



# **KBBPPS**

## **Knowledge Based Bio-based Products'**

### **Pre-Standardization**

**Work package 5**  
**Bottlenecks and impacts on functionality tests**

## **Deliverable N° 5.5:**

### **Green label report**

**Public**

Version: 1

Hürth, 16.03.2015

prepared by:

nova-Institut GmbH

Asta Eder, Lara Dammer

Chemiepark Knapsack, Industriestr. 300, 50354 Hürth

Tel.: +49-2233-481455

Fax: +49-2233-481450

Email: [lara.dammer@nova-institut.de](mailto:lara.dammer@nova-institut.de)

Partner website : [www.nova-institut.eu](http://www.nova-institut.eu)

Project website : [www.KBBPPS.eu](http://www.KBBPPS.eu)

*The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013 under grant agreement n° KBBE/FP7EN/312060/"KBBPPS".*

*The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Communities. The European Commission is not responsible for any use that may be made of the information contained therein.*



## Table of content

Executive summary .....	4
1 Introduction.....	7
2 Ecolabels.....	9
2.1 Overview of ecolabels .....	10
2.2 The EU Ecolabel – The European approach .....	12
2.2.1 The EU Ecolabel and its criteria development process .....	12
2.2.2 EU Ecolabel criteria catalogues and overlaps with bio-based products.....	13
2.2.3 Further research of EU Ecolabel possibilities of adding a “bio-based” criterion ..	15
2.2.4 Existing European labels and overlap with the EU Ecolabel .....	18
2.3 The Nordic Swan – The label of the Nordic countries.....	20
2.3.1 The Nordic Swan criteria development process .....	20
2.3.2 Overlap of Nordic Swan product groups and bio-based product groups .....	21
2.3.3 Bio-based share of raw materials in the Nordic Swan .....	21
2.3.4 Possibilities of adding a “bio-based” criterion to Nordic Swan .....	22
2.4 The Blue Angel – The oldest ecolabel of the world.....	22
2.4.1 The Blue Angel criteria development process .....	22
2.4.2 Overlap of Blue Angel product groups and bio-based product groups .....	23
2.4.3 Bio-based share of raw materials in the Blue Angel label .....	23
2.4.4 Possibilities of adding a “bio-based” criterion to the Blue Angel .....	24
2.5 The French ecolabel – NF Environnement .....	24
2.5.1 The French ecolabel criteria development process .....	25
2.5.2 NF Environnement product groups and overlap with bio-based product groups.	26
2.5.3 Bio-based share of raw materials in the NF Environnement label .....	26
2.5.4 Possibilities of adding a “bio-based” criterion to NF Environnement.....	26
3 Overview of green labels .....	27
4 Conclusion.....	29
5 List of references .....	31

## List of Illustrations

Figure 2 Reliable international ecolabels for procurement (UNOPS, 2009).....	11
Figure 3: Development and review process of EU Ecolabel criteria, Dammer et al., 2014 ....	12
Figure 4 European labels and overlap with the EU Ecolabel, Dammer et. al, 2014.....	19



## Executive summary

This report presents the results of the desk research of ecolabels that can be relevant for bio-based products carried out within Task 5.4 of KBBPPS. The main objective of this task was to analyse existing green labels for the selected products (Task 5.1) and to discuss the possible conflicts of including bio-based carbon or biomass content in these labels. Apart from desk research, also exchange with project partners in KBBPPS as well as Open-Bio contributed to selecting relevant labels and adjusting the research focus. ([www.biobasedeconomy.eu/research](http://www.biobasedeconomy.eu/research)). It was mutually agreed between all project partners that the ISO Type I ecolabels, covering different environmental criteria, should be put in the focus of the analysis, since it is expected that it will be environmental benefits of bio-based feedstocks that will be the incentive to add the use of bio-based raw materials as a criterion in any ecolabel or product group. By definition, only multi-issue labels offer the possibility to add criteria at all, so single-issue labels were not in the focus.

In order to reach the objective of the task, the following questions were central for the research:

- Which are the most relevant green labels in Europe (and to a lesser extent worldwide) that can be relevant for the selected bio-based products or bio-based products in general?
- How is the criteria development process of these labels?
- Which concrete overlap is there between the product groups of the selected labels and the bio-based products selected in KBBPPS?
- Is a bio-based content share or the use of renewable raw materials already included as a criterion in any of the relevant ecolabel?
- Could relevant ecolabels be easily adapted to be used for bio-based products?
- Could “bio-based” be integrated as an option or an add-on criteria in existing label criteria catalogues? Are there conflicts to be expected?
- Where would harmonization be easiest or the most difficult?

For a general overview, the report explains the types of ecolabels and their relevance for the bio-based products. A selection of the four most relevant multi-issue European ecolabels (EU Ecolabel, Blue Angel, Nordic Swan and NF Environnement) are then examined more closely with a view on the questions listed above. It was not possible to conduct such a thorough research for all green labels existing worldwide, but a separate annex provides a list of the most relevant global ecolabels. This overview was compiled by the FNR, a project partner in Open-Bio.

The four chapters on the selected ecolabels are structured very similarly to enable comparisons: After a short general introduction of the label's history, the criteria development process is depicted, followed by an analysis of the overlap of product groups and bio-based products, which is then concluded by the possibilities of harmonisation of the labels' criteria



with bio-based content criteria. Only the chapter about the EU Ecolabel deviates a bit from this structure, since much more detailed research from the Open-Bio contributed to this part. The depth of the analysis of the other ecolabels varies due to different degrees of data availability.

The analysis shows that it is technically possible to add a bio-based share of products as a criterion to existing or newly developed criteria catalogues of multi-issue Type I ecolabels. Especially the EU Ecolabel, the Nordic Swan and the Blue Angel offer good framework conditions for such a development. The EU Ecolabel already requires lubricants to be made of a certain share of renewable raw materials, while the Nordic Swan covers bio-based shares for durable wood alternatives to impregnated wood, disposables for food and floor coverings. Both the Nordic Swan and the Blue Angel follow a policy that aims to support the use of renewable resources, which is stated in the general documents. The Blue Angel and the EU Ecolabel already offer facilities for a special sign on the label that could also advertise the use of renewable raw materials as a specific environmental advantage. All three cover samples of bio-based products in some products categories without them being specifically declared as bio-based.

Worldwide, there is much more potential to find other labels that could also integrate a bio-based share of the raw materials basis as a criterion for green products. Annex I shows a table overview of globally existing important ecolabels. However, within the scope of this task, it was not possible to go into detailed analysis of all these labels. Further research is needed, if concrete findings and recommendations were to be developed for the multitude of ecolabels.

For the four investigated European ecolabels, the criteria development processes are quite similar and offer similar opportunities as well as challenges. Research within the Open-Bio project on the EU Ecolabel (Dammer et al. 2014) highlighted these challenges, which are applicable to all four labels as the following:

- Being “bio-based” is not an environmental advantage per se. An LCA (potentially reduced to a “hot-spot analysis”) needs to show that the use of renewable raw materials has a truly positive influence on the ecological impact of the products, before the use of bio-based feedstocks can play a relevant role for the criteria catalogue of an ecolabel.
- Even if these environmental advantages are shown, the bio-based feedstock is often relevant for intermediate products or chemical building blocks, while ecolabels are awarded to end products. How can the bio-based share (and its ecological impacts) be considered and calculated all the way through the process chain?

If these two main challenges are appropriately addressed, the following preliminary conclusions for implementation are drawn:

- Concerning the criteria, it can be agreed that the bio-based content should be declared according to the European standard that is currently being developed in



CEN/TC 411. This will be a criterion applicable to ALL bio-based products; however, not to all products within a Ecolabel product group containing both bio-based and fossil products. The minimum shares of bio-based content will be different from product group to product group.

