for the implementation as EU GPP recommendations.

Overall, the screening exercise led to the consideration of 19 EU Ecolabel criteria and sub-criteria, which were transformed into a total of 10 technical specifications (TS) and 9 award criteria (AC) (see: Table 6). Overall, the criteria cover the most important environmental hotspots and facilitate the methodology for assessment and verification by an independent third-party.

3.2 Screening exercise: part 2 – other ISO 14024 Type I ecolabels

In general, ISO 14024 type I ecolabels try to set criteria based on life cycle considerations of products or services. These ecolabels are voluntary, multiple criteria-based schemes that are third-party verified. The ISO 14024 standard also addresses procedures, governance and transparency regarding how pre-defined environmental criteria should be set in the first place. The EU Ecolabel is an example of an ISO 14024 type I ecolabel[28].

The non-exhaustive global examples of other ISO 14024 Type I ecolabels, which fully or partially addressee absorbent hygiene products included in the scope of the EU Ecolabel are:

- Nordic Ecolabelling ;
- Blue Angel
- GECA (Good Environmental Choice Australia) - The GECA *Sanitary Products (SPv1.0-2019)* standard is a modified adoption of Nordic Ecolabelling's Sanitary Products (V6.4: 2016)

These ecolabels guarantee that products bearing them have been verified by third parties for compliance with pre-defined environmental criteria. However, none of the ISO 14024 type I ecolabels, which were analysed (Nordic Ecolabelling and Blue Angel) are fully equivalent to theEU Ecolabel criteria that were selected for EU GPP criteria.

Nordic Ecolabeling for paper products has brought about a modular system that comprises three modules: the basic, chemical, and supplemental module. For this reason, the product-specific (supplementary module) should be read together with the basic module. The requirements' levels in a Supplementary Module are tailored to the specific product performance and therefore prevail over those set in the basic module.

The compliance check between EU Ecolabel, Nordic Ecolabeling, and Blue Angel summarized in Table 6 is based on the following criteria documents:

1. EU Ecolabel: Annex I to Commission Decision (EU) 2023/1809;
2. Blue Angel DE-UZ 208 - Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP), Edition January 2021, Version 3
3. Nordic Ecolabelling for Sanitary Products Version 6.9 • 14 June 2016 - 31 December 2025, read together Paper Products – Basic Modules, (Version 3.0, 05 October 2020 – 31 December 2025), or with Paper Products – Basic Module (Version 2.7 • 22 June 2011 - 31 December 2025).

[28] A list of further ecolabelling schemes can also be obtained at the web site of the Global Ecolabelling Network (GEN) www.gen.gr.jp/product.html

Table 6. EU GPP criteria recommendations for the public procurement of absorbent hygiene products in relation to selected ISO 14024 type I ecolabels

Recommended EU GPP criterion	[29] EU Ecolabel	[30,31,32] Nordic Ecolabel	[33] Blauer Engel
FLUFF PULP			
TS 1.1. SOURCING OF FLUFF PULP	✓	✓	✓
TS 1.2. FLUFF PULP BLEACHING	✓	✓	✓
AC 1.1. Absorbable organic halogens (AOX)	✓	✓	✓ 1
AC 1.2. Chemical oxygen demand (COD) sulphur (S), NOx, and phosphorous (P) emissions	✓	✓ 2	✓
AC1.3. Emissions of CO_2 from fluff pulp production	✓	✓	X
AC 1.4. Energy consumption	✓	✓ 3	✓
MAN-MADE CELLULOSE FIBRE			
TS2.1. SOURCING OF MAN-MADE CELLULOSE FIBRES	✓	✓	X
TS2.2. PULP BLEACHING	✓	✓	X
AC 2.1.1. Absorbable organic halogens (AOX)	✓	✓	X
AC 2.1.2. Organically bound chlorine (OCl)	✓	✓	X
AC 2.2. Production of man-made cellulose fibre	✓	✓	X
COTTON AND OTHER NATURAL CELLULOSIC SEED FIBRES			
TS 3.1. SOURCING OF COTTON AND OTHER NATURAL CELLULOSIC SEED FIBRE	✓	✓	✓
TS 3.2. Bleaching of cotton and other natural cellulosic seed fibre	✓	✓	✓
PRODUCTION PROCESS			
TS 4.1. MATERIAL EFFICIENCY IN THE MANUFACTURING OF THE FINAL PRODUCT.	✓	X	X
PRODUCT PACKAGING			
TS 5.1. CARDBOARD, AND/OR PAPER USED FOR PACKAGING	✓	✓	✓
AC 5.1. Plastic used for packaging	✓	✓	✓
TS 5.2. NON - USE OF COMPOSITE MATERIAL IN PACKAGING	✓	✓	✓
AC 5.2. Recyclability	✓	✓	✓
TS 5.3. INFORMATION ON RECYCLED CONTENT AND RECYCLABILITY ON PRODUCT PACKAGING	✓	✓	✓

Source: JRC based on EC 2023, Nordic Ecolabelling 2016, Blue Angel 2021.

1) If the fluff pulp is manufactured with only one type of pulp (without pulp mix), otherwise not equivalent
2) If the pulp is verified against with Nordic Ecolabelling for Paper Products – Basic Module (v 3.0), otherwise not equivalent
3) Only if the sum of points for energy and fuel does not exceed 2.5, otherwise not equivalent

[29] Commission Decision (EU) 2023/1809 of 14 September 2023 establishing the EU Ecolabel criteria for absorbent hygiene products and for reusable menstrual cups

[30] See: Nordic Ecolabel criteria for Paper Products – Basic Modules, (Version 3.0 • 05 October 2020 – 31 December 2025, available at: https://www.nordic-ecolabel.org/globalassets/ai001_3.0_basic_module_cd.pdf

[31] See: Nordic Ecolabelling for Paper products – Basic module, version 2.7 • 22 June 2011 - 31 December 2025, available at: https://www.nordic-swan-ecolabel.org/4ac252/contentassets/956d503409fb4a6bb1bb38762bb78da5/basic-module-for-paper-products-2.7_041_printing-companies-and-printed-matter-041_english.pdf

[32] See: Nordic Ecolabelling for Sanitary Products, Version 6.9. 14 June 2016 - 31 December 2025, available at: https://api.svanemaerket.dk/api/docs/CriteriaDocumentFiles/7444

[33] See: Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208, Basic award criteria, January 2021, version 3, available at: https://www.blauer-engel.de/en/productworld/nappies-feminine-hygiene-and-incontinence-products

✓ = covered; ✓✓ = exceeded; ✓ = partially or potentially covered/further assessment required; X = not covered

Annex 2 contains details of part 2 of the screening exercise summarised in Table 6. It describes the reasoning for the equivalence or non-equivalence between selected EU Ecolabel requirements for absorbent hygiene products and corresponding Nordic Ecolabeling and Blue Angel criteria. In summary, none of the ISO 14024 type I ecolabelling standards are entirely equivalent to the EU Ecolabel criteria that were selected for EU GPP criteria´s recommendations.

Unlike the above listed type I ecolabels, the Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFCS) certificates are exclusively sustainable forestry certificates that never address industrial production process. The limited scope of FSC and PEFC (to fibre sourcing), is the only reason of non-inclusion in the above equivalency cross-check with other type I Ecolabels. The schemes are accordingly addressed under criteria that verifies cellulose fibre sourcing i.e., Criterion T.S. 1.1., T.S. 2.1., and T.S. 5.1.

The applicability of alternative forms of verification or compliance's evidence always need to be checked in relation to the actual subject matter and requirements used in a tender.

When conducting the cross-checking exercise of EU Ecolabel criteria with those of other ISO 14024 Type I ecolabels for the same or similar product groups, it is important to specify the exact version of the other ecolabel criteria, since it can be updated or completely changed in later versions and the comparison summarised above may become inaccurate or invalid over time. In order to ensure that comparisons remain valid, the screening exercise should be repeated every few years. Updated versions of Table 6 and Annex 2 could be made available on the DG ENV website, on the same link where this report is made available.

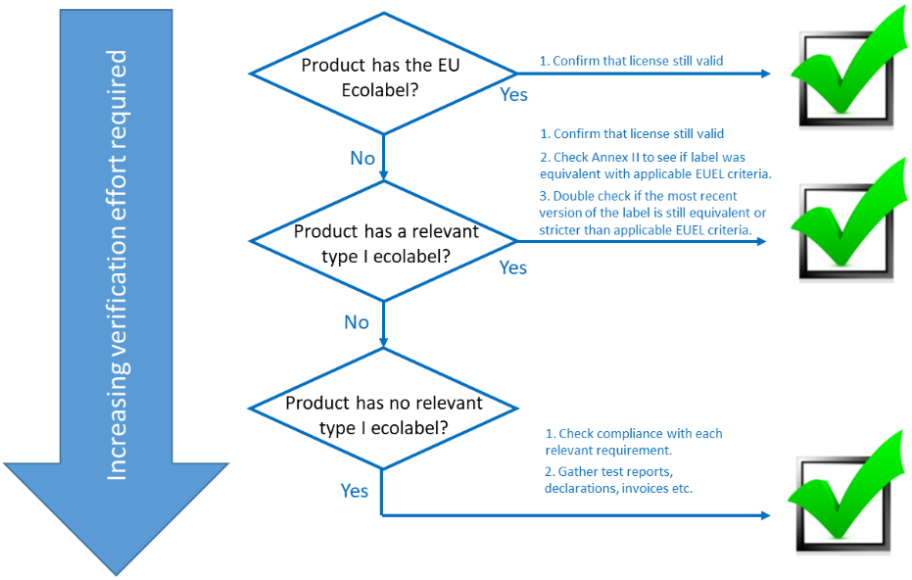
Other Type I ecolabels may undergo regular updates which make them more or less similar to EU Ecolabel criteria compared to today.

3.3 General considerations about verification via ecolabels

According to Article 43 of Directive 2014/24/EU (EC, 2014a) third-party environmental labels can be stipulated in technical specifications, award criteria, or contract performance conditions as means of proof. However, their applicability always needs to be checked in relation to the actual subject matter and criteria used in the tender, and equivalent means of verification for products without labels must be permitted.

When using criteria based on the EU Ecolabel in calls for competition, products awarded with the EU Ecolabel automatically comply with the set requirements and no further verification is required..

Figure 14. Verification hierarchy for GPP criteria based on EU Ecolabel criteria



Source: JRC own elaboration.

Products with the EU Ecolabel are associated with the least verification effort. However, in cases of doubt about the validity of the EU Ecolabel, procurers can consult the online catalogue (ECAT)[34] where searches can be made by product name, company name or license number. In case the product or license number cannot be found in the EU Ecolabel catalogue, the relevant national Competent Body[35] should be consulted.

The criteria arrangement into technical specifications and award criteria suggests how the procurement sequence could be managed in order to distinguish levels of ambition and achieve the best results. The award EU GPP criteria recommendations are to encourage manufacturers to steer innovation and become more competitive in invitations to tender in a number of areas that are strongly related to the environmental impact of absorbent hygiene products, and which are already addressed by ISO 14024 Type I ecolabels. The combination of less ambitious TSs with more ambitious ACs allows calls for competition rewarding the best products on the market while accommodating market features (i.e., availability of sustainable products).

If the products are currently undergoing the application process to obtain the EU Ecolabel (or a relevant type I ecolabel), this cannot be accepted as proof of compliance. Instead, compliance with individual requirements would be necessary just like for any other product without a relevant ecolabel.

Wherever equivalent third-party operated labelling scheme are not applicable, a full assessment and verification process is needed.

Where environmental labels or certificates are not available or applicable, a full assessment and verification process needs to be conducted. Each EU GPP criterion indicates information about, for example, relevant standards, test methods or other documentation that could be required to demonstrate compliance.

3.4 Recommended EU GPP criteria for the public procurement of absorbent hygiene products.

[34] http://ec.europa.eu/ecat/
[35] More details can be found here: https://ec.europa.eu/environment/ecolabel/competent-bodies.html

In this Section, we outline a total of 19 green criteria (nine technical specifications (TS), and ten award criteria (AC)) for procuring absorbent hygiene products. The recommendations are broken down into sections that cover essential improvement areas from the life cycle perspective, such as materials, core production process, and packaging.

Annex I to Commission Decision 2023/1809 serves as the basis for the recommendations. Each EU GPP criterion is accompanied by summarized rationales, which may be considered valuable by the procurer when designing the tender.

If you would like to further explore the technical and policy arguments that supported each EU Ecolabel criterion, please refer to the respective Technical Report (Faraca et al., 2023) and Preliminary Report (Pérez-Camacho et al., 2023).

Where the procurement exercise is to procure future products or customised products that do not yet exist, the technical specifications could be converted into contract performance clauses with clear penalties and consequences for any non-compliance.

In case of doubt about the market availability of compliant products, technical specifications could be changed to the award criteria.

Based on market analysis, the procurer may also opt to raise the level of ambition of the criteria. This can be accomplished by adjusting limit values or assigning a higher number of points to products that perform better than the limit value.

However, raising the ambition level of a specific criterion should not allow for the reduction in the ambition level of another criterion.

The criteria are narrowed down to materials that are typically used in the production of AHPs, such as fluff pulp, cotton, and man-made cellulose fibre. Therefore, it is crucial to view criteria 1 to 3 as complementary instead of alternative. The final number of points awarded to a product should not be decreased if any of the materials discussed in this report is not present.

The materials produced in an upstream process, particularly cellulose pulp, are highly traded commodities. The authors advise the procurer to ensure that feedstock comes from legally operating site(s), under conditions stated in the operating permit as specified by the competent regional or national authority - the introduction of respective safeguard(s) can be executed via e.g., exclusion criteria (EC). Compliance with applicable mandatory legislation should not be seen as a "green" requirement. Therefore, unless being relevant to the criterion´s explanation, it is not specifically addressed.

If you wish to find more background information on the compliance check for the selected type I ecolabels, please refer to Annex 2.

Fluff Pulp

TS 1.1. Sourcing of fluff pulp

Based on EU Ecolabel *Criterion 1.1 — Sourcing of fluff pulp* laid down in the Annex I to Commission Decision (EU) 2023/1809.

Technical specification
TS 1.1. Sourcing of fluff pulp
All (100%) fluff pulp used in a product shall be legally sourced and covered by valid Chain of Custody (CoC) certificates issued by an independent third-party certification scheme such as the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC) or equivalent. At least 70% of the wood raw material used for the production of fluff pulp shall be covered by valid Sustainable Forestry Management (SFM) certificate issued by an independent third-party certification scheme such as FSC, PEFC or equivalent.

The certification bodies issuing forest and/or chain of custody certificates shall be accredited or recognised by that certification scheme.

Verification:

Absorbent hygiene products, which have been awarded the EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirements.

Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)].

If the fluff pulp does not carry a required label or an equivalent label, another equivalent means of proof must be provided.

[(1)] Equivalency here means compliance check and demonstrating that fibre used in manufacturing of the non-EU Ecolabel absorbent hygiene product meets or exceeds the requirements as stated in criterion 1.1 of Annex I to Commission Decision (EU) 2023/1809.

