

## D1.2

# Report on existing international and EU SCS and B2B labels for feedstock and bio-based materials & products



UnitelmaSapienza  
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<b>NOVA</b>	Institut für politische und Ökologische Innovation GMBH
<b>BB</b>	Better Biomass
<b>BAM</b>	Bundesanstalt für Materialforschung und -prüfung
<b>RSB</b>	Roundtable on Sustainable Biomaterials Association
<b>ISEAL</b>	Iseal Alliance

## Abbreviations

<b>CEN</b>	European Committee for Standardisation
<b>EN</b>	European Standard
<b>EU</b>	European Union
<b>ILO</b>	International Labour Organisation
<b>ISEAL</b>	International Social and Environmental Accreditation and Labeling
<b>ISO</b>	International Organisation for Standardisation
<b>ITC</b>	International Trade Centre
<b>NACE</b>	Statistical Classification of Economic Activities in the European Union
<b>RED II</b>	Renewable Energy Directive (EU) 2018/2001
<b>SCS</b>	Sustainability Certification Schemes
<b>SDG</b>	Sustainable Development Goals
<b>STAR4BBS</b>	Sustainability Transition Assessment Rules for Bio-Based Systems
<b>STARProBio</b>	Sustainability Transition Assessment and Research of Bio-based Products



To boost a successful transition to a sustainable circular bio-based economy, the STAR4BBS project aims to achieve increased transparency on bio-based value chains by reaching greater harmonisation and effectiveness of existing Sustainability Certification Schemes (SCS) and labels through a new fit-for-purpose monitoring system. This deliverable reports one of the preliminary tasks undertaken to reach this goal, i.e. to analyse and select relevant SCS and B2B labels for bio-based feedstocks, materials and products (excluding food, feed, biofuels and bioenergy) to be monitored.

The methodological approach included, first of all, a review of scientific and grey literature, consolidated databases, websites and reports of standard-setting organisations and of existing international and EU SCS and B2B labels. Subsequently, knowledge sharing was implemented, especially with partners specifically involved with SCS and B2B labels, as well as experts from other EU-funded projects. The SCS and B2B labels identification process covered all relevant biomasses and sectors of bio-based value chains, including primary biomass sourcing from agriculture, forestry and aquaculture; secondary biomass from residues and waste; bio-based textiles; wood products and furniture; bio-based chemicals (e.g. cosmetics, detergents, bioplastics); construction and fair trade specific schemes potentially interesting for bio-based sectors.

As a result, more than 100 SCS and B2B labels were selected and analysed by applying a tailored analysis framework including, among others, schemes' governance structure, sustainability dimensions covered, economic costs and robustness,. As a second step, a set of criteria, in accordance with the project objectives, helped to obtain a reduced and more fit-for-purpose list of SCS and B2B labels. This list was validated and integrated through a co-creation workshop carried out to engage relevant stakeholders (e.g. policy makers, standard-setting organisations, NGOs, research institutions and value chain actors).

Overall, this report provides a better understanding of key characteristics of SCS and labels relevant for bio-based value chains. In addition the analysis allowed to narrow down the initial broad list of SCS and labels to a final number of 55, which will be tested by the new monitoring system.



The bioeconomy promotes the use of renewable resources as an alternative to fossil-based ones. Although this can strongly contribute to achieving sustainability goals, it also entails a number of risks and trade-offs outlined by the literature (Imbert et al., 2017; D’Amato et al., 2020). Accordingly, the sustainability of bio-based value chains should be thoroughly evaluated and, in this context, SCS and labels, aimed at verifying compliance with specific criteria, play a pivotal role both for public (procurers) and private purchases (Ladu & Morone, 2021). Within this framework, the overall goal of the Horizon Europe funded project STAR4BBS is to monitor in a constructive way the existing international and EU SCS and B2B Labels for bio-based feedstock, materials and products through the development of a new monitoring system (Box 1), with the final aim of maximising their potential in achieving sustainability targets, enabling at the same time greater traceability in global trade flows.

*Box 1. STAR4BBS collaboration with Sisters Projects*

#### **JOINT MONITORING SYSTEM**

The **STAR4BBS** project (Sustainability Transition Assessment Rules for Bio-Based Systems) is a Coordination and Support action, addressing the Horizon Europe call HORIZON-CL6-2021-ZEROPOLLUTION-01-07: *International and EU sustainability certification schemes for bio-based systems*. Two other projects – **HARMONITOR** (Harmonisation and monitoring platform for certification schemes and labels to advance the sustainability of bio-based systems) led by the SQ Consult, and **SUSTCERT4BIOBASED** (Sustainability Certification for Biobased Systems) led by the Stichting Wageningen Research, were also awarded to address the same call. The three sister projects work together in the implementation of different joint activities. One of them is the development of a Joint Monitoring System, of which the initial proposal, accepted by the EU officials in June 2023, is included in the Annex of D4.1 Concept of the monitoring system.

The goal of the three sister projects working together to develop a Joint Monitoring System (JMS) is to reduce confusion, divergences, and mistrust among stakeholders by creating a harmonized, overarching system. This would bring coherence to the space and clarity for policymakers driving the transition to a bioeconomy in the EU. Working together would allow the projects to build on each other's knowledge and experience, subjecting the JMS to a higher level of scrutiny, and maximizing the effective use of resources. The JMS would streamline stakeholder consultations and reduce fatigue while eliminating competition among the three projects and maximizing the synergies and impacts of the results. The creation of a JMS will require greater coordination, but it is believed to be feasible and worthwhile to work together to provide a more comprehensive and detailed tool, covering a wide range of bio-based sectors and products.

For the purpose of this deliverable, we will refer to the term “Monitoring System” because it provides recommendations generated within the implementation of STAR4BBS project activities. The deliverable will provide inputs to the development of the Joint Monitoring System.

In 2018 it was stated in the EU updated Bioeconomy Strategy that, to accelerate the development of a sustainable and circular bioeconomy, the bio-based sectors needed to be further advanced through the promotion of existing standards and labels and the



development of new ones specifically focused on bio-based value chains (European Commission, 2018). Efforts on the standardisation for bio-based sectors have been growing, with a number of standards, schemes and labels created in recent years, covering diverse aspects of the value chains. This calls for an in-depth mapping and analysis as a first step.

Against this background, this document presents the output of initial research of the STAR4BBS project, which consists of the review and analysis of existing international and EU SCS and B2B labels<sup>1</sup> relevant or potentially interesting<sup>2</sup> for biological feedstocks and for bio-based materials and products (excluding food, feed, biofuels and bioenergy). For doing so, it first identified more than 100 schemes and labels (123 in total) that were subsequently analysed, capturing relevant characteristics of each scheme/label including, among others, geographical coverage, type of feedstock, value chain stages covered, sustainability criteria, transparency and traceability mechanisms and economic costs. This process enabled to classify the schemes/labels by sectors and to establish the criteria for a pre-selection of the most relevant, reducing their number to a total of 52. Ultimately, this pre-selection was validated and integrated through a co-creation workshop which involved several stakeholders, generating a final list of 55 SCS and labels to be monitored by the new monitoring system.

The report is structured as follows: section 2 provides an overview of the current role of sustainability certifications and labels as well as associated challenges, especially in relation to circular bio-based value chains. Section 3 describes the methodological approach, while section 4 presents results and main findings of the analysis. Finally, conclusions and final remarks are reported in section 5.

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<sup>1</sup> It is worth noting that the identification and analysis of B2B labels included also B2C labels as, in many cases, this differentiation is not present. Therefore, the term “labels” used throughout the document refers to both.

<sup>2</sup> By this, we make reference to Schemes and labels that, although not entirely focused on bio-based feedstocks/materials and products, can provide important insights.





## 2 Sustainability Certifications and B2B Labels for bio-based systems: State of the Art

To overcome both environmental and socio-economic risks and assure a sustainable and circular bioeconomy, strong and reliable certification schemes and labels are needed (Ladu & Blind, 2017). This means that certification criteria and associated indicators should be relevant and verifiable in a transparent way, preferably assessed by a third party to avoid influence from the companies applying for SCS and labels (Tregidga et al., 2019).

Voluntary schemes include standards, certification schemes and labels (Marx et al., 2022). A certification scheme, for example, provides a written assurance from an independent body that the product, process, service, or system in question meets specific requirements (ISO, 2023). Most certification schemes have their own related labels. In particular, a label signals compliance against specific criteria with a particular emphasis on communicating with the end consumer and therefore it should be backed up by a trusted certification system (Dankers & Liu, 2003).

In terms of sustainability verification, environmental labelling has been gaining prominence as a way to boost the market uptake of bio-based products (Ladu & Blind, 2017). Type I environmental labelling, also referred to as ecolabelling according to ISO 14024 (Wurster et al., 2019), is a multi-criteria-based, third-party verified label awarded to products that fulfil environmental criteria based on a life cycle approach (Minkov et al., 2020). Examples of these are the EU Ecolabel, Blue Angel Ecolabel and the Nordic Swan Ecolabel.

Notably, in general, labels represent the basis for price (green) premium if the label has gained a certain level of credibility and trust (Rousseau & Vranken, 2013; Kempf & Syz, 2022; Feuß et al., 2022). This emerged clearly also in studies specifically focusing on bio-based products (e.g. Falcone & Imbert, 2018; Colasante & D'Adamo, 2021; Morone et al., 2021).

As mentioned above, standardisation efforts on bio-based products have been growing in recent years (Table 1). These standards have helped to ensure consistent terminology,

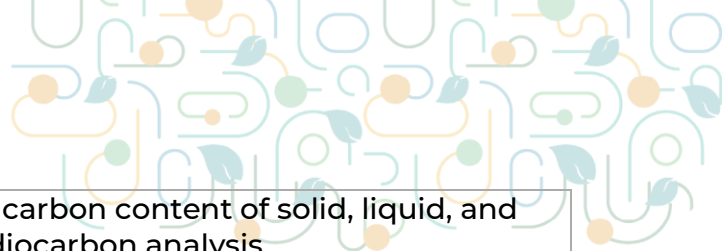
sampling, bio-based content monitoring (Singh, 2021) and have been found as a reference in a number of available SCS and labels analysed in this report<sup>3</sup>.

