

A person is shown from the side, working on a sewing machine. The scene is a workshop or factory floor, with various pieces of equipment and materials visible in the background. The image is overlaid with a semi-transparent blue rectangle, which serves as a background for the white text.

New Landscapes: Fashion, Textiles & Technology Catalyst R&D Grant Scheme

The British Council in partnership with UAL Fashion, Textiles and Technology Institute. Shaping the future of global fashion, textiles and technology.

By Professor Jane Harris, Laura Solomon and Amy Hulme

Published: 10 January 2024

How to cite: Harris, J., Solomon, L., Hulme, A., (2024), *New Landscapes: Fashion, Textiles, Technology Catalyst Research & Development*



Kita Menenun - Regenerative Cotton Arrives in Workshop

1	Executive Summary	4
2	Development of the 2023 New Landscapes: FTT Catalyst R&D Grant Scheme	10
2.1	Building on established methodology	12
2.2	Events as a core component of the scheme	12
3	Project and Partners	16
3.1	<i>Bureau 555</i> Digital perceptions	17
3.2	<i>Circular Livelihoods 2.0</i> Blending regenerative cotton and waste for a sustainable fashion future	21
3.3	<i>Regenerate Water Hyacinth</i> Optimising the potential of fibres extracted from local weed plants as a new wearable textile	25
3.4	<i>Waste Not</i> A culinary dye exchange	29
3.5	<i>Rafu Kar</i> Preserving heritage Indian mending skills and connecting skilled menders to a wider public	32
3.6	<i>Connecting Weaving Artisans</i> Increasing the visibility of artisan weavers in the Philippines	35
4.	Analysis	38
5.	Conclusions and Recommendations	41

1 Executive Summary



Caroline Hyde Brown—Oak and onion waste used as natural mordants.

Executive Summary

Climate change has driven the need for the fashion, textiles and technology (FTT) industry to redesign its relationship with both people and planet. Building a fairer, more inclusive and more responsible future requires collaboration on a global scale.

Research and development (R&D) can help tackle extreme poverty, create resilient infrastructure, and ensure sustainable consumption and production patterns¹ – core components of the FTT ecosystem. But there are regions around the world that require significant investment to progress their sustainable transformation.

To meet this opportunity for change, the **British Council's Architecture Design Team and Fashion (ADF) Team** in partnership with the **University of the Arts London Fashion, Textiles and Technology Institute (UAL FTTI)** delivered the **2023 New Landscapes: Fashion, Textiles & Technology (FTT) Catalyst R&D Grant Scheme**.

The scheme was designed to support and enable R&D collaborations between FTT SMEs in the UK and eligible countries in South Asia, East Asia, Sub-Saharan Africa and the Middle East and North Africa. It provided both financial support and bespoke specialist expertise to drive the progression of sustainable FTT R&D.

This report presents the findings from the **2023 New Landscapes: FTT Catalyst R&D Grant Scheme**. By facilitating access to leading academic research and researchers, the scheme aimed to aid growth for sustainable businesses within marginalised communities and, in turn, promote global prosperity at a sustainable level.

The scheme built on a methodology established through the **2022 New Landscapes pilot R&D programme**, and the **Business of Fashion, Textiles and Technology SME R&D programme**². The methodology was developed to foster and facilitate new ideas around the future of sustainable and socially-engaged fashion and apparel, and adjacent textiles and technology industries, with access to specialist academic research, expertise and facilities.

An open call inviting R&D project proposals aligning with the areas of sustainability, materials, manufacturing and commerce, retail and engagement, and digitisation was released. Successful proposals received a place on the programme with an award of £6,000 plus £15,000 of in-kind business and R&D support.

This support included hybrid FTT business and leading academic expertise, mentorship on conducting R&D for micro businesses, and guidance on testing and prototyping. Awardees also benefitted from peer-to-peer learning, networking opportunities, along with funding advice for further R&D, academic industry partnered research, and alternative forms of investment.

¹ <https://sdgs.un.org/goals>
² bftt.org.uk/sme-support-programme/

The scheme supported participants to:

- Increase the global network of practitioners in sustainable and responsible approaches
- Enable development of sustainable and circular FTT practices
- Increase experimentation and testing of sustainable design and production solutions exchange methods of designing and producing FTT using more sustainable methods.

This report outlines the real-world impact of the **2023 New Landscapes: FTT Catalyst R&D Grant Scheme** within the UK and six different countries (p.8–9), along with case studies detailing each of the awarded projects (p.10–37). Additionally, it explains the scheme’s methodology (p.11–13), examines successful and challenging elements (P.39–40) and includes a review of next steps and potential methods for scaling up the scheme (P.42–43).

There has never been a more important time to explore the FTT industry’s relationship with its workforce and the environment. Through engagement with the **2023 New Landscapes: FTT Catalyst R&D Grant Scheme**, young designers have become advocates for sustainable and responsible approaches to FTT and are leading and inspiring positive change.

“The urgency required of the Fashion, textiles and technology industry to re-design its relationship with the environment and communities to reduce impact on the climate is now imperative. The 2023 New Landscapes: FTT Catalyst R&D Grant Scheme expands the reach and impact of the 2022 New Landscapes pilot programme, creating a global network of engaged young designers and SMEs designing and producing in a more sustainable way. We are thrilled to share the R&D, impact and benefits created by our six funded innovative SME partners and are excited to continue to work with the British Council to further expand the benefits of funding global SME partnerships.” – Professor Jane Harris, Director of the UAL Fashion, Textiles and Technology Institute (FTTI).

“Building connection, understanding and trust between the UK and countries around the world is at the heart of the British Council’s work. The New Landscapes: FTT Catalyst R&D Grant Scheme developed and delivered together with UAL’s Fashion, Textiles and Technology Institute exemplifies this mission by actively facilitating international cooperation and learning not only in service to the grant projects, but also to benefit the wider cultural, social and environmental values of the FTT sector. We are proud to have further developed the grant offer and support from the 2022 pilot programme to increase connection and demonstrate greater impact in relation to the UN’s Sustainable Development Goals and the UK’s international development strategy.” – Sevra Davis, Director of Architecture Design and Fashion at the British Council



Natural dyes explorations by sustainable fashion brand 11.11/eleven eleven ©British Council.

The funding call in brief

23

Total applicants

6

Awarded projects

13

SMEs supported

£120k

Funding & in-kind support provided

£21k

Funding & in-kind provided per project

6

Months project duration

An open international funding call. Applications were shortlisted and final proposals pitched to a commissioning panel.