At the time of writing (as of January 2024), suitably equivalent third-party operated schemes identified include: FSC, PEFC, and Blue Angel DE-UZ 208 (v3, Jan 2021)

Further information

The fluff pulp is characterised by its high absorbency and is commonly used in absorbent hygiene products (see: Table 5). Mainly long softwood fibres such as spruce or pine are used for its production, which is concentrated in the United States (85% of global capacity in 2022) (Nelson, 2022). The production volume in the EU is estimated at 5% of global production (Schlusaz et al., 2019), mainly in Sweden and Finland.

The main environmental impacts that most people immediately associate with the cellulose pulp production are deforestation and land use. In order to enforce a continuation of existing good procurement practise in the sourcing of forestry products, it seems essential to ensure the sustainable use of forest resources throughout the supply chain. In this context, compliance with (1) the principles of sustainable forest management (SFM) and (2) the traceability and attribution of materials from SFM-certified forests through the supply chain to the final product is essential. In this respect, the EU GPP recommendation for fibre sourcing ensures that these areas are covered. The requirement is also structured to verify that all fibre is legally sourced and covered by a valid chain of custody certificates. The criterion requires a minimum of 70% w/w content of fibres from sustainably managed forests.

Referring to forest management schemes established in the market such as Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification (PEFC) or equivalent schemes, provides a procurer with a straightforward verification of compliance.

The voluntary certification schemes for sustainable forest management have been designed to incorporate relevant SFM practises (which help to mitigate the impacts of land use and protect biodiversity). Their implementation has been verified by an accredited independent third-party. FSC and PEFC have come to prominence precisely because they aim to allay potential consumer concerns about deforestation by ensuring that forests and plantations are managed sustainably. These labels have become established for many different types of wood products and are often required in tenders.

Verification of compliance with other Type I ecolabels

The verification of EU Ecolabel requirement for fibre sourcing relies on CoC and SFM certification schemes such as FSC and PEFC labels - thereof suitable proof of compliance.

The Blue Angel requires 100% SFM-certified fibres. By being more ambitious than EU Ecolabel, the scheme provides adequate evidence of compliance with the proposed EU GPP requirements for fibre sourcing.

The criterion for fibre sourcing in Nordic Ecolabelling for Sanitary Products (v.6.9., June, 2016) requires at least 30% w/w of wood raw material used in the fluff pulp to be SFM-certified, which does not fulfil EU Ecolabel criterion 1.1.

TS 1.2. and AC 1.1. Bleaching of fluff pulp

Based on EU Ecolabel Criterion 1.2 *Bleaching of fluff pulp* laid down in the Annex I to Commission Decision (EU) 2023/1809.

Technical specification	Award criterion
TS 1.2. *Fluff pulp bleaching*	AC 1.1. *Absorbable organic halogens (AOX)*
Fluff pulp used in the absorbent hygiene product shall be elemental chlorine free (ECF) or totally chlorine free (TCF) bleached. Chlorine gas shall not be used as a bleaching agent.	Note: This criterion refers to elemental chlorine free (ECF) pulp. Totally chlorine free (TCF) pulp automatically fulfils this requirement. X points will be awarded when ECF pulp bleaching for each pulp used in a product demonstrated to comply with maximum AOX emission value in accordance with criterion 1.2 of Annex I to Commission Decision (EU) 2023/1809.
Verification: Absorbent hygiene product, which have been awarded the EU Ecolabel EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirement. Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)]. If the absorbent hygiene product does not carry a required label or an equivalent label, another equivalent means of proof must be provided.	
[(1)] Equivalency here means compliance check and demonstrating that fluff pulp used in manufacturing of the non-EU Ecolabel absorbent hygiene product meets or exceeds the requirements as stated in criterion 1.2 of Annex I to Commission Decision (EU) 22023/1809. *For TS1.2 at the time of writing (as of January 2024), suitably equivalent third-party certification schemes identified include Nordic Ecolabelling for Sanitary Products (v.6.9, June 2016) and Blue Angel DE-UZ 208 (v.3, Jan 2021).* *For AC1.1 at the time of writing (as of January 2024), there are no labels that are suitable equivalents. However, Blue Angel DE-UZ 208 (v.3., Jan 2021) could be accepted as suitably equivalent third-party schemes under condition that only one type of pulp is used in the manufacturing of fluff pulp.*	

Further information:

The above EU GPP recommendations target reduction of industrial wastewater toxicity such as absorbable organic halogens (AOX) discharges into the wastewater.

The bleaching of pulp is mainly carried out to improve the optical properties of the end product (i.e., fluff pulp). Traditionally, chlorine gas was used as the main bleaching agent. Due to its strong association with the emission of chlorinated organic pollutants, bleaching with elemental chlorine was replaced by bleaching with elemental chlorine free (ECF) sequences (with chlorine dioxide as the main bleaching agent) and later on by totally chlorine free (TCF) bleaching sequences (with peroxide, ozone, oxygen, etc.). The distinguishing factor between the two processes is the use of chlorine dioxide in the ECF method. ECF and TCF are both considered best available techniques (EC, 2014c).

Absorbable organic halogens (AOXs) are associated with acute toxicity, chronic toxicity and mutagenic effects in living organisms. The main source of AOX emissions from bleaching processes is the use of free chlorine or chlorine compounds. As TCF bleaching does not require any form of chlorine, the award criterion should only apply to the ECF pulps.

In general, AOX monitoring calculates the total amount of halogens (chlorine, bromine and iodine) bound to dissolved or suspended organic matter in a wastewater sample. Verification of compliance is simplified by checking the results of the standardised test method ISO 9562:2004.

Monitoring and reporting of AOX emission are mandatory for the plants that are covered by the Industrial Emission Directive (2010/75/EU) and Commission Implementing Decision 2014/687/EU on the BAT conclusions for the production of pulp, paper, and board (EC, 2014c). Also, for the fluff pulp manufactured in the United States, the US EPA requires to monitor emission parameters under the

guidelines incorporated into the National Pollutants Discharge Elimination System (NPDES) permits and other control mechanisms for from pulp and paper manufacturing.

Hence, the verification of requirement should not cause additional burden for the procurer.

Verification of compliance with other Type I ecolabels

All listed schemes can be used as an appropriate proof of compliance for the verification of technical specification (TS1.2.).

For absorbable organic halogens, the EU Ecolabel sets the maximum emission threshold at 0.14 kg AOX/ADt for each individual pulp used in a final product, whereas for Nordic Ecolabelling: AOX emission from the individual pulp must be equal or lower than 0.17kg/tonne, and for Blue Angel: AOX emissions must not exceed a value of 0.12 kg AOX/ADt.

While the ambitious level set by Blue Angel is apparently higher than that of EU Ecolabel, the Blue Angel does not specify that the verification refers to each individual pulp in a pulp mix. This, in case of pulp blend, means that the reference value represents an average for a pulp mix whereas emission from each individual pulp might be (virtually) higher than 0.14 kg AOX/ADt. The equivalency can be accepted as long as fluff pulp is made from only one type of pulp.

AC 1.2. Chemical oxygen demand (COD) sulphur (S), NOx, and phosphorous (P) emissions

Based on EU Ecolabel criterion 1.3 *Emissions from fluff pulp production to water (chemical oxygen demand – COD and phosphorus (P)), and to air (sulphur compounds (S) and NOx* laid down in the Annex I to Commission Decision (EU) 2019/70.

Award criterion
AC 1.2. Chemical oxygen demand (COD) sulphur (S), NOx, and phosphorous (P) emissions
X points will be awarded when fluff pulp making process demonstrated to comply with maximum COD, S, NOx, and P emission limits to air and water in accordance with criterion 1.3 of Annex I to Commission Decision (EU) 2023/1809. Verification: Absorbent hygiene product, which have been awarded the EU Ecolabel EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirement. Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)]. If the absorbent hygiene product does not carry a required label or an equivalent label, another equivalent means of proof must be provided.
[(1)] Equivalency here means compliance check and demonstrating that emission to water and air from manufacturing of the non-EU Ecolabel absorbent hygiene products meets or exceeds the requirements as stated in criterion 1.3 of Annex I to Commission Decision (EU) 2023/1809. Compliance check shall include pulp and fluff pulp manufacturing, process i.e., for non – integrated pulp and paper production the verification should separately address pulping process and fluff pulp making process. For integrated production process, a combined verification shall suffice. *At the time of writing (as of January 2024), the suitably equivalent third-party scheme identified includes Nordic Ecolabel for Sanitary Products (v.6.9, June 2016)) but only if read together with Nordic Ecolabelling for Paper Products – Basic Module (v 3.0). The equivalency of Blue Angel DE-UZ 208 (v.3) should be accepted based on a case-by-case analysis.*

Further information:

Fluff pulp is a product of the pulp and paper industry. After producing cellulose pulp, it undergoes a series of operations (air-laid process)[36] to create cellulose fluff that has high absorbency and bulk. The fluffing process involves using a hammer mill to defibrillate cellulose pulp and break the fibre-

[36] When fibre is dispersed in the air

fibre bonds. The air carries the individual fibres and arranges them into a web of fluff pulp. The air-laid process permits the incorporation of fluff into the intended product, such as an absorbent hygiene product, and facilitates the mixing with other fibres in a nonwoven process.

Fluff pulp can be obtained in integrated and not integrated processes. A non-integrated pulp mill is a standalone factory that produces market pulp for further processing elsewhere, and a non-integrated paper mill uses externally purchased market pulp for fluff pulp production. In the integrated system, pulp and fluff pulp processing are interlinked as to the site and process continuity.

Emissions to water and air are among the most significant environmental impacts of pulp and paper production. The type and extent of emissions can vary depending on the technique used, fuel sources, and the novelty of abatement equipment. In the European Economic Area (EEA), as previously mentioned, the environmental performance of pulp and paper industrial activities is covered by the Industrial Emissions Directive (IED) and the BAT conclusions (EC, 2014c). Similarly, in the United States pulp and paper sector is covered by the National Pollutants Discharge Elimination System (NPDES) and National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Source Categories managed by the United States Environmental Protection Agency (US EPA). Therefore, monitoring selected emission parameters is a well-established practice worldwide and should not cause additional burden for the procurer.

As a general rule, the EU Ecolabel reference values for emission into the water and air set by Criterion 1.3 accommodate differences between pulping techniques and production scenarios. The emission thresholds are expressed as specific emission loads per tonne of product i.e., air dried pulp (ADt). For non-integrated mills, the raw material pulp(s) shall comply with the values listed for integrated mills, to which the emissions resulting from the conversion (fluffing) process should be added (Table 7).

Table 7 EUEL reference values for emissions from different pulp types and from paper production

Pulp grade/paper	Emissions (kg/ADt)			
	COD reference	P reference	S reference	NOx reference
Integrated mills				
Bleached chemical pulp (other than sulphite)	16.00	0.03(1)/0.05(2)	0.60	1.50
Bleached chemical pulp (sulphite)	24.00	0.03	0.60	1.50
Unbleached chemical pulp	6.50	0.02	0.60	1.50
Unbleached chemical pulp (UKP-E quality)	6.50	0.035	0.60	1.50
CTMP	15.00	0.01	0.20	0.3
NSSC	11.00	0.02	0.40	1.50
Non-integrated mills				
Paper mill (kg/tonne)	1.00	0.001	0.15	0.60

(1) Net emissions of P are considered in the calculation. The P naturally contained in wood raw materials and in water can be subtracted from the total emissions of P. Reductions up to 0.010 kg/ADt shall be accepted.

(2) The higher value refers to mills using eucalyptus and southern U.S. pine species from regions with higher levels of phosphorus and applies until 31 December 2026. From 1 January 2027, the limit of 0.03 kg P/ADt shall apply also to mills using eucalyptus and southern U.S. pine species from regions with higher levels of phosphorus

Source: EC, 2023.

The verification of COD, P, S and NOx emission represents a holistic approach that is translated into the emission scoring (points system), which evaluates the performance of a plant. The applicable

methodology requires to divide the monitored emissions from pulp and fluff pulp making process by the applicable reference values, while the resulting score must meet the following requirements[37]:

1. The score for any individual emission parameter shall not exceed 1.5., and
2. The total number of points ($P_{total} = P_{COD} + P_S + P_{NOx} + P_P$) shall not exceed 4.0.

The use of emission points grants flexibility at the site level and accommodates the trade-off between emission parameters.

Verification of compliance with other Type I ecolabels

EU Ecolabel, Nordic Ecolabelling and Blue Angel share a comparable methodological approach for verifying emissions i.e., translating the actual emission values into emission points for each monitored parameter.

To examine the differences between EU Ecolabel and Nordic Ecolabelling, the Nordic criteria for Sanitary Products should be read along with the Basic Module for paper products version 2.0 or later. The authors refer to the most recent Nordic Ecolabelling for Paper Products – Basic Module, Version 3.0 • 05 October 2020 – 31 December 2025 and/or Paper products – basic module v 2.7 *(22 Jun 2011 – 31 Dec 2025)* as their reference points. The EU Ecolabel and Nordic Ecolabelling accommodate integrated and non-integrated processing and consider the situation when fluff pulp might be made of more than one type of pulp (often the case) - emissions from different sites are allocated to the weight of each individual pulp in the pulp mix:

— The Paper products – basic module v 3.0 establishes the emission reference values that are comparable to those from EU Ecolabel. In some cases, the Nordics reference values are stricter, particularly for COD and S emissions. The equivalent methodological approach with comparable or stricter reference values can guarantee the equivalent or better performance.

— The Paper products – basic module v 2.7 (22 Jun 2011 – 31 Dec 2025) establishes the emission reference that, in particular for COD are somewhat less strict than the requirements set by EU Ecolabel. The use of an analogous calculation methodology cannot guarantee equivalent results due to the differences in reference values. A case-by-case analysis could lead to acceptance of equivalence.

The Blue Angel DE-UZ 208 (v. 3) determines an additional parameter for nitrogen (N) emission into the water, and then sets the maximum allowed score of five for the sum total of the five parameters. The emission reference values for each pollutant are generic i.e., without being associated with the pulping technique. Furthermore, the criteria have been comprehended to only encompass the integrated production process. All of these render the comparison between the schemes almost impossible, and therefore equivalence can only be recognized through a case-by-case analysis.

AC 1.3. Emissions of CO_2 from fluff pulp production

Based on EU Ecolabel criterion 1.4 *Emissions of CO_2 from fluff pulp production* laid down in the Annex I to Commission Decision (EU) 2019/70.

Award criterion
AC 1.3. Emissions of CO_2 from fluff pulp production
X Points will be awarded when fluff pulp manufacturing process demonstrated to comply with maximum CO_2 emission values in accordance with criterion 1.4 of Annex I to Commission Decision (EU) 2023/1809. Verification: Absorbent hygiene product, which have been awarded the EU Ecolabel EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirement.

