



## **Pioneering EU Funded New Cotton Project Celebrates Completion, Highlighting Key Insights and Learnings Towards a Circular Textiles Industry**

- Transitioning towards the adoption of circular value chains is key to supporting the scaling of circular fabrics.
- Investing in the development, scaling and harmonisation of sorting and recycling infrastructure is critical.
- The industry and the public sector need to address the significant challenges with data to support the shift towards a circular textiles industry, including a lack of availability, speed or accuracy quality.

27th March 2024, Amsterdam - The EU funded New Cotton Project announces the end of the three-and half-year innovation programme, which has seen the consortium demonstrate the successful implementation of the entire circular value chain, whilst assessing the challenges and opportunities for scaling fibre-to-fibre recycling within the EU. The final month of the project has seen the consortium host a policy roundtable with EU policymakers, disseminate key learnings through a public facing seminar and webinar and submit a white paper on 'Driving the Transition Toward Circular Textiles, along with an environmental LCA analysing the entire value chain.

The pioneering New Cotton Project launched in October 2020 with the aim of demonstrating a circular value chain for commercial garment production. Through-out the project the consortium worked to collect and sort end-of-life textiles, which using pioneering Infinited Fiber technology could be regenerated into a new man-made cellulosic fibre called Infinna™ which looks and feels just like virgin cotton. The fibres were then spun into yarns and manufactured into different types of fabric which were designed, produced, and sold by adidas and H&M, making the adidas by Stella McCartney tracksuit and a H&M printed jacket and jeans the first to be produced through a collaborative circular consortium of this scale, demonstrating a more innovative and circular way of working for the fashion industry.

As the project completes in March 2024, the consortium highlights eight key factors they have identified as fundamental to the successful scaling of fibre-to-fibre recycling.

### **THE WIDE SCALE ADOPTION OF CIRCULAR VALUE CHAINS IS CRITICAL TO SUCCESS**

Textile circularity requires new forms of collaboration and open knowledge exchange among different actors in circular ecosystems. These ecosystems must involve actors beyond traditional supply chains and previously disconnected industries and sectors, such as the textile and fashion, waste collection and sorting and recycling industries, as well as digital technology, research organisations and policymakers. For the ecosystem to function effectively, different actors need to be involved in aligning priorities, goals and working methods, and to learn about the others' needs, requirements and techno-economic possibilities. From a broader perspective, there is also a need for a more fundamental shift in mindsets and business models concerning a systemic transition toward circularity, such as moving away from the linear fast fashion business models. As well as sharing knowledge openly within such ecosystems, it also is important to openly disseminate lessons learnt and insights in order to help and inspire other actors in the industry to transition to the Circular Economy.

### **CIRCULARITY STARTS WITH THE DESIGN PROCESS**

When creating new styles, it is important to keep an end-of-life scenario in mind right from the beginning. As this will dictate what embellishments, prints, accessories can be used. If designers make it as easy as possible for the recycling process, it has the bigger chance to actually be feedstock again. In addition to this, it is important to develop business models that enable products to be used as long as possible, including repair, rental, resale, and sharing services.

### **BUILDING AND SCALING SORTING AND RECYCLING INFRASTRUCTURE IS CRITICAL**

In order to scale up circular garment production, there is a need for technological innovation and infrastructure development in end-of-use textiles collection, sorting, and the mechanical pre-processing of feedstock. Currently, much of the textiles sorting is done manually, and the available optical sorting and identification technologies are not able to identify garment layers, complex fibre blends, or which causes deviations in feedstock quality for fibre-to-fibre recycling. Feedstock preprocessing is a critical step in textile-to-textile recycling, but it is not well understood outside of the actors who actually implement it. This requires collaboration across the value chain, and it takes in-depth knowledge and skill to do it well. This is an area that needs more attention and stronger economic incentives as textile-to-textile recycling scales up.

### **IMPROVING QUALITY AND AVAILABILITY OF DATA IS ESSENTIAL**

There is still a significant lack of available data to support the shift towards a circular textiles industry. This is slowing down development of system level solutions and economic incentives for textile circulation. For example, quantities of textiles put on the market are often used as a proxy for quantities of post-consumer textiles, but available data is at least two years old and often incomplete. There can also be different textile waste figures at a national level that do not align, due to different methodologies or data years. This is seen in the Dutch 2018 Mass Balance study reports and 2020 Circular Textile Policy Monitoring Report, where there is a 20% difference between put on market figures and measured quantities of post-consumer textiles collected separately and present in mixed residual waste. With the exception of a few good studies such as Sorting for Circularity Europe and ReFashion's latest characterization study, there is almost no reliable information about fibre composition in the post-consumer textile stream either. Textile-to-textile recyclers would benefit from better availability of more reliable data. Policy monitoring for Extended Producer Responsibility schemes should focus on standardising reporting requirements across Europe from post-consumer textile collection through their ultimate end point and incentivize digitization so that reporting can be automated, and high-quality textile data becomes available in near-real time.