- Awardee SME ODA and UK locations
- | | |
|------------------------|---------------------------|
| 1 London/Norwich/Wales | 5 Kuala Lumpur (Malaysia) |
| 2 Dhaka (Bangladesh) | 6 Lagos (Nigeria) |
| 3 New Delhi (India) | 7 Manila (Philippines) |
| 4 Jakarta (Indonesia) | 8 Nairobi (Kenya) |

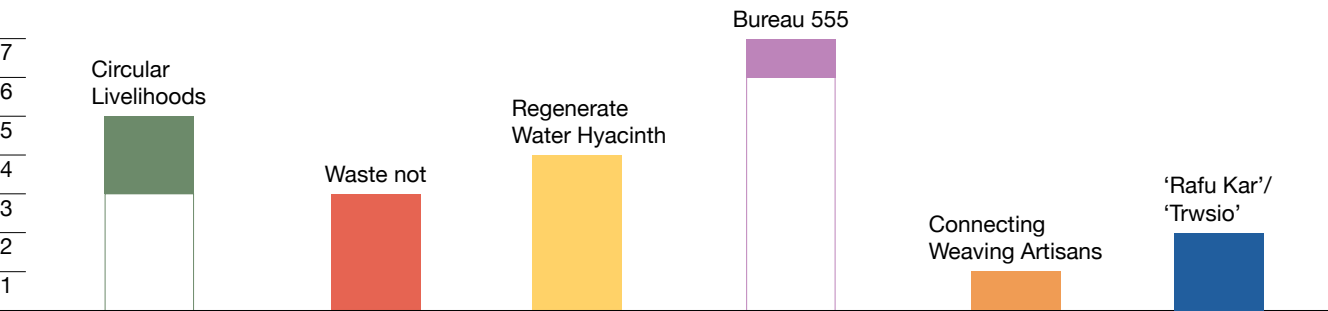
The scheme provided



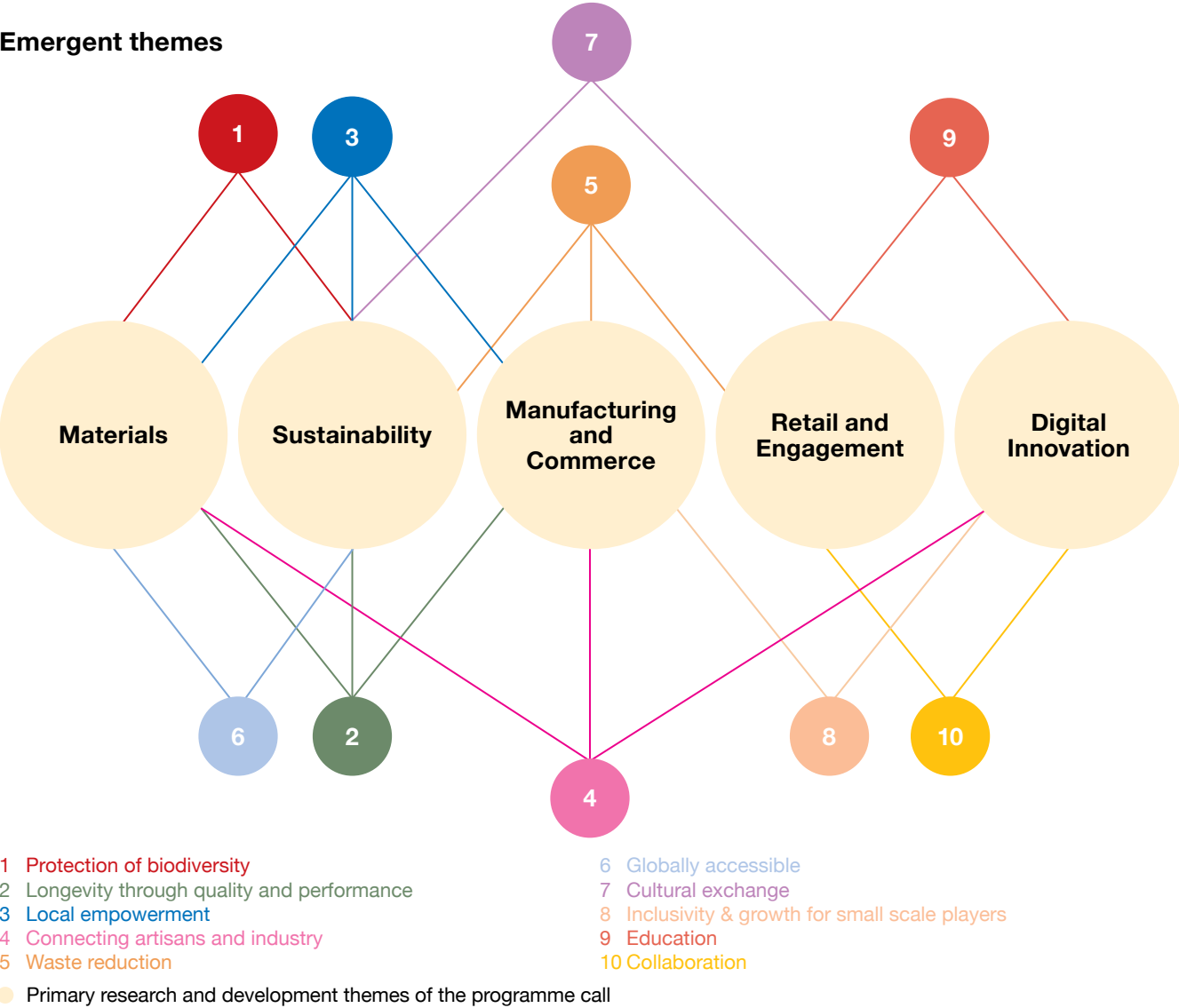
Sustainable development Goals reached across the projects



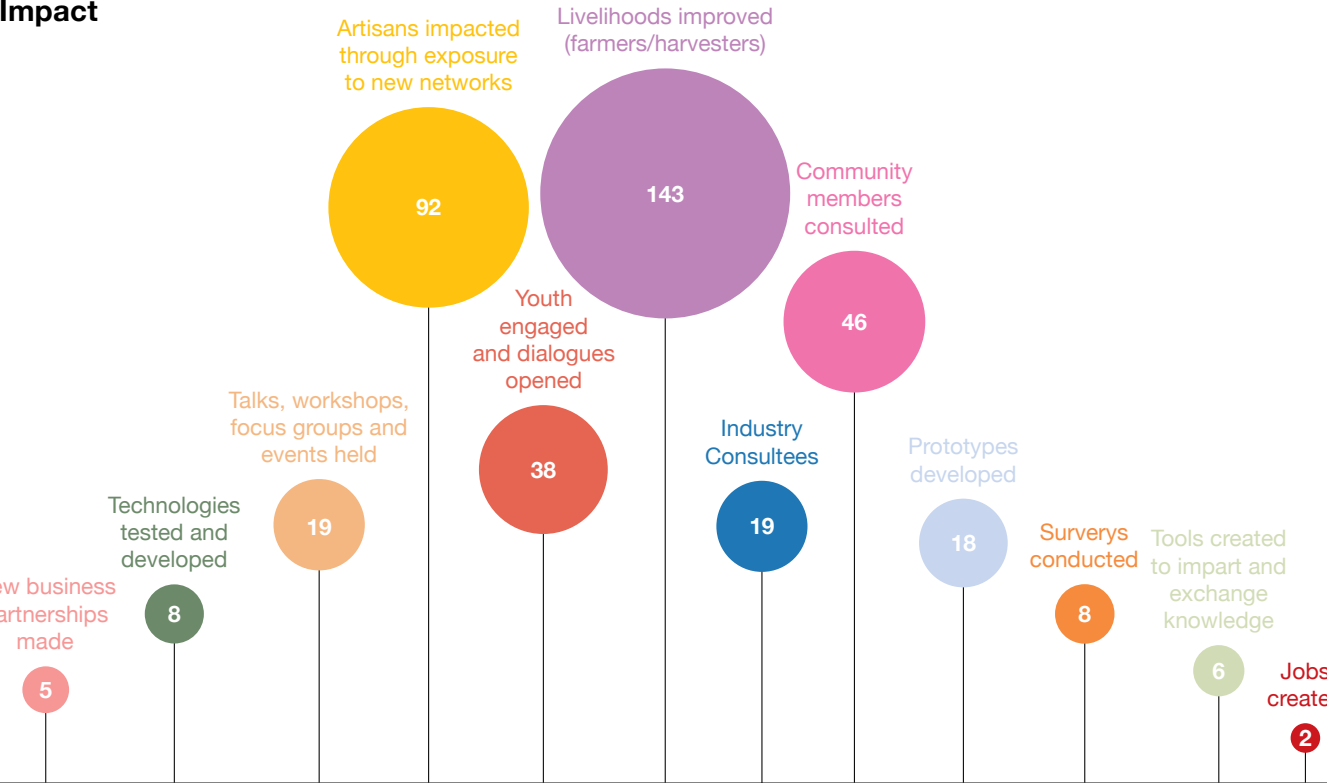
TRL (Technology Readiness Level achieved)



