
# MASTER TRAINEE
## Project title: Environmental and Economic Trade-offs of Advanced Mechanical Recycling for Flexible Polyolefin Packaging

**Position Snapshot**
Location: Lausanne, Switzerland
Company: Nestlé Research, Nestlé Institute of Packaging Sciences
Act. Rate: Full-Time
Type of contract: Internship (On-Site), 6 months
Start date: Flexible, 01.04.2026-01.07.2026
Deadline for applications: 01.03.2026

**Research Overview**
This research project explores whether it is environmentally and economically worthwhile to invest in advanced mechanical recycling processes and novel material design for recycling. These two intervention pathways aim to improve the quality and value of recycled plastics, but they might come with higher material and processing costs. The student will assess these trade-offs by means of Life Cycle Assessment (LCA) methodology, focusing on the application and refinement of the Circular Footprint Formula (CFF), and Life Cycle Costing (LCC). The project will be applied to a case-study for mono-material polyolefin films. The main goal would be to define an optimum point (e.g., BEP) between costs and benefits of such interventions. The project will also consider Extended Producer Responsibility (EPR) fees, recyclate market value, packaging prices, infrastructure costs, with considerations on scalability and market volumes.

**Main Research Questions**
1. Design vs. Recycling Trade-off
   Is it environmentally and economically beneficial to use more costly mono-material (e.g., monoPE) packaging structures to achieve higher recyclate quality?
2. Recycling Process Optimization
   Does adding advanced steps to conventional mechanical recycling improve recyclate quality enough to justify the environmental and financial costs, especially when comparing incumbent vs. eco-designed packaging

**Expected Outcomes**
- A methodological approach to define under which circumstances advanced mechanical recycling and packaging eco-design strategies would be environmentally and economically competitive for a case study on mono-material polyolefin films.
- Insights on the influence of recyclate quality and market values to selected circularity metrics and LCA indicators.
- Insights on the influence of market volumes and scalability of selected technologies on costs outlook.

**What will make you successful**
- Knowledge and experience on LCA, knowledge on LCC is a plus
- Proactiveness to connect with various internal and external stakeholders

**Contacts**
Please submit your CV before the deadline to Valeria Frigerio (Valeria.Frigerio@rd.nestle.com) and Elisabet Keisia Sumarjadi (ElisabetKeisia.Sumarjadi@rd.nestle.com).