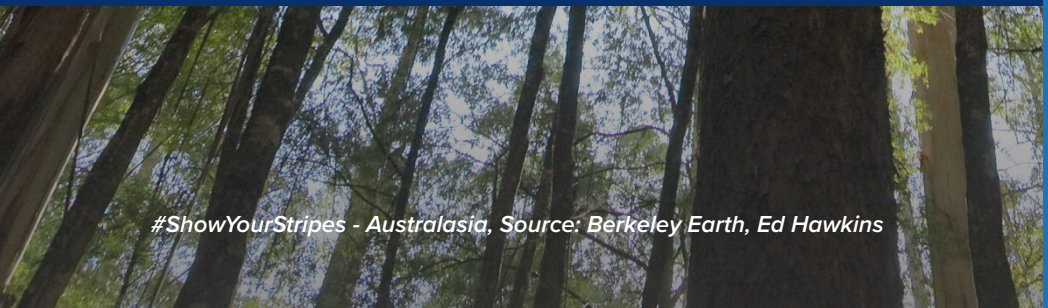
European Union Ecodesign for Sustainable Products Regulation:

Summary of inconsistencies and potential deficiencies in the Preliminary Study on New Product Priorities - with specific reference to Textiles and Footwear

Veronica Bates Kassatly and Terry Townsend



#ShowYourStripes - Australasia, Source: Berkeley Earth, Ed Hawkins

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Finally, the climate stripes used on the cover and throughout this report were created by Professor Ed Hawkins at the University of Reading, and we would urge you to view their website **showyourstripes.info**

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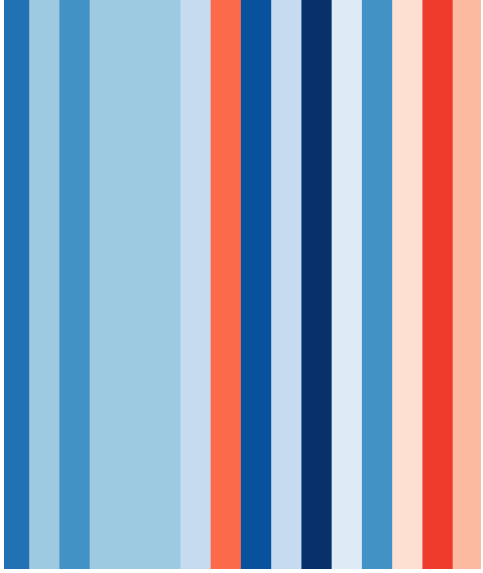

Executive Summary

In March 2022 the European Commission proposed the Ecodesign for Sustainable Products Regulation (ESPR). Under the ESPR, ecodesign requirements may be set for specific product categories to improve their circularity, energy performance, resource efficiency, and other environmental sustainability attributes.

The Joint Research Centre (JRC) was therefore commissioned to produce a report to suggest a number of product groups and horizontal measures as suitable candidates for prioritisation under ESPR once it enters into force. That report, "Ecodesign for Sustainable Products Regulation - preliminary study on new product priorities" was published in January 2023. It is referred to hereafter as the draft JRC report; the word draft being used in light of the report having the sub-heading "Technical Report – draft". Textiles and Footwear was one of 19 product groups assessed by the JRC, and the category was included in the final short-list of 12 end-use products. Potential measures under the ESPR for each product were also proposed.

This white paper assesses the draft JRC Report's 'potential measures' for Textiles and Footwear only. The draft Report's recommendations for other sectors are not considered. As the lead product group prioritized for action under the ESPR however, we believe that getting the analysis and recommendations for Textiles and Footwear right is imperative. Performance requirements on pesticide, fertilizer, water, land use, etc., decided for this sector will presumably determine those of all others.

Our paper, then, is not intended to be a criticism, but rather a call for the EU Commission and EU organizations wanting to address climate change with climate justice, to work more collaboratively toward the sustainability outcomes shared by the greatest number of people.

In the interest of user-friendliness, a detailed evaluation of some aspects has been relegated to appendices. This is noted in the text, and readers wishing to see the complete analysis of these topics may wish to go directly to the relevant appendix.

Part 1 of this paper is aligned with the European Parliament's stated concern of June 1, 2023, that the Ecodesign for Sustainable Products Regulation (ESPR) should be consistent with the Union's commitments under the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework, and the Sustainable Development Goals.

The paper evaluates whether the approach and recommendations of the draft JRC Report are consistent with these global agreements, as well as with prevailing WTO regulations. Part 1 then further considers whether minimum standards of direct engagement with both those most affected and those with the greatest expertise have been met.

Part 2 assesses the extent, depth, and validity of the data used to inform the proposed policy recommendations: does the data support the 'potential measures'?

Part 3 then discusses whether in the light of the analysis included in parts 1 and 2, the draft JRC Report's policy recommendations are substantiated, appropriate, and likely to be effective.

Regrettably, in our assessment, the answer to all three points considered is no.

We find many of the deficiencies in the draft JRC Report, like those of other components of the proposed EU textile and footwear policy, including the use of the Product Environmental Footprint method (PEF) to be attributable, at their base, to a failure by the EU to commission the research required to underpin effective legislation. As a result, as outlined in earlier reports by the authors of this paper, there is an absence of robust, current, and comparable data, and EU technicians are obliged to craft legislation based on a hodgepodge of available reports, commissioned - by and large - by vested interests.

We are particularly concerned by the draft JRC Report's analysis of climate change. For textiles and footwear, this appears to rely almost exclusively on a single paper written by McKinsey for the Global Fashion Agenda (GFA).

The data in this GFA study is neither internally consistent nor consistent with any other study of climate impacts in the apparel supply chain that we have been able to identify. Nor indeed is some of the data used even consistent with the stated source - but rather 3 times greater. As a result, the purported share of raw materials in total apparel production carbon emissions stated in FoC is far higher than in any other study. The impact share of manufacturing is correspondingly reduced. This automatically obscures the real issue in apparel production emissions - the fact that most occur in countries where the carbon intensity of the energy mix is well above the global average.

Climate change, and how we halt it equitably but effectively, is humanity's most pressing problem. However, since it is based on a faulty data source, the draft JRC Report's analysis of the climate impact of apparel presents a faulty solution. By definition, this means the draft JRC Report's potential solutions, consisting of both recommended information and performance requirements to mitigate climate emissions will simply not work, and in fact are likely to exacerbate apparel's climate change impacts.

In other instances, we find that the proposed performance requirements appear to conflict. For instance, one recommendation is a *"performance requirement on maximum limit of fertilisers, pesticides and insecticides to the production of cotton"*. Another is *"performance requirement on minimum content of material with sustainability* certification per kg or unit of textiles and footwear."* Brazil has the highest levels of pesticide application on cotton in the world - almost 4 times the global average. But it is also certified 'Better Cotton' (BC). Indeed, Brazil produces almost half the total global supply of BC cotton. So, which of those two performance requirements would apply?

There is nothing nefarious about various corporations attempting to portray resale, rental, recycling, or 'preferred' or 'innovative fibres' as the solution to all fashion's problems. These claims are aligned with current market incentives and are only to be expected. But it is unreasonable for EU policymakers to expect the JRC to use what are basically marketing tools from these corporations as guides for global policy. The outcome, as this paper outlines, is that in our assessment, none of the measures proposed in the draft JRC Report will make a significant dent in fashion's negative social and environmental impact (innovative fibres that can competitively replace plastic/fossil fibres aside).

Of equal concern in our estimation, is the fact that the draft Report's proposals have no clear link to, or apparent regard for (that we can discern) the European Union's global commitments. Indeed, the draft JRC report openly asserts *"Please note that in this context, sustainable does not include the social dimension."*

We do not agree with this explicit omission. Fibre production is vital to some of the poorest on the planet - cotton provides 50% of Benin's export income and is the principal cash crop of the predominantly rural population, as just one example. The draft JRC report, however, in common with the proposed EU use of PEF, does not attempt to consider the potential socioeconomic impact of its requirements on producers. We regard this as a direct violation of the EU's stated commitment to implement the SDGs in all its policies. We can, moreover, find little evidence that those with the greatest expertise, and those whose well-being is most at risk, have been consulted inclusively - if at all.

As a result, our response to the European Parliament's stated concern of June 1, 2023, that the Ecodesign for Sustainable Products Regulation (ESPR) should be consistent with the Union's commitments under the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework, and the Sustainable Development Goals, is that, unfortunately, in its present form, the draft JRC Report does not satisfy this requirement. We would moreover question both whether the draft JRC Report's treatment of plastic microfibres is consistent with the European Union's global commitments to adhere to the precautionary principle, as first outlined in the Rio Declaration, and whether it is consistent with the EU's recent call to phase-out 'unabated' fossil fuels and for COP28 in particular to *"to mark the beginning of the end of fossil fuels."*

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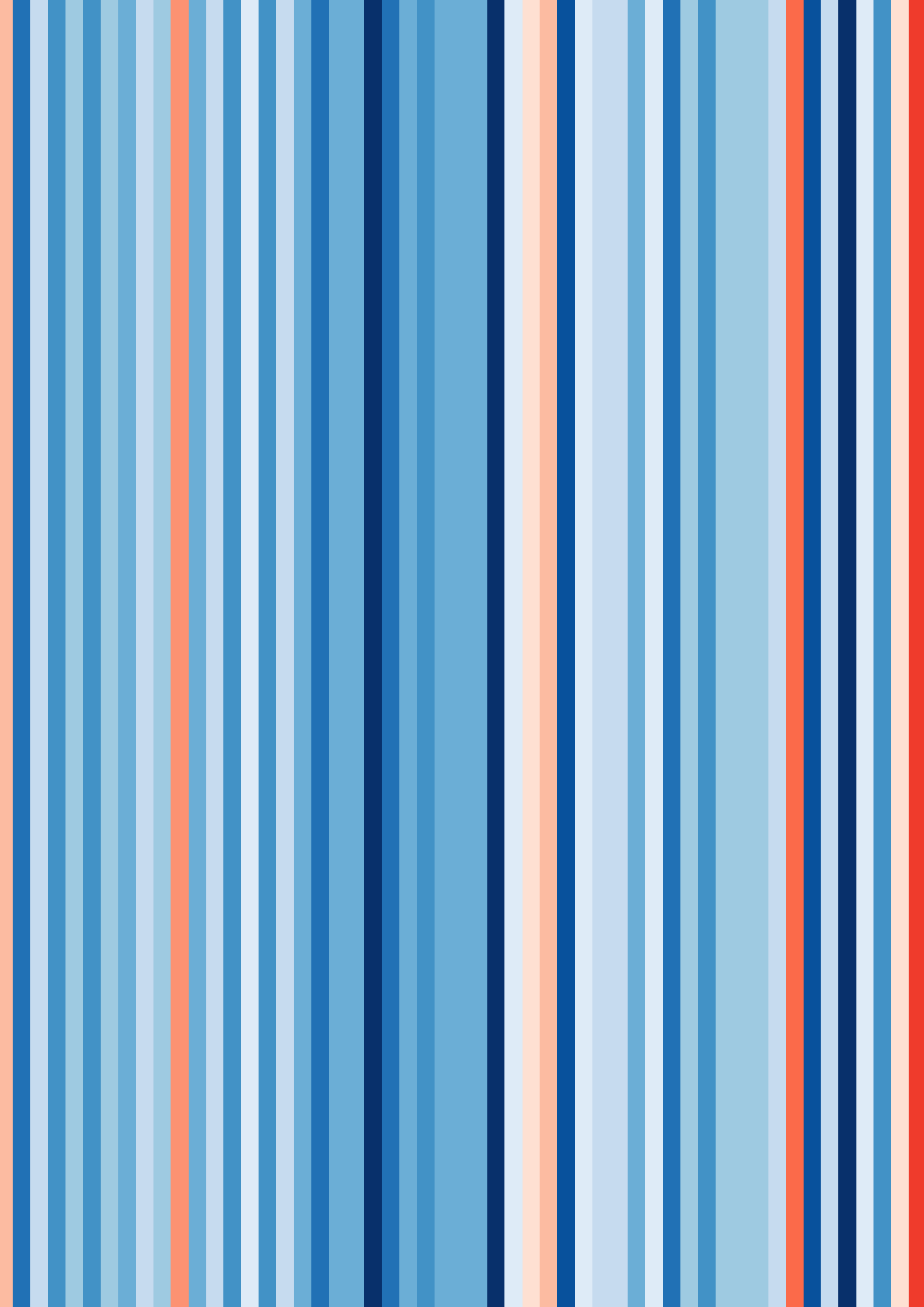
ESPR Abbreviations

ACIMIT	Association of Italian Textile Machinery Manufacturers
BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BCI	Better Cotton Initiative
BCG	Boston Consulting Group
BoF	Business of Fashion
CAP	Common Agriculture Policy
CM	Changing Markets Foundation
COP	Conference of the Parties
CRDC	Cotton Research and Development Corporation
EFA	European Fashion Alliance
EPA	Environmental Protection Agency
EP&L	Environmental Profit and Loss
ESA	Ecological Society of America
ESPR	Ecodesign for Sustainable Products Regulation
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FoC	Fashion on Climate
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GFA	Global Fashion Agenda
GHG	Green House Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GM	Genetically Modified
GMO	Genetically Modified Organism
ICAC	International Cotton Advisory Committee
IISD	International Institute for Sustainable Development (Canada)
ILO	International Labor Organization
IPM	Integrated Pest Management
ISO	International Organization for Standardization
JRC	Joint Research Centre
LCA	Life Cycle Assessment
MSI	Materials Sustainability Index
MT	Million Tonnes
NASA	The National Aeronautics and Space Administration
PEF	Product Environmental Footprint
PET	Polyethylene Terephthalate
rPET	recycled PET
SAC	Sustainable Apparel Coalition
SDG	Sustainable Development Goals
SEEP	ICAC Expert Panel on Social, Environmental and Economic Performance of Cotton Production
SFA	Sustainable Fibre Alliance
SIFO	National Institute for Consumer Research (Norway)
SOFITEX	Société Burkinabè des Fibres Textiles (Burkina Faso)
SONAPRA	Société Nationale Pour La Promotion Africole (Benin)
TE	Textile Exchange
TMC	The Microfiber Consortium
TRV	Trondheim Renholdsverk (Norway)
USD	United States Dollar
USDA	United States Department of Agriculture
UC	University of California
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WTO	World Trade Organisation
XPCC	Xinjiang Production and Construction Corporation



Introduction

As part of a well-intentioned, indeed, much-needed drive towards a greener, circular economy, the European Union (EU) is planning numerous measures intended to encourage a more regenerative and systemic approach to the use of resources and products, including both greener production and greener consumer choices.

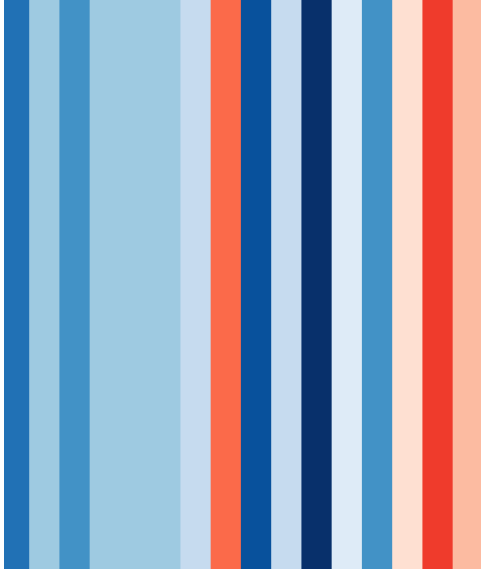
In this paper, we discuss just one such proposal: the Ecodesign for Sustainable Products Regulation (ESPR). In January 2023, the Joint Research Center (JRC) of the European Commission launched a preliminary study of new **product priorities**[1] for the Union's proposed ESPR (The draft JRC Report).[2]

The draft JRC Report suggests the product groups that should be prioritized for action under the ESPR once it enters into force, as well as suggested policy approaches. Textiles and footwear are rated as the highest-impact product group (with a total environmental score of 43 points, 13 points higher than the second-highest-scoring product group).

The draft JRC Report specifically states: *"To this end, feedback from stakeholders will be key to pave the way to an agreed, evidence-based priority list for the first ESPR Working Plan."* (p. 55). It is hoped that this paper will be considered in the spirit in which it is intended - as one such evidence-based piece of stakeholder feedback intended to inform good policy decision-making.

1 environment.ec.europa.eu/news/sustainable-products-commission-consults-new-product-priorities-2023-01-31_en

2 susproc.jrc.ec.europa.eu/product-bureau/product-groups/635/documents



PART 1

The Draft JRC Report and the European Union's International Commitments

This paper first evaluates whether the recommendations in the draft JRC Report are consistent with the EU's global commitments for 2030.

We do this in line with the concerns of the European Parliament itself. Specifically, on June 1, 2023, Parliament passed a resolution on the EU Strategy for **Sustainable and Circular Textiles**,[3] which asserted: *"that the actions following the publication of the strategy should be fully in line with the Union's international commitments, including the Sustainable Development Goals, the Paris Agreement, and the Kunming-Montreal Global Biodiversity Framework."*

We consider the draft JRC Report's adherence to each of these commitments in turn. We then consider a concern not mentioned by the European Parliament - namely whether the ESPR, as currently proposed, is consistent with the regulations governing global trade. And we then very briefly touch upon whether the draft JRC Report is both consistent with the EU's stated commitment to phase out fossil fuels and with the claim currently being made, that the ESPR will help the fashion industry reduce its reliance on fossil sources.

First, however, it is important to point out that if the EU wishes to operate and to be seen to operate as a free-market economy, it should include economic incentives as the primary determinant of commercial transactions. At no point does the draft JRC Report indicate whether its proposals make economic sense or consider how they align with prevailing economic incentives and disincentives. Such economic analysis however is we believe essential.

3 europarl.europa.eu/doceo/document/TA-9-2023-0215_EN.html

A. ESPR and the SDGs

The **Sustainable Development Goals**,[4] follow the **Millennium Development Goals**.[5] Which in turn follow the **Brundtland Agreement**.[6] That agreement asserted that sustainability encompasses environmental and social dimensions because they are inextricably linked. And that in aiming to meet the needs of the present without compromising the ability of future generations to meet their own needs, overriding priority must be given to meeting the essential needs of the world's poor.

As we will see, some of the proposed ESPR measures are intended to apply extra-territorially, including to cotton farmers, and so will affect the livelihoods of some of the world's most vulnerable. The World Bank estimates that globally, the number of people in extreme poverty (those who live on less than $2.15 per person per day at 2017 purchasing power parity) is in excess of 700 million. According to **Canada's International Institute for Sustainable Development (IISD)**[7] smallholder farmers, managing less than 2 hectares of land, predominantly in developing countries, support an estimated 2 billion people globally.

Whilst popular imagination in the Global North sees cotton as produced on large plantations, belonging to rich landowners, in reality with a few exceptions in Australia, Brazil[8] and the USA, smallholders are the major producers of the world's cotton. India, the country with the largest area devoted to cotton in the world, has an estimated ten million cotton farmers with an average farm size of 1.2 hectares.[9] The ICAC calculates that, globally, there are a little over 24 million cotton farmers. Around 40% are female and the average land holding is only 1.3 hectares.[9]

Indeed, smallholders are the major producers, not just of the world's cotton, but also of silk, alpaca, cashmere, and other 'natural' fibres.[10]

They are the farmers that some of the measures included in the draft JRC Report are targeting. It is self-evident that the EU cannot, scientifically, ethically - indeed we would argue, legally - introduce legislation impacting global trade in fibres, without considering the welfare of those who produce them.

4 *commission.europa.eu/strategy-and-policy/sustainable-development-goals_en*

5 *www.un.org/millenniumgoals/*

6 *gcbhr.org/backoffice/resources/reportfinal72dpi2.pdf*

7 *www.iisd.org/system/files/2021-12/ssi-initiatives-review-standards-poverty-reduction.pdf*

8 *www.veronicabateskassatly.com/read/if-brazil-is-better-whats-worse*

9 *www.icac.org/Content/PublicationsPdf%20Files/5a7e599d_0ce4_45a4_9331_2dab12829637/DATABOOK-2022-ss.pdf.pdf*

10 *www.veronicabateskassatly.com/read/thenbsprole-ofnbspcotton-andnbspnaturalnbspfibres-innbspa-sustainablenbspworld-economy-sustainability-includes-justicejustice-requires-access-to-technology*

While fibres other than cotton individually represent relatively small components of the world fibre economy - together they represent about one-fifth of global natural fibre production and 7% of total world fibre production (coir, sisal, and jute are little used in apparel) - it should be noted that all natural (farmed) fibres, not just cotton, ranging from alpaca to wool, including cashmere, silk, linen and all other animal and vegetable fibres are very important to the indigenous and other communities that their production supports.

WORLD FIBRE PRODUCTION

	2020	2021	2022, est.	Pct of total fibres in 2022	Pct of natural fibres in 2022
		Metric Tonnes		%	%
Abaca	75,889	83,501	72,000	0.06%	0.2%
Agave Fibres	40,625	40,743	41,000	0.04%	0.1%
Coir, without pith	1,101,498	1,115,349	1,145,000	1.0%	3.5%
Cotton Lint	23,989,000	25,176,000	25,314,609	22.1%	76.5%
Other Fibre Crops, raw, n.e.c.	739,145	755,326	733,000	0.6%	2.2%
Flax, processed but not spun	974,806	896,636	851,805	0.7%	2.6%
True Hemp, raw or retted	251,062	302,318	272,000	0.24%	0.8%
Jute, Kenaf & Allied Fibres	2,874,800	3,175,600	3,095,000	2.7%	9.4%
Kapok fibre	78,674	82,150	80,000	0.07%	0.2%
Ramie, raw or retted	62,228	10,138	10,000	0.01%	0.0%
Sisal, Henequen and similar hard fibres	280,800	281,400	273,000	0.2%	0.8%
Silk, raw	91,765	86,311	91,221	0.08%	0.3%
Wool, clean	1,019,575	1,037,933	1,053,000	0.9%	3.2%
Other animal fibres	27,000	26,460	27,000	0.02%	0.1%
Total Natural Fibres	31,606,868	33,069,866	33,100,000	28.9%	100.0%
Cellulosic	6,600,000	7,155,000	7,334,000	6.4%	
Synthetic Filament	49,514,000	53,029,000	53,981,000	47.1%	
Synthetic Staple	19,750,000	20,050,000	20,178,000	17.6%	
Total Manmade Fibres	75,864,000	80,234,000	81,493,000	71.1%	
Total Fibre Production	107,470,868	113,303,866	114,593,000	100.0%	

Table 1. Source: dnfi.org/dnfi-world-natural-fibre-update-November-2023

It is difficult to estimate employment in the agricultural segments of natural fibre value chains because most production occurs in countries with weak systems of data collection, most producers are smallholders and most labor is hired informally and seasonally, and because some households go in and out of production from one season to the next, making it difficult to know who and how many are employed in any one year. Nevertheless, a reasonable estimate of total employment in natural fibre industries, including family labor, hired labor, and employment in industries providing services to agriculture, and including both full-time year-round employment and part-time or seasonal employment, is between 40 and 50 million households, with total employment between 150 million and 200 million each year. (Discover Natural Fibres Initiative, World Natural Fibre Update, January 2024.)

Of the total, cotton alone accounts for around 24 million households and about 100 to 150 million in total employment. Fibres other than cotton account for around 20 million households and between 50 and 100 million in total employment.

In other words, between 2% and 3% of the world's population earns at least part of their annual income, and in many cases their entire annual cash income, from natural fibre production. That is not a trivial role. That is a significant contribution to SDGs 1 & 2. That is a significant contribution to justice. We are disconcerted that the European Commission fails to recognize this in any of its proposed legislation, including both the PEF and the ESPR, and is targeting all such fibres, not just cotton, due to purported GHG emissions, or water consumption, or indeed, some ill-defined reason for a *"performance requirement on restricting the use of certain materials"*. It is self-evident that this will cause hardship to the poorest, whilst making little contribution to reducing GHG emissions and other environmental impacts in the apparel supply chain.

We are concerned that the draft JRC report does not acknowledge this, let alone address it, and includes only the same asterisked caveat to most of the categories covered, including textiles and footwear: *"*Please note that in this context sustainable does not include the social dimension."*

The IISD provides the following succinct definition of poverty: *"Poverty is defined as the lack of resources, choices, opportunities, power, and voice necessary to achieve a basic level of living standards and to participate in society."* It is certainly the case that these smallholder farmers and their dependents appear to have had no voice or significant consideration in the EU's ESPR proposals. As a result, we would submit that the ESPR as currently proposed, contradicts the EU's own stated undertaking: *"We are committed to implementing the SDGs in all our policies and encourage EU countries to do the same."*[11]

11 international-partnerships.ec.europa.eu/policies/sustainable-development-goals_en

B. The ESPR and Climate change:

The EU's commitment to and objectives for, climate change, are governed by the **Paris Agreement**,[12] and subsequent Conference of the Parties (COP).

The World Bank has estimated that even with rapid, inclusive, and climate-informed development, between 2015 and 2030, climate change will have pushed an additional 3 -16 million people into poverty. If development is delayed and less inclusive, the increase in climate change-induced poverty will rise to between 35 million and 122 million people.[13]

In other words, those who have contributed least to climate change will - indeed already do[14,15,16,17,18] - suffer the most. In recognition of this fundamental injustice, the five key takeaways from COP27, held in Egypt, on 6 Nov - 20 Nov 2022, were as follows:

1. Establishing a dedicated fund for loss and damage;
2. Maintaining a clear intention to keep 1.5°C within reach;
3. Holding businesses and institutions to account;
4. Mobilizing more financial support for developing countries;
5. Making the pivot toward implementation.[19]

As further elaborated in the climate change sections below, none of these commitments are reflected in the draft JRC Report.