Emergent themes



Impact



2 Development of the 2023 New Landscapes: FTT Catalyst R&D Grant Scheme

Bureau 555—Shoulder drape research

The **2023 New Landscapes: FTT Catalyst R&D Grant Scheme** was designed to nurture international co-operation around responsible and sustainable FTT. The objective of the second call was to build on learnings from the **2022 New Landscapes pilot R&D programme**, while bringing to life new ideas to help shape the future of sustainable fashion and textiles globally. Supporting the cultural, social and environmental values of the FTT sector, the scheme facilitated international co-operation with partnerships between SMEs and academic institutions in the UK and international SMEs.

Six UK SMEs and their overseas partners—spanning South and Southeast Asia and West Africa—were awarded funding to develop R&D projects over a six-month period (March 2023 to September 2023) supported by the UAL FTTI and British Council.

Each project had a strong focus on sustainable innovation across manufacturing and commerce, garment aftercare, materials, colouration and digital practices, with the potential to generate new opportunities for wider international collaboration. R&D took place in the UK and overseas under the academic guidance of the UAL FTTI.

Project R&D focus areas:

- **Reducing textile waste through the scale up of 2D and 3D digital garment sampling**
- **Scale up of circular woven textiles, incorporating waste that supports the working practices of textile communities**
- **Establishing a virtual platform to support repair and aftercare practices**
- **Exploring food waste to achieve accessible textile-dyeing methods that are less environmentally harmful**
- **Establishing a toolkit to determine how weaving communities based in remote locations can become more credible actors within the wider fashion and textile ecosystem**
- **Developing a durable and sustainable textile made from water hyacinth blended yarns**

The structure of the **2023 New Landscapes: FTT Catalyst R&D Grant Scheme** connected each of the parties outlined below with a key participating role in the project:

- **British Council:** provided the project funding for the 2023 New Landscapes: FTT Catalyst R&D Grant Scheme
- **UAL Fashion, Textiles and Technology Institute (UAL FTTI):** provided project management, access to transdisciplinary academic R&D expertise, knowledge exchange, communication and business support
- **UK Company Lead:** the key contact at the UK SME carrying out the project work
- **International Project Lead:** the key contact at the International SME

- carrying out the project work
- **FTTI Project Lead, Academic Mentor, UK Company Lead**, and **International project Lead** maintained a collaborative partnership approach throughout, linking in associate communities as appropriate.

2.1 Building on established methodology

2023 New Landscapes: FTT Catalyst R&D Grant Scheme builds on methodology developed through two pioneering programmes: the **UAL Business of Fashion, Textiles and Technology** (BFTT) and the **2022 New Landscapes pilot R&D programme**.

The **BFTT** was one of nine UK-wide Creative R&D Partnerships³ as part of the £80m UK Creative Industries Clusters Programme (CICP)⁴, hosted by the Arts and Humanities Research Council (AHRC 2018-2024)⁵. It developed a bespoke SME R&D programme⁶ drawing from the UK Government’s longstanding Knowledge Transfer Partnership (KTP) scheme⁷ with adaptations to meet the specialist requirements of UK FTT businesses.

The **2022 New Landscapes pilot R&D programme** provided opportunity to further develop the R&D call for a second round of funding with requirements specific to ODA countries in mind.

The following adaptations were put in place:

- Length of project timeframes extended from four to five months, with the additional month given to complete reporting
- Following the level of interest from an open call, The British Council and UAL FTTI awarded an additional project, bringing the total number of awards to six
- Total amount of in-kind support provided by FTTI increased to a value of £15,000
- To optimise scale-up opportunities, two awardees from the 2022 New Landscapes pilot R&D programme received follow-on funding
- FTTI provided advice and support for those in receipt of follow-on funding for advanced R&D, between awardees and other organisations

2.2 Events as a core component of the scheme

Four workshop events were facilitated by the UAL FTTI for awardees during the six-month scheme. Each event aimed to further develop partnerships through networking, community building and facilitated learning.

1. **May 2023:** An introductory event launched the initiative with the six awardees from the 2023 New Landscapes: FTT Catalyst R&D Grant

3 The UAL BFTT HEI partnership includes Loughborough University (LU); University College London (UCL); Queen Mary University of London (QMUL); University of Leeds (UoL); University of Cambridge (UoC) and the Victoria and Albert Museum (V&A). <https://bftt.org.uk/>

