



The Circular Economy Company

Presentation



The scale of the problem + our solution

Nearly **90 per cent** of the 33 million workwear items supplied in the UK annually currently end up in landfill or are incinerated; c. **zero** is recycled.

But the challenge and opportunity is even greater – **more than 330,000 tonnes** of textile waste is discarded every year in the UK. Almost all made from virgin materials.

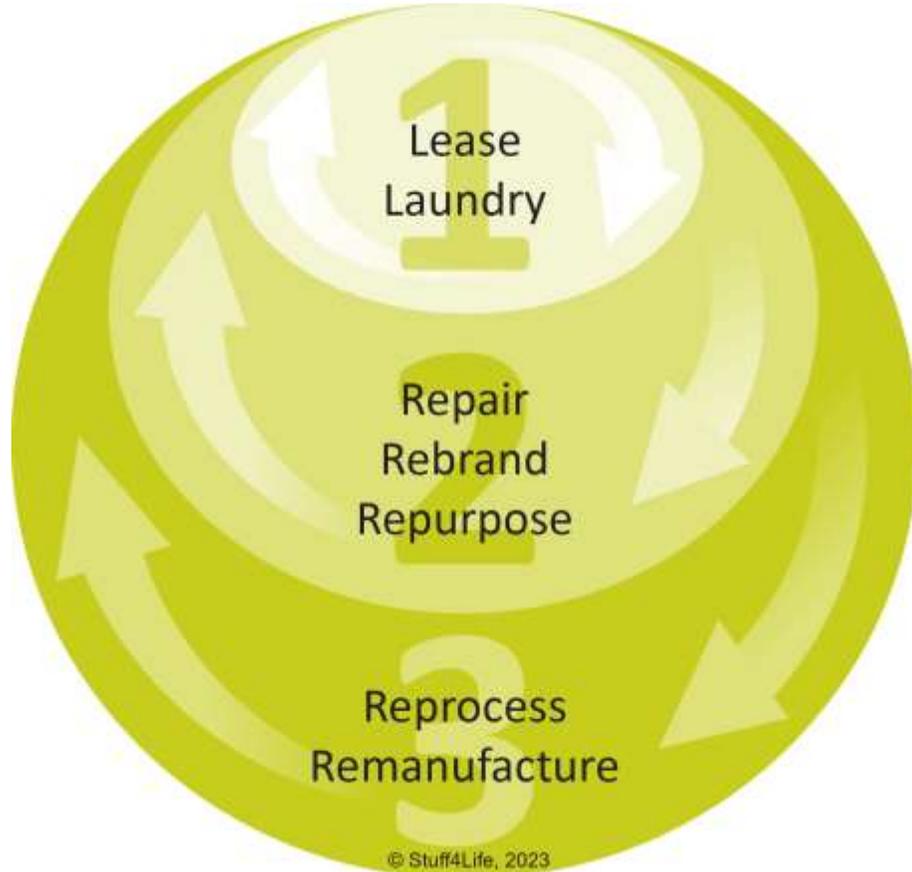
The significant supply chain impacts of textiles are almost entirely unaccounted for. **Extended Producer Responsibility (EPR)** is on the horizon.

We are ready:

- Stuff4Life works with you to challenge and champion change
- Second Time extends in-use phase and traceability of garments
- Workwear recycles materials in garments back into new products



How it works: circularity as a business model



Clothing as a Service (clothing supplier/end use customer)

Move to a lease/laundry system, sharing savings and making stuff last longer

- New items made from recycled content; in-use phase maximised by servitisation
- Work together to identify cost savings through servitisation
- Reduced waste, manufacturing and carbon impacts incl Scope 4 reductions
- Items repaired/rebranded where possible; recycled at end of life back into new product

Repair, rebrand, repurpose (Stuff4Life Second Time)

Keeping stuff in play for longer, delivering social value, reducing environmental impact

- Work with local/regional third parties to keep items in use for as long as possible
- Deliver social impact through providing employment, skills and donated equipment
- Items that can't be repaired, rebranded, repurposed are recycled back into new product

Circularity as a service (Stuff4Life Workwear)

Taking stuff back at the end of life to reprocess back into new PPE; preparing for EPR

- Patent-pending process depolymerises polyester ready for remanufacture
- Core to our market-leading, innovative circular business model
- Product outputs meet industry standards, recycled back into new product

Award-winning

Arco and Stuff4Life won Recycled Product of the Year at the 2023 National Recycling Awards for the jointly-developed Responsible Hi-Vis range. The judging panel said: *“This is an excellent circular solution to a challenging and niche segment of the clothing market that demonstrates the benefits of collaboration to deliver a truly systemic approach.”*

Stuff4Life has been nominated for The Earthshot Prize 2024 *“for their work in bringing the circular economy to life through their innovative technology.”*



THE
EARTHSHOT
PRIZE

NOMINEE

Process and outcomes

Why does workwear/teamwear/kit get thrown away?