12 climate.ec.europa.eu/eu-action/international-action-climate-change/climate-negotiations/paris-agreement_en

13 www.worldbank.org/en/topic/climatechange/brief/shock-waves-managing-the-impacts-of-climate-change-on-poverty-background-papers

14 documents1.worldbank.org/curated/en/349001468197334987/pdf/WPS7483.pdf

15 www.unicef.org/emergencies/devastating-floods-pakistan-2022

16 www.theguardian.com/world/2023/jul/07/pakistan-monsoon-floods-punjab-province-deaths

17 www.washingtonpost.com/world/2023/07/14/india-floods-himachal-pradesh-monsoon/

18 www.nytimes.com/2023/09/13/world/middleeast/what-we-know-floods-libya.html?name=styln-libya-floods&region=TOP_BANNER&-block=storyline_menu_recirc&action=click&pgtype=Article&variant=undefined

19 unfccc.int/process-and-meetings/conferences/sharm-el-sheikh-climate-change-conference-november-2022/five-key-takeaways-from-cop27

C. ESPR and the Kunming-Montreal Global Biodiversity Framework

On the 19th of December 2022, all parties to the Convention on Biological Diversity Fifteenth meeting – Part II, which took place in Montreal, Canada, agreed to the release of the **Kunming-Montreal Global Biodiversity Framework**.[20] The European Union is listed among those who hosted consultations and provided financial support - along with the governments of several EU member states: Austria, Belgium, France, Germany, Ireland, and Italy, amongst others.

That framework specifically states:

The Kunming-Montreal Global Biodiversity Framework, including its Vision, Mission, Goals and Targets, is to be understood, acted upon, implemented, reported and evaluated, consistent with the following:

a) Contribution and rights of indigenous peoples and local communities....

b) Different value systems [acknowledgment of]....

c) Whole-of-government and whole-of-society approach....

d) National circumstances, priorities and capabilities [ability to contribute according to]....

e) Collective effort towards the targets....

f) Right to development....

g) Human rights-based approach....

h) Gender....

Here it is worth quoting the words of the IISD *"The ILO reports that Indigenous Peoples living in 23 countries represent 83% of the Indigenous population worldwide and constitute an alarming 18.7% of the world's extreme poor."*[21]

The EU's avowed commitment to Kunming-Montreal is then, intimately related to its commitments to the SDGs.

Barely a month passed between the release of the Biodiversity Framework and the publication of the draft JRC Report. As we shall see, however, there is not a trace of those 8 dictates in the JRC's biodiversity recommendations for textiles and footwear. Rather, the analysis and recommendations included in the draft JRC Report make no reference to the rights of indigenous peoples and local communities and don't acknowledge different value systems, national capabilities, or rights to development. Further, as we have already noted, the draft JRC Report explicitly excludes any consideration of the socio-economic impacts of its recommendations on the world's poorest.

20 www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf

21 www.iisd.org/system/files/2021-12/ssi-initiatives-review-standards-poverty-reduction.pdf

At least as far as textiles and footwear are concerned, we can find no evidence that the JRC reached out to any multilateral organizations in the preparation of the draft report - either to obtain data or to assess the potential impacts of their recommendations. Our inquiries suggest that many, if not most, of the multilateral organizations of which the EU is a member are not even aware of the draft JRC report's existence. Indeed, the EU appears to have made no attempt to consult or even inform those international organizations that are fibre-specific, such as the **International Sericultural Commission**[22], or the **International Cotton Advisory Committee**[23] of their plans.

Just how difficult it is to engage with the ESPR process is perhaps best illustrated by a report commissioned by the Transformers Foundation - a grouping primarily of large denim, viscose, and cotton producers[24] - supported by **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH**,[25] and GIZ FABRIC Asia, which was published in July 2023. That report states: *"This group of documents is intended to enable suppliers in the apparel value chain - and others who are seeking to better understand upcoming legislation - to better understand how impending sustainability-related legislation in the Global North will impact them"*.[26]

Yet, in its coverage of the ESPR,[27] said publication makes no mention of the draft JRC Report.

We must conclude then that a group of lawyers, specifically tasked with assessing such legislation, were unable to find the proposals contained in the draft JRC Report. Moreover, as joint funders, GIZ will surely have read Transformer's final draft. Yet they too, despite being mandated to support the German Government in achieving its development objectives,[28] appear to have been unaware of the draft JRC report's existence.

22 inserco.org/en/

23 icac.org/

24 www.transformersfoundation.org/about

25 www.giz.de/en/html/about_giz.html

26 www.transformersfoundation.org/an-apparel-suppliers-guide-key-sustainability-legislations-in-the-eu-us-and-uk/#factsheets

27 static1.squarespace.com/static/5efdeb17898fb81c1491fb04/t/64b685bd6c2a072aac866511/1689683393533/Factsheet+6+-+EU+Ecodesign+for+Sustainable+Products+Regulation+-+An+Apparel+Supplier_s+Guide.pdf

28 www.susana.org/en/community/partners/list/details/178#

We have, furthermore, only been able to identify two position papers on the ESPR proposals for textiles and apparel, one from The European Fashion Alliance (EFA),[29] that was published on June 15, 2023, and the other from the Change and Wasted Textile projects, published on May 14, 2023.[30] We note that both were submitted after the expiration of the feedback and consultation period.

We therefore submit that the EU needs to improve the way it engages with those potentially affected by the ESPR proposals, including direct engagement with relevant international organisations, and providing sufficient time to allow for detailed consideration of the impacts of the proposals.

A further concern - as we shall demonstrate in Part 2 - is that the draft JRC Report uses poor quality data. This is a problem (and a challenge) common to the entire sector. It is also a problem common to the proposed PEF.

We would submit that both concerns reflect not only a failure by the JRC and others to consult, but also a fundamental failing in the EU's approach to apparel regulation. Specifically, the EU has quite simply, not commissioned any of the - admittedly expensive - independent research in the form of comparable LCAs, etc., that would enable the JRC and others involved to develop fact-based policy measures. Instead, these agencies and organizations are obliged to use whatever is already available. In the nature of things, this tends to represent the economic interests of those with the strongest connections to EU policy makers (which is typically not farmers in the non-EU countries where cotton is produced).

Indeed, the same could be said of the forthcoming national PEF of the EU member state, France. This has been law since 2021, with initial implementation scheduled for January 2024.[31] But again, many seem unaware of its existence. The French PEF is not included in the aforementioned Transformers report either. And we can find no evidence that the major fibre-producing nations and representative agencies have been consulted.

29 www.europeanfashionalliance.org/news/european-fashion-alliance's-position-paper-on-espr

30 clothingresearch.oslomet.no/2023/05/14/ecodesign-position-paper-textiles-and-footwear/

31 medium.com/@wouter.stor/the-scope-of-the-french-agec-eco-labeling-law-is-changing-from-24-on-are-you-impacted-9a4d5d50c68e

D. ESPR and the WTO

As the USA learned to its cost, technical barriers to trade fall under the General Agreement on Tariffs and Trade (GATT), and cannot be erected at will.

Specifically, in 1996, the USA attempted to introduce a regulation requiring all shrimp exporters to the USA to use 'turtle excluder devices' to allow turtles to escape from shrimp fishing nets. Exporting nations claimed that the law was a disguised restriction on free trade, and challenged the measure via the WTO's dispute resolution process. They won. The ban was judged as contrary to WTO rules, not because countries do not have a right to introduce legislation to protect endangered species - or to save water, or to reduce emissions - but because the regulation was arbitrary and unjustifiably discriminatory.[32]

We are not experts in global trade regulation, but it is self-evident, that if the EU imposes performance requirements on different aspects of fibre imports, such as the maximum limit of fertilizers, pesticides, including insecticides, and water that can be used in the production of cotton, or on the minimum content of material with sustainability certification that must be included, and so on, it is erecting non-tariff or 'technical' barriers to trade.

Such barriers are governed by the Uruguay Round Agreement on Technical Barriers to Trade.[33]

This agreement specifically states:

2.2 *Members shall ensure that technical regulations are not prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade. For this purpose, technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create. Such legitimate objectives are, inter alia: national security requirements; the prevention of deceptive practices; protection of human health or safety, animal or plant life or health, or the environment. In assessing such risks, relevant elements of consideration are, inter alia: available scientific and technical information, related processing technology or intended end-uses of products.*

Moreover,

2.8 *Wherever appropriate, Members shall specify technical regulations based on product requirements in terms of performance rather than design or descriptive characteristics.*

And finally, when proposing to introduce regulations that are novel and may have a significant effect on other nations, the member concerned - in this case the EU - is required to notify other members of the proposals, early enough in the proceedings for comments and amendments.

32 assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/962785/The_Economics_of_Biodiversity_The_Dasgupta_Review_Full_Report.pdf

33 www.wto.org/english/docs_e/legal_e/17-tbt_e.htm

We quote:

2.9 Whenever a relevant international standard does not exist or the technical content of a proposed technical regulation is not in accordance with the technical content of relevant international standards, and if the technical regulation may have a significant effect on trade of other Members, Members shall:

2.9.1 publish a notice in a publication at an early appropriate stage, in such a manner as to enable interested parties in other Members to become acquainted with it, that they propose to introduce a particular technical regulation;

2.9.2 notify other Members through the Secretariat of the products to be covered by the proposed technical regulation, together with a brief indication of its objective and rationale. Such notifications shall take place at an early appropriate stage, when amendments can still be introduced and comments taken into account;

As we point out throughout this paper, we do not believe that the draft JRC Report's proposals will increase the used - rather than usable - life of apparel, which is their stated objective. But this is what must be proven for the measures to constitute acceptable technical barriers.

Furthermore, we can find no evidence that any of the obligatory notification and consultation requirements have taken place. Certainly, the draft JRC Report makes no mention of them.

As we have repeatedly noted, many of the proposed measures are intended to impact global trade, and so the livelihoods of some of the world's most vulnerable. Natural fibres are vehicles for a pro-poor sustainability agenda, not just because of their value and employment opportunities, but also because of their unique attributes as durable, storable, transportable products. They can be stored for years without loss of physical value. They do not require refrigeration, and when stored properly, they do not degrade in quality, and they are not vulnerable to mold, bacteria, insects, or other vermin. They can, moreover be transported over rough roads for thousands of kilometers without damage. If a bale falls out of the back of a truck or off the side of a rail car, you just brush off the dust, put it back, and continue.

Further, fibres have high ratios of value to weight and density, so they can be economically shipped from interior locations. For example, as of the end of November 2023, one kilogram of wheat was worth $0.22 on the Chicago Board of Trade (CBT), one kilogram of soybeans was worth $0.49 on the CBT, and one kilogram of Brent Crude was worth $0.51. Meanwhile, one kilogram of cotton was worth $1.75 on the Intercontinental Exchange, one kilogram of Merino wool was worth $7.67 at an average location in Australia, and one kilogram of flax at an average location in Europe was $7.16.

These are the reasons why fibres are grown and raised in regions distant from end-use markets like Mali, Burkina Faso and Chad, Zambia and Zimbabwe, Uzbekistan and Xinjiang, Southern India, the Ganges Delta, Northern Brazil, Mongolia, and the Australian wheat-sheep belt, thousands of kilometers from ports and weeks from shipping destinations.

Natural fibres are grown on the frontiers of global trade, and in many regions, fibres are the only viable economic activity available, providing income to millions. Natural fibres connect people to markets.

Far from being a competitor to food, as is so often depicted by brands and their funded initiatives - including one industry initiative much cited by the draft JRC Report - **Textile Exchange**[34] (an organization created by Patagonia to encourage production first, of organic cotton, and now of 'preferred' fibres, supported by an array of noted global brands, including ASOS, Bestseller, PVH Corp, Ralph Lauren Corporation, H&M, Kering, Nike, New Look, Otto, Primark, Reformation, Shein, Walmart, and Zalando) - such fibres also contribute to food security by providing economic yields and cash incomes in regions where other crops would fail. With animal fibres, animal husbandry is an important component of balanced whole-farm agricultural systems for many smallholders as well as an important source of nutrients. As cash crops, natural fibres often serve as collateral against input loans to farmers, allowing farmers access to fertilizer, insecticides, and seeds for food crops that would otherwise be unavailable. Consequently, natural fibre production enables increased food production. For many smallholder households in the Global South, basic sustenance is provided by food crop production and animal husbandry, but cotton, jute, abaca, sisal, and other fibres are often the only source of cash income for the family.

These are the reasons why it is appropriate to talk about natural fibres both in the context of sustainability and the achievement of SDGs 1 & 2 and in the context of 'trade not aid'. As we have repeatedly noted, however, the draft JRC Report does not even acknowledge this, let alone address it, and includes only the same asterisked caveat to most of the categories covered, including textiles and footwear: *"*Please note that in this context sustainable does not include the social dimension."*

We consider this to be a fundamental deficiency of the proposals.

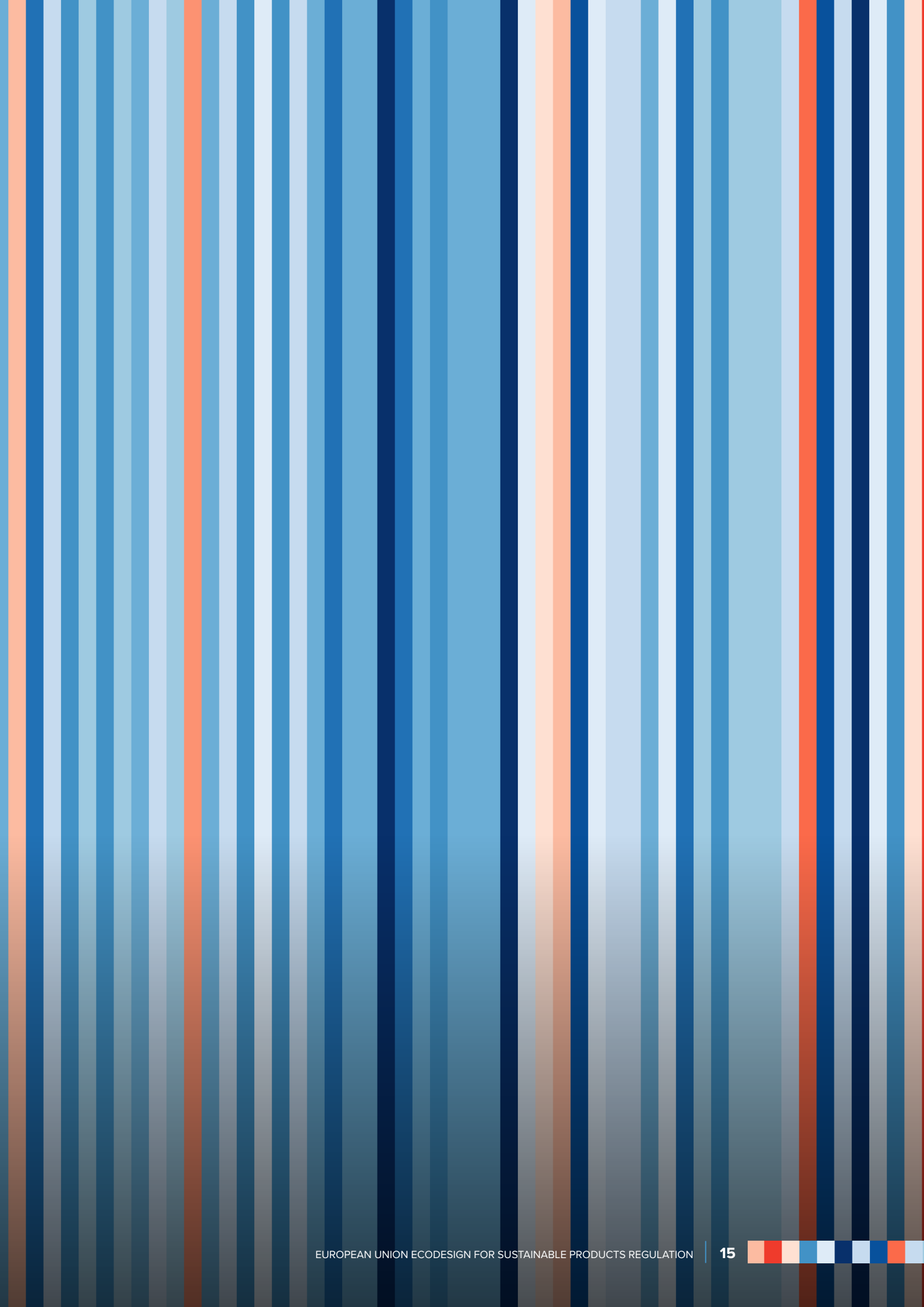
If the EU is to honor its commitments to the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework, and the Sustainable Development Goals, as well as to the WTO, it must both address those goals and adhere to those regulations in any and all sustainability legislation.

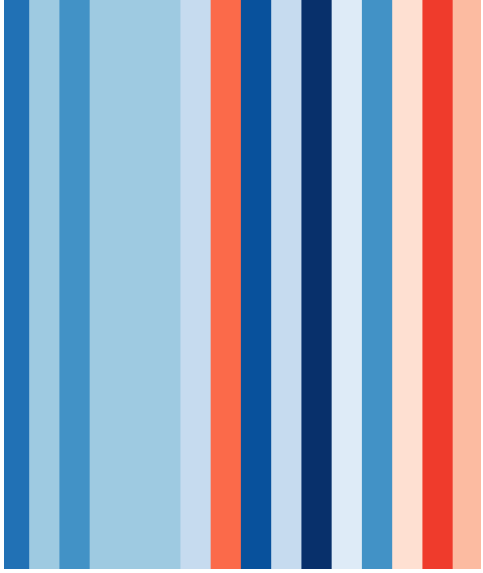
We would moreover add two additional concerns not raised by the European Parliament in June 2023:

i) Whether the draft JRC Report is consistent with the Union's obligation to adhere to the Rio Declaration in its treatment of plastic fibres; and

ii) Whether the draft JRC Report is both consistent with the EU's stated commitment to phase out fossil fuels and with the claim currently being made, that the ESPR will help the fashion industry reduce its reliance on fossil sources.

34 textileexchange.org/





PART 2

The extent, depth, and validity of the data employed in the draft JRC Report

Introduction

In this section, we provide a detailed analysis of the sources used by the draft JRC Report to derive the most significant recommended information and performance requirements. Specifically, the relevant text of the report is quoted, including the references provided. These references are then explored to see if they do in fact provide supporting evidence for the draft JRC Report's potential measures under the ESPR.

We start with the two areas most pertinent to the EU's global commitments: Climate Change and Biodiversity. The draft JRC Report proposals also cover Lifetime extension, Human Toxicity (albeit no measures are envisaged under ESPR for human toxicity since the related impacts mainly refer to chemical safety, which is excluded from the scope), Material efficiency, Life Cycle Energy consumption, Waste Generation & Management, Soil Effects, Air Effects, and Water Effects.

We continue with a consideration of the other significant categories in turn. Before turning to this, however, we would like to draw attention to what, in our view, is a deficiency in the draft JRC Report's analysis.

Economists differentiate between durable and non-durable goods. Apparel is a durable good, which means that the true measure of an item's impact is its effective use intensity. Or, in other words, the impact that matters is not the impact at the factory gate - which is the metric that the draft JRC report is considering. The impact that matters is impact per wear.[1]

1 gcbhr.org/backoffice/resources/great-green-washing-machine-report-part-2final.pdf

It is self-evident that rapidly-purchased, rapidly-disposed-of fashion cannot be worn many times. So, even if it is produced in the same factories, using the same materials, as slower or more 'luxury' items, it will still be markedly less sustainable. Garment A, with a production impact of 1,000 - in GHG emissions, water scarcity, or whatever - worn 1,000 times, has an impact per 'wear' of 1. Garment B, with a production impact of 100, that is only worn 10 times, has an impact per 'wear' of 10. Moreover, after 1,000 'wears', only one of garment type A enters the waste stream. But at 10 'wears' each, to reach 1,000 'wears', 100 of garment type B, will first have to be produced (and 100x100= 10,000) and then disposed of. Consumers choosing Garment B over Garment A will result in 10 times the environmental impact and 10 times the waste. But impact at the factory gate - which is what is currently used, and what is embodied in PEFs, Environmental Profit and Loss accounts and Material Sustainability Indexes - tells you the opposite.

This is the fundamental failure of fast fashion. No amount of fibre switching, smaller runs, on-demand production, recycling, or even renewable energy, can ever fix this. It is the very fastness of fast fashion - apparel quickly purchased and equally rapidly disposed of - that makes it unsustainable. It is this that the EU's textile and footwear legislation must address if it wishes to put *"**fast fashion out of fashion**"*.[2]

2 *www.europarl.europa.eu/news/en/press-room/20230424IPR82040/ending-fast-fashion-tougher-rules-to-fight-excessive-production-and-consumption*

A. Climate Change

(This is an abbreviated version of Appendix 2. More committed readers may wish to go directly to that Appendix).

The Climate Change section of the draft JRC Report opens with the following statement: *"The fashion industry is responsible for 10% of annual global carbon emissions, and expected to increase by 50% by 2030 (26, 27, 40)".*

But, as we demonstrate in Appendix 2, the JRC provides no substantive data source for this figure of 10%, whilst the rest of the climate change section relies almost entirely on the 2020 FoC report by McKinsey. That report contradicts the 10% figure by stating: *"This research shows that the global fashion industry produced around 2.1 billion tonnes of GHG emissions in 2018, equalling **4%** (emphasis added) of the global total...[and] will likely rise to around 2.7 billion tonnes a year by 2030".*[3]

As summarized in Appendix 2, our research suggests that the share of fashion in global GHG emissions would be better expressed as a range. Within the sector, the 10% claim is largely discredited. Commonly cited values vary from 2% to 8%, but as we demonstrate in the appendix, a more realistic range would be 1.8 - 4.8%.

In short, contrary to the figures cited in the draft JRC Report, the fashion industry is probably responsible for less than 5% of annual global carbon emissions. This is still a significant number, but it is less than half that used in the draft JRC Report.

This does not mean that we are arguing that reducing apparel's Greenhouse Gas (GHG) emissions is somehow less important. Rather, as elaborated in Appendix 2, we contend that if legislation is to fulfill its promise it must be based on accurate data to begin with. Under normal procedures, the JRC would have undertaken a literature review to establish the ranges and reliability of purported carbon emissions in textiles and footwear. The proposed ESPR climate measures for textiles and footwear are instead, almost all derived from a single study, the 2020 GFA McKinsey "Fashion on Climate" (FoC) report.[4]

This is not immediately apparent, as this single source is sometimes listed as footnote (41) and sometimes as footnote (43) - giving the impression that at least two studies: FoC and *Textile Exchange, 2020, Cotton in Africa: sustainability at a crossroads*,[5] have reached the same conclusions on impact values. This is not the case. As demonstrated in Appendix 2, all these carbon claims are coming from a single commercial report, whose numbers are not only inconsistent with every other carbon study in apparel that we have found[6] they are not even internally consistent. Nor indeed, is some of the raw material data even consistent with the purported source - but rather 3 times greater than the cited source claims. Not surprisingly, the outcome of this unexplained inflation, is that the share of raw materials in total apparel production carbon emissions, shown in the FoC report, is far higher than in any other study.

In reality, the CO_2 emissions involved in manufacturing - from spinning through to dyeing and finishing - are the more important stage in apparel's lifetime emissions.

3 www.mckinsey.com/industries/retail/our-insights/fashion-on-climate

4 www.mckinsey.com/industries/retail/our-insights/fashion-on-climate

5 store.textileexchange.org/wp-content/uploads/woocommerce_uploads/2020/06/Cotton-in-Africa-Sustainability-at-a-Crossroads-White-Paper_final-2020611_ref-corrected-emh8hp.pdf

6 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

Yarn and fabric preparation contribute considerably more than the mere 13% claimed by FoC. Indeed, the UC Bren/Patagonia study that FoC relies upon as the source for purported emissions in organic cotton cultivation, recycled cotton, and bio-based synthetics[7] found that knitting and weaving generated 50% of baseline GHG emissions broken down by textile production stage. The preceding stage - yarn formation or spinning - contributed a further 11%. Raw material production, on the other hand, only accounted for 21%.

Patagonia's relative allocations of carbon emissions to the different stages of apparel production are roughly consistent with those of every other study that we have found. Whether these are brand specific like the aforementioned Patagonia study, along with H&M, and Levis, or crop-specific, such as the 2016 Cotton Incorporated/Sphera conventional cotton LCA, or whether global assessments such as those of Quantis, UNEP, The Apparel Impact Institute, or Mistra Future Fashion.[8]

The sole exception that we have identified is the GFA/McKinsey FoC report. All of this matters, of course, not only because we would want the data underpinning policy measures to be accurate, but equally, or even more importantly perhaps, because the inflated raw material impact values automatically lead the FoC report to attribute the bulk of GHG production emissions to the raw material, rather than to the manufacturing stage of production. This, of course, implies that switching raw materials would have a significant impact on emissions.

If however - as all other studies claim, raw materials are not the most important stage, and GHG emissions in manufacturing dwarf[9] those in raw material production, switching raw materials is not the solution that the draft JRC Report appears to be claiming. Nor, of course, will the use of recycled fibres reduce emissions as much as the EU appears to anticipate.

It is also concerning that the draft JRC report appears to be promoting organic cotton as a climate-friendly alternative without any analysis of the trade-offs and implications. The merits behind this claim aside,[10] world-renowned soil scientist Pedro A. Sanchez, has observed that in Africa *"most soils are depleted of their nutrients and it makes no sense to go organic on such soils."*[11]

As mentioned elsewhere in this paper, for smallholders, cotton production is rotated with food production. We do not believe that the EU should insist that farmers in sub-Saharan Africa further compromise their already insufficient food security, in the interests of EU consumers.

There is moreover yet another wrinkle to all this, namely that existing impact evaluation methodology treats all carbon emissions as if they were identical, whether a kilogram is emitted in production by indigenous alpaca farmers in Peru or a kilogram is emitted by Saudi Aramco. This is obviously incorrect. In order to meet the SDGs, and address climate change with climate justice, the consumption (and so production) emissions of the poorest must actually increase.[12]

7 bren.ucsb.edu/projects/reducing-greenhouse-gas-emissions-through-materials-innovation-apparel-industry

8 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

9 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

10 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

11 www.cornucopia.org/2015/09/qa-dr-pedro-sanchez-discusses-cuba/

12 policy-practice.oxfam.org/resources/carbon-inequality-in-2030-per-capita-consumption-emissions-and-the-15c-goal-621305/

B. Biodiversity

This is the opening statement on Biodiversity in the Textiles and Footwear section in the draft JRC Report:

> *Biodiversity Effects [4]*
> *Environmental impact: High*
> *The fashion industry is a major player in biodiversity impacts through deforestation and degradation of natural habitats; pollution of air, water, and soil; and contribution to climate change (26, 27). Examples of impacts are the use of chemicals with high concern for the environment due to their capacity to spread globally and bioaccumulate (28), microfibres released into the environment (35% of total primary microfibres release) (5), and the spread of invasive alien species due to long-range transport of raw materials and fashion products facilitates (29, 30). Biodiversity impacts are especially high for cashmere (26).*

The claim for cashmere's purported negative biodiversity impacts has a single source:
"26) Ellen MacArthur Foundation, 2021, The Nature Imperative: How the circular economy tackles biodiversity loss."