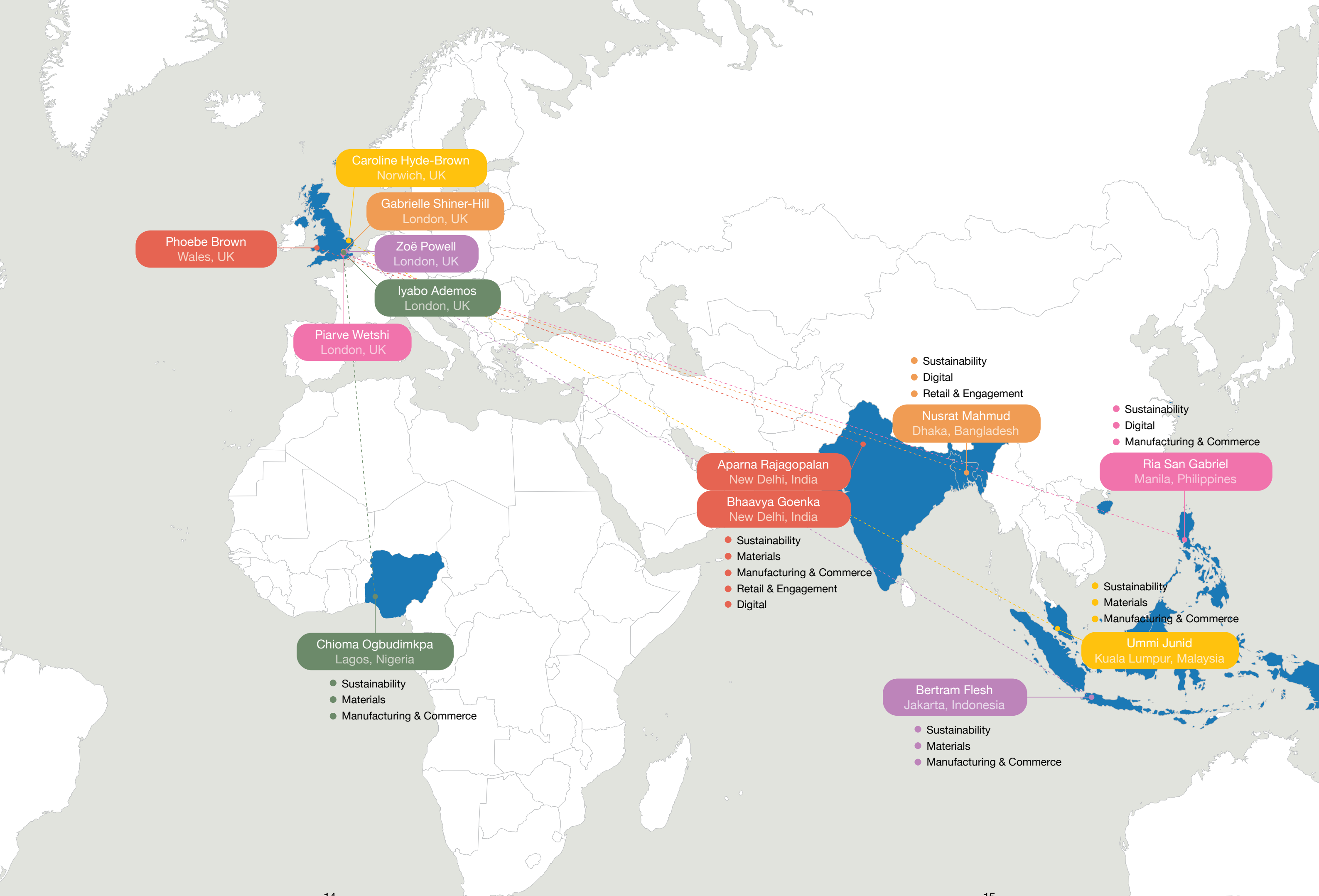
4 Creative Innovation is an emergent platform to showcase outputs and impact of the CICP Programme: creativeinnovation.uk/

5 ukri.org/councils/ahrc/

6 bftt.org.uk/sme-support-programme/

7 ktp.innovateuk.org/

- Scheme presenting their project proposals. *Attendees included the New Landscapes SME awardees, the FTTI and BFTT networks, British Council, and international country offices.*
2. **June 2023:** The UAL FTTI hosted an in-person R&D networking event and all-day workshop at Plexal, Queen Elizabeth Olympic Park, London. BFTT and New Landscapes SMEs showcased their R&D with over 80 attendees from across the UAL, UAL FTTI, BFTT, and New Landscapes networks and awardees.
 3. **August 2023:** A third online event was facilitated by the UAL FTTI, focussing on fashion, textile and technology sectors, their global environmental impact, and opportunities for leadership on sustainability and innovation. New Landscapes awardees explored many aspects of the themed workshop, which informed their R&D. *Attendees included the New Landscapes SME awardees, the UAL FTTI and BFTT networks, British Council UK, and international country offices.*
 4. **September 2023:** New Landscapes SME awardees presented project outcomes, outlining the impact arising from their R&D. *Attendees included the New Landscapes SME awardees, the UAL FTTI and BFTT networks, British Council UK, and international country offices.*



3 Projects and Partners



Kita Menenun – Pak Yassin Reeling

3.1 Bureau 555 – Digital perceptions

Launched as a business in 2022, Bureau 555 is a legacy project of the **2022 New Landscapes pilot R&D programme**. The business was awarded follow-on funding to optimise digital methods it developed to reduce textile waste produced by conventional textile and fashion sampling processes. Bureau 555 provides digital skills attainment to Bangladeshi workers with essential garment fabrication skills, enhancing professional development and advancement.

- **Gabrielle Shiner-Hill, London, UK (Bureau 555) + Nusrat Mahmud, Bangladesh (Hamid Fabrics & Bureau 555)**
Bureau555.com
Hlf.com.bd
Shinerhilldesign.com

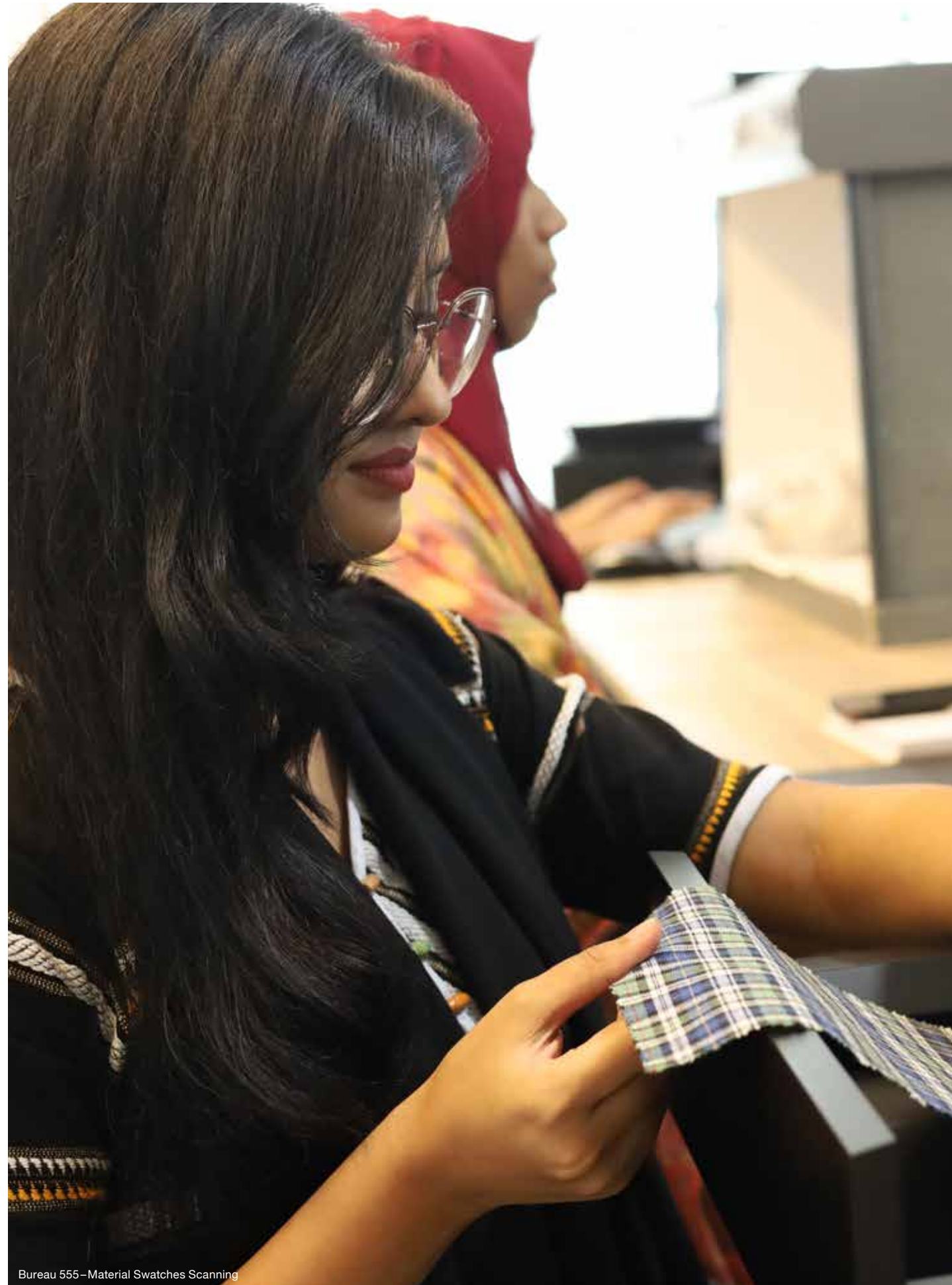
The textile industry is one of the worst environmental polluters⁸. However, while there is a lot of discussion around retail waste in ‘fast fashion’, there is less focus on the waste produced before garments reach the High Street. Traditional models of product development rely on physical processes, such as the production of fabric, creation of garment samples, and transportation of samples from country to country. This results in landfill waste from fabrics and apparel that do not reach production, high volumes of carbon emissions from mills and transport, and wasted time in the sampling of new products that never make it to market.