- Worn out, too dirty, too smelly – let's recycle it back into new stuff!
- Damaged, wrong branding, people leave, rules change – it can be saved!
- Flawed design, built-in obsolescence/complexity – we'll help you turn it around!

Our process:

Assess – Stuff4Life will assess your workwear, identify the best options + feedback options

Repair, rebrand, repurpose – Second Time will formulate a plan to keep as much as possible in use

Reuse – Second Time will ensure someone else benefits from your garment, fully traceable

Retain – Second Time will endeavour to recover the garment again at the end of its second life

Recycle – anything that can't be reused will be recycled through Stuff4Life Workwear

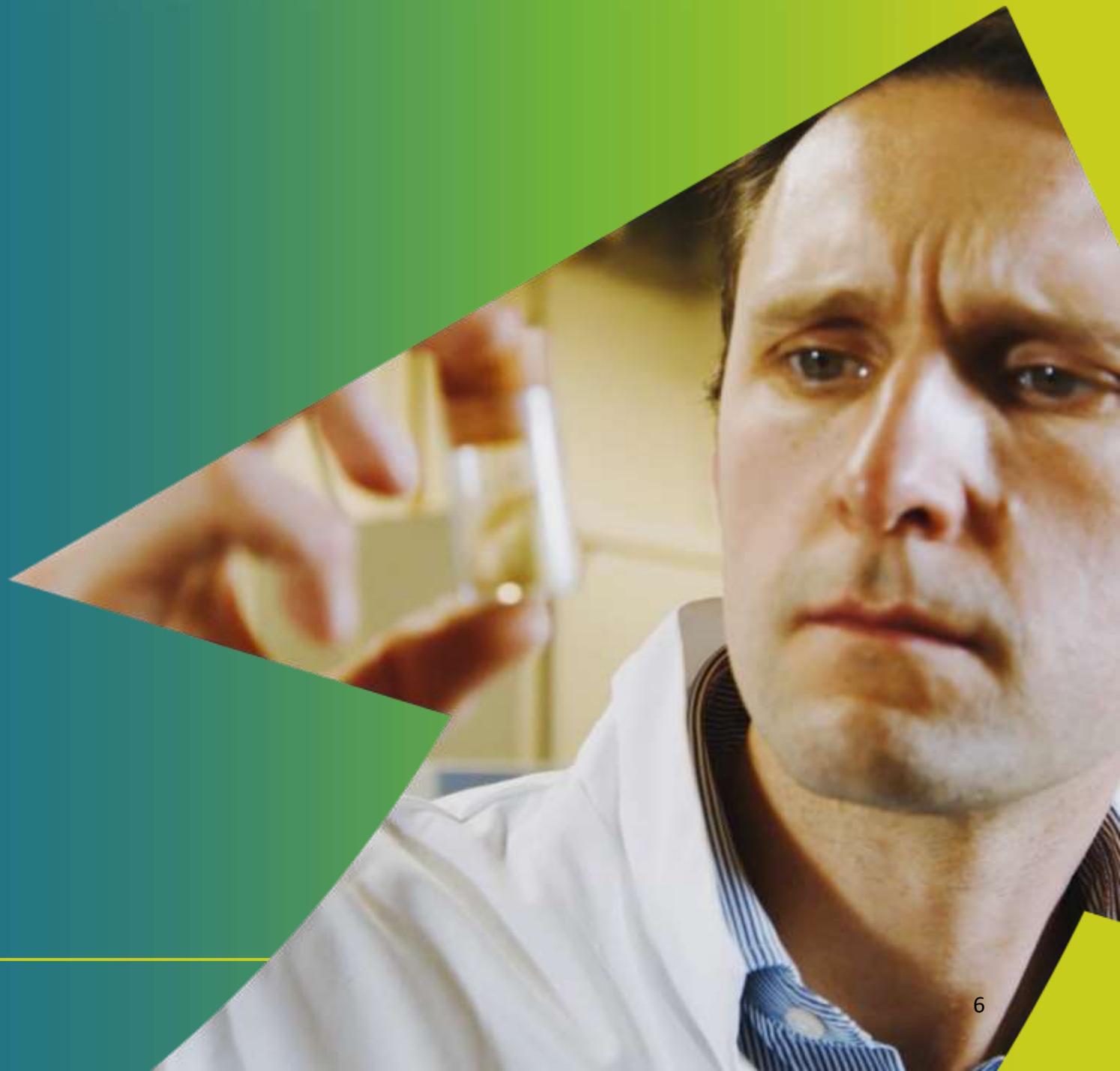


Outcomes/benefits:

Social Value Portal TOMS framework values plastic reuse and recycling at £1.58 per kg. As a worked example... for a workforce of 2,000 over an eight-year workwear and uniform cycle in a medium- to high-wear environment utilising Arco's Responsible range, and partnered with Stuff4Life's services delivers:

- Financial saving of up to £2.5 million from better buying
- Social impact value of £7.5 million by minimising waste and maximising recycling
- Carbon impact saving of 300 tonnes through combined efforts
- Investing in people via Second Time social enterprise and Mind – just like garments, people deserve a second chance

The science stuff...



Improving the sustainability of manufacturing

Stuff4Life Workwear is a feedstock chemical manufacturer; not a waste company/solution.

Stuff4Life Workwear's novel, patent-pending process uses hydrolysis to depolymerise polyester fabric. Our output – recycled Purified Terephthalic Acid (r-PTA) – is 'ready for repolymerisation'... and we have already demonstrated this.

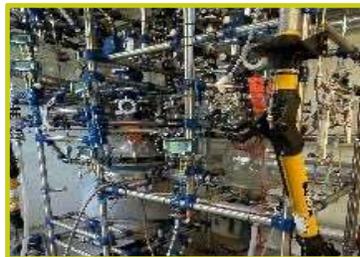
The process is **engineered for circularity**:

- Recovers 'as good as new' monomers to be used again by manufacturers, c. 50% lower CO₂ impact
- Creates outputs for use by existing processes and infrastructure, reducing Scope 3 emissions
- Enables recovery of non-polyester fibres, polymers, reflective beads, fasteners, dyes