That MacArthur Foundation report does indeed state: *"Recycling materials with particularly high biodiversity impacts at the fibre growing stage, like cashmere, is especially beneficial. After stopping the use of virgin cashmere in 2016 and moving to recycled inputs, Stella McCartney estimated an instant 92% reduction in their cashmere-related environmental impact."*

The source for this assertion is *"Stella McCartney, Recycled cashmere (accessed 15th July 2021)."*

The word biodiversity is not even mentioned on the referenced page. Stella McCartney simply repeated the claims of their recycled cashmere supplier - ReVerso. Moreover, if we check the **ReVerso website**,[13] it makes no claims whatsoever about biodiversity. It only makes claims for purported water, CO_2, and energy savings, obtained by switching from virgin cashmere to ReVerso.

13 www.re-verso.com/en/

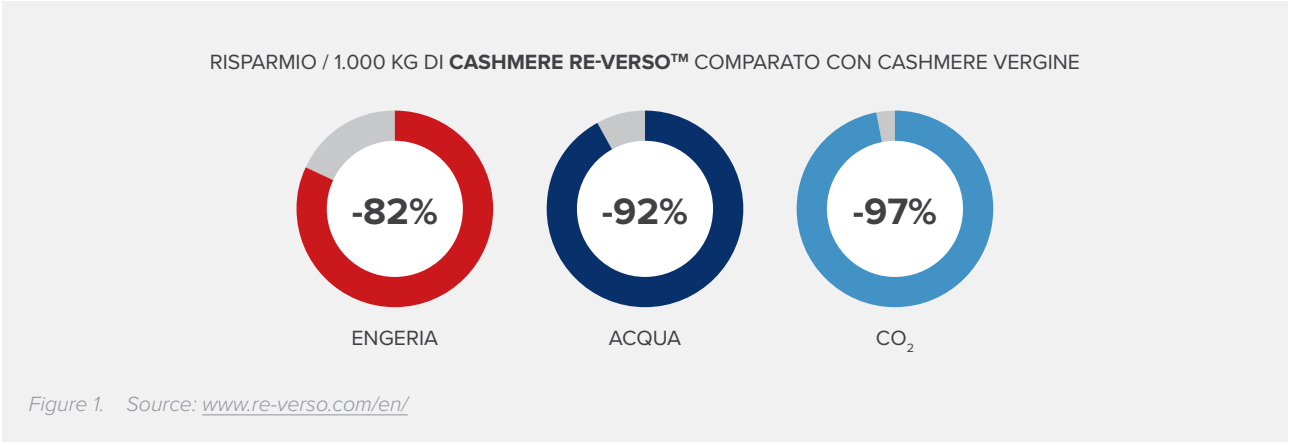


Figure 1. Source: www.re-verso.com/en/

We were unable to find the source for these purported savings on the ReVerso website, and to our knowledge, there is no LCA of virgin cashmere production that ReVerso could be comparing its manufacturing impacts to. Indeed, as far as we are aware, there is very little environmental data anywhere on cashmere production - hence the fact that, as the SAC confirmed (email of October 25, 2023) *"data on cashmere is not currently included in the Higg MSI, nor has it been available in the past."*

Cashmere cannot be recycled more than once or twice. Fibres are damaged and shortened each time they are subjected to processing stresses, and recycled fibres must always be blended with virgin cashmere to produce new garments. We were not able to obtain estimates of the quantity of cashmere recycled each year. Nor were we able to ascertain the average cost. Given that recycled cashmere is apparently inferior, we would assume that this is lower than the cost of the virgin equivalent.

Virgin cashmere, by contrast, is the mainstay of the nomadic lifestyles of several indigenous peoples and communities in Mongolia (both inner and outer), Afghanistan, **Iran**,[14] Kashmir - from whence the fibre gets its name[15] - **Ladakh**[16] and even **Nepal**.[17]

As of November 2023, a representative average price of cashmere fibre is US$100 per kg.[18] World production of cashmere is estimated to be around 27,000 tonnes, greasy (IWTO Market Information, 2023). After scouring and dehairing, production on a clean basis is estimated at 12,300 tonnes (Sustainable Fibre Alliance (SFA). At $100 per kilogram average, the value of world cashmere production at the dehaired level (equivalent to ginned cotton or scoured wool), is about $1.2 billion.

The current debate generally focuses on Mongolia, which produces an estimated 45% of world commercial cashmere production (SFA). Some sources claim that Mongolia's herd size is over 80 million, while carrying capacity is estimated at about 45 million.[19] Other sources put the herd size at 70 million, and carrying capacity at 20 million.[20]

Our own research indicates that, while in 2022, Mongolia did have a total of 71 million head of livestock, most nomads in Mongolia herd the traditional "five snouts" which include sheep, goats, horses, cows (which includes yaks) and—in the desert regions—Bactrian camels.[21] Goats alone totaled just 27.5 million. The Mongolian Government does not distinguish between goat types, but reportedly, cashmere goats predominate.[22]

14 pastoralismjournal.springeropen.com/articles/10.1186/s13570-015-0040-y

15 www.swisscashmere.org/en/ladakhi-cashmere

16 www.nytimes.com/2022/02/14/travel/kharnak-nomads-ladakh-india.html

17 www.independent.co.uk/climate-change/nepal-cashmere-nomad-herd-climate-change-b2418692.html

18 www.gschneider.com/cashmere-and-silk/

19 sustainablecashmereplatform.com/the-true-cost-of-cashmere/

20 apparelinsider.com/wp-content/uploads/2023/09/Apparel-Insider_Cashmere_Digital.pdf

21 www.yesmagazine.org/issue/death/2019/08/16/mongolia-herding-cooperatives-rural-communities-survival

22 www.nytimes.com/2023/12/16/opinion/holidays-environment-cashmere.html

A reasonable estimate of the total cashmere herd then would be between 16 million and 25 million. Goats are, however, acknowledged to be the most environmentally destructive.

Total employment in Mongolia is 1.2 million, out of a population of 3.45 million.[23] The livestock industry accounts for one-fourth of employment or approximately 300,000 people.[24] By calculation, the average cashmere herd size in Mongolia would be between 50 and 80 head. The average yield of cashmere fibre, clean, per goat, was 200 grams. Accordingly, the gross value of production per household engaged in cashmere production for dehaired cashmere was between $1,000 and $1,600. Herders received about half of the gross value of production, after the costs of transportation to markets, scouring and dehairing, or around $500 to $800 per year per household.[25]

This has enormous economic impacts in Mongolia, where 2022 GDP per capita (current US$) was $4,947.[26] For many of the households living in Mongolia and the Chinese region of Inner Mongolia, livestock, including goats, also provide meat and milk, essential to their livelihoods.

That recent practices in Mongolia have caused environmental damage is a common refrain, and this is generally extrapolated to all Asian cashmere production. But there is a paucity of hard data. The extent to which some observed changes may be due to climate patterns and/or mining activities, and roads, rather than goats, does not appear to have been evaluated. To cite one paper on the topic *"For instance the mean annual temperature in Mongolia increased by 1.7 °C between 1940 and 2001 and extreme weather events like extremely harsh winter conditions (dzud in Mongolian) have become more frequent."*[27]

Where overgrazing is severe, one would expect some impact on biodiversity, but the extent to which this has been significant does not seem to have been evaluated either. In fact, the extent to which Mongolian rangelands are degraded is uncertain. We cite a 2018 paper published by The Ecological Society of America (ESA):

> *In "the case of Mongolia, where the dominant narrative in the popular press and policy circles is that Mongolia's rangelands are widely degraded, with 70% the most frequently cited estimate. The primary cause of declining rangeland condition is thought to be growing livestock populations, especially of goats occurring since livestock were privatized in 1992. However, field empirical degradation estimates vary widely from 9% to 90%, with some studies showing little to no evidence of degradation, some moderate degradation, and some significant degradation. Similarly, remote sensing studies present a confusing picture, with one nationwide study showing large areas with positive regeneration of vegetation over time. Others show declines in greenness indicating loss of vegetation cover and production, with explanations ranging from overuse by livestock to climate change."*[28]

23 tradingeconomics.com/mongolia/employment-rate

24 www.imf.org/en/News/Articles/2019/12/09/na121019-greening-growth-in-mongolia)

25 www.researchgate.net/publication/335991449_Assessing_sustainability_of_Mongolia's_Cashmere_production

26 data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=MN

27 www.sciencedirect.com/science/article/abs/pii/S0140196321002202

28 esajournals.onlinelibrary.wiley.com/doi/full/10.1002/eap.1684

A 2022 study, funded by Kering and executed by NASA, attempted a coherent assessment and found that goats were not the problem. We quote the NASA program:

> *After analyzing the models they built, the scientists made an interesting discovery: weather and climate had a much stronger impact on rangeland conditions than the goats' grazing. Although herders' management practices certainly played a role, the team noticed a huge difference between a wet year in 2018 and a dry year in 2019 — from flash floods to major droughts.*
>
> *"It was the plan of the whole project to change grazing practices to change the quality of the rangelands," said Chaplin-Kramer. "But the rangelands are so driven by climate that there's only so much of a difference you can make. What you can do a lot better* ***is protect herders and their livelihoods*** *(emphasis added) by trying to adapt herd sizes to fit better within the bounds of the system. We had to change tactics there — the whole project, not just the science."*[29]

Similarly, the aforementioned ESA study does not support the conventional wisdom that 70% of Mongolian rangelands are moderately to very severely degraded. About 20% of Mongolia's land is not suitable pasture, whilst about 55% of Mongolia's rangelands are in areas far from livestock concentration points. That said, the study also found that the impacts of heavy livestock grazing on riparian areas and river ecosystems may be widespread.[30]

The need for careful evaluation of sources of environmental damage is shown by an example from Australia. Irrigators, mainly cotton growers in the Macquarie Valley of Australia, were blamed for the demise of iconic wetlands. However, research demonstrated that under proper management, flora and fauna returned. It was not irrigation per se that had damaged the environment, but poor land management practices and those could be rectified.

So also, it would seem, with cashmere. Historically, the market demanded only high-quality cashmere, which, reportedly, can only be produced by goats grazing on prime rangelands. As long as this prevailed, herd size was, presumably, more or less self-regulating.

Today, Mongolian herders have to make a living in the face of climate change, increasing population, increased mining activity, and increased pollution. And they are poor. They do not have the luxury of worrying about the future. They must earn cash to feed, clothe, educate, and care for their families today. We would suggest then, that it is the market that determines whether cashmere production is sustainable or not.

Roughly with the turn of the century, high street brands began to offer cheap 'cashmere' knitwear at rock-bottom prices. As pointed out by ecologist Ginger Allington, *"Goats that graze on rangelands in poor condition produce shorter, thicker fibres that fetch lower prices in the market"*.[31]

29 appliedsciences.nasa.gov/our-impact/story/making-cashmere-more-sustainable-desert-runway

30 esajournals.onlinelibrary.wiley.com/doi/full/10.1002/eap.1684

31 www.nytimes.com/2023/12/16/opinion/holidays-environment-cashmere.html

If the market has moved towards cheaper, coarser cashmere, it is only to be expected that herders will have increased their herd size to compensate. That this degrades the rangelands, harming biodiversity, is arguably, an unavoidable consequence of market forces. As we find repeatedly throughout this paper, the principal driver of unsustainable practices in the fashion value chain, yet again, appears to be price. The average price of cashmere may be too low to cover the cost of sustainable production. And whilst it is true that fibre from other livestock - baby yak for example - comes with a lighter environmental cost, it is pointless to recommend that herders switch from goats to yaks unless and until the market makes such a switch economically attractive.

If so, then far from helping, commentary from the most expensive brands, such as Stella McCartney or the Kering Group, that Cashmere is 'unsustainable', and recycled cashmere a far better option may well be exacerbating the situation, as demand for premium cashmere dwindles and demand for cheap cashmere takes its place. Or, as the World Bank puts it: *"Markets must be reshaped to put a premium on quality over quantity to support both rangeland health and improved livelihoods"*.[32]

Cashmere's example shows the importance of basing policies on robust data, rather than perceived views. As we can see, commonly held views about the environmental impacts of natural fibres are not infrequently, wrong, clearly demonstrating why science-based best, and adaptive management practices, developed in consultation with those most affected, are imperative if governments intend to develop regulatory regimes. Those consulted must be inclusive. As the ESA study observes, people with different viewpoints interpret degradation differently. *"In the eyes of an ecologist, change that reduces ecosystem function is degradation. To a pastoralist, degradation is loss of ecosystem productivity."* It is, moreover, difficult to interpret change in systems with long evolutionary histories of grazing. In the Central Asian steppes, grazers have been present for millions of years, and livestock for millennia.

It seems to us self-evident that, if *"The Kunming-Montreal Global Biodiversity Framework, including its Vision, Mission, Goals and Targets, is to be understood, acted upon, implemented, reported and evaluated, consistent with the following: Contribution and rights of indigenous peoples and local communities"*,[33] it is the pastoralists' views that hold primacy, and the place to start or at least to give equal consideration to is with the needs and constraints faced by the herders. Current thought and 'responsible' fibre programs appear to consider the ecologist's view alone. They start with the brands' need for a raw material that they can market as sustainable, and then work down to the farmers/herders involved.

We conclude that a complete overhaul of the existing certification system for natural fibres may well be required.

As a further word of warning here, sustainable fashion's enthusiasm for stamping out cashmere herding - on purported environmental grounds - has precedents that do not augur well. The US Government engaged in a misguided attempt to restore the rangelands of the Navajo Nation in the 1930s.[34]

32 ieg.worldbankgroup.org/blog/preserving-rangelands-people-and-climate-lessons-mongolia

33 www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf

34 fibreshed.org/2022/01/05/harm-in-the-guise-of-doing-good/

By the end of that program, the rangelands had not improved, but the Navajo sheep had been slaughtered, and their tribal economy destroyed. The Navajo Nation was brought to its knees. Almost 100 years later, it still has not recovered. Indeed, the World Bank itself admits, that its attempts to restore the rangeland in Inner Mongolia proved misguided. The program *"fundamentally changed local nomadic culture while yielding disappointing productivity and restoration benefits"*.[35]

We would moreover point out that broad, ill-researched assertions encourage the kind of 'green' claims that the EU wishes to stamp out. Swedish brand ASKET, for instance, has recently been heavily promoting its **'Impact Receipt'**.[36]

And, as shown in the screenshot below, ASKET is simultaneously offering unsubstantiated and sweeping condemnations of the income sources of some of the poorest on the planet - in an attempt to sell more clothes. As we just saw, cashmere production is the backbone of indigenous livelihoods. Mohair production is an important source of income in South Africa's poorest areas - the Eastern Cape and Karoo. These aspects of fibre production must be considered. Brands wishing to make these kinds of claims must be required to provide some evidence of purported harm. ASKET provides none. Indeed, given that virtually all Benin cotton is conventional, rainfed, and uses little pesticide or fertilizer, where is the demonstrable benefit of ASKET's organic cotton, over Benin conventional cotton?

35 ieg.worldbankgroup.org/blog/preserving-rangelands-people-and-climate-lessons-mongolia#report-link

36 www.asket.com/gb

Figure 2. Source: www.asket.com/gb/materials (06/11/2023)

Similarly Good on You, a purported sustainability ranking used by publications like Vogue[37], and by websites such as Farfetch, Net a Porter, and others to promote sales by providing: *"1.8x faster sales growth of Conscious products compared to the FARFETCH marketplace average"*[38] openly states that a brand can achieve a "Great" score across the board, only if it is entirely vegan.

As the World Bank points out *"Around the world, rangelands support the livelihoods, social traditions, and resilience of 500 million people, primarily in low-income countries."* For brands like the Kering Group to declare that these people's way of life is harmful, due to the extensive areas of land required to raise livestock in such hostile environments - Kering's 2022 EP&L puts the land-use cost of its Mongolian cashmere at €2,708 per kilo[39] - is quite simply wrong. The EU cannot, responsibly, adopt Kering's - or any similar - land-use metrics. Nor can it continue to permit green claims based on personal preferences cast as global imperatives.

As already mentioned, the asterisk on sustainability in the draft JRC Report leads us to the following statement: " **Please note that in this context, sustainable does not include the social dimension."* However, the EU has signed global agreements stating specifically that it will include the social dimension in both its climate and biodiversity policies and legislation. We would submit that for the JRC not to do so, is in direct contravention of both of the EU's commitments to the SDGs and of its commitments under the Kunming-Montreal agreement.

37 www.vogue.co.uk/article/emma-watson-british-vogue-interview

38 partnerships.goodonyou.eco/case-studies/farfetch

39 kering-group.opendatasoft.com/pages/material-intensities/

C. Water Effects

The draft JRC Report begins its water recommendations with a series of macro numbers which we find to be unsubstantiated. For instance, the report states that *"the global textiles and clothing industry was responsible for the consumption of 79 000 million m^3 of water."* The source given is an EU paper.[40] However, the primary source provided in that EU paper is the 2017 Pulse of the Fashion Industry - for which the link no longer works, so most readers have no means of discovering that this is the same report that recommended that by 2030, the industry should replace 30% of its cotton with (far cheaper) polyester, specifically to 'save' water. The report was written by the Boston Consulting Group, and the only source given for the estimate that global fashion consumed 79 billion m^3 of water per year in 2015, is "BCG analysis." No other documentation or explanation of how the analysis was conducted is provided.

The draft JRC Report continues: *"Moreover, it was estimated that about 20% of global water pollution is caused by dyeing and finishing textile products (1)."* This is a very popular claim, for which no actual source has ever been found. Research by one of the authors of this report suggests that it was invented in 2009, by a waterless fabric printing start-up, to peddle their solution, which, since their technology only worked on fossil fibres, required them first to persuade the general public that fossil fibres were themselves 'more sustainable'. This was quickly picked up by other agencies marketing such fibres. And thence, by assorted sustainability pundits. It has no basis whatsoever in reality.[41]

The draft JRC Report then continues with some data specific to cotton:

> *"The water consumption of textiles is also due to the cultivation of cotton (used in ~40% of clothes (13, 15, 18)), which requires huge quantities of water (estimated at 2.6% of global water use (13)), fertilizers and pesticides (2, 14, 15), and is usually grown in dry areas where other commodities grow with difficulties (12)."*

40 www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf

41 www.veronicabateskassatly.com/read/the-creation-of-a-plastic-fibre-promoting-myth-in-twenty-one-screenshots

This is presumably the justification for the recommended "*performance requirement on maximum limit of water consumption related to the production of cotton*", and is based on the following sources:

(2) European Parliamentary Research Service, 2019, Environmental impact of the textile and clothing industry - What consumers need to know.[42]

(12) F.A. Esteve-Turrillas, M. de la Guardia, 2017, Environmental impact of Recover cotton in textile industry, Resources, Conservation and Recycling.

(13) Chapagain Water footprint of cotton.[43]

(14) P. Micklin, 2007, The Aral Sea disaster, Annu. Rev. Earth Planet Sci. 35[44].

(15) FAO-ICAC, 2015, Measuring Sustainability in Cotton Farming Systems towards a Guidance Framework.[45]

It is important to note here that water is used by all crops. Farmers use water to irrigate the crops which provide them with the greatest economic return for their situation. Banning cotton would save no water, but simply cause reduced economic and employment activity as farmers would move to the next most profitable crop to grow.

We provide detailed analysis and data on current cotton water, pesticide, and fertilizer use - largely obtained from the **International Cotton Advisory Committee (ICAC)**,[46] an intergovernmental organization, of which the EU is a member, in Appendix 3. To summarize, our first observation is that much of the data that the draft JRC report references is out of date. The water footprint report is from 2005. The Aral Sea report was published in 2007 (and states quite clearly in the synopsis that the problem is not a specific crop, but excessive irrigation in general).

There is moreover, a common misconception about cotton, which is shared by the draft JRC report. As Appendix 3 points out, cotton is grown in arid and semi-arid regions because it is a xerophyte and so can be grown in such regions. Regions are not arid or semi-arid because - as the draft JRC report appears to be suggesting - cotton is grown in them. On the contrary, a not insignificant percentage of the global population has not had the good fortune to be born in green and pleasant lands and must eke out a living in difficult circumstances. A full and accurate definition of sustainability requires the EU to recognize this.

As for the 2015 FAO report on Measuring Sustainability in Cotton Farming Systems, one of the authors of the present paper was involved in producing that report and would vigorously contest the notion that it in any way supports the JRC's assertions.

42 www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf

43 www.waterfootprint.org/resources/multimediahub/Chapagain_et_al_2006_cotton_2.pdf

44 www.annualreviews.org/doi/abs/10.1146/annurev.earth.35.031306.140120

45 www.fao.org/3/i4170e/i4170e.pdf

46 icac.org/home/index/

Finally, source (2) *"2019, Environmental impact of the textile and clothing industry - What consumers need to know"* does make sweeping statements. For example: *"cotton is considered especially problematic because it requires huge quantities of land, water, fertilisers and pesticides"*. But source 2 provides no sources for these claims.

That report also insists that *"polyester's main advantages are that, unlike cotton, it has a lower water footprint, has to be washed at lower temperatures, dries quickly and hardly needs ironing, and it can be recycled into virgin (new) fibres"*.

But it is far from clear that fracked polyester feedstock does in fact have a lower water footprint than cotton. Indeed, the New York Times claims that US fracking wells have increased their water usage sevenfold since 2011, *"threatening America's fragile aquifers"*.[47] While, as elaborated elsewhere in this paper, cotton can be, and is, currently commercially recycled fibre to fibre. Contrary to that 2019 report's assertions, polyester is not (albeit Eastman Chemicals Kingsport, Tennessee "molecular" recycling facility for end-of-life polyester products and packaging, may or may not change this).[48]

The draft JRC Report then goes on to state:

> *"One of the main measures to reduce impacts to water is via reusing and recycling textiles. Indeed, it was estimated that at least 16,000 million l water could be saved thanks to reuse and reselling of used clothes (7). Incorporating recycling cotton in the production of textiles, on the other hand, avoids the use of blue water, fertilizers and pesticides during cultivation and the use of water, dyes, wetting agents, softener, and other related products during dyeing (7)."*

Only one source for these two claims - that clothing resale 'saves' 16 billion liters of water, and that using recycled cotton means the need for dying is automatically avoided - is provided:

(7) GreenStory, 2019, Comparative Life Cycle Assessment (LCA) of second-hand clothing vs new clothing. Prepared for ThredUp.[49]

ThredUp is an online retailer of used clothing with a direct commercial interest in promoting resale as a 'sustainable' option - or as they put it *"All thrills, zero guilt"*.[50] As with any LCA produced by a vested interest, ThredUp's LCA should obviously be read with a degree of skepticism. The first place to look is in the assumptions. ThredUp assumes that when customers purchase a garment from ThredUP this is instead of – i.e. replacing - buying a new garment (p.43).[51]

As discussed in section g) Waste Generation & Management, and in Appendix 6, there is no evidence that second-hand purchases replace new ones, at least not one-for-one. Quite the contrary. What very limited evidence there is suggests displacement rates of one-third at best.[52] Indeed, despite the purported significant growth in the second-hand market over the past decade, there appears to have been no equivalent reduction in new clothing sales.

47 www.nytimes.com/interactive/2023/09/25/climate/fracking-oil-gas-wells-water.html

48 www.recyclingtoday.com/news/eastman-chemical-recycling-plastics-investment/

49 cf-assets-tup.thredup.com/about/pwa/thredUP-Clothing-Lifecycle-Study.pdf

50 www.thredup.com/

51 cf-assets-tup.thredup.com/about/pwa/thredUP-Clothing-Lifecycle-Study.pdf

52 norden.diva-portal.org/smash/get/diva2:957517/FULLTEXT02.pdf

We would also point out that ISO has strict LCA requirements when it comes to comparative assertions. As one of the authors of this paper has demonstrated, LCAs currently employed in the apparel sector do not satisfy these requirements[53] Indeed, this is one of the major flaws in the EU's - and France's - plans to introduce a PEF for apparel.

The draft JRC report's claim that recycled cotton *"avoids the use of blue water, fertilizers and pesticides during cultivation and the use of water, dyes, wetting agents, softener, and other related products during dyeing,"* is literally, copy-pasted from the ThredUp LCA. And, as detailed in Appendix 3, the claim is not substantiated.

The unsubstantiated water-saving claims continue with the following statement:

> *"The environmental impacts of cotton can be drastically reduced also when sourcing it from organic farming, which uses less water and pollutes less (10): it was estimated that organic cotton consumes 79% less water than conventional cotton (12)."*

(10) Textile Exchange, 2014, Life Cycle Assessment (LCA) of Organic Cotton A global average, prepared by PE International.[54]

(12) F.A. Esteve-Turrillas, M. de la Guardia, 2017, Environmental impact of Recover cotton in textile industry, Resources, Conservation and Recycling.[55]

Support for the claims were not found in either of the referenced documents.

Source (10), the 2014 organic LCA is quite specific in stating that the apparent difference in water consumption between that study and an earlier LCA for conventional cotton reflected rainfall in the regions where organic and conventional cotton studied in the respective reports were grown at the time, and could not be attributed to the cultivation system.[56]

Whilst source (12) does not in fact claim any water saving due to organic cultivation, let alone a savings of 79%. Indeed, the figures included for India cite a 2013 study that showed conventional water consumption as 2617 lt/kilo and organic water use as 2793 lt/kilo of fibre.[57]

Water use and water consumption are frequently confused. In LCA's, water consumption refers to the quantity that evaporates or transpires; water use refers to water that is diverted and degraded in some way. Water consumption is a subset of water use. Cotton consumes more water per kilogram of fibre than polyester, but polyester uses more water than cotton.

