Summary Report

Quantified reduction of environmental impact by brands and retailers.

Project code: REC900-0B3
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Our mission is to accelerate the move to a sustainable resource-efficient economy through re-inventing how we design, produce and sell products; re-thinking how we use and consume products; and re-defining what is possible through re-use and recycling.

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Written by: Ria Kearney / Klas Wetterberg – Anthesis Group in conjunction with WRAP

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Executive summary

Introduction

This project was part of the European Clothing Action Plan (ECAP), a €3.6 million EU LIFE funded project which aimed to reduce clothing waste across Europe and embed a circular economy approach.

Key aims:

- Divert over 90,000 tonnes of clothing waste from landfill and incineration.
- Reduce the carbon, water and waste footprints of clothing in Europe.
- Ensure that fewer low-grade textiles go to incineration and landfill.
- Prevent waste in the clothing supply chain.
- Encourage innovation in resource-efficient design, recycling of textile fibres and service models to encourage business growth in the sector.
- Influence consumers to buy smarter and use clothing for longer, by using the existing Love Your Clothes consumer campaign.

The project worked directly with a range of European based apparel brands and retailers to support them to develop and implement a sustainable fibre strategy through a practical, structured approach. This aimed to enable them to switch from conventional fibres to a range of relevant more sustainable fibre options and achieve improvements in the environmental footprint associated with their fibre usage and, in turn, contribute to the overarching ECAP targets and achieve improvements in the environmental footprint of clothing being sold in Europe. A total of 12 European based apparel brands and retailers participated in the project. These brands and retailers had headquarters across seven European countries and provided a representative cross section of the European apparel sector, from small brands to large retailers specialising in a diverse range of apparel products and catering to a variety of customer segments.

Targets and Structure

As a key part of the overall programme, this project was targeted with achieving a 10% reduction across the associated carbon, water and waste footprints (relating to fibre usage) of each participating brand and retailer. In order to provide a quantified measurement of this activity over time.

The project was structured around 6 key steps:

i. Recruit European based apparel brands and retailers to take part in the project
ii. Analyse production data for European sales (or orders) from participants to measure their baseline fibre footprints
iii. Work with participants to develop strategies to source more sustainable fibres
iv. Support participants in implementing their sustainable fibre strategies
v. Measure the impacts of implementing their strategies by conducting an end line (a final measurement) that compares progress against the baseline (initial measurement) fibre footprint, to track changes in the fibre mix over time
vi. Develop and share case studies

This report focuses on steps ii and v and provides a topline summary of the aggregated, quantified reduction of environmental impact resulting from measures taken by the participating apparel brands and retailers within the sustainable fibres action area of ECAP.

Methodology Summary

In order to provide a quantified measurement of this activity over time, this project was supported by a footprint calculator tool developed by WRAP in order to calculate a baseline and an endline fibre footprint at the beginning and end of the intervention, that enabled; changes in fibre consumption over time; and the associated changes in environmental impact relating to the carbon, water and waste parameters to be compared. A high-level overview of the process for producing individual retailers' and brands' footprints is shown in Figure 1.

Figure 1: Overview of the data collection and analysis process for calculating a fibre footprint for individual ECAP participants.

SKU level-data

- Anthesis provided a data collection template for retailers and brands to complete
- Anthesis gave the retailers and brands support in gathering accurate data at sufficient detail
- The data provided by the participant was then cleaned to exclude out of scope items like accessories, hats, gloves, footwear and home textiles

Fibre mix analysis

- SKU-level information was collated into a high-level fibre mix, dividing the mix into tonnages of fibres like polyester, cotton, wool and regenerated cellulosics
- The % of sustainable fibres for each high-level fibre type was calculated

Footprint outputs

- The fibre mix data was entered in a tool that calculates life cycle impacts:
  - Water (m^3)
  - Carbon (CO_2e)
  - Waste (tonnes)
- These footprints could be improved with various improvement actions, such as sustainable fibre use and end-of-life improvement actions

Footprint analysis and report

- Outputs were analysed to identify:
  - Impacts by life cycle stage
  - Footprint contribution by fibre type
  - Key areas for improvement
- Reasons for the footprint change (endline footprints)

Notes: **SKU** = Stock Keeping Unit. **Anthesis Group** were contracted by WRAP to deliver this work.

Key outcomes and Insights

At the beginning of the ECAP programme, ECAP participants used 2,500 tonnes (0.8%) of sustainable fibres, compared to 32,000 (9.2%) at the endline. This means that sustainable fibre usage by the participating brands and retailers increased by over 29,000 tonnes.

Four additional types of sustainable fibres were being used by brands and retailers by the endline footprinting stage. In addition, all but one fibre was being used in greater quantities than in the baseline year. The most common sustainable fibre types in the endline assessments were alternatives to conventional cotton, with Better (BCI) cotton being the most used sustainable cotton option. Also, sustainable alternatives to viscose were used extensively, particularly modal and lyocell.

ECAP participants (anonymised) and their respective use of sustainable fibres are outlined in the tables below. The use of sustainable fibres is expressed as a percentage of the total use of the fibre category. For example, organic cotton is expressed as a % of all cotton in the fibre mix. Where cells are highlighted in green, this indicates that the sustainable fibre was used, according to the following rules:

- 0-2%: lightest green/blue
- 2-5%: light green/blue
- 5-10%: green/blue
- >10%: dark green/blue
- Negative values: pink

The tables display significant progress across several fibre types between the baseline (Table 1) and endline (Table 2), especially for cotton, polyester and regenerated cellulosic fibres (lyocell, modal, Tencel and Cupro).

Table 1: Sustainable fibre use across 12 retailers and brands - baseline year

Fibre type	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Lyocell	0.0%	15.4%	0.0%	1.9%	0.0%	2.5%	36.0%	3.5%	1.6%	0.0%	1.0%	5.8%
Modal	1.1%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	26.3%	0.0%	0.0%	0.0%	0.0%
Tencel	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cupro	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic cotton	4.9%	0.0%	0.0%	4.4%	1.2%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%
BCI cotton	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CMiA cotton	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%
Recycled cotton	0.4%	0.0%	0.0%	0.0%	41.2%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
REEL cotton	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recycled polyester	0.3%	15.0%	0.0%	0.6%	0.0%	0.0%	9.0%	0.7%	0.0%	0.0%	0.0%	0.0%
Recycled nylon	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recycled wool*	3.4%	0.0%	0.0%	0.0%	64.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic wool*	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Number of sustainable fibres	6	2	0	5	4	1	3	5	1	0	1	2

Table 2: Sustainable fibre use across 12 retailers and brands - endline year

Fibre type	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Lyocell	1.6%	13.4%	0.7%	1.1%	0.0%	3.3%	37.0%	4.5%	4.3%	26.1%	0.5%	6.2%
Modal	11.8%	1.1%	0.0%	10.8%	0.0%	1.7%	0.0%	21.1%	8.7%	0.0%	0.6%	7.2%
Tencel	17.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cupro	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.6%	0.0%	0.0%
Organic cotton	21.2%	75.6%	0.0%	25.0%	6.7%	9.8%	2.8%	44.0%	0.0%	72.0%	0.0%	0.0%
BCI cotton	50.9%	0.0%	0.0%	6.1%	6.7%	42.6%	92.7%	0.0%	0.0%	0.0%	11.2%	0.0%
CMiA cotton	0.1%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Recycled cotton	2.0%	0.0%	0.0%	0.0%	30.1%	0.1%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%
REEL cotton	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recycled polyester	29.6%	59.8%	0.1%	8.2%	6.0%	1.7%	46.9%	44.6%	0.0%	0.0%	0.0%	0.0%
Recycled nylon	0.0%	0.0%	0.0%	0.0%	19.3%	0.0%	40.4%	0.0%	0.0%	18.4%	0.0%	0.0%
Recycled wool*	0.9%	6.4%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic wool*	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Number of sustainable fibres	9	7	7	6	6	6	5	5	3	4	3	3