[37] If you wish to learn more about the calculation methodology please check: EU Ecolabel criteria for Graphic Paper, Tissue Paper and Tissue Products. Final Technical Report,

Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)]. If the absorbent hygiene product does not carry a required label or an equivalent label, another equivalent means of proof must be provided.
[(1)] Equivalency here means compliance check and demonstrating that CO_2 emission from manufacturing of the non-EU Ecolabel absorbent hygiene product meets or exceeds the requirements as stated in criterion 1.4 of Annex I to Commission Decision (EU) 2023/1809. Compliance check shall include pulp and paper manufacturing, process i.e., for non – integrated pulp and fluff pulp production the verification should separately address pulping process and fluff pulp making process. For integrated production process, a combined verification shall suffice. *At the time of writing (as of January 2024), no suitably equivalent labels have been identified.*

Further information:

The CO_2 emission from pulp and paper manufacturing occurs due to the energy requirements in the production process, which are fulfilled by on-site fuel burning and consumption of externally purchased electricity e.g., originating from the national grid. However, high energy consumption does not always indicate a high CO_2 emission, just like low CO_2 emission is not always a sign of low energy consumption.

The authors suggest that the procurer always considers a joint verification of energy consumption and CO_2 emission when choosing "green" criteria. This would be an added incentive for the market to switch to a less carbon-intensive economy.

Direct and indirect emissions across the supply chain will determine the carbon footprint of the product. For fluff pulp manufacturing, on-site combustion of fossil fuels is the source of direct CO_2emissions - as detailed under scope 1[38] of GHG Protocol[39], whereas the use of grid (purchased) electricity sums up to indirect emissions (scope 2 of the GHG Protocol). In 2021, the European pulp and paper industry relied on biomass for 60,5% of their fuel needs (CEPI, 2023). A substantial amount of biomass resulted from the process residues, particularly black (or brown) liquor[40]. Modern kraft pulp plants (sulfate process) already have chemical recovery units, which generate on-site electricity through a combined heat and power (CHP) unit that utilises biomass.

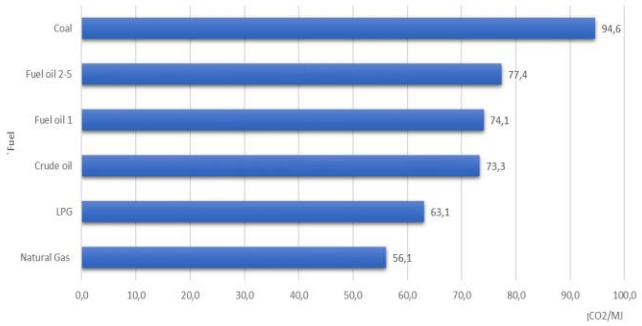
In 2021, the specific direct CO_2 emission from pulp and paper industry in Europe, was 0.27 kt CO_2/kt of product, which was 7,4% lower than in 2020. The overall implemented energy efficiency measures reduced the absolute direct CO_2 emissions of the sector by 2.7% between 2020 and 2021 and by 27.9% since 1991 (CEPI, 2023).

[38] See: Scope 1 and 2 GHG Inventory Guidance f

[39] Greenhouse gases emission (GHG) Protocol supplies the world's most widely used greenhouse gas accounting standards for measuring and managing greenhouse gas (GHG) emissions. It addresses private and public sector activities, value chains and mitigation actions.

[40] By product of chemical pulping process with a high biomass content

Figure 15. Reference values for CO2 emissions from different energy sources



Source: EC, 2018c

When calculating CO_2 emissions, the amount of energy from renewable sources purchased and used for the production processes shall count as zero CO_2 emissions. For biomass combustion, the relevant sustainability and greenhouse gas savings criteria are specified in the Directive (EU) 2018/2001[41]

The above recommended EU GPP award criterion AC. address both direct and indirect CO_2 emissions and encourages the optimisation of energy sourcing, for instance, the substitution of carbon-intensive fossil fuels for energy from renewable sources[42].

The EU Ecolabel Criterion 1.4 refers to the emission factors for fuels[43] established by Commission Regulation (EU) No 2018/2066[44] (Figure 15), except for grid electricity with the reference value of 376 g CO_2 fossil/kWh that is in line with Regulation 2019/331[45]. The following CO_2 emission limit values apply:

For integrated mills

- Chemical and semi-chemical pulp: 400 kg CO_2/ADt
- CTMP 900 kg CO_2/ADt

For non-integrated mills

- Converting process 95 kg CO_2/ADt

The CO_2 emission estimation from mills that are not integrated should use the reference values established for integrated production and include the CO_2 emitted during pulp fluffing (converting) process.

The EU Emissions Trading System (EU ETS) covers the pulp and paper industry, therefore CO_2 monitoring is already a standard industry practice and should not proportionate additional barrier for the criteria verification by the procurement. *Note: The ETS scope for CO_2 reporting differs from the EUEL's.*

[41] See: Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast) (OJ L 328, 21.12.2018, p. 82)

[42] The amount of energy from renewable sources purchased and used for the production processes counts as zero CO2 emission for the calculation

[43] Fuel emission factors relate CO2 emission with net calorific value (NCV) and mass of fuel

[44] See: Commission Implementing Regulation (EU) 2018/2066 of 19 December 2018 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 601/2012 , OJ L 334, 31.12.2018, p. 1–93

[45] See: Commission Delegated Regulation (EU) 2019/331 of 19 December 2018 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council, OJ L 59, 27.2.2019, p. 8–69

Verification of compliance with other Type I ecolabels

To examine the methodology for the calculation established by Nordic Ecolabelling, the Nordic criteria for Sanitary Products v.6.9. should be read along with the Basic Module for paper products version 2.0 or later. The authors use the most recent Nordic Ecolabelling for Paper Products – Basic Module, Version 3.0 • 05 October 2020 – 31 December 2025 and/or *Paper products – basic module v 2.7* (22 Jun 2011 – 31 Dec 2025) as their reference points. Both reference documents show some methodological differences with the EU Ecolabel.

The Nordic Ecolabelling reference values for Sanitary products are in comparable value ranges [*to those established by EU Ecolabel*], which may reproduce comparable results, in particular, for non-integrated production and for CTMP integrated production. However, the comparison of the equivalence of the possible scenarios for the CO_2 emission becomes complicated due to the differences in methodology. This means that equivalence can be accepted based on a case-by-case analysis (for more details see: Annex II).

Blue Angel DE-UZ 208 v.3 for Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) does not set requirement on CO_2 emission.

AC 1.4. Energy consumption

Based on EU Ecolabel criterion 1.5 *Energy consumption for fluff pulp production* laid down in the Annex I to Commission Decision (EU) 2019/70.

Award criterion
AC 1.4. Energy consumption during fluff pulp production
X points will be awarded if the energy used for the fluff pulp production demonstrated to comply with the maximum energy (electricity and fuel) consumption in accordance with criterion 1.5 of Annex I to Commission Decision (EU) 2023/1809 Verification: Absorbent hygiene product, which have been awarded the EU Ecolabel will be deemed to comply with the requirements. Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme, confirming that equivalent EU Ecolabel requirements are met [(1)]. If the absorbent hygiene product does not carry a required label or an equivalent label, another equivalent means of proof must be provided.
[(1)] Equivalency here means compliance check and demonstrating that energy consumption for manufacturing of the non-EU Ecolabel absorbent hygiene product meets or exceeds the requirements as stated in criterion 1.5 of Annex I to Commission Decision (EU) 2023/1809. Compliance check shall include pulp and paper manufacturing, process i.e., for non – integrated pulp and paper production the verification should separately address pulping process and fluff pulp making process. For integrated production process, a combined verification shall suffice. *At the time of writing (as of January 2024), the equivalent third-party scheme includes Nordic Ecolabelling for Sanitary products (v.6.9. June 2016) but only if the sum of points for energy and fuel does not exceed 2.5 (in line with the EUEL criterion 1.5). The equivalency of Blue Angel DE-UZ 208 (v.3) should be accepted based on a case-by-case analysis.*

Further information

Fuel and energy sourcing are the main contributors to the environmental impact of the pulp and paper sector. Either primary energy in the form of fuel or secondary energy in the form of electricity and steam or both energy sources are used. Hence, by encouraging industry best practice the recommended EU GPP criterion stimulates the optimisation of energy consumption (and therefore triggers environmental and monetary benefits).

Energy costs largely adds to total production costs, so there is an inherent incentive for the pulp and paper (including fluff pulp) sector to improve energy efficiency when beginning new investment cycles. In general, the pulp and paper industry relies on a long-term investment plan (e.g., to modernise installation), therefore any radical shift to technologies that offer improved energy efficiency is unlikely to occur on an industry-wide scale overnight, thus sequential improvements via

upgrades are more likely. Incorporating energy consumption thresholds into the tender would reward the paper business sector for transforming efforts towards energy efficiency and incentivize sustainable investment.

Although energy optimisation is a common practise in the pulp and paper industry, the extent of the applicable measures depends on the pulping technique used. One aspect that distinguishes the pulp and paper industry from other energy-intensive industries is the aforementioned fact that the residual biomass (i.e., bark, black liquor and, to a much lesser extent, wastewater sludge) is recovered from the process and used as fuel. A faster spread of best available techniques (BATs), such as combined heat and power (CHP), retrofitting existing mills with energy efficient technologies, and maximising economics of scale production (e.g., integrating mills, larger paper machines, etc) can further reap significant energy savings (EC, 2014c). Although BAT 6 of Decision 2014/687/EU doesn´t state any specific energy consumption reference values, it lays out a series of measures for its reduction.

To this end, the primary energy consumption of the European pulp and paper sector in 2021 reached in total 1.356.405 TJ (88.8% fed by fuels), while the electricity consumption was 93.239 GWh (95.6% of which produced through the CHP). In reference to 2020, the specific primary energy consumption dropped by 0.6% (13.15 TJ/kt), whereas specific electricity consumption by 2.7% (0.90 MWh/kt) (CEPI, 2023), while 95.6% of on-site electricity was produced through CHP.

The EU Ecolabel criterion is based on monitoring of actual energy fed into the different pulping processes. This is linked to specific reference values for fuel and electricity consumed to manufacture 1 tonne of product (sum of the energy from pulp processes and the fluff pulp conversion process). The EU Ecolabel calculates energy points i.e., a ratio between actual energy consumption and the reference value weighted against a type of pulp content in a pulp mix. The points for energy (P_{energy}) and for fuel (P_{fuel}) should not exceed 1.5, for each parameter, whereas the sum of points ($P_{total} = P_{energy} + P_{fuel}$) should not exceed 2.5. The combined verification of a total energy used allows for flexibility when optimising mill(s) energy consumption.

Table 8. EU Ecolabel reference values for energy consumption during fluff pulp manufacturing

Pulp grade	Electricity kWh/AD_t $E_{reference}$	Fuel kWh/AD_t $F_{reference}$
Integrated mills		
Chemical and semi-chemical pulp	800	5 400
CTMP pulp	1 800	900
Non-integrated mills		
Converting process (fluffing)	250	1800

Source: EC, 2023.

Verification of compliance with other Type I ecolabels

Nordic Ecolabelling for Sanitary Products (v.6.9.) and EU Ecolabels share methodological principles to calculate energy consumption. Unlike EU Ecolabel, the Nordic Ecolabel calculates energy scores for each parameter without considering its sum total: the threshold for scoring is 1.25 for energy and 1.25 for fuel consumption. The main distinctions stem from the reference values, which are a bit more relaxed in the Nordic Ecolabelling criteria. However, as the maximum allowed score for each parameter is 16.6% more ambitious than established by EU Ecolabel [*1.25 vs 1.5*], the authors assume that the energy consumption calculation might be comparable under condition that the sum of points for fuel and electricity is less than 2.5 (for more details refer to Annex 2).

Blue Angel DE-UZ 208 v.3 for Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) uses a different methodology for the energy calculation i.e., pass/fail approach. The authors assume that reference values refer to an integrated production. The use of generic reference values for heat and electricity by Blue Angel ignores the specific pulp input (and

pulping technique) involved. The equivalency assessment is nearly impossible due to the absence of an energy point and generic values for the pulp blend. This means that equivalency can be accepted based on a case-by-case analysis.

Man-made cellulose fibre

TS 2.1. Sourcing of man-made cellulose fibres

Based on EU Ecolabel Criterion 2.1 — *Sourcing of man-made cellulose fibres* laid down in the Annex I to Commission Decision (EU) 2023/1809.

Technical specification
TS 2.1. Sourcing of man-made cellulose fibres
For dissolving pulp produced from wood raw material All (100%) dissolved pulp used in a product shall be legally sourced and covered by valid Chain of Custody (CoC) certificates issued by an independent third-party certification scheme such as the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC) or equivalent. At least 70% of the wood raw material used for the production of dissolving pulp shall be covered by valid Sustainable Forestry Management (SFM) certificate issued by an independent third-party certification scheme such as FSC, PEFC or equivalent. The certification bodies issuing forest and/or chain of custody certificates shall be accredited or recognised by that certification scheme. For dissolving pulp produced from cotton linters if represents at least 1 % w/w of the final product All cotton and other natural cellulosic seed fibres shall be traceable and grown according to the requirements laid down in Council Regulation (EC) No 834/2007[46] and Regulation (EU) 2018/848[47] of the European Parliament and of the Council, the US National Organic Programme (NOP[48]) or equivalent legal obligations set by trade partners of the European Union. The organic cotton content may include organically grown cotton and transitional organic cotton. **Verification:** Absorbent hygiene products, which have been awarded the EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirements. Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)] If the fluff pulp does not carry a required label or an equivalent label, another equivalent means of proof must be provided.
[(1)] Equivalency here means compliance check and demonstrating that dissolving pulp used in manufacturing of the non-EU Ecolabel absorbent hygiene products meets or exceeds the requirements of criterion 2.1 for wood raw material, and criterion 3.1 for cotton liners, as applicable, in line with Annex I to Commission Decision (EU) 2023/1809. *For sourcing of wood raw material for manufacturing of dissolving pulp, at the time of writing (as of January 2024), suitably equivalent third-party operated schemes identified include FSC and PEFC*

Further information

[46] Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91 (OJ L 189, 20.7.2007, p. 1)

[47] Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007, PE/62/2017/REV/1 (OJ L 150, 14.6.2018, p. 1)

[48] National Organic Program, A Rule by the Agricultural Marketing Service on 12.21.2000, 65 FR 80547

To see further information on cellulose fibre sourcing, please refer to technical specification TS 1.1. within fluff pulp section.

Dissolving pulp produced from cotton linters shall meet technical specification TS 3.1. addressed within the following 'Cotton and other natural cellulosic seed fibres' section.

Verification of compliance with other Type I ecolabels

Nordic Ecolabelling specifies that a minimum of 30-% w/w of all wood raw material used shall proceed from forestry certified (SFM) under the FSC or PEFC schemes.

Blue Angel DE-UZ 208 v.3 for Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) does not set requirements on man-man cellulose fibres.

FSC and PEFS are suitable equivalent third-party operated schemes to verify fibre sourcing.

TS 2.2 and AC 2.1. Bleaching of man-made cellulose fibre

Based on EU Ecolabel Criterion 2.2 *Bleaching of man-made cellulose fibres* laid down in the Annex I to Commission Decision (EU) 2023/1809.