Table 1. Standards for the bio-based sector

Standard	Description
CEN/TR 16721	Bio-based products - Overview of methods to determine the bio-based content
CEN/TR 16957	Bio-based products - Guidelines for Life Cycle Inventory (LCI) for the End-of-life phase
EN 16766	Bio-based solvents - Requirements and test methods
EN 16575	Bio-based products. Vocabulary
EN 16640	Bio-based products. Bio-based carbon content. Determination of the bio-based carbon content using the radiocarbon method"
EN 16751	Bio-based products. Sustainability criteria <sup>4</sup>
EN 16760	Bio-based products - Life Cycle Assessment - It provides specific LCA requirements and guidance for bio-based products, excluding food, feed and energy, based on EN ISO 14040 and EN ISO 14044.
EN 16785-1: 2015	Bio-based products - Bio-based content - Part 1: Determination of the bio-based content using the radiocarbon analysis and elemental analysis
EN 16785-2:2018	Bio-based products - Bio-based content - Part 2: Determination of the bio-based content using the material balance method
EN 16848	Bio-based products - Requirements for Business-to-Business communication of characteristics using a Data Sheet
EN 16935	Bio-based products - Requirements for Business to Business-to-Consumer communication and claims
EN 16807:2016	Criteria and requirements of bio-lubricants and bio-based lubricants
EN 17228_2019	Plastics – Bio-based polymers, plastics, and plastic products. Terminology, characteristics and communication
EN 17351_2020	Bio-based products – Determination of the oxygen content using an elemental analyser
CEN/TR 17557:2020	Surface active agents – Bio-based surfactants- Overview on bio-based surfactants
NTA 8080-1	Sustainably produced biomass for bioenergy and bio-based products
ISO 16620	Biobased carbon content of plastic products, polymers, and additives

<sup>3</sup> These references to standards can be consulted in *Appendix A: Matrix of SCS and labels* in which the certification schemes and labels that make reference to the different existing standards are shown.

<sup>4</sup> It is worth mentioning that in 2020 a Working Group coordinated by UnitelmaSapienza and TUB, within the UNI Italian Standardisation Body, was created for the definition of a pre-normative document (Prassi di Riferimento - PdR) for the development of guidelines for an integrated assessment of the sustainability aspects of bio-based products based on EN 16751. The final aim is to update and provide more information on the criteria identified by the standard.



<b>ASTM D6866</b>	<b>Biobased carbon/biogenic carbon content of solid, liquid, and gaseous samples using radiocarbon analysis</b>
<b>CEN/TS 6137:2011</b>	<b>Plastics – Determination of biobased carbon content</b>

Source: Own elaboration based on CEN & CENELEC (2023); Ladu & Morone (2021); Ladu & Blind (2017); Falcone et al. (2017)

It is worth noting that, concerning the bioeconomy in Europe, mandatory sustainability criteria implemented through a specific regulation concern exclusively bioenergy sector regulated by the RED II (Vogelpohl et al., 2022). Currently, a broad range of voluntary SCS and labels are available to verify the different sustainability aspects in the bio-based value chains, even though with different levels of robustness (Bos et al., 2018; STAR-ProBio, 2018; Majer et al., 2023). There are indeed a number of different challenges due to the growing complexity of the verification mechanisms, especially when biological feedstocks are imported from third countries. As emphasised by Majer et al. (2018), the structure and the aspects they certify can greatly vary arising issues of effectiveness, including the risk of greenwashing (Global Ecolabelling Network, 2022; Van den Oever et al., 2017). This is why the literature highlighted the importance of including a life cycle approach in the development of sustainability criteria for bio-based products within SCS and labels (Cordella & Kaps, 2018) even though related high economic costs should be considered (Morone & D’Amato, 2019). Weaknesses related to specific bio-based products have also been pointed out: regarding bioplastics, Rosenboom et al. (2022) argue that there are a great number of certifications and labels to identify biodegradable materials, but that monitoring and harmonisation is needed to avoid confusion particularly among converters and consumers.

Another interlinked critical aspect relates to the sustainability dimensions covered by SCS and labels, as most of them are strongly focused on environmental evaluations, neglecting socio-economic aspects (Ladu & Morone, 2021). Moreover, an additional point to be considered is the risk for a ‘race to the bottom’ since “the more complex and ambitious schemes, with a higher level of assurance, risk losing market shares to less ambitious schemes with lower levels of assurance.” (Majer et al., 2023, p. 6).

In conclusion, due to the current proliferation of SCS and labels seen as a “jungle” by producers and consumers, a greater harmonisation is expected to play a pivotal role to facilitate, on the one hand, the companies to select the right SCS and labels and, on the other hand, consumers to make better-informed choices (Bornhauser et al., 2023).

### 3 Methodological Approach



A 3-step methodology, (Figure 1) was adopted for firstly identifying and successively validating preselected SCS and labels. This section describes in detail the activities carried out for each step.

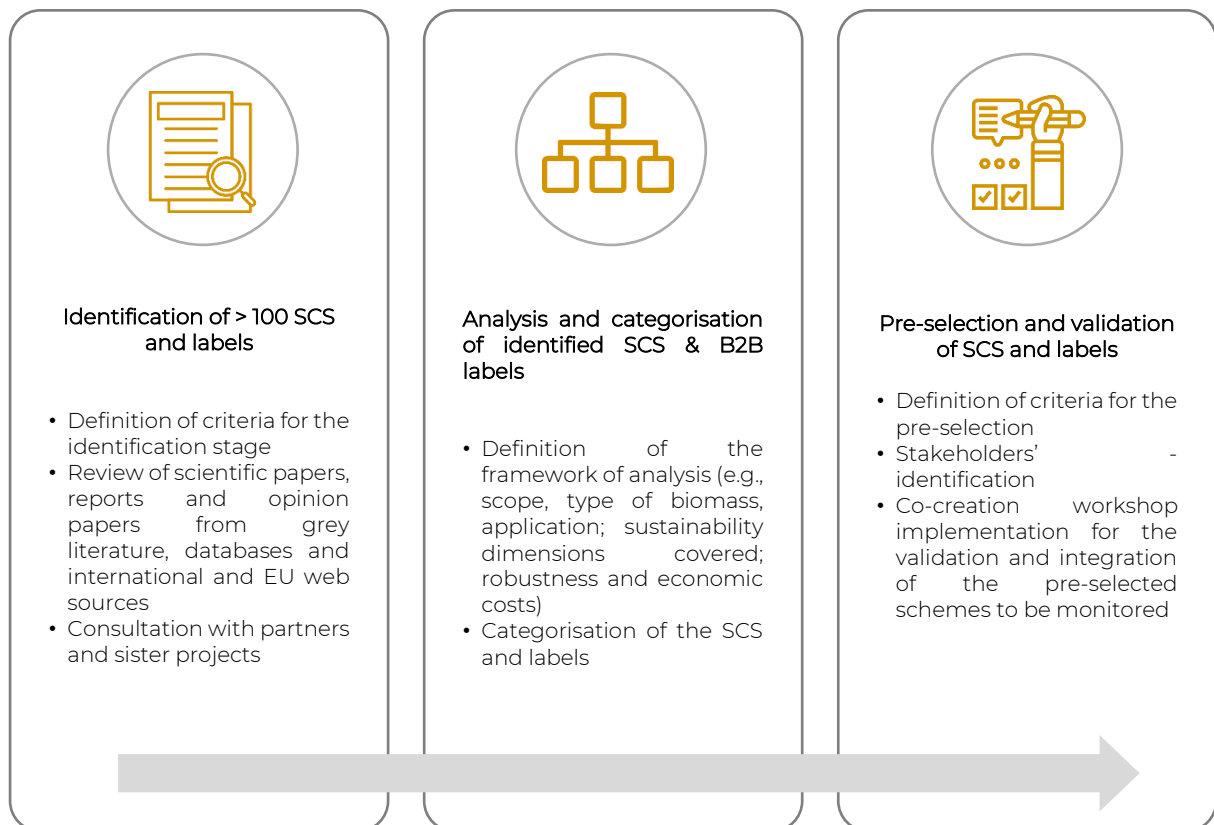


Figure 1. Methodological approach overview

#### 3.1 Process for the identification of >100 SCS and B2B labels

The identification and analysis of existing SCS and B2B labels relevant or potentially interesting for bio-based systems was based on a twofold approach. Firstly, the findings emerged from the literature review (section 2) allowed to gain a more precise picture of the role that SCS and labels are playing, as well as some relevant shortcomings to be considered. Secondly, before starting to implement a desk analysis to identify the SCS and labels, a set of criteria was defined based on priorities emerging from the papers and reports reviewed (section 2) and on STAR4BBS specific goals:

- All primary and secondary biomass is considered, excluding schemes and labels specific for food/feed and biofuel/bioenergy sectors. The feedstock types include primary biomass: agricultural organic and non-organic (including oils such as



palm and argan), forestry, flowers and plants, aquatic biomass, organic and non-organic fibre crops and, secondary biomass: all bio-circular including industrial residues, i.e. bio-based feedstock derived from waste and residues of biological origin from agriculture, forestry, fisheries and aquaculture as well as wastes from bio-based industries (e.g. food) and the organic fraction of municipal waste (End-of-life)

- Relevant sectors for the industrial bio-based value chains are included
- Global coverage is prioritized particularly when the biomass is produced outside the EU and imported into Europe
- All life cycle stages are considered.

By following these criteria, a desk analysis was conducted by reviewing scientific papers, reports pertaining to the grey literature and international and EU databases. Table 2 shows a summary of consulted sources.