- Decarbonises manufacturing supply chain, creating new opportunities and driving new business models
- Delivers product quality equivalent to standard industry virgin product, 'ready for repolymerisation'

The next steps are to: manufacture into yarn and into product; and repolymerise at larger scale.



Lab to scale-up
in < 12 months



Next scale-up
in progress



Product quality
remains our focus



Remanufacture
is our next step



Net-zero contribution – ‘end of life’ comparison

Stuff4Life Workwear has assessed the carbon impact of its depolymerisation technology as an ‘end of life’ alternative to Energy from Waste (EfW). Based on conservative assumptions, Stuff4Life Workwear’s process impact is approximately half that of EfW. This does not account for the additional benefit of utilising recycled monomers recovered from the process in new products or longer life design, which is considered separately.



Incineration benchmark: GHG emission of PET incineration = 3.9 kg CO₂-eq per kg PET



Stuff4Life comparison: 1 cycle with 10x solvent recovery = 1.99 kg CO₂-eq per kg PET

Acceptance criteria and recycling credits

We are keen to work with you to maximise resource efficiency, minimise and eliminate environmental impacts and maximise social value. Nothing is a problem, some challenges are just simpler than others!



- Garments/fabrics that can no longer be used but could be used again;
- Polyester, cotton or other fabric materials and composites;
- Safety wear for redistribution – unused/certified
- Full traceability of end-destination and take-back offered at end of second life



- Whole garments with a minimum polyester content of 65%
- Fast-track for 100% polyester garments in an approved closed-loop service
- Lab testing available to define PTA yield/demonstrate recyclability
- Full traceability of end-destination and circularity-as-a-service tracking/reporting

Stuff4Life will issue credits for each garment recycled based on a verified mass balance chain of custody model.





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Right here, right now: ready to go

Thank you