Technical specification	Award criterion
TS 2.2. *Bleaching of man-made cellulose fibre*	AC 2.1. O*rganic halogens*
The pulp use to manufacture man-made cellulose fibre used in the absorbent hygiene product shall be elemental chlorine free (ECF) or totally chlorine free (TCF) bleached. Chlorine gas shall not be used as a bleaching agent.	Note: This criterion refers only to elemental chlorine free (ECF) pulp. Totally chlorine free (TCF) pulp automatically fulfils this requirement. 1. X points will be awarded when ECF pulp bleaching for each pulp used to manufacture man-made cellulose fibres demonstrated to comply with emission limit for absorbable organic halogens (AOX) in accordance with criterion 2.2 of Annex I to Commission Decision (EU) 2023/1809. 2. X points will be awarded when ECF pulp bleaching for each pulp used to manufacture man-made cellulose fibres demonstrated to comply with thresholds for organically bound chlorine (OCI) content in accordance with criterion 2.2 of Annex I to Commission Decision (EU) 2023/1809.
Verification: Absorbent hygiene product, which have been awarded the EU Ecolabel EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirement. Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)]. If the absorbent hygiene product does not carry a required label or an equivalent label, anotherequivalent means of proof must be provided.	
[(1)] Equivalency here means compliance check and demonstrating that dissolving pulp used in manufacturing of the non-EU Ecolabel absorbent hygiene product meets or exceeds the requirements as stated in criterion 2.2. of Annex I to Commission Decision (EU) 22023/1809. *For TS 2.1.at the time of writing (as of January 2024), suitably equivalent third-party certification schemes identified include Nordic Ecolabelling for Sanitary Products (v.6.9, June 2016)* *For AC2.1.1 at the time of writing (as of January 2024), there have been no labels identified as suitable equivalents.* *For AC 2.1.2. at the time of writing (as of January 2024), suitably equivalent third-party certification schemes identified include Nordic Ecolabelling for Sanitary Products (v.6.9, June 2016)*	

Further information

The criteria aim to reduce the negative environmental and health effects caused by the consumption of resources and emissions generated during the production of man-made cellulose fibres.

Organically bound chlorine (OBC) or (OCl) indicates the amount of organochlorine compounds that remain in the finished product as a result of pulp bleaching and therefore it is determined by bleaching chemistry. To decrease the OBC content in the end product, standard techniques include adjustment of process parameters, including the selection and concentration of bleaching agents. For instance, chlorine dioxide is used in the delignification stage (D) before being extracted with alkaline.

Absorbent hygiene products can contain chlorine compounds that dissolve in bodily fluids and pass through the skin barrier, potentially damaging human health (Sofronova et al., 2022). The ISO 1148 has been developed for determination of the total content of chlorine (TC) and organically bound chlorine (OBC) in cellulose materials.

To learn more about AOX emission, consult technical specification TS 1.2. within the fluff pulp section.

The proposed EU GPP criterion establishes threshold values for organochlorines, addressing AOX emission into water and the presence of OCl in a final product for ECF bleached pulps.

- 0.140 kg AOX/ADt, measured in the wastewater from pulp manufacturing; and
- 150 ppm OCl, measured in the finished man-made cellulose fibres.

Verification of compliance with other Type I ecolabels

For Nordic Ecolabelling for Sanitary Products (v.6.9.), the emission reference value for AOX (0,15 kg AOX/ADt) is less strict than the EU Ecolabel requirement. For organically bound chlorine (OCl), the Nordic Ecolabelling and EU Ecolabel establish equivalent threshold.

Blue Angel DE-UZ 208 v.3 for Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) does not set requirements on man-man cellulose fibres.

AC 2.2. Production of man-made cellulose fibre

Based on EU Ecolabel Criterion 2.3. *Production of man-made cellulose fibre* laid down in the Annex I to Commission Decision (EU) 2023/1809.

Award criterion
AC 2.2. Production of man-made cellulose fibre
1. X points will be awarded when man-made cellulose fibre manufacturing process demonstrated that more than 50 % of dissolving pulp used in the process had been obtained from dissolving pulp mills that recover value from their spent process liquor either by generating on-site electricity and/or steam or by manufacturing chemical co-products as specified in criterion 2.3 of Annex I to Commission Decision (EU) 2023/1809. **2.** X points will be awarded when viscose and modal manufacturing process demonstrated to comply with maximum emission values in accordance with criterion 2.3 of Annex I to Commission Decision (EU) 2023/1809. **Verification:** Absorbent hygiene products, which have been awarded the EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirements. Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)] If the fluff pulp does not carry a required label or an equivalent label, another equivalent means of proof must be provided.
[(1)] *Equivalency here means compliance check and demonstrating that man-made cellulose fibre used in manufacturing of the*

non-EU Ecolabel absorbent hygiene products meets or exceeds the requirements of criterion 2.3 of Annex I to Commission Decision (EU) 2023/1809.

At the time of writing (as of January 2024), there have been no labels identified as suitable equivalents.

Further information

The traditional methods for producing dissolving grade pulps include acid sulfate and pre-hydrolysis kraft pulping processes. These methods proportionate cellulose of high purity. The conventional viscose process involves dissolving cellulose pulp with carbon disulphide (CS_2) in strong alkaline conditions, i.e., in the presence of sodium hydroxide (NaOH). The spinning that follows, transforms the dissolved pulp into filaments or staple yarns. For filaments, individual long fibre strands form an organised structure of a yarn, whereas for staple viscose, fibre is cut into short lengths after spinning, making viscose easier to blend and process into, for example textile yarns or nonwoven. The staple fibre that is bulky and 'fuzzy to touch' has a resemblance to cotton. About 85% of the total viscose fibre production is produced as staple fibres and about 15% as filaments[49].

The emissions to water in dissolving pulp mills can originate from different processes, mainly washing losses, effluents from the bleach plant and condensates from the evaporation plant, while major point sources for emissions to air are the recovery boiler, the bark or biomass boiler and other steam blocks for steam production; however, potential releases of emissions to air from a number of processes are also to be taken into account (Faraca et al., 2023). Alternatively, new trends in the production of regenerated fibres are related to the direct dissolution of cellulose in appropriate environmentally sound recyclable solvents, allowing high quality fibres (Mendes et al., 2021).

The award criteria encourage the retrieval of value, like by recovering spent liquor to produce lignosulphonates or generate steam. In this sense, more than 50 % of dissolving pulp used to manufacture man-made cellulose fibres shall be obtained from dissolving pulp mills that recover value from their spent process liquor either by generating on-site electricity and/or steam, or by manufacturing chemical co-products.

EU Ecolabel emission reference values are extracted from the Reference Document on Best Available Techniques in the Production of Polymers (BREF, 2007) and distinguish the specificity of fibre processing into filaments or staple (Table 9) *[The BREF document above can provide the procurer with more information about the manufacturing process of man-made cellulose fibre and its associated emission].*

Table 9. EU Ecolabel emission limit values for viscose and modal manufacturing process

Fibre type	Sulphur emission to air (g S/kg)	Zinc emission to water (g Zn/kg)	COD emission to wate (g COD/kg)	SO_4^{2-} emission to water (g SO_4^{2-}/kg)
Staple fibre	20	0.05	5	300
Filament fibre				
-**Batch washing**	40	0.10	5	200
-**Integrated washing**	170	0.50	6	250

Source: EC, 2023.

Verification of compliance with other Type I ecolabels

The Nordic Ecolabel for sanitary products (v.6.9) does not specify a minimum % for the recovery of values from product manufacturing. In contrast to the EU Ecolabel, the Nordic scheme establishes a general emission requirement that does not take into account the type of fibres used and the

[49] See: https://www.marketresearch.com/UnivDatos-Market-Insights-v4240/Viscose-Staple-Fiber-Current-Forecast-31627669/

verification refers to the proportion of cellulose fibres that makes up at least 10% (w/w) of the products. The different emission thresholds in the Nordic system could also cause other non-equivalent outcomes.

Blue Angel DE-UZ 208 v.3 for Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) does not set requirements on man-man cellulose fibres.

Cotton and other natural cellulosic seed fibres

TS 3.1. and TS 3.2. Sourcing and bleaching of cotton and other natural cellulosic seed fibre

Based on EU Ecolabel Criterion 3.1. *Sourcing and traceability of cotton and other natural cellulosic seed fibre* and Criterion 3.2. *Bleaching of cotton and other natural cellulosic seed fibres* laid down in the Annex I to Commission Decision (EU) 2023/1809.

Technical specification
TS 3.1. Sourcing of cotton and other natural cellulosic seed fibre
All cotton and other natural cellulosic seed fibres shall be traceable and grown according to the requirements laid down in Council Regulation (EC) No 834/2007[50] and Regulation (EU) 2018/848[51] of the European Parliament and of the Council, the US National Organic Programme (NOP[52]) or equivalent legal obligations set by trade partners of the European Union. The organic cotton content may include organically grown cotton and transitional organic cotton.
TS 3.2. Bleaching of cotton and other natural cellulosic seed fibre
Cotton and other natural cellulosic seed fibres used in a product shall be bleached using totally chlorine free (TCF) techniques in accordance with criterion 3.2 of Annex I to Commission Decision (EU) 2023/1809.
Verification: Absorbent hygiene product, which have been awarded the EU Ecolabel EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirement. Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)]. If the absorbent hygiene product does not carry a required label or an equivalent label, another equivalent means of proof must be provided.
[(1)] Equivalency here means compliance check and demonstrating that cotton and other natural cellulosic seed fibre used in manufacturing of the non-EU Ecolabel absorbent hygiene products meets or exceeds for TS 3.1 - the requirements of criterion 3.1., and for TS 3.2. - the requirements of criterion criterion 3.2 of Annex I to Commission Decision (EU) 2023/1809.. *For TS 3.1. at the time of writing (as of January 2024), suitably equivalent third-party opearetd schemes identified include: Nordci Ecolabelling (v.6.9., June 206) and Blue Angel DE-UZ 208 (v.3, Jan 2021).* *For TS 3.2. at the time of writing (as of January 2024), suitably equivalent third-party opearetd scheme identified includes Blue Angel DE-UZ 208 (v.3, Jan 2021).*

[50] Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91 (OJ L 189, 20.7.2007, p. 1)

[51] Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007, PE/62/2017/REV/1 (OJ L 150, 14.6.2018, p. 1)

[52] National Organic Program, A Rule by the Agricultural Marketing Service on 12.21.2000, 65 FR 80547

Further information

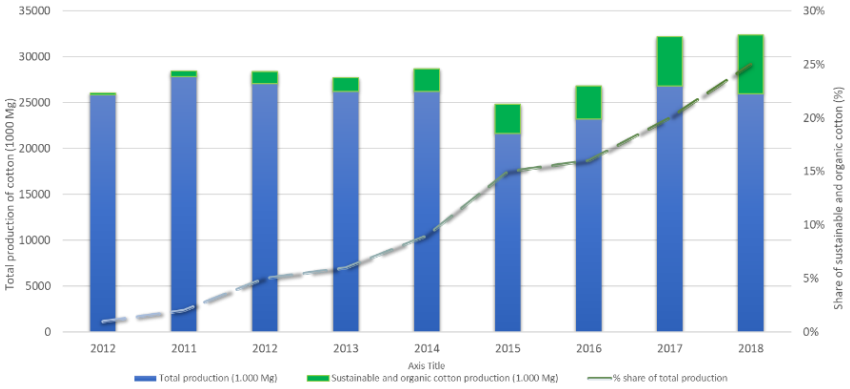
This requirement is designed to reduce the negative environmental effects of growing and processing of cotton and other natural cellulosic seed fibres.

Global cotton production is expected to grow by 1.6% per year, reaching 30,6 million tonnes in 2031, while global trade in raw cotton is expected to exceed 12 million tonnes (up 27% from 2021), with India being the largest cotton producer and the United States the largest exporter in 2022. India's contribution to the global increase in cotton production is estimated to be around 25%.

Since 2010, the percentage of cotton fibres produced in accordance with sustainability or organic standards has been steadily increasing, reaching a 25% share in 2018. Among the existing standards, in 2018 the Better Cotton Initiative dominated worldwide with a share of more than 45% of the sustainable cotton supply, followed by the Responsible Brazilian Cotton Initiative with 35%. The certification of around 80% of cotton production under these two initiatives makes Brazil a leading player in global sustainable cotton supplier (OECD/FAO, 2022).

The authors want to stress that the increasing market availability of sustainable and organic cotton justifies the need to define the criterion as a technical specification. More detailed information on the organic cotton global market can be found in the Organic Cotton Market Report 2022 (Textile Exchange[53]).

Figure 16. Global sustainable and organic cotton production



Source: OECD/FAO, 2022 based on International Cotton Advisory Committee (ICAC) data[54].

The main objective of organic cotton cultivation is to reduce GHGs emission and use farming methods that minimize or eliminate the use of pesticides. Organic production is beneficial for the environment, farmers, and local communities, and it responds to consumer demand for organic products. Organic producers are verified by third-party certification bodies to meet strict national regulations regarding the methods and materials allowed in organic production. International Federation of Organic Agriculture Movements (IFOAM)´s family of organic production guidelines, such as the European Commission Regulations (EC) 834/2007 or the United States Department of Agriculture National Organic Program (USDA NOP), among others, are used for the due diligence.

In Europe, the production and control requirements for organic harvests are laid down by Regulation 834/2007 on organic production and labelling of organic products, which harmonises the rules for the production, labelling and control of organic products. It lays down general principles for specific production methods, the use of natural resources and strict restrictions on the use of synthetic chemicals. It also lays down specific principles for agriculture, the processing of organic food and organic feed. Organic production pursues the objectives of the common agricultural policy (CAP)[55] of

[53] See: https://textileexchange.org/

[54] See: www.icac.org.

[55] See: CAP 2023-27 (europa.eu)

the Union to enforce sustainable agriculture and rural development. Regulation (EC) 1235/2008[56] describes how producers of organic products from outside the EU can conform to the applicable European requirements.

In the United States of America, the National Organic Program (USDA NOP) is the federal regulatory framework, which develops and enforces consistent national standards for organically produced agricultural products sold in the United States[57].

In addition, the term ´transitional organic cotton´, also called ´in-conversion cotton´, refers to the crop that is in the process of certification. The certification time might vary- for example, the European Union requires 24 months and India and the United States36 month[58].

Regarding cotton bleaching, currently about 80-90% (Faraca et al., 2023) of cotton is bleached using TCF techniques (mainly based on H_2O_2 sequences). In this sense, the requirement reinforces the implementation of the current industry best practise.

Verification of compliance with other Type I ecolabels

All reference schemes set comparable requirements for cotton sourcing and traceability. As for cotton bleaching, unlike EU Ecolabel, the Nordic Ecolabelling accepts ECF bleaching technique. Equally to EU Ecolabel, Blue Angel only accepts total chlorine free (TCF) bleaching process.

Production process

TS 4.1. Material efficiency in the manufacturing of the final product.

Based on EU Ecolabel Criterion 6. *Material efficiency in the manufacturing of the final product* laid down in the Annex I to Commission Decision (EU) 2023/1809.

