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# NORDIC CRITERIA FOR MORE SUSTAINABLE PACKAGING

FOR HEALTHCARE PRODUCTS

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# 1 Introduction

These Nordic Criteria for More Sustainable Packaging for Healthcare Products aims at reducing climate and environmental impacts of packaging associated to products provided to the healthcare sector. The document contains a number of criteria for packaging for healthcare products that can be used in the tender process.

The criteria have been developed in collaboration between stakeholders responsible for public green procurement, at both state level, regional level and at hospitals in Norway, Sweden, Denmark, Iceland and the Faroe Islands. By joining forces in the development, and the implementation, of these environmental criteria for packaging, we want to send a strong signal to the market and set a clear direction for suppliers. This should benefit both the environment, public procurement organisations and suppliers, as well as support a cost-effective change towards more climate and environmentally sustainable packaging for healthcare products.

The purpose of the criteria is to assist the relevant responsible persons for public sector tenders, e.g. category managers, public procurement officers, or procurement consultants, to define packaging specific criteria relevant to the specific procurement. The document includes a guide to the tender consultant on how to use the criteria (section 2) and a library of criteria (section 3) which can be implemented in the tender material as appropriate.

## 2 Guide to the Use of The Criteria

A library of criteria has been developed. The overall purpose of using these criteria is to lower the climate and environmental impact, e.g. greenhouse gas emissions from the packaging used to provide the healthcare sector with products. The criteria are divided into three key topics in line with sustainable packaging best practices:

The sustainability topics

- > Reduce material waste
- > Design for recycling
- > Recycled or sustainably sourced materials content

The library of criteria is designed to be used when purchasing healthcare products and setting criteria to the packaging following these products. The document is not exhaustive, but these criteria can be used when relevant in addition to other requirements and criteria. The use of the criteria must not compromise requirements related to patient safety, product approval procedures or criteria in standards (e.g., ISO 11607 standard series, the Directive 93/42/EEC on Medical Devices, the Directive 90/385/EEC on Active Implantable Medical Devices, Directive 98/79/EC on In Vitro Diagnostic Medical Devices, Regulation (EU) 2017/745 on Medical Devices, Regulation (EU) 2017/746 on In Vitro Diagnostic Medical Devices).

Structure and levels of criteria

For each of the topics a library of criteria is presented. The criteria cover both primary, secondary and tertiary packaging materials and the main materials used for packaging i.e. plastic, cardboard and metals.

The criteria are recommendations and are divided in three levels:

- > **Basic criteria** are designed to allow for easy application in green public procurement, focusing on the key area(s) of climate and environmental performance of the packaging of the products and aimed at keeping administrative costs for organisations at a minimum.
- > **Advanced criteria** are designed to accomplish higher levels of climate and environmental performance supporting higher climate, environmental and innovation goals.
- > **Spearhead criteria** are designed for excellent climate and environmental performance, being at forefront of the industry.

It is necessary that the feasibility of all criteria, and especially the latter two levels, are tested through early market dialog in the pre-tendering process. This will enable the adaption of the criteria to be in line with the market maturity of the individual product segment. In some cases, the criteria can be difficult to apply due to e.g., specific product packaging requirements. Nevertheless, the criteria are expected to be relevant to up to 80% of the packaging. In addition to the differentiation made in the criteria between basis, advanced and spearhead levels, the criteria can in some circumstances not be applicable to all levels of packaging (primary, secondary or tertiary packaging). The use of the criteria should therefore be implemented accordingly.

It is expected that the market will develop, and as it does, the criteria will move up the ladder i.e. advanced criteria are expected to be basic criteria in the coming years and spearhead criteria to be advanced criteria when possible.

For each criterion in the list, it is specified which type of material the criterion apply to, suggested wording to use in the tender material and suggestions for relevant documentation. For each criterion it is also indicated whether it is appropriate to use as a minimum criterion or as a competition criterion. The early market dialog can reveal if a criterion can be used as a minimum criterion or as a competition criterion in the specific tender.

It should be noted that in addition to the packaging, manuals and leaflets are included in the criteria aiming at minimising material usage (criteria 1.3 "scoring model").

## 2.1 Process Guide and Decision Tree

How to use the criteria

The library of criteria presented in section 3 are generic to packaging materials of all types of healthcare products. Therefore, before applying any criteria, the feasibility must be evaluated in the pre-tendering process. If the criteria compromise safety, legal or standard requirements for a specific product, they shall not be applied. Nevertheless, to move the market, it is of outmost importance to use the criteria as often and as broadly as possible in procurement of healthcare products.

The climate and environmental impact from packaging depends on the life cycle of the packaging and type of material, amount of material, recyclability etc. While we want to minimize material usage and advance circularity of packaging, it is also important to consider potential trade-offs in the whole life cycle of the packaging and the product. For example, reducing the weight of packaging too much can have the consequence of higher product loss because of reduced product shelf-life or transport damages.