- Criteria to be developed need to be quantifiable, pass / fail and also steerable, which means that they can be made stricter from revision to revision.
- A defined share of certified sustainable feedstock should be required for all bio-based products. There are several established certification systems and labels that address the certification systems for sustainable forest and agricultural feedstocks FSC, PEFC, ISCC+, RSB, etc. These are already integrated in several ecolabels and should also be combined for the claim of the sustainability of the bio-based feedstock.
- Bio-degradability is a very complex issue for a European ecolabel. Firstly, it does not make sense to include such requirements for all product groups, since many products should be durable and not degrade over time. Secondly, waste regulations are different from country to country, so a European label cannot inform consumers about their choices for disposal.

For the more concrete development of sample criteria catalogues, the Open-Bio project will take over and select some bio-based products groups for further research within the context of the EU Ecolabel. The results of this research will be made available also to Advisory Partners of KBBPPS and Open-Bio outside of Europe. New Zealand or the U.S. could potentially be interested in working on the expansion of their ecolabels for bio-based products, for which this report and other works from Open-Bio might be a useful basis.



## 1 Introduction

This report presents the results of the desk research of ecolabels that can be relevant for bio-based products carried out within Task 5.4 of KBBPPS. The main objective of this task was to analyse existing green labels for the selected products (Task 5.1) and to discuss the possible conflicts of including bio-based carbon or biomass content in these labels. Apart from desk research, also exchange with project partners in KBBPPS as well as Open-Bio contributed to selecting relevant labels and adjusting the research focus. ([www.biobasedeconomy.eu/research](http://www.biobasedeconomy.eu/research)). It was mutually agreed between all project partners that the ISO Type I ecolabels, covering different environmental criteria, should be put in the focus of the analysis, since it is expected that it will be environmental benefits of bio-based feedstocks that will be the incentive to add the use of bio-based raw materials as a criterion in any ecolabel or product group. By definition, only multi-issue labels offer the possibility to add criteria at all, so single-issue labels were not in the focus. As another contribution, especially the overlap with the Open-Bio work package 7 “Labelling” offered distinct benefits, since intense research on the EU Ecolabel was done there that was used as input to this report.

In order to reach the objective of the task, the following questions were central for the research:

- Which are the most relevant green labels in Europe (and to a lesser extent worldwide) that can be relevant for the selected bio-based products or bio-based products in general?
- How is the criteria development process of these labels?
- Which concrete overlap is there between the product groups of the selected labels and the bio-based products selected in KBBPPS?
- Is a bio-based content share or the use of renewable raw materials already included as a criterion in any of the relevant ecolabel?
- Could relevant ecolabels be easily adapted to be used for bio-based products?
- Could “bio-based” be integrated as an option or an add-on criteria in existing label criteria catalogues? Are there conflicts to be expected?
- Where would harmonization be easiest or the most difficult?

For a general overview, the report explains the types of ecolabels and their relevance for the bio-based products. A selection of the four most relevant multi-issue European ecolabels (EU Ecolabel, Blue Angel, Nordic Swan and NF Environnement) are then examined more closely with a view on the questions listed above. It was not possible to conduct such a thorough research for all green labels existing worldwide, but a separate annex provides a list of the most relevant global ecolabels. This overview was compiled by the FNR, a project partner in Open-Bio.



The four chapters on the selected ecolabels are structured very similarly to enable comparisons: After a short general introduction of the label's history, the criteria development process is depicted, followed by an analysis of the overlap of product groups and bio-based products, which is then concluded by the possibilities of harmonisation of the labels' criteria with bio-based content criteria. Only the chapter about the EU Ecolabel deviates a bit from this structure, since much more detailed research from the Open-Bio contributed to this part. The conclusion compares the results of the different analyses and puts these in relation to selected single-issue labels that are also relevant for bio-based products. The need for further research is outlined.

The authors would like to acknowledge all KBBPPS and Open-Bio partners and advisory partners that have contributed to this analysis. A special thanks goes to FNR who delivered the data for the global overview of ecolabels.





## 2 Ecolabels

Product labelling and ecolabels in particular represent important instruments for promoting markets for environmentally friendly products. By providing information on the environmental product characteristics, they offer potential buyers the possibility to select a product based on features that would otherwise remain unobservable or very difficult to assess (Bleda & Valente, 2009; Teisl & Roe, 1998). If the label enjoys a high level of credibility and communicates relevant information to buyers, it may even offer the basis for a mark-up in price compared to similar products (Keeping & Shiers, 1996; Morris, 1997; Rotherham, 2005).

The different ISO types of environmental information and labels (ISO, 2013) are presented in the following table. Examples of Type I labels are ecolabels of EU Member States such as the EU Ecolabel, Blue Angel in Germany and the Nordic Swan. They cover multiple criteria relevant for environmental benefits, thus substantiating the claim of the labelled products to be beneficial compared the other products of the same category on the market. This means in consequence that Type I labels need to be sufficiently strict to be applicable to only the best part (e.g. 20%) of one product category in the market.

### Box 1: Types of environmental product information

The International Organization for Standardization (ISO) distinguishes three different categories of environmental labels and declarations.

- **Type I labels (ISO 14024:1999)** are multi-criteria-based third party programmes that award a license to use environmental labels on products indicating overall environmental preferability of a certain product within a particular product category based on life cycle considerations. There are also Type I-like labels that have a similar verification and certification process but focus on single issues (e.g. energy consumption, sustainable forestry, etc.).
- **Type II (ISO 14021:1999)** labels are **self-declared environmental claims** that producers, distributors or importers make about specific attributes of their products. The main difference to the previous category is that they are not awarded by an independent authority.
- **Environmental declarations of Type III (ISO 14025:2006)** are voluntary programmes that provide quantified environmental data of a product, under pre-set categories of parameters set by a qualified third party and based on life cycle assessment, and verified by that or another qualified third party.

Contrary to the selectivity of the Type I labels, the environmental product declarations (EPD) of Type III do not claim to be environmentally more preferable than the other products in the market, but offer a set of third party certified information on a special product group (e.g. particle boards) based on life-cycle analysis. Also being called 'environmental impact labels', they are primarily intended for use in business-to-business communication, but their use in



business-to-consumer communication under certain conditions is not precluded. Type II labels are not always third party approved and focus only on one single environmental issue claimed by the producer of the products. The claim might refer to the product, to a component of the product or to its packaging; this is called an ‘environmental claim’ or also a ‘green claim’. A reliable green claim should respect the criteria indicated by ISO 14021, meaning that information behind the claim should be verifiable and accurate. If this is not the case, companies who falsely claim to have a sound environmental record risk participating in green washing (UNOPS, 2009). However, even a sound claim will never provide the same guarantee of reliability as an environmental label.

**Table 1: ISO types of environmental labels, Source: ELN, 2004**

Label type	Criteria areas / metrics	Life cycle consideration	Third party verification	Selectivity = differentiation of environmentally preferable products from others in the product category
Type I	multiple	yes	yes	yes
Type II	single	no	preferred	no
Type III	multiple	yes	yes	no

## 2.1 Overview of ecolabels

Ecolabels are voluntary labelling systems for food and consumer products. All ecolabels have in common that they help consumers to identify products and services that have a reduced environmental impact throughout their life cycle, from the raw material, to production, use and disposal. Different labels put emphasis on different environmental impacts of the products. The focal points also differ depending on attitudes of the consumers in different regions. Also the hot spots of environmental impact are strongly dependent on the product category, which is why each products group has different criteria to fulfil.

In 1978, the “Blue Angel” was the first European ecolabel to be established. Since then, many international and national labels have followed. In 1989, the Nordic Council of Ministers set up the Nordic Ecolabel and finally in 1992, the EU Ecolabel followed, which combines all European countries in close cooperation with the national label authorities and national label organisations. The “Blue Angel” and the “Nordic Ecolabel” (the Nordic Swan) as well as the EU Ecolabel are the most well-known and used Ecolabels in Europe, although there are also other national labels in several countries such as the Austrian Ecolabel, AENOR Medio Ambiente from Spain, NF Environnement from France, National Programme of Environmental Assessment and Ecolabelling in the Slovak Republik (NPEHOV). The popularity of the ecolabels vary in different European and international regions and in different product groups.