The tactility of textiles means potential customers will often travel to international tradeshows to experience the touch and feel of fabric samples that have been shipped across the globe. Until now, the fashion industry has not had access to technology that provides designers and developers with the conviction that the fabric quality they perceive on a digital screen will match their expectations in real life.

Companies have been slow to adopt digital sampling methods due to costs in software and limited training expertise, which benefits from both physical and digital knowledge and experience.

“We focused on making 3D visualisation of textiles more recognisable for key stakeholders in the supply chain and closing the gap between physical fabric testing and 3D material testing. Alongside developing our material digitisation skills we held open talks to educate the fashion industry on what digital fabrics are and how they are made, why they are important and how they can be made to the highest quality.” – Gabrielle Shiner-Hill

8 <https://doi.org/10.3389/fenvs.2022.973102>



Bureau 555 – Material Swatches Scanning



Bureau 555 – 3D fabric processing in Vizoo

Bureau 555 – 3D CLO QC

Gabrielle Shiner-Hill (UK) and Nusrat Mahmud (Bangladesh) founded Bureau 555 as a global business after initial funding from 2022 New Landscapes pilot R&D programme enabled them to survey FTT industry perception of digital textiles. They successfully developed digital assets of more than 200 fabrics for international brands and began to reduce the skills gap in digital sampling by training staff in Bangladesh and the UK.

Digitisation of fabrics

Bureau 555 was able to improve the digital representation of fabrics through specialist expertise provided by academic mentor Professor Jane Harris, UAL FTTI, alongside advanced knowledge from the project teams, technical advances in the field, and valuable feedback gained directly from potential users, designers and textile companies.

“In the current time, there’s a growing need for sustainable workflows, like DPC, to complement the circularity and environmental initiatives in the supply chain.”

–Nusrat Mahmud

Raising awareness of digital sampling benefits

Bureau 555 educated potential clients on the viability of digital sampling of garments and textiles through workshops comparing digital and physical methods. This built confidence around the merits of digital sampling. By calculating and comparing the carbon footprint of a physical garment with its digital representation, the partnership also illustrated environmental savings that could be achieved through digital sampling.

“During the grant we scanned 294 fabrics, saving 8,820 yards of textiles and reduced the supply chain’s CO2 emissions by 4107.18 KG of CO2.” **–Gabrielle Shiner-Hill**

Key outcomes

1. Tested new approaches to visualising textiles in 3D, making 3D visualisation of textiles more relevant for key stakeholders in the supply chain
2. Development of a 'fabric test report 2.0', closing the gap between physical and digital fabric testing and representation
3. Development of an open-source digital material database, allowing companies to use digital materials more lucratively and with less perceived risk
4. Provided life-cycle analysis results for a 100% cotton shirt vs the same product created digitally as baseline evidence for switching to digital sampling
5. TRL (Technology Readiness Level) Start 6 > End 7

Key themes

Sustainability
Digital
Retail and engagement

Sustainable Development Goals contribution



3.2 Circular Livelihoods 2.0 – Blending regenerative cotton and waste for a sustainable fashion future

Circular Livelihoods 2.0 builds on a project funded by the 2022 New Landscapes pilot R&D programme to develop a new type of circular textile yarn. The team were awarded follow-on funding to scale up a prototype yarn made using locally and regeneratively-grown cotton, combined with recycled denim waste. They also explored the development of a yarn made with fibres from the kapok tree, which is cultivated for its cottonlike seed fibres. By establishing a viable production route for circular textiles, the project created a foundation in Indonesia for a local, self-reliant, and circular fashion industry. The Rumah SukkhaCitta foundation will provide opportunities and income to Indonesian artisans and farmers while reducing waste and environmental impact.

→ **Zoë Powell Best, London, UK + Bertram Flesch (SukkhaCitta), Indonesia**
[Sukkhacitta.com](https://sukkhacitta.com)
zoepowell.com
rumahsukkhacitta.org/circular-livelihoods



Indonesia's textile industry has an increasingly negative environmental impact due to its practice of discarding and burning waste. Independent researcher and textile designer Zoë Powell Best (UK) and Chief Sustainability Officer of social enterprise SukkhaCitta, Bertram Flesch (Indonesia), expanded their portfolio of circular yarn prototypes to include kapok, a plant fibre that is usually too brittle for spinning. By developing a process for spinning the fibre waste, usually deemed worthless, into yarn, the partnership is supporting local industry and addressing textile waste with viable, profit-making initiatives.

Alongside waste, Indonesia's textile industry is responsible for increased CO₂ emissions through intensive monoculture farming of cotton, which requires fertiliser and pesticides, as well as a high volume of water. The project team worked directly with smallholdings, educating farmers on how

to utilise sustainable, mixed-farming methods to reduce the environmental impact of their crops. Farming in this way not only has the potential to increase biodiversity, but also result in increased income for farmers.

“Traditional, smaller-scale methods are regenerative. Mixed crops and animals mean land can be fed with compost and manure, and there is less need for pesticides. It enables the soil to retain more water and, importantly, it can lock in more carbon. Land that is cultivated using a regenerative approach can sequester 10 tons of CO₂ per hectare compared with conventional cotton cultivation, which can create around 3 tons of CO₂ per hectare. Growing a mixture of crops means farmers can also provide food for their community.” Bertram Flesch, SukkhaCitta

Working with local yarn spinners

Working with local yarn spinners, the Circular Livelihoods team explored and tested the best compositions for blending regenerative cotton with waste plant fibres. Fabrics were woven from the yarns, then tailored into garments. These were user-tested to assess the comfort and feel of the fabrics. Development of yarn and testing of fabrics support the route to commercialisation, which will have a positive impact on communities and the environment.

Developing the look and feel of the fabric

Informed by feedback from in-house designers on its sampling floor, SukkhaCitta advanced the research by developing the feel and aesthetic of the cloth. Academic mentor Professor Mohammad Mahbubul Hassan, UAL FTTI, advised the project during yarn development and manufacture, alongside testing methods to prove strength and durability. SukkhaCitta collaborated with SMK3, a local textile vocational school in Indonesia, providing access to a textile testing laboratory and manufacturing equipment.