53 gcbhr.org/insights/2022/07/the-rise-of-life-cycle-analysis-and-the-fall-of-sustainability-illustrations-from-the-apparel-and-leather-sector

54 store.textileexchange.org/wp-content/uploads/woocommerce_uploads/2019/04/LCA_of_Organic_Cotton-Fibre-Full_Report.pdf

55 www.researchgate.net/publication/308907483_Environmental_impact_of_Recover_cotton_in_textile_industry

56 www.veronicabateskassatly.com/read/ibfuw5pssfcl8swm464yyo3eei8a6d

57 www.researchgate.net/publication/308907483_Environmental_impact_of_Recover_cotton_in_textile_industry

The fashion industry has promoted the claim that the cultivation of organic cotton consumes less water than conventional for almost a decade. In 2022, however, the Norwegian Consumer Authority ruled these claims unsubstantiated and banned brands from making them.[58] As a result, they have disappeared from the websites of almost all the major companies.

Moreover, basic biology suggests that organic production systems may require more water than conventional, not less, because of competition between the commercial crop and weeds. Plants compete in fields for resources, including water. In conventional agriculture, weeds can be controlled with herbicides applied after seeds are planted but prior to emergence. This eliminates competitors as young crops emerge. In organic systems, herbicides cannot be used, and weeds will be present in fields until they are picked by hand, resulting in increased water and fertilizer requirements to sustain the commercial crop. Indeed, the inability to use synthetic pesticides and fertilizers to target both pests and fertility generally results in lower yields, and so other things equal, higher water consumption per kilogram of fibre.

The draft JRC Report goes on to note: *"More than 100 brands have committed to the '2025 Sustainable Cotton Challenge' to achieve 50% of cotton from sustainable sources. (16)*

(16) Textile Exchange, 2025 Sustainable Cotton Challenge.[59]

The 'Sustainable Cotton Challenge' is an industry program. There is no independent evidence that the various identity cottons included constitute anything more than a marketing opportunity. The Challenge came under particular scrutiny in 2020, both for a lack of robust data[60] and because a significant percentage of the two principal identity cottons - Better Cotton or BCI, and organic cotton - were not only coming from Xinjiang,[61] they were coming directly from farms operated by the Xinjiang Production and Construction Corporation (XPCC). Moreover, BCI appears to have given funding - including, potentially, taxpayer money - directly to the XPCC.[62] Indeed, that the proceeds of these 'sustainable' cotton sales were actually funding the CCP crackdown on the Uyghur population, was precisely why the USA issued a Withhold and Release Order against *"cotton and cotton products originating from the Xinjiang Production and Construction Corps (XPCC)"* in December 2020.[63]

For the draft JRC Report to use 'Sustainable Cotton Challenge' identity cottons as a proxy for *"maximum limit of water consumption related to the production of cotton"*, needs to be supported by evidence.

58 *gcbhr.org/backoffice/resources/the-rise-of-lcas-and-the-fall-of-sustainability.pdf*

59 *textileexchange.org/2025-sustainable-cotton-challenge/?gclid=CjwKCAjwkY2qBhBDEiwAoQXK5cWbpsHXzwYhdluj9OlMfvlDrd-9n8gES-gmJx3QCTtaw6MwdzSV2QhoCXBcQAvD_BwE*

60 *www.veronicabateskassatly.com/read/what-is-sustainable-cotton-and-how-is-it-measured*

61 *www.veronicabateskassatly.com/read/shaking-hands-with-the-devil-sustainable-cotton-and-the-xinjiang-production-and-construction-corp*

62 *www.veronicabateskassatly.com/read/heaven-is-high-and-the-emperor-is-far-away*

63 *www.cbp.gov/newsroom/national-media-release/cbp-issues-detention-order-cotton-products-made-xinjiang-production*

We are moreover concerned that the focus on water use - and not just in the draft JRC Report - obscures and detracts from our most pressing concern: Climate Change. As demonstrated in Appendix 3, there is no global agreement on restricting water use, and there is no impact justification for interfering in, or imposing on millions of individual farmers how they should best use water allocated to them by sovereign states. Whether Cambodia chooses to irrigate silk, or India to irrigate cotton, has absolutely no impact on the water resources available to citizens of the EU. It is unclear then, what gives the EU the right to arbitrate extra-territorially. Water is a local problem, best regulated locally. Carbon emissions, on the other hand, whether emitted in Nepal, Nicaragua, or the Netherlands, affect us all - potentially catastrophically. We would suggest that this constitutes clear justification and authority for the EU to rule unilaterally, that European consumption - and so global trade - should be determined, at least in part, by GHG emissions in production.

Finally, as far as microfibres are concerned, whether from the point of view of biodiversity or water, the draft JRC Report repeats the same statement in both sections:

> *"Several initiatives exist to fight microfibres releases from textiles, resulting for example into guidance for product development, in addition to innovative microfibre free materials (8).*

(8) Textile Exchange, 2021, Preferred Fibre & Materials - Market Report 2020" [64]

We find the fact that the draft JRC Report has consulted only one source on a topic as contentious as microfibres, surprising. That this source is an industry body is concerning - particularly since, as outlined in Appendix 4, TE's assessment of the situation would be disputed by many.[65]

Indeed, whilst the draft JRC report only expresses concern about microfibres in the sections covering water and biodiversity, they are, in reality, also a major concern in air quality. A May 2023 review published in Science of The Total Environment collated concentrations, shape, size, and polymetric characteristics for microplastics in ambient air, deposition, dust, and snow from 124 peer-reviewed articles. In summary, the authors found that ambient air featured concentrations between <1 to >1000 microplastics/m^3 (outdoor) and <1 microplastic/m^3 to 1583 ± 1181 (mean) microplastics/m^3 (indoor), consisting of polyethylene terephthalate - better known as PET - polyethylene, and polypropylene.[66] Or, in other words, available evidence suggests that there is a strong likelihood that we are breathing in microplastics with every breath we take. The May 2023 Science of The Total Environment also documented that the number of publications on microplastics in the atmosphere rose from fewer than ten in 2015 and 2016 to more than 100 in 2022, demonstrating the growing concern about the subject within the scientific community.

64 textileexchange.org/app/uploads/2021/04/Textile-Exchange_Preferred-Fibre-Material-Market-Report_2020.pdf

65 roar-assets-auto.rbl.ms/files/48995/Pete%20Myers%20testimony.pdf

66 www.sciencedirect.com/science/article/pii/S0048969723008094?via%3Dihub

Indeed, if recent research is correct, microplastics in the air could be adding to climate change.[67]

That natural fibres are not in and of themselves harmful to both human life and the environment is amply demonstrated by the millennia for which we have been using them. Polyester, on the other hand, was first commercialized in 1951[68] - and is already causing serious problems. Suggesting that fossil-based and natural fibres are identical except for relative longevity and shedding rates, and that wool and silk have a negative environmental impact that is as high as 72% of the impact of plastic microfibres is highly misleading.

As elaborated in Appendix 4, in line with the EU's stated commitment to the precautionary principle since the Rio Declaration on Environment and Development of 1992,[69] we would submit that the EU and the JRC have a responsibility to carefully consider implementing measures to mitigate the non-essential use of plastics in fashion. We would, moreover, urge them to evaluate whether it is desirable to recycle plastic fibres at all. Or whether money currently devoted to new plastic recycling technologies might, for fashion at least, be better spent on developing means of destroying such fabrics completely, at the least cost, and with the least environmental impact.

Finally, still in the context of the draft JRC report's treatment of fossil fibres, we feel it important to quickly touch upon whether the draft JRC report reflects the EU's recent commitment to phase out fossil fuels. And/or, as is currently being argued, will help the fashion industry reduce its reliance on fossil fuels.

Additional detail is provided in Appendix 4. Regrettably, once again the answer on both counts is no. Polyester is the predominant global fibre, constituting roughly 54% of the total supply. Cotton represents less than half that. Yet, for reasons that we cannot understand, the draft JRC Report has two performance requirements specifically targeted at cotton and none whatsoever targeted at polyester. This seems an extraordinary omission when, under Climate Change, the report itself states: *"Emissions are mainly related to the production of materials... especially polyester (the most commonly used fibre)."*

Moreover, whilst the draft JRC report specifically proposes a *"performance requirement on maximum limit of fertilisers, pesticides and insecticides to the production of cotton"*, there is no matching performance requirement for say antimony in polyester.[70]

67 www.euronews.com/green/2023/09/29/plastic-air-pollution-microplastics-in-clouds-could-be-exacerbating-climate-change-study-s

68 www.encyclopedia.com/sports-and-everyday-life/fashion-and-clothing/textiles-and-weaving/polyester

69 www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf

70 defendourhealth.org/wp-content/uploads/2022/07/PET-Report-Part1-070622c-3.pdf

Despite polyester being the most prolific fibre in the fashion supply chain, there are moreover, to our knowledge no virgin polyester certifications. Surely if the draft JRC report proposes a *"performance requirement on minimum content of material with sustainability* certification per kg or unit of textiles and footwear"* this should not be restricted to fibres that represent less than 50% of the total? There is no reason that we can see why polyester should not also be certified - for example, that it is antimony-free.[71] Moreover, all polyester feedstock is not equal. If it is intended to trace cotton or wool back to the source farm or country, in order to restrict imports into the EU of fibre that uses excessive water or fertilizer, it seems to us, even more important that polyester should be traced back to see if the feedstock producer fracked or pumped, is notorious for uncapped wells, methane leaks, excessive water use, and burn-offs, or potentially, is located in a region with which the EU is not trading.

For example, China accounts for two-thirds of world polyester production. The proportion is reportedly growing, and the majority of Chinese production appears to be oil-based. Compared with 2022 averages, China's oil imports from Russia increased by 23% (400,000 barrels/day) in 2023. The 2.6 million b/d of crude oil that China imported from Russia in June 2023, is the largest volume China has ever imported from any country in any month.[72]

By calculation, about one in seven barrels used in China are imported from Russia. Not insignificant amounts appear also to come from Iran.[73]

It follows automatically, that it is every bit as imperative that brands know where their polyester feedstock comes from, as it is that they know where their wool or cotton comes from. Indeed, we would argue that is considerably more important. Without this knowledge, the EU could be violating its own sanctions with its apparel imports. Moreover, given that at Cop28 the Union publicly pledged to phase out fossil fuels, this commitment must be reflected in any and all legislation - including that applicable to fossil fuel-based apparel.

As it is, the imbalance in performance requirements leads us to believe that complying with them as currently proposed, far from reducing fashion's reliance on fossil fuels, could actually result in brands substituting various fossil fibres - particularly polyester - for farmed or cellulosic alternatives.

71 defendourhealth.org/wp-content/uploads/2022/07/PET-Report-Part1-070622c-3.pdf

72 www.eia.gov/todayinenergy/detail.php?id=60401

73 eur-lex.europa.eu/EN/legal-content/summary/restrictive-measures-against-iran.html

D. Soil Effects

The draft JRC Report appears to equate soil effects with land use, stating:

> *"Clothing, footwear and household textiles represent the second highest pressure category on land use and are largely a consequence of cotton cultivation." Specifically "Cotton cultivation is also linked to large use of fertilisers, pesticides and insecticides (2): around 5% of pesticides and 14% of insecticides sold are destined for use on cotton (23). It has been showed that improper application pesticides has led to an increase in pest resistance and to the reduction of crop yields due to resistance (4).*

(2) European Parliamentary Research Service, 2019, Environmental impact of the textile and clothing industry - What consumers need to know. Prepared by N.Sajn.[74] (4) Joint Research Centre, Institute for Prospective Technological Studies, Beton, A., Perwueltz, A., Desaxce, M., et al., 2014, Environmental improvement potential of textiles (IMPRO Textiles), edited by: Cordella M., Kougoulis J., Wolf O., Dodd N., Publications Office.[75]
(23) Pesticide Action Network UK, 2018, A review of pesticide use in global cotton production.[76]

The draft JRC Report continues:

> *Reuse and recycling have the potential of reducing the production of new items, and therefore the cultivation of cotton..... The pressure on land use can be reduced by switching to organic cotton, which does not use pesticides; however, organic crop yields is generally lower and can lead to increased land use (4, 24). Flax and hemp could be viable alternatives to cotton fibres, given their higher yields, durability and strength (4). Finally, regenerative practices (64) improve soil health, increase the soil's water retention capacity and reduce reliance on fertilisers and pesticides (26).*

(4) JRC Beton A et al, Environmental improvement potential of textiles (IMPRO Textiles).[77]
(24) Swezey S. L., Goldman P., Bryer J., Nieto D., 2007, Six-year comparison between organic, IPM and conventional cotton production systems in the Northern San Joaquin Valley, California. Renewable Agriculture and Food Systems.[78]
(26) Ellen MacArthur Foundation, 2021, The Nature Imperative: How the circular economy tackles biodiversity loss.[79]

74 www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf
75 publications.jrc.ec.europa.eu/repository/handle/JRC85895
76 www.pan-uk.org/cottons_chemical_addiction_updated
77 publications.jrc.ec.europa.eu/repository/handle/JRC85895
78 www.jstor.org/stable/44491428
79 www.ellenmacarthurfoundation.org/biodiversity-reportwww.washingtonpost.com/opinions/2023/06/30/herbicide-invasive-plants-national-parks-shenandoah/

There is no endnote 64, so we do not know what that source was supposed to be.

The draft JRC Report's assumption that all use of pesticides is harmful and that all pesticides are equally bad is misplaced. As the US Park Services, and Shenandoah National Park in particular, have discovered, in invasive-plant management - which is essential to preserve the biodiversity the draft JRC Report so ardently seeks -"The reliance on herbicides is pretty close to universal".[80]

Similarly, a study by the French Agricultural and Environmental Research Institute (INRAE) analyzed the economic impact of banning glyphosate on arable crops and found that *"direct sowing, or no-till field farming accounts for just less than two percent of farmed land in France, and more than 80 percent of those fields are treated with glyphosate. The no-till method is considered among the most environmentally sound as it increases biodiversity, soil fertility and life and aids in carbon sequestration. INRAE scientists reported that banning glyphosate would likely lead farmers employing these methods to abandon them because of the dramatic increase in production costs".*[81]

As for the draft JRC Report's suggestion that hemp and flax 'could be viable alternatives to cotton fibres, given their higher yields, durability and strength,' the rationale for the suggestion is that this substitution will reduce impact, and it assumes that cotton can simply be replaced with hemp or flax. Hemp and flax - or linen - are not in fact perfect substitutes for cotton. The fibres can be blended for certain uses and with certain provisos. Meaning, that cotton, flax, and hemp are, in reality, in many instances, complementary goods. Moreover, for both flax and hemp, the retting operation, depending on the process employed, can be highly polluting (chemical) or energy-intensive (steam), and natural or biobased (enzymatic) processes are low in efficiency or high in cost.

When correctly treated, all natural fibres are biodegradable, renewable, and do not shed synthetic microfibres. A substantial increase in the production of flax and hemp fibres as substitutes for the use of polyester in textile applications would be highly welcome. Both fibres represent great industries with histories dating back thousands of years. Europe already has an alliance promoting domestic flax, linen, and hemp,[82] and there is an association representing industrial hemp.[83]
The EU may want to consider adding provisions to its Common Agriculture Policy (CAP) to further encourage both fibres' production and use.

E. Material Efficiency

The analysis and recommendations of this section are largely mirrored in those on waste and lifetime extension, so in the interests of brevity, we only focus on the latter.

80 www.washingtonpost.com/opinions/2023/06/30/herbicide-invasive-plants-national-parks-shenandoah/

81 fas.usda.gov/data/france-french-scientific-report-finds-banning-glyphosate-use-harms-no-till-sustainable

82 allianceflaxlinenhemp.eu/en

83 allianceflaxlinenhemp.eu/en

F. Lifetime Extension

The ESPR sets considerable store by the potential for performance and information requirements to rectify all the problems associated with 'fast fashion'. Exactly what the JRC means by fast fashion is not defined. We provide a definition, consistent with the current and historic understanding of the term, in Appendix 5.

Once you define fast fashion, it rapidly becomes apparent that what the draft JRC Report is proposing is little more than wishful thinking, predicated on largely or wholly unsubstantiated assumptions and data. When it comes to 'Lifetime Extension' - so, by definition, completely transforming disposable fast fashion - the draft JRC Report makes the following observations:

> *Products of fast fashion usually have a short lifetime, and European consumers purchased 40% more clothing in 2012 compared to 1996, but wore it for a duration half as long. Better quality and sustainable material is part of the solution, but this is inseparable from consumer awareness (27). Increasing the lifetime of textile products can be achieved by using it for longer or reselling it for reuse by someone else. Estimates show that if the number of times a garment is worn is doubled on average, the GHG emissions would be 44% lower (31). This could be achieved by measures that ensure and increase the durability of the items and the resistance to shrinkage/weather (31). On the other hand, studies estimate that resale will become twice as big as fast fashion by 2030 (26). It was studied that repair, re-commerce, rental and refurbishment models can extend average product life by 1.35, 1.7, 1.8 and 2 times (43).*

(26) Ellen MacArthur Foundation, 2021, The Nature Imperative: How the circular economy tackles biodiversity loss.[84]
(27) European Parliamentary Research Service, 2020, What if fashion were good for the planet?, prepared by L. Van Woensel and S. Suna Lipp.[85]
(31) Ellen MacArthur Foundation, 2017, A new textiles economy: redesigning fashion's future.[86]
(43) Textile Exchange, 2020, Cotton in Africa: sustainability at a crossroads.[87]

The data on 'repair, re-commerce, rental, and refurbishment models' extending *'average product life by 1.35, 1.7, 1.8 and 2 times'*, was not found in the referenced report *"Cotton in Africa: sustainability at a crossroads"*. As explained in Appendix 2, endnote (43) should refer to endnote *(41) McKinsey, Global Fashion Agenda, 2020, "Fashion on climate. How the fashion industry can urgently act to reduce its greenhouse gas emissions"*.

84 www.ellenmacarthurfoundation.org/biodiversity-report

85 www.europarl.europa.eu/RegData/etudes/ATAG/2020/656296/EPRS_ATA(2020)656296_EN.pdf

86 ellenmacarthurfoundation.org/a-new-textiles-economy

87 store.textileexchange.org/wp-content/uploads/woocommerce_uploads/2020/06/Cotton-in-Africa-Sustainability-at-a-Crossroads-White-Paper_final-2020611_ref-corrected-emh8hp.pdf

The McKinsey/GFA report does indeed state:

> *"The analysis **assumes** (emphasis added) that recommerce models can extend average product life by 1.7x, based on average length of second-hand ownership. [66] The rental model is assumed to extend product life by 1.8x, based on the average number of rentals during a product's lifetime. [67] Repair models offer a more modest 1.35x extension, assuming professional repairs. [68] Finally, refurbishment has the potential to double lifetime extension."*

But it turns out that the McKinsey 'data' sources are nothing more than opinions, primarily from vested interests:

(66) Elizabeth Cline: The conscious closet, 2019, (67) Expert input from rental model executives, (68) WRAP, Valuing our clothes, 2017; expert input from circularity experts and repair business executives.

There was a burst of excitement around clothing rental/sharing in 2020-2021, and every second sustainability journalist touted this as the new solution to all of fashion's problems.[88,89] Clicking through the links in one such article in the Guardian, however, reveals that as of October 2023, only 2 out of 5 of the companies referenced are still in the rental business.[90]

According to BoF, one retailer that finally got rental right is Nuuly.[91] But a cursory examination of the Nuuly website on November 1, 2023, revealed that even in the 'tops' category, few items had a retail price of much less than $100 (≈ €95).[92] This clearly bears no relationship to the clothing that the EU wishes to target, which as the Kantar study referenced in Appendix 6, shows, in France at least, has an average cost of around €12.50.

We have found no data demonstrating how many times second-hand purchases are actually worn, and the draft JRC report does not provide any. Nor does it assess whether, on the contrary, the fact that they are 'only renting' or 'bought second-hand' encourages consumers to believe that their purchases are 'impact free' and so they can make as many as they please.

88 www.theguardian.com/money/2021/nov/21/why-ive-rented-my-dress-could-soon-be-the-most-fashionable-thing-to-say

89 www.theguardian.com/fashion/2022/dec/22/more-sustainable-wear-something-new-every-weekend-how-rental-fashion-became-big-business

90 www.theguardian.com/fashion/gallery/2020/sep/21/ready-to-rent-five-of-the-best-fashion-rental-brands-in-pictures

91 www.businessoffashion.com/articles/retail/nuuly-rent-the-runway/

92 www.nuuly.com/rent/browse/tops

Anecdotally, even the most-rented items don't appear to clock up as much as 3-figure total wears, and at least one study has suggested that share models are the least environmentally friendly - primarily due to shipping and dry cleaning impacts - with *"the lowest global warming impacts achieved in the REDUCE scenario"*.[93] In other words, the best way to diminish fashion's environmental impact would not be rental. It would be for consumers to buy less and to wear each item more times.

How *"Better quality and sustainable material"* is *'part of the solution'* to *"Products of fast fashion usually have a short lifetime, and European consumers purchased 40% more clothing in 2012 compared to 1996, but wore it for a duration half as long"* is unclear. Fast fashion is defined (see Appendix 5) as cheap clothing, designed, manufactured, and marketed with the specific intent that it should be a 'throwaway'.

'Better quality' and 'cheapest' are rarely synonymous. Available data suggests that claiming that garments are made of 'sustainable' material is a proven marketing technique to increase sales - not to reduce them. Hence the raft of fast fashion brands that claim to be producing using 'sustainable' fibres and fabrics.[94,95,96,97] Indeed, a recent report from the UK reveals that whilst fast fashion brands like Primark and ASOS claim to have reduced the carbon impact of their textiles by 12% and water by 4% between 2019 and 2022, this was negated by a 13% increase in the volume of textiles produced and sold.[98] This is unlikely to surprise anyone who has passed a Primark store recently and seen the number of references to 'sustainable' in the various displays. And it's not just fast fashion that is using claims of material 'sustainability' to sell more clothes. As outlined in Appendix 2, the Swedish brand, ASKET, is attempting to tell consumers that they can purchase 12 new garments a year and still hit their 2.3 tonne annual consumption target for CO_2 emissions.[99] Other sources claim that the permissible number is less than half ASKET's estimate - at only 5.[100]

Given that EU citizens' average annual consumption emissions are well over 2.3 tonnes, and that this total allocation must be spread over many other purchases, from transport to heating, to food, we find such prescriptive analysis potentially misleading.

93 iopscience.iop.org/article/10.1088/1748-9326/abfac3/pdf
94 sheingroup.com/sustainability/planet/sourcing-responsible-products-and-materials/
95 www.newlook.com/uk/sustainability/materials
96 www2.hm.com/en_gb/sustainability-at-hm/our-work/innovate.html
97 www.patagoniaworks.com/press/2022/6/14/media-advisory-the-monster-in-our-closet
98 www.theguardian.com/fashion/2023/nov/06/fashions-efforts-green-cancelled-shopaholics-wrap
99 www.asket.com/gb/transparency/impact/impact-receipt
100 hotorcool.org/unfit-unfair-unfashionable/

G. Waste Generation & Management

(This is an abbreviated version of the analysis included in Appendix 6. More committed readers may wish to go directly to that section)

We do not dispute the JRC's claim that significant volumes of clothing are discarded without ever being worn, or after only light wear, that *"87% of textile waste is landfilled or incinerated after its final use, and less than 1% of all clothing is recycled back into apparel, as most of the material being recycled is cascaded into lower-value applications such as cleaning cloths, insulation material, and mattress stuffing"*. Italian management consultants, Ambrosetti, for example, claim that of the 35 textile items disposed of annually by the average EU citizen, only one has a second life as clothing, 3 are recycled as waste, and the rest are landfilled.[101] We do, however, question the validity of the draft JRC Report's proposals to rectify these trends. In what follows, here and in Appendix 6, we examine cause and effect, and we find the recommended performance and information requirements inconsistent with both the nature and definition of fast fashion and with prevailing economic incentives.

The draft JRC Report continues with the following claims:

> *"There is high untapped potential with respect to the end-of-life of textiles (31, 35). Companies can adopt circular business models to ensure that waste and overproduction are avoided, e.g. by shifting towards on-demand production, lending, renting, repair and resale (35, 62). In particular, the global second-hand fashion market is estimated at 130 000 million USD, and expected to grow a 127% by 2026, especially via online resale (38)."*

(31) Ellen MacArthur Foundation, 2017, A new textiles economy: redesigning fashion's future.[102]
(35) European Environment Agency, 2020, Textiles and the environment: the role of design in Europe's circular economy, briefing.[103]
(38) ThredUp, 2022, Resale Report 2022[104]
[report also references (7) GreenStory, 2019, Comparative Life Cycle Assessment (LCA) of second-hand clothing vs new clothing. Prepared for ThredUp]. 62) Muthu, S.S. and Li, Y., 2021. The environmental impact of footwear and footwear materials. Handbook of footwear design and manufacture, pp.305-320.

Starting with on-demand production, we find little evidence that this will reduce the volume of clothing produced as the draft JRC Report contends. Quite the contrary. As Shein's recent rise has amply demonstrated[105] the smaller and more agile the production runs, the greater the possibility of tapping into every design desire and demographic.

101 www.ambrosetti.eu/venice-sustainable-fashion-forum/just-fashion-transition/
102 ellenmacarthurfoundation.org/a-new-textiles-economy
103 www.eea.europa.eu/publications/textiles-and-the-environment-the/textiles-and-the-environment-the
104 www.thredup.com/resale/2022/
105 www.wsj.com/business/fast-fashion-giant-shein-files-to-go-public-30a97410?st=flrkmtlkmpjmu66&reflink=desktopwebshare_permalink

While traditionally, fashion brands launched 2 collections per year, and fast fashion moved to weekly (52 collections), Shein uses on-demand production to play a whole new ball game. According to **Les Amis de La Terre**[106] in May 2023, Shein launched an average of 7,200 new models on its website - every single day - rising as high as 10,800 new additions on May 16, 2023.[107]

Simple arithmetic shows us that with a minimum manufacturing order run of 100 units, Shein produced at least 22 million garments in May 2023, alone. If we consider that the successful garment runs are reordered, it is more likely to be 1 million new garments daily - from just one brand.

With the assistance of an uncritical press, on-demand production is being presented to consumers and legislators as a win for sustainability.[108]

It obviously isn't, and to claim otherwise demonstrates a fundamental misunderstanding of both fast fashion and sustainability. This constant plethora of choices, offered for less than the price of a sandwich, creates its own demand. Indeed, some refer to this compulsion to purchase as 'addiction'.[109]

And whilst the draft JRC Report never mentions price, as Appendix 6 demonstrates, Shein is well aware of the role of economic incentives.