Decision Tree

A generic procurement process for healthcare products can be divided into the four phases described below. A guide on how to find the right criteria is found in the Decision Tree in Figure 1.

### 1 **Planning phase:**

- > Clarify the political mandate for setting climate and environmentally related criteria in the tender.
- > Analyse the current consumption pattern regarding volume and packaging material. The climate and environmental effect of using the packaging criteria, will normally be largest for the high-volume products.
- > Clarify the internal possibilities for source separating the packaging at end of life.

- > Conduct market analysis and market dialogue.

## 2 **Tender material preparation phase:**

- > Based on the market dialogue, set the long-term strategy for packaging in the category.
- > Set ambition level for the actual tender and identify the relevant criteria to include in the tender material. The ambition level is increased by 1) using the higher level of criteria, 2) using the criteria as minimum criteria and 3) weighting climate and environmental competition criteria high in the tender.
- > Consider if it is possible to include development and improvement criteria during the contract period.

## 3 **Tender phase:**

- > Adapt the criteria following the Q&A phase.
- > Evaluate the bids.

## 4 **Contract period:**

- > Invite for performance and progress dialogue.
- > Follow up on the specified criteria

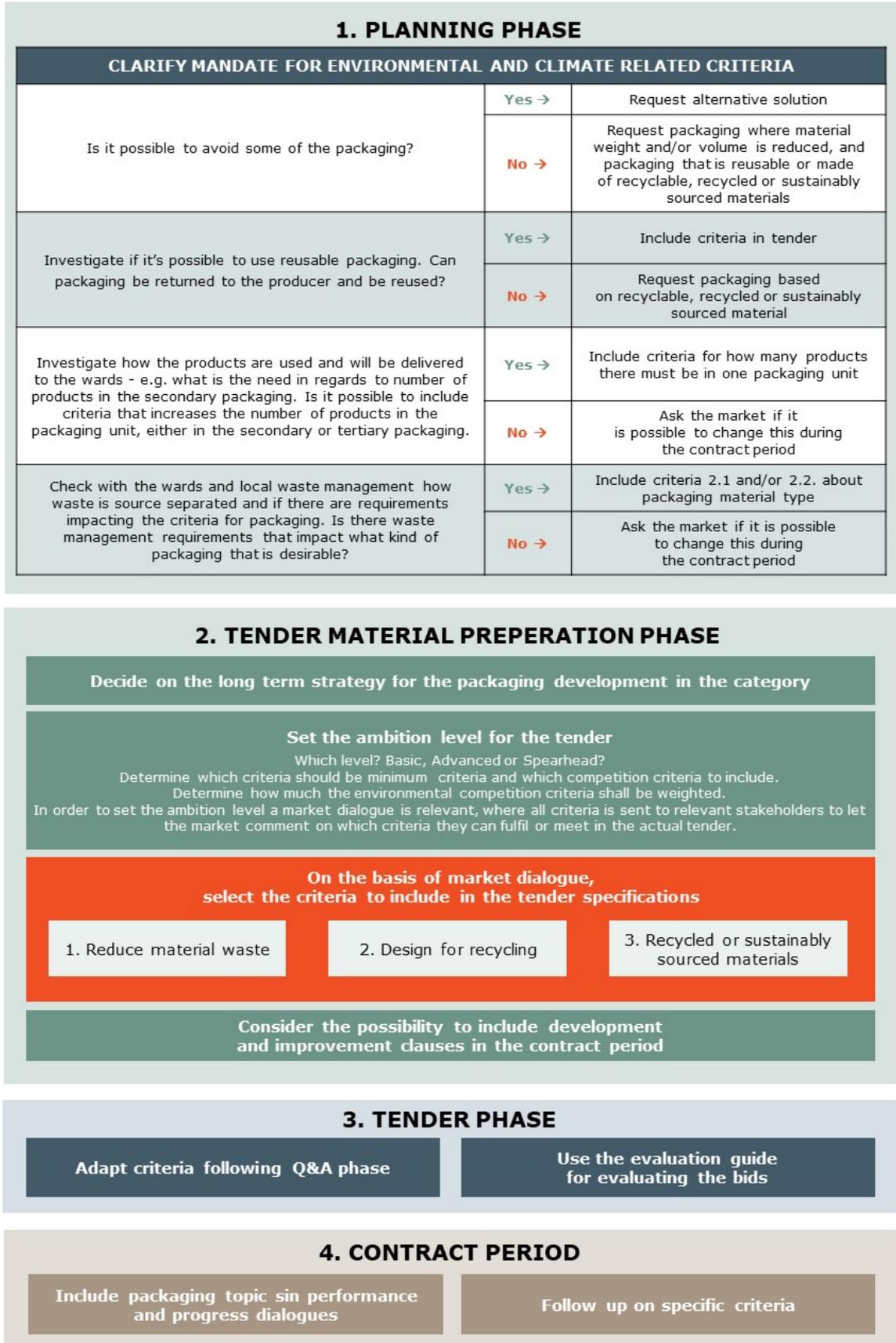


Figure 1 Guide and Decision Tree with the purchase phases

## 3 Library of Criteria

The criteria are divided in three sections according to the purpose of the criteria:

- 1 Reduce material consumption
- 2 Design for recycling
- 3 Recycled or sustainably sourced materials

### Scoring model

In order to let the suppliers (defined as contract holder) compete on providing the most climate and environmentally sustainable packaging, a specific criterion - criterion 1.3 - will be used as a scoring model to calculate a score for the packaging. The score is used as a competition criterion in the tender. The supplier uses the scoring model in Appendix A themselves to calculate a score. If more than five products are included in the tender, the calculation is done for each of the five products with the highest anticipated volume for each sub-contract. The contracting authority can verify the supplier's calculation results by using the weights and material type stated in the tender list in relation to criterion 1.2. The scoring model is based on Life Cycle Assessment screening of different material categories, and together with the weight of the materials, the scoring model will give a score representing the relative environmental burden of the extraction and production of the packaging.

### 3.1 Reduce Material Consumption

- > The aim of the following criteria is to reduce and minimise materials used for packaging.
- > If the criteria comprise safety, legal, regulatory, or standard requirements for a specific product they shall not be applied.

No.	Level	Criteria	Documentation
1.1 Reduce material	<b>Basic</b>	Minimum criteria  The Suppliers are to present a strategy or plan on how they have previously, and/or plan to reduce the amount of packaging materials.	<i>Provide a strategy or plan on how you have reduced or will reduce amount of packaging materials.</i>
	<b>Advanced</b>	Competition criteria  Description and documentation of how packaging have been or will be reduced to a minimum according to CEN 13428's (CEN, 2006) 10 specific performance criteria or similar criteria undertaken before or during the contract period.	<i>Provide the checklists and a declaration of conformity with EN 13428 (CEN, 2006). The declaration should include a description specifying that the minimum adequate amount of weight and volume of the packaging have been reached/will be reached during the contract period, and how this was/will be performed.</i>
	<b>Spearhead</b>	-	-

No.	Level	Criteria	Documentation
1.2 <i>Weight and material information</i>	<b>Basic</b>	Minimum criteria Provide specific weight and material type of packaging (primary secondary, tertiary) and data sheets for the five highest volume products in the tender list.	<i>Regarding plastic, the main type (LDPE, HDPE, LLDPE, PP, PET etc.) shall be specified in grams and in percentage of recycled or biobased content.</i>
	<b>Advanced</b>	Minimum criteria Provide specific weight and material type of all packaging (primary secondary, tertiary) and product data sheet per product in the tender list.	<i>Regarding plastic, the main type (LDPE, HDPE, LLDPE, PP, PET etc.) shall be specified in grams and in percentage of recycled or biobased content.</i>
	<b>Spearhead</b>	-	-

No.	Level	Criteria	Documentation
1.3 <i>Environmental burden of packaging</i>	<b>Basic</b>	Competition criteria State the score calculated based on the packaging scoring model in Appendix A.  The lower the score, the higher the points in the evaluation of the offer.	<i>Filled in calculation from Appendix A. No need for further documentation.  The contracting authority reserves the right to test the result based on the specified weight and material types in the tender lists.</i>
	<b>Advanced</b>	-	-
	<b>Spearhead</b>	-	-

No.	Level	Criteria	Documentation
1.4 <i>Minimise metal use</i>	<b>Basic</b>	Minimum criteria No metal can be utilised in secondary or tertiary packaging with exception of nails in pallets and staples in cardboard boxes.	-
	<b>Advanced</b>	Minimum criteria No metal can be utilised in secondary or tertiary packaging with exception of nails in pallets and staples in cardboard boxes.  No metal in primary packaging with exception of metal layer for barrier purposes thinner than 5 µm placed on the inside or middle layer of flexible plastic packaging.	-
	<b>Spearhead</b>	-	-

## 3.2 Design for Recycling

- > The aim of the following criteria is to ensure that packaging can be recycled by designing the packaging for recycling.
- > If the criteria comprise safety, legal, regulatory, or standard requirements for a specific product they shall not be applied.