SukkhaCitta Cotton Farmers working East Java



Kita Menenun Weaving preparation

Ashfa-Weaver weaving Kapok&Cotton fabric using handloom in Central Java, Indonesia.

“Land that is cultivated using a regenerative approach can sequester 10 tons of CO₂ per hectare compared with conventional cotton cultivation, which can create around 3 tons of CO₂ per hectare.”

Key outcomes

1. Optimised denim waste and regenerative cotton yarn prototype
2. Scaled up production of fabric lengths made from regenerative cotton and denim waste yarn blend, developed via the 2022 New Landscapes pilot R&D programme
3. Garments made from regenerative cotton and denim waste fabric
4. Two yarn prototypes made from variations of regenerative cotton and kapok fibre blends
5. Prototype fabric lengths made from regenerative cotton and kapok fibre yarn blends
6. TRL (Technology Readiness Level): Start 3 > End 5

Key themes

Sustainability
Materials
Manufacturing and commerce

Sustainable Development Goals contribution





Water hyacinth stems soaked in Sodium Metabisulphite and spread to dry in the sun

3.3 Regenerate Water Hyacinth–Optimising the potential of fibres extracted from local weed plants as a new wear-able textile

Regenerate Water Hyacinth aimed to provide job opportunities to local harvesters, spinners and weavers in Nigeria by exploring new ways to process water hyacinth fibre. The project team advanced development of this raw material, making it suitable for application in the fashion industry.

→ **Iyabo Ademosu (Massassi B), London, UK + Chioma Ogbudimkpa (Red Button), Nigeria**
msha.ke/massassib/
redbuttonng.com/

In the waterways of Nigeria, water hyacinth is considered a pest plant species. The invasive plant covers the water surface, preventing the movement of people, transport, and the use of hydroelectric power channels, as well as threatening biodiversity.

*“Water hyacinth (*Eichhornia crassipes*) is a highly invasive aquatic plant. It rapidly reproduces and covers the surface of freshwater bodies such as lakes, rivers, and ponds. This plant poses significant ecological and economic problems in many parts of the world especially in coastal regions.”*

– **Iyabo Ademosu and Chioma Ogbudimkpa**



Iyabo Ademosu in Lagos, Nigeria, with artisans sorting and cleaning freshly harvested water hyacinth stems in preparation for fibre extraction



Iyabo Ademosu Extraction of water hyacinth fibre using carding brushes



Iyabo Ademosu Extraction of water hyacinth fibre using carding brushes



Iyabo Ademosu—Water Hyacinth and Cotton yarn

Led by apparel brand entrepreneurs, Iyabo Ademosu (UK), and Chioma Ogbudimkpa (Nigeria), the Regenerate Water Hyacinth project developed a yarn that utilises this nuisance plant and provides potential commercial opportunities for artisans, designer makers and local fishermen. Its stiff and strong properties mean water hyacinth is used in parts of the world for making baskets and furniture, which are typically crafted using a full stem. The project team explored ways of processing the plant to produce

a quality fibre output, suitable for blending and spinning with other plant fibres, such as bamboo. They developed a yarn prototype that demonstrates the viability of spinning and weaving water hyacinth fibres for use in clothing and apparel.

Improving economic outcomes

By increasing demand for water hyacinth fibre, the research seeks to increase the volume harvested, removing the hazard from the waterways and supporting local communities to earn a living from this invasive species. The R&D of a new yarn prototype involved engaging with local communities in Nigeria, including collaboration with rural harvesters, fishermen, yarn spinners and artisans.

Innovation in fibre

Expertise in fibre technology from UAL FTTI informed the product development process. Professor of Sustainable Materials, Mohammad Mahbubul Hassan provided advice on the most appropriate sustainable chemicals and processes to use for treatment of the water hyacinth fibre. Laboratory experiments were conducted to explore how processing of the plant could be optimised to produce textile-grade spinnable fibres.

“For this project over 300 pounds of water hyacinth weed was harvested, clearing about 800sqm of water area”
–Iyabo Ademosu and Chioma Ogbudimkpa

Key outcomes

1. Development of a novel first stage yarn prototype for apparel application made using water hyacinth fibres
2. Creation of a Roadmap for scale-up
3. TRL (Technology Readiness Level): Start 1 > End 4

Key themes

Sustainability
 Materials
 Manufacturing and commerce

Sustainable Development Goals contribution





Caroline Hyde-Brown—using food waste to dye yarn

3.4 Waste Not—A culinary dye exchange

Waste Not explored methods of producing natural textile dyes derived from food waste. The collaborative project worked with youth groups and small businesses in the UK and Malaysia to share knowledge of how food waste may be used to create stable natural dyes suitable for clothing and apparel.

→ **Caroline Hyde-Brown, Norwich, UK + Ummi Junid, Malaysia**
[theartofembroidery.co.uk/](http://theartofembroidery.co.uk/duniamotif.com/)
duniamotif.com/

“Waste Not is an innovative project that combines culinary arts, sustainability, and cultural exchange to harness the potential of food waste as a valuable resource, with the ultimate goal of influencing the fashion and textile industries in the UK and Malaysia towards more sustainable practices.”—Caroline Hyde-Brown & Ummi Junid

Around three quarters of the 6.6 million tonnes of food we throw away each year in the UK could have been eaten (4.5 million tonnes)⁹. Synthetic, petrochemical-based dyes used in the fashion and textile industry have a significant environmental impact, limiting the biodegradation and composability of textiles.

By exploring natural dye recipes and processes, the Waste Not project aimed to establish circular applications for domestic and industrial food waste—reducing the amount of organic waste that ends up in landfill and providing a more sustainable alternative to synthetic dyes.



Ummi Junid—SME workshop in Malaysia

⁹ <https://wrap.org.uk/sites/default/files/2023-11/WRAP-Food-Surplus-and-Waste-in-the-UK-Key-Facts-Nov-2023.pdf>



Ummi Junid: Coconut used as natural mordant to dye fabric



Ummi Junid: SME workshop Malaysia dying fabric with natural mordant

Engaging with next generation

The Waste Not team used the project as a vehicle to inform communities about waste and how to create value from it. Facilitated workshops were key to the project, educating and sharing knowledge with youth groups, industry, and small businesses in both the UK and Malaysia.

“Crafters are more than just makers. Craft-making embodies a focused relationship with your materials. You need to be able to understand the environment of the material so you can create a new form.” –Ummi Junid.

Exchange of approaches and techniques

Project partners Caroline Hyde-Brown (UK) and Ummi Junid (Malaysia), both experienced in the use of natural dyes, used the project to exchange knowledge on traditional approaches and techniques, equipping each of them with new skills. They also explored collaborations with industry, and exchanged knowledge with communities in both the UK and Malaysia.

Recipes for colour

A key aim of the project was to map available food waste streams in the UK and Malaysia, before exploring approaches to producing a range of natural dye colours from the chosen food waste. The partners placed importance on testing colour fastness to evidence the viability of the dyes for use in apparel contexts. Academic mentor Professor of Sustainable Materials,

Mohammad Mahbubul Hassan provided R&D support throughout the programme provided knowledge on plant chemistry, on suitable natural mordents for colour recipes, and the introduction of methods to validate findings.