The outcome of this on-demand model is - unavoidably - ever-increasing manufacturing emissions that are amortized over ever fewer wears, and so automatically - rising global GHG emissions, and rising, not falling, waste.

As for the draft JRC Report's other proposed solutions: *"lending, renting, repair and resale"*, as explained in Appendix 6, for fast fashion, the economic incentives are not aligned. Moreover, the report's assumptions are extremely optimistic - not to say unrealistic. The primary source for the draft JRC Report's resale recommendations appears to be yet another publication by ThredUp.[110] We don't know whether those surveys were commissioned (paid for) by ThredUp, how the consumers were selected, or what questions they were asked. So we don't know how representative of US consumers the responses really are. There is in any case, no reason to suppose that they accurately represent the actions and opinions of global, let alone EU consumers.

106 www.amisdelaterre.org/

107 www.amisdelaterre.org/wp-content/uploads/2023/06/decryptage-fast-fashion-vdef.pdf

108 sourcingjournal.com/topics/business-news/shein-supply-chain-agility-competitive-advantage-boston-consulting-group-goodops-sustainability-438557/

109 kr-asia.com/decoding-shein-the-rise-of-chinas-newest-retail-decacorn-part-1-of-3

110 www.thredup.com/resale/2022/#size-and-impact

As for *Green Story Inc's Comparative Life Cycle Assessment (LCA) of second-hand clothing vs new clothing*, the results are based upon the assumption that second-hand clothing purchases replace new purchases, one-for-one (p43). This appears to be a common misconception.

There is no evidence to support this claim. Indeed, the only study that appears to exist[111] reportedly found "that the re-use displacement effect in Britain from buying a used item rather than a new one is only 28% for textiles"[112]

And this was in 2013. Ten years later, despite the purported significant growth in the second-hand market, there has been no equivalent reduction in new clothing sales. Rather, the data appears to indicate little more than a transfer of income from charity shops and waste processors to online re-marketers. Indeed, there is some evidence that the realization that it is possible to resell clothes so easily, and so profitably, may actually be encouraging new purchases - particularly at the top end of the market. For example, the recently-launched app **Croissant,**[113] currently only available in the US, is offering a guaranteed resale price to shoppers. The guarantee is presumably intended to encourage purchases from brands/retailers enrolled in the program, or as the **Croissant website**[114] puts it *"Customers spend 50% more when they're empowered with Guaranteed Buybacks™"*.

Further, the disappearance of the highest quality items from the waste stream, due to their diversion to these much-vaunted 'sustainable' resale sites, has reduced the profitability of waste sorting and disposal, as documented by the European recycling industry association EuRIC.[115] This falling profitability automatically both puts pressure on sorting costs - and so sorting quality - and increases incentives to dump unwanted clothing on the Global South. As documented in Appendix 6, investigations undertaken recently by Aftonbladet (Ab)[116] and Changing Markets (CM) substantiate this concern.[117]

If the EU can't recycle polyester and blended fabrics fibre to fibre we believe it has no business exporting that waste to the Global South. Cheap plastic clothes do not have resale potential. Even Business of Fashion (BoF), who previously insisted resale was key to sustainability - and included a resale requirement in their 'sustainability' index[118] has now realized that it's a Potemkin solution.[119]

The claim that enhanced durability will both postpone product end-of-life and allow easier recycling solutions is also not supported empirically. We cover each in turn in the next section.

111 *(WRAP (2013a): Study into consumer second-hand shopping behavior to identify the re-use displacement effect, WRAP March 2013, Project Code MDP007-001)*

112 *norden.diva-portal.org/smash/get/diva2:720972/FULLTEXT02.pdf*

113 *croissant.com/*

114 *croissant.com/merchants*

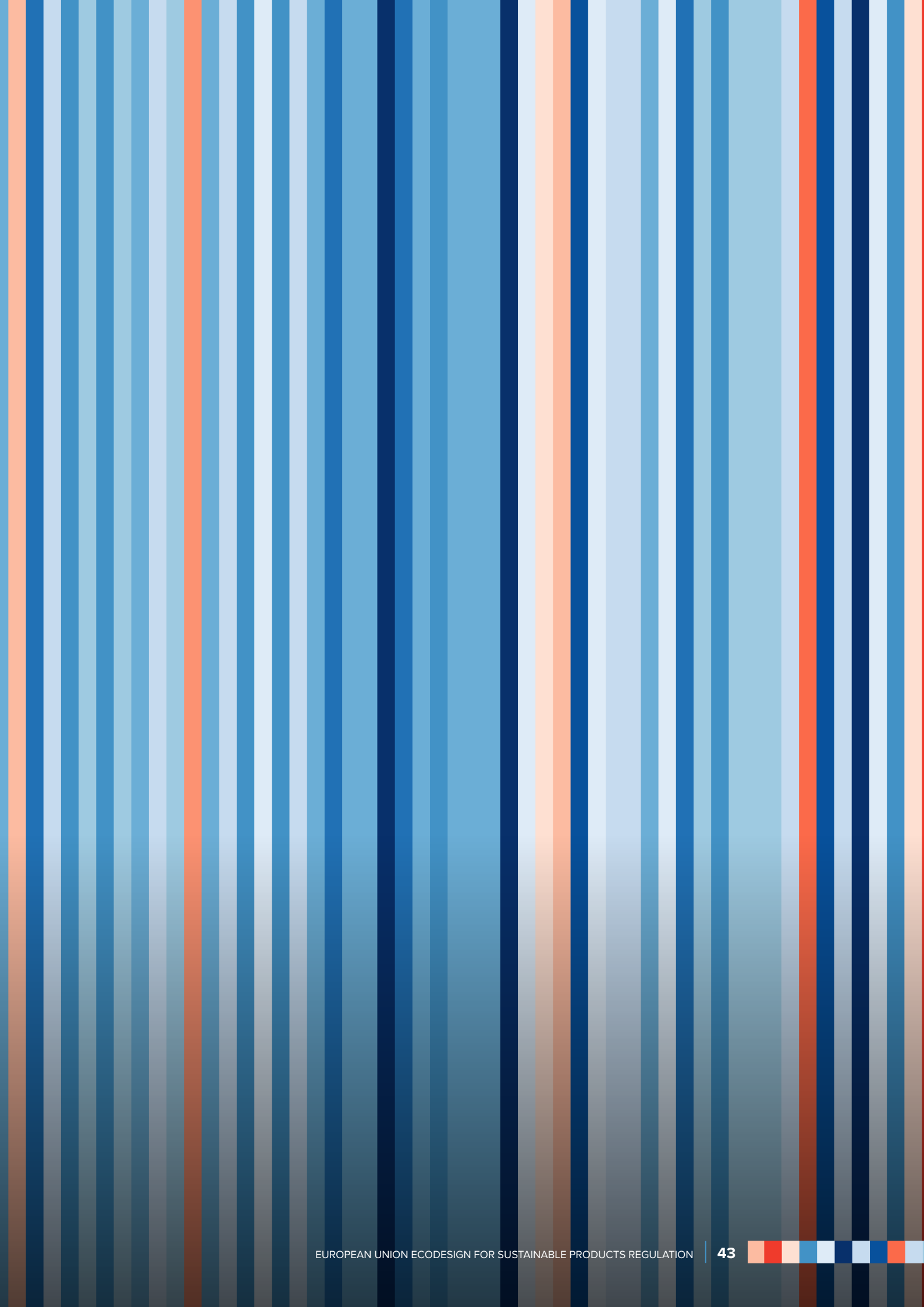
115 *euric.org/resource-hub/reports-studies/study-lca-based-assessment-of-the-management-of-european-used-textiles*

116 *www.aftonbladet.se/nyheter/a/O8PAyb/har-dumpas-h-m-kladerna-du-atervinner*

117 *changingmarkets.org/wp-content/uploads/2023/07/Take-back-trickery_compressed.pdf*

118 *gcbhr.org/insights/2023/01/amplifying-misinformation-the-case-of-sustainability-indices-in-fashion*

119 *www.businessoffashion.com/articles/sustainability/resale-wont-fix-fast-fashions-sustainability-issues/?utm_source=newsletter_dailydigest&utm_medium=email&utm_campaign=Daily_Digest_310723&utm_term=P6N6HAI72BFM7EYKXVRIE65DRQ&utm_content=top_story_1_cta*



PART 3

The draft JRC Report policy recommendations - are they substantiated, appropriate, and likely to be effective?

The draft JRC report lists a number of proposed performance and information requirements ('potential measures') at the end of each of the product groups analysed in detail from 'Water Effects' through to 'Lifetime Extension'. The proposed requirements are listed in Appendix 1. Some of the more significant are discussed in further detail below.

Since our paper, whilst written in the public interest, is being funded by the Australian Cotton Research and Development Corporation, we consider those measures specifically directed towards cotton production first. We then consider some of the other performance and information requirements.

A. Performance Requirement on Cotton

Two of the draft JRC report's performance requirements are directed specifically toward cotton:

- *performance requirement on maximum limit of water consumption related to the production of cotton*
- *performance requirement on maximum limit of fertilisers, pesticides and insecticides to the production of cotton*

The validity of the analysis behind these performance requirements, as well as their viability, is examined in detail in Appendix 3. As we demonstrate, neither is supported by the facts and we would strongly recommend that, in light of cotton's importance to cotton farmers, including some who are among the world's poorest people, the EU should reconsider its treatment of cotton, and indeed all other natural fibres, in terms of their social contribution rather than focusing on environmental considerations only.

We would also point out that in many areas the problem is not too much fertilizer, but too little. Eminent soil scientist and director of the Columbia University Earth Institute's Tropical Agriculture and Rural Environment Program, Pedro Sanchez,[1] has repeatedly stated that the main biophysical constraint on crop production in Africa is the depletion of soil fertility on smallholder farms.[2]

Yet a November 2023, report on cotton and climate, funded by the Dutch Ministry of Foreign Affairs demands *"SYNTHETIC AGROCHEMICALS (by which they mean the use of synthetic pesticides and fertilizers) MUST BE PHASED OUT".*[3]

1 www.earth.columbia.edu/articles/view/2784

2 www.nature.com/articles/nplants201414#:~:text=Africa%20south%20of%20the%20Sahara,convergence%20towards%20a%20common%20goal.

3 www.solidaridadnetwork.org/publications/cotton-and-climate-paper/155

B. Performance Requirement on GHG Emissions

Given the extraordinary climate-change-induced weather patterns that almost all of us have experienced in 2023,[4] and the enormous social and environmental costs that these have imposed,[5] it must be clear to everyone that the most important consideration for the ESPR to address is GHG emissions in the apparel supply chain. Fortuitously, we argue, that mitigation of GHG emissions in fashion will have some of the least significant consequences for the global economy. This is for two reasons:

1. Unlike say heating, cooling, or transport, a not insignificant percentage of the emissions in the fashion value chain are generated producing far-from-essential, even frivolous, output. Arguably, it would cause little suffering if such consumption were curtailed.[6]
2. Reducing these emissions would be possible to achieve. If required, brands could switch sourcing away from countries with high-carbon energy mixes - such as India, Bangladesh, and China - towards low-carbon sources such as France, Brazil, or Belgium.[7] On a large scale, this would, of course, require an expansion of existing capacity. Alternatively, brands could continue to source from low-wage nations. But, in line with the EU's commitments under COP 27 to mobilize more financial support, they would then have to demonstrate that they had paid for the installation and operation of carbon-mitigating technology in the manufacturing facilities concerned.

We would, moreover, point out that whilst conventional wisdom - and indeed EU policy - is focused on investment in the development of innovative and recycled fibres, investment in farmers appears to have been overlooked.

4 www.bbc.co.uk/news/resources/idt-bcea7bff-641f-4cbf-b091-26491409fbdc

5 qz.com/not-just-maui-snapshots-of-a-summer-of-global-climate-1850746711

6 www.europarl.europa.eu/RegData/etudes/BRIE/2022/729405/EPRS_BRI(2022)729405_EN.pdf

7 ourworldindata.org/explorers/energy?tab=chart&facet=none&country=USA~CHN~OWID_WRL~IND~BRA~ITA~FRA~DEU~GBR~BEL&Total+or+Breakdown=Total&Energy+or+Electricity=Electricity+only&Metric=Carbon+intensity&Select+a+source=Low-carbon

The 2022 ICAC Cotton Data Book tells us that on average, in 2021, cotton yield per hectare in India and most of Africa was less than 500 kilograms of lint per hectare. The global average was similar to the yield obtained in Bangladesh - around 760 kg/ha whilst Australian farms produced 2,000 kg/ha.[8]

Like Australia, much of Africa has optimal conditions for cotton production.[9]

If African farmers were optimal farmers, Africa could produce optimal yields, while reducing carbon emissions per kg of lint at the same time. Imagine a world in which Africa produced 10 million tonnes of cotton, up from 1.4 million, supplanting that much polyester. That alone would reduce CO_2e emissions by about 30 million tonnes (8 million tonnes of increased cotton production/reduced polyester production times approximately 4 kgs of CO_2e/tonne of lint.

It seems to us that this would be an excellent objective for the EU to pursue - reducing carbon emissions whilst doubling cash crop incomes for some of the world's poorest, and so fulfilling two out of three global sustainability objectives in one measure.

There are of course differences in the types of farms and farmers that will make this objective harder to achieve. The average Australian cotton farm *"grows 576 hectares of cotton, comprising 10% of the total farm area"*.[10] In Africa, farms are much smaller. As the World Bank has found, the average family farm in Malawi is only 0.7 hectares. Nonetheless, farmer organizations are powerful tools for technology transfer and economic development.[11] If African cotton yields could just be increased to the global average, that would already constitute a significant move towards the achievement of both the SDGs and the Paris Accords/COP.

8 www.icac.org/Content/PublicationsPdf%20Files/5a7e599d_0ce4_45a4_9331_2dab12829637/DATABOOK-2022-ss.pdf.pdf

9 icac.org/Meetings/Details?eventId=1100

10 cottonaustralia.com.au/industry-overview

11 blogs.worldbank.org/africacan/amid-global-food-crisis-commercial-small-farmers-offer-hope-malawi#:~:text=With%20an%20average%200.7%20hectares,dispersed%20and%20low%2Dvolume%20farms.

C. Performance Requirement on Sustainability Certifications

As for the proposal that the EU should introduce a *"performance requirement on minimum content of material with sustainability* certification per kg or unit of textiles and footwear"*, the draft JRC Report provides no evidence that sustainability certifications produce beneficial outcomes for the environment, let alone for farmer welfare. Indeed, it would surprise many to learn that the major standards provide no such evidence either. Some implementers claim astonishing outcomes. - Textile Exchange owned CottonConnect for example, asserts the following on its homepage: *"36% increase in farmer profits for those that have participated in our agronomic programmes. They've also boosted yields by 11%"*.[12] But no evidence is provided. At least one whistle-blower has protested that the claims are false,[13] and surely common sense tells us that in a country like India, where so many poor are tied to agriculture, if the CottonConnect programs - whether REEL, BCI, or organic - did work as claimed, farmers would be queuing up to join them. In reality, it appears that the opposite applies, and attrition rates are high.[14]

Moreover, a recent report by the WWF observes specifically *"Certification to a standard does not equate to sustainability"*.[15] Given that the WWF has been the driving force behind an array of certifications from Better Cotton,[16] to **Science Based Targets,**[17] they clearly have some experience - and so presumably, expertise - in the domain. As the WWF report points out:

> *"Non-certified does not always equal "bad" or "unsustainable": Some farmers may be certified to a standard but not implement certain good agricultural practices because, for example, the standard may not strictly require it, or because they may be trying to cut corners (if the standard does require it). Meanwhile, some farmers may not be certified to a standard, yet implement the same or better agricultural practices than a certified farmer.* ***Some farmers might choose not to seek certification for various reasons, including a lack of economic incentive (i.e., benefits of certification do not outweigh the high administrative and financial costs that are often associated with certification)*** *(emphasis added), a lack of information about certification, a lack of implementation capacity, or poor enabling conditions (e.g., financing, choice of inputs, regulatory support), among other factors. Standards and certifications provide some degree of assurance and set of minimum expectations, but this does not mean non-certified is "bad".*

12 www.cottonconnect.org/
13 gcbhr.org/backoffice/resources/reportfinal72dpi2.pdf
14 gcbhr.org/backoffice/resources/reportfinal72dpi2.pdf
15 wwfint.awsassets.panda.org/downloads/wwf_benchmarking_study_on_cotton_sustainability_standards.pdf
16 gcbhr.org/backoffice/resources/reportfinal72dpi2.pdf
17 sciencebasedtargets.org/about-us

Furthermore, having sustainability standards is one thing, but having access to certification services is another. In many areas, there are no companies or agencies providing certification services, and in other situations costs are prohibitive.

There are no companies that offer certification services for cotton initiatives operating in much of South America or Central America, large parts of Africa, and much of Asia. Because of concerns about human rights and the ability to operate autonomously, most certification companies have ceased operations in China in recent years.

Certification is costly. Certification to organic standards, for instance, typically costs at least several hundred USD per farm, a prohibitive amount for a smallholder with less than two hectares. Registration in the larger cotton sustainability initiatives Better Cotton and Cotton Made in Africa is accomplished by involving groups of farmers in villages, but these initiatives are donor-funded and not universally available. The sustainability scheme known as the United States Cotton Trust Protocol - available to US farmers only - is supported by a $90 million grant from USDA. Most other governments cannot afford to provide the same level of support.

Accordingly, a performance standard that favors cotton and other natural fibres that are certified to certain standards will disadvantage many producers who may be completely sustainable by any objective metric, and it will almost certainly discriminate against the poorest. Farmers in Bolivia, Bangladesh, Sudan, and many other countries cannot participate in a sustainability initiative no matter how conscientiously they are working to implement best practices on their farms. Furthermore, we doubt that the WTO would find obliging desperately poor producers in the Global South to allocate resources to unproven schemes dictated by the Global North - or lose their export market to the EU - an acceptable technical barrier to trade.

D. Performance Requirement on Minimum Recycled Content in Textiles and Footwear

The draft JRC Report's proposal to legislate a minimum recycled content would be counterproductive.

a) Currently, recycled fibres are not a perfect substitute for virgin fibres. It would appear that in almost all instances they are of inferior quality. If garments are worn fewer times as a result, any purported environmental savings in raw material impact may well be outweighed by the increased manufacturing impact engendered by having to produce more clothing.

And

b) Far more important, is the requirement that clothes be made of fabrics that can themselves be recycled - or at the very least, safely composted - to mitigate and prevent ever-increasing mountains of clothing waste.

At present, polyester constitutes approximately 54% of global fibre production.[18] The percentage that is devoted to apparel, and the percentage that polyester constitutes of all apparel, however, is less clear. Investigations by the Changing Markets Foundation, for example,[19] suggest that the use of plastics at the lower end of the market is almost ubiquitous. Both C&A[20] and H&M, on the other hand,[21] claim that cotton constitutes around 60% of their fibre portfolio. However, this data is both self-reported and seems to be calculated by weight. A cotton garment will generally be heavier than its polyester equivalent. Moreover, another recent report by The Changing Markets Foundation showed that of 21 good quality garments, originally bought from second-hand clothes shops, and therefore considered suitable for reuse,[22] 9 items, or 43%, came from C&A or H&M. Yet eight items in the total mix - 38% - were 100% polyester, and 8 items were polyester blends. Not a single piece was 100% cotton. Even an H&M hoodie that appeared to be cotton was actually 57% polyester.[23]

In this context, 'Recycled polyester' is much vaunted as a sustainable solution, but is, in fact, composed almost entirely of recycled PET plastic bottles. The draft JRC Report notes this but still treats recycled polyester from bottles as if it were the same as fibre-to-fibre recycled polyester. Indeed, on page 30, the report summarizes what it believes to be, *"Successful case studies on the use of recycled materials in textiles"*. Closer examination, however, reveals that for polyester at least, this claim is not substantiated. The *Tricorp* Case Study, for instance, is stated to have successfully used 10% post-consumer cotton, 40% pre-consumer cotton, and 50% post-consumer polyester.

18 textileexchange.org/app/uploads/2022/10/Textile-Exchange_PFMR_2022.pdf

19 changingmarkets.org/wp-content/uploads/2021/01/FOSSIL-FASHION_Web-compressed.pdf

20 www.c-and-a.com/image/upload/v1695633741/corporate/pdf/reporting/sustainability/CA-Sustainability-Report-2022.pdf 170

21 hmgroup.com/sustainability/circularity-and-climate/materials/

22 changingmarkets.org/wp-content/uploads/2023/07/Take-Back-Trickery-Compressed.pdf

23 changingmarkets.org/wp-content/uploads/2023/07/Take-Back-Trickery-Compressed.pdf

The linked study, however, states *"Composition of the yarn and fabric for the T-shirts and polo shirts: 10% post-consumer textiles (cotton), 40% industrial textile waste (cotton) and 50% PET"*.

The report also states that in the case of the polo shirts, the PET is virgin, and in the case of the tees - post-industrial. There is nothing about post-consumer polyester.[24]

Whilst for the remainder, 'post-consumer' polyester appears in many cases, to refer to 'post-consumer recycled polyester derived from 100% recycled bottles'.[25]

The notion that diverting bottles to make fabric is environmentally friendly, is unsubstantiated on multiple counts.

a) Recycled PET bottles can be recycled into PET bottles - again and again (with the addition of some virgin material). Fabric manufactured from recycled bottles cannot currently be commercially recycled into anything at all - not even once.

b) Recycled polyester chip is inferior in strength to virgin polyester, even after just one iteration. By the time a polyester molecule is recycled two or three times, the integrity of the chemical bonds within each molecule is so weakened, that they become essentially useless. At the limit, if you are making products requiring very little strength, you might be able to recycle polyester 6-7 times. (Conversation with Michael Bermish, retired, formerly a Senior Consultant with Woods Mackenzie.)

As a practical matter, then, any apparel application could only use rPET that had been recovered once. Even then, the recycled molecules would have to be blended with virgin polyester. In other words, it is very difficult to make a 100% rPET product - let alone one that can itself be recycled.

c) In a laboratory, you can create rPET using less energy than virgin PET. But, in the real world, where contaminants get thrown into the bin, the actual energy cost to recycle is higher than for virgin production. When people recycle, they often do not rinse the container or remove the band around the neck that holds the cap. That band, and caps, and dried food or drink, and sometimes labels, and other foreign material, tend to get chipped up and put in the vat to be melted down. Recyclers must use enough heat to vaporize the organic contaminants, and they must get the heat just right so that non-polyester molecules separate from polyester and can be skimmed off.

d) The share of global PET production (polyester feedstock) that goes into bottles is virtually identical to the volume that goes into polyester fabric.[26]

24 www.ecap.eu.com/wp-content/uploads/2019/07/Fibre_to_Fibre_Pilot_Case_Study_Tricorp.pdf

25 www.matrec.com/en/materials-news/post-consumer-recycled-polyester-fabric

26 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

At the limit then, for every bottle turned into fabric, a new bottle must be manufactured. This of course means that in the long term, the impact of rPET fabric is the sum of both the new bottle **and** the recycling process.

The bottom line is that rPET costs more, the quality is inferior, and the GHG emissions per kilogram are greater than for virgin polyester. Some advocates contend that recycling removes products from the waste stream, but with polyester, this is not the case. The Eastman Chemicals Kingsport, Tennessee "molecular" recycling facility for end-of-life polyester products and packaging, may or may not change this.[27] But at present, polyester recycling only delays entry into the waste stream by one iteration. Much like organic cotton, rPET textiles exist primarily because consumers have been led to believe that it is beneficial to the environment, and retailers try to take advantage of that perception to sell more products.

Furthermore, contrary to the claims of the Policy Hub (the Policy Hub is an industry-funded initiative, created in 2019, by two other industry initiatives, The Sustainable Apparel Coalition, and the Global Fashion Agenda[28] and is a strategic partner of **Textile Exchange**)[29] allowing brands to treat rPET from bottles as equivalent to fibre-to-fibre rPET is not *"essential to overcome the innovation gap"*.[30]

Quite the opposite applies. As long as brands can use relatively cheap rPET from bottles and market this as 'circular' and 'sustainable' there is no incentive whatsoever for them to purchase, and therefore, commercially develop rPET from clothing - which all are agreed, will be considerably more expensive.[31]

It is moreover the case that other sectors are now finding that recycling plastic is not the environmental panacea that they had hoped. Lego, for example, pulled out of its much-vaunted "Bottles to Bricks" initiative in September 2023. To quote ScienceAlert:[32]

> *"This ambitious project aimed to replace traditional Lego plastic with a new material made from recycled plastic bottles. However, when Lego assessed the project's environmental impact throughout its supply chain, it found that producing bricks with the recycled plastic would require extra materials and energy to make them durable enough. Because this conversion process would result in higher carbon emissions, the company decided to stick with its current fossil fuel-based materials while continuing to search for more sustainable alternatives."*

Finally, as noted above, given the increasingly alarming evidence of the consequences of plastic microfibre pollution, we would question whether recycling such fibres is automatically a desirable objective. Might it be better to attempt to mitigate all plastic in non-essential usages, whilst focusing on how best to eliminate the abundance of plastic that this planet already has?

27 www.recyclingtoday.com/news/eastman-chemical-recycling-plastics-investment/

28 www.ecotextile.com/2019052824338/labels-legislation-news/sac-policy-hub-seeks-circular-economy-boost.htm

29 textileexchange.org/about/

30 uploads-ssl.webflow.com/5dcda718f8a683895d9ea394/64b7db32a805ceb98e2ca056_Feedback%20Substantiating%20Green%20Claims%20Policy%20Hub.pdf

31 gcbhr.org/backoffice/resources/great-green-washing-machine-report-part-2final.pdf

32 www.sciencealert.com/lego-will-no-longer-aim-to-use-recycled-plastic-heres-why

E. Performance Requirement on Durability

The draft JRC report proposes two durability-related performance requirements:

i) - performance requirement on design ensuring the durability of the textile products or footwear and

ii) - performance requirement on minimum durability of the product (under normal conditions of use).

Neither will contribute anything to the EU's avowed objectives. **Enhanced durability will not postpone product end-of-life:**

As we have already pointed out, the bulk of fast fashion is thrown out - despite being in perfectly good wearable condition. A recent report from Norway examined discarded apparel found in that country's residual waste.[33] The majority (91.4%) came from a TRV (waste collection) project in Trondheim. Here, residents are encouraged to deliver usable textiles to collection boxes in the area and to put bags with textiles that they deem unusable, outside for collection on a fixed day.