*Table 2. Sources for the identification of >100 SCS and B2B Labels*

Category	Source
Peer-reviewed papers <sup>5</sup>	Singh, A., et al. (2021). Policy review for biomass value chains in the European bioeconomy.
	Bracco, S., et al. (2019). Analysis of standards, certifications and labels for bio-based products in the context of sustainable bioeconomy.
	Majer, S., et al. (2018) Gaps and research demand for sustainability certification and standardisation in a sustainable bio-based economy in the EU.
	Ladu, L., & Blind, K. (2017). Overview of policies, standards and certifications supporting the European bio-based economy.
	Suttie, E., Hill, C., Sandin, G., Kutnar, A., Ganne-Chédeville, C., Lowres, F., & Dias, A. C. (2017). Environmental assessment of bio-based building materials.
Reports from the grey literature	Bornhauser et al., (2023). Sustainability standards and labels. Navigating the jungle: How to demonstrate purpose and create value by selecting the right sustainability standards and labels.
	CEN and CENELEC. (2022). Work Programme
	Global Ecolabelling Network (2022). Ecolabels and their role in mitigating climate change.
	CEN and CENELEC (2021). Annual Report.
	European Commission (2021). Study on Certification and Verification Schemes in the Forest Sector and for Wood-based Products.

<sup>5</sup> In this table we make reference only to the papers that included a list of specific SCS and labels relevant or interesting for bio-based systems.



	IEA Bioenergy (2018). Standards and Labels related to Biobased Products: Developments in the 2016-2018 triennium.
	EEA Report (2018). The circular economy and the Bioeconomy: Partners in Sustainability.
	NL Agency (2011). How to select a biomass certification scheme?
<b>Certifications' related web databases, websites, and monitoring systems</b>	ITC Standards Map ( <a href="https://www.standardsmap.org/en/home">https://www.standardsmap.org/en/home</a> )
	Ecolabel Index ( <a href="https://www.ecolabelindex.com/">https://www.ecolabelindex.com/</a> )
	Global Ecolabelling Network ( <a href="https://globalecolabelling.net/">https://globalecolabelling.net/</a> )
	Siegelklarheit Label Directory ( <a href="https://www.siegelklarheit.de/">https://www.siegelklarheit.de/</a> )
	InnProBio ( <a href="https://www.biobasedconsultancy.com/">https://www.biobasedconsultancy.com/</a> )
	A.I.S.E. -Bio-based materials in the Detergents Industry ( <a href="https://www.aise.eu/our-activities/sustainable-cleaning-78/circular-economy/bio-based-materials.aspx">https://www.aise.eu/our-activities/sustainable-cleaning-78/circular-economy/bio-based-materials.aspx</a> )
	ISEAL Alliance ( <a href="https://www.isealalliance.org/">https://www.isealalliance.org/</a> )
<b>Deliverables from other EU-funded projects</b>	STAR-ProBio (2018), STAR-ProBio Deliverable D9.2, Recommendations for Standards and Criteria for eco-labels for bio-based products.
	STAR4BBI (2018) STAR4BBI Deliverable D4.3 Report on implementation for creation of new or revised standards.

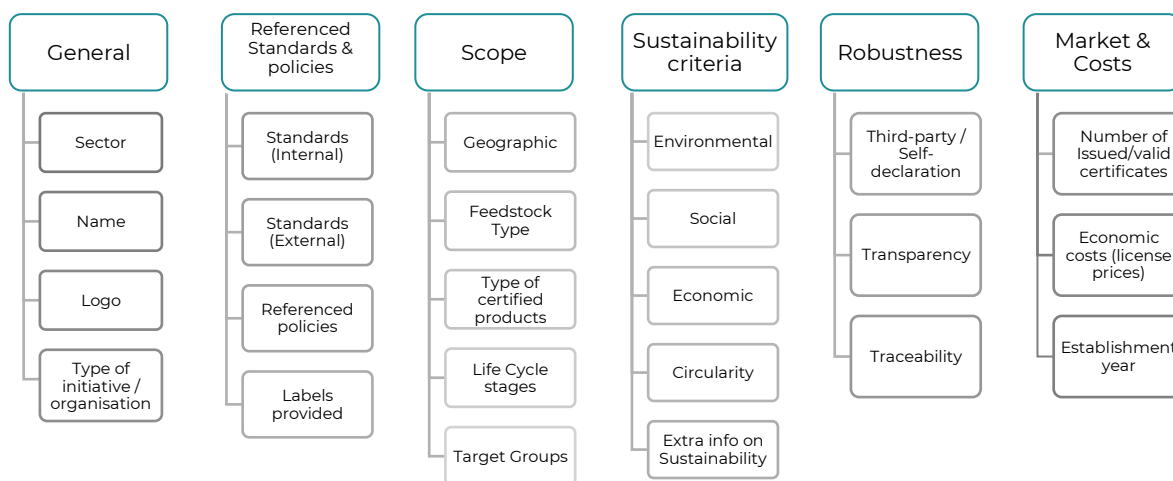
The process of identification and analysis also covered schemes and labels that consider only specific aspects interconnected with sustainability (e.g. it included SCS and labels that verify the end-of-life stages such as biodegradability and compostability or the bio-based content). Moreover, it is worth mentioning that during this step, three prominent examples of certification schemes in the bioenergy, biofuel, food and feed sector were also included (i.e. Sustainable Biomass Program, GLOBALG.A.P.) since, even though they certify biomass and/or bio-based products for purposes which are out of the scope of this project, they can be useful to learn from their experience and comprehensiveness in terms of sustainability aspects they include (Bracco et al., 2019).

In this way, a preliminary list including more than 100 SCS and labels was obtained and was shared with partners with specific expertise on certification schemes such as the International Social and Environmental Accreditation and Labelling Alliance (ISEAL) and the Roundtable on Sustainable Biomaterials (RSB). Additionally, a fruitful collaboration was established with sister projects (see Box 1), also involving a member from the International Trade Centre (ITC) Standards Map.



### 3.2 Analysis and categorisation of >100 SCS and B2B Labels

The >100 SCS and B2B labels included in the preliminary list were analysed by creating a matrix including a range of specific categories examining different aspects to capture most relevant information (Appendix A<sup>6</sup>). The categories considered are shown in Figure 2.



*Figure 2. Aspects analysed in the identified SCS & B2B labels*

The first category “General” includes information on the scheme’s application sector/s, and the scheme owners’ type of organisation (i.e. non-profit organisation, government body, multi-stakeholder initiative, private organisation).

The second category “Referenced Standards & policies” indicates when the schemes follow a standard in the certification process, differentiating between the internal standards (designed by the organisation) and the external standards (designed for example by the International Organisation for Standardisation [ISO] and the European Committee for Standardisation [CEN]). The referenced policies aspect specifies if the scheme refers to specific policies and regulations. It also registers information to which international conventions or agreements the scheme refers, either as guidelines or for establishing its principles (i.e., EU Organic Regulation, ILO conventions, SDGs and RED). In addition, this category also includes information regarding the labelling options that

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<sup>6</sup> In addition to the information captured in the matrix, as it will also be explained in footnote n.7 a linked descriptive document was compiled to provide more specific information about the sustainability criteria of SCS and labels.





the scheme provides: business-to-business (B2B), business-to-consumer (B2C) and/or on-product marks and claims.

The third category “Scope” specifies the geographical area (countries or regions in which the scheme is applied), the feedstock type (type/s of biomass) and the type of product(s) it certifies. Moreover, this category identifies which life-cycle stages are covered (e.g. production, manufacturing, distribution, consumption) and the scheme’s target groups.

With reference to the “Sustainability Criteria” category, in line with complementary activities undertaken within the project<sup>7</sup>, the following specific aspects were considered:

- For the environmental pillar: climate change, air, water, soil, hazardous substances, biodiversity, and natural resources
- Regarding the social pillar: socio-economic categories and related indicators (e.g. working conditions, occupational health and safety, land use rights, contribution to employment) making reference to different stakeholders
- Concerning the economic pillar: profitability, long-term investment, economic risks and productivity
- As for the circularity dimension: products and materials design, production processes, end-of-life stage and circular business model.

In the matrix, a cross was added when at least one of these criteria was considered by the SCS/Label<sup>8</sup>.

In relation to the “Robustness” category, three main aspects were analysed: type of verification, transparency and traceability. The type of verification describes if the scheme works under a third-party or a self-declaration process. According to ISEAL (2021), transparency implies making important information publicly available and easily accessible, hence, our analysis indicates if the information required for the certification process is publicly available and if the scheme has a valid certificates database. With reference to traceability, ISO (1994) defines it as the ability to verify the history, location, or application of an item using documented recorded identification. Therefore, for the

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<sup>7</sup> More information can be found in STAR4BBs Deliverable D3.1 “Report on Sustainability Indicators for the Monitoring System based on Life Cycle Assessment”.

<sup>8</sup> As mentioned in footnote n.5 a separate document was created in order to include all relevant information regarding the specific sustainability criteria used by the scheme/label. This document is not present in the appendix, but it could be available on request.



analysis of the identified SCS and labels, information regarding their value chain traceability mechanisms as well as their Chain of Custody (CoC) procedures were captured.

Finally, the last category of the matrix “Market & Costs” captured available information related to economic costs of adopting SCS and labels, since an important objective of the STAR4BBS project relates to the assessment of all costs and the feasibility of SCS and labels. This category also registers available information on the number of issued/valid certificates (when available) and other important remarks to understand the schemes’ market relevance.