No.	Level	Criteria	Documentation
2.1 <i>Limit variety in plastic types</i>	<b>Basic</b>	Minimum criteria If the tertiary packaging is plastic, then PE (LDPE, HDPE, LLDPE), PP or transparent PET shall be used for the main component (more than 95% of the total weight of the package).	<i>Declaration of conformity.</i>
	<b>Advanced</b>	Minimum criteria If the tertiary and/or secondary packaging is plastic, then PE (LDPE, HDPE, LLDPE), PP or transparent PET shall be used for the main component (more than 95% of the total).	<i>Declaration of conformity.</i>
	<b>Spearhead</b>	Minimum criteria If any packaging is plastic, then PE (LDPE, HDPE, LLDPE), PP or transparent PET should be used for the main component (more than 95% of the total).	<i>Declaration of conformity.</i>

No.	Level	Criteria	Documentation
2.2 Increase recyclability	<b>Basic</b>	<p>Minimum criteria</p> <p>The plastic packaging cannot be made from:</p> <ul style="list-style-type: none"> <li>&gt; Styrene polymers (PS, EPS, XPS)</li> <li>&gt; Regenerated Cellulose</li> <li>&gt; Oxo- or biodegradable polymers</li> </ul> <p>The secondary and tertiary packaging cannot be</p> <ul style="list-style-type: none"> <li>&gt; PVC</li> <li>&gt; Composite and/or packaging combining different materials, multilayer packaging (plastics/paper, plastics/aluminium, plastics/plastics)</li> </ul>	<i>Provide a technical datasheet which describes the material composition of the packaging.</i>
	<b>Advanced</b>	<p>Minimum criteria</p> <p>The plastic packaging cannot be made from:</p> <ul style="list-style-type: none"> <li>&gt; Styrene polymers (PS, EPS, XPS)</li> <li>&gt; Regenerated Cellulose</li> <li>&gt; Oxo- or biodegradable polymers</li> <li>&gt; PVC</li> </ul> <p>The primary, secondary and tertiary packaging cannot be:</p> <ul style="list-style-type: none"> <li>&gt; Composite and/or packaging combining different materials, multilayer packaging (plastics/paper, plastics/aluminium, plastics/plastics)</li> </ul>	<i>Provide a technical datasheet which describes the material composition of the packaging.</i>
	<b>Spearhead</b>	<p>Minimum criteria</p> <p>Biobased should be PE (LDPE, HDPE, LLDPE), PP, PET and have a have a chain of custody certification (e.g. RSB, Bonsucro or similar) or stem from secondary/tertiary</p> <p>The plastic packaging cannot be made from:</p> <ul style="list-style-type: none"> <li>&gt; Styrene polymers (PS, EPS, XPS)</li> <li>&gt; Regenerated Cellulose</li> <li>&gt; Oxo- or biodegradable polymers</li> <li>&gt; PVC</li> </ul> <p>The primary, secondary and tertiary packaging cannot be:</p> <ul style="list-style-type: none"> <li>&gt; Composite and/or packaging combining different materials, multilayer packaging (plastics/paper, plastics/aluminium, plastics/plastics)</li> </ul>	<i>Provide a technical datasheet which describes the material composition of the packaging.</i>

No.	Level	Criteria	Documentation
2.3 <i>Document recyclability</i>	<b>Basic</b>	-	-
	<b>Advanced</b>	<p>Competition criteria</p> <p>The recyclability of plastic packaging(s) is documented by a RecyClass or similar certification scheme. The higher Class scored, the higher the points in the evaluation of the offer.</p>	<p><i>Provide certification of Class from RecyClass or similar (eg. Cyclos-HTP).</i></p>
	<b>Spearhead</b>	<p>Minimum criteria</p> <p>The recyclability of plastic packaging(s) is documented by a RecyClass or similar certification scheme. The higher Class scored, the higher the points in the evaluation of the offer.</p> <p>The plastic packaging needs to fulfil minimum Class B in RecyClass or similar level in other certification system.</p>	<p><i>Provide certification from RecyClass that resulted in Class A or B or similar level (eg. Cyclos-HTP) in other certification scheme.</i></p>

No.	Level	Criteria	Documentation
2.4 Avoid labels that harm recyclability	<b>Basic</b>	Minimum criteria Labels on plastic packaging must comply with one of the following options: <ul style="list-style-type: none"> <li>&gt; Labels shall be of the same material as the packaging</li> <li>&gt; If packaging is PET, the label shall be PP or PE (LDPE, HDPE, LLDPE) and not cover more than 40% of the surface</li> </ul>	<i>State which option the packaging complies with.</i>
	<b>Advanced</b>	Minimum criteria Labels on plastic packaging must comply with one of the following options: <ul style="list-style-type: none"> <li>&gt; Labels shall be possible to wash off at temperatures below 60°C and be water soluble/releasable</li> <li>&gt; Labels shall be of the same material as the packaging</li> <li>&gt; If packaging is PET, the label shall be PP or PE (LDPE, HDPE, LLDPE) and not cover more than 40% of the surface</li> </ul>	<i>State which option the packaging complies with.</i>
	<b>Spearhead</b>	-	-

### 3.3 Recycled or Sustainably Sourced Materials

- > The aim of the following criteria is to promote recycled materials, sustainably sourced materials and decrease use of metals in packaging.
- > If the criteria comprise safety, legal, regulatory, or standard requirements for a specific product they shall not be applied.