Table 3: Change in sustainable fibre use across 12 retailers and brands - difference between endline and baseline years

Fibre type	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Lyocell	1.6%	-2.0%	0.7%	-0.8%	0.0%	0.8%	1.0%	1.0%	1.9%	26.1%	-0.4%	0.4%
Modal	10.7%	1.1%	0.0%	-5.9%	0.0%	1.7%	0.0%	-5.2%	8.1%	0.0%	0.6%	7.2%
Tencel	12.5%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
Cupro	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	7.6%	0.0%	0.0%
Organic cotton	16.3%	75.6%	0.0%	20.6%	5.5%	9.8%	2.8%	42.6%	0.7%	72.0%	0.0%	0.0%
BCI cotton	50.9%	0.0%	0.0%	6.1%	6.7%	42.6%	92.7%	0.0%	0.0%	0.0%	11.2%	0.0%
CMiA cotton	0.1%	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.6%
Recycled cotton	1.7%	0.0%	0.0%	0.0%	-11%	0.1%	0.0%	-0.6%	0.0%	0.0%	0.0%	0.0%
REEL cotton	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recycled polyester	29.2%	44.8%	0.1%	7.6%	6.0%	1.7%	37.9%	43.9%	0.0%	0.0%	0.0%	0.0%
Recycled nylon	0.0%	0.0%	0.0%	0.0%	19.1%	0.0%	15.4%	0.0%	0.0%	18.4%	0.0%	0.0%
Recycled wool*	-2.5%	6.4%	0.0%	0.0%	35.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic wool*	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Number of sust. fibres	3	5	7	1	2	5	2	0	4	4	2	1

*Sustainable fibres that were not recognised as footprint improving actions in the ECAP fibre footprint tool

Contents

1.0 Introduction

The European Clothing Action Plan (ECAP) is a €3.6 million EU LIFE funded project which aims to reduce clothing waste across Europe and embed a circular economy approach. Specifically, it aims to:

- Divert over 90,000 tonnes of clothing waste from landfill and incineration.
- Reduce the carbon, water and waste footprints of clothing in Europe.
- Ensure that fewer low-grade textiles go to incineration and landfill.
- Prevent waste in the clothing supply chain.
- Encourage innovation in resource-efficient design, recycling of textile fibres and service models to encourage business growth in the sector.
- Influence consumers to buy smarter and use clothing for longer by using the existing Love Your Clothes consumer campaign.

The programme was structured around eight different action areas in order to achieve this. One of these areas worked directly with European based apparel brands and retailers in the development of and implementation of sustainable fibre strategies through a practical, structured approach.

2.0 Aim

The sustainable fibres action area was targeted with working directly with a range of European based apparel brands and retailers to support them to develop and implement a sustainable fibre strategy through a practical, structured approach. This aimed to enable them to:

- switch from conventional fibres to a range of relevant more sustainable options and achieve improvements in the environmental footprint associated with their fibre usage
- contribute to the overarching ECAP targets relating to carbon, water and waste reduction
- achieve improvements in the environmental footprint of clothing being sold in Europe.

In addition to assessing relevant improvement actions relating to more sustainable fibre options, some participating brands and retailers also reported on "end of life" improvement actions, related to re-use and recycling of their garments.

3.0 Methodology

In order to provide a quantified measurement of this activity over time, this action area was supported by a footprint calculator tool developed by WRAP in order to calculate a baseline and an endline fibre footprint at the beginning and end of the intervention, that enabled:

- changes in fibre consumption over time
- associated changes in environmental impact relating to the carbon, water and waste parameters to be compared.

A high-level overview of the process for producing individual retailers' and brands' footprints is shown below in Figure 2.

Figure 2: Overview of the data collection and analysis process for calculating a fibre footprint for individual ECAP participants.

SKU level-data

- Anthesis provided a data collection template for retailers and brands to complete
- Anthesis gave the retailers and brands support in gathering accurate data at sufficient detail
- The data provided by the participant was then cleaned to exclude out of scope items like accessories, hats, gloves, footwear and home textiles

Fibre mix analysis

- SKU-level information was collated into a high-level fibre mix, dividing the mix into tonnages of fibres like polyester, cotton, wool and regenerated cellulosics
- The % of sustainable fibres for each high-level fibre type was calculated

Footprint outputs

- The fibre mix data was entered in a tool that calculates life cycle impacts:
  - Water (m^3)
  - Carbon (CO_2e)
  - Waste (tonnes)
- These footprints could be improved with various improvement actions, such as sustainable fibre use and end-of-life improvement actions

Footprint analysis and report

- Outputs were analysed to identify:
  - Impacts by life cycle stage
  - Footprint contribution by fibre type
  - Key areas for improvement
- Reasons for the footprint change (endline footprints)

***Notes*: SKU** = Stock Keeping Unit. **Anthesis Group** were contracted by WRAP to deliver this work.

At the data collection stage, the data management process ensured that the data received was of a sufficient quality to produce a representative footprint. This process was iterative and often included several rounds of communication, where the data was quality checked and the participant then cleaned their datasets or supplied additional information. Most retailers and brands did not have their own internal data regarding the weight of individual items, so to obtain fibre tonnages, default weights were used from a list of average garment weights from more than 100 garment types, used by the Sustainable Clothing Action Plan. For every fibre mix analysis and footprint produced, a QA review was done where a second data analyst reviewed calculations, data quality and footprint outputs to ensure robust results. Fibre mixes and footprint outputs were also shared with the ECAP participants at an early stage to allow them to sense-check results before the analysis and report was finalised.

A total of 12 European based apparel brands and retailers participated in and completed the sustainable fibres action area of ECAP. These brands and retailers had headquarters across seven European countries and provided a representative cross section of the European apparel sector, from small brands to large retailers specialising in a diverse range of apparel products and catering to a variety of customer segments.

The phased entry of ECAP participants meant that baseline (first year measurements) and endline (last year measurements) footprints did not occur at the same point in time. They were calculated for each participant for the latest year for which they had the relevant data, in line with their internal buying schedules and ordering systems. For the retailers and brands that used product order data, it was possible to project footprints forward in time. However, for those that used product sales data, footprints could only be calculated for the previous calendar year.

For the purpose of the analysis within this report, all baseline and endline footprints and fibre mixes have been aggregated. This aggregation was done using the final, peer reviewed outputs of 12 individual ECAP participant analyses. These final outputs from individual analyses included not only data on fibres and footprints, but also analyses of the relative effect of different footprint drivers. As there were slight differences in the footprint data used for different retailers, results should be considered accordingly. Results shown throughout this report have been rounded to a maximum of three significant figures.