The adoption of this framework of analysis allowed to gain a precise picture on more than 100 SCS and labels characteristics. Such information enabled to group this long list into 10 major categories, following an adapted approach relying on Ronzon & M'Barek (2018) which makes reference to the Statistical Classification of Economic Activities in the European Union (NACE)<sup>9</sup>. These categories are:

- I. SCS & Labels strongly/or entirely tailored to bio-based feedstocks and/or materials and products
- II. Other interesting SCS & ecolabels covering different types of products (not specifically tailored to bio-based)
- III. Primary Sector related -Agriculture- (NACE A01)
- IV. Primary Sector related -Forestry- (NACE A02)
- V. Primary Sector related -Aquaculture- (NACE A03)
- VI. Manufacture of bio-based textiles (NACE C13, C14 & C15)
- VII. Manufacture of Wood Products & Furniture (NACE C16 & C31)
- VIII. Manufacture of bio-based chemicals excluding biofuels (NACE C20)
- IX. Construction (NACE F41, F42 & F43)
- X. Fair Trade

### 3.3 Process for the pre-selection of SCS & B2B labels

After the >100 SCS & labels were identified and analysed, the criteria for selecting a lower number of SCS and labels were defined according to project’s priorities also in line with

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<sup>9</sup> This approach is used by many other scholars and the European Commission's Joint Research Centre (JRC). The full list of categories can be found at: <https://nacev2.com/en>



EU goals for the bioeconomy (European Commission, 2022). This resulted in 52 pre-selected schemes and labels. The established criteria were:

- Policy sustainability priorities identified during the 1st Co-creation workshop undertaken by STAR4BBS<sup>10</sup>
- Relevance of the sustainability dimensions covered by the schemes
- STAR4BBS value chain selection including at least 10 biological feedstocks and 5 bio-based products related value chains<sup>11</sup>
- Relevant schemes and labels referenced in the existing monitoring systems reviewed within the project
- Robustness of the SCS and labels
- Scheme usage and availability of information on economic costs.

It is worth noting that in order for a scheme or label to be included in the pre-selection list, at least two of these criteria needed to be met.

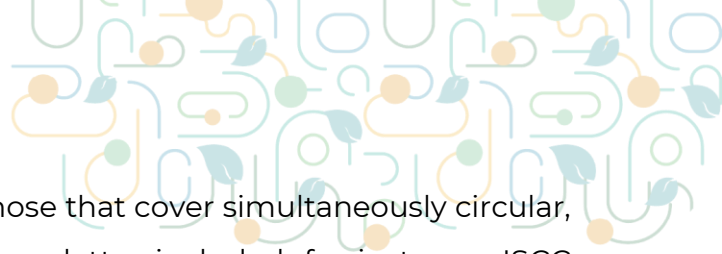
With reference to policy priorities, we pre-selected schemes and labels addressing prioritized quantitative and qualitative policy targets. For example, one of the prioritised targets refers to “reduction on the use of fossil-based fertilisers and their associated risks”. Therefore, schemes certifying organic biomass and those including criteria on sustainable agriculture were pre-selected such as GLOBALG.A.P. and IFOAM organic. Another case is represented by the targets related to “increasing the sustainability of products in the EU starting from its design/inception” and “ensuring the sustainability of renewable bio-based materials as well as the efficient performance of products, recyclability and environmental impact”. Schemes linked to these policy targets are those that certify through a life cycle and/or those that prioritise circularity. Accordingly, we pre-selected Cradle-to-Cradle and ecolabels such as EU ecolabel, Blue Angel and Nordic ecolabel.

As for sustainability dimensions covered, in line with partners engaged with the identification of sustainability indicators (to be included in the new monitoring system), we paid particular attention to the way in which schemes and labels approach the

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<sup>10</sup> The first STAR4BBS co-creation workshop was held in January 2023, and it focused on the prioritisation of sustainability policy targets for certification schemes and labels. Details can be found at: [STAR4BBS hold its first stakeholders' consultation workshop - STAR4BBS](#)

<sup>11</sup> The analysis of biomass flows is an ongoing activity that will also contribute to the selection of bio-based feedstocks and value chains that will be further analysed by the monitoring system. The work presented in this report will also inform these activities. This might help to refine the focus of some specific schemes.



different aspects of sustainability, especially to those that cover simultaneously circular, environmental and socio-economic aspects. These latter included, for instance, ISCC Plus, RSB for Advanced Products and FSC.

Correspondingly to STAR4BBS value chains selection, the information derived from the analysis of biomass streams coming from parallel activities within the project (volumes of bio-based feedstocks, materials, and products in international trade flows) contributed to include in the pre-selection list schemes linked to relevant biomasses such as palm oil, sugarcane and maize, as well as to other intermediate bio-based products focused on use of secondary and end-of-life biomass (e.g. Bonsucro, RSPO).

Thanks to the collaboration with partners involved with the development of the monitoring system<sup>12</sup>, attention was devoted to SCS and labels referenced in the reviewed existing monitoring systems, as described in D1.4 of the STAR4BBS project.

In addition, we made sure that the most robust schemes emerged from the analysis were included. In this regard, to understand how robust a scheme is, third party verification, mechanisms for traceability, biomass coverage (multiple, single crops, secondary biomass), as well as verification of the EoL were taken into account. Moreover the analysis indicates if the scheme is an ISEAL's Code Compliant member, which guarantees the implementation of codes of good practice in Standards-setting, assurance and impacts. Beyond the already mentioned schemes such as ISCC plus and RSB also schemes such as the Green Gold Label (GGL) and Better Biomass were included.

Finally, thanks to inputs from the project's activities focused on assessment of costs and feasibility and usage of SCS and labels, we also paid particular attention to schemes and labels reporting in a transparent way relevant information for these aspects.

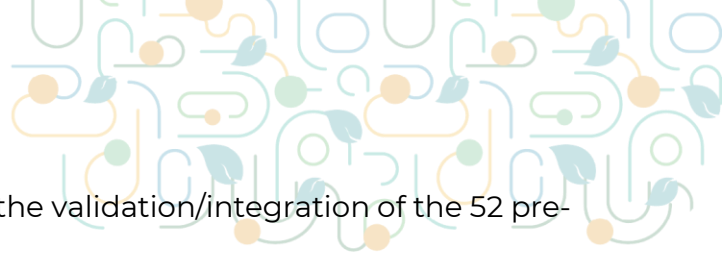
### 3.4 Co-creation Workshop for the validation of the pre-selection of the 52 SCS and B2B Labels

The purpose of the 2<sup>nd</sup> Co-creation Workshop<sup>13</sup> was to involve a broad range of stakeholders to present and validate adopted approaches and intermediate results of

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<sup>12</sup> For further information see Deliverable D1.4. Report on existing monitoring schemes, with recommendations for new system.

<sup>13</sup> Details of the workshop can be found at: <https://star4bbs.eu/2023/05/10/2nd-star4bbs-co-creation-workshop-online/>



the STAR4BBS project including, among others, the validation/integration of the 52 pre-selected SCS and labels (see Appendix B).

The different categories of stakeholders engaged in the workshop were:

- Intergovernmental organisations
- EU Policy-makers
- Standard setting, labelling, certification organisations and certification bodies
- Academia and research institutions
- Value chain actors
- Civil society organisations and end consumers
- Other EU funded projects

A total number of 27 external stakeholders actively participated in the planned co-creation activities<sup>14</sup>. It is worth mentioning that prior to the workshop, the registered participants received a list of the pre-selected SCS and labels, including a brief description of each scheme/label in order to provide valuable information in advance (Appendix C).

The activity started by presenting the criteria (Section 3.1) adopted for the identification of the initial list of >100 SCS and labels and the aspects analysed in the matrix. Subsequently, the criteria used for the pre-selection of the 52 most relevant SCS & labels for the project objectives were shown (Section 3.3). After this introduction, participants were asked to be involved in an exercise to validate and integrate the list of the pre-selected schemes by answering the following questions:

- *Do you disagree with any of the pre-selected SCS and labels? If any, please write it*
- *Are there any missing SCS and labels in this pre-selection that you consider relevant? If any, please write it*

Specifically, by using the *Mentimeter Digital Platform*, these questions were asked for each of the 10 categories of SCS and labels (see section 4.1). Only in the case of category VI, i.e., bio-based textiles, due to the large number of potentially interesting SCS and labels for the sector, participants were asked to prioritise the pre-selected schemes.

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<sup>14</sup> Also the Joint Advisory Board was involved in this activity.



## 4 Results and final list of selected SCS and B2B Labels

### 4.1 Workshop results and validation/integration of the final list

As a result of stakeholders' involvement, a validated list for each category was obtained. This section will show each category with the corresponding SCS and labels<sup>15</sup>

Regarding the first category "SCS & labels strongly/or entirely tailored to bio-based feedstocks and/or materials and products" (

Figure 3), it was suggested to integrate from the list the Sustainable Biomass Program (SBP) certification. In addition, it is worth mentioning that, labels such as OK compostable, OK biodegradable, DIN Compostable and Seedling were firstly considered as part of this category. However, after the feedback collected from stakeholders, these schemes were moved to a different category since, even though they can cover bio-based products, they could also apply for fossil-based products since they do not make reference to bio-based content.

### SCS & labels strongly/or entirely tailored to bio-based feedstocks and/or materials and products



Figure 3. SCS & Labels for Category I

<sup>15</sup> It should be noted that from this pre-selection, labels associated to specific certification scheme (e.g. FSC recycled, mixed, 100%) were not explicitly included as they are part of the corresponding certification schemes. However, they are described in Appendix A.

Interestingly, as shown by the figure the USDA Certified biobased product was validated for the selection since, although focused on the USA market, it represents a particularly international relevant term of reference.

Regarding the second category “Other interesting SCS & ecolabels covering different types of products (not specifically tailored to bio-based products)” (Figure 4), as mentioned above, labels related to compostability and biodegradability were moved to this category. The input from stakeholders also provided the opportunity to clarify that there is awareness about the fact that these schemes consider just particular aspects related to the End-of-life stage and thereby they will be evaluated by the monitoring system in a specific way. In addition, it was also pointed out by participants that there could be some SCS and labels only focused on specific sustainability dimensions and this could have an impact on how they perform in the overall evaluation. As a result, it has been agreed that this aspect will be taken into account while developing the monitoring system.

## Other interesting SCS & ecolabels covering different types of products (not specifically tailored to bio-based products)



Figure 4. SCS & Labels for Category II

Secondly, one participant suggested deleting the China Environmental Labelling while other stakeholders provided insights on the pre-selection criteria. Specifically, the suggestion focused on evaluating the applicability in the EU market and to consider the possibility of excluding those schemes that operate solely outside the EU. However, since





the STAR4BBS project aims to also consider international SCS and labels to learn from them, some international schemes have been included since they can be an important reference for equivalent EU schemes and labels. Nonetheless, for later stages of the project, this aspect will be carefully reconsidered.

