

Cost-Benefit Analysis of Bioplastic Sorting

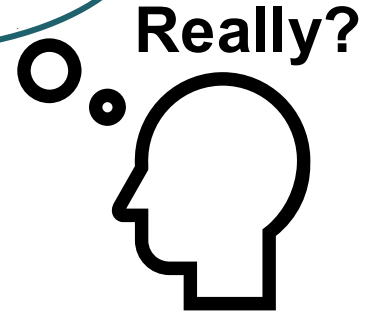
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Concerns about Biodegradable bio-based plastics

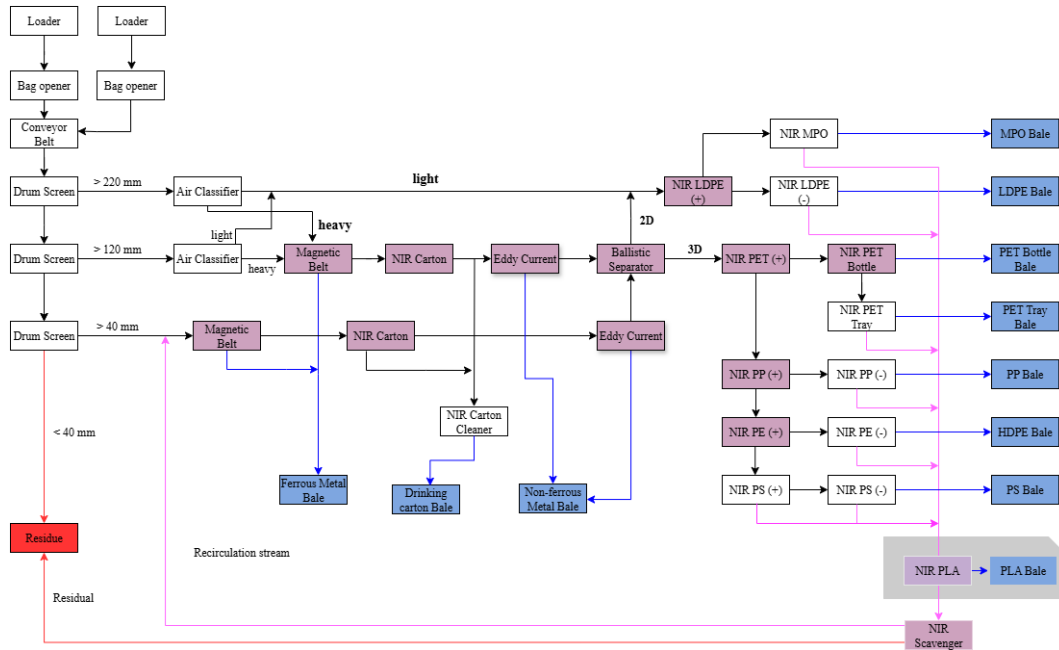
- Act as contaminants deteriorate conventional bale quality
- Too little to sort & recycle, not economically viable



Consider the application and production capacity, we first focus on PLA

What have we done?

Material flow analysis of PLA packaging at MRFs with Cost-Benefit Analysis CBA



(Li et al., 2026, Resources, Conservation & Recycling)

Scenario: BAU and +NIR PLA

Scenario: Increasing market penetration
0.12%-20%

NIR Sorting efficiency

- 99% for virgin, 97.4% for degraded PLA products (Chen et al., 2021).
- 97.8% (Titech) and 99.6% (Gertman et al., 2013) from mixed PET waste stream.
- **88.04%** (CE Delft, 2019)

Take-Home Message

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Modelling material flows and cost-benefit of sorting PLA packaging waste in material recovery facilities under different market penetration scenarios

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Thank you.

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