



## BIO-PLASTICS EUROPE: SUSTAINABILITY FRAMEWORK

The plastics industry in Europe faces a critical juncture, balancing positive properties of conventional plastics (i.e. low weight or preserving effect on food) with their negative external effects on the environment and ultimately human health. Conventional plastics, derived from non-renewable and non-degradable resources, contribute to pollution, climate change, and resource depletion. Yet, they also play a pivotal role in enhancing food safety, healthcare, water management, and energy efficiency.

Recognizing the urgency for a more sustainable approach, the BIO-PLASTICS EUROPE project emerges as a beacon of innovation within the Horizon Europe framework. This initiative seeks to pivot the industry towards bio-based and biodegradable plastics, aiming to diminish carbon footprints, curtail reliance on fossil fuels, mitigate waste, and foster economic and health benefits. In doing so, it aims to amplify the positive externalities of plastics while minimizing their adverse impacts.

The BIO-PLASTICS EUROPE project focuses on creating sustainable bio-based plastics that are environmentally friendly and do not interfere with food supply chains, offering performance on par with or better than traditional plastics. The project covers the entire lifecycle of these plastics, emphasizing innovative designs, business models for recycling and reuse, and the safety of recycled materials highlighting the strengths and weaknesses of the new value chain. It also involves a wide range of stakeholders in its research and innovation efforts, aiming to drive systemic innovation, improve skills in related economies, and share knowledge effectively. A vital aspect of the initiative is developing a Policy Framework in line with EU guidelines to influence policies at various levels and support the transition to a circular economy, which will be detailed in an upcoming white paper.

Incorporating the insights from a comprehensive sustainability assessment, the BIO-PLASTICS EUROPE project has an overarching impact of the current plastics industry—predominantly fossil-based—on the Sustainable Development Goals (SDGs). This evaluation, contributed to by 101 experts in the field, offers a nuanced understanding of the industry's influence on global sustainability objectives as well as a future with 40% bio-based plastics (Figure 1)

The assessment utilized a gauge scale to understand the impact of plastics on the SDGs, ranging from -3 (Extremely Negative) to +3 (Extreme Positive), with 0 indicating a Neutral impact. Findings from this analysis underscore a significant negative impact of the current industry—99% fossil-based and 1% bio-based plastics—on several critical SDGs. Notably, SDGs related to environmental sustainability, such as SDG 14 (Life Below Water), SDG 15 (Life on Land), and SDG 13 (Climate Action), were among the most adversely affected. This reflects the detrimental consequences of conventional plastic production and usage on natural ecosystems and climate stability.

Conversely, the assessment illuminated a promising shift in the potential future scenario where the industry evolves to comprise 60% fossil-based and 40% bio-based plastics. Experts opined that such a transition would benefit the SDGs, fostering positive outcomes. This shift is particularly advantageous for SDGs that focus on environmental conservation and sustainable resource management, including SDG 14 (Life Below Water) and SDG 15 (Life on Land), as well as SDGs that address broader sustainability challenges like SDG 13 (Climate Action), SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities and Communities), and SDG 12 (Responsible Consumption and Production), as well as SDG 3 (Good Health and Well Being).

This forward-looking analysis reinforces the urgent need for a paradigm shift towards more sustainable plastic production, application, and end-of-life. It highlights the tangible benefits such a transition can offer in aligning the plastics industry with global sustainability goals and underpins the BIO-PLASTICS EUROPE project's commitment to fostering a more sustainable plastics economy that harmonizes industrial innovation with environmental stewardship and societal well-being. Starting from the promising results of BIO-PLASTICS EUROPE project, further developments are needed to support the deployment of the effective and sustainable entire value chain.



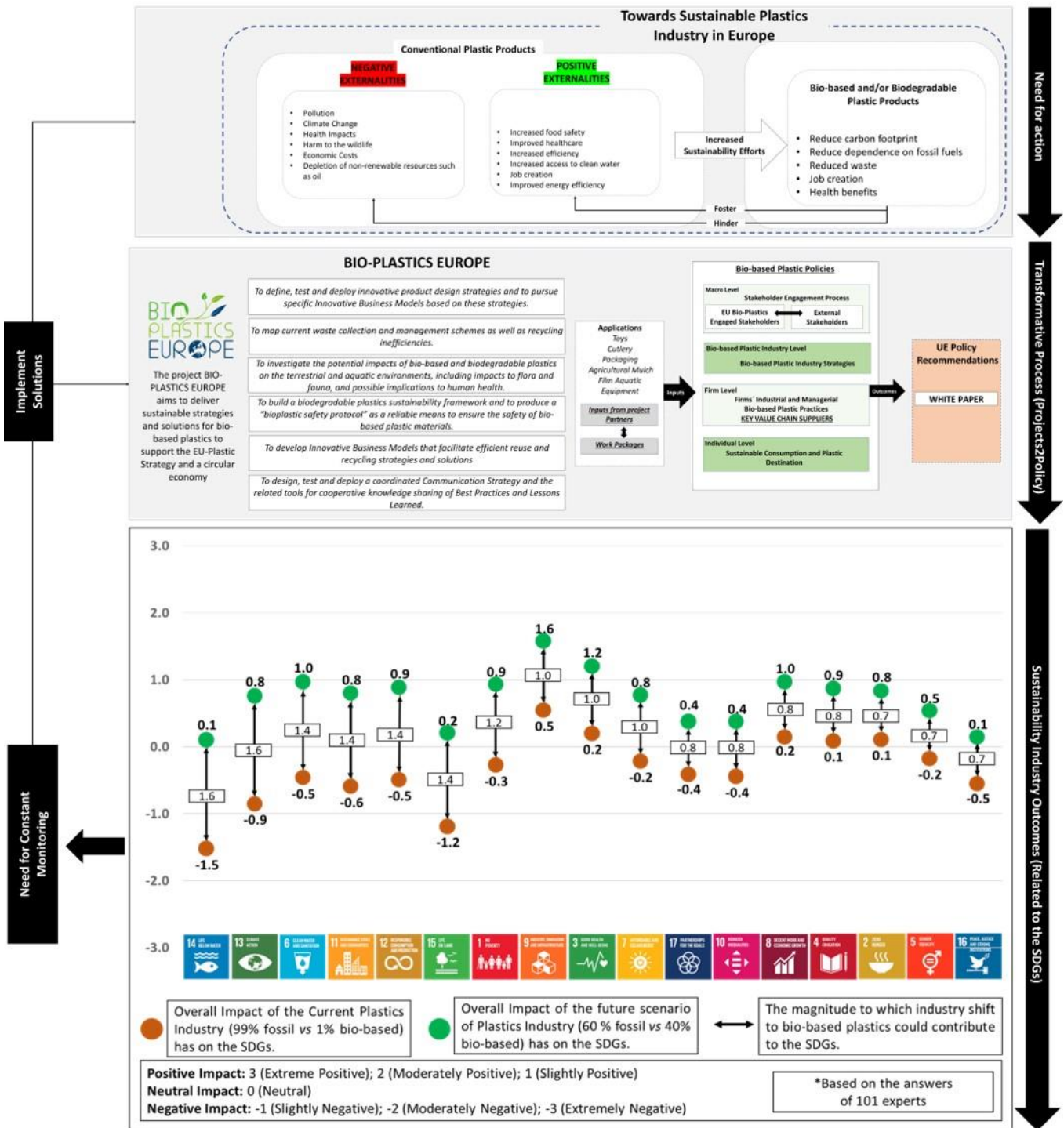


Figure 1 BIO-PLASTICS EUROPE Sustainability Framework developed from a systems thinking perspective.



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