Analysis of the 'unusable' clothing bags, found that 17.66% of the items had a maximum usability score of five, meaning the item was as good as new or unused! Some even retained their original tags! A further 42% *of the textiles scored a condition of 4, which means the condition of the garment is considered as good."* In other words, 60% of the clothing discarded as unusable, was still perfectly wearable![34]

As a new scheme, it is possible that some TRV consumers misunderstood what was supposed to go where. But the findings are concerning. Brand-new, and almost-new items, should have been put into collection boxes, not dumped in the waste bags intended for unusable clothing.

Enhancing material durability will simply make this profligacy even more persistent. As has been repeatedly pointed out since at least 2021, the mountains of unwanted clothing deposited in Chile's Atacama desert appear to be there precisely because of their durability. They are predominantly made of fossil fibres, not biodegradable, and so not accepted in municipal landfills.[35]

Further, as the Aftonbladet report cited above and in Appendix 6, makes abundantly clear, the last thing biodiversity needs is for fast fashion to become more durable. We quote that report:

> *"The sea turtles were affected first. Since time immemorial, they have tumbled out of the waves and onto the sand to bury their eggs on the beaches where they themselves were once born. Now the sand cannot be dug in anymore. The seabed is covered with sunken garments. The corals die and the fish are driven further out to sea, where the Chinese super trawlers sweep forward."*[36]

33 avfallnorge.no/fagomraader-og-faggrupper/rapporter/method-for-picking-analyses-of-textiles-redu-wasted-textiles-project-2023

34 avfallnorge.no/fagomraader-og-faggrupper/rapporter/method-for-picking-analyses-of-textiles-redu-wasted-textiles-project-2023

35 www.aljazeera.com/gallery/2021/11/8/chiles-desert-dumping-ground-for-fast-fashion-leftovers

36 www.aftonbladet.se/nyheter/a/bgW3ld/har-ar-snabbmodets-ground-zero

Recent reports by **Changing Markets**[37] and **National Geographic**[38] reinforce all these findings with graphic intensity. For the draft JRC Report to suggest that *"enhanced durability"* is the solution to *"postponing the end-of-life of the product"* is quite simply confounded by reality.

Enhanced durability will not allow easier recycling solutions. Cotton can be economically recycled, fibre-to-fibre, and so frequently is - including as viscose feedstock, which apparently eliminates fibre quality concerns (recycled fibres are generally of inferior quality).[39]

Polyester already is durable. But it is quite simply too cheap for fibre-to-fibre recycling to make sense. As a raw material, polyester costs about half the price of cotton. Polyester recycling technology, on the other hand, appears to cost considerably more than its cotton counterpart. Indeed, as a 2022 report from the Geneva Center for Business and Human Rights[40] pointed out, Patagonia and Teijin launched a fabric-to-fabric recycling program in 2005, along with a goal to make all Patagonia products recyclable by 2010. We are now in 2023 - almost 20 years later - and none of Patagonia's offerings appears to be produced from fibre-to-fibre recycled polyester. As Patagonia themselves are aware (10:00 minute mark in the film)[41] making polyester 'more durable' would contribute nothing. If such a thing is possible, it would simply mean that the mountains of discarded polyester fabric will last longer.

As for the draft JRC report's assertion that: *"the share of recycled polyester reached 14% in 2019, [but] it is not yet advancing at the speed and scale required, also due to the low prices of fossil-based polyester (8). While most recycled polyester on the market is currently based on plastic bottles, the value of polyester fibres in discarded textiles is currently being lost (8)"*

Polyester fibres in discarded textiles are currently not recycled **precisely** because they have no commercial value. Whilst if most recycled polyester on the market is based on plastic bottles, advancing the adoption of bottle rPET at "speed and scale" will do absolutely nothing to reduce waste in the apparel sector. On the contrary, legislation allowing brands to pretend that bottle rPET has the same benefits as fibre-to-fibre recycled polyester is nothing more than an excuse for them to pursue business as usual.

37 changingmarkets.org/wp-content/uploads/2023/02/Trashion-Report-Web-Final.pdf

38 www.nationalgeographic.com/environment/article/chile-fashion-pollution

39 www.renewcell.com/en/

40 gcbhr.org/insights/2022/03/the-great-greenwashing-machine-part-2-the-use-and-misuse-of-sustainability-metrics-in-fashion

41 www.patagonia.com/why-plastics/

Indeed, in June 2022, **Patagonia released a short film,**[42] documenting both the development and benefits of the proposed **New York State Fashion Act,**[43] and the purported benefits of bottle-recycled polyester.[44] Presumably, Patagonia regards the integration of bottle rPET into sustainability legislation as vital to the continued success of its business model. Presumably again, this is because fibre-to-fibre polyester recycling - as Patagonia's own history shows - appears too expensive.

At the same time, as we have also already pointed out and as the Patagonia film reiterates (13:30 minute mark in the film),[45] the bulk of fast fashion is plastic particularly polyester. Indeed, as one of the authors of this report found, on April 21, 2022, when the Shein website still documented the number of hits for 'women clothing' and 'men clothing' in fibre searches, Shein UK offered '287,995 products' for women clothing and '35,471 products' for men clothing, 323,466 items of clothing in total. Of these, 263,350, or 81%, were polyester. A total of 23,669 products were viscose, and only 17,771 were reported as being made of cotton.

As Professor Ingun Klepp has pointed out:

> *"If we are demanding more durable apparel products, using standard tests for strength, pilling, color-fastness, whatever, means more plastic. If we are looking at regulation of waste, eco-modulating fees based on weight, we favor plastic apparel, as synthetics in general are lighter. If we are looking at recyclability as a policy tool, synthetics win again, even though it will mainly be from recycled bottles. And, last but not least, if we use LCAs to dictate what are preferred fibres, again synthetics win."*[46]

Or in other words, the EU Commission's, and so the draft JRC Report's insistence on ending fast fashion by making clothes more durable, will have precisely the opposite effect. It will result in the promotion of cheap disposable plastic clothing as more sustainable, and hence encourage additional consumption.

We would highly recommend that both the Commission and the JRC take time to consider whether, in light of the recent research on the negative impacts of plastic microfibres on both human and environmental health, recycling polyester and other plastics is a desirable objective.

42 www.patagonia.com/why-plastics/

43 www.thefashionact.org/

44 www.patagoniaworks.com/press/2022/6/14/media-advisory-the-monster-in-our-closet

45 www.patagonia.com/why-plastics/

46 clothingresearch.oslomet.no/2023/10/25/lasting-durability-and-lifespan-looking-closer-at-the-terms/

A General Observation

Finally, as a general note, perhaps the most fundamental failing of the ESPR is that the very model is flawed. It is flawed on two counts. Both, in and of themselves we would argue, are sufficient to render it ineffective.

1. From untreated effluent, GHG emissions, poverty wages, and dangerous and abusive work environments, the bulk of fashion's damage stems from its manufacture in countries with poor regulatory implementation; large, often underemployed, unskilled workforces; and GHG-intensive energy sources.

   Yet first brands and retailers, and now proposed EU regulation, focus on raw materials, and attempt to convince consumers that the most important thing to consider is raw material-centric purported production emissions - not how many times they will actually wear/use the item. As we can see, the outcome of all this has been an increase in the number of items of clothing bought by the average consumer - not a reduction. On the contrary, consumer perception that the impact is documented and the fibre sources 'preferred' and so less harmful, not surprisingly, appears only to reassure them that all is in hand and that they can carry on shopping as usual.

As we pointed out in the introduction to Part 2, simple arithmetic tells us that the most important determinant of how environmentally harmful a garment is not something that can be readily legislated. It is the number of times that garment is worn.

As we saw, the impact at the factory gate is not the impact that matters. The impact that matters is the impact per wear. All the evidence suggests that the net result of the focus on 'making consumers aware' of the purported production impact of their clothing purchases, far from leading them to buy less, is distracting them from the most important message: 'How many times will you wear/use this?', and encouraging them to buy more. Hence the enthusiasm of so many brands for posting purported impact based upon the flimsiest of evidence and despite there being no requirement to do so. Norrona, Zalando, and H&M all attempted to use the Worldly Higg MSI to do precisely this in 2022. If the Norwegian Consumer Authority had not intervened, many others would have followed.

2. Prescriptive requirements that are not covered financially are counterproductive. 'Sustainable' apparel has been characterized by prescriptive requirements almost from the get-go. That the EU now finds itself attempting to impose regulation is clear evidence that demands that brands 'demonstrate' that they source from safe manufacturing facilities, that the workers are well-treated, and that their inputs are 'responsibly/sustainably sourced' (by producing 'certifications') have failed.

The Nation published a damning *"investigation into the dangerously irresponsible business of "ethical factory" audits."* In April 2020.[47]

In April 2023, The Business of Fashion published an article[48] lamenting the fact that *"Ten years on from Rana Plaza, factory fires and other safety failings still kill and injure hundreds of people working in the textile industry every year."*

The reason according to BoF is that: *"Efforts to address safety issues have been undercut by the drive for faster, cheaper fashion."*

A more comprehensive and robust analysis is provided by Karaosman and Marshall, 2023. We quote:[49]

> *"The fashion giants' dominant logic of financial growth was operationalised by cost-reduction strategies, which were routinely passed onto their suppliers. Fashion giants claimed to engage in supply chain sustainability, but suppliers stated that fashion giants demanded paradoxical requirements from them. For example, demands for water-intensive designs and colors and for water-footprint reduction; better quality products and cost reduction; on-time delivery and last-minute orders; operational flexibility, reduced costs, increased production and increased sustainability requirements. Tier-1 suppliers managed the fashion giants' multiple and conflicting operational, quality and sustainability demands by cascading demands onto lower-tier suppliers."*

47 www.thenation.com/article/world/factory-audit-investigation/

48 www.businessoffashion.com/articles/sustainability/fashion-garment-workers-safety-rana-plaza/

49 orca.cardiff.ac.uk/id/eprint/159758/

The problem, of course, is that apparel sourcing has monopsonistic traits – a limited number of large brands are said to exercise disproportionate economic power over manufacturers by threatening to move their sourcing if their demands are not met. While smaller brands not infrequently claim to be unable to influence anything.

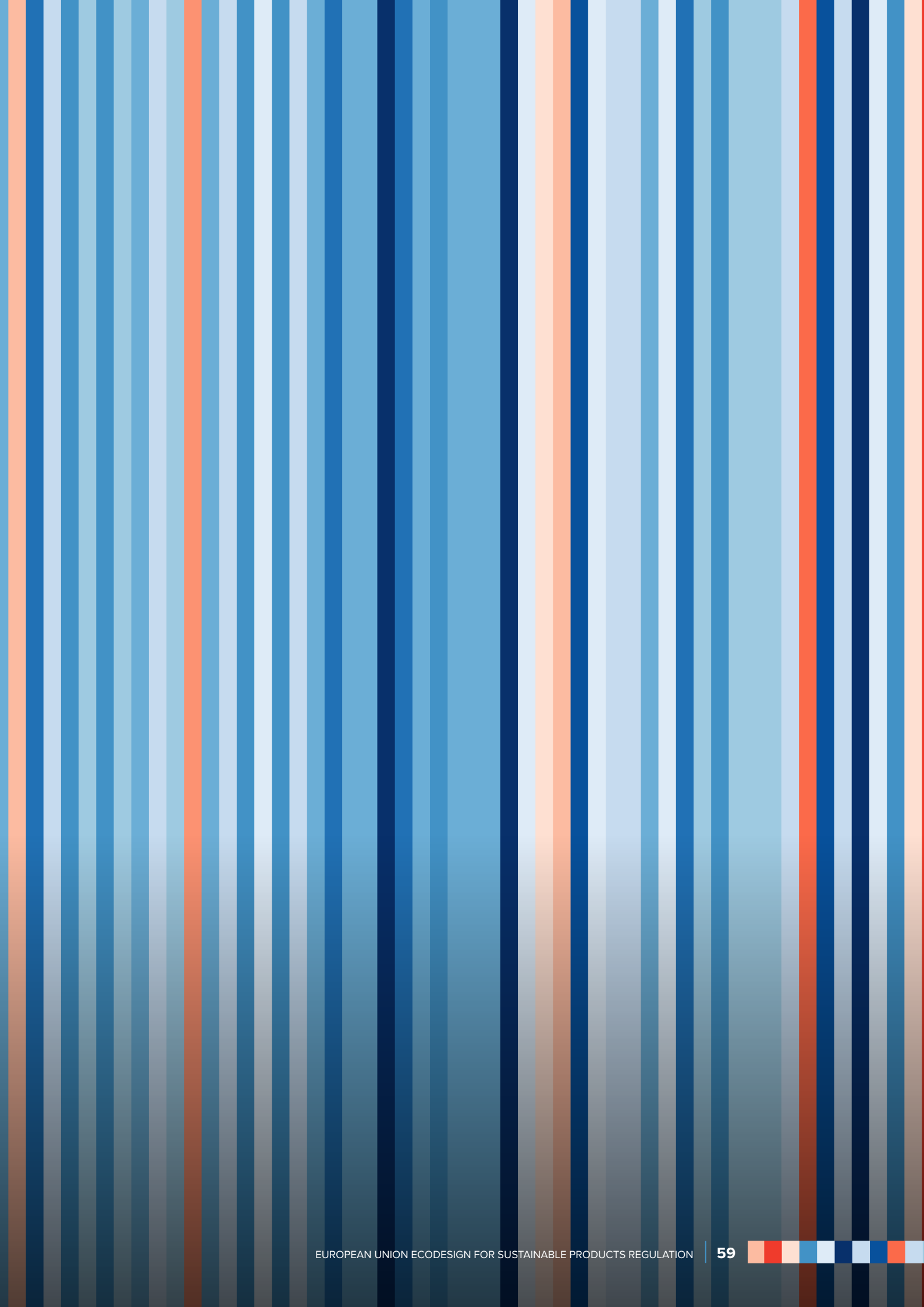
Based on data from the Bangladesh Garment Manufacturers and Exporters Association (BGMEA), trade publication Apparel Insider recently published an article demonstrating that, from 2012 to 2022, the average[50] prices of apparel exported to the EU and USA hardly increased in nominal terms. Yet throughout that period manufacturers have *"been under huge pressure to spend on more sustainable production methods, purchasing infrastructure for solar electricity, better effluent treatment and so on,"* and raw material and transport costs have soared. This means real prices have plummeted! Meanwhile brands sign letters to the Bangladesh Government supporting worker demands for higher wages, whilst apparently refusing to pay any more to suppliers, in order to cover these wage increases.[51]

One can only imagine what would be the outcome of the ESPR, were it to be imposed in its current form. A veritable tsunami of demands by the major brands for information/performance requirements would unfurl on suppliers – who would respond by simply passing them down the chain. The inevitable result would be yet more pressure to cut costs and take other measures to manage brand expectations. Glowing reports of adherence to the ESPR would be produced, whilst, on the ground, climate change and inequality would only increase.

Ten or twenty years from now we would all be asking ourselves 'What went wrong?' When in reality, poor research and faulty analysis doomed the venture from the start. Because, as we have sought to demonstrate, it resulted in performance/information requirements that not only did not address the issues targeted but actually contributed to increasing climate change and global inequality while imposing ever greater burdens on biodiversity.

50 apparelinsider.com/violent-clashes-the-high-price-of-cheap-apparel/

51 www.aafaglobal.org/AAFA/AAFA_News/2023_Letters_and_Comments/Major_Brands_Urge_Strong_Bangladesh_Minimum_Wage_Review.aspx\



APPENDIX 1

List of Potential measures under the Textiles and Apparel Section of ESPR:

- performance requirement on minimum recycled content in textiles and footwear
- performance requirement on maximum limit of water consumption related to the production of cotton
- performance requirement on maximum limit of water consumption per kg or unit of product
- performance requirement on maximum limit of chemical consumption related to the production of one kg or unit of product
- performance requirement on design for reliability (shed-resistance to release of microplastics)
- performance requirement on design for minimising water consumption during the use of the product
- performance requirement on maximum limit of fertilisers, pesticides and insecticides to the production of cotton
- performance requirement on minimum content of material with sustainability* certification per kg or unit of textiles and footwear.
- performance requirement on design ensuring easy recyclability of the product at the end of its useful life
- performance requirement on design ensuring the durability of the textile products or footwear
- performance requirement on minimum percentage of recycled content in product packaging
- performance requirement on the use of design techniques that ease non-destructive disassembly and re-assembly of specific components in clothing items
- performance requirement on use of standard components for those parts that are prone to breaks
- performance requirement on use of modular design in clothing items
- performance requirement on restricting the use of certain materials or manufacturing practises in certain applications (nb. The modifier ‘in certain applications’ is not always included)
- performance requirement on minimum durability of the product (during under normal conditions of use)
- performance requirement on minimum reliability (e.g. resistance to shrinkage/weathering)

- performance requirement on the use of component and material coding standards for the identification of components and materials in clothing items (for reuse or recycling)
- information requirement on water consumption during production per kg or unit of product
- information requirement on the possible release of non-biodegradable microplastics
- information requirement on how to manage the textile or footwear at the end of its lifetime
- information requirement on percentage of recycled content in product packaging
- information requirement on the GHG emissions associated with the washing and drying operations of a clothing item
- information requirement on the energy consumption associated with the washing and drying operations of a clothing item
- information requirement on how to use the product to avoid its premature substitution/replacement (or of its components)
- performance requirement on design to reduce particulate matter release during production stage of the product
- information requirement on how to use the product to increase durability to avoid air pollution for new product production
- performance requirement on minimum recycled content in textiles and footwear reducing air pollution due to the decrease of raw material extraction
- performance requirement on maximum level of GHG emissions per kg of product or item of clothing produced.
- performance requirement on maximum level of energy consumed per kg of product or item of clothing produced
- performance requirement on the availability of guarantees specific to remanufactured clothing items
- information requirement on the energy consumed associated with the production of a clothing item
- information requirement on the GHG emissions associated with the production of a clothing item
- performance requirement on minimum recycled content in textiles and footwear
- performance requirement on limiting the number of materials used in a single product (in certain applications)
- performance requirement on availability of guarantees specific to remanufactured clothing items
- information requirement on the possible/ expected lifetime of the product/the textile or footwear

APPENDIX 2

Concerns around the data for Climate Change employed by the draft JRC Report

The Climate Change section of the draft JRC Report opens with the following statement: *"The fashion industry is responsible for 10% of annual global carbon emissions, and expected to increase by 50% by 2030 (26, 27, 40)"*

Footnote (26) references *"Ellen MacArthur Foundation, 2021, The Nature Imperative: How the circular economy tackles biodiversity loss"*.[1]

As the diagram on the following page shows, the report cites a value that – at 4% - is less than half the draft JRC Report's *'10% of annual global carbon emissions'*.

Footnote (27) refers to a paper by the *"European Parliamentary Research Service, 2020, What if fashion were good for the planet?"*, prepared by L. Van Woensel and S. Suna Lipp.[2]

1 ellenmacarthurfoundation.org/biodiversity-report

2 www.europarl.europa.eu/RegData/etudes/ATAG/2020/656296/EPRS_ATA(2020)656296_EN.pdf

THE IMPACT OF THE FASHION SECTOR ON THE FIVE DIRECT DRIVERS OF GLOBAL BIODIVERSITY LOSS

Land-use change

- At the current pace, by 2030 the fashion industry is projected to use 35% more land for cotton cultivation, forest for cellulosic fibres, and grassland for livestock

Overexploitation

- Over 45 of global freshwater withdrawal is linked to the textiles industry, with consumption expected to double by 2030
- Conventional cotton cultivation - the most water-intensive fibre production process - is often located in already water-stressed regions

Pollution

- Despite accounting for approximately 3% of total arable land, the production of cotton is estimated to use as much as 16% of all insecticides, 6% of all pesticides, and 45 of all synthetic fertilisers globally, which can degrade soil health, pollute waterways, and endanger biodiversity
- Out of 2,450 textile-related chemicals studied by the Swedish Chemical Agency, 5% were of high potential concern for the environment due to their capacity to spread globally and bioaccumulate, causing disease and allergic reactions, and increasing cancer risk
- An estimated 35% of microplastics in the ocean originate from synthetic microfibre release

Climate change

- The fashion industry was estimated to account for 4% of global emissions in 2018 - approximately as much as France, Germany, and the UK combined
- At the current pace, the sector's emissions would nearly double the maximum required to stay on the 1.5°C pathway

Invasive alien species

- Long-range transport of raw materials and fashion products facilitates the spread of invasive alien species, which can have serious negative consequences for their new environment

Figure 3

Source: ellenmacarthurfoundation.org/biodiversity-report page 58.

That report does contain the following statement: *"The fashion industry also accounts for 10% of annual global carbon emissions and is a major player in deforestation and soil degradation."* The source for this claim is given as the UNFCCC UN Climate Change News, 6 September 2018. This news blog does indeed state *"The fashion industry, including the production of all clothes which people wear, contributes to around **10% of global greenhouse gas emissions**[3] due to its long supply chains and energy intensive production. The industry consumes more energy than the aviation and shipping industry combined."*[4]

But the source for that claim is a UNFCCC article on New York Fashion Week[5] which states no such thing. Claiming instead: *"The fashion industry is highly greenhouse gas intensive, with estimated emissions ranging between 2 and 8 percent of the global total."*

Finally, footnote (40) is listed as: *"World Bank, 2019, How Much Do Our Wardrobes Cost to the Environment?"*[6]

This is not a World Bank report as the footnote suggests – but some sort of blog. It is unclear who wrote it. In any case, the Bank would be well advised to remove it. It's riddled with outdated and inaccurate claims, including the assertion that: *"The fashion industry is responsible for 10% of annual global carbon emissions, more than all international flights and maritime shipping combined. At this pace, the fashion industry's greenhouse gas emissions will surge more than 50% by 2030."* The sources for this – along with some other numbers on the environmental impact of fashion are given as both the UNEP and the Ellen MacArthur Foundation. The linked web.unep.org page can't be found. As the link to Ellen MacArthur is to a general page, which report is being referred to is unclear.

3 unece.org/forestry/press/un-alliance-aims-put-fashion-path-sustainability

4 unfccc.int/news/un-helps-fashion-industry-shift-to-low-carbon

5 unfccc.int/news/un-helps-fashion-industry-shift-to-low-carbon

6 www.worldbank.org/en/news/feature/2019/09/23/costo-moda-medio-ambiente

However, since the blog post is dated September 2019, it must be a report published before that date. Moreover, as we have already seen in Footnote (26) above, by 2021 (if it ever made it) the Ellen MacArthur Foundation had revised that claim to 4%.

In other words, the draft JRC Report provides no substantive data source for their claim that *"The fashion industry is responsible for 10% of annual global carbon emissions, and expected to increase by 50% by 2030"*.

Indeed, as outlined below, the rest of the climate change section relies almost entirely on a single 2020 report by McKinsey and the **Global Fashion Agenda**[7] "**Fashion on Climate**".[8] And this states, *"This research shows that the global fashion industry produced around 2.1 billion tonnes of GHG emissions in 2018, equalling 4% of the global total.... [and] will likely rise to around 2.7 billion tonnes a year by 2030."*

It is concerning that the draft JRC Report cites sources that actually show very different emissions from those claimed in the report itself. From our own research, we would suggest that the share of fashion in global GHG emissions would be better expressed as a range. Within the sector, the 10% claim is largely discredited. Commonly cited values vary from 2% to 8%, but as we demonstrate, a more realistic range would be 1.8 – 4.8%.

The first estimate - 2% - comes from a 2021 publication by the **Apparel Impact Institute**,[9] (they have recently – June 2023 – reduced that estimate to 1.8%.[10]

The 8% figure on the other hand, comes from a 2018 report by LCA provider **Quantis.**[11]

As Lutz Walter, Secretary General of The European Technology Platform for the Future of Textiles and Clothing (Textile ETP) has pointed out,[12] the Quantis report is based on the following unlikely assumption: *"The breakdown for total fibre production by market use is 84% going to apparel, 12% to home textile, 4% to industrial textile (see Table A and The Fibre Year report)."*[13,14]

No other report attributes 84% of total global fibre production to apparel. Indeed, of global PET production, it is claimed that 66% is devoted to textiles (polyester) and only 38% of that, to clothing.[15] And polyester is apparel's dominant fibre.[16]

The United States is the only country that currently tracks imports by fibre. Since the US is around 20% of world cotton consumption at the end-use (retail) level, this data is significant.

The data is calculated in Raw-fibre equivalent pounds, meaning that fibre waste in the production process is included in the estimates. For 2020, US textile imports totaled 18,198 million pounds, of which apparel constituted 10,058 million pounds or 55%.[17]

7 globalfashionagenda.org/our-partners-network/

8 www.mckinsey.com/industries/retail/our-insights/fashion-on-climate

9 apparelimpact.org/roadmap-to-net-zero-report-2021/

10 apparelimpact.org/wp-content/uploads/2023/07/Aii_RoadmapReport-752.pdf)

11 quantis.com/

12 www.linkedin.com/posts/lutz-walter_textilecircularity-textilerecycling-textileinnovation-activity-7084154913848471552-3fjO?utm_source=share&utm_medium=member_desktop

13 quantis.com/wp-content/uploads/2018/03/measuringfashion_globalimpactstudy_full-report_quantis_cwf_2018a.pdf

14 thefiberyear.payrexx.com/en/?tid=b6339efe

15 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

16 changingmarkets.org/portfolio/fossil-fashion/

17 www.ers.usda.gov/data-products/cotton-wool-and-textile-data/cotton-and-wool-yearbook/

That is definitely not 84% - which certainly suggests that Quantis' 8% must be reduced accordingly. It is moreover, in line with the general consensus in the textile and footwear sector that in reality only about 50% of total global fibre production goes to apparel. In which case, of course, all else equal, Quantis' 8% falls to 4.8%.

Both of these industry-generated estimates were arrived at by looking at global production. As suggested by Lutz Walter, of Textile ET[18] another way of looking at these values is to approach the question from the point of view of consumption, and apparel's share in the average consumer's total CO_2 footprint. Two recent studies put this in the region of 2%.[19,20]

In short, contrary to the figure of 10% used in the draft JRC Report, the fashion industry is probably responsible for less than 5% of annual global carbon emissions.