This action area was structured around 6 key steps:

i. Recruitment of European based apparel brands and retailers to take part
ii. Analysis of production data for European sales (or orders) from participants to measure their baseline fibre footprints
iii. Working with participants to develop strategies to source more sustainable fibres
iv. Supporting participants in implementing their sustainable fibre strategies
v. Measurement of the impacts of implementing their strategies by conducting an end line (a final measurement that compares progress against the baseline (initial) measurement) fibre footprint to track changes in the fibre mix over time
vi. Development of case studies to share learnings to a wider audience

Note that, the baseline results in sections 4.0 and 5.0 relate to data gathered from 2015 to 2017. The endline results relate to data gathered from 2018 to 2019.

4.0 Total Fibre Usage

Between the baseline and endline phases, the total fibre usage across the ECAP project increased by 6.9%, from 325,000 tonnes to 347,000 tonnes, equating to an increase in the total amount of fibres used by participants of 22,000 tonnes (Table 4).

Table 4: Fibre use, by fibre category, for a baseline and endline fibre assessment; aggregated for 12 ECAP B3 participating brands and retailers.

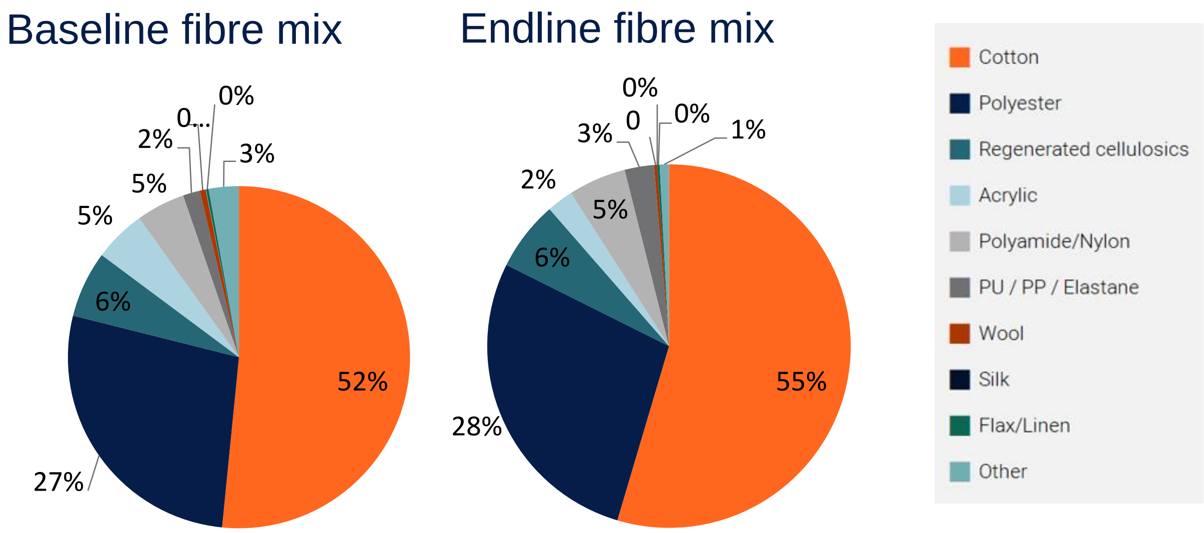
Fibre type	Tonnage		Change	
	Baseline	Endline	in tonnes	in %
Cotton	167,000	189,000	22,000	13.1%
Polyester	88,700	96,500	7,800	8.7%
Regenerated cellulosics	20,400	21,500	1,100	5.8%
Acrylic	15,900	8,100	-7,800	-48.9%
Polyamide/Nylon	15,000	17,800	2,800	18.7%
PU / PP / Elastane	5,250	9,040	3,790	72.2%
Wool	1,790	962	-828	-46.2%
Silk	127	68	-59	-46.4%
Flax/Linen	769	700	-69	-9.0%
Other	9,240	2,870	-6,370	-68.9%
Total:	325,000	347,000	22,000	6.9%

4.1 General fibre categories

The aggregate ECAP baseline demonstrates fibre compositions that were dominated by cotton and polyester, which together constituted over 75% of the retailers' and brands' fibre usage. The remaining fibre mix was split more evenly between fibre categories like manmade cellulosic fibres and synthetics, specifically acrylic and nylon fibres, as shown in Figure 3. In much smaller quantities, retailers and brands fibre mixes also included natural or animal derived fibres such as wool, silk and linen.

Within the "Other" category, fibres such as leather, metallised fibres and polyethylene are included. "Other" fibres accounted for 5.5% of total reported in-scope fibres in the baseline year, and 1.5% in the endline year. The ECAP footprint calculator does not pull these fibres out for separate analysis, but instead assigns an impact to them based on an average of the specified fibre types.

Figure 3: Breakdown of the aggregated fibre inputs of 12 ECAP participating brands and retailers for the baseline and endline years.



The composition of the participants' collections, in percentage terms, did not change significantly by the endline year. The primary changes in the use of fibres, as a proportion of the total fibre mix, related to the level of cotton used (an increase of 3% overall) and the decreased use of acrylic (a reduction of 3% overall). However, individual fibres changed significantly, such as acrylic, wool and silk, which almost halved. The largest increases in fibre use came from cotton, polyester and PU (Polyurethane) / PP (Polypropylene) / elastane, which increased by 22,000 tonnes, 7,800 tonnes and 3,790 tonnes, respectively. These changes to the aggregate fibre mix were driven by the largest retailers and brands, but also reflect trends that were common to several ECAP participants. For example – 10 of 12 participants increased their use of polyester and 9 of 12 participants reduced their use of wool and silk. In terms of cotton though, half of the ECAP participants increased their use and half decreased it – so the increase comes mainly from large brands and retailers.

4.2 Tracking uptake of more sustainable fibres

As the retailer and brands action plans set out to support participating brands and retailers to switch from conventional to more sustainable fibres, the footprinting process aimed to track this change in the fibre mix over time. Thirteen different more sustainable fibre types are presented in this section, eleven of which were included in the WRAP calculator tool, which cover the more sustainable fibre options disclosed. These options are as follows:

- Lyocell
- Modal
- Tencel
- Cupro
- Organic cotton
- Better (BCI) cotton
- CMiA cotton
- Recycled cotton
- REEL cotton
- Recycled polyester
- Recycled nylon
- Organic wool*
- Recycled wool*