### **THE NEED FOR CONTINUOUS RESEARCH AND DEVELOPMENT ACROSS THE ENTIRE VALUE CHAIN**

Overall, the New Cotton Project's findings suggest that fabrics incorporating Infinna™ fibre offer a more sustainable alternative to traditional cotton and viscose fabrics, while maintaining similar performance and aesthetic qualities. This could have significant implications for the textile industry in terms of sustainability and lower impact production practices. However, the project also demonstrated that the scaling of fibre-to-fibre recycling will continue to require ongoing research and development across the entire value chain. For example, the need for research and development around sorting systems is crucial. Within the chemical recycling process, it is also important to ensure the high recovery rate and circulation of chemicals used to limit the environmental impact of the process. The manufacturing processes also highlighted the benefit for ongoing innovation in the processing method, requiring technologies and brands to work closely with manufacturers to support further development in the field.

### **THINKING BEYOND LOWER IMPACT FIBRES**

The New Cotton Project value chain third party verified LCA reveals that the cellulose carbamate fibre, and in particular when produced with a renewable electricity source, shows potential to lower environmental impacts compared to conventional cotton and viscose. Although, it's important to note that this comparison was made using average global datasets from Ecoinvent for cotton and viscose fibres, and there are variations in the environmental performance of primary fibres available on the market. However, the analysis also highlights the importance of the rest of the supply chain to reduce environmental impact. The findings

show that even if we reduce the environmental impacts by using recycled fibres, there is still work to do in other life cycle stages. For example; garment quality and using the garment during their full life span are crucial for mitigating the environmental impacts per garment use.

### **CITIZEN ENGAGEMENT**

The EU has identified culture as one of the key barriers to the adoption of the circular economy within Europe. An adidas quantitative consumer survey conducted across three key markets during the project revealed that there is still confusion around circularity in textiles, which has highlighted the importance of effective citizen communication and engagement activities.

### **COHESIVE LEGISLATION**

Legislation is a powerful tool for driving the adoption of more sustainable and circular practices in the textiles industry. With several pieces of incoming legislation within the EU alone, the need for a cohesive and harmonised approach is essential to the successful implementation of policy within the textiles industry. Considering the link between different pieces of legislation such as Extended Producer Responsibility and the Ecodesign for Sustainable Products Regulation, along with their corresponding timeline for implementation will support stakeholders from across the value chain to prepare effectively for adoption of these new regulations.

The high, and continuously growing demand for recycled materials implies that all possible end-of-use textiles must be collected and sorted. Both mechanical and chemical recycling solutions are needed to meet the demand. We should also implement effectively both paths; closed-loop (fibre-to-fibre) and open-loop recycling (fibre to other sectors). There is a critical need to reconsider the export of low-quality reusable textiles outside the EU. It would be more advantageous to reuse them in Europe, or if they are at the end of their lifetime recycle these textiles within the European internal market rather than exporting them to countries where demand is often unverified and waste management inadequate.

Overall, the learnings spotlight the need for a holistic approach and a fundamental mindset shift in ways of working for the textiles industry. Deeper collaboration and knowledge exchange is central to developing effective circular value chains, helping to support the scaling of innovative recycling technologies and increase availability of recycled fibres on the market. The further development and scaling of collecting and sorting, along with the need to address substantial gaps in the availability of quality textile flow data should be urgently prioritised. The New Cotton Project has also demonstrated the potential of recycled fibres such as Infinna™ to offer a more sustainable option to some other traditional fibres, but at the same time highlights the importance of addressing the whole value chain holistically to make greater gains in lowering environmental impact. Ongoing research and development across the entire value chain is also essential to ensure we can deliver recycled fabrics at scale in the future.

///Ends///

For press requests and more information on the New Cotton Project please contact:

Fashion for Good: Melanie Hughes at [melanie.hughes@fashionforgood.com](mailto:melanie.hughes@fashionforgood.com)

[www.newcottonproject.eu](http://www.newcottonproject.eu)

## Notes to Editor

The New Cotton Project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000559.

\* MOM Markendienst for adidas: quantitative consumer survey December 2021 'New Cotton'

adidas Made To Be Remade apparel are products created with an end-of-life solution from the outset. Once returned, each can be fully made into brand new yarn and reused to knit the next apparel piece. Both chemical and mechanical recycling technologies can be applied depending on the material of the products, whilst the loop creation process ensures no loss of performance between generations. Product will be worn, worn out and returned to adidas.