No.	Level	Criteria	Documentation
3.1  <i>Reduce the environmental burden of plastic packaging material</i>	<b>Basic</b>	-	-
	<b>Advanced</b>	Minimum criteria  If the tertiary packaging is plastic: <ul style="list-style-type: none"> <li>&gt; Minimum 50% of the tertiary packaging is produced from recycled plastic or biobased plastic<sup>1</sup></li> </ul> <p><sup>1</sup> Biobased should be PE (LDPE, HDPE, LLDPE), PP, PET and have a <i>have a chain of custody certification</i> (e.g. RSB, Bonsucro or similar) or stem from secondary/tertiary resources</p>	<i>No documentation needed in the tender material.</i>  <i>After the contract agreement has been signed, documentation should be provided, if requested by the contracting authority. The documentation should be provided in accordance with ASTM D6866, EN16785-1 or similar for biobased content and/or EN15343, ISO 22095 or similar for recycled content.</i>
	<b>Spearhead</b>	Minimum criteria  If the tertiary and/or secondary packaging is plastic: <ul style="list-style-type: none"> <li>&gt; Minimum 50% of the secondary and tertiary packaging is produced from recycled plastic or biobased plastic<sup>1</sup></li> </ul> <p><sup>1</sup> Biobased should be PE (LDPE, HDPE, LLDPE), PP, PET and have a chain of custody certification (e.g. RSB, Bonsucro or similar) or stem from secondary/tertiary resources</p>	<i>No documentation needed in the tender material.</i>  <i>After the contract agreement has been signed, documentation should be provided, if requested by the contracting authority. The documentation should be provided in accordance with ASTM D6866, EN16785-1 or similar for biobased content and/or EN15343, ISO 22095 or similar for recycled content.</i>

No.	Level	Criteria	Documentation
3.2 <i>Avoid deforestation from unsustainable cardboard</i>	<b>Basic</b>	Minimum criteria If the tertiary and/or secondary packaging is fibre based: > Minimum 50% FSC/PEFC-certified (or otherwise certified sustainably sourced) or recycled fibres	<i>No documentation needed in the tender material.</i>  <i>Certification for relevant scheme should be stated on either the packaging or the delivery note/invoice.</i>
	<b>Advanced</b>	Minimum criteria If the tertiary and/or secondary packaging and/or manual/leaflet is fibre based: > Minimum 90% FSC/PEFC-certified (or otherwise sustainably sourced wood) or recycled fibres	<i>No documentation needed in the tender material.</i>  <i>Certification for relevant scheme should be stated on either the packaging or the delivery note/invoice.</i>
	<b>Spearhead</b>	Minimum criteria If any packaging and/or manual/leaflet is fibre based: > Minimum 90% FSC/PEFC-certified (or otherwise sustainably sourced wood) or recycled fibres	<i>No documentation needed in the tender material.</i>  <i>Certification for relevant scheme should be stated on either the packaging or the delivery note/invoice.</i>

## Appendix A Scoring Model

Specify the weight of the total packaging (primary, secondary, tertiary, etc.) and the weight of manual and/or leaflet included relatively allocated to one product. If more than five products are included in this tender, the calculation is done for each of the five products with the highest anticipated volume for each sub-contract. This should be determined in the tender list.

If the tenderer takes back the packaging in order to reuse it or if the packaging is being part of an established standardized take-back scheme as e.g. EUR-pallets, it does not count in the calculation below.

It is evaluated positively that a low overall score is achieved.

$$\text{Overall Score} = Ax_{\text{plastic}} + Ax_{\text{cellelose}} + Ax_{\text{metal}}$$