Key outcomes

1. Mapping commercial food waste streams in the UK and Malaysia
2. Generation of colour sample charts and natural dye recipes
3. Knowledge sharing through facilitation of educational workshops both in the UK and Malaysia
4. Development of an educational website
5. TRL (Technology Readiness Level): Start 0 > End 3

Key themes

Sustainability
Materials
Manufacturing and commerce

Sustainable Development Goals contribution



Iyabo Ademosu: Extraction of water hyacinth fibre using carding brushes

3.5 Rafu Kar – Preserving heritage Indian mending skills and connecting skilled menders to a wider public

Taking inspiration from the Welsh Repair Directory, the Rafu Kar project aimed to create a publicly available, free-to-use, digital community platform to connect people in India to indigenous textile menders – providing artisan menders with increased income and keeping garments out of landfill.

- **Phoebe Brown (Repair Café Wales), Wales, UK + Bhaavya Goenka (Iro Iro), India + Aparna Rajagopalan (Circular Design India), India**
repaircafewales.org/
iroirozerowaste.com/

The fashion and textile industry is estimated to generate 92 million tons of textile waste each year¹⁰. India has communities of indigenous textile makers and menders who have the skills to extend the life of garments, reducing the amount of waste. However, these skilled workers are not readily visible to consumers.

Class differences and limited access to available technology have increased the gap between artisan textile menders in India and the wider fashion and textiles industry, making it difficult for the mender community to survive.

In the face of a rapidly expanding fast-fashion industry, indigenous textile practices and mending techniques are being lost. These practices have both cultural significance and practical value. However, indigenous textile menders are not involved in mainstream conversations around circularity and are less aware of their value in a sustainability context.

In the UK, the Repair Directory is an online resource created in Wales to make it quick and easy for people to find a reliable ‘repair shop’ in their local area¹¹.

“By making the indigenous cultural practices visible, we want to highlight the critical role the informal sector has been play, to retain the value of textiles but have not been included in mainstream, industry-led conversations around circularity.” – **Phoebe Brown, Bhaavya Genka, Aparna Rajagopalan.**

¹⁰ <https://www.fashionrevolution.org/waste-is-it-really-in-fashion/>
¹¹ <https://repairefficiencywales.co.uk/what-is-the-repair-directory/>

Circularity by design

Circular Design India and Repair Café Wales collaborated to support and highlight the skills that India’s artisanal communities offer. The project engaged with menders and the public to understand barriers to garment aftercare services, such as mending. The partnership, supported by academic mentor Rebecca Hoyer, researched and identified factors affecting behaviour change, highlighting a disconnect between artisans and consumers. Research findings supported initiatives to bring long-term employment opportunities to Indian menders, working towards more sustainable consumer practices and benefitting the local economy.

Digitising repair connections

The creation of a prototype digital platform highlighting repair practises in India was modelled on The Repair Directory for Wales. The platform connects indigenous textile menders in India to consumers and showcases local repair services. The pilot online tool was designed to appeal to both menders and those looking for mending services in India. The intention is that the platform concept is transferrable, scalable, and adaptable to suit other countries.



Bhaavya Goenka – Mender at Chawri Bazaar



Bhaavya Goenka – Mender at Chawri Bazaar

Key outcomes

1. Development of an educational platform connecting the consumer to after-care repair services for apparel
2. TRL (Technology Readiness Level): Start 0 > End 2

Key themes

Sustainability
Manufacturing and commerce



3.6 Connecting Weaving Artisans–Increasing the visibility of artisan weavers in the Philippines

Small-scale weavers face many challenges to working with larger brands. Connecting Weaving Artisans aimed to overcome barriers to collaboration between the FTT industry and artisans weavers in the UK and Philippines–improving economic outcomes and establishing more sustainable approaches to developing products for large FTT companies.

- **Piarve Wetshi (Colechi), London, UK + Ria San Gabriel (Panublix), Philippines**
colechi.com
panublix.com

The complex nature of global supply chains in the FTT industry have resulted in barriers for global companies to develop meaningful relationships with small-scale design studios in the UK, and artisanal weavers in the Philippines. Certification of sustainability is increasingly expected by manufacturers, brands, and end consumers, but the cost of gaining globally recognised certification is often unaffordable for small businesses.

“Like skilled weavers, we intertwined threads of collaboration between the UK and the Philippines at an online exchange with stakeholders from both countries, discovering commonalities and fostering a global sense of community. We are honored to create a space for weavers, trade agencies, academe, and partners to voice out and contribute towards a future where inclusivity and prosperity flourish in the age-old craft of weaving.”
–Ria San Gabriel



Ria San Gabriel–Panublix with the weavers of Salngan Livelihood Multi-Purpose Cooperative

Piarve Wetshi (UK) and Ria San Gabriel (Philippines) mapped the remote locations of small-scale weavers across the UK and Philippines. Through interviews, surveys and on-the-ground research supported by academic mentor Steph Rolph, the partnership determined the barriers to business growth for small-scale weavers.

Research findings and data analysis were shared to highlight challenges to small weaving businesses based in rural areas that wish to engage and sell to larger brands. Insights into sustainable design and manufacture practice were also exchanged.



“We believe that weaving traditions and craftsmanship know no boundaries; they are threads connecting us all, strengthening the fabric of cultural preservation, economic growth, and global collaboration. Through dialogues, we’ve not only gathered information but also fostered relationships, a testament to the power of connection that contributes to the rich tapestry in this industry.”

–Ria San Gabriel

The project team developed a toolkit that detailed how large companies can bridge the gap across global supply chains and build relationships with small-scale weavers. The aim is for the toolkit to be widely disseminated



Key outcomes

1. Development of a toolkit to help small-scale weavers work with the wider industry
2. TRL (Technology Readiness Level): Start 0 > End 1

Key themes

Sustainability
Retail and engagement

Sustainable Development Goals contribution



4 Analysis

Bhaavya Goenka–Imported denim in a market in Nigeria.

The 2023 New Landscapes: FTT Catalyst R&D Grant Scheme optimised all available provision to support each R&D project to achieve the outcomes outlined. Future enablers and opportunities were identified for development of each project beyond the timeline of this initiative.

Enablers	Opportunities
A novel environment for innovation was created through multi-level partnerships.	The scheme demonstrated that R&D provides a vehicle for innovation business growth and economic development for international SME partnerships.
Each project received a cash grant of £6,000 from the scheme to support R&D project costs.	Each of the SME projects achieved advances in technology readiness levels (TRLs) with sufficient evidence to undertake further R&D and attract additional investment.
Each project team received bespoke support and guidance from the UAL FTTI, including specialist academic expertise and technical guidance.	The scheme generated new knowledge for each of the project teams, which led to knowledge exchange, sharing their R&D experience across different cultures of practice and international communities.
Additional provision included business advice as appropriate.	Access to the UAL FTTI and British Council's network of academic and industry professionals helped to promote the innovations achieved.
A dedicated R&D Fellow specialising in sustainable FTT research provided support throughout the project delivery.	The pilot scheme (2022) and follow-on initiative (2023) provided a platform to evolve the programme over the longer term.
The initiative enabled the fast-track of R&D to a relatively advanced level, so projects may be able to apply for further funding to further R&D.	
The initiative enabled the fast-track of R&D to a relatively advanced level, so projects may be able to apply for further funding to further R&D.	
Provision of project management tools supported the smooth running of project planning and delivery and ensured accountability.	
The British Council network of in-country offices provided access to international development networks and related expertise.	
The UAL FTTI facilitated online and in-person networking events for the awardees, supporting peer-to-peer learning, knowledge exchange, opportunities for collaboration, and expansion of each project's network and international reach. Links with UK SME R&D beneficiaries of the UKRI Business of Fashion, Textiles and Technology funding award ¹² were also facilitated.	