With regard to world-wide implemented ecolabels, the FNR provided support in the frame of the related Open-Bio project, by conducting an analysis of globally available ecolabels in the form of a comprehensive excel sheet that will be available as a separate annex. Today, ecolabels are truly found all over the globe, including in developing countries and countries in transition.

Figure 1 presents relevant ecolabels that were selected by UNOPS (2009) as reliable for procurement purposes. Also the Global Ecolabelling Network (GEN, 2015) provides an exhaustive list of labels. The product categories covered by ecolabels include chemicals, textiles, electricity, paper, furniture, building material, cleaning products and services, appliances, hotel accommodation, etc. Labelling of further product groups is under development.



Figure 1: Reliable international ecolabels for procurement (UNOPS, 2009).

With the establishment in 1978, the Blue Angel was not only the first European label, but also worldwide the very first of its kind (Lange, et al., 2014). 1988, the "Ecologo" – North America's largest Type I ecolabel – was established, other international Type I ecolabels that followed were in 1989 "EcoMark: Japan" and "Green seal" in North America. Since 1992, the "Environmental Choice New Zealand" and since 1993 "China Environmental Labelling" have been available. Nine years after New Zealand, Australia followed in 2001 with the "Green Tag Certified" and later in 2010 with the "Good Environmental choice" of Australia.

## 2.2 The EU Ecolabel – The European approach

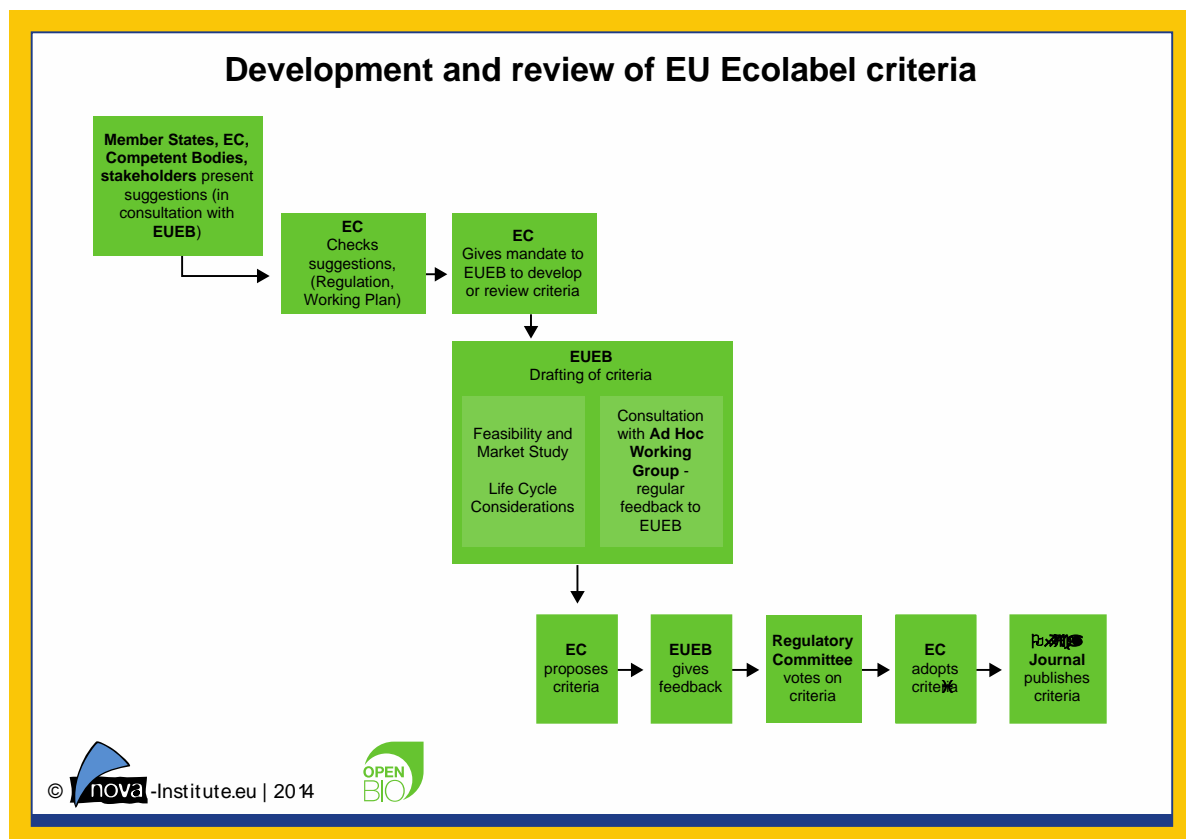
### 2.2.1 The EU Ecolabel and its criteria development process

The EU Ecolabel was established in 1992, involving all EU Member States in close cooperation with the national label authorities and national label organisations. The scheme is gov-



erned by Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009.

The status quo of the EU Ecolabel criteria was analysed through a desk research in a first step, making use of the publically available information of the European Commission and selected publications. The process of the development and review of existing EU Ecolabel criteria catalogues follows the scheme illustrated below. Member States, the European Commission (EC – DG Environment), and Competent Bodies can present suggestions for new introductions or reviews in consultation with the EU Ecolabel Board (EUEB). The EUEB is made up of the Competent Bodies of the Member States, DG Environment and representatives of citizen and consumer organisations. In addition, any interested party can make suggestions for new criteria or product groups to be included in the EU Ecolabel scheme. These are checked by the EC. The EC then gives a mandate and a working plan to the EUEB for the development of new criteria or for the revision of existing criteria. Revisions are done regularly approx. every 5 years.



**Figure 2: Development and review process of EU Ecolabel criteria, Dammer et al., 2014**

For every product group, a special Ad Hoc Working Group is nominated by the EUEB. This group consists of experts and stakeholders specific to each product group, which checks the feasibility of the criteria in the targeted markets as well as the life cycle considerations of the environmental impacts. Their recommendations are then formalized as criteria that the EC proposes to the EUEB. After feedback from the EUEB, the regulatory committee votes on the criteria. After the adaption of the criteria by the EC, they are published in the Official Journal

of the European Union. The process of the label criteria revision takes approx. 2 years (incl. national implementation) and the process offers manifold possibilities for interested parties to make suggestions for the criteria or even to lead an Ad Hoc Working Group.

### **2.2.2 EU Ecolabel criteria catalogues and overlaps with bio-based products**

EU Ecolabel criteria catalogues are specific to each product group with little direct overlap. The following table lists the groups of end products that can currently have an EU Ecolabel, which is a total of 26 product groups. With regard to bio-based products, a set of 26 bio-based products that was previously defined in the project (Task 5.1) is used to keep the analysis manageable. (It is complete coincidence that the number of both sets of products – EU Ecolabel and bio-based products – is the same.) The product samples on the list are taken as examples to investigate the question, which of the bio-based products might already be included in one of the product groups that are covered by the existing EU Ecolabel criteria catalogues. Table 2 (based on own research) illustrates these overlaps and shows that out of 26 total product categories of the EU Ecolabel, only seven could include some of the bio-based products from the KBBPPS product list. These bio-based products might mainly be included as raw material or intermediate part of the end products that the EU Ecolabel addresses. Only one product group, lubricants, already has the share of renewable raw materials (bio-based) included as a separate criterion.

Table 3 illustrates the issues covered by the EU Ecolabel criteria for those seven product groups that overlap with the bio-based product groups. Criteria cover sustainability criteria throughout the life cycle of the products, but also product quality. “EU Ecolabelled” stands for a higher level of performance than the average products in the market with minimized content of hazardous substances and substances harmful to the environment and health, which is a good example for selectivity (chapter 3) of a Type I ecolabel. All EU Ecolabelled product criteria include criteria for evident consumer information about environmental benefits, use and recycling. Also special slogans can be added to the Flower, e.g. “Contains a large fraction of bio-based material” as can be found on EU Ecolabelled lubricants.