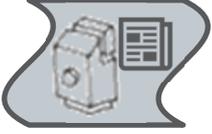
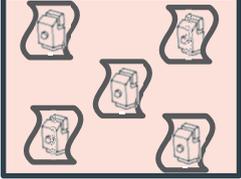
Material			Weight (filled by tenderer) Specify in kg <b>(A)</b>	Factor (given by contracting authority – cannot be changed) <b>(*B)</b>	Score
<b>Plastics</b> Including plastic laminates and plastic non-reusable plastic pallets. The most common material is assessed to be LDPE, hence the factors mainly based hereon.	Virgin fossil-based	Virgin plastic is produced from fossil fuels. Styrene polymers (PS, EPS and XPS) are excluded following the tender criteria.	<i>Tenderer, specify weight here</i>	5	$A \times B$
	Biobased	Bio-based plastic is defined as bio-based, but not oxo- or biodegradable polymers. The focus is on bio-based materials from primary and secondary sources, i.e. representative for the market today. Tertiary sources (from waste products, e.g. used cooking oil) are therefore excluded.	<i>Tenderer, specify weight here</i>	3	$A \times B$
	Recycled	Mechanically recycled plastics is defined as products/packaging with 100% recycled plastic.	<i>Tenderer, specify weight here</i>	4	$A \times B$
<b>Cellulose based material</b> E.g. cardboard and paper including non-reusable wooden pallets and other either adhered or attached paper e.g. manuals/leaflets. The most common material is assessed to be cardboard, hence the factors mainly based hereon.	Virgin	Virgin fibres are produced from 100% new fibres.	<i>Tenderer, specify weight here</i>	3	$A \times B$
	Recycled or sustainably sourced	100% recycled/sustainably sources fibres. Cellulose fibres are to a lesser extent included. Sustainably sourced is e.g. FSC or PFEC certified	<i>Tenderer, specify weight here</i>	2	$A \times B$
<b>Metals</b> Including metal foil. The most common material is assessed to be aluminum, hence the factors mainly based hereon.	Virgin	Virgin metals are fully produced from primarily, raw material sources.	<i>Tenderer, specify weight here</i>	22	$A \times B$
	Recycled	100% recycled content.	<i>Tenderer, specify weight here</i>	7	$A \times B$
<b>Overall score</b>					<i>SUM of the above</i>

\* The B factor is based on LCA screenings of material types. The purpose of the 'B factor' is to have an overall environmental factor for use directly in tenders, allowing for evaluation of bids, without having an environmental expert in the tendering process. The factors are thus indicative and will not necessarily align with the results from a LCA of a specific packaging product.

### Example of calculating the score of a packaging in three layers

The offered product is packed in a bag with a paper manual. It is placed in a cardboard box with 5 products in it. On delivery, there can be 12 boxes on a reusable EUR pallet. On delivery, the boxes on the pallet are wrapped in single used plastic foil.

Example of correct calculation using the scoring model:

<p>Product and manual (0.1 kg virgin paper) are packed in a bag (0.2 kg virgin plastic bag).</p> <p>The full weight, 1/1, of both the bag and manual should be accounted for in the scoring model.</p>	
<p>There are five products placed in a cardboard box (0.4 kg cardboard with 50% recycled content (0.2 kg) and 50% virgin content (0.2 kg)).</p> <p>1/5 of the weight of the cardboard box is allocated to the product.</p>	
<p>By delivery, 12 boxes can be placed on a pallet (reusable EUR pallet). The boxes are wrapped in plastic foil (1.2 kg of 100% recycled plastic foil)</p> <p>1/12 of the weight of the plastic foil is allocated to the product (The EUR-pallet is reusable and is therefore not accounted for).</p>	

<b>Material</b>		<b>Weight</b> (filled by tenderer) Specify in kg <b>(A)</b>	<b>Factor</b> (given by contracting authority – cannot be changed) <b>(B)</b>	<b>Score</b>
<b>Plastic material</b> including plastic laminates and plastic non-reusable plastic pallets	Virgin fossil-based plastic	<b>0.2</b>	5	$0.2 \times 5 =$ <b>1.0</b>
	Biobased	<b>0</b>	3	<b>0</b>
	Recycled plastic	$1.2 / (12 \times 5) =$ <b>0.017</b>	4	$0.017 \times 4 =$ <b>0.068</b>
<b>Cellulose based material</b> e.g. cardboard and paper including non-reusable wooden pallets and other attached paper e.g. manuals/leaflets	<i>Based on virgin fiber</i>	$0.1 + 0.2/5 =$ <b>0.14</b>	3	$0.14 \times 3 =$ <b>0.42</b>
	<i>Recycled or FSC el. PFEC certified</i>	$0.2/5 =$ <b>0.04</b>	2	$0.04 \times 2 =$ <b>0.08</b>
<b>Metal</b> Including metal foil	<i>Virgin</i>	<b>0</b>	22	<b>0</b>
	<i>Recycled</i>	<b>0</b>	7	<b>0</b>
<b>Overall score</b>				<b>1.568</b>