12 bfft.org.uk/

The following points outline some of the challenges and further benefits an international programme of this type may present:

Challenges	Further Benefits
The time differences between businesses located in different countries and the UK can limit time for collaboration and meeting points.	A series of facilitated events convened SMEs, academics, and British Council country colleagues from across the two programmes, creating links that may generate future partnerships and collaboration.
SMEs have different business demands and responsibilities, which can impact the delivery and output of the R&D achieved in different ways. A bespoke approach to project support is required.	Awardees were invited to present at additional public-facing events and contribute to online events and content development throughout the programme, ensuring a wider reach.
Following the pilot scheme, the R&D timeframe was increased from four to five months. However, the ambition and potential of each project was greater than the available time and funding resource.	Beyond the timeline of the programme, the UAL FTTI continues to provide advice to all the awardee SMEs on further funding, R&D, and networking opportunities where appropriate.
The current support, in particular funding, limited the opportunity to scale up the R&D work, for example, to conduct manufacturing trials and other types of advanced prototyping.	Access to the UAL FTTI and British Council's network of academic and industry professionals helped to promote the innovations achieved.

5 Conclusions & Recommendations



Bureau 555 – Galib working in blender.

The **2023 New Landscapes: FTT Catalyst R&D Grant Scheme** enabled a wider community of collaborative SME businesses from across the UK and six countries to access leading sustainable and circular R&D support. A combination of expertise from academia and industry helped advance sustainable approaches. These span material and digital innovation, from initial product conception, through design and development, and on to devising alternative production processes.

The programme acknowledged that while digital technology should be more accessible and inclusive in its development and training, such technology may also benefit from valuable tacit analogue knowledge and experience working in parallel. **Over the five-month period, the scheme supported six SMEs in the delivery of R&D; tested eight novel technologies; and developed 18 different product prototypes.**

The programme generated two permanent jobs and improved the livelihoods of 122 farmers and 21 rural harvesters, while benefitting 92 artisans through network engagement. Additionally, five new business partnerships for the SME project teams were made, and 19 industry advisors were consulted. The R&D project teams conducted eight surveys (connecting to approx. 23 respondents), participated in 19 presentations, workshops and events, and developed six associated tools to impart and exchange knowledge. The awardees also consulted 38 young people and 46 community members.

The 2023 New Landscapes: FTT Catalyst R&D Grant Scheme aligns with the UK Government's wider strategic goals in terms of international development. The Government's International Development Strategy¹³ is based around four key principles including "supporting the long-term agency of countries and people, building effective institutions and capabilities, and drawing on UK world class research and expertise". It considers that "success means unleashing the potential of people in low and middle-income countries to improve their lives. When people have more power and choice, populations become more prosperous, peaceful, and healthier".

It is considered this approach will enable provision for effective, integrated support to partner countries striving to determine their own future. And goes on to propose support to partner countries by exchanging good practice, and building partnerships across government, business and civil society. These aspirations, alongside the increasing imperative of addressing climate change, demonstrate the timeliness and relevance of the **2023 New Landscapes: FTT Catalyst R&D Grant Scheme.**

Recommendations at programme level

- **Build on the success and impact achieved in a limited time span and consider if there is scope to further extend the initiative 14.**
- **Engage at policy level with relevant government bodies and**

¹³ [gov.uk/government/publications/uk-governments-strategy-for-international-development/the-uk-governments-strategy-for-international-development](https://www.gov.uk/government/publications/uk-governments-strategy-for-international-development/the-uk-governments-strategy-for-international-development)
¹⁴ <https://www.arts.ac.uk/about-ual/press-office/stories/new-landscapes-for-fashion,-textiles-and-technology-india-and-uk-open-call>

UK Research and Innovation (UKRI) to advance the importance and benefits of such programmes.

Recommendations at project level

- **Facilitate cross-disciplinary links for the SME project teams, raising awareness of R&D opportunities internationally with sustainability objectives.**
- **Further investment and provision for SME awardees to optimise initial sustainable R&D activity with the aim of scaling up.**
- **Support the awarded collaborative partnerships to also collaborate with other organisations and undertake new R&D.**
- **Improve access to skills training enabling international countries to become more involved in the development and application of innovative technologies that affect livelihoods.**
- **Further develop partnerships through networking, events and community building.**
- **Foster further inclusion via provision of increased access support, such as language translators.**
- **Facilitation of networking events and follow-up workshops beyond the programme, providing the awardees with continued support beyond the lifetime of the programme.**

Colophon

The Fashion, Textiles and Technology Institute
www.arts.ac.uk/ftti

First published 2024

© 2024 The Fashion, Textiles and Technology Institute

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the written permission of the Fashion, Textiles and Technology Institute.

Authors

Prof Jane Harris, Director (UAL/FTTI)
Laura Solomon, R&D Fellow (UAL/FTTI)
Amy Hulme, (UAL/FTTI)

Academic Mentors

Prof Jane Harris, Director of UAL Fashion, Textiles and Technology Institute
Prof Mahbubul Hassan, Professor of Advanced Sustainable Materials,
UAL Fashion, Textiles and Technology Institute
Steph Rolph, Pathway Leader in Woven Textile Design,
Central Saint Martins
Rebecca Hoyer, Associate Lecturer Central Saint Martins
Laura Solomon, R&D Fellow, UAL Fashion,
Textiles and Technology Institute

Additional thanks

Sevra Davis, Director of Architecture, Design and Fashion, British Council
Hannah Robinson, Programme Manager (Architecture, Design, Fashion),
British Council
British Council Country Offices—Bangladesh, India, Indonesia, Kenya, Malaysia,
Nigeria and the Philippines.
Nadja Ohranovic, Associate Director, Strategic Partnerships and Business
Development (UAL)
Kate Langrish, Editorial Consultant

Design

Philipp Doring

Image Credits

p.2 © Kita Menenun
p.4 © Caroline Hyde-Brown
p.9 © British Council
p.10 © Bureau 555
p.16 © Kita Menenun
p.18-19 © Bureau 555
p.21 © SMK
p.22 © Sukka Citta
p.23 © Kita Menenun
p.24-26 © Iyabo Ademosu
p.28 © Caroline Hyde-Brown
p.29-30 © Ummi Junid
p.33-34 © Bhaavya Goenka
p.35-37 © Ria San Gabriel
p.38 © Bhaavya Goenka
p.41 © Bureau 555

Responding to global drivers, the New Landscapes R&D programme stimulates international collaboration to re-evaluate the industry's relationship with climate change, the environment, and the need for radical transparency and social responsibility.