**Table 2: Overlap of EU Ecolabel product groups and pre-defined bio-based products list**

<b>EU Ecolabel product group</b>	<b>Might include one of a pre-defined set of products of the KBBPPS project</b>
Rinse-off cosmetics	Facial scrub creams with PHA pearls
All-purpose cleaners and sanitary cleaners	
Textile products	Viscose, cotton, wool
Paints and varnishes	Plant oil based paint
Wooden floor coverings	Extruded Wood-Plastic Composite profiles
Personal computers	
Notebook computers	
Televisions	
Campsite services	
Tourist accommodation services	
Converted paper	
Newsprint paper	
Printed paper	
Copying and graphic paper	
Tissue paper	
Hard coverings	
Textile floor coverings	
Wooden furniture	Particle boards
Soil improvers and growing media* <i>*materials in which plants can grow</i>	
Light sources	
Heat pumps	
Water-based heaters	
Lubricants	Lubricants
Bed mattresses	Particle boards
Sanitary tapware	
Flushing toilets and urinals	



**Table 3: Bio-based products' criteria catalogues in the EU Ecolabel (own research)**

Type of EU Ecolabel criteria	Mattresses	Wooden furniture	Wooden floors	Paints	Lubricants	Rinse-off cosmetics	Textiles
Minimised content of hazardous substances	x	x	x	x	x	x	x
Sustainable managed forest and reduced impact on habitats / Organic farming	x	x	x				x
Limited use of substances harmful to the environment and health	x	x	x	x	x	x	x
Reduced water and air pollution	x			x	x	x	x
Consumer information	x	x	x	x	x	x	x
High standards of biodegradability					x	x	
High level of performance	x	x	x	x	x	x	x
Requirements regarding the use of resources from recycled materials	x						
Limited packaging waste						x	
Share of renewable raw materials					x		

### 2.2.3 Further research of EU Ecolabel possibilities of adding a “bio-based” criterion

Table 4 summarizes the KBBPPS analysis of the EU Ecolabel criteria sets of the seven product groups that are considered key for the current research because they overlap with the KBBPPS bio-based products list. The use of bio-based raw materials in the criteria was found in two cases: directly for lubricants and indirectly for wooden floor coverings. Wooden floor coverings should be made of 90% wood or bamboo. To add such a criterion for the use of bio-based materials seems to be technically possible likewise for the five other explored product groups (Mattresses, Wooden furniture, Paints, Rinse-off cosmetics and Textiles). It needs to be discussed, however, in which cases this makes sense and is desirable from an environmental and industry point of view.

Exclusion of specific non-bio-based materials in the criteria was also part of the analysis. Content of metals or metallic compounds or certain plastics can be restricted in the raw materials of the product as well as in its packaging. The latest published criteria catalogue of EU Ecolabel relevant for the bio-based sector was Rinse-off cosmetics (EU Ecolabel product groups and criteria, 2014). In the criterion 3 (Excluded or limited substances and mixtures), micro-plastics in the cosmetics and certain plastics for the packaging were rejected.



Table 4: Detailed criteria analysis for selected (bio-based) product groups

Product category EU Eco-label	Match with bio-based product list	Bio-based share	Sustainability of feedstock	Bio-based functionality included in criteria	End of life options	Non-bio-based alternatives excluded through criteria
Bed mattresses	Particle boards	Possible	Sustainable forest management FSC & PEFC equivalent No GMO wood	-	No	Packaging made from recycled materials and marked to identify plastic type (ISO 11469).
Wooden furniture	Particle boards	Possible	Sustainable forest management FSC & PEFC equivalent No GMO wood	-	Packaging shall be easily separable by hand in recyclable parts consisting of one material.	No substances containing s. classified as risk R phase a. to D. 67/548/EEC. Plastics and metal ≤ 2% of total weight.
Wooden floor coverings	WPC decking	Only coverings with 90% wood or bamboo or cork are included	Sustainable forest management FSC & PEFC equivalent No GMO wood	Minimised content of hazardous substances	Packaging shall be from renewable materials	Only coverings with 90% wood or bamboo or cork are included
Indoor and outdoor paints and varnishes	Natural paint; plant oil based	Possible	Possible	Minimised content of hazardous substances	No	No
Lubricants	Lubricants	Renewable raw materials ≥ 45 %	Possible	Biodegradability	Biodegradability for all ingredients >0,10 %	Exclusion of metals or metallic compounds
Rinse-off Cosmetics	Facial scrub cream with PHA pearls	Possible	For palm oil RSPO	Biodegradability included	Content has to be biodegradable; Limited packaging waste	Weight/content < 0.30g of packaging /g of product. Plastic parts in the packaging shall be marked according to DIN 6120, Part 2.
Textiles	Blended fabric: Viscose, Cotton, wool	Possible	Highlighted if 70 - 95 % of the cotton in product is organic	High quality	No	Included e.g. polypropylene, acrylic

Restrictions could be expanded in favour of bio-based materials use, if it has a sufficient environmental impact. That would of course influence the use of the label in the market, as in this case some products would be excluded from the use of the label, such as textiles made of mineral oil based fibres. In the example of the rinse-off cosmetics, that could mean instead of banning all micro-particles, only degradable bio-based plastics could be allowed to be contained in the product.

The EU Ecolabel already covers the use of renewable raw materials as a requirement in the criteria for lubricants. The reason is the high amount of leakage of these products (e.g. in boats or landscaping machinery), which makes it very reasonable to require biodegradability in order to be ecologically advantageous. The properties “bio-based” and “biodegradable” are inextricably linked here. Technically, this is not necessarily the case, but the decision was





made to link the aspects. This offers an example that confirms the potential possibility to include bio-based feedstocks in the EU Ecolabel criteria.

The revision of the lubricants criteria, which initiated among other things the inclusion of bio-based materials, was started mostly because of an insufficient market uptake of the EU Ecolabel. The revision process took from 2003 to 2005. At that time, the development of criteria was focused on the components of the lubricants. Biodegradability in water and soil was noted as a market driver and was the reason behind the category “use of renewable raw materials”. This means that biodegradability and a bio-based origin of feedstocks were inextricably linked in this context. The last update of the criteria of lubricants took place in 2011. Another revision of the lubricant criteria will follow soon.

The EU Ecolabel for lubricants has been successful especially in promoting products with high bio-based shares: these are mainly chainsaw oils and marine two stroke oils that are used primarily by professionals. It is not surprising that B2B customers are more aware of the EU Ecolabel for lubricants than the end users are (personal communication with experts).

“Wood originating from sustainably managed forest”, a “reduced impact on habitats” as well as “organic farming” is included in four of the seven criteria sets. The proof takes place by established certification schemes such as FSC & PEFC, RSPO or equivalent. Use of GMO wood as a raw material is restricted.

Favourable bio-based functionality is covered in different criteria, for example in biodegradability for products that end up in the environment as it is the case with lubricants and rinse-off cosmetics. Also minimized content of hazardous substances can be reached by bio-based feedstock use, as is the case in indoor and outdoor paints and varnishes or wooden flooring (see Table 4). Other samples of bio-based functionality can be found in textiles, in which the high quality of the fibres is reached through the use of bio-based raw materials. All these findings offer arguments for the possible integration of bio-based as a criterion in any Type I ecolabel, concrete implementation depending on the product group in question.

Despite these findings pointing towards the advantages of bio-based aspects, our research, and especially the stakeholder workshop conducted in the frame of the Open-Bio project (Dammer et al, 2014), made it clear that including bio-based products in the EU Ecolabel or any other ecolabel will be a complex task.

The main conclusions are:

- A label should combine bio-based aspects with environmental information in order to give value to consumers.
- The EU Ecolabel is a good vehicle for this. There is no need to create a new ecolabel. With third party verification of claims and a trusted issuing authority (the EU), the EU Ecolabel fulfils important criteria that are necessary for gaining consumer trust and creating an effective label.



- However, the requirements are different for different product groups, so implementation will be complex.
- Concerning the criteria, it can be agreed that the bio-based content should be declared according to the European standard that is currently being developed in CEN/TC 411. This will be a criterion applicable to ALL bio-based products; however, not to all products within a Ecolabel product group containing both bio-based and fossil products. The minimum shares of bio-based content will be different from product group to product group.
- Criteria to be developed need to be quantifiable, pass / fail and also steerable, which means that they can be made stricter from revision to revision.
- A defined share of certified sustainable feedstock should be required for all bio-based products

#### **2.2.4 Existing European labels and overlap with the EU Ecolabel**

When developing or reviewing criteria catalogues for the EU Ecolabel (or any other multi-issue Type I ecolabel), it is not always necessary to reinvent the wheel. Several criteria and sub-criteria specifications as well as their testing and proof methods can be covered by other, mostly single-issue labels.

