

Bio-Based Products

Suggestions for Ecolabel Criteria and Standards in Line with Sustainable Development Goals

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ABSTRACT

Communicating the related environmental benefits of bio-based products to consumers represents a key component of their market uptake. In this regard, the use of ecolabels ISO 14024 Type I play a crucial role. This article identifies and analyzes different criteria proposed by ecolabels for conducting a sustainability assessment of bio-based products considering its entire lifecycle. A comparison of the selected criteria with existing indicators ruled out by the SDGs is proposed. Through expert consultation, the suitability of existing ecolabel criteria for bio-based products has been tested for four applications of biobased products: food packaging from PLA; biobased automotive components; bio-based mulch film; and bio-based insulation material.

KEYWORDS

Bio-Based Products, Bioeconomy, Circular Economy, Ecolabels, Environmental Certification, SDGs, Standards, Sustainability

INTRODUCTION TO THE UNITED NATIONS SUSTAINABILITY GOALS, ECOLABELLING AND THE BIOECONOMY

In 2016, the United Nations' Sustainability Goals (SDGs) were proposed and designed, comprising 17 worldwide agreed goals to make planet earth more sustainable.

The importance of environmental labelling was recognized in 1992, during the Second Earth Summit (Rio Summit). The resulting Agenda 21 mentions environmental labelling as a tool to promote Sustainable Development (SD) (Horne, 2009; United Nations, 1992).

Ecolabelling provides consumers with explicit information about the environmental performance of a product and directs their buying behaviour toward sustainable choices (European Commission, 2012). It plays also an important role as a government policy instrument to establish information guidelines for consumers on sustainable consumption (BIO Intelligence Service, 2012; Schader et al., 2011). Therefore, ecolabels address the goal of sustainable consumption and production patterns, corresponding to the 12th goal of SD (United Nations, 2015). This article will show further links between ecolabels and the SDGs.

Various links between the SDGs and the bioeconomy have been identified by previous publications. While Gawel et al. (2019) argue that the bioeconomy has a positive impact on the SDGs, others argue that its application has both positive and negative impacts on the achievement of SDG targets (see Heimann, 2019, Nunes et al., 2016). For this reason, bioeconomy products with positive

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environmental impacts require appropriate communication and marketing tools in order to convince the consumers of its benefits.

Bio-based products are one of the bioeconomy sectors (European Commission, 2012, p. 5). According to CEN (2014), they are defined as products produced entirely or partly from biomass (plant, forestry or animal origin).

A key component for the market uptake of bio-based products is to communicate the related environmental benefits to the consumer. Ladu and Blind (2017) argue that labels, in particular ecolabels are an essential vehicle to communicate the benefits of bio-based products to consumers, especially if predefined sustainability criteria are met and verified through a certification process.

This article starts with a literature review, followed by information on the research objectives and methodologies. Afterwards, selected ecolabel criteria are described and suggestions for ecolabel criteria and labels for a number of bio-based products in line with the SDGs are made. The article ends with suggestions for further steps and conclusions.

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LITERATURE REVIEW ON THE SDGS AND ECOLABELS

Current Contributions of the Bioeconomy to the SDGs

Various relations between the bioeconomy and the SDGs exist already. To support SDG 2 (Zero Hunger), the efficient use of biomass as a sustainable energy source can supply energy needs for beneficiaries to make, convert and eat food, which tackles the goal to end hunger, obtain food security and improve nutrition (WFP, 2019). The use of biomass waste, use of wastewater, use of marine fauna (fish) and flora (algae) and an increasing importance of biodiversity can contribute to the achievement of SDG 6, 12, 14 and 15 (referring to clean water, responsible consumption, life on land and below water, Biobased Industries Consortium, 2018). In the transportation sector, the use of bioenergy can increase access to modern energy services and can reduce the use of fossil fuels (Biobased Industries Consortium, 2018), which is in line with SDG 7 on affordable and clean energy. El-Chichakli et al. (2016) describe the positive impact on the local economy through the construction of a large bio-refinery in Finland. Although the refinery only requires 200 workers to carry out the production process, the authors argue that 2,500 other jobs will be created throughout the value chain. In addition, El-Chichakli et al. (2016) argue that the recovery of organic waste and the conversion of domestic waste into biofuels, and also the conversion of CO₂ emissions into chemicals and biofuels can contribute to the achievement of targets on SDG 11 and 13 on sustainable cities and climate action. Potential for additional contributions of the bioeconomy to the persuasion of the SDGs and their demonstrations by the use of targeted ecolabel criteria will be subject of this study.

Benefits of Ecolabels and Standards

Ecolabels play an import role in promoting eco-friendly consumption. The reason is that most ecolabelled products are credence goods, implying that the valued attributes they contain are not observable to the consumer even after purchase or consumption (Daugbjerg et al., 2014). As Figure 1 shows, eco-friendly consumption is influenced by a set of consumer-related factors, in which “Trust in the ecolabel” and “Knowledge on eco-friendly aspects” play an important role.

Ideally, environmental labels are based on transparent criteria and are awarded by an independent third party (e.g. the EU Ecolabel). By acquiring these labels, products show compliances with technical specifications and sustainability criteria. Considering that consumers accept the label as one means of proof of compliance with the technical specifications, standards function as an important foundation of trust-worthy ecolabels.

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