Technical specification
TS 4.1. Material efficiency in the manufacturing of the final product
At the final assembly site, the waste that is generated during manufacturing and packaging of the absorbent hygiene products and sent to landfill or incineration without energy recovery shall not exceed: (a) 8% by weight of the end products for tampons; (b) 4% by weight of the end products for all the other products. **Verification:** Absorbent hygiene product, which have been awarded the EU Ecolabel EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirement. Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)]. If the absorbent hygiene product does not carry a required label or an equivalent label, anotherequivalent means of proof must be provided.
[(1)] Equivalency here means compliance check and demonstrating that material efficiency in the manufacturing of the final non-EU Ecolabel absorbent hygiene products meets or exceeds the requirements of criterion 6 of Annex I to Commission Decision (EU) 2023/1809. *At the time of writing (as of January 2024), no suitably equivalent third-party opearetd scheme has been identified.*

[56] Commission Regulation (EC) No 1235/2008 of 8 December 2008 laying down detailed rules for implementation of Council Regulation (EC) No 834/2007 as regards the arrangements for imports of organic products from third countries. OJ L 334,12.12.2008, p. 25–52

[57] See: https://www.ams.usda.gov/about-ams/programs-offices/national-organic-program

[58] Textile Exchange 2021, see: https://textileexchange.org/app/uploads/2021/02/In-Conversion-to-Organic-the-Basics-Final-020821-1.pdf

Further information

The main objective of this criterion is to promote material recovery during the assembly of the final product and thus limit the amount of waste that ends up in a landfill or is incinerated without energy recovery. For this reason, process rejects e.g., scraps (*pre-consumer waste*) treated according to the principles of the circular economy and waste hierarchy such as recovery for reuse, recycling or processing for energy recovery do not fall within the scope of this requirement.

Pre-consumer process rejects are valuable materials of high purity (Wille et al., 2028, Cordella et al. 2015) that should, as far as technically feasible, be returned to the production process, for instance, by mixing with the raw materials and reprocessed. Plotka-Wasilewska et al. (2022) report that more and more component manufacturers are setting up recycling programmes for their production waste, which directly benefits the process economy. To support this practice, technical specification TS 4.1. promotes production processes that maximise resource efficiency.

To this end, the waste generated during the manufacture and packaging of the end products should not exceed 8% w/w for tampons and 4% w/w for all other products. The amount of waste that is landfilled or incinerated without energy recovery should be calculated by subtracting the amount of waste recovered (reused, recycled, etc.) from the total amount of waste generated.

Verification of compliance with other Type I ecolabels

Neither the Nordic Ecolabelling for sanitary Products (v. 6.9) nor the Blue Angel DE-UZ 208 (v. 3) establish a threshold for the waste generated at the final product assembly site.

Packaging

TS. 5.1, TS 5.2., TS 5.3, AC 5.1, and AC 5.2 for packaging requirements

Based on EU Ecolabel Criterion 8. *Packaging* laid down in the Annex I to Commission Decision (EU) 2023/1809.

Technical specification	**Award criteria**
TS 5.1. Cardboard, and/or paper used for packaging	**AC 5.1. Plastic used for packaging**
Sales packaging made of cardboard and/or paper shall contain a minimum 40% of recycled material. Grouped packaging made of cardboard and/or paper shall contain a minimum 80% of recycled material. The remaining share (100% minus recycled content percentage) of cardboard and/or paper used for the sales and grouped packaging shall be SFM-certified by an independent third-party certification scheme such as FSC, PEFC or equivalent.	X points will be awarded when the plastic material used in the sales packaging demonstrated to comply with a minimum content of recycled material in accordance with criterion 8(b) of Annex I to Commission Decision (EU) 2023/1809.
TS 5.2. Non - use of composite material in packaging	**AC 5.2. Recyclability**
Grouped packaging shall be avoided or made of only of cardboard and/or paper. Packaging (sales and grouped) shall not be made of composite materials such as mixed plastics or paper coatings with plastics or metals, shall not be permitted.	X points will be awarded when sales and grouped packaging demonstrated to comply with the recyclability requirement in accordance with criterion 8(c) of Annex I to Commission Decision (EU) 2023/1809.
TS 5.3. Information on recycled content and recyclability on product packaging	
Recycled content and recyclability of sales and grouped	

packaging shall be indicated on the sales packaging	

Verification:

Absorbent hygiene product, which have been awarded the EU Ecolabel EU Ecolabel according to Annex I of Commission Decision (EU) 2023/1809 will be deemed to comply with the requirement.

Alternatively, the tenderer shall declare that the absorbent hygiene product has been certified by another third-party operated labelling scheme confirming that equivalent EU Ecolabel requirements are met [(1)].

If the absorbent hygiene product does not carry a required label or an equivalent label,another equivalent means of proof must be provided.

[(1)] Equivalency here means compliance check and demonstrating that the packaging used for the non-EU Ecolabel absorbent hygiene products meets or exceeds the requirements of criterion 8 of Annex I to Commission Decision (EU) 2023/1809.

For TS 5.1. at the time of writing (as of January 2024), suitably equivalent third-party operated schemes identified include FSC and PEFC.

For TS 5.2. at the time of writing (as of January 2024), suitably equivalent third-party operated scheme identified includes Blue Angel DE-UZ 208 (v.3, Jan 2021).

ForTS 5.3. at the time of writing (as of January 2024), no suitably equivalent third-party operated scheme has been identified.

For AC 5.1. at the time of writing (as of January 2024), no suitably equivalent third-party operated scheme has been identified.

For AC 5.2. at the time of writing (as of January 2024), for sales packaging, suitably equivalent third-party opearetd scheme identified includes Blue Angel DE-UZ 208 (v.3, Jan 2021).

Further information

The primary goal of the above requirements is to achieve advanced green procurement practices that support the recycling of materials and contribute to the creation of a sustainable value chain.

The Ecodesign of packaging (sales and grouped[59]) that enforces a minimum content of recycled and recyclable materials will support material circularity and hence resource recovery. The EU GPP requirement encourages the development of such measures, which aim to reduce the depletion of natural resources that would otherwise be used to produce new raw materials. To this end, grouped packaging must be made of paper or cardboard, whereas sales packaging can be made of paper, cardboard or plastic. Mixing of the different materials (i.e., plastic with paper) is not allowed. Table 10 summarises the EU Ecolabel requirements for plastic and cellulose -based materials used in packaging. The key elements of the requirements are divided into sections and are explained below.

Maximised recycled material content in packaging

The selection of paper that contains up to 100% of recycled fibre (known as paper for recycling) is a common green public procurement practice for paper products. This is undoubtedly an appropriate way to allocate life cycle thinking and reduce the environmental impact associated with pulp and paper production.

In 2022, the recycling rate of paper and board in Europe was 70.5%, which corresponds to 49.1% (47.491.000 tonnes) of the total raw material consumption of the European pulp and paper industry. In the same period, in total 79.5% of recycled fibre was used for the production of packaging and board (CEPI, 2023). Overall, the use of recycled fibres is much in demand and so it can be assumed that is being efficiently heightened. The highest recycled content (70-90% w/w[60]) can be found in corrugated board used for product distribution, which due to its characteristic e.g., thickness is not used for sales packaging.

Technical specification TS 5.1. therefore, stipulates a minimum recycled content of 40 % w/w for sales packaging and 80 % w/w for grouped packaging. The remaining percentage should be covered by a valid SFM certificate. In this way, 100% diligent material is used in product packaging.

[59] See definitions in the Introduction.

[60] GWP Group, 2022. Recyclable Packaging. Available at: https://www.gwp.co.uk/advantages/recyclable-packaging/

For plastic, the revised Packaging and Packaging Waste Directive (PPWD)[61] defines a safeguard for the recycled content (recycled plastic material) in the contact sensitive packaging such as medical applications[62]. The Zero Waste Europe (ZWE) estimated future targets for the recycled content of plastic packaging between 30-40%[63] - combined value for chemical[64] and mechanical recycling. While setting targets for a high percentage of recycled plastic content may be affected by its availability on the market, expert consultations suggested that due to several limitations, around 30–40% w/w of recycled content would be appropriate for the plastic packaging sector (Faraca et al., 2023). Consequently, the PPWD proposal, depending on the type of packaging, sets targets for recycled content[65]. For AHPs, it is understood that the packaging should meet the targets of 35% by 2030 and 65% by 2040 (Faraca et al., 2023). Market estimates forecasts enough availability of secondary raw materials to be used (based upon availability of recyclates) and indicate a current potential recycled content of (close to) 25% and near 49% by 2030[66].

Accordingly, criterion AC 5.1.for a share of recycled plastic (see: Table 10), while achieving the expected targets, also represents a compromise between the ambitious level and market feasibility i.e., a share of 20% w/w of recycled plastic. In the medium term (from 2027), however, the level of ambition will rise to 35% w/w. This harmonises the EU Ecolabel targets with the revised Packaging and Packaging Waste Directive ahead of time.

The procurer can play an important role in promoting a circular economy, as the consistent application of such a criterion would help stimulate the market to reap the full potential of plastic recyclates.

Recycled content shall be verified by complying with the EN 45557 or ISO 14021 while recyclability shall be verified by complying with the EN 13430 or ISO 18604.

For wood cellulose fibre, the remaining share (100 % minus recycled content percentage) of the cardboard and/or paper used for the sales and grouped packaging should be SFM certified material according to FSC, PEFC or equivalent schemes.

No use of the composite packaging and guaranteed material recyclability

The study of the Society for Packaging Market Research (GVM)[67] has observed a recent market trend to substitute plastic packaging by paper composites packaging i.e., mixing paper with plastic with or without aluminium thus creating multi-material and multilayer product. While this re-designing might favour some functional aspects, the embedded material heterogeneity doubtlessly complicates or hinders recycling (Walker et al, 2020).

Since traditional single-component recycling technologies are not suitable for the composite packaging (*due to physicochemical incompatibility of the different layers, problems with the identification of material type, sorting and separation technique, etc*) this implies the use of complex separation techniques. For example, for plastic, multilayer waste scraps would first need to be partially or fully deconstructed into their constituent resins before being co-fed into processing

[61] See: https://environment.ec.europa.eu/publications/proposal-packaging-and-packaging-waste_en

[62] 'Contact sensitive packaging' means packaging that is intended to be used in any packaging applications in the scope of Regulations: (EC) No 1831/2003 for animal nutrition, (EC) No 1935/2004 for materials and articles intended to come into contact with food, (EC) No 767/2009 for placing on the market and use of feed, (EC) No 2009/1223 on cosmetic products, (EU) 2017/745 on medical devices , (EU) 2017/746 for in vitro diagnosis MD, (EU) 2019/4 for the manufacture, placing on the market and use of medicated feed, (EU) 2019/6 for veterinary medicinal products, Directive 2001/83/EC for medicinal products for human use, or Directive 2008/68/EC for inland transport of dangerous goods

[63] See: ZWE, 2022: Climate impact of pyrolysis of waste plastic packaging in comparison with reuse and mechanical recycling

[64] ´Chemical recycling' means the process of converting polymeric waste by changing its chemical structure and turning it back into substances that can be used as raw materials for the manufacturing of plastics or other products. There are different chemical recycling technologies, e.g. pyrolysis, gasification, hydrocracking and depolymerisation

[65] For 2030 (a) contact sensitive packaging made from polyethylene terephthalate (PET) as the major component; (b) contact sensitive packaging made from plastic materials other than PET, except single-use plastic beverage bottles; (c) single-use plastic beverage bottles; (d) packaging other than those referred to in points (a), (b) and (c). For 2040 (a) contact sensitive plastic packaging, except single-use plastic beverage bottles; (b) single-use plastic beverage bottles; (c) plastic packaging other than those referred to in points (a) and (b).

[66] See: Ellen MacArthur Foundation (2019) New Plastics Economy Global Commitment: June 2019 Report

[67] See: Substitution von Kunststoffverpackungen durch papierbasierte Verbunde

equipment to produce reconstituted multilayer films (Garcia and Robertson, 2017). Furthermore, the recycling of fibre-based composite materials must also be processed in specialised paper mills (with additional equipment and adequate operating conditions) that enable to reprocess EN 643 paper for recycling of Grade 5[68].The sorted composite packaging frequently ends up being incinerated with energy recovery (De Mello Soares, 2022). To this end, Circular Economy for Flexible Packaging (CEFLEX) has launched a series of voluntary guidelines - Designing for a Circular Economic (D4ACE)[69] – aiming at maximizing the content of recyclable components in the structures, avoidance of hazardous or non-recyclables materials, reduction of complexity, among other measures to increase packaging recyclability.

The award criterion AC 5.2 on material recyclability is meant to reinforce technical specification TS 5.2 and ensure that the packaging material reaches the quality to be reintroduced into material value chain. The requirement is verified by standardised test method that guarantees product recyclability such as ATICELCA and PTS test methods.

Verification of compliance with other Type I ecolabels

Table 10 outlines the packaging requirements for the referenced schemes. Blue Angel and Nordic Ecolabelling set extensive requirements for product packaging, which include the contents of removable materials or the chemical profile of recycled materials. The exercise is solely focused on comparing the requirements across the reference schemes against EU Ecolabel Criterion 8 and therefore only includes the proposed EU GPP criteria.

Also, the authors consider relevant to mention that Blue Angel DE-UZ 208 foresees changes in their requirements for packaging, as follows: *Packaging criteria will be reviewed e.g., with the aim of promoting the use of a high recycled content in the plastic and paper used for sales packaging for products that are also individually packaged. This requirement has only applied to repackaging up to now Within the planned criteria revision, the general issue of material efficiency will also be examined* (Blue Angel, 2021).

Table 10. An overview of the comparison between EU Ecolabel requirements for materials used in packaging and other schemes of reference

Requirement	Sales Packaging	Grouped packaging	Nordic Ecolabelling For Sanitary Products (v.6.9)	Blue Angel DE-UZ 208 (v.3)	FSC and PEFC
Cardboard and paper	≥40% w/w of recycled content with the remaining % w/w of SFM-certified fibre	≥80% of w/w of recycled content Remaining % w/w of SFM-certified fibre	For primary packaging ≥20-% w/w of renewable and/or recycled. Chain of Custody (CoC) certified by the FSC/PEFC schemes	80% w/w of recycled fibre for repackaging. Virgin fibres must not be sourced from forests that are particularly worthy of protection	Certification body for the SFM and paper for recycling
Plastic	Until 31.12.2026 ≥20% w/w of recycled content, From 1.01 2027 ≥35% w/w of recycled content.		For primary packaging ≥20-% w/w of renewable and/or recycled	≥80% recycled plastic in repacking. Biodegradability and recyclability criteria for sales packaging	n.a.
Recyclability	≥95 % w/w of recyclable material and remaining 5 % w/w must be compatible with recycling.		≥20 % w/w of renewable and/or recycled in the primary packaging	For sales packaging ≥95% of available for recycling material	n.a.
Composite packaging	Not allowed		Paper/board must not be coated	Not allowed	n.a.

Source: Adopted from EC 2023, Nordic Ecolabelling 2016, and Blue Angel 2021.

[68] See: https://www.cepi.org/the-new-en643/

[69] See: https://guidelines.ceflex.eu/

FSC and PEFS are suitable equivalent third-party operated schemes to verify cellulose fibre sourcing (both virgin and paper for recycling).

4 Conclusions

This report provides considerations for defining green criteria in public tenders and aims to motivate procurers to reflect on, evaluate and guide their innovation measures and management practises in order to realise the full potential of green public procurement. The content of this report could also be useful for evaluating or revising existing procurement practises. It aims to encourage the 'doers and makers' to endorse green purchasing and implement procedures capable of advancing sustainable procurement practices.