## ABOUT AALTO UNIVERSITY

Aalto University is a community of bold thinkers where science and art meet technology and business. We build a sustainable future by creating novel solutions to major global challenges. We value responsibility, courage, and collaboration. By merging three leading Finnish universities in 2010, Aalto was founded to work as a societally embedded research university. In a short space of time, we have since become a forerunner in our key areas. We are renowned for our sense of community and culture of entrepreneurship and innovation. Design research in Aalto University fosters goal-oriented research, imaginative experiments, critical discussion and cross-disciplinary enquiry. We work with businesses, scientists, technologists, sociologists, policymakers, public sector organisations and communities of interest towards a more just and sustainable world.

## ABOUT ADIDAS

adidas is a global leader in the sporting goods industry. Headquartered in Herzogenaurach/Germany, the company employs more than 61,000 people across the globe and generated sales of €21.2 billion in 2021.

adidas' sustainability mission is to help End Plastic Waste through innovations and partnerships that are focused on rethinking materials, redesigning processes, reducing carbon footprint and driving behavioural change. adidas has set big goals for the coming years: replacing virgin polyester with recycled polyester wherever possible by 2024, (by the end of 2021 already 91% of its polyester was recycled), 15% reduction of value chain GHG emissions per product by 2025, 30% value chain GHG emissions reduction by 2030 and climate neutrality (CO<sub>2</sub>e) in the entire value chain by 2050. For more information visit: [adidas.com/sustainability](https://adidas.com/sustainability).

## ABOUT FASHION FOR GOOD

[Fashion for Good](#) is the global platform for innovation. At its core is the Global and Asia Innovation Programme that supports disruptive innovators on their journey to scale, providing hands-on project management, access to funding and expertise, and collaborations with brands and manufacturers to accelerate supply chain implementation.

To activate individuals and industry alike, Fashion for Good houses the world's first interactive museum dedicated to sustainable fashion and innovation to inform and empower people from across the world and creates open-source resources to action change.

Fashion for Good's programmes are supported by founding partner Laudes Foundation, co-founder William McDonough and corporate partners adidas, BESTSELLER, C&A, CHANEL, Inditex, Kering, Levi Strauss & Co., Otto Group, Patagonia, PVH Corp., Reformation, Stella McCartney, Target and Zalando, and affiliate and regional partners Arvind Limited, Birla Cellulose, Norrøna, Pangaia, Teijin Frontier, Vivobarefoot, Welspun and W. L. Gore & Associates.

## ABOUT FRANKENHUIS

Salomon Frankenhuis started the company Frankenhuis in 1874, in a time where the cotton industry was growing fast in Twente, Holland. Today Frankenhuis BV is a privately owned company, as part of Boer Group which has been collecting, sorting and preparing textiles, worn clothing and shoes for reuse for over 100 years. The entire process, transparent, under one roof with 750 employees sort approximately 112,5 million kg of used textile every year. Frankenhuis B.V specialises in mechanical recycling of post-consumer textiles. With 30 full time employees,

they produce between 6000- 8000 tonnes of fibre per year. Besides making fibre, Frankenhuis also prepares post-consumer textile streams as feedstock for chemical recycling of textiles. To be able to do so, Frankenhuis “deep-sorts” post-consumer garments and defines the best suited recycling method and prepares the stream for the next step in the recycling process.

#### ABOUT H&M GROUP

H&M Group is a global fashion and design company, with over 4,000 stores in more than [70 markets and online sales in 60 markets](#).

All [our brands](#) and business ventures share the same passion for making great and more sustainable fashion and design available to everyone. Each brand has its own unique identity, and together they complement each other and strengthen H&M Group – all to offer our customers unbeatable value and to enable a more circular lifestyle.

H&M Group’s vision for sustainability is to lead the change towards a circular fashion industry with net-zero climate impact, while being a fair and equal company. We work according to our sustainability strategy produced jointly with external and internal experts. Our sustainability work spans the entire value chain, focusing both on our own operations and, together with other stakeholders, the industry in general.

