



# Integrated Assessment Tool (IAT)



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## Purpose

The IAT delivers methodological guidance for conducting an integrated assessment of bio-based products addressing, from a life cycle perspective, their most relevant sustainability aspects. IAT enables companies to conduct internal sustainability assessments of their bio-based products for benchmarking, eco-design and sustainability qualification purposes, also in respect to the achievement of SDGs. IAT is accompanied by a scoring system that allows to quantify how well a bio-based product performs compared to an "ideal performance". IAT has a strong focus on applicability and business relevance making it a versatile and effective tool for supporting the transition towards sustainable production and consumption within the bio-economy sector.

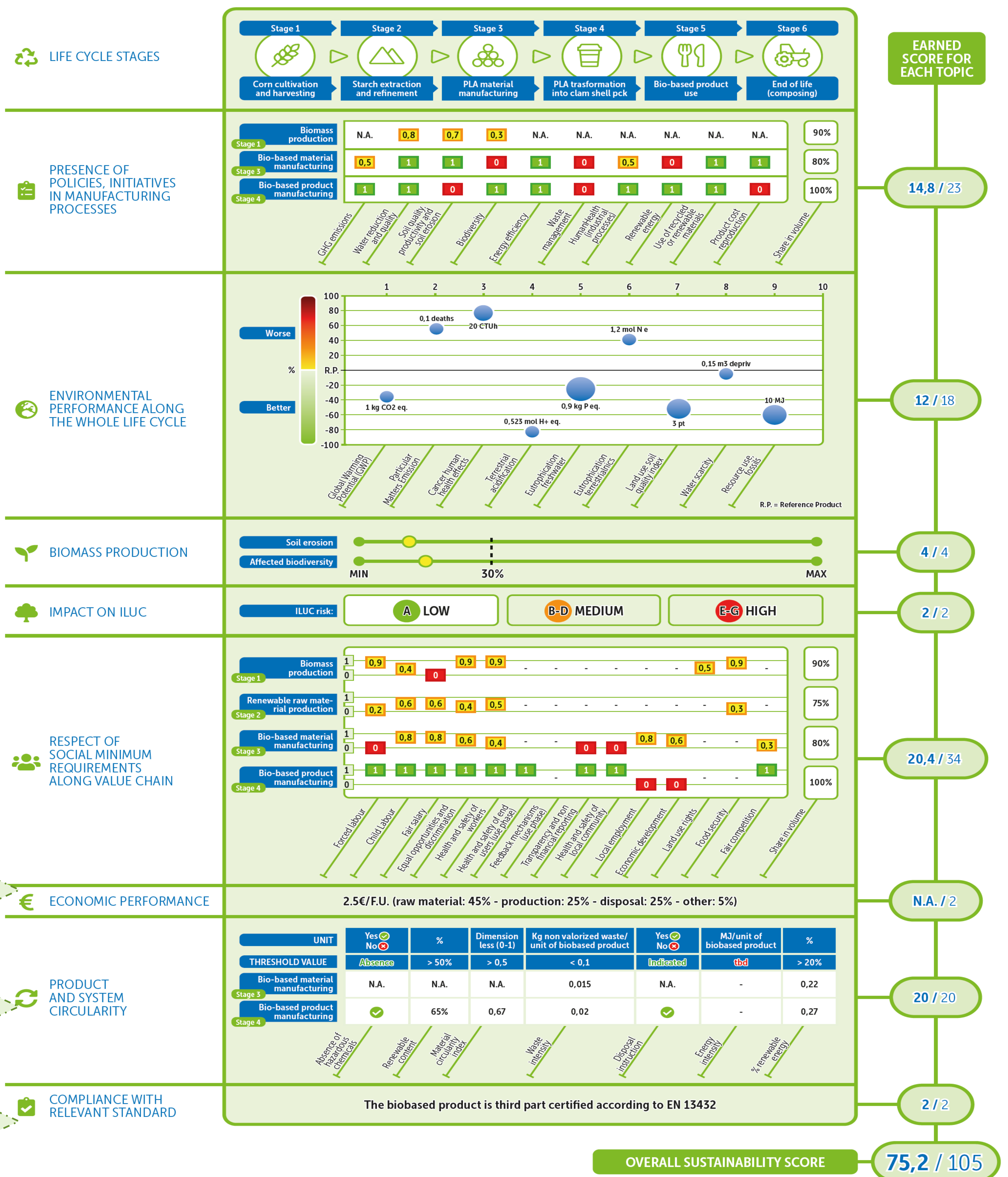
## IAT Elements

The IAT translates innovative developments from different STAR-ProBio Work Packages (WP2, WP3, WP4, WP5, WP6, WP7) into an **applicable integrated assessment tool**, consisting of **48 indicators** (qualitative and quantitative) associated to **24 principles** and **10 Sustainable Development Goals (SDGs)**. The IAT consists of the following elements: i) IAT Matrix (list of principles, criteria and indicators); ii) Related metrics, methodologies and standards; iii) Guidance on how to apply the tool; iv) A scoring system; v) A communication template (Figure 1)



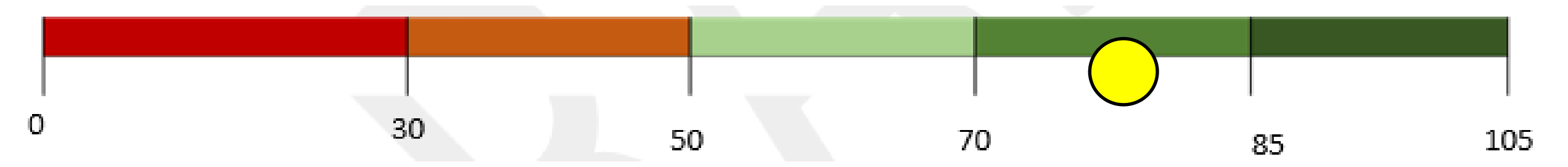
Figure 1: Sustainability assessment results of a bio-based product according to the IAT communication template

- Section 1:** schematic life cycle stages of the bio-based product
- Section 2:** presence of policies and/or initiatives. This section measure the commitment of companies in addressing **ten** relevant sustainability topics regarding environment, circularity and economic. Qualitative indicators. 1 means the company has in place a policy, 0 none.
- Section 3:** Life Cycle Assessment. Overall **nine** LCA indicators are determined for the bio-based product and compared to a Reference Product. (Quantitative indicators). The lowest the best.
- Section 4:** biomass production. **Two** semi quantitative indicators related to affected biodiversity and soil erosion.
- Section 5:** ILUC risk estimated using the risk tool developed by UNIBO (database).
- Section 6:** social aspects. The fulfillment of the minimum social requirements for **fourteen** social indicators are investigated. (Qualitative - yes/no condition).
- Section 7:** Life Cycle Costing (LCC) assessment performed in parallel with LCA analysis. (Quantitative).
- Section 8:** Circularity. Overall **seven** quantitative and qualitative indicators have been defined for addressing the product and system circularity.
- Section 9:** Presence of relevant standards related to the specific bio-based product category.



**LEGEND**  
 Red: weak performance (action urgently needed)  
 Orange: low performance (action needed)  
 Light green: good (minor action needed)  
 Medium green: very good (minor action needed)  
 Dark green: outstanding

The obtained score is compared to the scale below. In this way the applicant can visualize the overall performance and assess the necessary actions



**Publications**  
 1. F. Razza et al. (2020). Metrics for quantifying the circularity of bioplastics: the case of bio-based and biodegradable mulch films. *Resources, Conservation & Recycling*, Special Issue on "Sustainable Cycles and Management of Plastics".



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