*not included in WRAP calculator tool

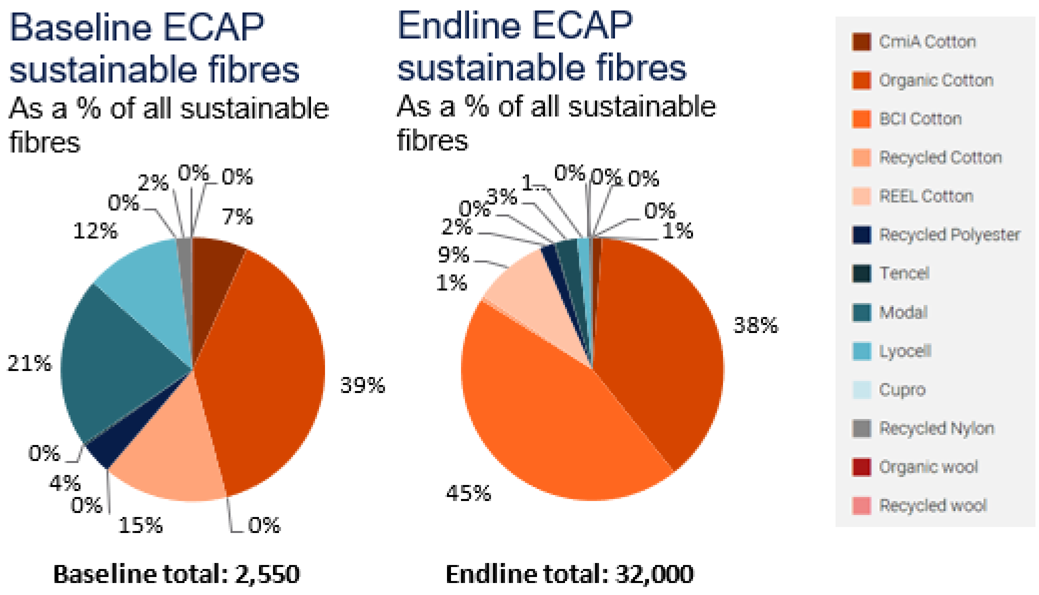
Despite small changes in the use of high-level fibre categories as highlighted above, significantly more changed with regards to the more sustainable fibres being sourced between the baseline and endline stages (Table 5). At the beginning of the ECAP programme, ECAP participants used 2,500 tonnes (0.8%) of sustainable fibres, compared to 32,000 (9.2%) at the endline. This means that sustainable fibre usage by the participating brands and retailers increased in excess of 29,000 tonnes.

Table 5: Sustainable fibre use, by fibre type, for a baseline and endline fibre assessment; aggregated for 12 ECAP B3 participating brands and retailers.

Sustainable fibre type	Tonnage		Change	
	Baseline	Endline	in tonnes	in %
Cotton Made in Africa	172	375	204	119%
Organic Cotton	995	12,200	11,200	1,130%
Better (BCI) Cotton	-	14,200	14,200	NA
Recycled Cotton	392	167	-225	-57.3%
REEL Cotton	-	2,900	2,900	NA
Recycled Polyester	102	572	470	462%
Tencel	7	51	44	647%
Modal	532	867	335	63.0%
Lyocell	294	478	184	62.7%
Cupro	-	0.24	0.24	NA
Recycled Nylon	51	135	84	166%
Organic wool	-	0.01	0.01	NA
Recycled wool	2	2	1	41.0%
Total:	2,550	32,000	29,400	1160%

The aggregate baseline and endline results are shown in Figure 4 below. During the baseline, although tonnages at this stage were low, several types of sustainable fibres were used. The most common types being used were alternatives to conventional cotton, with organic cotton being the most used more sustainable cotton option. Also, sustainable alternatives to viscose were used extensively, particularly modal and lyocell.

Figure 4: Breakdown of the aggregate sustainable fibre use of 12 ECAP participant brands and retailers in the baseline year.



By the endline stage, sustainable alternatives to conventional cotton dominated participants' sustainable fibre strategies. As seen in Figure 4, these constituted over 90% of sustainable fibre use. Case studies conducted with ECAP participants showed that the motivation behind targeting cotton was the fact that it often constituted over half of the fibre mix. Being such a dominant fibre, it was therefore a suitable target for sustainable fibre strategies. Most significant was the increased use of Better Cotton, through the Better Cotton Initiative (BCI). This option was not used by any participant in the baseline footprint but had become a widely and extensively used sustainable fibre by the endline. Its main advantage over organic cotton, as reported by ECAP participants, was the lower premium associated with its use. The higher cost of sourcing sustainable fibres was stated as an important barrier to sustainable fibre uptake.

With the sole exception of recycled cotton, all disclosed sustainable fibres were used more, on aggregate, in the endline than in the baseline, which is a positive indication of the transition towards sourcing more sustainable fibres amongst participants. This positive trend is also shown in Table 6, where it is evident that the proportion of sustainable fibres, by fibre category, increased for cotton, viscose, nylon, wool and polyester.

Table 6: Total fibre tonnage and tonnage of more sustainable fibre options, for a baseline and endline fibre assessment of 12 retailers and brands.

Fibre type	Baseline			Endline		
	Total fibre tonnage	of which sustainable fibres	in %	Total fibre tonnage	of which sustainable fibres	in %
Cotton	167,000	1,560	0.9%	189,000	29,900	15.8%
Viscose	20,400	833	4.1%	21,500	1,400	6.5%
Nylon	15,000	51	0.3%	17,800	135	0.8%
Polyester	88,700	102	0.1%	96,400	572	0.6%
Wool	1,790	2	0.1%	961	2	0.2%

In **Table 7** and Table 8, ECAP participants (anonymised) and their respective use of sustainable fibres are outlined. The use of sustainable fibres is expressed as a percentage of the total use of the fibre category. For example, organic cotton is expressed as a % of all cotton in the fibre mix. Where cells are highlighted in green, this indicates that the sustainable fibre was used, according to the following rules:

- 0-2%: lightest green/blue
- 2-5%: light green/blue
- 5-10%: green/blue
- >10%: dark green/blue
- Negative values: pink

The differences between the baseline and endline year is shown in **Table 9**, which shows that sustainable fibre use increased especially for polyester, cotton and regenerated cellulosic fibres (lyocell, modal, Tencel and Cupro).

Table 7: Sustainable fibre use across 12 retailers and brands - baseline year

Fibre type	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Lyocell	0.0%	15.4%	0.0%	1.9%	0.0%	2.5%	36.0%	3.5%	1.6%	0.0%	1.0%	5.8%
Modal	1.1%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	26.3%	0.0%	0.0%	0.0%	0.0%
Tencel	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cupro	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic cotton	4.9%	0.0%	0.0%	4.4%	1.2%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%
BCI cotton	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CMiA cotton	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%
Recycled cotton	0.4%	0.0%	0.0%	0.0%	41.2%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
REEL cotton	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recycled polyester	0.3%	15.0%	0.0%	0.6%	0.0%	0.0%	9.0%	0.7%	0.0%	0.0%	0.0%	0.0%
Recycled nylon	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recycled wool*	3.4%	0.0%	0.0%	0.0%	64.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic wool*	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
No. of sustaiable fibres	6	2	0	5	4	1	3	5	1	0	1	2

Table 8: Sustainable fibre use across 12 retailers and brands - endline year

Fibre type	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Lyocell	1.6%	13.4%	0.7%	1.1%	0.0%	3.3%	37.0%	4.5%	4.3%	26.1%	0.5%	6.2%
Modal	11.8%	1.1%	0.0%	10.8%	0.0%	1.7%	0.0%	21.1%	8.7%	0.0%	0.6%	7.2%
Tencel	17.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cupro	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.6%	0.0%	0.0%
Organic cotton	21.2%	75.6%	0.0%	25.0%	6.7%	9.8%	2.8%	44.0%	0.0%	72.0%	0.0%	0.0%
BCI cotton	50.9%	0.0%	0.0%	6.1%	6.7%	42.6%	92.7%	0.0%	0.0%	0.0%	11.2%	0.0%
CMiA cotton	0.1%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Recycled cotton	2.0%	0.0%	0.0%	0.0%	30.1%	0.1%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%
REEL cotton	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recycled polyester	29.6%	59.8%	0.1%	8.2%	6.0%	1.7%	46.9%	44.6%	0.0%	0.0%	0.0%	0.0%
Recycled nylon	0.0%	0.0%	0.0%	0.0%	19.3%	0.0%	40.4%	0.0%	0.0%	18.4%	0.0%	0.0%
Recycled wool*	0.9%	6.4%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic wool*	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
No. of susainable. fibres	9	7	7	6	6	6	5	5	3	4	3	3

