ESR 10

Project title and research strand:	LCA of biodegradation of bioplastics. Strand 4: Methodology.	
Name:	Felicitas Pellengahr	
Supervisors, affiliation:	Yvonne van der Meer; Maastricht University (NL) Stefaan De Wildeman; B4Plastics (BE)	

Abstract

The growing concern over plastic emissions has increased interest in biodegradable plastics and circular economy strategies as potential solutions. However, evaluating their overall sustainability remains complex. This study explores two main areas of applications: highly abrasive use cases in textiles and facilitating organic waste treatment with compostable plastics. The research was based on examining three case studies. Integrating microplastic emissions into Life Cycle Assessments (LCAs) emerges as a critical aspect for comprehensive environmental evaluation of plastic products. The case studies focus on textiles and tea bags, showcasing the environmental implications of biodegradable polymers and circularity approaches. Current findings suggest that while these materials offer some benefits, their overall environmental impact reduction is limited. Comprehensive data and advanced modeling of Fate Factors are identified as crucial for accurately assessing their environmental performance. This research underscores the necessity for integrated approaches that consider not only production but also use phases and end-of-life scenarios. Future advancements in biodegradable polymer research must prioritize robust data collection and transparent modeling techniques to refine our understanding and optimize their environmental benefits. By addressing these challenges, stakeholders can effectively navigate the complexities of holistic plastic product design and advance sustainable practices in diverse industrial sectors.

Visual Summary – Poster