Concerning the Primary sector-related: Agriculture (NACE 01), participants confirmed the relevance of the selected schemes and labels but also suggested reincorporating the GlobalG.A.P. from the preliminary list of 100 SCS and labels, as shown in Figure 5.

### Primary Sector related –Agriculture- NACE A01



Figure 5. SCS & Labels for Category III:: Primary Sector related –Agriculture-

Regarding Forestry (NACE A02) the selected schemes have been confirmed while regarding Aquaculture (NACE A03), it was suggested also to reconsider the Friend of the Sea scheme. However, after reviewing the suggested scheme, it was decided to not include it as most of the certifications granted by this scheme are mainly focused on the certification of food and feed (out of the main scope of the project). Figure 6 shows the selected schemes for Forestry and Aquaculture sectors.

Primary Sector related –Forestry-  
NACE A02



Primary Sector related –Aquaculture-  
NACE A03



Figure 6. SCS & Labels for Primary Sector related: Forestry and Aquaculture

For the bio-based textiles sector, participant inputs helped to prioritise the pre-selected schemes as shown in Figure 7.

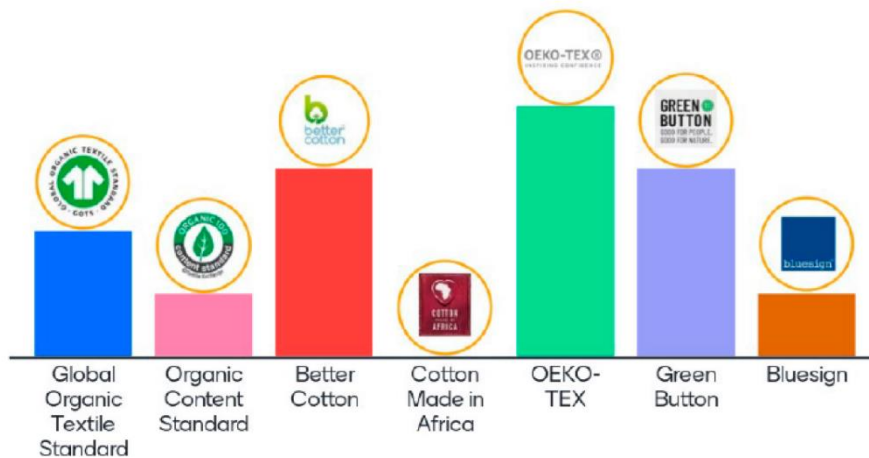


Figure 7. Results on the prioritisation of SCS & Labels for bio-based textiles

It is worth mentioning that although the prioritisation exercise conducted for SCS and Labels related to textiles was meant to reduce their number, it has been agreed to include them all for this step. In particular, the decision of keeping also the “Cotton Made in Africa” scheme relates to STAR4BBS project objectives since, as mentioned above, it is also a priority to include international schemes and labels. Based on a further analysis, we concluded that this scheme represents a relevant framework for imported bio-based feedstock as it provides criteria tailored to African countries.



Figure 8 shows the validated selection of schemes for the sectors of wood products and furniture (NACE C16 and C31) and the bio-based chemicals (NACE C20). In both cases all schemes were confirmed. In addition, the A.I.S.E charter for sustainable cleaning scheme was added after determining its importance for the bio-based chemicals sector.

## Manufacture of Wood Products & Furniture (NACE C16 & C31)



## Manufacture of bio-based chemicals NACE C20



Figure 8. SCS & labels for Manufacture of Wood Products & Furniture and Bio-based Chemicals

For the construction sector (NACE F41, F42 & F43), the selected schemes were confirmed (Figure 9).

## Construction (NACE F41, F42 & F43)



Figure 9. SCS & labels for Category IX: Construction Sector

For the category of Fair Trade, the selected schemes were confirmed (Figure 10)



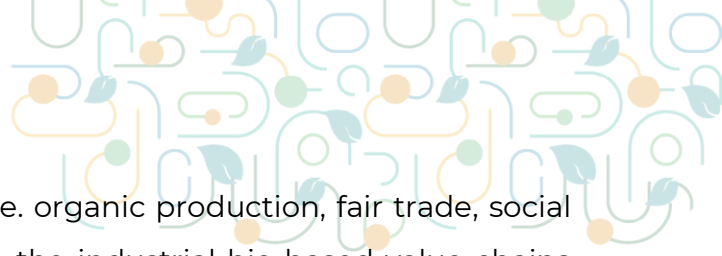
*Figure 10. SCS & labels for Category X: Fair Trade Specific*

In the end, the validated and integrated list of SCS & labels encompasses a total of 55 schemes as it was possible to confirm the importance of the pre-selected schemes and to integrate missing relevant ones.

## 4.2 Findings from the analysis of SCS & B2B labels

The validated final list consists of different types of certification schemes and labels including, on the one hand, certification schemes specifically or partially designed for certifying biomass and bio-based materials and products. On the other hand, the list includes other schemes/label that, although are not designed specifically for bio-based products, become relevant as they are focused on specific sectors of the bioeconomy (e.g. agriculture) and and/or due to the sustainability criteria or other aspects they establish for the bio-based components of different products. Example of this latter are the multi-issue ecolabels, which, by using a life-cycle approach, evaluate the environmental performance of different types of products, contributing, in this way, to evaluate the compliance of sustainability criteria of the bio-based portions of several products. Another example is the EoL certification schemes which can provide valuable guidelines for bio-based products by providing guidelines for the products' end-of-life management.

The analysis also showed how the schemes that are designed specifically for bio-based products are generally more comprehensive, as they cover several of the analysed parameters. Among others, they offer the possibility of certifying a wide range of agricultural raw materials and biological residues. In addition, these schemes have incorporated different systems for chain of custody to facilitate the traceability along the value chains. These characteristics help to facilitate their adoption and use across the different and the interlinked bio-based value chains, as it has been indicated in the matrix (Appendix A, column L and M). On the other hand, schemes that have a narrow



focus consider specific aspects and/or sectors (i.e. organic production, fair trade, social aspects) eventually making their applicability in the industrial bio-based value chains more challenging. Nonetheless, the fact that the different certification schemes cover with great detail different aspects, could potentially guide the monitoring system development towards a greater comprehensiveness in the assessment of the effectiveness SCS and labels applicable to bio-based systems.

Another finding from the analysis relates to the different sustainability dimensions covered by the analysed SCS and labels (Appendix A, columns P-T). The environmental aspects, followed by the social ones were the most frequent monitored criteria. In contrast, the economic aspects as well as the circularity ones are less present throughout the different schemes.

In terms of the circularity, which can be considered the most recent integration to the sustainability concept, some schemes are starting to incorporate these aspects as an integral part of the certification process by establishing criteria to integrate a percentage of recycled and renewable content in a product or by certifying different circular feedstocks. Other certification schemes are following circularity principles for establishing criteria on products' packaging through the integration of recycled and post-consumer materials.

Regarding the geographical scope of the SCS and labels, it was observed that some schemes rely on the minimum country-level regulations or national legal systems. Hence, these certification schemes follow different criteria depending on the country in which the product is certified, making difficult to have homogeneous international criteria.

Concerning the criteria related to bio-based products and/or components, it was observed that only a small number of schemes make explicit reference to these bio-based components requirements. With the exception of the schemes strongly or entirely tailored to bio-based feedstocks and products, only a limited number SCS and labels explicitly incentivise the use of bio-based products (e.g. LEED). Some others specify the minimum contents of bio-based materials in a product (e.g. Nordic Ecolabel sanitary products and food packaging).

In addition, the analysis also showed important facts regarding the way in which the SCS and labels for the bio-based sector are changing. One of these transformations can be observed on the efforts that different certification schemes have done for increasing the

mutual recognition making the process of certification easier for producers and manufacturers, particularly when they seek to certify different parts of the value chains under a variety of schemes (i.e. from biomass sourcing to final product commercialisation). A significant example is the use of meta-label systems (e.g. Green Button for the textile sector) which recognises certification schemes as valid to guarantee the fulfilment of sustainability criteria through different certifications without the need of adding an additional verification step.

Moreover, digitalisation is also helping to facilitate the implementation and improvement of traceability mechanisms for avoiding fraud or errors in the supply chain sustainability. Certification schemes have started to request the adoption of digital tools to track and trace certified biomass and bio-products, contributing to trustworthiness of the SCS and labels. Digital platforms are also being used to target providers, and other supply chain actors as well as for submitting claims when issues or concerns about a certification procedure arise throughout the value chain.



## 5 Conclusions and final remarks

SCS and B2B labels are playing an important role to achieve the transition to a circular and sustainable bioeconomy. However, different challenges have emerged in the development and implementation of voluntary schemes and a way to foster their effectiveness, harmonisation and transparency is needed.

This report described the work carried out for identifying, analysing and selecting a set of SCS and labels relevant for bio-based feedstocks, materials and products to be monitored by a new monitoring system.

The methodological approach encompassed three main stages: first, the review of sources of interest including academic publications, grey literature reports and specialised databases; secondly, the identification and analysis that included more than 100 SCS and labels potentially relevant for bio-based value chains according to criteria gathered from the literature and the project objectives; and thirdly, the implementation of a final list of 55 SCS and labels validated and integrated together with relevant stakeholders.

Notably, the methodological approach devoted particular attention also to a range of different tools allowing to obtain direct information, including tacit knowledge, from relevant stakeholders. First, by working closely with partners engaged with standard-setting organisations. Secondly, during the validation of the pre-selection process, through the implementation of a co-creation workshop that involved a total of 27 participants including policymakers, standard-setting organisations and certification bodies, NGOs, academics and research institutions, value chain actors, civil society organisations and experts working in other EU-funded projects. In particular, the participants also provided suggestions of additional SCS and labels that allowed us to enrich the list. This contributes to reaching the aim of working together with stakeholders throughout the entire development process of the new monitoring system.