Single-issue labels offer a good approach to introducing green aspects instead of dealing with all the diverse environmental impacts throughout a product life cycle – as it happens with the multi-issue ecolabels as introduced above. Single-issue labels focus on the major environmental impact of a product, independent of the process stage – that could be the use of certified sustainable feedstock, the non-use of toxic chemicals during the production or the reduced use of energy during use, etc. There are several established certification systems and labels that address specific aspects of ecological impacts, as for example the certification systems for sustainable forest and agricultural feedstocks FSC, PEFC, ISCC+, RSB; the energy efficiency label etc. These labels can have very strong messages for the consumer on their own, but they can also support a broader multi-issue label. The following figure illustrates how these certifications are integrated or can be integrated in a criteria catalogue of one product category in a Type I ecolabel. The EU Ecolabel was chosen as an example.

Since December 2014, one product category of the EU Ecolabel now has a requirement for sustainably produced agricultural biomass. Palm oil being an important component of the majority of cosmetics, this is a very relevant criterion. The criteria catalogue states that “palm oil and palm kernel oil and their derivatives used in the product must be sourced from plantations that meet criteria for sustainable management that have been developed by multi-stakeholder organisations that have a broad-based membership including NGOs, industry and government.” For certification, applicants shall provide third-party certification such as RSPO or any equivalent scheme based on multi-stakeholder management criteria. For chemical derivatives of palm oil and palm kernel oil, it is acceptable to demonstrate sustainability through book and claim systems such as GreenPalm or equivalent.



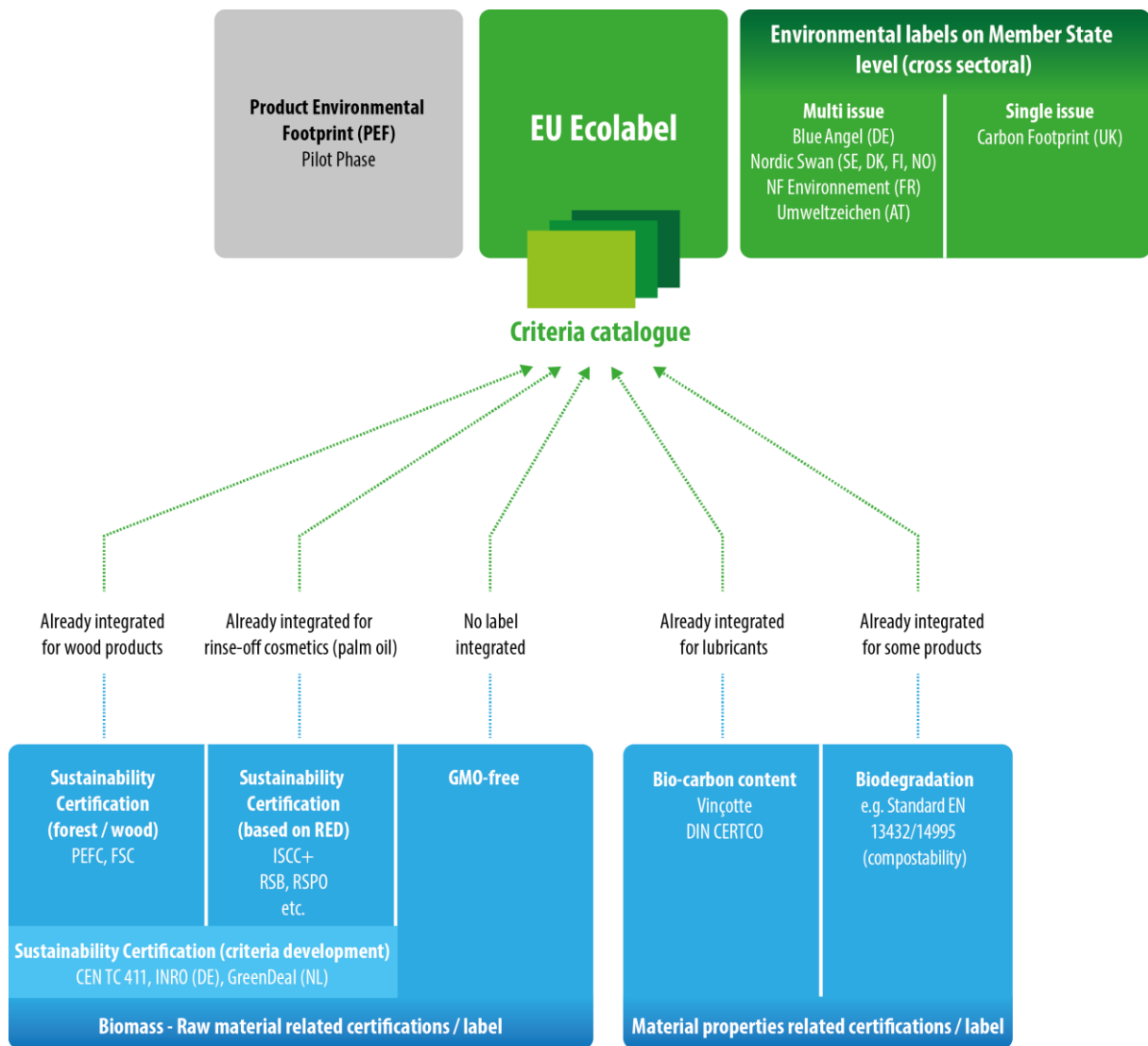


Figure 3 European labels and overlap with the EU Ecolabel, Dammer et. al, 2014

All these established systems are already experts for their respective fields, so using and combining of established systems seems a reasonable way to go for the bio-based products (Dammer et al., 2014). As the conclusions in 3.2.3 stipulate that a generally applicable criterion for BBP could be a certain amount of sustainable bio-based feedstock, the already existing certification systems for sustainable renewable raw materials should be used to prove the fulfilment of the claim.

For the bio-based share as criterion itself, both Vinçotte and DIN CERTCO offer testing and certification of bio-based carbon content according to the American ASTM standard D6866-12. CEN/TC 411 (“Bio-based products”) is currently working on establishing a European standard on bio-based carbon content measurement, which will probably be applied by certifiers after adoption by CEN.



All criteria that need to be addressed by an ecolabel (process related energy consumption, use of hazardous substances, recyclability, toxicity, etc.) are defined per product category and are defined by the dedicated criteria catalogue, including testing methods and threshold values to be maintained. This standard procedure could also be used for the bio-based share of a product, in case the raw material basis plays an important role for the ecological impact of the product. If the bio-based share does not offer any benefit for the environmental impact of the product, the implementation in any criteria scheme will probably not be feasible.

### **2.3 The Nordic Swan – The label of the Nordic countries**

The Nordic Swan is a voluntary ecolabelling system that evaluates a product's impact on the environment throughout the whole lifecycle, looking at energy and water usage, the kinds of chemicals used, recycling and reuse of waste products.

The Nordic Swan is a Type I ecolabel and was developed by the Nordic Council of Ministers in 1989 [NCOM \(2012\)](#). It was initiated as a practical tool for consumers to help them actively choose environmentally sound products and is the official ecolabel of the Nordic countries (Norway, Sweden, Denmark, Finland and Iceland). 95 % of consumers in the Nordic market recognize the Nordic Ecolabel logo (The swan logo), and 78 % trust the label (Yougov, 2013). The popularity of the Nordic Ecolabel is very high, 58 % of respondents say that they like the Nordic Ecolabel (Yougov, 2013).

#### **2.3.1 The Nordic Swan criteria development process**

The Nordic Ecolabelling Board is a member of the Global Ecolabelling Network (GEN), which is an association of ecolabelling organisations worldwide. Nordic Swan is managed by the Nordic Ecolabelling Board, a non-profit organisation.