This does not mean that we are arguing that reducing apparel's Greenhouse Gas (GHG) emissions is somehow less important. On the contrary, tackling fashion's carbon footprint first makes excellent sense because unlike say heating, cooling, or transportation, a significant percentage of fashion's emissions appear to be generated in the production of 'fast fashion'. A concept that we examine more closely in Appendix 4, but basically, we mean fashion rapidly purchased, and equally rapidly disposed of. The exact percentage of total emissions accounted for by such fast fashion is unknown. However, if, as noted in Appendix 5, 70% of French apparel purchases cost an average of €8.20 in 2021, then 70% fell within the fast fashion price point. The European Environment Agency asserts: *"When household expenditure data are adjusted to reflect changes in the price of clothing, they indicate that the volume of EU-28 clothing purchases actually increased by 40% in the period 1996–2012. Population growth made a relatively small contribution to this overall increase."*[21] Whilst as Appendix 5 documents, French clothing purchases appear to have increased steadily (by perhaps +3 garments each year) since 2015. All of which is to say, it would appear that perhaps 50% of all EU clothing purchases could fall within the fast fashion category.

As already mentioned, but this is so frequently overlooked that it is worth repeating, simple arithmetic tells us that the impact that matters is impact per wear.[22] It is self-evident that rapidly-purchased, rapidly-disposed-of fashion cannot be worn many times. So, even if it is produced in the same factories, using the same materials, as slower or more 'luxury' items, it will still be markedly less sustainable. Let's restate our earlier comparison.

We have 2 garments:

Garment A has a production impact of 1,000 – in GHG emissions, water scarcity, or whatever metric you are comparing. It is worn 1,000 times, so it has an impact per wear of one.

Garment B has a production impact of 100, it is only worn 10 times, so it has an impact per wear of 10.

18 LutzWalterhttps://www.linkedin.com/posts/lutz-walter_textilecircularity-textilerecycling-textileinnovation-activity-7084154913848471552-3fjO?utm_source=share&utm_medium=member_desktop

19 www.bbvaresearch.com/en/publicaciones/measuring-the-co2-footprint-of-european-households-a-comprehensive-approach/

20 bonpote.com/comment-calculer-son-empreinte-carbone/

21 www.eea.europa.eu/publications/environmental-indicator-report-2014

22 gcbhr.org/backoffice/resources/great-green-washing-machine-report-part-2final.pdf

When brands and sustainability pundits talk about sustainability they all tell you that the only thing you need to focus on is impact at the factory gate. By that metric, Garment A is far less sustainable than Garment B. But with some simple sums we have already seen this isn't true. Moreover, after 1,000 wears, only one of Garment A enters the waste stream. But at 10 wears each, to reach 1,000 wears, 100 of Garment B will first have to be produced (and 100x100= 10,000) and then disposed of.

Consumers choosing Garment B over Garment A will result in 10 times the environmental impact and 10 times the waste.

Arithmetically, this is the fundamental failure of fast fashion. No amount of fibre switching, smaller runs, on-demand production, recycling, or even renewable energy, can ever fix this. It is the very fastness of fast fashion – apparel quickly purchased and equally rapidly disposed of – that makes it unsustainable.

It is nonetheless important to get a handle on the size of the problem, otherwise not only the EU but also others, will be claiming that their proposed legislation would have a far greater impact in reducing climate change than can possibly be achieved in reality. For example, Assemblywoman Dr. Anna Kelles, one of the two sponsors of The New York Fashion Sustainability and Social Accountability Act,[23] offers the following justification for its proposals:

> *"During this 2023 Fashion Week, in addition to appreciating the latest designs on the runway, we must also examine the fashion industry's global climate impact and labor practices. The fashion industry is responsible for as much as 8.6% of global greenhouse gas emissions and has been permitted to operate unchecked by regulations that would curb both pollution and the use of exploited, forced, and child labor."*[24]

Since actual carbon emissions appear, at most, to be nearer half the 9 -10% posited by legislators, even if the measures envisaged are successful – and as the analysis in this paper makes clear, we think this unlikely – they will not have the impact on global climate change that politicians, and so voters, will be expecting.

It matters also because, amidst considerable fanfare,[25] brands are using these numbers to suggest to consumers that they can purchase more clothing than is actually the case. Swedish brand, ASKET, for example, is currently promoting the notion that we can all purchase 12 new items of clothing a year, at a total GHG cost of 115 kg CO_2e,[26] whilst still achieving just, Paris-consistent-emissions, of only 2.3 tonnes CO_2e per annum, per capita.

23 www.thefashionact.org/

24 www.reveriepage.com/blog/new-york-fashion-sustainability-and-social-accountability-act-the-fashion-act

25 fashionunited.uk/news/fashion/asket-launches-impact-receipt-highlighting-environmental-cost-of-purchase/2023110372383

26 https://www.asket.com/gb/transparency/impact/impact-receipt

ASKET's allocations and values are, of course, inconsistent with the per capita consumption studies referenced earlier. Bonpote, for example, estimates that the average French consumer's apparel consumption emissions are 170 kg CO_2e, or 2% of an annual total of 9.9 tonnes.[27] As a result, ASKET's claims have the potential to lead their customers into believing that they have a far greater carbon budget available to allocate to clothes than may be the case.

Under normal procedures, the JRC would have undertaken a literature review to establish the ranges and reliability of purported carbon emissions in textiles and footwear. However, as analyzed below, it appears that the proposed ESPR climate measures for textiles and footwear are instead, almost all derived from a single study – the 2020 GFA McKinsey "Fashion on Climate" report.[28]

This is not immediately apparent, as this single source is sometimes listed as footnote (41) and sometimes as footnote (43) – giving the impression that at least two studies have reached the same conclusions on impact values. This is not the case. All these carbon claims are coming from a single commercial report, whose numbers are inconsistent with every other study of carbon emissions in the apparel supply chain that we have found.[29]

Further, the cited values are not even internally consistent, and in a number of instances, are not the actual value shown by the source claimed.

This is what the draft JRC Report states on page 169:

> "Climate Change Environmental impact: High Emissions are mainly related to the emissions (41), especially polyester (the most commonly used fibre) or PVC in the case of the footwear industry (59), via carbon-intensive processes (1), as well as synthetic inputs used for the cultivation of cotton (41), the energy-intensive processes of dyeing and finishing products (29%) (12, 41) and the energy used for laundering the items during the use phase (20%) (41)."

Improvement potential: High

According to estimations, the textiles sector should decrease its GHG emissions by ~50% in order to stay on the 1.5-degree pathway (43): 60% of the accelerated abatement potential is expected to lie in decarbonising upstream operations, 20% in brands own operations, and 20% in encouraging sustainable consumer behaviour (43). Several players on the market have committed to a goal of reducing 30% CO_2 emissions from textile fibre and material production by 2030, with a vision of achieving net-zero emissions by 2050 (8,42). Measures related to decrease the textiles' upstream impacts on climate change include energy efficiency measures and switching to renewable sources of energy, and to a minor extent to reductions in cut-off waste (43): possible energy efficiency improvements were estimated at 20% for polyester production, 5% for spinning and knitting operations, 30% for heating, ventilation and air conditioning-related equipment and 20% in sewing through new technologies and equipment upgrades (43).

27 bonpote.com/comment-calculer-son-empreinte-carbone/

28 www.mckinsey.com/industries/retail/our-insights/fashion-on-climate

29 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

Measures related to cotton cultivation have been found to achieve unclear results, with studies finding that climate change impacts for conventional and organic cotton can be considered similar taking into account the high variability within the same kind of cultivation (4,12), and other studies concluding that improved farming practices and reduced synthetic inputs in cotton cultivation can cut around 50% of GHG emissions from farming (41,43). With respect to brands' operations, improvement potential measures include: energy efficiency measures for heating, ventilation and air conditioning-related equipment, using recycled materials for packaging, reducing e-commerce returns through technological improvements on predicting size and fit and consumer behavioural change to reduce purchases with an intent to return, and reduce overproduction (43). Improving textiles end-of-life also has a high potential of reducing the GHG emissions of the sector. A scenario assuming an increase of 15% in recycling and 12% in reuse of EU textile waste should reduce climate change impact by 8% (4), while circular business models such as on-demand production, lending, renting, and repair could achieve larger reductions. Finally, reduced washing and drying of textile products in the use phase are expected to save 186 million tonnes of CO_2 (43).

The respective footnotes list the following sources:

(41) *"McKinsey, Global Fashion Agenda, 2020, Fashion on climate. How the fashion industry can urgently act to reduce its greenhouse gas emissions".*[30]

(43) *Textile Exchange, 2020, Cotton in Africa: sustainability at a crossroads.*[31]

As we can see, (43) is a paper prepared by the fashion industry-created and funded initiative - Textile Exchange. Not surprisingly, given its title, the cited report - *"Cotton in Africa: sustainability at a crossroads"* - is on the purported merits of organic cotton cultivation in Africa, and says nothing whatsoever about *"Measures related to decrease the textiles' upstream impacts on climate change include energy efficiency,"* or *"possible energy efficiency improvements in polyester production etc."*

Those numbers are, however, to be found in the GFA/McKinsey report *"Fashion on Climate"* (FoC), which does state: *"The immediate focus of accelerated abatement should be upstream operations, where around 60% of emissions savings are possible....Actions relating to brands' own operations have the potential to deliver around 20% of the reduction, with the remainder coming from changes in consumer behaviour."*

30 www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/fashion%20on%20climate/fashion-on-climate-full-report.pdf

31 store.textileexchange.org/wp-content/uploads/woocommerce_uploads/2020/06/Cotton-in-Africa-Sustainability-at-a-Crossroads-White-Paper_final-2020611_ref-corrected-emh8hp.pdf

FoC also makes the other assertions cited in the draft JRC Report such as *"around 20% of energy efficiency improvements for polyester" and "a 5% efficiency gain in spinning, weaving and knitting stages."*

We conclude then, that what we are looking at here is an error of transposal. It is not footnote (43) that is the source of the claims cited in the second paragraph copy-pasted above. It is footnote (41) *"McKinsey, Global Fashion Agenda, 2020, Fashion on climate. How the fashion industry can urgently act to reduce its greenhouse gas emissions"*.

If we replace (43) with (41) in the second paragraph, it immediately becomes apparent that the JRC's primary - virtually, sole - source for carbon emissions in textiles and footwear is, as already stated, a 2020 publication: *'McKinsey, Global Fashion Agenda (GFA), Fashion on climate. How the fashion industry can urgently act to reduce its greenhouse gas emissions."*[32]

Indeed, it is no exaggeration to say that the JRC appears to have virtually copy-pasted the assumptions/outcomes of the GFA/McKinsey FoC report into their own. Since the GFA is an industry initiative whose agenda is 'shaped and signed off on' by its 'strategic partners', which, in 2022, included: ASOS, BESTSELLER, Global Fashion Group, H&M Group, Kering, Nike, PVH Corp, Ralph Lauren Corporation, and Target,[33] this could hardly be described as arms-length and independent research.

The FoC report does not offer any sources for its raw material emissions calculations - apart from The Fibre Year 2019. Andreas Engelhardt of Fibre Year Consulting was kind enough to confirm that his reports include no emissions data whatsoever, as well as to provide the production volumes given in The Fibre Year 2019 that are used by FoC (email of October 9, 2023). After a few dead ends, McKinsey was kind enough to provide the emissions data tables shown below (email of October 4, 2023).

It should, however, be noted, that it is most unusual for a report, professing to analyze global emissions for the greater good, not to cite its data sources.

As we can see from the key assumptions table, FoC claims that 5.9 tonnes of CO_2e, per tonne of fibre, are emitted annually in cotton cultivation. This was calculated on the following basis: average from Stockholm Environment Institute (5.3), Indian Textile Journal (5.9), C&A (6.6). We were not able to identify and locate all the reports that FoC used to evaluate the impact of conventional cotton production. One source listed was C&A, so in itself, not a primary source. Whilst another, the Stockholm Environment Institute (SEI) report was published in 2005,[34] and much of the impact data for cotton dates from 1994/95. FoC asserts that fertilizers and pesticides account for around 70% of GHG emissions in conventional cotton cultivation. Judging from the SEI paper, this is based on the premise that cotton consumes 11% of the world's agrochemicals (fertilizers, insecticides, herbicides, growth regulators, and defoliants) and accounts for about 24 percent of the global insecticides market. These numbers are completely outdated - and with them FoC's cotton climate impact calculations.

32 www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/fashion%20on%20climate/fashion-on-climate-full-report.pdf

33 globalfashionagenda.org/resource/the-gfa-monitor/

34 mediamanager.sei.org/documents/Publications/SEI-Report-EcologicalFootprintAndWaterAnalysisOfCottonHempAndPolyester-2005.pdf

KEY ASSUMPTIONS: CO_2 EMISSIONS PER KG OF FIBRE IN MATERIAL PRODUCTION

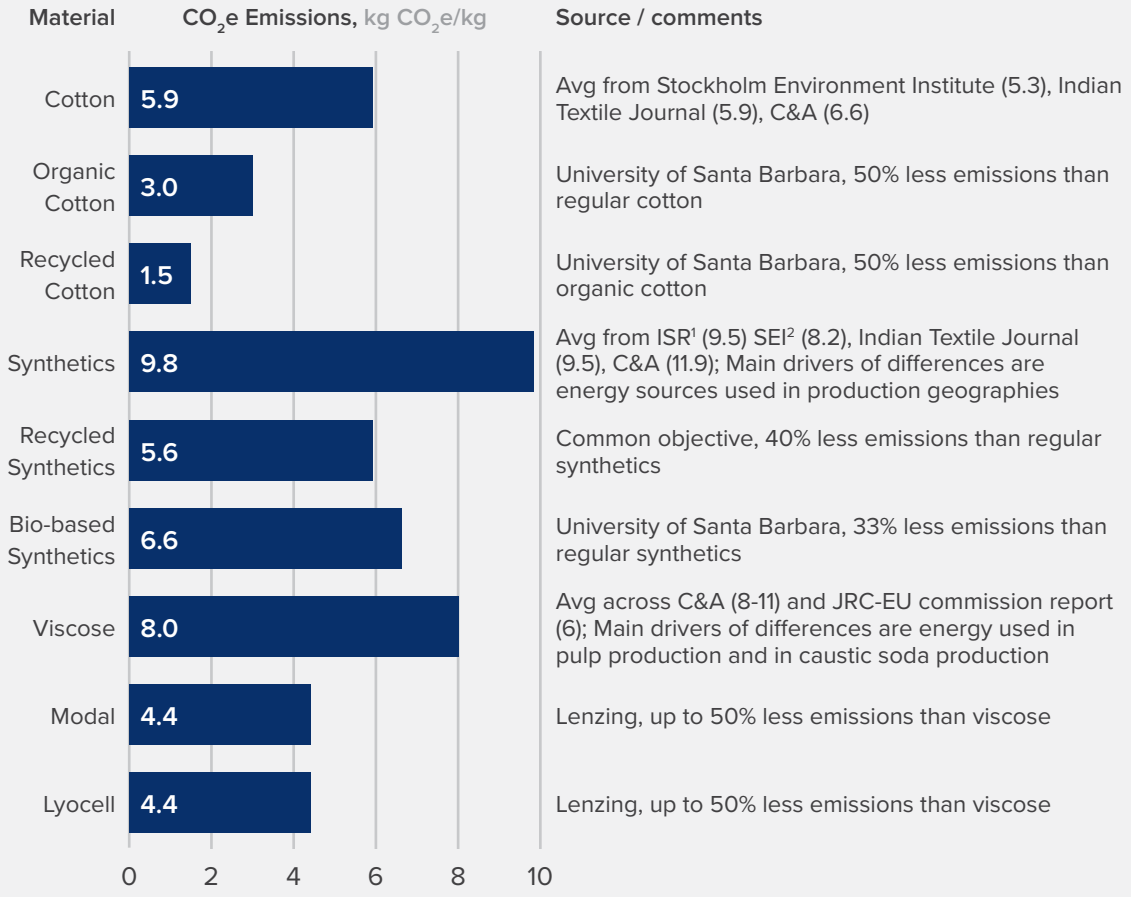


Figure 4. (a) Institute for Sustainable Research; Stockholm Environment Institute

Based on data provided by the International Cotton Advisory Committee in the Cotton Data Book 2022,[35] cotton accounted for 3.4% of the world's agrochemicals (fertilizers, insecticides, herbicides, growth regulators, and defoliants) by value in 2020, and 3.0% by volume. Cotton accounted for 9.8% of the global insecticides market. In other words, FoC's use of the SEI report overstates by a factor of approximately 3.2 with respect to global agrochemical use and a factor of 2.4 with respect to the global insecticides market.

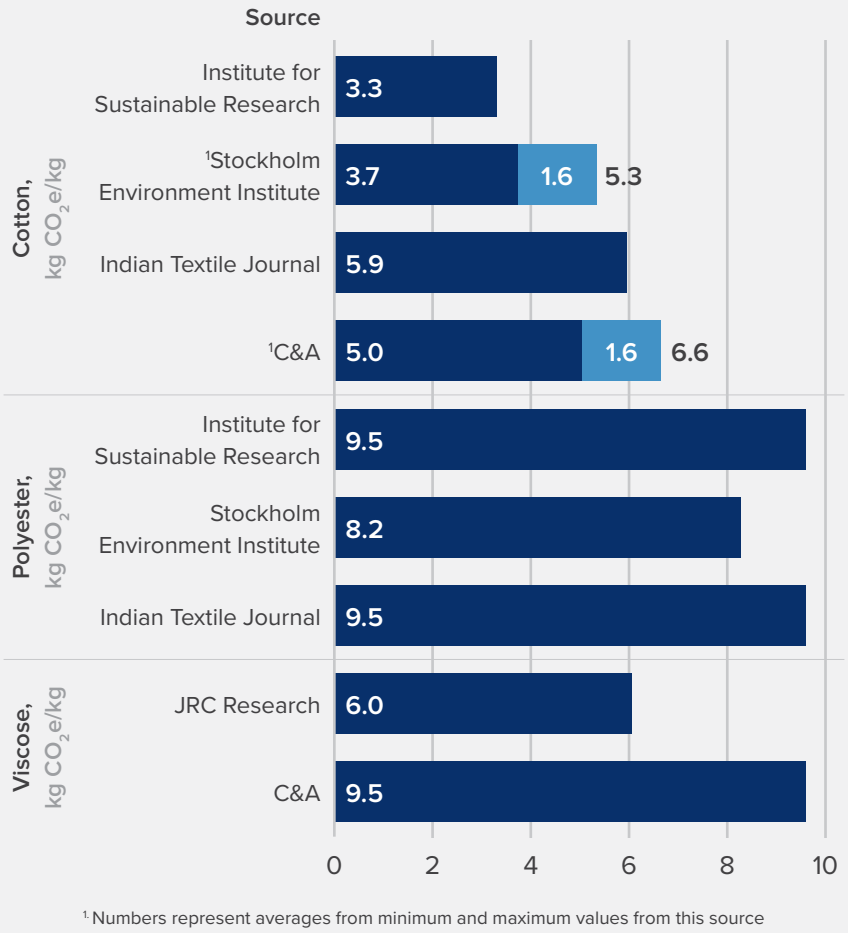
The FoC report was published in 2020. The Swedish Foundation for Strategic Environmental Research - MISTRA - undertook a literature review of cotton emissions for a report published in 2019. We quote:

> *"Climate impact of cotton fibres is often calculated to be in the range 0.5 to 4 kg CO_2 equivalents per kg fibres (excluding CO_2 sequestered in the fibre), but it is not unusual with results up to about 6 kg CO_2 equivalents – so the variations span about one order of magnitude."*[36]

35 www.ICAC.org

36 www.diva-portal.org/smash/get/diva2:1298696/FULLTEXT01.pdf

OVERVIEW OF CO_2 EMISSIONS PER KG OF FIBRE: COTTON, POLYESTER, VISCOSE



[1] Numbers represent averages from minimum and maximum values from this source

Figure 4. (b) Key Assumptions: CO_2 emissions per kg of fibre in material production for FoC. Provided by McKinsey email of October 4, 2023

GFA/McKinsey have opted for the very highest value in the range - ~ 6kg.

As Mistra points out, much of the data used in such claims is old. Oddly, the FoC does not even consider the Sphera (formerly Thinkstep) 2016 cotton LCA funded by Cotton Inc.[37]

That LCA, unlike those employed by FoC, is ISO compliant, peer-reviewed and open access. It found that the average GHG emissions in cultivation across the 4 major producing regions included in the evaluation, was only 1.4 kg CO_2e/kilo of fibre.[38]

37 resource.cottoninc.com/LCA/2016-LCA-Full-Report-Update.pdf

38 resource.cottoninc.com/LCA/2016-LCA-Full-Report-Update.pdf

This estimation is more recent than the SEI report by almost 2 decades, considers considerably more data points, and, as far as we are aware, is used by the EU PEF database as well as by the Worldly/Higg MSI. Furthermore, the GFA itself clearly states that Worldly, formerly known as Higg Co - the for-profit licensee of the Sustainable Apparel Coalition's Higg Index, including the MSI - is their data partner.[39]

We reached out to the GFA to enquire why the MSI value was not employed or even included in the FoC evaluation. In response, the GFA appeared to have little to no idea what data underpinned FoC, as, and we quote: *"McKinsey led the data collection and analysis and established the baseline methodology...McKinsey chose the data source that they found most relevant for this analysis, such as Quantis."* Indeed, GFA named Quantis as a source when the charts supplied by McKinsey clearly show that this was not the case.[40]

The FoC report also claims *"Organic cotton is around 50% less emissions intensive than conventional cotton, due to the limited use of pesticides and fertilisers and more advanced farming practices. (53)"*

Footnote 53 reveals the source to be: 53. University of California, Santa Barbara: *Reducing greenhouse gas emissions through materials innovation in the apparel industry, 2019.*[41]

As figures 4 and 5 show, this study's claims for the emissions of conventional cotton are inconsistent with the GHG emissions employed in FoC. The UCSB Bren study, as the chart reproduced below shows, claims emissions for cotton raw material (fibre) cultivation are less than 2.5 Kg of CO_2e per kilo of fibre. Which is, in turn, less than half of the value used by FoC of approximately 6kg.

Of even greater concern: FoC claims to have obtained the impact values used for both organic and recycled cotton, as well as bio-based synthetics, from that UCSB Bren study. But the impact values claimed by FoC are, inexplicably, three times greater than those actually shown in the UCSB Bren study.

As Figure 5 shows, the UCSB Bren study claims that the GHG intensity for organic cultivation is somewhat over 1 kg CO_2e/kg of fibre. FoC on the other hand, shows the impact to be 3 kg CO_2e/kg fibre.

Exactly the same applies to recycled cotton, which FoC claims has an impact of 1.5 kg CO_2e/kg fibre. But the UCSB Bren study that FoC claims is the source, clearly shows an impact that is nearer 0.5 kg CO_2e/kilo of fibre.

And finally, FoC also claims to have sourced its impact value for bio-based synthetics from the UCSB Bren study. And again, as Figure 5 shows, the Bren report claims GHG emissions for bio-based PET to be around 2.0 kg/kg fibre, whilst FoC claims that the UCSB Bren study found the GHG emissions of bio-based PET to have averaged 6.6 kg/kg!

It is self-evident, that, other things being equal, if FoC is going to claim that raw materials have double or triple the GHG impact actually found by the underlying studies, the final report will suggest that the share of raw materials in total production emissions is far greater than it is in reality. Hence the difference between the values shown in FoC and all other studies.

39 globalfashionagenda.org/our-partners-network/

40 Email of October 31, 2023

41 bren.ucsb.edu/projects/reducing-greenhouse-gas-emissions-through-materials-innovation-apparel-industry

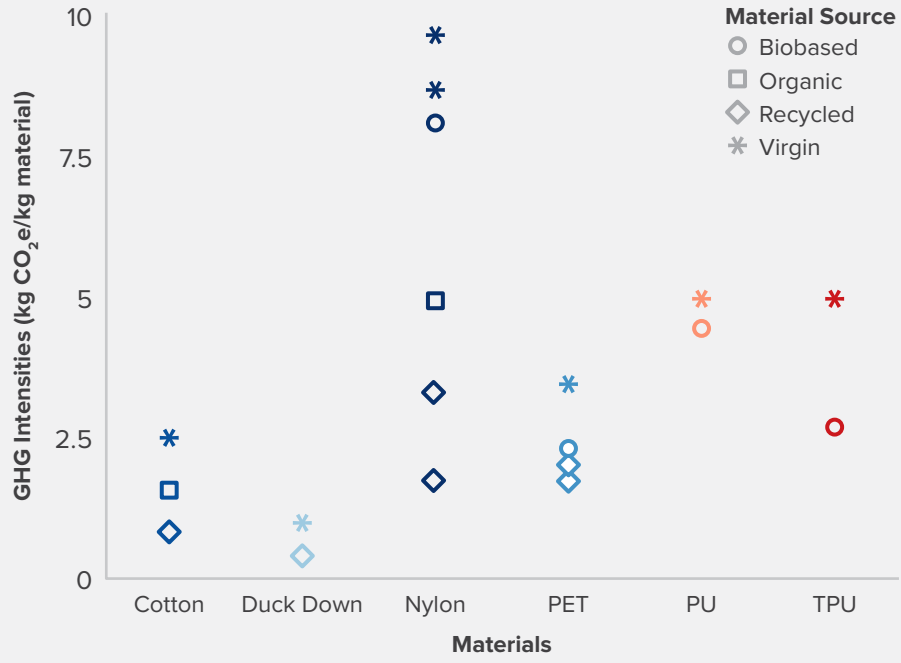


Figure 5. bren.ucsb.edu/projects/reducing-greenhouse-gas-emissions-through-materials-innovation-apparel-industry

This has, of course, given the JRC the impression that targeting raw materials would have a significant impact on apparel's global GHG emissions. In reality, it would contribute little. Far more important are the CO_2 emissions involved in the manufacturing of fashion - from spinning through to dyeing and finishing. Yarn and fabric preparation do not constitute a mere 13% of apparel's lifetime emissions as FoC claims. Indeed, the UCSB/ Bren study states: *"While this analysis explored potential GHG emissions savings from raw material and dye processes, process 1 and 5 respectively, the greatest source of GHG emissions across all five textile production stages actually came from process 3,* ***the knitting and weaving involved in the formation of each product****"*[42] *(emphasis added).*

The UCSB Bren study found that knitting and weaving generated 50% of baseline GHG emissions broken down by textile production stage. The preceding stage - yarn formation or spinning - contributed a further 11%. Raw material production, on the other hand, only accounted for 21% - despite the predominance of fossil fibres in the product mix considered (as figure 5 shows, fossil fibres generated considerably higher raw material GHG emissions than cotton - as high as a factor of 10x more, for nylon).