Table 9: Change in sustainable fibre use across 12 retailers and brands - difference between endline and baseline years

Fibre type	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Lyocell	1.6%	-2.0%	0.7%	-0.8%	0.0%	0.8%	1.0%	1.0%	1.9%	26.1%	-0.4%	0.4%
Modal	10.7%	1.1%	0.0%	-5.9%	0.0%	1.7%	0.0%	-5.2%	8.1%	0.0%	0.6%	7.2%
Tencel	12.5%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
Cupro	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	7.6%	0.0%	0.0%
Organic cotton	16.3%	75.6%	0.0%	20.6%	5.5%	9.8%	2.8%	42.6%	0.7%	72.0%	0.0%	0.0%
BCI cotton	50.9%	0.0%	0.0%	6.1%	6.7%	42.6%	92.7%	0.0%	0.0%	0.0%	11.2%	0.0%
CMiA cotton	0.1%	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.6%
Recycled cotton	1.7%	0.0%	0.0%	0.0%	-11%	0.1%	0.0%	-0.6%	0.0%	0.0%	0.0%	0.0%
REEL cotton	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recycled polyester	29.2%	44.8%	0.1%	7.6%	6.0%	1.7%	37.9%	43.9%	0.0%	0.0%	0.0%	0.0%
Recycled nylon	0.0%	0.0%	0.0%	0.0%	19.1%	0.0%	15.4%	0.0%	0.0%	18.4%	0.0%	0.0%
Recycled wool*	-2.5%	6.4%	0.0%	0.0%	35.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Organic wool*	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Number of sust. fibres	3	5	7	1	2	5	2	0	4	4	2	1

*Sustainable fibres that were not recognised as footprint improving actions in the ECAP fibre footprint tool

4.3 End-of-life Activities

Another aspect of the clothing supply chain which affects participants' overarching environmental impact, relates to the activities they are undertaking to "close the loop" on their supply chain and to consider the impacts occurring at the end-of life of the garments they produce and sell. Within the WRAP calculator tool, used as the basis for the footprint measurements, several actions for improving garments' end-of-life could be reported on. These include collecting garments for recycling and re-use and offering repair services to customers to extend the life of their garments.

In the baseline year, end-of-life related actions were uncommon and minimal data was available amongst participants. By the endline measurement, however, several strategies had emerged, and actions had become more commonplace. This aligns with the sector's increasing focus in recent years on circularity and an emphasis on finding solutions that enable all supply chain actors, including brands and retailers, to become more circular.

The most common end-of-life action being undertaken by participants by the endline stage was offering take-back schemes or in-store clothing collection points, enabling consumers to return their old garments for re-use and / or recycling, sometimes in exchange for gift vouchers on new purchases. Although this was reported by 5 participants, the volumes collected via such schemes (around 100 tonnes across the whole project), have not yet surpassed more than 1% of their total fibre sales or orders and are very much in their infancy, as these participants trial and refine these schemes.

The second most common actions relate to extending the lifetime of the product by creating platforms for re-sale, or by offering consumers repair services for faulty garments. Each action was reported on by 3 ECAP participants who are exploring these services. Quantities for these improvement actions proved difficult for retailers and brands to estimate at this early stage. However, for example, one participant confirmed that they now had a person working nearly full-time relating to the management and scale up of their garment repair service.

In addition, an important action with regards to end-of-life was the increased use of recycled fibres, which is helping to create a market for recycled fibres. However, progress under this action area was less evident, as recycled cotton use within this action area declined from the beginning to the end. (In another action area of ECAP related to fibre to fibre recycling, pilots have been conducted to help stimulate this market in future). Although recycled polyester and nylon became more common, the feedstock for these fibres at present is less often post-consumer garments, but rather synthetic waste materials derived from other sectors. Therefore, this improvement action likely had a negligible effect on increasing the demand for recovering and re-using fibres from the apparel sector.

Beyond the aforementioned actions, a breadth of other strategies is being pursued. Other end-of-life related improvement actions reported by participants included:

- Providing consumers with information about how to make their clothes last longer;
- Setting up partnerships to enable the manufacture of recycled fibres;
- Researching garment tracing technologies to promote collection and re-use;
- Using design strategies which extend the durability of garments;

5.0 Aggregate waste, water and carbon footprints

Data on participants' fibre usage was entered into the ECAP fibre footprint calculator, developed by WRAP, which gave an estimate of their associated carbon, water and waste impacts. The aggregate result of these footprinting exercises is presented below, together with analysis on the drivers behind footprint changes.

5.1 Per tonne footprint changes

The per tonne footprint, or the total footprint divided by the total fibre inputs, gives an indication of the average environmental impacts of the fibre mix. As this measure is not affected by the volume, but rather the quality, of fibre inputs, it provides the most relevant indicator of fibre mix sustainability.

As can be seen in Table 10, all three per tonne footprints declined between the baseline and endline stages. The greatest reduction in environmental impacts related to carbon, which reduced by 8.00%, or 2.4 tonnes of CO_2-equivalents. However, as will be explained in Section 5.3 only a proportion of this decline can be attributed to the use of sustainable fibres. Instead, changes to the footprint tool and the relative use of high-level fibre categories seems to stand for most of the footprint reduction, at least in relation to carbon and waste.

Table 10: Summary of per tonne water, waste and carbon footprints, aggregated across 12 ECAP participant brands and retailers

Footprint Type	Baseline	Endline	Change	% Change
Carbon (tCO2e)	30.0	27.6	-2.4	-8.00%
Water (m3)	6,650	6,510	-140	-2.11%
Waste (tonnes)	1.55	1.54	-0.01	-0.58%

5.2 Total footprint changes

The total footprint of a fibre mix is primarily linked to the size of the fibre inputs, and only secondarily to the carbon, water or waste intensity of the individual fibres used. Since the participants' aggregate fibre inputs (i.e. the total volume of fibres sourced) increased between the baseline and endline stages, the aggregate waste and water footprints increased. However, there was a slight decrease in the aggregate carbon footprint. This is because the average fibre mix of ECAP participants had a much lower carbon intensity in the endline year, compared to the baseline, as shown in Section 5.1. This carbon reduction per tonne of fibre used was so big that it completely offset the scale effect of greater fibre use overall. The aggregate footprint results are shown in **Table 11.**

Table 11: Summary of total water, waste and carbon footprints, aggregated across 12 ECAP participant brands and retailers

Footprint Type	Baseline	Endline	Change	% Change
Carbon (in tonnes of CO2e)	9,730,000	9,570,000	-160,000	-1.65%
Water (in millions of m3)	2,160	2,260	100.0	4.65%
Waste (tonnes)	504,000	535,000	31,000	6.28%

5.3 Drivers of footprint changes

To simplify the analysis of each retailer's / brand's footprint change over time, three main footprint drivers were analysed:

A. Changes in the use of sustainable fibre
B. High-level changes in fibre categories
C. Changes in footprint tool data and assumptions

These footprint drivers interact and happen to varying degrees at the same time. This makes it difficult to tease the drivers apart and calculate the relative importance of each one.