In conclusion, some relevant inputs for the monitoring system derived from the analysis are:

- To consider that some schemes focus only on one life-cycle stage (i.e. EoL) or one sustainability aspect (i.e. social), thereby impacting their overall performance if not taken into account, even when the scheme is strong on that specific domain. For this, a creation of different categories or modules within the monitoring system can help to account for these differences among the SCS and labels.
- The environmental aspects are the most frequently present sustainability criteria in the SCS and labels, hence, the monitoring system needs to pay particular attention to this matter to foster the integral adoption of sustainability aspects.
- To consider that circularity principles are not yet well-developed in most of the SCS and labels. In some cases, they are indirectly established, or they focus on simple components of the bio-based products (e.g. packaging). However, the bioeconomy sector needs to be also circular for achieving an integral adoption of sustainability. In this respect, circularity criteria still need to be further developed and encouraged.
- The geographical scope of the schemes can cause some variations across different countries when they rely on minimum country-level regulations such as the national legal systems. Hence, this aspect needs to be carefully reviewed. An option for this is that the monitoring system works based on minimum requirements. Another tool that could help to offset these differences is the development of complementary modules (add-ons).
- Explicit requirements for bio-based products and/or components appear only in a small number of schemes. The monitoring system can identify a way to categorise and display how the SCS and labels are evaluating criteria linked to bio-based value chains to make clear how the adoption of one certification or label contributes to the circular bio-based systems.
- The adoption of digital tools has been significantly increasing within the certification processes to improve the traceability mechanisms. Hence, the visibility of these tools and the performance of them is an additional characteristic that the Monitoring System can take into account for the assurance of the effectiveness of the SCS and labels.



In summary, the information in this report lays the groundwork for further activities to be developed by the STAR4BBS project, including the most relevant SCS and labels to be monitored.

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## Appendix A. Matrix of analysis of SCS and B2B Labels

*This Appendix is provided as supplementary material.*

### 2<sup>nd</sup> Co-Creation Workshop Agenda – May 26<sup>th</sup>, 2023

Partners: UNITELMA, TUB, ISEAL, USC

#### GENERAL AIM

This co-creation workshop aims to discuss, improve and validate adopted approaches and intermediate results of the project, with relevant stakeholders. The ultimate goal is to analyze insights emerging from invaluable discussions that will be incorporated into project outputs.






#### SPECIFIC OBJECTIVES

1. **Discussion on system-level characteristics and monitoring evaluation structure:** we will propose system categories and potential evaluation structures for the development of the new monitoring system, building on the analysis of identified existing monitoring tools.
2. **Discussion on sustainability indicators:** we will present the results of the identified key sustainability areas and collect inputs on their validation.
3. **Validation/integration of the 50 pre-selected Sustainable Certification Schemes (SCS) and labels:** we will present the pre-selected list of 50 SCS and labels (and related selection criteria), asking the participants for feedback.

#### AGENDA

TIME	TITLE	SPEAKERS
10.00 – 10:15	<b>Welcoming to the Workshop and introducing the STAR4BBS project</b>	<b>Luana Ladu</b> (STAR4BBS Project Coordinator) TUB
10.15 – 10.55	<b>Validation of system categories and potential monitoring evaluation structure</b>	<b>Nikola Matovic, Maira Devisscher, Luana Ladu</b>  TUB & ISEAL
10.55 – 11.30	<b>Key sustainability areas prioritization</b>	<b>Sara Lago Oliveira,</b> USC
11.30 – 11.40	<b>Coffee Break</b>	
11.40 – 12.20	<b>Validation of pre-selected SCS &amp; labels</b>	<b>Enrica Imbert, Ana Encino</b> UNITELMA
12:20 – 12:30	<b>Q&amp;A</b>	<b>All participants</b>






**List of pre-selected SCS & labels**

<b>1. SCS strongly/or entirely tailored to bio-based feedstocks and/or materials and products</b>			
<b>Name</b>	<b>Logo</b>	<b>Description</b>	<b>Type of certified products</b>
ISCC PLUS		ISCC PLUS certification is a scheme that is applicable for the bioeconomy and circular economy for food, feed, chemicals, plastics, packaging, textiles and renewable feedstock derived from a process using renewable energy sources. ISCC PLUS covers the same certification requirements as ISCC EU but can be customised to meet the needs of different markets or specific applications. It provides the option to adapt ISCC PLUS certificates to specific market requirements through voluntary add-ons.	Circular and bio-based materials such as plastics, chemicals as well as additional technical substances and other areas where the practical use of biomass exists. ISCC PLUS is becoming a globally recognized standard for the recovery of waste and residues that provide the feedstocks for circular plastics, chemical intermediates, and therefore a wide variety of consumer facing products like packaging, housewares, toys, etc.
REDcert <sup>2</sup>		REDcert <sup>2</sup> is a certification scheme for sustainable biomass production for the food and animal feed industry as well as the use of biomass as a raw material. The scope of the scheme can be expanded to include processing (conversion) and supply/trade. For the chemical industry, it is a scheme used to show that fossil-based raw materials have been replaced by certified sustainable materials using the mass balance approach.	Detergents and cleaning agents Chemical products (monomers, automotive refinish products) Plastics Construction elements
RSB Global Advanced Products Certification		The RSB Standard for Advanced Products is originally developed to enable the sustainable certification of non-energy products. It is updated to capture the increasing use and importance of such product categories –beyond traditional bio-based products to include non-biogenic end of life products and production residues. The scheme is global and applicable to diverse supply chains and feedstocks. The RSB Standard is uniquely positioned to cover any bio-based or recycled fossil feedstock and any end-product, as well as complete supply-chains and novel technologies.	Plastics, textiles, pharmaceuticals, packaging, tableware, cosmetics, nutritional supplements, food, feed, pulp, paper
Green Gold Label		Green Gold Label (GGL) is an international certification programme for sustainable biomass. It is known as the global certificate for sustainable biomass. Within the GGL certification programme, the following standards are Chain of Custody, Agricultural source, Transaction and Product Certificate, Forest management and Power Company criteria	Biomass: products, by-products, residues and derivatives of organic origin from agriculture, forestry and/or landscape and environment management that are eligible for energy and biobased products, production (i.e. woody, agri-residue and waste wood biomass, as well as bioliquids)
Better Biomass		Better Biomass is an international certification system for solid, liquid and gaseous biomass. The Better Biomass certificate is used to demonstrate the sustainability of the biomass used for energy, fuels or bio-based products. The criteria cover important values for nature, environment and society.	Energy, fuels or bio-based products





## 2. Labels strongly/ or entirely tailored oriented to bio-based materials and products

Name	Logo	Description	Type of certified products
OK Biobased		<p>OK Biobased offers a comprehensive guarantee about the origin of the bio-based products. On a basis of the determined percentage of renewable raw materials (% Bio-based), products can be certified as one-star-bio-based, two-star-bio-based, three-star-bio-based or four-star-bio-based.</p>	<p>All products which are (partially) manufactured from bioplastics and/or materials of natural origin. Raw material bio-material, biofiber composite. Components &amp; constituents: films, sheets &amp; plates, ink, colorant, adhesive &amp; additives, packaging; &amp; finished products: bags/sack trade, catering (trays, cups, cutlery, coffee pads), packaging, garden, horticultural &amp; agricultural products (films, plant pots, groundcovers, clips and twines)</p>
OK Compost - industrial-- home-		<p>OK Compost has two different certifications: Industrial and Home. Packaging or products featuring the OK compost INDUSTRIAL label are guaranteed as biodegradable in an industrial composting plant. This applies to all components, inks and additives. The sole reference point for the certification programme is the harmonised EN 13432: 2000 standard. OK compost HOME certification programme does not explicitly refer to a specific standard but details all the technical requirements that a product must meet to obtain the certification.</p>	<p>Raw materials: granulates, film, plate Components: paper, ink, additives, adhesives, packaging components Finished products: collection bags, shopping bags, cutlery, gardening products.</p>
OK Biodegradable -soil- -water- -marine-		<p>It evaluates the biodegradability of products according to specific environments: marine, soil and water. OK biodegradable SOIL label is a guarantee a product will completely biodegrade in the soil without adversely affecting the environment. OK biodegradable WATER guarantee biodegradation in a natural fresh water environment, and thus substantially contribute to the reduction of waste in rivers, lakes or any natural fresh water. Marine biodegradability is an added value to any product regardless of where it is consumed.</p>	<p>All raw materials: biofiber composite, biomaterial All components and constituents: films, inks, sheets, packaging All finished products: bags, catering, packaging, gardening and agricultural products</p>
TUV Seedling		<p>The Seedling logo is a registered trademark owned by European Bioplastics. Seedling logo is awarded to compostable to products that are in compliance with EN 13432. When successfully certified, the product will fully biodegrade in an industrial composting plant under controlled conditions such as temperature, moisture and time frame</p>	<p>All end products made of compostable materials, intermediates and additives</p>
Bio-Based Content certification scheme		<p>The European bio-based content certification scheme is used to specify and validate the amount of biomass in a bio-based product, based on the European standard EN 16785-1:2015. This European standard provides a method of determining the bio-based content of solid, liquid and gaseous products using the radiocarbon analysis and elemental analyses. Bio-based content certification enables transparent and credible communication about the bio-based content of a product in the business-to-business and business-to-consumer communication, which not only involves the bio-based carbon content, but also the other elements hydrogen, oxygen and nitrogen.</p>	<p>Group I: products obtained by chemical or biological reaction Group II: products obtained by mixing Group I products, without chemical or biological reaction Natural products, can be used to produce Group I products or as constituent(s) of Group II products.</p>