#### ABOUT INFINTED FIBER COMPANY

Infinited Fiber Company is a Finnish technology and fashion company with a patented textile-to-textile recycling technology that turns cotton-rich textile waste, such as worn-out t-shirts, jeans, and production scraps into Infinna™, a virgin-quality, versatile textile fiber with the soft and natural look and feel of cotton. Infinna™ is biodegradable, contains no microplastics, and at the end of their life, garments made with it can be recycled in the same process together with other textile waste, enabling circularity in fashion. Learn more: [www.infinitedfiber.com](http://www.infinitedfiber.com)

#### ABOUT INOVAFIL


Inovafil is a spinning mill, located in the north of Portugal, with a manufacturing unit in Vila Nova de Famalicão and headquarters in Guimarães. It produces a wide variety of special blends, both melange and ecru yarns, using conventional ring, open-end and, recently, air-jet spinning technologies. Thanks to its cutting-edge technology, Inovafil can produce natural, artificial and synthetic fibres. In recent years, the market has started to demand more and more specific products, not only in terms of functionality, but also in terms of comfort, safety and environmental friendliness. To meet these demands, Inovafil invested in innovation by creating a very complete and diverse portfolio. Due to increasing environmental sustainability awareness, Inovafil focuses on sourcing eco-friendly raw materials - fibres resulting from different types of waste; biodegradable fibres; recycled fibres etc. Also, in order to maintain its core values of honesty, transparency and social-environmental responsibility, Inovafil is certified Oeko-Tex® Standard 100, Global Organic Textile Standard (GOTS), Organic Content Standard (OCS), Global Recycled Standard (GRS), Forest Stewardship Council (FSC), Better Cotton Initiative (BCI) and Supima®.

#### ABOUT KIPAS TEXTILES

Kipas Textiles, established in Kahramanmaraş in 1984, with a turnover exceeding \$450 million and 6500 employees, is one of the leading companies in Turkey and its region with an annual production capacity of 80 million metres of fabric, a daily production of 450 tonnes of yarn and over 5 million garments annually.

As one of the most preferred suppliers of the world’s leading brands, Kipas Textiles works on the sustainable production of yarns, fabrics and denim with minimum resource usage in water, energy and hazardous discharge. Kipas Textiles is tackling waste and pollution through environmentally friendly production methods and the latest recycling technologies. Committed to making a positive impact in the fashion industry, 60% of Kipas’ production is made with sustainable resources. As a company, Kipas contributes to the Sustainable Development Goals in our daily practices and our sustainable production methods are audited regularly. Because of their vertically integrated textile mill, Kipas is one of the largest sustainable yarn, fabric and denim manufacturers and preferred suppliers of the world’s leading brands. Kipas Textiles has a wide product range such as upholstery, deco, shirting, sport and casual clothes fabrics, denim and technical textiles.

#### ABOUT REVOLVE WASTE

REvolve specialises in textile waste, recycling and circular materials flows. Recycling alone is not enough, and it's also very clear that circularity is impossible without recycling. Therefore, REvolve focuses on delivering the data, insights and systemic developments needed for a rapid transformation of business as usual in the textile industry. Today, REvolve works with companies, nonprofits and consortiums to map textile waste, define the short and mid-term circular opportunities within it and develop networks that effectively (re)cycle textile resources over and over again. 


#### ABOUT RISE

RISE is the Swedish research institute and innovation partner for every part of society. Through international collaboration with industry, academia and the public sector, we contribute to a competitive business community and a sustainable society. Our more than 3000 employees drive and support all types of innovation processes. RISE is an independent, state-owned research institute that offers unique expertise and about a hundred testbeds and demonstration environments for future-proof technologies, products and services. Read more at [ri.se](https://ri.se)

#### ABOUT TEKSTINA

TEKSTINA is a leader in the manufacture of sustainable textiles with almost 200. years of heritage. It is a private SME with 80 employees. Tekstina operates in one location in Ajdovscina in Slovenia with in-house research and development, design, testing and manufacturing facilities. Production facilities include warping, weaving, preparation, printing and finishing plants with highly qualified specialists. The company management system is certified to ISO 9001 and 14001. Products are certified under the Oeko-Tex 100;step by Oeko- Tex, GRS and GOTS standards. Tekstina is the leading supplier of textile solutions for printed fabrics. Their innovative, customer-focused approach ensures that they can design, develop, test and deliver a wide variety of fabrics globally to many of the world's leading companies.

#### ABOUT XAMK

South-Eastern Finland University of Applied Sciences - Xamk is a higher education institution that profiles as a strong implementer of research, development and innovation (RDI) activities. The goal is to help businesses thrive and to generate new entrepreneurship. In RDI projects the experts find, test and develop new products and services, or conduct research for the needs of businesses and the world of work. In collaboration with the international partners, the experts strive to solve the common challenges of the future. 

The RDI focus areas include Digital Economy, Forest, the Environment and Energy, Sustainable Wellbeing and Logistics and Seafaring. These feature national and international top expertise serving the needs of the largest companies in Finland and the export industry. The research cooperation partners include businesses, various organisations and public bodies, universities and universities of applied sciences and research institutes. The primary sources of research and development funding include EU structural funds, other EU and international research programmes, Business Finland, Academy of Finland, together with foundations, businesses and other organisations.

For more information see our website [www.xamk.fi](https://www.xamk.fi)