To overcome this problem, footprint drivers had to be analysed as isolated phenomena, one at a time. For example, when the effect of sustainable fibres (B.) was calculated, high-level categories of the fibre mix (A.) as well as footprint tool data and assumptions (C.) were kept constant.

Further complicating the analysis of different footprint drivers, is the variation in the use of baseline and endline tool versions across participating retailers and brands. For some, the same was used for both the baseline and endline footprints; for others, different versions of the tools were used for each time period. This is because the footprint tool itself evolved in parallel to the delivery of this action area, as WRAP continued to develop the tool. As new data was made available, the tool parameters changed, and new versions were released. To standardise the approach, version "v1ew" of the tool was identified as most suitable for baselines and "v2.10" for endlines. The parameters of these footprint tools were harmonised as much as possible, so that differences in parameters between baselines and endlines would reflect updates, rather than methodological changes. However, the approach for calculating wool impacts was changed. Retailers that had a large proportion of wool in their fibre mix therefore had both the baseline and endline footprints calculated with v2.10. Due to this inconsistent approach, the analysis of footprint drivers cannot be easily be aggregated across the brands and retailers.

As a result of these limitations to the analysis, the following sections outline the footprint drivers separately, with their respective impact broken down by retailer/brand.

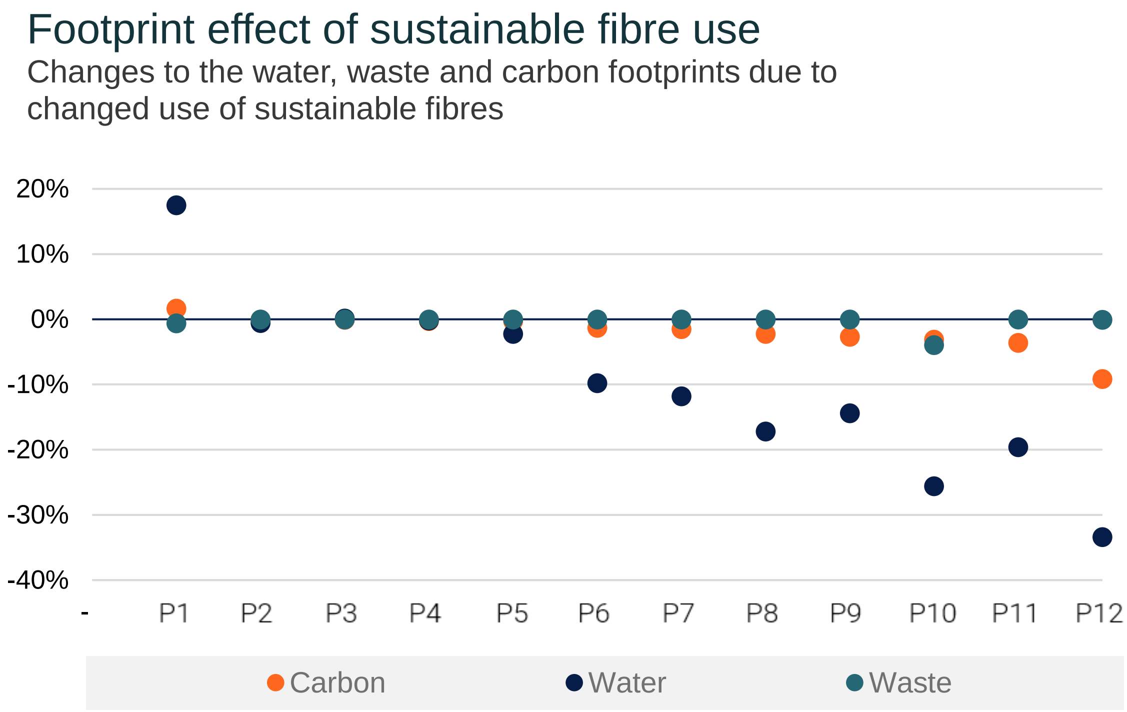
5.3.1 Footprint drivers: Changes in the use of sustainable fibres

The associated environmental footprint impacts of sustainable fibres in the ECAP fibre footprint tool are generally the same, or lower than, their conventional fibre counterparts. The footprint effect of sourcing sustainable fibres can vary. For example, sourcing fibres like recycled cotton can have large impacts, whereas sourcing recycled polyester has smaller impacts. Therefore, a retailer can see relatively little change in their footprint outcomes, despite sourcing a lot of sustainable fibres. Figure 5 shows how the footprint effects of sustainable fibres tend to be greatest for water, followed by carbon and waste.

The participants in Figure 5 can be broadly classified into 3 clusters:

- Participant 1: Although this participant increased their use of sustainable fibres, they used less of the sustainable fibres that reduce footprints the most. Because of this, their changed use of sustainable fibres led to a footprint increase between the baseline and endline.
- Participants 2-5: These participants had such small use of sustainable fibres that the impact on most footprint measures was negligible by the time their endline was conducted.
- Participants 6-12: These participants showed footprint reductions of around 10% or more on at least one measure. In order to achieve sustainable fibre-related footprint reductions this large, targeted and systematic efforts need to be made to source fibres sustainably and at scale.

Figure 5: The diagram shows the percentage change in fibre footprints, attributable to the use of sustainable fibres, between a baseline and endline assessment for 12 apparel retailers and brands. Positive values indicate that fibre footprints increased as a result of changing use of sustainable fibres, negative values indicate that fibre footprints decreased as a result of more sustainable fibre use.



To obtain the aggregate footprint effect of sustainable fibre use across this action area, each retailer's fibre footprint was compared with a hypothetical footprint where sustainable fibres were not used. These hypothetical footprints, assuming all fibres were conventional fibre types, were generally higher than the actual fibre footprint, which included footprint reductions thanks to sustainable fibre use. In the baseline year, the conventional footprints were very similar to the actual fibre footprints. As shown in **Table 12**, the effect of sustainable fibres, on aggregate, was a 0.34% reduction in the total water footprint and a 0.23% reduction in the total carbon footprint. In the endline year, the differences between the conventional and actual footprints were still small but had grown. By taking the difference-in-difference, i.e. the change in % effect between the baseline and endline, the footprint reductions due to changing use of sustainable fibres is obtained. This shows that the footprint reduction associated with sustainable fibre increases was -0.59% for carbon, -3.82% for water and -0.01% for waste.

Table 12: Conventional footprints compared to actual footprints in the baseline and endline year of ECAP. Aggregate results for 12 retailers and brands.