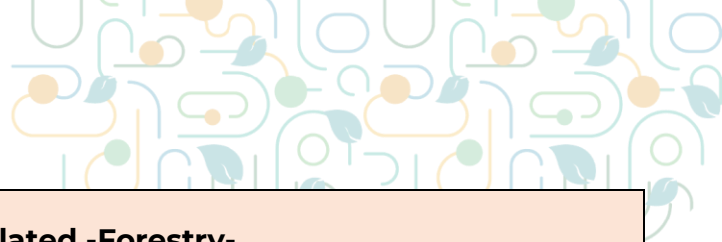





<p>DIN-Geprüft biobased</p>		<p>This certification scheme applies to products which are fully or partly manufactured from biobased raw materials. In addition, this scheme sets out the minimum requirements for the product itself as well as for the testing, monitoring and certification of same on the basis of the quality property biobased.</p>	<p>Biobased products: packaging, containers, films, bags</p>
<p>DIN-Geprüft Biodegradable in Soil</p>		<p>It tests and certifies according to DIN EN 17033: Plastics - Biodegradable mulch films for use in agriculture and gardening. This standard defines European requirements for biodegradable mulch films for the first time. It offers certification for mulch films, intermediates and materials according to DIN EN 17033. The mark proves the biodegradability of mulch films and other products in the soil.</p>	<p>Mulch films, semi-finished products and other materials</p>
<p>DIN-Geprüft Compostable Industrial Home</p>		<p>There are two types of Compostable labels: Industrial and Home. Both follow specific certification schemes that apply for (end) products made of compostable materials for home and garden composting, intermediates and materials. The scheme establishes requirements that need to be met by the product, material or intermediate directly, as well as requirements relating to the associated testing, monitoring and certification.</p>	<p>Bags, loose fill products. Other (e.g. packaging materials, films)</p>
<p>Japanese Biomass plastic identification labeling system</p>		<p>The Japan BioPlastics Association (JBPA) created the BiomassPla Identification and Labelling System to help consumers identify biomass-based plastics defined by the JBPA as “high-polymer” materials that can be obtained through chemical or biological synthesis from raw materials that contain substances derived from renewable organic resources. Biomass-based plastics exclude chemically unmodified non-thermoplastic natural organic high-polymer materials. The standards focus on measuring the “biomass-based plastic ratio” (at least 25%); biodegradability; toxicity; environmental safety, among others.</p>	<p>biomass-based plastics and its semi-finished products</p>
<p>USDA Biobased Product Label</p>		<p>Managed by the U.S. Department of Agriculture (USDA), the goal of the BioPreferred Program is to increase the purchase and use of biobased products. USDA has identified 139 categories (e.g. cleaners, carpet, lubricants, paints) of biobased products for which agencies and their contractors have purchasing requirements. Each mandatory purchasing category specifies the minimum biobased content for products within the category. The USDA Certified Biobased label indicates that the product has been certified by USDA to contain the percent biobased content as shown on the label.</p>	<p>Biobased Chemicals, enzymes Biobased Plastic Bottles and Packaging Forest Products Textiles</p>










### 3. Primary Sector related -Agriculture-

Name	Logo	Description	Type of certified products
Roundtable on Sustainable Palm Oil (RSPO)		The RSPO Principles and Criteria (RSPO P&C) is applicable for sustainable palm oil production worldwide. The RSPO P&C cover the most significant environmental and social impacts of palm oil production and the immediate inputs to production, such as seed, chemicals and water, and social impacts related to on-farm labour and community relation.	Palm oil
Roundtable on Sustainable Soy		The Round Table on Responsible Soy is a civil organization that promotes responsible production, processing and trading of soy on a global level. The RTRS Standard for Responsible Soy Production is applicable on a worldwide level that assures soy production is socially equitable, economically feasible and environmentally sound.	Biofuel Soy Corn
Bonsucro		Bonsucro is the leading global sustainability platform and standard for sugar cane. It aims to ensure that current and new sugarcane production and all sugarcane derived products are produced sustainably, through standard setting and certification	Sugarcane, raw sugar, molasses, ethanol, bagasse, refined sugar, electric energy, other (PLA, B2B packaging material, specifically wicket bags
Rainforest Alliance		The Rainforest Alliance Certification Program includes the provision of an environmental certification for sustainability in agriculture. In parallel to its certification program, the Rainforest Alliance develops and implements long-term conservation and community development programs. The Certification Program is made up of three principal components: Sustainable Agriculture Standard, Assurance System, and Data System and Tools	Flowers and plants; Paper and cardboard packaging; Tissue; Palm oil Textile: Yulex® -plant-based rubber from guayule—a renewable non-food crop; Personal care: soap, skin, hair
IFOAM Organic		The IFOAM Standard (IS) is an internationally applicable organic standard. It covers the areas of general organic management, crop production (including plant breeding), animal production (including beekeeping), aquaculture, wild collection, processing and handling, labelling, and social justice.	Floriculture & Horticulture Manufactured products Textiles
EU Organic Agriculture		The EU organic logo gives a coherent visual identity to organic products produced in the EU. This makes it easier for consumers to identify organic products and helps farmers to market them across the entire EU. The organic logo can only be used on products that have been certified as organic by an authorised control agency or body. This means that they have fulfilled strict conditions on how they must be produced, processed, transported and stored.	Silkworm cocoon suitable for reeling; natural gums and resins; beeswax; essential oils; cork stoppers of natural cork, not agglomerated, and without any binding substances; cotton, not carded or combed; wool, not carded or combed; raw hides and untreated skins.
USDA Organic		USDA Organic is the US federal regulated organic label. Organic certification means that farmers and businesses have met strict standards for the growing, processing and handling of their products. USDA organic seal certifies that the product has 95 percent or more organic content.	Cosmetics, skincare, textiles Bananas, Cereals, Cocoa, Coconut (Fresh), Coffee, Cotton & fibres, Flowers, Fruits, Honey, Nuts, Other products, Palm oil, Plants, Rice, Soy, Spices, Sugar, Tea, Vegetables




<b>4. Primary Sector related -Forestry-</b>			
<b>Name</b>	<b>Logo</b>	<b>Description</b>	<b>Type of certified products</b>
Forest Stewardship Council (FSC)		The Forest Stewardship Council (FSC) is a forest certification scheme owner. That means FSC develops standards for sustainable forestry, promoting them and cooperating with all relevant stakeholders for implementation. It has 2 main schemes: Forest management & Chain of Custody.	Barks: Soil conditioner and substrates; Cork and articles of cork: Straw, wicker, rattan and similar; Bamboo and articles of bamboo; Plants and parts of plants; Natural gums, oils and derivatives; Chemical, medicinal and cosmetics; Pulp; Paper products; Paperboard; Corrugated paper; Packaging and wrappings; Rough wood; Furniture; Solid wood; veneer; wood panels; Other manufactured wood products
Programme for the Endorsement of Forest Certification (PEFC)		Programme for the Endorsement of Forest Certification (PEFC) is a leading global alliance of national forest certification systems. It manages two certifications: Sustainable Forest management certification & Chain of Custody certification.	Wood products, household items: paper; Furniture; Utensils; Rough wood; Wood panels; Packaging: cardboard, packaging materials, other manufactured wood products
<b>5. Primary Sector related -Aquaculture-</b>			
ASC-MSC Seaweed Standard		The ASC and MSC have released a joint standard for environmentally sustainable and socially responsible seaweed production. The standard applies globally to all locations and scales of seaweed operations, including both harvesting of wild populations and farmed seaweed production.	Seaweed





6. Manufacture of bio-based textiles			
Name	Logo	Description	Type of certified products
Global Organic Textile Standard (GOTS)		This standard stipulates requirements throughout the supply chain for both ecological and labour conditions in textile and apparel manufacturing using organically produced raw materials. The aim of the standard is to define world-wide recognised requirements that ensure the certified organic status of textiles, from the harvesting of the raw fibre, through environmentally and socially responsible manufacturing up to labelling to provide credible assurance to the end consumer.	Fibre products, yarns, fabrics, clothes, home textiles, mattresses, personal hygiene products, food contact textiles, other products with textiles (i.e. toys)
Organic Content Standard OCS (Textile Exchange standards)		The Organic Content Standard (OCS) is an international, voluntary standard that provides chain of custody verification for materials originating on a farm certified to recognized national organic standards. The standard is used to verify organically grown raw materials from the farm to the final product.	Organic fibres, cotton, hemp,
Better Cotton Claims Framework		The Better Cotton Standard System is a holistic approach to sustainable cotton production which covers social, economic, and environmental issues on cotton production. It includes six elements: the farm-level standard -Principles and Criteria (P&C); Capacity Building; the Assurance Programme; Chain of Custody; Claims Framework; and Results and Impact (Monitoring and Evaluation) system. The system is designed to ensure the exchange of good practices, and to encourage the scaling up of collective action.	Cotton
Cotton made in Africa		Cotton made in Africa (CmiA) Standard covers the most significant aspects of cotton cultivation and ginning, with a focus on specific framework conditions in Sub-Saharan Africa. It applies to Managing Entities operating in Sub-Saharan Africa with a direct link to small-scale farmers. The CmiA sustainability claim focuses on the supply and value chain in the participating African countries, i.e. the growing and ginning of cotton, and thus the standard provides the basis for uninterrupted traceability from farm to gin.	Cotton
OEKO-TEX®		OEKO-TEX® is a trademark representing the International Association for Research and Testing in the Field of Textile and Leather Ecology. Its labels and certificates confirm the human-ecological safety of textile products and leather articles from all stages of production (raw materials and fibres, yarns, fabrics, ready-to-use end products) along the textile value chain. Some also attest to socially and environmentally sound conditions in production facilities.	Raw, semi-finished & finished textile products (raw and dyed/finished yarns, woven and knitted fabrics, accessories, domestic and household textiles, bed linen, terry products...)
Bluesign® System		Bluesign® is a system with solutions for textile industry and brands through which companies can increase their sustainability performance. The bluesign® SYSTEM focuses on resources, people, and the environment. The bluesign® SYSTEM reduces the impact on humans and the environment, ensures the responsible use of resources, and guarantees the highest possible degree of consumer protection. The strictest criteria and the verification of the implementation of the system on-site motivate companies along the entire textile value chain to improve their sustainability performance.	Footwear Medical supplies, such as dressings and bandages Hygiene products Toys Food safe articles Furniture
Green Button		Green Button is awarded to textile products that are sold by responsibly operating companies, are made only from approved fibres and materials, and whose production processes at the stages of manufacturing, wet processes, and raw material extraction have been verified by recognised certification labels with regard to social and ecological criteria. This certification programme contains requirements for the competence, consistent operation and impartiality of certification bodies evaluating companies seeking to certify their due diligence processes and practices.	All textiles or textile products: garments, domestic textiles, technical textiles, textile shoes and accessories (bags, gloves, covers)