Verification of compliance with such green requirements has been facilitated by harmonizing with the environmental criteria already defined and met by the relevant products bearing the EU Ecolabel and, in some cases, other equivalent ISO Type I ecolabels.

The report systematises the knowledge about environmental aspects related to absorbent hygiene products, and informs procurers and product manufacturers about the reasons for the chosen environmentally friendly sourcing option(s) or recommendation(s) along the value chains of a product.

The exact range of products covered by the EU Ecolabel is explained to provide a useful context for purchasers. It provides some background market data based on Eurostat's PRODCOM database and identifies relevant Common Procurement Vocabulary codes that should be used when tendering.

The AHPs procurement is likely to foremostly satisfy the needs of health care providers or alike public administration bodies including public home-care service. The labels can be used in different phases of the procurement process. At the verification stage, ecolabels provide a means of third-party verification that can significantly help procurers to save time and effort while ensuring that high environmental standards are applied in public procurement. Contracting authorities setting requirements that can be met by works, supplies or services bearing a specifically cited label (e.g., the EU Ecolabel) shall accept any other labels (e.g., Nordic Ecolabel, Blue Angel etc.) as proof of compliance so long as they confirm that the works, supplies or services with these other labels also meet the relevant specified requirements of that specified label.

The main environmental hotspots were found to be associated with the upstream process (sourcing and manufacturing of input materials). The key impacts are linked to the resource depletion, energy generation and consumption as well as emissions resulting from the industrial processing. Reducing the overall environmental impact of the AHPs should in the first place, focus on the environmental hotspots, improving process efficiency and circularity of the raw materials used, while maximising waste recovery in the pre-consumer phase (both upper – and core processes), and reuse/recycling of packaging material in the EoL phase.

The EU Ecolabel criteria considered as the most appropriate for the use in recommended EU GPP criteria were as follows:

1. Fluff pulp sourcing and manufacturing (referring to the impacts associated with upstream processes for fibre sourcing and processing);
2. Man-made cellulose fibre sourcing and manufacturing (referring to the impacts associated with upstream processes for fibre sourcing and processing);
3. Cotton and other cellulose seed fibre sourcing and manufacturing (referring to the impacts associated with upstream processes for fibre sourcing and processing);
4. Material efficiency in the manufacturing of the final product Pulp bleaching (referring to the impacts associated with core process);
5. Packaging (referring to the impact associated with downstream processes.

Each criterion is followed by the summarised rationales and explanation of the requirement set by EU Ecolabel and other type I ecolabels. Brief justifications of why these EU Ecolabel criteria are recommended for EU GPP (based on relevance to the subject matter, ease of verifiability and environmental relevance) can be found in Annex 1. Finally, a comparison of how selected other ISO 14024 type I ecolabels compare to the relevant EU Ecolabel criteria is presented in Annex 2.

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List of abbreviations and definitions

AC	Award Criterion/Criteria
AHPs	Absorbent hygiene products
AOX	Halogenated organic compounds
CEPI	The Confederation of European Paper Industries
CHP	Combined heat and power
CoC	Chain of custody
CPV	Common Procurement Vocabulary
CTMP	Chemi-thermo mechanical pulp
EC	Exclusion Criterion/Criteria
ECF	Elementary chlorine free
EMAS	Eco-Management and Audit Scheme
EoL	End of life
FSC	Forest Stewardship Council
GPP	Green Public Procurement
IFOAM	International Federation of Organic Agriculture Movements (IFOAM)
ISO	International Standards Organisation
LCA	Life cycle assessment
NOx	Nitrogen Oxides
PEF	Product Environmental Footprint
PEFC	Programme for the Endorsement of Forest Certification
SC	Selection Criterion/Criteria
SFM	Sustainable Forestry Management
SOx	Sulphur Oxides
TCF	Totally chlorine free
TED	Tenders Electronic Daily
TS	Technical Specification
UNEP	The United Nations Environment Programme

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Annexes

Annex 1. Explanations of screening of EU Ecolabel criteria for suitability of use in EU GPP criteria

Highly recommended Recommended Non-recommended

EU Ecolabel criterion	Relevance to the subject matter (SM)	Ease of verification without EU Ecolabel	Environmental relevance	Recommendation for the use as EU GPP recommendation
Fluff Pulp				
1.1 Sourcing of fluff pulp	Directly related – cellulose fibre is the main raw material for fluff pulp manufacturing, which lies among the main materials used in a final AHP product.	Straightforward compliance checks without EU Ecolabel. Verification relies on the common industry practice in using sustainable forest management (SFM) certification schemes such as PEFC or FSC.	Environmental hotspot. Related to the circular economy objectives.	Highly recommended as TS.
1.2 Bleaching of fluff pulp	Indirectly related to the SM– criteria apply at the level of the industrial site where fluff pulp was made.	Easy to demonstrate compliance when products do not have an EU Ecolabel by means of the supply chain verification. Standardised test methods to verify the compliance check.	Environmental hotspot. An emission to water that occurs during the core process of fluff pulp manufacturing and dominates the environmental impact (material sourcing). Related to the circular economy objectives.	Highly recommended as TS + AC.
1.3 Emission of COD and phosphorous (P) to water and sulphur (S) compounds and NOx to air from production of fluff pulp	Indirectly related to the (SM) – criteria apply at the level of the industrial site where fluff pulp was made.	Easy to demonstrate compliance when products do not have an EU Ecolabel by means of the supply chain verification. Standardised test methods to verify the compliance check. Industrial Emissions Directive (2010/75/EU) ensures monitoring and reporting of the selected emission parameters.	Environmental hotspot. Emissions to water and air that occur during the core process of fluff pulp manufacturing dominate the environmental impact (material sourcing). Related to the circular economy objectives.	Highly recommended as AC.
1.4 Emissions of CO_2 from production of fluff pulp	Indirectly related – criteria apply at the level of the industrial site where fluff pulp was made.	Easy to demonstrate compliance when products do not have an EU Ecolabel by means of the supply chain verification. Standardised test methods to verify the compliance check. Verification supported by the EU Emissions Trading System (EU ETS) that requires monitoring and reporting of CO2 emissions.	Environmental hotspot. Emissions to water and air that occur during the core process of fluff pulp manufacturing dominate the environmental impact (material sourcing). Directly related to the circular economy objectives (climate change).	Highly recommended as AC.
1.5 Energy use from production	Indirectly related – criteria apply at level of the site where fluff pulp was made.	Easy to demonstrate compliance with if products do not have an EU Ecolabel. Monitoring of energy consumption by the manufacturer- supply chain verification (energy consumption).	Environmental hotspot. Directly related to the circular economy objectives (climate change)	Highly recommended as TS.

EU Ecolabel criterion	Relevance to the subject matter (SM)	Ease of verification without EU Ecolabel	Environmental relevance	Recommendation for the use as EU GPP recommendation
Man-made cellulose fibres (including viscose, modal, lyocell, cupro, triacetate)				
2.1 Sourcing of man-made cellulose fibres	Directly related – cellulose fibre is the main raw material for the man-made cellulose fibre manufacturing, which lies among the main materials used in a final AHP product.	Straightforward compliance checks without EU Ecolabel - verified relying on a common industry practice in using sustainable forest management (SFM) certification schemes.	Environmental hotspot. Related to the circular economy objectives.	Highly recommended as TS.
2.2 Bleaching of man-made cellulose fibres	Indirectly related – criteria apply at the level of the industrial site where man-made cellulose fibre was made.	Easy to demonstrate compliance when products do not have an EU Ecolabel by means of the supply chain verification (technology and emission). Standardised test methods to verify the compliance check.	Environmental hotspot. An emission to water that occurs during the core process of the pulp manufacturing dominates the environmental impact (material sourcing). Related to the circular economy objectives.	Highly recommended TS+ AC.
2.3 Production of man-made cellulose fibres	Indirectly related – criteria apply at the level of the industrial site where man-made cellulose fibre was made.	Easy to demonstrate compliance when products do not have an EU Ecolabel by means of supply chain verification (technology and emission). Standardised test methods to verify the compliance check with the emission limit values	Environmental hotspot. Directly related to the circular economy objectives.	Highly recommended as AC.
Cotton and other natural cellulosic seed fibres				
3.1 Sourcing and traceability of cotton and other natural cellulosic seed fibres	Directly related – cotton lies among the main materials used in a final AHP product.	Straightforward compliance checks without EU Ecolabel by regulatory requirements concerning organic production and labelling of organic products	Environmental hotspot. Related to the circular economy objectives	Highly recommended as TS.
3.2 Bleaching of cotton and other natural cellulosic seed fibres	Indirectly related – criteria apply at the level of the industrial site where cotton fibre is processed	Easy to demonstrate compliance when products do not have an EU Ecolabel by means of the supply chain verification (notification of bleaching technique used).	Environmental hotspot. An emission to water that occurs during the core process of fluff pulp manufacturing dominates the environmental impact (material sourcing). Related to the circular economy objectives	Highly recommended as TS + AC.
Production of polymers and plastic				
4. Production of synthetic polymers and plastic materials	Directly related – synthetic polymers and plastic materials form part of a final AHP product (including packaging).	Complex verification without EU Ecolabel due to the need to qualitatively verify the appropriateness of the measures which were used at the manufacturing site to reduce environmental impact from material processing.	Environmental hotspot. Applicable measures are meant to mitigate environmental impact from the production site. The magnitude of the improvement potential that might be achieved cannot be assessed due to the lack of quantitative requirements.	Not recommended.

EU Ecolabel criterion	Relevance to the subject matter (SM)	Ease of verification without EU Ecolabel	Environmental relevance	Recommendation for the use as EU GPP recommendation
Biobased plastic				
5. Biobased plastic materials	Directly related – synthetic polymers and plastic materials form part of a final AHP product.	Complex verification without EU Ecolabel due to the lack of a comprehensive traceability system in-place. Current market performance does not allow establishing a min. percentage content of biobased plastic in a product.	Not considered as an environmental hotspot. The use of available bio-recourses for bio-plastic manufacturing might reduce dependency on fossil fuels, e.g. bioSAP. However, an increase use of biobased materials does not guarantee an overall greater material sustainability as a trade-off impact must be individually considered.	Not recommended.
Material efficiency				
6. Material efficiency in the manufacturing of the final product	Indirectly related – criteria apply at the level of the final industrial site where incoming materials are processed.	Relatively easy to demonstrate compliance when products do not have an EU Ecolabel by means of the quantitative verification of the amount of waste generated during the manufacture and packaging of a final product.	Environmental hotspot. Resource efficiency and waste reduction at manufacturing site directly related to the circular economy objectives.	Highly recommended as TS.
Excluded and restricted substances				
7.1 Restrictions on substances classified under Regulation (EC) No 1272/2008 of the European Parliament and of the Council	Directly related - as to SVHC and CLP classification, and non-presence or conditional requirements of listed substances that might remain on the final product.	Difficult to verify the compliance check for product without EU Ecolabel. It would require screening of chemicals used in a production process followed by the relevant declaration of compliance issued by a final product manufacturer and upstream supply chain.	Not considered as an environmental hotspot, except for the use of chlorine in bleaching.	Not recommended.
7.2 Substances of Very High Concern (SVHCs)				
7.3 Other specific restrictions				
Product Packaging				
8. Packaging	Directly related – packaging material forms part of a final AHP product.	Relatively easy to demonstrate compliance when products do not have an EU Ecolabel.	Environmental hotspot. Resource efficiency and recyclability requirement for packaging - directly related to the circular economy objectives.	Highly recommended as a TS (EU Ecolabel sub-criteria 8a and 8d) and AC (8b and 8c).
User information				
9. Guidance on the use and on the disposal of the product and of the	Not relevant	Easy to verify.	Not considered as an environmental hotspot, however user behaviour determines the EoL phase.	Not recommended.

EU Ecolabel criterion	Relevance to the subject matter (SM)	Ease of verification without EU Ecolabel	Environmental relevance	Recommendation for the use as EU GPP recommendation
packaging				
Fitness for use				
10. Fitness for use and quality of the product	Directly related.	Easy to verify however fitness for use and product quality criteria are considered tenderer-specific	The AHP products are predominately single-use items of a short life-spam. The EoL has not been identified as the key contributor to the life cycle impact of a product.	Not recommended.
Social requirements				
11. Corporate Social Responsibility with regard to Labour Aspects	Not relevant.	Easy to demonstrate compliance when products do bear an EU Ecolabel by means of the third-party verification against indicated ILO principles.	Not relevant.	Not recommended.
User information				
12. Information appearing on the EU Ecolabel	Not relevant.	Not applicable without EU Ecolabel.	Not relevant.	Not recommended.

Annex 2. Indicative information on verifying the EU GPP recommendation for absorbent hygiene products using selected ISO 14024 type I ecolabels

Additional explanations for the equivalency check are provide *in green.*

Proposed EU GPP criterion		EU Ecolabel, Annex I to Commission Decision (EU) 2023/1809[70]	Nordic Ecolabelling for Sanitary Products v. 6.9[71] read together with Basic Module for paper products v.2.0 or later[72][73]	Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208 v.3[74]
Scope		Any article, for both private and professional use, whose function is to absorb and retain human fluids such as urine, faeces, sweat, menstrual fluid or milk, excluding textile products. *This includes: breast pads, children's diapers, incontinence care products, (panty liners, formed diapers and diapers with tape strips), sanitary towels (pads and panty liners), tampons, and the like.*	Disposable products with an absorbent and/or protective function for bodily fluids and faecal matter. **The function of the products may furthermore be to facilitate bodily cleansing of such fluids or to facilitate the removal of products applied intentionally to the body, such as cosmetics.** The disposable products can be found either in private bathrooms, or in a more public environment such as a care institution. Materials/components in the sanitary product or additional components that are EU ecolabelled do not have to fulfil additional material requirements. *Materials/components in the sanitary product or additional components that are EU ecolabelled do not have to fulfil additional material requirements.* *Remark: The scope of EU Ecolabel confines to the absorbent hygiene products, and does not include body cleansing or protection products such as cotton pads, cotton wool, sauna underlays, compresses, bibs, plasters, draw sheets, bed linen, wash cloths (except paper cloths), surgical gowns, patient gowns/patient covers, surgical masks and caps.*	Disposable hygiene products with an absorbent function for bodily excretions that remain on or in the body for a certain period of time. The scope covers nappies (e.g., disposable nappies, nappy liners, swim nappies and pants), incontinence products (e.g., incontinence pads, disposable pants, incontinence slips and anal tampons) and feminine hygiene products (panty liners, sanitary towels, tampons and nursing pads)
Fluff pulp	*Fibre sourcing*	*Criterion 1.1. Applies whenever fluff pulp content is higher or equal to 1% w/w of the final product.* • All (**100 %**) fluff pulp suppliers shall hold valid chain of custody certificate (**CoC**) issued by an independent third-party certification scheme such as Forest	*Criterion 015 applies to the content of at least 10,0 % w/w in relation to the total weight of the sanitary product + additional components.* • The producer of cellulose-based pulp/fluff/air-laid must be Chain of Custody (CoC) certified by the FSC/PEFC schemes.	Criterion 3.4.1. states that the wood used for the production of the fluff pulp **must be sourced 100% from certified forests** that can verify that they are managed in accordance with the principles of ecological and socially responsible forestry management.