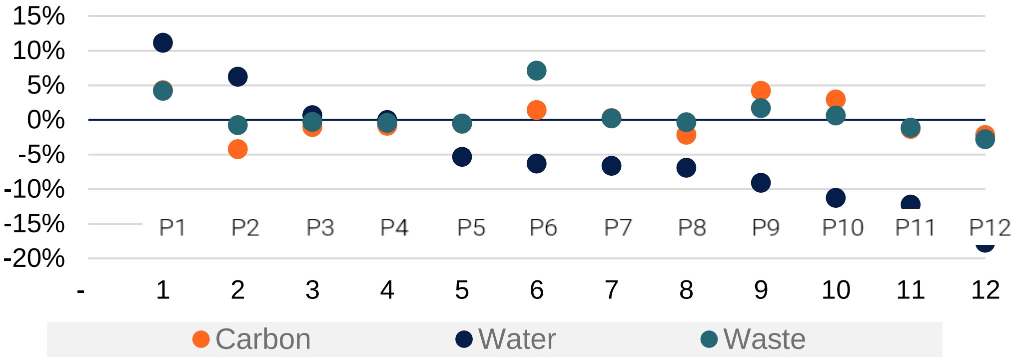
Footprint type	Baseline if conventional	Baseline Actual	% effect	Endline if conventional	Endline Actual	% effect
Carbon (tCO_2e)	9,750,000	9,730,000	-0.23%	9,650,000	9,570,000	-0.82%
Water (in millions of m3)	2,170	2,160	-0.34%	2,360	2,260	-4.16%
Waste (tonnes)	504,000	504,000	0.00%	536,000	535,000	-0.01%

5.3.2 Footprint driver: High-level changes in fibre categories

The conversion factors between fibre and footprint vary significantly between high-level fibre categories such as polyester, cotton, acrylic and nylon. Small changes to their respective share of the fibre mix could therefore generate large changes in the fibre footprint, as seen in Figure 6. The water footprint in particular was subject to large footprint changes due to these shifts in the relative weight of different fibre categories.

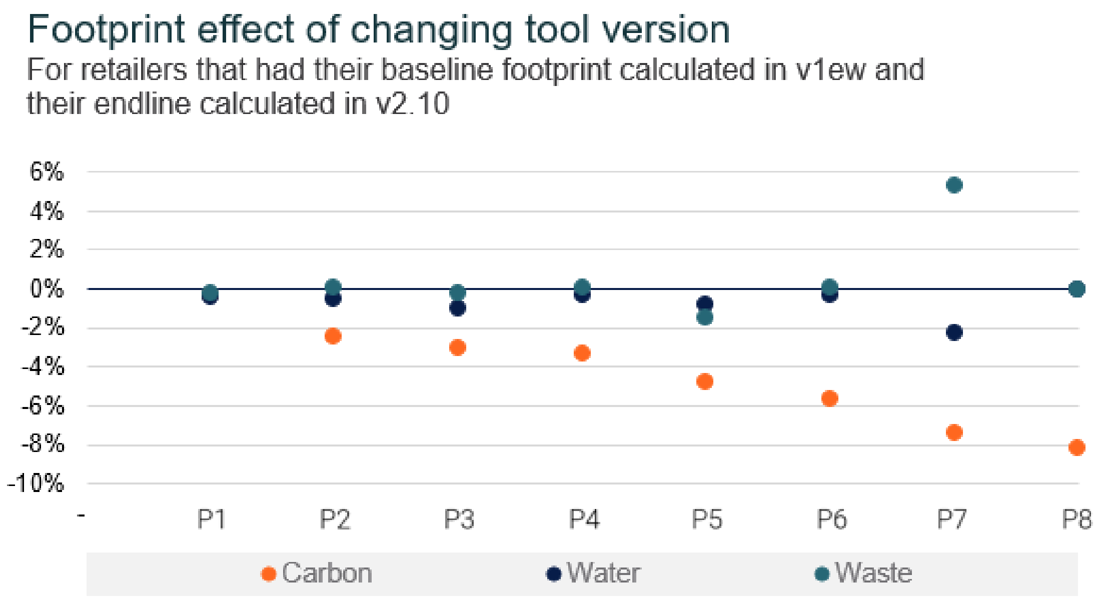
For each individual retailer, these fibre mix changes tended to drive a lot of the footprint change, but on aggregate, the changes to the high-level fibre categories almost cancelled each other out. The total effect of this footprint driver, all other things equal, was a reduction in the carbon footprint by 2.9%, an increase in the water footprint by 2.2%, and a reduction in the waste footprint by 0.6%. This means that this footprint driver contributed more to the carbon and waste footprint reductions than sustainable fibres. However, the water footprint reduction caused by sustainable fibres was so large, that high-level changes to the fibre mix could only partially offset this effect.

Figure 6: The percentage change in fibre footprints, attributable to changes in the use of high-level fibre categories, between a baseline and endline assessment for 12 apparel retailers and brands. Positive values show that the changes in use of high-level fibre categories led to footprint increases, whereas negative values indicate that these changes to the fibre mix reduced the fibre footprint.



5.3.3 Footprint driver: Changes in footprint tool data and assumptions

Figure 7: The percentage change in fibre footprints, attributable to changes to the footprint tool used, between a baseline and endline assessment for 12 apparel retailers and brands. Positive values indicate that the updated, endline, footprint tool gave a larger footprint than the baseline tool would have. Negative values show that the updates made to the footprint tool reduced the endline footprint, relative to what it would have been with the baseline tool.



Different footprint tool versions were used for the baseline and endline footprints for 8 retailers. Where the effect of the change skewed the combined, the same version of the tool was used for both the baseline and endline. The structure of the footprint tool was kept consistent between the baseline (v1ew) and endline (v2.10) versions, but following a data review some of the assumptions were changed and new improvement actions were added. Data for weaving / knitting was reviewed but this was not changed in the tool because it would have meant a change to the methodology and would have significantly affected the overall results.

The following improvement actions were added as new data had become available since the baseline tool was developed:

- Recycled cotton
- Cotton connect
- Viscose spin dyeing

Changes to baseline data were made for the following fibres and processes:

- New **nylon** data was added which reduced the carbon footprint of nylon production but increased the water footprint by 21%
- Additional data for **viscose** were reviewed which gave a lower carbon footprint for viscose on average
- New data for **wool** were reviewed and enteric emissions added to the tool. This entailed a change to both the baseline and endline versions of the tool since it represented a methodological change, and all retailers' baseline reports were reproduced to include enteric emissions both before and after implementation of ECAP. Other changes to the assumptions about wool were proposed at this time so that biophysical properties of wool would be used to allocate impacts, as well as taking into account production of wool from different sheep breeds, but these have not so far been implemented to avoid changing the results excessively.
- Data for **silk** production in India was reviewed including reeling to raw silk and found to be higher quality than previous data. This increased the carbon footprint several times over, but reduced the water footprint for silk. Few retailers use silk, especially in large quantities, and so this did not affect the results. However for any that do have a greater than normal proportion of silk in their fibre composition, the option was made available to compare footprints without the changes, by using the same version of the tool for both baselines and endlines.
- Data for spinning / weaving / knitting cotton was reviewed, but was not changed in the tool, because they would have affected the combined results.

Due to the updates made to the footprint tool, environmental impacts in the endline tool were generally lower than they would have been, if the same fibre mix had been input into the baseline tool version. This is shown in Figure 7, which demonstrates that the biggest effect of using the v2.10 tool was a reduction in the carbon footprint. The lower carbon footprints were generally due to v2.10's lower carbon emissions factors for polyester, regenerated cellulosics and nylon.

It is worth noting that the scale of the carbon reductions from this driver were larger than either sustainable fibres or high-level fibre categories. Therefore, it can be considered one of the most important reasons for the steep declines in carbon footprints across the action area. The effect of footprint version changes on the water and waste footprints was not as big as for carbon. Both footprints were lower in the endline than they would have been if calculated with the v1ew, however, this effect was small compared to changes to the high-level fibre categories.

