

A Pathway to Circularity in Composite Manufacturing: Targeting High Impact Consumables

Erica Barnes

Supervised by: Ffion Rodes, Karthik Ramakrishnan,
Ian Hamerton

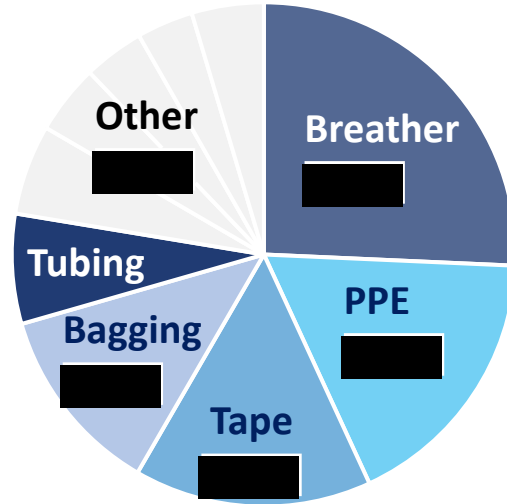
NCC Project Team: Marisa Zeolla, Callum
Branfoot



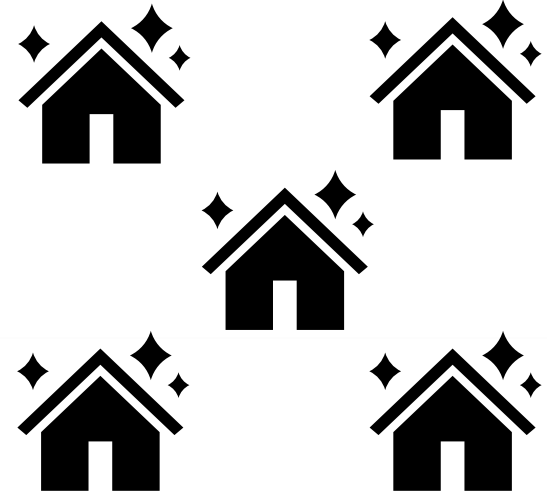
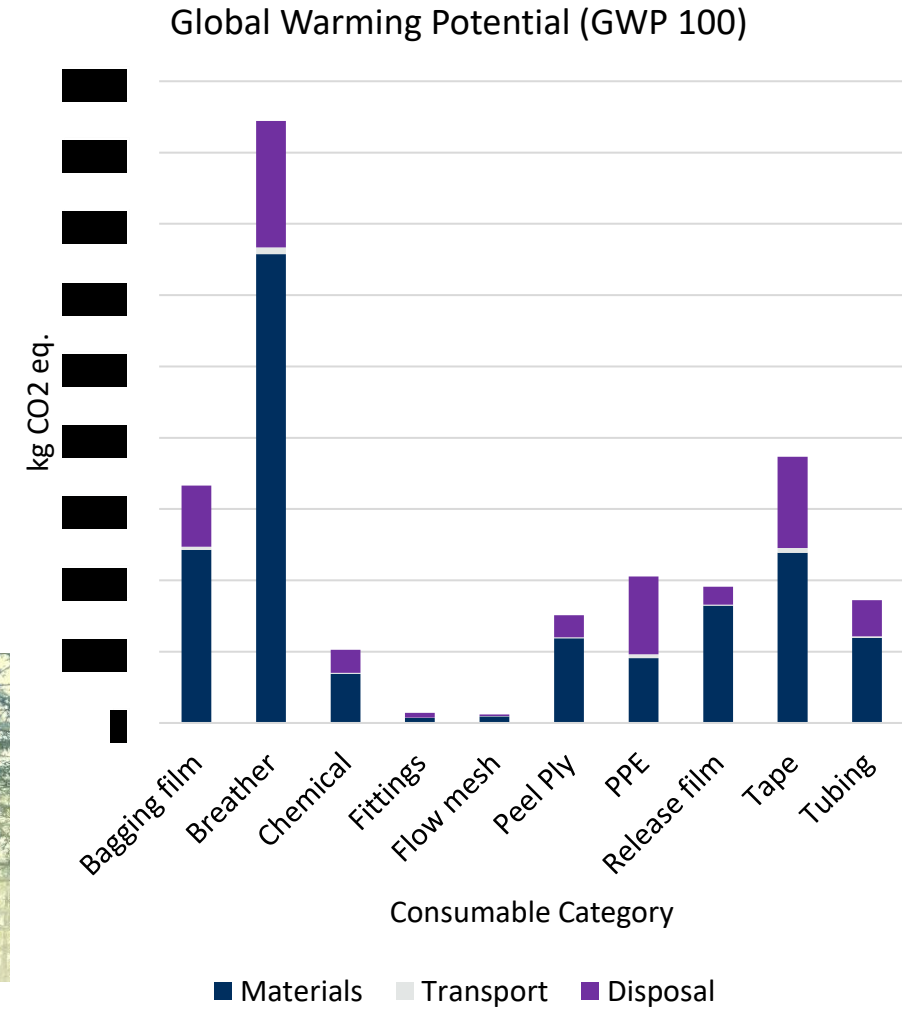