Each Nordic country has a local office that is responsible for criteria development, site visits, licensing and marketing. Despite working independently, they meet twice a year for common communication. Usually, criteria are valid for three years; after that the criteria can be modified, as additions or corrections can be made by the Nordic Ecolabelling Board, although small additions can also be done continuously. The Nordic Ecolabelling Board is required to give notice at least 12 months prior to the expiry date of which criteria will apply thereafter.

The Nordic Swan label is administered by:

- Denmark: Ecolabelling Denmark
- Sweden: Ecolabelling Sweden AB
- Finland: Motiva Services Oy - Ympäristömerkintä
- Norway: Foundation for Ecolabelling
- Iceland: Environment Agency operating under direction of the Ministry for the Environment

The Board receives some government funding while most support is provided by companies through their annual license fees.



The licence criteria are developed by experts from the Nordic Ecolabelling organisations mentioned above. Experts from ministries, environmental organisations, producers, etc. can give their opinion and, thus, indirectly participate in the development of criteria. Before the Nordic Ecolabelling Board finalises the criteria, they are sent out for review, where everybody is able to comment on the criteria and suggest further adjustments. To ensure that Swan labelled products and services are as environmentally friendly as possible the criteria are continuously reviewed. This is done to take into account product development progress and new scientific discoveries as well as new information about environmental impact (Lange, et al., 2014).

### 2.3.2 Overlap of Nordic Swan product groups and bio-based product groups

The Nordic Swan includes 60 different product categories with criteria catalogues for the Nordic Countries. The overlap of eight Nordic Swan product groups with the KBBPPS product categories is presented in Table 5.

**Table 5: Overlap of Nordic Swan product groups and bio-based product groups**

<b>Nordic Swan product group</b>	<b>Might include one of a pre-defined set of products of the KBBPPS project</b>
Durable wood alternative to conventionally impregnated wood	Extruded Wood-Plastic Composite profiles
Disposables for food	Packaging Film, disposable cups and plates
Textiles, hides/skins and leather	Viscose, cotton, wool fabric
Indoor paints and varnishes	Plant oil based paint
Panels for the building, decorating and furniture industry	Particle boards
Floor coverings	Particle boards
Furniture and fitments	Particle boards
Wooden furniture	Particle boards
Small houses, apartment buildings and pre-school buildings	Particle boards

### 2.3.3 Bio-based share of raw materials in the Nordic Swan

The bio-based share of the product is included in three criteria catalogues, namely for “Durable wood alternative to conventionally impregnated wood”, for “Disposables for food” and for “Floor coverings”.

At least 50% of the floor covering (by weight) must be comprised of renewable raw materials. For disposables for food, a minimum of 90% of the material of which the disposable is composed of (by weight) must be produced from renewable raw materials. An exemption exists in the case of inorganic fillers, which may make up to 20% by weight of the disposable. A maximum of 10% of the materials of which the disposable is composed may consist of mate-



rials and additives, coatings and adhesives produced from non-renewable raw materials. Accordingly, in total fillers and other non-renewable materials must not exceed 30% by weight of the disposable.

Nordic Ecolabelled durable wood is an alternative to conventionally impregnated wood and is recognized by: no heavy metals or biocides are added, problem-free as waste and it is produced from wood from sustainable forestry. The criterion for the raw material to be used is wood from certified forest proven by independent body and certificate, annually at least 70% of the wood used has to be certified.

### **2.3.4 Possibilities of adding a “bio-based” criterion to Nordic Swan**

The standard procedure of the Nordic Swan could also be employed in order to include a bio-based share of a product as criterion in the requirements, in case the bio-based share plays a role for the ecological impact of the product. The environmental impact of a product is assessed from a life-cycle perspective, which means from raw material to waste.

Nordic Ecolabelling has chosen to define renewable materials in the criteria catalogues as biological materials that are reproduced in nature. This includes the bio-degradable part of the product, waste and traces from agriculture and aquaculture (both vegetable and animal), sustainable forestry operations and similar industries as well as the biodegradable fraction of industrial waste and municipal waste (criteria catalogue for Nordic Ecolabelling for disposables for food).

## **2.4 The Blue Angel – The oldest ecolabel of the world**

The Blue Angel was initiated by the German government and is awarded by an independent jury to products that are environmentally friendlier than others serving the same use. Each label specifies that the product or service focuses on one of four different protection goals: health, climate, water, and resources.

The Blue Angel, Germany’s oldest and most well-known eco-label (1,500 companies use the Blue Angel and more than 80% of Germans know the label (Jaekel, 2014)) has signed a cooperation contract with ecolabels in China and Japan (BAPR, 2014); also with other international ISO Type I labels such as the EU Ecolabel and Ecomark Africa cooperation and harmonization has been established.

### **2.4.1 The Blue Angel criteria development process**

The Blue Angel Standard is managed by four entities:

- The “Environmental Label Jury” is an independent decision-making body composed of representatives from environmental and consumer associations, trade unions, industry, trade, crafts, local authorities, science, media, churches and federal states.
- The Federal Ministry for the Environment Nature Conservation and Nuclear Safety is the owner of the label. It regularly informs the public about the decisions of the Environmental Label Jury.



- The Federal Environment Agency with its “Eco-labelling, Eco-declaration and Eco-procurement” department acts as office of the Environmental Label Jury and develops the technical criteria of the Basic Award Criteria for the Blue Angel.
- RAL gGmbH is the label-awarding agency.

The development of criteria to be met by products carrying the "Blue Angel" is based on a life cycle approach. The criteria development process is initiated by a consortium led by the Federal Environment Agency, followed by a transparent stakeholder process. Finally, the draft criteria catalogue is submitted to the independent "Environmental Label Jury" for adoption.

As already mentioned above, the criteria of Type 1 ecolabels describe about 20% of the best products available on the market. This means that none of the criteria must be set too sharply so as to possibly exclude all products or to prefer just one manufacturer. To ensure this, a compulsory expert consultation takes place as part of the development of the eco-labels under Blue Angel, to which interested parties such as producers, but also environmental and consumer organizations, academia and government agencies are invited.

At the end of the development of a new ecolabel or criteria revision under Blue Angel, there is the “Jury Umweltzeichen” (“Environmental Label Jury”). It is composed of representatives of socially relevant groups and is appointed by the Environment Minister. The Jury Umweltzeichen will review the submitted draft again and then adopt it in a democratic process proposed by the Environmental Agency (Gröger, Quack, 2007).

#### **2.4.2 Overlap of Blue Angel product groups and bio-based product groups**

The Blue Angel is currently awarded to 12,000 products in 120 product categories; six of these categories overlap with the KBBPPS bio-based product groups (see Table 6).

#### **2.4.3 Bio-based share of raw materials in the Blue Angel label**

The bio-based share of a product is not mentioned directly in any of the criteria catalogues listed above. In the criteria catalogue for “Low-emission floor coverings, panels and doors for interiors made of wood and wood-based materials” considering the area of the application it is mentioned that the product should contain 50% wood raw material, but this is not directly a criterion. At the same time the FSC certificate or similar is a criterion for the used wood as a raw material. The same applies to ready-to-use indoor furniture and slatted frames

Contrary to the EU Ecolabel category “Lubricants”, in the Blue Angel the share of the bio-based material (plant-based oil) is not a criterion for „Rapidly biodegradable chain lubricants for motor saws“. Instead the proof of biodegradability of the material is necessary in order to be accepted for the Blue Angel. Basic substances of chain lubricants must – each by itself – be biodegradable by at least 70 % (according to OECD Guideline for Testing of Chemicals (1992) 301 –B, C, D or F or 92/69/EEC C. 4 C – F, respectively).