## Appendix B Glossary

<b>Packaging</b>	
Packaging	According to the European Packaging and Packaging Waste Directive (EUROPEAN PARLIAMENT AND COUNCIL. DIRECTIVE 94/62/EC of 20 December 1994, <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da">https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da</a> ) "'packaging' shall mean all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer. 'Non-returnable' items used for the same purposes shall also be considered to constitute packaging." Packaging consists of primary, secondary, and tertiary packaging.
Primary packaging	"(a) sales packaging or primary packaging, i.e. packaging conceived so as to constitute a sales unit to the final user or consumer at the point of purchase" ((EUROPEAN PARLIAMENT AND COUNCIL. DIRECTIVE 94/62/EC of 20 December 1994, <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da">https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da</a> ).
Secondary packaging	"(b) grouped packaging or secondary packaging, i.e. packaging conceived so as to constitute, at the point of purchase, a grouping of a certain number of sales units whether the latter is sold as such to the final user or consumer or whether it serves only as a means to replenish the shelves at the point of sale; it can be removed from the product without affecting its characteristics" (EUROPEAN PARLIAMENT AND COUNCIL. DIRECTIVE 94/62/EC of 20 December 1994, <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da">https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da</a> ).
Tertiary packaging	"(c) transport packaging or tertiary packaging, i.e. packaging conceived so, as to facilitate handling and transport of a number of sales units or grouped packaging in order to prevent physical handling and transport damage. Transport packaging does not include road, rail, ship and air containers" (EUROPEAN PARLIAMENT AND COUNCIL. DIRECTIVE 94/62/EC of 20 December 1994, <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da">https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da</a> ).
<b>Reuse and recycling</b>	
Reuse	"'reuse' shall mean any operation by which packaging, which has been conceived and designed to accomplish within its life cycle a minimum number of trips or rotations, is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market enabling

	<p>the packaging to be refilled; such reused packaging will become packaging waste when no longer subject to reuse" (EUROPEAN PARLIAMENT AND COUNCIL. DIRECTIVE 94/62/EC of 20 December 1994, <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da">https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da</a>).</p>
Recycling	<p>"recycling' shall mean the reprocessing in a production process of the waste materials for the original purpose or for other purposes including organic recycling but excluding energy recovery" (EUROPEAN PARLIAMENT AND COUNCIL. DIRECTIVE 94/62/EC of 20 December 1994, <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da">https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0062&amp;from=da</a>).</p>
Recyclability	<p>'recyclability' is the ability of a material to reacquire the properties that it had in its virgin state, where virgin state refers to the material in its purest form before being processed or shaped for a specific use.</p>
Open and closed recycling loops	<p>'Closed-loop recycling' shall mean that the quality of the materials being recycled are kept at a similar level by cycling materials into the same application, whereas, an 'open-loop recycling' shall mean that the materials being recycled are degraded in quality and/or material properties, and require applications with lower demands (Ellen MacArthur Foundation, 2014, <a href="https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_20-1-16.pdf">https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_20-1-16.pdf</a>).</p>
Disposal phase (incl. sorting and preparing for recycling)	<p>The 'end of life' phase of a material or product, whether that is landfilling, incinerating, recycling or reusing.</p>
Post-consumer recycling (PCR)	<p>'post-consumer recycling' means that the material being recycled originates from either household, commercial or institutional waste.</p>
Circular economy	<p>'circular economy' shall mean "an industrial system that is restorative and regenerative by design. It rests on three main principles: preserving and enhancing natural capital, optimising resource yields, and fostering system effectiveness" (Ellen MacArthur Foundation, 2014, <a href="https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_20-1-16.pdf">https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_20-1-16.pdf</a>).</p>

Composite materials	Composite materials consist of two or more materials, e.g. a milk carton with cardboard and plastic.
Non-recyclable composite	Non-recyclable composite are materials that will not separate before or in the recycling process.
<b>Plastics</b>	
Plastics/polymers	A polymer is a chemical compound that contains a chain of repeating molecular units. A plastic material is a polymer, typically modified with additives, which can be moulded or shaped by pressure and temperature. See abbreviations below for different polymers and additives (e.g. to enhance barrier properties). See more on plastics and recycling hereof e.g. in <a href="https://plastikviden.dk/media/212448/study-about-plastic-sorting-and-recycling.pdf">https://plastikviden.dk/media/212448/study-about-plastic-sorting-and-recycling.pdf</a>
Bioplastic (biobased and biodegradable)	A term that covers bio-based plastics, biodegradable plastics and plastics that is both bio-based and biodegradable. For further information see e.g. <a href="https://www2.mst.dk/Udgiv/publications/2020/02/978-87-7038-165-9.pdf">https://www2.mst.dk/Udgiv/publications/2020/02/978-87-7038-165-9.pdf</a>
Bio-based plastics	Bio-based plastics are plastics with building blocks that are derived partly or wholly from plant-based feedstocks.
Compostable plastics	Plastic that biodegrades in industrial composting facilities and is compliant with the standard EN 13432 (Packaging – Requirements for packaging recoverable through composting and biodegradation – Test scheme and evaluation criteria for the final acceptance of packaging).
Multi-layer plastics	A multi-layer plastic is a combination of two or more polymers.
Non-recyclable multi-layer plastics	A non-recyclable multi-layer plastic is one where the polymers cannot be recycled together. Multi-layer plastics can be recycled together when the polymers are technically compatible, e.g. have similar melting indexes.