[70] Commission Decision (EU) 2023/1809 of 14 September 2023 establishing the EU Ecolabel criteria for absorbent hygiene products and for reusable menstrual cups

[71] Nordic Ecolabelling for Sanitary Products , Version 6.9. 14 June 2016 - 31 December 2025, available at: https://api.svanemaerket.dk/api/docs/CriteriaDocumentFiles/7444

[72] Nordic Ecolabelling for Paper Products – Basic Module, Version 3.0 • 05 October 2020 – 31 December 2025, available at: https://www.nordic-ecolabel.org/globalassets/ai001_3.0_basic_module_cd.pdf

[73]Nordic Ecolabelling for Paper products – Basic module, version 2.7 • 22 June 2011 - 31 December 2025, available at: https://www.nordic-swan-ecolabel.org/4ac252/contentassets/956d503409fb4a6bb1bb38762bb78da5/basic-module-for-paper-products-2.7_041_printing-companies-and-printed-matter-041_english.pdf

[74] Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208, Basic award criteria, January 2021, version 3, available at: https://www.blauer-engel.de/en/productworld/nappies-feminine-hygiene-and-incontinence-products

Proposed EU GPP criterion		EU Ecolabel, Annex I to Commission Decision (EU) 2023/1809[70]	Nordic Ecolabelling for Sanitary Products v. 6.9[71] read together with Basic Module for paper products v.2.0 or later[7273]	Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208 v.3[74]
		Stewardship Council (FSC), Programme for the Endorsement of Forest Certification Schemes (PEFC) or equivalent. • A minimum of **70% of wood** fibres used for the production of fluff pulp must be covered by a valid Sustainable Forestry Management (SFM) certificate issued by an independent third-party certification scheme such as FSC, PEFC or equivalent. • All fibres must be legally sourced. • All virgin fibre should be sourced from non-GMO species.	• **A minimum of 30 weight-%** of all wood raw material used in the cellulose-based pulp/fluff/air-laid, must originate from forestry certified under the FSC or PEFC schemes. • The remaining proportion of wood raw material must be covered by the FSC/PEFC control schemes (FSC controlled wood/PEFC controlled sources), or 75% of the wood raw material in the pulp must be must be wood shavings or sawdust or a combination of certified and wood shavings/sawdust.	Verification for the fluff pulp used in the product by means of: – FSC certificate: FSC Mix Credit or FSC 100%; – PEFC certificate: 100%; or – A comparable certificate whose scope and requirement standards are equivalent to one of the named certification systems. ***Remark: The criterion has a higher ambitious level that the corresponding EU Ecolabel criterion.***
	Pulp bleaching	*Criterion 1.2. Applies whenever fluff pulp content is higher or equal to 1% w/w of the final product.* • Bleaching with the use of **elemental chlorine (Cl_2)** gas is **not allowed**; • For the elemental chlorine free (ECF) pulp - an average annual emission limit value of **0,14 kg AOX /ADt** for each pulp used in EU Ecolabel product; • Test method: ISO 9562:2004 • **Totally chlorine free (TCF)** bleached or **unbleached** pulps **are exempted** from the requirement and corresponding declaration of compliance is sufficient.	*Criterion 014 applies to the content of at least 1,0 % w/w in relation to the total weight of the sanitary product + additional components.* • The cellulose-based pulp/fluff/air-laid must **not** be bleached with **chlorine gas** (Cl_2). *Criterion 016 applies to content of at least 10,0% w/w applies to the content of at least 1,0 % w/w in relation to the total weight of the sanitary product + additional components.* • Emissions of AOX from the production of fluff/cellulose pulp and pulp for air-laid must on average be ≤0.15 kg/tonne per pulp mixture. **Emissions of AOX from the individual pulp must be ≤0.17kg/tonne**. **However, for the final product made of the TCF pulp(s) the equivalency should always be accepted**.	Criterion 3.4.2.4 states that: The fluff pulp must **not** be bleached using **elementary chlorine.** A total chlorine free (TCF) process is preferred for the bleaching process, although an elemental chlorine free (ECF) process is permitted – ClO_2 consumption must be notified. **The annual average** for the measured AOX emissions to waste water must not exceed a value **of 0.12 kg AOX** per air dry tonne. *Remark: The AOX emission threshold value is indeed lower than the value required for the EU Ecolabel. However, unless otherwise stated, the Blue Angel accommodates the average value for the pulp blend, whereas the EU Ecolabel checks each incoming pulp. Mixing of different pulps – for example - 1 Mg of pulp with 15 kg AOX/ADt and 11 Mg of pulp with 9 kg AOX/ADt gives 2 Mg of pulp mix with on average 12 kg AOX/ADt In this sense, the equivalency can only be recognised when the AOX emission for each ECF pulp used in the final product is lower than 0.14 kg AOX/ADt – independently from the final emission average value.* *In this sense, equivalence can be accepted on the basis of a case-by-case analysis.* ***However, for the final product made of the TCF pulp(s) the equivalency should always be accepted.*** ***Equally, the equivalency could be accepted when only one type of pulp is used in the fluffing process (fluff pulp manufacturing)***

Proposed EU GPP criterion		EU Ecolabel, Annex I to Commission Decision (EU) 2023/1809[70]	Nordic Ecolabelling for Sanitary Products v. 6.9[71] read together with Basic Module for paper products v.2.0 or later[7273]	Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208 v.3[74]
	Emission of COD and phosphorous (P) to water and sulphur (S) compounds and NOx to air from production of fluff pulp	*Criterion 1.3. Applies whenever fluff pulp content is higher or equal to 1% w/w of the final product.* The criterion is built up based on specific reference limits values (kg/ADt) for emissions of **COD** (chemical oxygen demand) and **P** (phosphorus) to water; and sulphur **(S)** and **NOx** to air. • The emission limit value for each parameter varies **depending on the pulping technique** used. Both integrated and non-integrated systems are considered. • The measured emission values are translated into **emission score**, i.e., for each parameter and for each pulp weigh (ADt) content the ratio between measured emissions value and the reference value is translated into an emissions score. The following requirements apply: – **Any individual** emission parameter **shall not exceed 1,5, and** – the total number of points (**Ptotal** = PCOD + PS + PNOx + PP) **shall not exceed 4,0**.	*Criterion 016 applies to content of at least 10,0% w/w in relation to the total weight of the sanitary product + additional components.* Note: Several reference values are slightly stricter than the EUEL. • The criterion is built up based on specific reference limits (kg/ADt) for emissions to water and air, i.e., **S, NOx, COD, P** that vary **depending on the pulping technique** used. **Both integrated and non-integrated** systems are considered. • Analogical to EU Ecolabel methodology emission score is calculated for each parameter. – The **individual point score** for PCOD, PP, PS, and PNOx **must not exceed 1.5** – The total number of points (**Ptotal** = PCOD + PS + PNOx + PP) **shall not exceed 4.0.** *Remark:* *The most recent Paper products – basic module v 3.0 (05 Oct 2020 – 31 Dec 2025) establishes the emission reference values that are comparable to those from EU Ecolabel. Nordic reference values can be stricter in certain situations, particularly when it comes to COD and S emissions. The equivalent methodological approach with comparable or stricter reference values can guarantee the equivalent or better performance.* *The supporting Paper products – basic module v 2.7 (22 Jun 2011 – 31 Dec 2025) establishes the emission reference that, in particular for COD are somewhat less strict than the requirements set by EU Ecolabel, particularly for chemical pulps. Due to the differences in reference values while using an analogous calculation methodology cannot guarantee equivalent results. Equivalence can be accepted through a case-by-case analysis.*	Criterion 3.4.2.2 and Criterion 3.4.2.3 • The criteria are built up based on specific reference limits values (kg/ADt) for emissions of COD (chemical oxygen demand), total P (phosphorus) and total **nitrogen (N) into water**, and sulphur (S) and NOx into air. • The measured emissions are translated into emission points for each parameter – the ratio between measurement value and the reference value – and meet the following requirements: – for each of the emission points P_{COD}, **P_N,** P_P, a value of 1.5 must not be exceed in each case, and – the sum of the emission points for emissions to waste water and air (P_{COD}, P_N, P_P, $P_{Sulphur}$ and P_{NOx} **must not exceed a value of 5.0** • The emission reference values are **not adapted to the pulping technique**, being however in the range of those established by EU Ecolabel for bleached chemical pulp [*COD reference value is slightly higher for Blue Angel*]. *Remark: The Blue Angel does not link the emission reference values to the digestion (pulping) process – therefore there are pass/fail reference values for each parameter. Accordingly, when different pulps are used, the verification may refer to the averaged emissions and not to each individual pulp weight [unless otherwise stated or/and if only one pulp type is used]. In addition, unlike the EU Ecolabel, the Blue Angel requires verification of the total nitrogen content released into the water, which increases the versatility of the requirement - therefore the sum of the emission points equals 5.* *Due to the methodological differences, equivalence could only be acknowledged on the basis of a case-by-case analysis.*
Emission to water and air CO2	Emissions of CO_2 from production of fluff pulp	*Criterion 1.4. Applies whenever fluff pulp content is higher or equal to 1% w/w of the final product.* For an integrated and non-integrated process, carbon dioxide (CO_2) emissions **from all energy sources** used for the production of **electricity (whether on-site or off-site)** shall not exceed **threshold values** (kg CO_2/ADt) **for each pulping** technique used and for conversion process (in case of non-integrated production): – Chemical and semi-chemical pulp – 400 kg	*Criterion 016 applies to content of at least 10,0% w/w in relation to the total weight of the sanitary product + additional components.* In principle criterion refers to integrated production. For production of pulp/fluff/ and pulp for air-laid, the limit value for emissions of CO_2 is 450 kg CO_2/ADt. For mechanical fluff pulp (CTMP), the limit value for emissions of CO_2 is 900 kg CO2/ADt. The calculation methodology must fulfil the requirements R1-R6, R8-R10 and R12-R18 in the Basic Module for paper products, version 2. *The supporting Paper products – basic module v 2.7 (22 Jun 2011 –*	Not addressed

Proposed EU GPP criterion		EU Ecolabel, Annex I to Commission Decision (EU) 2023/1809[70]	Nordic Ecolabelling for Sanitary Products v. 6.9[71] read together with Basic Module for paper products v.2.0 or later[7273]	Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208 v.3[74]
		CO_2/ADt; – Chemitermomechanical pulp (CTMP) – 900 kg CO_2/ADt; – Converting process – 95 kg CO_2/ADt. • Separated value for the conversion refers to the non-integrated production. This specifically allocates energy consumption to the processing (fluffing) of market pulp - purchased elsewhere. • If needed, CO_2 emission factors for other energy sources can be found in Annex VI to Commission Implementing Regulation (EU) 2018/2066[75], whereas the CO_2 emission factors for grid electricity should be in line with Commission Delegated Regulation (EU) 2019/331.[76] The emission factors are provided as mass of CO_2 emitted per a unit of energy [g CO_2 fossil/MJ] • For the **grid electricity**, the value of **376 g CO2/kWh** should be used, **unless** verified documentation establishing the **specific value** for of electricity suppliers • **Specific credits** are given for the amount of energy from **renewable sources** purchased and used for the production processes. • **Biomass** needs to fulfil the relevant **sustainability and greenhouse gas savings** criteria as specified in the Directive (EU) 2018/2001.[77]	*31 Dec 2025) – Criterion R10 calculates the emission of CO_2 from purchased electricity* and fossil fuel used for heating and electricity. The basic module's Appendix 2 specifies a calculation method that is based on a theoretical CO_2 content in the fuel mass. The calculations should incorporate the weighted average of the CO_2 emissions from all pulps in the pulp mixture. This average should be totalled with the CO_2 emissions from paper production.* *Based on CO_2 emissions from purchased electricity shall be calculated on a basis of 385 g CO_2/kWh. *The most recent supporting Paper products – basic module v 3.0 (05 Oct 2020 – 31 Dec 2025) specifies that the emission of greenhouse gases refers to fuels used for production of process heat. The heat supplier is the source of information on CO_2 emissions from purchased heat energy. The calculation pertains to the production of pulp and fluff pulp. EUEL criterion 1.4 covers all energy sources used for the production of electricity, regardless of where it is produced. The Emission factors for fuels are harmonised with Annex VI of Commission Regulation (EU) No 601/20122 or with factors accepted by the authorities in European Union Emissions Trading System (EU ETS)* *Remark:* *Nordic Ecolabelling's reference values pertain to the production of pulp and fluff pulp. The EU Ecolabel distinguishes integrated and non-integrated production.* *Even considering that the Nordic Ecolabelling reference values for non-integrated production and for CTMP integrated production are virtually comparable to those established by EU Ecolabel, the differences in methodological approach complicate the comparison of the results. In this sense, equivalence can be accepted on the basis of a case-by-case analysis.*	

[75] Commission Implementing Regulation (EU) 2018/2066 of 19 December 2018 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 601/2012, C/2018/8588 (OJ L 334, 31.12.2018, p. 1)
[76] Commission Delegated Regulation (EU) 2019/331 of 19 December 2018 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council (OJ L 59, 27.2.2019, p. 8)
77 Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2018, p. 82)