**Table 6: Overlap of Blue Angel product groups with selected bio-based product groups**

<b>Blue Angel product group</b>	<b>Might include one of a pre-defined set of products of the KBBPPS project</b>
Mattresses	Particle boards
Rapidly biodegradable chain lubricants for motor saws	Lubricants
Low-pollutant and low-emission varnishes	Plant oil based paint
Low-emission floor coverings, panels and doors for interiors made of wood and wood-based materials	Particle boards Extruded Wood-Plastic Composite profiles
Low emission composite wood panels	Particle boards Extruded Wood-Plastic Composite profiles
Low-Emission furniture and slatted frames made of wood and wood-based materials	Particle boards
Textiles	Viscose, cotton, wool fabrics
Low-emission thermal insulation material and suspended ceilings for use in buildings	Premanufactured construction components, Natural fibre insulation

#### 2.4.4 Possibilities of adding a “bio-based” criterion to the Blue Angel

As described above, the Federal Environment Agency, following a transparent stakeholder process, submits criteria for adoption or revision to the independent "Environmental Label Jury". If the bio-based raw material is approved to have an important environmental impact on the life cycle of the product group, the process offers possibility to add “bio-based” as a criterion. Also hearings from experts to prove the market relevance of any new criterion are foreseen in this process.

Since the end of 2008, the Blue Angel has implemented a strategy putting a stronger emphasis on special topics such as “protects resources” or “protects water”. These categories in the label strengthen the function of the sign since consumers notice even more easily which specific environmental advantage is offered by the product. If the bio-based feedstock basis of a product has a decidedly positive influence on the environmental impact of a product, a dedicated message such as “saving fossil resources” could also be added to the Blue Angel, thus creating a possibility for effective communication of bio-based shares.

## 2.5 The French ecolabel – NF Environnement

The NF Environnement mark is a voluntary certification mark issued by AFNOR Certification in France. This label, which was created in 1991, is awarded to products that have a reduced effect on the environment while offering an equivalent performance as other products with the same functionality.





To be issued the NF Environnement mark, the product must comply with ecological and fitness-for-purpose criteria. These criteria are the result of negotiations between representatives of manufacturers, consumer, environmental protection and distributor associations and public authorities.

The use of products bearing the NF Environnement mark, as of those marked with the EU Ecolabel, contributes to ecologically responsible consumer behaviour.

### **2.5.1 The French ecolabel criteria development process**

The French Ecolabel Committee is made up of four Boards.

- The Professional Board, made up of 4 members representing industry and distribution professions and companies
- The Associations Board, made up of 4 members representing environmental protection and consumer associations
- The Administrations Board, made up of 3 members representing the Ministries in charge of the Environment, Industry
- The Technical Bodies Board, made up of 3 bodies: one representative of the ADEME (Environment and Energy Control Agency), one representative of the Industrial Techniques Centres (CTI) network, one representative of the laboratories network

These stakeholders negotiate the criteria of a product group. The NF Environnement mark aims to certify that the products and/or services on which it is affixed have a minimal negative impact on the environment, along with a satisfactory quality of use compared to other similar products or services available on the market.

The reference guidelines may, on a case by case basis, include ethical or social criteria. With regard to product testing, NF Environnement mark certification may rely wholly or partly on the provisions of national, European and international standards documents, completed where necessary by other reference documents currently in force concerning environmental protection.

Proposals for products categories are made and collected by the AFNOR NF Mark Committee. Environmental evaluations based on the “New Simplified Approach” are made by the NF Mark Committee that decides if the overall product group in which the proposed product belongs, would be good candidates for the NF Environnement mark. Though a full LCA is not conducted, information from other programs’ LCAs are available, and information from producers are used in evaluating a product’s suitability for the label (LIFE 2007).

When developing product-specific criteria, products are assessed to determine their environmental impacts, based on multiple ecological factors, (e.g., the impact of the products’ wastes on the environment, to air, water, and soil). Once identified, these impacts are quantified for setting threshold levels (e.g. limits on toxicity of chemicals, VOC content, hazardous materials content, etc.). Additionally, the NF Environnement mark conducts a generic environmental impact analysis when developing product criteria.



The NF Environnement scheme invites stakeholders from various organizations to participate in all stages of the criteria development (see above). For example, a working group composed of representatives from industry, retailers, environment, and consumer NGOs, AFNOR, and if needed, experts from the concerned product sector, are involved in drafting the technical rules (the criteria catalogues). Revisions of the criteria are done regularly.

### 2.5.2 NF Environnement product groups and overlap with bio-based product groups

The French ecolabel covers 25 product categories of which four groups may overlap with KBBPPS product groups as shown in the following table.

**Table 7: Criteria overlap for NF Environnement for selected (bio-based) product groups**

<b>NF Environnement product group</b>	<b>Might include one of a pre-defined set of products of the KBBPPS project</b>
Paints, varnishes and related products	Plant oil based paint
Carrier bags	Food packaging
Adhesives for floor coverings	Adhesives
Professional Furniture	Particle boards

### 2.5.3 Bio-based share of raw materials in the NF Environnement label

The bio-based share of a product is not mentioned in any of the criteria catalogues listed above. E.g. the carrier bags include a criterion for the biodegradability (approval by EN 13432) instead of a criterion for renewable raw materials as is done by Nordic Swan criteria for food disposables.

### 2.5.4 Possibilities of adding a “bio-based” criterion to NF Environnement

The standard procedure of the NF Environnement label criteria development could also be used to introduce the bio-based share of a product in a criteria catalogue, provided that a bio-based feedstock basis has a proven positive influence on the ecological impact of the product. E.g. the stakeholder participation process described above offers possibilities for suggesting new criteria.



### 3 Overview of green labels

As stated in the introduction, this report focuses on Type I multi-criteria ecolabels, to which “bio-based share” could be added as a criterion. Other labels such as bio-based labels (e.g. BioPreferred, Dincertco or Vincotte) or labels that give evidence to the sustainability of bio-based feedstocks are not in the focus of this report, but are presented in following overview table. This is because these single-issue labels can play an important role for bio-based products, especially in B2B markets. However, since they already address dedicated issues of bio-based products, there is no specific challenge to integrate any “bio-based” criterion. Therefore, the analysis only focused on the more complex multi-criteria labels, but the overview should give a complete picture of relevant labels in the European (and U.S.) market for bio-based products.



Table 8: Overview of green labels relevant for bio-based products (own research)

Logo	Label	Hosted by	Hosting country/countries	Target region	Focus of the criteria	Overlap with bio-based product list
	DIN Bio-based	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH	Germany	Global	Bio-based content	Packaging films, food packaging, textiles, PU-foam, high performance polyamids
	USDA Certified Biobased Product	US Department of Agriculture (USDA)	US	US	Bio-based content	Building products, cleaning products, electronics, food, forest products / paper, health care services & equipment, appliances machinery & equipment, textiles
	OK biobased	VINCOTTE	Belgium	Global, but well known in NL, DE, UK, PL, CH & AT	Bio-based content	Packaging films, food packaging, wood-plastic composites
	PEFC – Programme for the Endorsement of Forest Certification Schemes	PEFC = Programme for the Endorsement of Forest Certification Schemes	EU, global	Global, focus Europe	Sustainable forest management	WPC, construction elements, particle boards
	FSC – Forest Stewardship Council	FSC – Forest Stewardship Council	US, global	Global, focus North America	Sustainable forest management	WPC, construction elements, particle boards
	SFI – Sustainable Forestry Initiative	Sustainable Forestry Initiative, Inc.	US	Global, focus North America	Sustainable forest management	WPC, construction elements, particle boards
	ISCC PLUS – International Sustainability & Carbon Certification	ISCC System GmbH	Germany	Europe	Sustainability of biomass for energy and material use	Technical high performance polyamids
	RSB – Roundtable on Sustainable Biomaterials	Roundtable on Sustainable Biomaterials - RSB	Switzerland	Global	Sustainability of biomass for energy and material use	Facial scrub cream with PHA pearls
	EU Ecolabel	European Commission (EC – DG Environment)	EU and Member States	EU	Environmental footprint along the life-cycle of the product	Lubricants, particle boards, plant oil based paint, textiles, WPC, facial scrub cream with PHA pearls
	Der Blaue Engel	German Federal Ministry for the Environment/ Ral g GmbH	Germany	Germany	Environmental footprint along the life-cycle of the product	WPC, flooring, furniture, lubricants, surfactants, premanufactured construction components
	Nordic Swan	Nordic council with representatives in each nordic country	Finland, Sweden, Norway, Iceland, Denmark	Scandinavia	Environmental footprint along the life-cycle of the product	WPC, lubricants, particle boards, plant oil based paint, textiles
	NF Environnement	AFNOR Certification	France	France	Environmental footprint along the life-cycle of the product	Plant oil based paint, food packaging, adhesives, particle boards