### 7. Manufacture of Wood Products & Furniture

Name	Logo	Description	Type of certified products
Eco-Certified Composite (ECC)		The Eco-Certified Composite (ECC) sustainability standard is a voluntary industry certification for manufacturers of composite wood or agrifiber-based panels, including particleboard, medium density fibreboard (MDF), hardboard, engineered wood siding, and engineered wood trim.	Wood fibre for production of particleboard, medium density fibreboard, hardboard, engineered wood siding and engineered wood trim

### 8. Manufacture of bio-based chemicals excluding biofuels -Cosmetics- (not covered in Categories 1 & 2)





COSMOS		The COSMOS-standard defines the criteria that companies must meet to ensure consumers that their products are genuine organic or natural cosmetics produced to the highest feasible sustainability practices. It covers in detail all aspects of the sourcing, manufacture, marketing and control of cosmetic products. The certification bodies inspect each of these aspects when certifying an organic or natural product.	Organic and natural cosmetics ingredients
NATRUE		NATRUE is an association committed to promoting and protecting Natural and Organic Cosmetics worldwide. The NATRUE Standard is applicable to raw materials and finished products intended for cosmetic use. It may be used for the purposes of independent third-party certification of finished cosmetic products, as well as the certification and approval of raw materials used in cosmetic products	Raw materials and finished products intended for cosmetic use. Finished cosmetic products

### 9. Construction

ANAB - Architettura Naturale		The ANAB - CERTIFIED PRODUCT FOR GREEN BUILDING identifies construction products that have a reduced environmental impact, complying with the requirements for building materials set forth in the most important building certification and assessment systems and they provide the guarantee of respect for the health and safety of end users and workers.	Construction materials
BREEAM		One of the most common and internationally recognised certification schemes for sustainability in buildings. BREEAM works under a rating system, involving a wide range of assessment criteria to appraise the performance of a building including energy, pollution, materials, waste, ecology and management process.	Civil engineering, infrastructure, landscaping and public realm works, new-build domestic and non-domestic buildings, existing buildings in operation, building fit-outs and refurbishments
Leadership in Energy and Environmental Design (LEED)		LEED is a green building rating and certification system. It provides a framework for healthy, efficient, carbon and cost-saving green buildings. It covers prerequisites that address carbon, energy, water, waste, transportation, materials, health and indoor environment quality. This scheme works under "credits" or "points" awarded after the requisites are fulfilled.	New Construction (NC); Existing Buildings, Operations & Maintenance (EB O&M); Commercial Interiors (CI); Core & Shell (CS); Schools (SCH); Retail; Healthcare (HC); Residential; Cities and Communities
Assessment System for Sustainable Building (BNB)		The Federal Ministry of Transport, Building and Urban Development (Germany) developed this certification specially adapted for federal buildings. It provides measurable and verifiable criteria for the evaluation of construction measures including ecological, economic sociocultural and functional, technical and process quality.	Office buildings, educational buildings, laboratory buildings, outdoor facilities











### 10. Ecolabels (covering different categories products)

Name	Logo	Description	Type of certified products
Blue Angel		<p>The Blue Angel is an impartial and voluntary product label owned by the German Environment Agency. It is an independent label that certifies the best products in a product group based on a comprehensive range of criteria. In the evaluation process, the environmental label takes a holistic view of the life cycle of the product – from its production and use through to its disposal and recycling. It comprises 8 categories of products: household/drugstore; living/textiles; green IT/appliances; construction products; heating/energy; paper/stationery; vehicles/mobility; services/municipality.</p>	<p>Cleaning products; clothing and textiles Construction/building; gardening/Agriculture; office equipment/furniture; Paints/coatings; paper products; personal care products; printing inks; thermal insulation; toys &amp; recreational equipment</p>
Nordic Ecolabel		<p>The Nordic Ecolabel is a voluntary ecolabelling scheme for the Nordic countries Denmark, Finland, Iceland, Norway and Sweden. It takes into account the environmental impact of goods and services during their entire life cycle, from raw materials to waste products. It comprises 55 different product groups counting more than 200 different product types.</p>	<p>Alternative dry cleaning; Chemical building products; Cleaning products; Cleaning services; Cosmetic products; De-icers; Dishwasher detergents; Disposable bags; accessories for health care; wood for outdoor use; Floor covering; Furniture and fitments; detergents; Imaging equipment; Indoor paint and varnishes; Manufacture of textiles, hides/skins and leather; New buildings; Packaging; paper; Products of textile, hides/skins and leather; Sanitary products &amp; others</p>
EU Ecolabel		<p>The EU Ecolabel is a label to promote products and services that have a reduced environmental impact. Recognised across Europe, it is a label of environmental excellence that is awarded to products and services meeting high environmental standards throughout their life cycle: from raw material extraction, to production, distribution and disposal. There are currently twenty-seven different product groups covering a wide range of categories, from cleaning products to cleaning services, from home and garden to clothing and paper products, and from rinse-off cosmetics to tourist accommodation services.</p>	<p>Textiles Gardening products Paper Coverings (wood, cork, bamboo-based floor coverings) Furniture (wood, cork, bamboo and rattan) Cosmetics Absorbent hygiene products</p>
China Environmental Labeling		<p>It is a public voluntary eco-label scheme owned by the Chinese Ministry of Ecology and Environment) that aims to encourage the sustainable use of resources and energy to develop and produce environment-friendly products. It has 50 different product categories covering a number of industry sectors such as automobile, electrical and electronic, construction, textile, packaging, printing, chemicals and others.</p>	<p>Clothing &amp; textiles, Electronics, Households Construction materials Cosmetics Packaging Toys</p>
NaturePlus		<p>The Natureplus label distinguishes building materials, building products and furnishings. This label is only awarded to building and home products that consist of 85% renewable and/or mineral raw materials. The natureplus eco-label is the only European environmental label for building products that is based on strict scientific criteria in a multitude of key areas</p>	<p>Insulation materials from renewable raw materials; Timber and wood materials; thermal insulation systems; Insulation materials from expanded of roamed mineral raw materials; Wall paints; Surface coatings from renewable materials; Adhesives from renewable raw materials; Paper and wood glues from renewable raw materials; Textile floor coverings; Wooden doors; Sealant sheeting from renewable materials; Wallpaper</p>





<b>11. Fair Trade Specific</b>			
<b>Name</b>	<b>Logo</b>	<b>Description</b>	<b>Type of certified products</b>
Fair for Life		Fair for Life is a certification programme for fair trade in agriculture, manufacturing and trade. It is an inclusive certification programme, adopting a recognition approach towards certain other existing Fair Trade certification schemes.	Cosmetic and beauty products Detergents and home perfumes Textiles and leather products Handicrafts
Fairtrade International Trader		Fairtrade International promotes sustainable development and poverty alleviation and sets the Fairtrade standards. The Fairtrade Standards ensure fairer terms of trade between farmers and buyers, protect workers' rights, and provide the framework for producers to build thriving farms and organizations.	Floriculture & horticulture Manufactured products Textiles
WFTO Fair Trade Standard		The WFTO Fair Trade Standard specifies criteria for assessing if an enterprise truly implements the 10 Principles of Fair Trade. Demonstrating compliance earns Fair Trade Enterprises the designation "Guaranteed Fair Trade". This Standard is the heart of the WFTO Guarantee System, focusing on the management and operation of Fair Trade Enterprises.	Floriculture & horticulture Cosmetics Forestry Manufactured products
<b>12. Other interesting SCS &amp; labels covering different sectors</b> (not specifically tailored to bio-based products)			
Naturland		Naturland is one of the major organic producers' associations founded in Germany. It promotes the development and growth of organic market not only in Germany but also on an international level. In addition to food production, Naturland is also involved in the areas of ecological forest use, textile production and cosmetics.	Ornamental plants, herbaceous perennials, shrubs, Market gardening; Wild grown products; Organic Forest management; Timber; Textile; Cosmetics; Fertilisers
AIAB (Italian Association for Organic Agriculture)		AIAB is the Italian Association for Organic Agriculture's certification. It certifies organic products made by Italian companies, according to the association standards that prohibit the use of chemical pesticides. It covers a broad range of categories, including detergents, farms, cosmetics, stores, bio-fibres and others.	Detergents; cosmetics bio-fibres (organic cotton); fertilizers and plant protection products.
ECOCERT Natural Detergents and Natural Detergents Organic		This standard applies to detergents and other cleaning or washing preparation products. It was created to define a quality level higher than that defined by the European regulation for detergent products, which guarantees a real valorisation of agro-resources, a real practice of respect for the environment throughout the production chain and a real respect for the consumer; to establish a link between certain detergent products and Organic Farming by promoting the use of plant ingredients from Organic Farming; and to make a link between detergent products and respect of the environment.	Cleaning products Detergent
Nature Care Product		The NCP regulates the requirements for certified care products as well any non-food product based on natural raw materials. The NCP standard particularly includes detergents and cleaning agents, textile and leather care products, pesticides and fertilizers. The standard sets minimum requirements for the ingredients and manufacturing processes of care products and so ensure a natural product that works harmony with nature.	Detergents and cleaning agents, care products for objects (textile and leather), candles, pesticides and fertilizers.
Cradle to Cradle		The Cradle to Cradle Certified® Products Program applies to products. It provides the framework to assess the safety, circularity and responsibility of materials and products across five categories of sustainability performance: material health, product circularity, clean air & climate protection, water and soil stewardship & social fairness	Cleaning agents, office supplies, construction products, textiles, electronic devices, packaging, cosmetics, furniture and other products from different industrial sectors

“ Sustainable bio-based systems via effective certification & labelling ”

### Consortium:



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