Biodegradable (Biodegradation)	The breakdown of an organic chemical compound by micro-organisms into carbon dioxide, methane (in the absence of oxygen), water and mineral salts of any other elements present (mineralization) and new biomass.
Mechanical recycling of plastics	Plastic waste is sorted and reprocessed by mechanical means (shredding, melting, granulation) into pellets, flakes, powders or granulates. The polymer structure is not changed due to any chemical processes. Only thermoplastics goes through mechanical recycling. This is the most common form of recycling.
Chemical recycling of plastics	It is defined as techniques used to break down plastic polymers into their constituent monomers, which in turn can be used again in refineries, or petrochemical and chemical production. There are different types of chemical processes, examples are pyrolysis, hydrolysis, hydrocracking and gasification. In Europe, chemical recycling only recycles a small, but increasing share of packaging and post-consumer plastic waste. Also known as feedstock recycling.
Biological recycling of plastics	Biodegradable plastics that enters industrial composting facilities, is said to be biologically recycled.
Technically recyclable	'technically recyclable' means that it is possible for a given material to be collected, sorted, and transported to a recycling facility, and to be recycled into a "new" product. That a material is technically recyclable only takes into consideration whether the material can be recycled, and not whether there is a demand for it on the market.
Economically viable to recycle	'economically viable to recycle' means that there is a demand for a given recycled material on the market, and the recycler of the material is thus receiving value for what is being collected and recycled.
RecyClass	RecyClass is a tool where you in through a number of steps can check the level of recyclability of your package. There is also advice on improving your package's design and the possibility to get your package certified. Behind RecyClass is a collaboration across the value chain. See more at <a href="https://recyclass.eu/">https://recyclass.eu/</a>
Cyclos HTP	Cyclos HTP is a German institute that certifies packaging and other goods as recyclable. See more at <a href="https://www.cyclos-htp.de/">https://www.cyclos-htp.de/</a>
<b>Fibre-based materials</b>	

Fibre-based materials	Fibre-based materials are considered to be wood-based. This includes paper, carton, cardboard, wood and other cellulose materials.
Regenerated Cellulose	A class of materials manufactured by the conversion of natural cellulose to a soluble cellulosic derivative and subsequent regeneration, typically forming either a fibre (e.g., rayon) or a film (e.g., cellophane).
<b>Other abbreviations</b>	
FSC	Forest Stewardship Council (FSC) forest management certification confirms that the forest is being managed in a way that preserves biological diversity and benefits the lives of local people and workers, while ensuring it sustains economic viability.
RSB standards	<p>The Roundtable on Sustainable Biomaterials (RSB) is a global, multi-stakeholder independent organisation that drives the development of a bio-based and circular economy on a global scale through sustainability solutions, certification, and collaborative partnerships.</p> <p>The RSB standard is a method of sustainability validation of bio-based and recycled resources. The RSB Standard is anchored in 12 sustainability principles, and their underlying criteria, to ensure that the key environmental and social issues surrounding the use of fuels and products made from bio-based and advanced feedstocks are addressed.</p>

## Appendix C Plastic abbreviations

		Polymer	Additive
<b>ABS</b>	Acrylonitrile Butadiene Styrene	x	
<b>A-PET</b>	Amorphous Polyethylene Terephthalate	x	
<b>ASA</b>	Acrylonitrile Styrene Acrylate	x	
<b>C-PET</b>	Crystalline Polyethylene Terephthalate	x	
<b>EPS</b>	Expanded polystyrene (foam)	x	
<b>EVOH</b>	Ethylene vinyl alcohol		X
<b>HDPE</b>	High Density Polyethylene	x	
<b>HIPS</b>	High Impact Polystyrene	x	
<b>LDPE</b>	Low Density Polyethylene	x	
<b>PA</b>	Polyamide, aka. Nylon	x	
<b>PC</b>	Polycarbonates	x	
<b>PE</b>	Polyethylene	x	
<b>PET</b>	Polyethylene terephthalate	x	
<b>PETG</b>	Glycol-Modified Polyethylene Terephthalate	x	
<b>PLA</b>	Polylactic Acid	X	
<b>PO</b>	Polyolefins	x	
<b>PP</b>	Polypropylene	x	
<b>PS</b>	Polystyrene	x	
<b>PVC</b>	Polyvinyl chloride	x	

		Polymer	Additive
<b>PVdC</b>	Polyvinylidene chloride		X
<b>R-PET</b>	Recycled Polyethylene Terephthalate	x	
<b>XPS</b>	Extruded polystyrene (foam)	x	