Proposed EU GPP criterion		EU Ecolabel, Annex I to Commission Decision (EU) 2023/1809[70]	Nordic Ecolabelling for Sanitary Products v. 6.9[71] read together with Basic Module for paper products v.2.0 or later[7273]	Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208 v.3[74]
	Energy consumption	*Criterion 1.5. Applies whenever fluff pulp content is higher or equal to 1% w/w of the final product.* • Addresses integrated and non-integrated process. • Specific reference limit values verify the actual energy consumption (separately **for heat and power**) used during pulp production and converting process (for non-integrated mills): – Chemical and semi-chemical pulp: 800 kWh/ADt for electricity consumption and 5400 kWh/ADt for fuel consumption; – CTMP: 1800 kWh/ADt for electricity consumption and 900 kWh/ADt for fuel consumption; – Converting process: 250 kWh/ADt for electricity consumption, and 1800 kWh/ADt for fuel consumption; • Separated value for the conversion refers to the non-integrated production. This specifically allocates energy consumption to the processing (fluffing) of market pulp - purchased elsewhere. • The energy consumption is translated into **energy score** - weighted against the mass content (kg ADt) of each pulp used in a pulp mix - calculated by ration between measured energy consumption (heat and power) and reference value. The following thresholds apply: – **Pelectricity < 1,5**; – **Pfuel < 1,5**; – **The sum** of points (Ptotal = Pelectricity + Pfuel) shall not exceed **2,5**. • The criterion considers energy cogeneration (CHP[78]).	*Criterion 016 applies to Cellulose-based pulp/fluff/air-laid content equal or higher than 10% w/w in relation to the total weight of the sanitary product + additional components.* Broadly similar to the EUEL methodological approach with some additional limits include. – Fluff pulp: 900 kWh/ADt for electricity consumption and 6000 kWh/ADt for fuel consumption; – CTMP: 2000 kWh/ADt for electricity consumption and 1000 kWh/ADt for fuel consumption; – Reference values for air-laid process: for energy consumption 4000 kWh/ADT and for fuel 4000 kWh/ADT. • The energy consumption is translated into **energy score** - weighted against the mass content (kg ADt) of each pulp used in a pulp mix - calculated by ration between measured energy consumption (heat and power) and reference value. The score is assessed separately for fuel and electricity, and following thresholds apply: – **Pelectricity < 1,25**; – **Pfuel < 1,25**; *Remark: The main differences arise from the reference values, which are somewhat more relaxed in the Nordic Ecolabelling criteria. However, as the maximum allowed score for each parameter is 16,6% lower than that of the EU Ecolabel, the authors assume that results might be comparable under condition that the sum of points for fuel and electricity is less than 2.5.* *Example:* *Integrated CTMP production, with maximum allowed energy consumption values - calculated as Nordic Ecolabel reference values multiplied by 1.25 i.e. 2500 kWh/ADt for electricity consumption and 1125 kWh/ADt for fuel consumption for 1 air dry tone of pulp.* *EU Ecolabel reference values -based calculation:* *Pelectricity score 1,38 < 1,5;* *Pfuel 1,25< 1,5;* *Ptotal = 2,63 > 2,5*	Criterion 3.4.2.5 sets the specific energy consumption values in fluff pulp production: - Electrical energy: ≤ 1.125 kWh/air dry tonne - Heating energy: ≤ 7.500 kWh/air dry tonne • The reference values are based on integrated production and are less strict than those required by the EU Ecolabel. Blue Angel employs a direct verification method by using generic reference values without taking into account individual pulp input (and pulping technique) - there is no scoring system. • Blue Angel uses pass/fail approach Remark: *The use of generic pulp mix value and the absence of energy points are the main reasons why the energy consumption calculation methodology is different.* ***Assessing whether the criterion could yield results similar to those of the EU Ecolabel is a difficult task.*** *It is only a theoretical conjecture of the authors that the general reference values could be understood as addressing chemical and semi-chemical pulp [due to similarities with EU Ecolabel as to the value ranges]. Since the EU Ecolabel reference values for CTMP are in a higher range than those for chemical pulp and the Blue Angel applies a pass/fail approach (with no flexibility between parameters), the Blue Angel for fluff pulp could in theory reproduce equivalent results [to the EUEL Criterion 1.5) as long as the score for electricity and fuel is less than or equal to 1.25 points each. In this sense, equivalence can be accepted on the basis of a case-by-case analysis.*

[78] Combined heat and power

Proposed EU GPP criterion		EU Ecolabel, Annex I to Commission Decision (EU) 2023/1809[70]	Nordic Ecolabelling for Sanitary Products v. 6.9[71] read together with Basic Module for paper products v.2.0 or later[7273]	Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208 v.3[74]
Man-made cellulose fibres	Fibre sourcing	*Criterion 2.1. Applies whenever man-made cellulose fibres content is higher or equal to 1% w/w of the final product.* • All (**100 %**) man-made cellulose fibre suppliers shall hold valid chain of custody certificate (**CoC**) issued by an independent third-party certification scheme such as FSC, PEFC or equivalent. • A minimum of **70% of wood** fibres used for the production of fluff pulp must be covered by a valid Sustainable Forestry Management (SFM) certificate issued by an independent third-party certification scheme such as FSC, PEFC or equivalent. • All fibres must be legally sourced. • Dissolving pulp produced from **cotton linters** shall meet **Criterion 3.1** for cotton (sourcing and traceability). • All virgin fibre should be sourced from non-GMO species.	Criterion 015 applies to the content of at least 10,0 % w/w in relation to the total weight of the sanitary product + additional components. • The producer of cellulose-based pulp/fluff/air-laid must be Chain of Custody (CoC) certified by the FSC/PEFC schemes. • **A minimum of 30 weight-%** of all wood raw material used in the cellulose-based pulp/fluff/air-laid, must originate from forestry certified under the FSC or PEFC schemes. The remaining proportion of wood raw material must be covered by the FSC/PEFC control schemes (FSC controlled wood/PEFC controlled sources), or 75% of the wood raw material in the pulp must be must be wood shavings or sawdust or a combination of certified and wood shavings/sawdust.	Not addressed
	Bleaching	*Criterion 2.2. Applies whenever man-made cellulose fibre content is higher or equal to 1% w/w of the final product.* • Bleaching with the use of **elemental chlorine (Cl_2)** gas is **not allowed.** • Emission limit values for ECF bleaching: – for AOX: **14,0 kg AOX /ADt;** – for **organically bound chlorine (OCl):** 150 ppm. • **Totally chlorine free (TCF)** bleached pulps **are exempted** from the requirement and corresponding declaration of compliance is sufficient.	*Criterion 024 applies to the content of **at least 5,0 %** w/w in relation to the total weight of the sanitary product + additional components.* • Bleaching with the use of **elemental chlorine (Cl_2)** gas is **not allowed.** • Emission limit values: – **0.15 kg AOX/ADt** (from the production of cellulose pulp): – 150 ppm for organically bound chlorine (OCl) (in the finished fibre):	Not addressed
	Production of man-made cellulose fibres	*Criterion 2.3. applies whenever man-made cellulose fibres content is higher or equal to 1% w/w of the final product.* • Criterion 2.3(a) - Processing of **at least 50 % of dissolved pulp** that is used to manufacture man-made cellulose fibre, needs to be processed with	*Criterion 024 applies to the content of **at least 10,0 %** w/w in relation to the total weight of the sanitary product + additional components.* • Sulphur emissions to air from the dissolving of the pulp and fibre production must not exceed more than 20 g/kg of regenerated cellulose fibre expressed as an annual average.	Not addressed

Proposed EU GPP criterion		EU Ecolabel, Annex I to Commission Decision (EU) 2023/1809[70]	Nordic Ecolabelling for Sanitary Products v. 6.9[71] read together with Basic Module for paper products v.2.0 or later[7273]	Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208 v.3[74]
		spent process liquor recovery either by generating on-site electricity and/or steam; or by manufacturing chemical co-products. • Criterion 2.3(b) – **Specific annual average emission limit values** (g/kg of product) based on fibre type for sulphur, zinc, COD, and SO4 $^{2-}$ – Stable fibre: 20 g S/kg, 0,05 g Zn/kg, 5g COD /kg, and 300 g SO4 2-/kg; – Filament fibre: Batch washing: 40 g S/kg, 0,10 g Zn/kg, 5g COD /kg, and 200 g SO4 2-/kg; Integrated washing:170 g S/kg, 0,50 g Zn/kg, 6g COD /kg, and 250g SO4 2-/kg;	• Zinc emissions to water from dissolving of the pulp and production of fibre must not exceed 0.2 g Zn/kg of regenerated cellulose fibre, expressed as an annual average. • The quantity of oxygen depleting substances may also be stated as the equivalent quantity of TOC. *Remark: Unlike EU Ecolabel, the Nordic Ecolabelling sets a generic emission requirement i.e., without considering fibre type. The different emission threshold might reproduce non-equivalent results. Additionally, the scope of criterion Criterion 2.3(a) is not addressed*	
Cotton and other natural cellulosic seed fibres	**Sourcing**	*Criterion 3.1. applies whenever cotton and other natural cellulosic seed fibres content is higher or equal to 1% w/w of the final product.* • **All cotton** and other natural cellulosic seed fibres **shall be grown organically** in line with Council Regulation (EC) No 834/2007[79] and Regulation (EU) 2018/848[80], the US National Organic Programme (NOP[81]), or equivalent legal obligations set by trade partners of the European Union. • The organic cotton content **may include organically grown cotton and transitional organic cotton**. • Cotton and other natural cellulosic seed fibres used to manufacture absorbent hygiene product shall be **traceable**. • **Tampon strings** are **exempted** from the requirement.	Criterion 022 applies to the content of at least 5,0 % w/w in relation to the total weight of the sanitary product + additional components. • The cotton must **be organically cultivated** or cultivated in the transitional phase to organic production. • The **string on tampons is exempted** from the requirement. • Organic means cotton grown in line with Council **Regulation (EC) No 834/2007** of 28 June 2007 on organic production and labelling of organic products, or products produced in the same way and under similar **control schemes**. Examples include: KRAV, IFOAM, KBA, OCIA, TDA, DEMETER	Criterion 3.5.1. establishes that the cotton fibres must be sourced 100% from controlled organic cultivation or from fibres from the conversion phase and must comply with the requirements of Regulation (EC) No 834/2007 (EC Organic Regulation) or the so-called "Common Objectives and Requirements of Organic Standards" from the International Federation of Organic Agriculture Movements, IFOAM; since 2015 IFOAM – Organics International. Retrieval ribbons on tampons are exempt from this requirement. At all stages of the processing chain, it must be ensured that controlled organic fibres and products are not mixed with conventional fibres and products and that the cotton is not contaminated with pollutants.

[79] Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91 (OJ L 189, 20.7.2007, p. 1)
[80] Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007, PE/62/2017/REV/1 (OJ L 150, 14.6.2018, p. 1).
[81] National Organic Program, A Rule by the Agricultural Marketing Service on 12.21.2000, 65 FR 80547.

Proposed EU GPP criterion		EU Ecolabel, Annex I to Commission Decision (EU) 2023/1809[70]	Nordic Ecolabelling for Sanitary Products v. 6.9[71] read together with Basic Module for paper products v.2.0 or later[7273]	Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208 v.3[74]
Material efficiency	Bleaching	*Criterion 3.2. only applies to cotton linters used to produce dissolving pulp.* • Cotton and other natural cellulosic seed fibres shall be **bleached only using TCF technologies**.	Criterion 021 applies to the content of at least 1,0 % w/w in relation to the total weight of the sanitary product + additional components. • The cotton must not be bleached with the aid of chlorine gas (Cl_2) *Remark: Unlike EU Ecolabel, the Nordic Ecolabelling **does accept ECF** bleaching technique.*	Only a totally chlorine free (TCF) bleaching process is permitted for the bleaching of cotton fibres
Material efficiency	Manufacturing of the final product	*Criterion 6 applies to the final product assembly site* The **quantity of waste** - generated during the final product manufacturing and packaging - and **landfilled or** incinerated **without energy recovery**, must not exceed: – for tampons - 8 % by weight of the end products; – for other products - 4 % by weight of the end products.	Not addressed	Not addressed
Packaging	*[Horizontal]*	*Criterion 8 applies to sales and group packaging* • **Grouped packaging shall be avoided** or **exclusively** made of cellulose fibre, i.e., only **cardboard and/or paper**. • No composite materials should be used in packaging (sales and grouped), mixed plastics or the coating of the cardboard and/or paper with plastics or metals is not allowed.	Criterion 017 states that the paper/carton/paperboard must not be coated or treated with fluorinated chemicals. The exclusion of the use of packaging made from composite materials is not addressed.	Criterion 3.12.1. states that composite packaging or coating of the paper/cardboard with plastics or metals is not permitted. Only unmixed plastic without any coatings is allowed.
Packaging	Cardboard and/or paper used for packaging	• **At least 40 %** of recycled content in **sales packaging**; • **At least 80 %** of recycled content in **grouped packaging** • The remaining share (100 % minus % of recycled content) needs to be **SFM** - **certified** by an independent third-party certification scheme such as FSC, PEFC or equivalent. • Packaging means items of any materials that are intended to be used for the containment, protection, handling, delivery or presentation of products and that can be differentiated into packaging formats based on their function, material and design, including. • Grouped packaging, also known as secondary	Criterion 036 specifies that the **primary packaging** should contain **≥20 weight-%** of renewable and/or recycled material in relation to the total weight of the primary packaging. Criterion 017 states that the producer of the paper/carton/paperboard must be Chain of Custody (CoC) certified by the FSC/PEFC schemes **Primary packaging means the packaging around the sanitary products a*	Recycled fibres must account for at least 80% by mass of the total repackaging. The approved proportion of virgin fibres must not be sourced from forests that are particularly worthy of protection e.g., tropical or boreal forests. If plastic repackaging is used, it must contain > 80% recycled plastic *Remark* *It is not specified that the remaining 20%w/w should be SFM certified. The recycled content in sales packaging is not specified. The packaging criteria will be reviewed, e.g., with the aim of promoting the use of a high recycled content in the plastic and paper used for sales packaging for products that are also individually packaged. This requirement has only applied to repackaging up to now.* *For the group packaging, the equivalency should be accepted made*

Proposed EU GPP criterion		EU Ecolabel, Annex I to Commission Decision (EU) 2023/1809[70]	Nordic Ecolabelling for Sanitary Products v. 6.9[71] read together with Basic Module for paper products v.2.0 or later[7273]	Nappies, feminine hygiene and incontinence products (absorbent hygiene products, AHP) - DE-UZ 208 v.3[74]
		packaging, means packaging conceived so as to constitute a grouping of a certain number of sales units • Sales packaging, also known as primary packaging, means packaging conceived so as to constitute a sales unit consisting of products and packaging to the final user or consumer at the point of sale;		*if it is made of 100% recycled fibre.*
	Plastic used for packaging	• Until 31 December 2026, sales packaging made of plastic shall contain a minimum 20 % recycled material. • **From 1 January 2027, sales packaging made of plastic shall contain a minimum 35 % recycled material.**	*Criterion 031* • The primary packaging contains ≥20 weight-% of renewable and/or recycled material in relation to the total weight of the primary packaging. *Equivalent only until December 31, 2026, if recycled plastic content in the primary (sales) packaging is at least 20% by weight. Nordic Ecolabeling addresses both recycled and renewable materials while meeting the minimum percentage requirement. The possible mixing of materials does not give a clear equivalence. It could however be accepted on a case-by-case basis, if 20% of the material is recycled.*	The Blue Angel criterion 3.12.1 addresses sales packaging as to plastic bio-degradability, recyclability, or phasing out the use the use of composite materials. *Remark: The Blue Angel criteria document informs that packaging criteria will be reviewed e.g., with the aim of promoting the use of a high recycled content in the plastic and paper used for sales packaging for products that are also individually packaged. Within the planned criteria revision, the general issue of material efficiency will also be examined*
	Recyclability	• **A minimum of 95%** by weight of cardboard and/or paper or plastic content **in the sales packaging** and of cardboard and/or paper **in grouped packaging** needs to be **available for recycling**. • The remaining 5 % residuals shall be compatible with recycling.	Criterion 036 specifies that the primary packaging should contain ≥20 weight-% of renewable and/or recycled material in relation to the total weight of the primary packaging. *Primary packaging means the packaging around the sanitary products a	Criterion 3.12.1. states that for sales packaging material content that is available for recycling must exceed 95%
	Information on recycled content and recyclability cled content and recyclability labelling	• Recycled content and recyclability of sales and grouped packaging shall be indicated on the sales packaging	Criterion 041 specifies that the consumers must be urged not to discard the used products down the toilet. This information can be stated using a pictogram	The sales packaging must contain consumer information (e.g. printed on the sales packaging) that includes the following information for the disposal of the used products: • The hygiene products must not be thrown into the toilet. • The hygiene products should be disposed of with the household waste. In addition, the packaging must include information for consumers on the correct disposal of the packaging

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