6.0 Conclusion

In summary, several insights can be highlighted in considering the quantified aggregated environmental impact resulting from this action area as outlined below:

- **The action area succeeded in helping a range of European based brands and retailers to source more sustainable fibres. Highlights include:**
  - Nearly all participants showed an improvement on the baseline.
  - These participants increased their proportion of sustainable fibres as a % of the total fibre mix.
  - Several retailers also tried to find sustainable alternatives in several fibre categories at once – namely cotton, polyester, regenerated cellulosic fibres and wool.
  - At the beginning of the ECAP project, ECAP participants used 2,500 tonnes (0.8%) of sustainable fibres, compared to 32,000 (9.2%) at the endline. This means that sustainable fibre use by the participating brands and retailers increased by in excess of 29,000 tonnes.
  - As a result of participating in the action area and committing to source more sustainable fibres through setting sustainable fibre strategies, supported by setting fibre related sourcing targets, the brands and retailers continue to increase their uptake of more sustainable fibres. These strategies extend beyond the formal end of ECAP, given the widespread and publicly communicated intention to achieve their fibre sourcing targets over the medium and long term.
  - In addition, the action area steps have provided participants with relevant insights into their fibre sourcing activity and how this can be best supported through improved measurement and tracking processes, on an ongoing basis. The insights provided from the fibre baseline have proved a key starting point on their journey to source more sustainable fibres.
  - For many, the endline provides a second data point (in addition to the baseline as the primary data point), to give an indication of how they can most effectively adapt their fibre mix to reduce environmental impact. The real value will come from building these data points year on year, to gain maximum insight and optimise their fibre mixes, for reduced environmental impact over the long term.

- **The footprint impacts of sourcing sustainable fibres were smaller overall than the original target of a 10% reduction across carbon, water and waste within the formal timeframe of the action area:**
  - When it comes to the per tonne, or average, fibre footprint, overall reductions of 8.00% for carbon, 2.11% for water and 0.58% for waste were achieved.
  - However, this includes the footprint effects of updates to the footprint calculator, as well as high-level changes to the retailers' and brands' fibre mixes, that did not relate to sustainable fibres.
  - The per tonne footprint reductions attributable to greater sustainable fibre use were therefore 0.59% for carbon, 3.82% for water and 0.01% for waste.
  - With regards to the waste impacts, achieving footprint reductions as large as 10%, thanks to sustainable fibres, is challenging. This is because the total fibre footprint also includes in-use and end-of-life parameters. As such, sustainably sourced fibres only reduce part of the environmental impacts associated with apparel products. This impact limitation applies less to carbon and water impacts. Especially for water, a relatively large proportion of the fibre footprint comes from the fibre production stage.
  - In order to meet the targets, retailers and brands would have had to *both* source more sustainable fibres overall, as well as source fibres that have a large footprint reduction across the lifecycle, such as recycled cotton.

- The major environmental benefit of switching to sustainable fibres relates to the water footprint reductions that can be achieved, resulting from a switch from water intense conventional cotton, to more sustainable cotton alternatives. To date, at an aggregate level, this resulted in a 3.8% reduction in the water footprint overall.
- It is worth noting that although switching conventional fibre types to more sustainable types decreases the average fibre footprint, the footprint impacts in absolute terms will increase if the total volumes of fibre production continues to increase.

- **The reasons behind the above results can be summarised as follows:**
  - As sustainable cotton was the most implemented improvement action (given the dominance of conventional cotton within participants' baseline fibre mixes,) and as cotton has a significantly intense water footprint in comparison to other fibre types, it is logical that improvements would be greatest in relation to water impact;
  - However, Better Cotton, sourced via BCI, (and a popular sustainable cotton choice amongst participants,) makes a very small improvement to the fibre footprint, when compared to other cotton alternatives such as recycled cotton, within the context of the current calculator tool. This could potentially change as more nuanced data becomes available and could be integrated into the tool. In addition, as the ability to source recycled cotton becomes more effective and more widespread, we could potentially see increased rates of recycled cotton being sourced and greater reductions in the water footprint overall.

- **The improvement actions that had the greatest footprint impacts were not pursued to the same degree by all participants:**
  - The extent to which participants pursued the various improvement actions depended on several factors, such as:
    - suitability for the particular product type and its required attributes
    - quality standards
    - availability via the supply base
    - volumes required
    - cost

    Each participant pursued improvement actions relevant to their product portfolio, supply chain, sustainability strategy and business model, hence a standardised approach was not pursued (or encouraged).
  - Assessing and accurately predicting the specific and varied trade-offs arising from switching from one fibre type is complex. Fibres that perform well on one footprint measure, for example, may perform less well on another and understanding the relative size of these impacts is challenging.
  - This report provides a snapshot of the aggregated results only and does not showcase individual brand / retailer results or impact.

- **Limitations to note:**
  - Due to current limitations, sustainable fibre options being sourced by some participants, where these align with their sourcing objectives, customer expectations etc., (such as Fairtrade cotton and recycled wool,) were not

accounted for. These could be included in future iterations of the tool as more data becomes available.

  - The waste footprint was very similar across different fibre types – including sustainable fibres. This was due to the largest proportion of the waste impacts coming from the end-of-life related actions taken by participants – which in the tool is identical for most garments. It also arises from the lack of granular waste data sitting behind the tool. Due to this, differences in waste impacts were very small, even when large fibre mix changes occurred.
  - Due to a lack of granular information on each fibre type and their impacts and the complexity involved in developing such a comprehensive tool, conservative assumptions were made. Consequently, the differences modelled by the tool could potentially be smaller than in reality. Therefore, it is likely that some of the benefits of substitution to sustainable fibres are underestimated in this current study.
  - Generally speaking, the availability of reliable and up to date data relating to environmental impacts of fibre production and processing is an on-going challenge for the sector.

- **Learnings to note:**
  - Brands and retailers need further support with the development of easy-to-use, accessible tools to support internal, day to day decision making and scenario planning in relation to sourcing decisions and this would be a valuable next step.
  - Brands would benefit from a "sandbox" where they can easily experiment with their fibre mix to see what decisions have the greatest marginal impact. This could potentially be developed as an additional component within the current calculator tool with access provided under licence, or as a standalone tool for brands to use internally, to play around with different fibre sourcing scenarios. This could allow them to consider nuanced scenarios and build insight into the various trade-offs and relative size of the impacts arising from different substitutions.

- **Thinking beyond the environmental impact of fibres:**
  - It is worth mentioning that several ECAP participants pursued sustainable fibre sourcing to not only better understand (and reduce) their associated water, waste or carbon impacts, but to also start to address the many other sustainability related impact areas (such as social and ethical), as part of a holistic approach to their sustainability activities including:
    - improved wet processing practices
    - better working conditions
    - supporting biodiversity of local environments
    - empowering local communities
    - working towards achieving more sustainable products overall, including how they can be re-used and recycled at the "end of life" stage.
- **Case studies:**
  - The case studies produced from the work on sustainable fibre strategies are available on ECAP's website at http://www.ecap.eu.com/take-action/sustainable-fibre-strategies/

WRAP's vision is a world in which resources are used sustainably.

Our mission is to accelerate the move to a sustainable resource-efficient economy through re-inventing how we design, produce and sell products; re-thinking how we use and consume products; and re-defining what is possible through re-use and recycling.

Find out more at **www.wrap.org.uk**

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