1. Quantifying the Problem (LCA)
2. Data Informed Industrial Strategies
3. Hidden Impacts
4. What's Next...
5. Summary

Quantifying the Problem



3



60,000 miles



Quantifying the Problem

20-100 x^{*}

* According to Commercially sensitive research

Data Informed Industrial Strategies

5

Manufacture

- Buy lower impact materials
- Buy from suppliers that prioritise renewable energy
- Buy kitted consumables

Use

- Use appropriate consumables
- Minimise waste (efficient manufacturing)
- Effectively sort waste

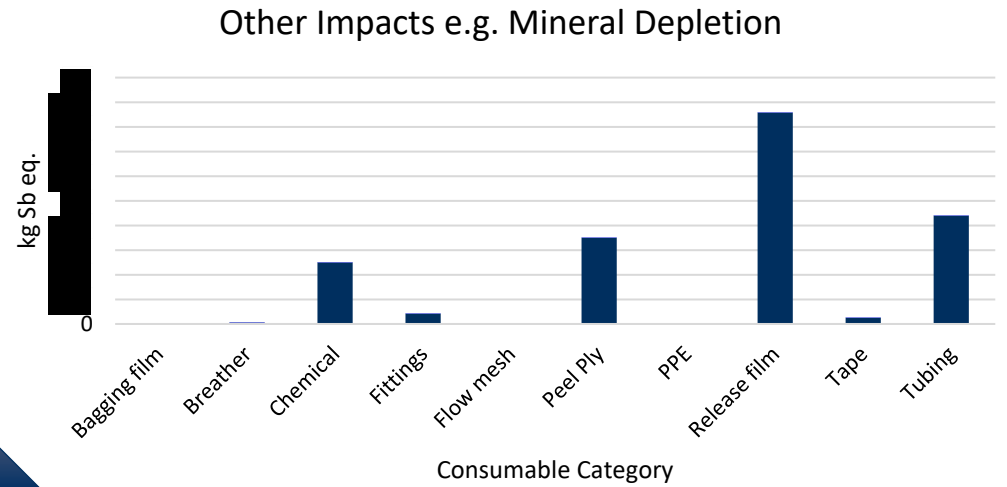
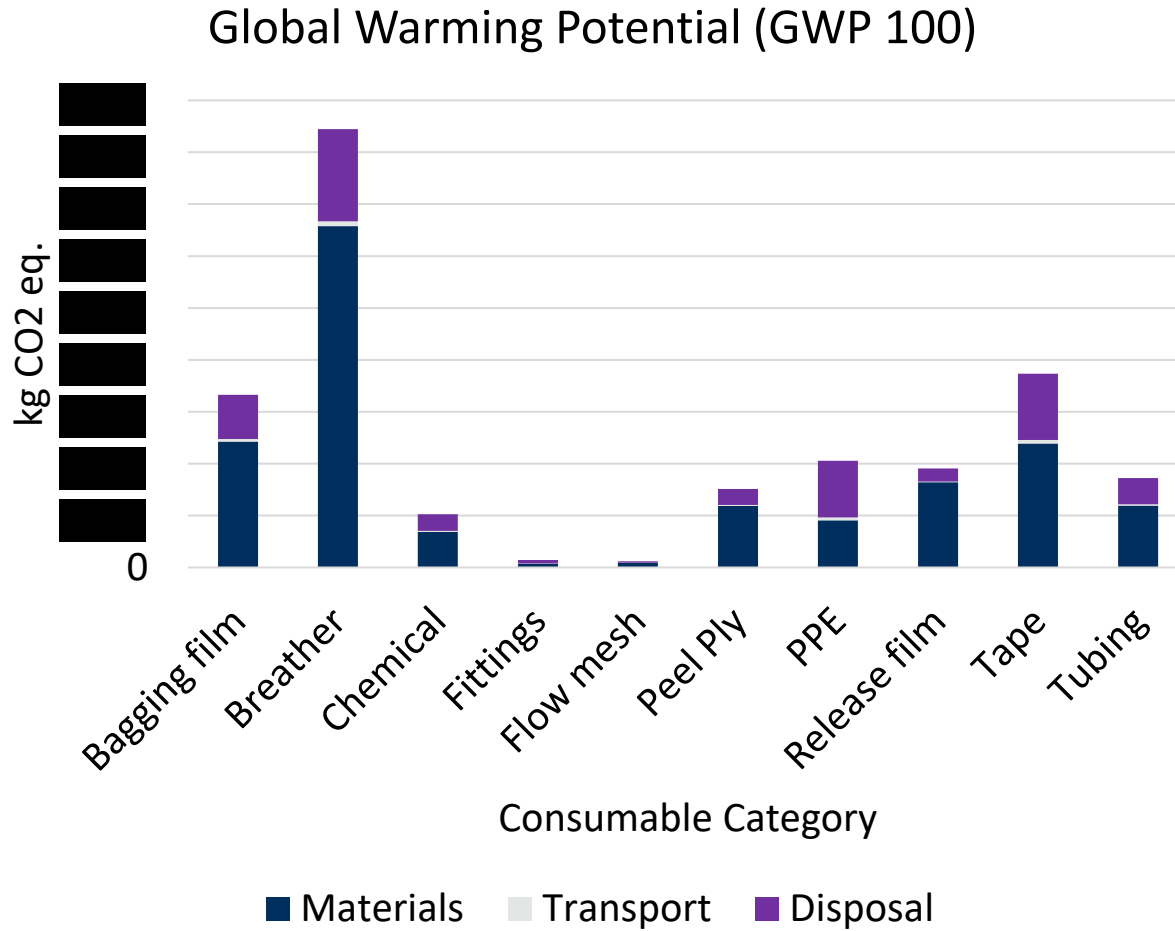
End-of-Life

- Energy Recovery (incineration)
- Minimise waste to landfill

HARD TO RECYCLE DUE TO RESIN CONTAMINATION



Hidden Impacts



What's Next...

Recycling of Mixed Consumable waste into a new value stream / product

Consumable Manufacture

Novel Materials – recycled, biobased?

Use Phase

Reusable Solutions from new materials

Disposal

Landfill

Incineration



Summary

- Consumable use creates significant amounts of waste and is often overlooked in environmental assessments of composites
- A facility LCA was carried out that identifies key consumables and highlights the need for targeted solutions
- More research is needed both in the short term and long term to provide validation to reassure industry of existing solutions AND enable the implementation of new/novel solutions



erica.barnes@bristol.ac.uk

erica.barnes@nccuk.com



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