## 4 Conclusion

For obvious reasons, single-issue ecolabels do not provide the possibility to add additional criteria in the scheme. The analysis of the four most popular European Type I multi-criteria ecolabels has shown that it is technically possible to add a bio-based share of products as a criterion to existing or newly developed criteria catalogues. Especially the EU Ecolabel, the Nordic Swan and the Blue Angel offer good framework conditions for such a development. The EU Ecolabel already requires lubricants to be made of a certain share of renewable raw materials, while the Nordic Swan covers bio-based shares (renewable raw materials or wood should be used as a raw material) for durable wood alternatives to impregnated wood, disposables for food and floor coverings. Both the Nordic Swan and the Blue Angel follow a policy that aims to support the use of renewable resources, which is stated in the general documents. The Blue Angel and the EU Ecolabel already offer facilities for a special sign on the label that could also advertise the use of renewable raw materials as a specific environmental advantage. All three cover samples of bio-based products in some products categories without them being specifically declared as bio-based.

Worldwide, there is much more potential to find other labels that could also integrate a bio-based share of the raw materials basis as a criterion for green products. Annex I shows a table overview of globally existing important ecolabels. However, within the scope of this task, it was not possible to go into detailed analysis of all these labels. Further research is needed, if concrete findings and recommendations were to be developed for the multitude of ecolabels.

For the four investigated European ecolabels, the criteria development processes are quite similar and offer similar opportunities as well as challenges. Research within the Open-Bio project on the EU Ecolabel (Dammer et al. 2014) highlighted these challenges, which are applicable to all four labels as the following:

- Being “bio-based” is not an environmental advantage per se. An LCA (potentially reduced to a “hot-spot analysis”) needs to show that the use of renewable raw materials has a truly positive influence on the ecological impact of the products, before the use of bio-based feedstocks can play a relevant role for the criteria catalogue of an ecolabel.
- Even if these environmental advantages are shown, the bio-based feedstock is often relevant for intermediate products or chemical building blocks, while ecolabels are awarded to end products. How can the bio-based share (and its ecological impacts) be considered and calculated all the way through the process chain?

If these two main challenges are appropriately addressed, the following preliminary conclusions for implementation were drawn from stakeholder research:

- Concerning the criteria, it can be agreed that the bio-based content should be declared according to the European standard that is currently being developed in



CEN/TC 411. This will be a criterion applicable to ALL bio-based products; however, not to all products within a Ecolabel product group containing both bio-based and fossil products. The minimum shares of bio-based content will be different from product group to product group.

- Criteria to be developed need to be quantifiable, pass / fail and also steerable, which means that they can be made stricter from revision to revision.
- A defined share of certified sustainable feedstock should be required for all bio-based products. There are several established certification systems and labels that address the certification systems for sustainable forest and agricultural feedstocks FSC, PEFC, ISCC+, RSB, etc. These are already integrated in several product groups of different European ecolabels, such as in “Rinse-off cosmetics” or in “Wooden floor coverings” in the EU Ecolabel and should also be combined for the claim of the sustainability of the bio-based feedstock.
- Bio-degradability is a very complex issue for a European ecolabel, but plays an important role in market relevant bio-based products groups such as lubricants or disposables for food. Firstly, it does not make sense to include such requirements for all product groups, since many products should be durable and not degrade over time. Secondly, waste regulations are different from country to country, so a European label cannot inform consumers about their choices for disposal.

For the more concrete development of sample criteria catalogues, the Open-Bio project will take over and select some bio-based products groups for further research within the context of the EU Ecolabel. The results of this research will be made available also to Advisory Partners of KBBPPS and Open-Bio outside of Europe. New Zealand or the U.S. could potentially be interested in working on the expansion of their ecolabels for bio-based products, for which this report and other works from Open-Bio might be a useful basis. In this regard, it is recommended that any framework for determining/claiming bio-based content should be compatible with most, if not all, labels. For example if the bio-based labelling framework was developed with the EU Ecolabel in mind, a clear framework would be ideal to enable harmonisation as then it could be taken up by the other labelling bodies such as Nordic Swan, Blue Angel or non-European schemes.



## 5 List of references

- Bhate S. 2002: One world, one environment, one vision: Are we close to achieving this? An exploratory study of consumer environmental behaviour across three countries. *Journal of Consumer Behaviour* 2(2): 169–184.
- Bleda, M.; Valente, M. 2009: Graded eco-labels: A demand-oriented approach to reduce pollution. *Technological Forecasting & Social Change*, 76, 512–524.
- Blue Angel: <http://www.blauer-engel.de/de/produktwelten>
- RAL gGmbH (RAL) 2014: „Blauer Engel“ kooperiert mit Umweltzeichen in China und Japan, Sankt Augustin.
- Dammer, L., Eder, A., Peuckert, J, Quitzow, R. 2014: Assessment of Ecolabel criteria for bio-based products. Report for the Open-Bio project. Hürth 2014.
- Dembkowski, S.; Hanmer-Lloyd S. 1994: The environmental value-attitude-system model: a framework to guide the understanding of environmentally-conscious consumer behaviour. *Journal of Marketing Management* 10(7), 593-603.
- EN 16575:2014 2014: 'Bio-based products – Vocabulary'  
[ftp://ftp.cen.eu/CEN/Sectors/List/bio\\_basedproducts/DefinitionsEN16575.pdf](ftp://ftp.cen.eu/CEN/Sectors/List/bio_basedproducts/DefinitionsEN16575.pdf)
- European Commission 2015: EU Ecolabel product groups and criteria.  
<http://ec.europa.eu/environment/ecolabel/products-groups-and-criteria.html>
- European Commission 2014: EU Ecolabel. Overview.  
<http://ec.europa.eu/environment/ecolabel/>
- [European Commission](#) 2007: Start IPP - Starting with the promotion of IPP approach in Mediterranean countries, Life Environment Project, Brussels.
- Global Ecolabelling Network (GEN) 2004. Introduction to ecolabelling, global Ecolabelling Network information paper, Ottawa.
- Global Ecolabelling Network 2015: <http://www.globalecolabelling.net>
- Gröger, J., Quack, D. 2007: Product Sustainability Assessment (PROSA) as a tool to develop awarding criteria for eco-label, Freiburg.
- ISO Central Secretariat (ISOCS) 2012: Environmental Labels and Declaration, How ISO standards help, ISBN 978-92-67-10586-4
- Jaekel, U. 2014: Green Consumer Information - National, Regional and Global Perspective. Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Berlin.
- Lange, P., Kjeldesen, U. B. , Tofteng, M., Krag, A. Lingaard, K. 2014: The coexistence of two Ecolabels – The nordic Ecolabel and the EU Ecolabel in the Nordic Countries, Nordic Council of Ministers, Copenhagen.
- Nordic Council of Ministers (NCOM) 2012: Nordic Ecolabelling yearly report 2012, Copenhagen.
- Nordic Ecolabel: <http://www.nordic-ecolabel.org/>



Thøgersen, T. 2000: Psychological determinants of paying attention to eco-labels in purchase decisions: model development and multinational validation. *Journal of Consumer Policy* 23: 285–313.

UNOPS –The United Nations Office for Project Services 2009: A Guide to Environmental Labels – for Procurement Practitioners of the United Nations System. Copenhagen.

[https://www.unqm.org/Areas/Public/Downloads/Env\\_Labels\\_Guide.pdf](https://www.unqm.org/Areas/Public/Downloads/Env_Labels_Guide.pdf)

YouGov Norway AS 2013: Nordic Consumer Survey, Oslo.

