



# NICER PROGRAMME & INNOVATE UK CIRCULAR ECONOMY FOR SMEs

## Pip & Henry



NICER PROGRAMME

**UKRI** Innovate  
UK

# Tiny steps giant futures

## The Challenge: What we were trying to achieve

Growing feet mean the average lifespan for a child's shoe is just 4-6 months. Each year in the UK, 80 million pairs of children's shoes are sold, 85-90% of which end up in landfill. Shoes are notoriously difficult to recycle as they contain up to 40 different types of materials, stitched or glued together.

Although a few companies are experimenting with ways to extend the life of children's shoes, existing solutions are few in number and offer either limited size expansion or limited market share (i.e. sandals). Other companies are experimenting with increasing the recyclability of their materials, largely through the use of mono-materials, without addressing mainstream footwear industry practices.

To tackle this challenge we are applying circular economy (CE) thinking at the product design stage, to develop three new children's shoe concepts which incorporate the key principles of product life extension and design for disassembly and recyclability.

## The Barriers: What are the common barriers and how can these be overcome

Shoemaking has not evolved over the years. The materials and manufacturing landscape is complex as well as being capital and labour intensive – making it hard (and expensive) to change established processes.

We saw the need to borrow from other industries such as toy making, apparel and jewellery, to completely evolve the manufacturing and design process for footwear. This approach has shaped the development of our novel concepts in a way that ensures operational and financial efficiency.

## The Approach: How we tackled the challenge

Out of a total of over 50 ideas, we chose three new concepts to take through the design and specification process to address the twin challenges of longevity and recyclability in children's shoes:

1. **Expandable concept:** an expandable sneaker offering 3x the lifespan of a standard shoe, with cost and carbon savings both in production and through reduced consumption.
2. **Multi-purpose concept:** designed for multi-occasion usage, the sock-in-sandal shoe reduces the need to purchase multiple shoe styles for different occasions.
3. **Disassembly concept:** designed for recyclability, this shoe is made without the use of glue, enabling disassembly and material value capture once the product is beyond repair.

We secured partnerships with laboratories and manufacturers to develop several rounds of prototypes for each concept and test them.

Through the process we developed strong working relationships with potential suppliers, building flexibility and resilience into the supply chain and aligning goals. In terms of collaboration, we also brought on board advisors with a wide range of expertise in the footwear industry, who have supported us in testing our ideas and overcoming challenges.

## Unexpected outcomes: What we learned along the way

Taking all three concepts through the design and specification stage at the same time proved to be a challenge and we had to extend our project by six months because all three concepts required several rounds of redesign and further iterations.

Due to limited time and resources, we paused on the disassembly project after achieving a preliminary concept design, postponing the release of this style until 2026. This enabled us to focus time and resources more fully on the remaining two concepts, which are due to launch in 2025.

*“It's time footwear – an everyday use product – is made, and designed differently - using circular economy principles that have been well established in the world of apparel and fashion.”*

**The Outcome: What we achieved and how it has impacted the business, society and key stakeholders**

The multi-purpose shoe is in the final design stages and we are excited to bring it to market in summer of 2025. The expandable shoe is in progress but needs further technical development before it can be brought to market. However, we expect to be ready to launch by late 2025. Both the multi-purpose and expandable shoe concepts have been tested with children and parents and have received positive reviews. Market research with the target market has demonstrated an appetite for such products and a willingness to pay a premium for products that will last longer.

**Looking forward: Next steps and future directions**

We have developed a business plan to bring all three concepts to market in the next two years and are working towards this aim. We aspire to capture 0.09% of the children's footwear market in Europe, reducing the environmental footprint of children's shoes by reducing the quantity required and increasing recyclability.

We are also keen to explore other CE principles such as:

- Offering a subscription model (product as a service). Parents return outgrown shoes, making purchase and recycling easier.
- Offering pre-worn shoes at lower prices. This would include cleaning and replacement of worn parts, made possible through the design for disassembly criteria.

There is also an opportunity to expand our range beyond children's footwear to adults who need adjustable or expandable footwear for example, due to health conditions.

This project was funded by the UKRI National Interdisciplinary Circular Economy Research Programme and Innovate UK. Development of the case studies has been supported by the UKRI Circular Economy Hub. More information about the CE-Hub can be found [here](#).