These relative allocations of carbon emissions to the different stages of apparel production and consumption are roughly consistent with those of every other study that we have found. Whether these are brand specific like the UCSB Bren study which relies on data supplied by Patagonia, or studies from H&M, and Levis, or crop-specific, such as the 2016 Cotton Incorporated/Sphera conventional cotton LCA, or whether global assessments such as those of Quantis, UNEP, The Apparel Impact Institute, or Mistra Future Fashion.[43]

42 bren.ucsb.edu/projects/reducing-greenhouse-gas-emissions-through-materials-innovation-apparel-industry

43 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

The sole exception that we have identified is the GFA/McKinsey study - which has been further propagated by BoF.[44]

Indeed, calculations by Ambrosetti suggest that even if the purported values were correct (and they are not) expected European GHG emissions (MT CO_2e) reduction as a consequence of ESPR implementation is not particularly encouraging. Total emissions reduction would apparently only amount to 117 MT CO_2e, from a 2022 baseline of 938.[45] Given what we have just pointed out - that manufacturing emissions far exceed those of raw materials, and for climate change, the draft JRC report focuses almost exclusively on raw material emissions - this is perhaps, hardly surprising. It is worth noting, by contrast, that Ambrosetti also notes[46] that a 2016-2021 study by the Association of Italian Textile Machinery Manufacturers (ACIMIT), found that across over 44 Italian manufacturers of machinery for the textile industry, innovation was able to reduce carbon footprint by between around 20% in knitting to by more than 80% in weaving and other. When we consider that the carbon intensity of Italian electricity is under 400 grams of carbon dioxide-equivalents emitted per kilowatt-hour, whilst that of China and India is estimated to be over 500 gCO_2e/kwh and 600 gCO_2e/kwh, respectively,[47] we begin to get an idea of the kind of reductions in apparel's global carbon emissions that could occur were the ESPR to mandate performance requirements that actually required brands to reward manufacturers for installing carbon-mitigating technology.

To return to FoC however, we should, moreover, point out that the claim used by that report, that organic cotton cultivation generates 50% fewer GHG emissions than conventional production, is unsubstantiated. Patagonia - whose data is FoC's source for this assertion - used to have a similar claim on their website:

> *"Compared to growing conventional cotton, there is a 45% reduction in CO_2 emissions and a 90% reduction in water as a result of growing organic cotton."*[48]

Patagonia - and many other brands - derived this claim from a report produced by Textile Exchange in 2014.[49]

44 www.businessoffashion.com/reports/news-analysis/the-state-of-fashion-2023-industry-report-bof-mckinsey/

45 www.ambrosetti.eu/venice-sustainable-fashion-forum/just-fashion-transition/

46 www.ambrosetti.eu/venice-sustainable-fashion-forum/just-fashion-transition/

47 ourworldindata.org/explorers/energy?tab=chart&facet=none&country=CHN~IND~ITA&Total+or+Breakdown=Total&Energy+or+Electricity=Electricity+only&Metric=Carbon+intensity&Select+a+source=Low-carbon

48 web.archive.org/web/20220222230557/www.patagonia.com/mx/our-footprint/organic-cotton.html

49 store.textileexchange.org/product/the-life-cycle-assessment-of-organic-cotton-fibre-summary-of-findings/

As the Sphera LCA pointed out, lower GHG emissions for organic cultivation were only obtained because the commissioner of the study - Textile Exchange - made the decision to exclude the emissions generated by manure production. Once this is included, GHG emissions increase from 978 to 3725 kg CO_2e/kg (p.44).[50]

We note here that, according to the US EPA, manure management accounts for about 11% of the total greenhouse gas emissions from the agricultural sector in the United States.[51]

This is although, according to the USDA, only some 5% of all U.S. cropland is fertilized with livestock manure.[52]

It is self-evident that failing to account for manure management in the purported GHG emissions of organic cotton cultivation helps nobody and nothing. If relied upon by the JRC to guide GHG performance requirements for footwear and apparel, this will increase, rather than reduce climate change.

It is also worth noting that, since the Norwegian Consumer Authority's 2022 decision that the water and GHG claims included in the TE summary were not substantiated, and so not admissible in consumer-facing declarations, all major brands appear to have removed them.

Indeed, Patagonia's current version of the above-cited web page merely states:

> *"Organic methods support biodiversity and healthy ecosystems, improve the quality of soil and often use less water."*[53]

Any final version of the draft JRC Report needs to include robust data and cross-check the sources for these important calculations. It is also concerning that no journalist, initiative, transparency organization, or publication - including Business of Fashion[54] - (email of October 30, 2023) appears to have made any attempt to follow up with GFA / McKinsey.

This matters, because legislators, not just in the EU, but also in the USA, are not commissioning their own studies to guide regulation. They are relying on available information, and assuming that this is robust. But clearly, neither the press nor anyone else is making any attempt to verify the accuracy of the studies that they are propagating.

50 store.textileexchange.org/wp-content/uploads/woocommerce_uploads/2019/04/LCA_of_Organic_Cotton-Fibre-Full_Report.pdf

51 www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#:~:text=Manure%20management%20accounts%20for%20about,4%20and%20N2O.

52 www.ers.usda.gov/webdocs/publications/42731/9428_ap037_1_.pdf?v=8770.2

53 www.patagonia.com/mx/our-footprint/organic-cotton.html

54 www.businessoffashion.com/articles/sustainability/the-problem-with-sustainability-data/

The data underpinning policy measures must be accurate, or legislation will do more harm than good. The FoC report attributes the bulk of GHG production emissions to the raw material, rather than to the manufacturing stage - suggesting that switching raw materials would have a significant impact on emissions. But raw materials are not the most important stage - as all other studies document - so, switching raw materials is not the solution that the draft JRC Report appears to be claiming. Nor, of course, will the use of recycled fibres reduce emissions as much as the EU appears to anticipate.

It is also concerning that the draft JRC report appears to be promoting organic cotton as a climate-friendly alternative without any analysis of the trade-offs and implications. The merits behind this claim aside,[55] World-renowned soil scientist Pedro A. Sanchez has observed that in Africa *"most soils are depleted of their nutrients and it makes no sense to go organic on such soils."*[56] As mentioned elsewhere in this paper, for smallholders, cotton production is rotated with food production. We do not believe that the EU should insist that farmers in sub-Saharan Africa further compromise their already insufficient food security, in the interests of EU consumers.

We believe that the draft JRC report's proposed performance requirements risk increasing the poverty and hunger of the most vulnerable, whilst enabling brands to increase sales volumes by suggesting to consumers that their purchases are sustainable - regardless of how many times they are worn - because they were made of 'preferred' fibres.

Indeed, Textile Exchange, Boston Consulting Group (BCG), and LCA provider Quantis, have just released a report that appears to borrow heavily from FoC, claiming:[57]

> *"that raw materials can constitute as much as two-thirds of a fashion and apparel brand's climate impact,"*

and outlining the growth and profits that brands will be able to access if they switch raw materials, to those rated 'preferred' by the for profit, Worldly Higg MSI. We quote:

> *"In fact, at the high end of the range in the model, a fashion brand with $1 billion in annual revenues has the potential to tap a cumulative opportunity of approximately $100 million over five years."*

By way of illustration of exactly what this means, Shein has already partnered with Textile Exchange,[58] and clearly expects this collaboration[59] to help boost sales volumes.[60]

Finally, it is self-evident that for the objectives of both the SDGs and Kunming-Montreal to be obtained, the GHG consumption emissions of the poorest must not fall. They must increase. In the case of smallholder farmers, this means that their production emissions must also increase. The draft JRC report does not address this.

55 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

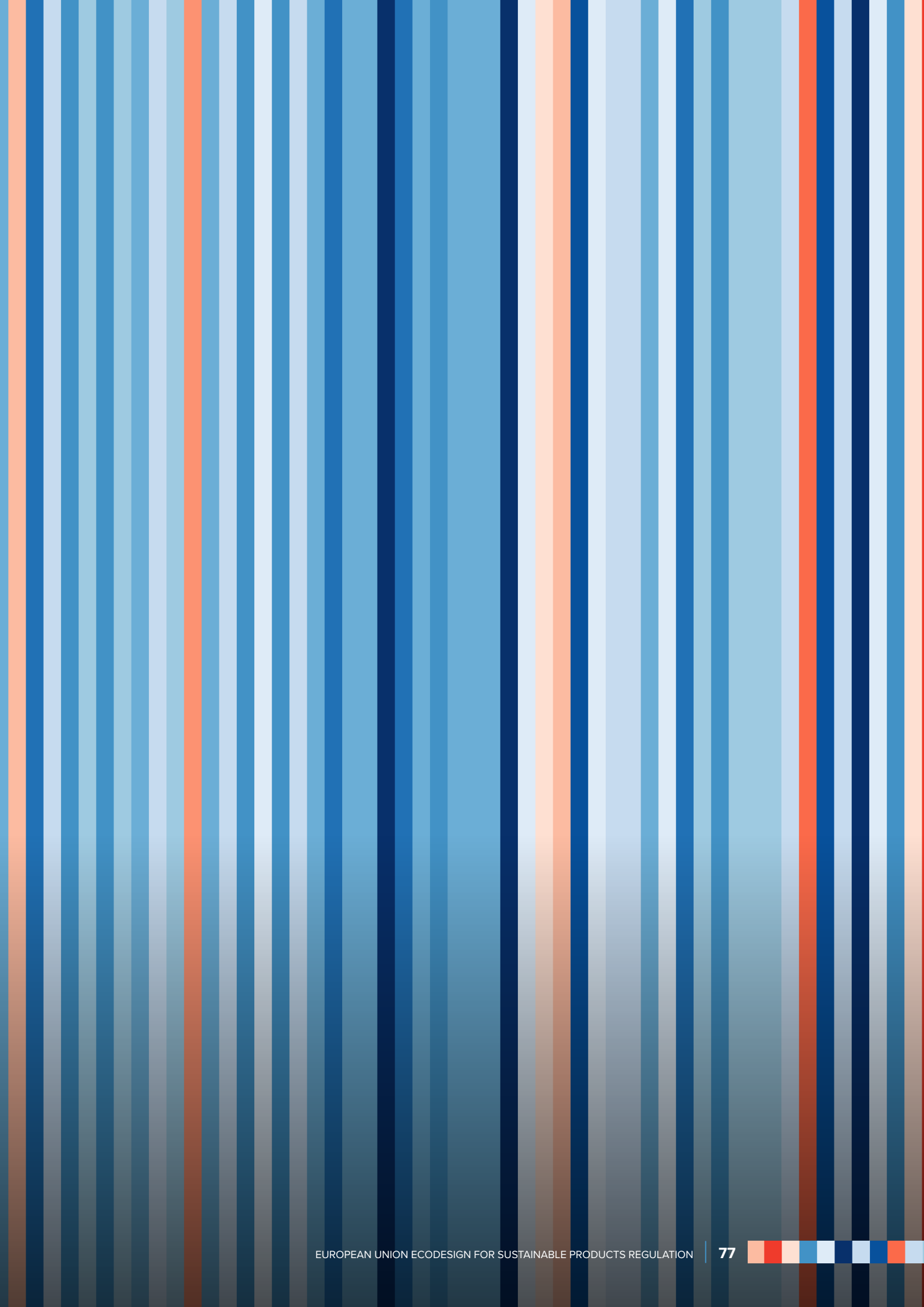
56 www.cornucopia.org/2015/09/qa-dr-pedro-sanchez-discusses-cuba/

57 www.bcg.com/press/25october2023-sustainable-raw-materials-133-million-tons-2030

58 sheingroup.com/shein-joins-textile-exchange/

59 www.prnewswire.com/news-releases/shein-launches-evolushein-new-clothing-line-designed-to-make-purposeful-products-accessible-for-all-301534882.html

60 sheingroup.com/sustainability/planet/sourcing-responsible-products-and-materials/



APPENDIX 3

Water, Land, Pesticide and Fertilizer Use in Global Cotton Production and Water Effects in General

As a precursor to this discussion, we believe it important to point out that in many instances, and not just in the draft JRC Report, when reference is made to water impact, the values shown are not the real amount of water consumed but a weighted score, designed to reflect an assessment of scarcity.

Not only can different water weighting systems come up with very different values, but as a result of these heavy weightings occurring before the data even enters the metric, they can completely outweigh far more important considerations - particularly the world's most pressing concern, climate change.[1]

For example, in one study, Australian researchers found that whilst actual farm consumption of water in milk production in SE Australia varied from 9.1 to 313 liters of water per liter of milk, the most common water weighting system, AWARE, converted this to an average of 6,616 liters of water per liter of milk![2] That's a multiple of between 21 and 727! As a quick example of the impact this has, EuRIC published a study at the beginning of this 2023.[3] Using PEF data available at the time, that study found that a polyester tee had a 5% higher climate impact than a cotton one. But once the water scarcity was factored in, the PEF score for the cotton tee was close to double that of the polyester version.

1 www.veronicabateskassatly.com/read/weighting-what-it-does-and-why-it-matters

2 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

3 euric.org/resource-hub/reports-studies/study-lca-based-assessment-of-the-management-of-european-used-textiles

Increasing water use efficiency within sustainable withdrawal limits is directly aligned to a priority SDG - SDG 6. However there is no global agreement on restricting water use, and there is no impact justification for interfering in the sovereign use of such resources. Whether Cambodia chooses to irrigate silk, or India to irrigate cotton, has absolutely no impact on the water resources available to citizens of the EU. It is unclear then, what gives the EU the right to arbitrate extra-territorially. Water is a local problem, best regulated locally. For water to be deemed to have been withdrawn sustainably, this must match changing and seasonal river and ground system levels. Its impact is not absolute but falls within accepted limits. In Australia, for example, every year, sustainable water use limits are set by the government. Basic environmental and human needs must be met before any water is allocated for irrigation. Because the volume of water in rivers and headwater storages varies each year, the amount of water available for irrigation also varies each year. This means that if water is scarce in any given year, there will be little or no water allocated to farmers. The net result is that in Australia - as would be the case in any managed water system - the acreage under cotton rises and falls with annual rainfall and irrigation water availability.[4]

Carbon emissions, on the other hand, whether emitted in Nepal, Nicaragua, or the Netherlands, affect us all - potentially catastrophically. We would suggest that this constitutes clear justification and authority for the EU to rule unilaterally, that European consumption - and so global trade - should be determined, at least in part, by GHG emissions in production.

4 (Unpublished) SBTn Materiality Screening Tool: assessment of cotton materiality ratings (2023). Chris Cosgrove, Sustenance Asia.

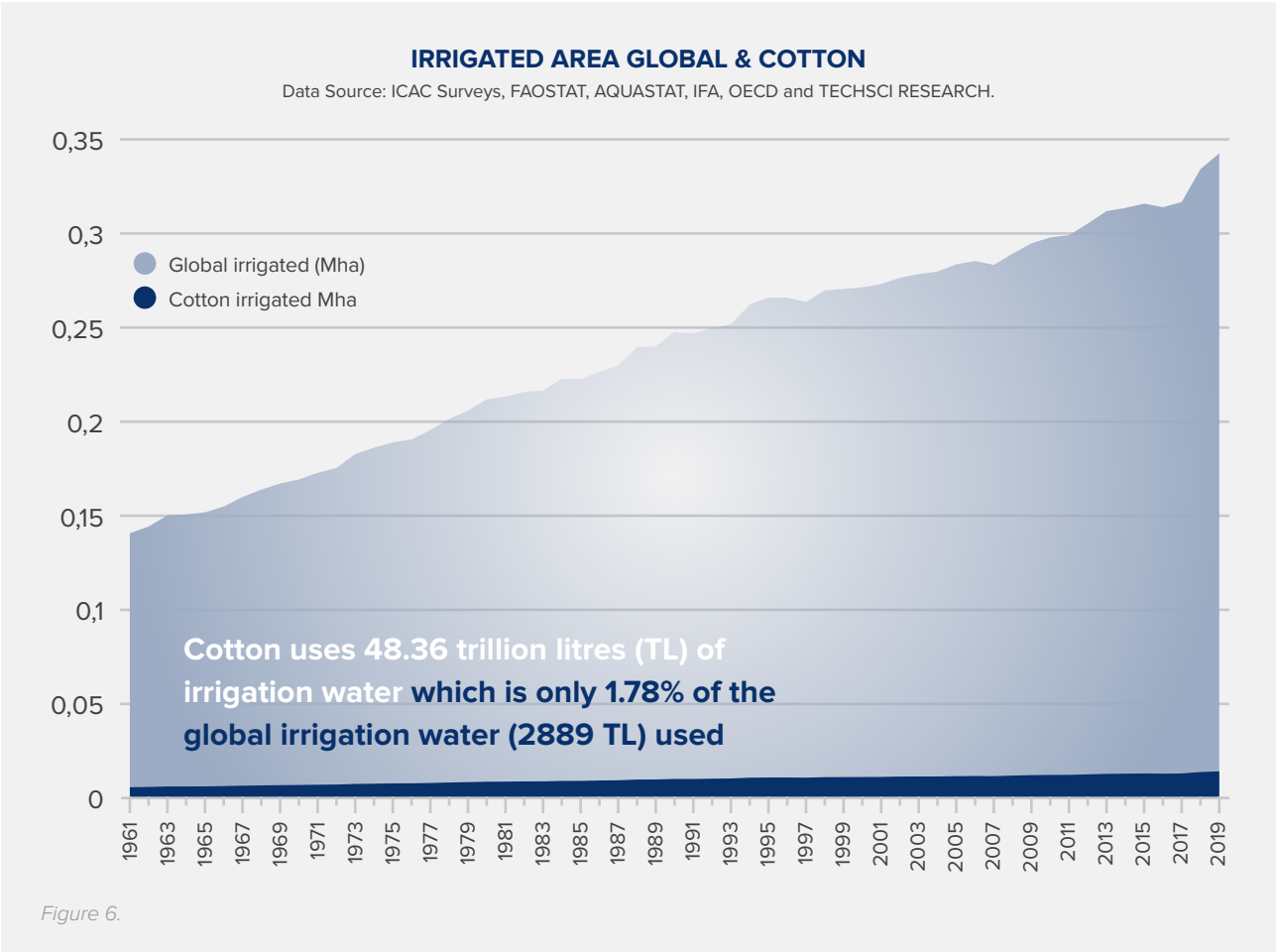


Figure 6.

Cotton and Water Use

There are many tropes, distortions, and inaccuracies in circulation regarding the environmental and health impacts of cotton production. The draft JRC report uses subjective language to assert that the cultivation of cotton requires “huge quantities” of water, fertilizer, and pesticides.

The objective reality is that cotton is a drought and heat-tolerant crop, well suited to climates with low rainfall.[5] Grain crops are in the grass family and have horizontal roots, good for stabilizing soil but leaving crops vulnerable to water stress. Cotton is a woody perennial with vertical roots that can descend 1.5 meters, allowing it to provide an economic yield in semi-arid and arid regions where food crops would fail. Cotton is grown in arid and semi-arid regions because it can be grown in such regions. Regions are not arid or semi-arid because cotton is grown in them.

As shown by **Kranthi**,[6] cotton uses 2.3% of global cropland, but less than 2% of all water used for irrigation worldwide is used on cotton.

5 *Williams, Allan, Cotton Research and Development Corporation, Australia, paper presented to the ICAC Plenary Meeting in Abidjan, 2018.*

6 *icac.org/Meetings/Details?eventId=1219*

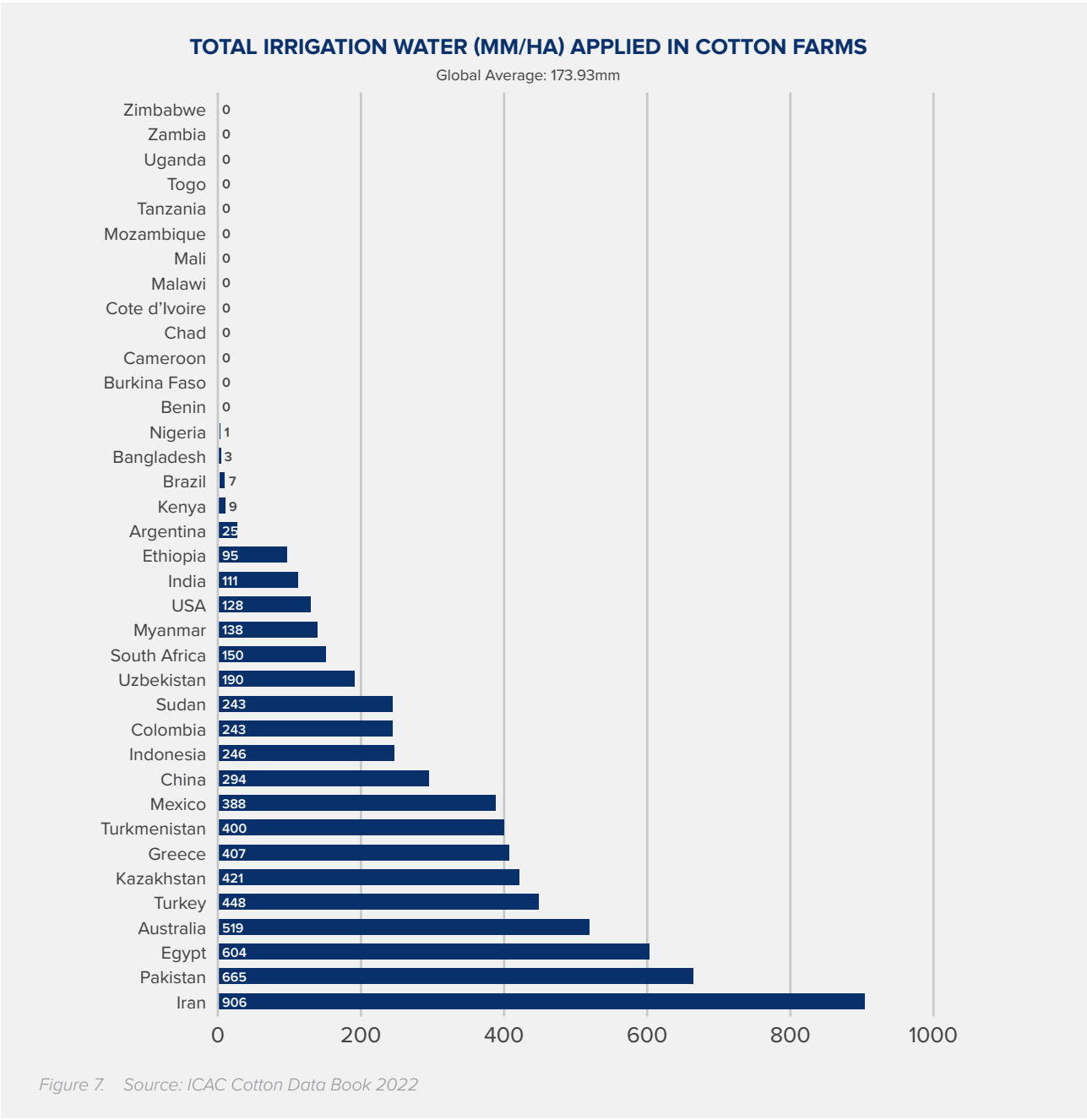


Figure 7. Source: ICAC Cotton Data Book 2022

Irrigation is used to optimize yield and quality and to provide greater production stability and income security for farmers. Irrigated cotton accounts for approximately half the area under cotton production but produces around 75% of the annual crop (SEEP 2015, ICAC 2014). There is considerable variation within and between countries in the volume of irrigation water applied per hectare to cotton, ranging from zero to more than 9,000 cubic meters per hectare. The global average is 1,740 cubic meters per hectare. Requirements vary depending on region, growing season length, climate, cultivar, irrigation method, and production goal (FAO 2012).[7]

7 *icac.org/Content/PublicationsPdf%20Files/d5fa29c6_1453_4623_871b_1658c57dfebe/Intro-pages%20DATABOOK-2022.pdf.pdf*

Water use as defined in FAO (2012) is the actual evapotranspiration of water from a field. Evapotranspiration is a combination of two separate processes whereby water is lost from the soil surface by evaporation and used by the crop through transpiration. Water use is a measure of the total amount of water used to grow the crop in the field.

Water use in cotton varies from zero to 906 mm per hectare per season, including both rainfall and irrigation. Among countries that irrigate, a typical range is 400 mm to 700 mm per season. If we add all the water consumed by cotton irrigation in a typical season worldwide and divide by all the cotton produced, on average, cotton requires approximately 2,100 liters per kilogram of lint production. (ICAC Cotton Data Book 2022, Figure 75).

Even though water consumption depends on environmental factors such as soil characteristics and climate, similar ranges have been reported for several climates: 390 to 780 mm on the southern High Plains of Texas (Howell et al., 2004), 590 to 780 mm in the interior valley regions of California (Grismer 2002), and 430 to 740 mm in Uzbekistan (Ibragimov at al. 2007). Whilst in Australia, the average for the period between 1988 and 2011 was 729 mm (Roth 2013).

Water consumed for irrigation on cotton in any one season can be affected by a range of factors, including prevailing temperatures and rainfall (some seasons are better for crops than other seasons), variety planted, insect pressure, and relative crop and energy prices (high prices for cotton lead farmers to apply more inputs to achieve higher yields, while higher energy prices lead farmers to reduce expenses associated with pumping and applying water.)

Accordingly, any performance requirement on the maximum limit of water consumption related to the production of cotton that might be recommended will have to be tailored to each region of production and allowed to vary from season to season depending on agronomic conditions and relative prices. The recommendations contained in the draft JRC report make no reference to such complexities.

Far from using “huge” amounts of water, cotton is drought and heat-tolerant and uses less water than rice, maize, soybeans, and many vegetable crops per hectare of production. In Australia, typically 80% - 90% of cotton’s average irrigation requirement is 6 - 7 megalitres per hectare (ML/ha), compared to rice (11.5ML/ha), fruit and nut trees (5.1 ML/ha) and vegetables for human consumption (4 ML/ha).[8]

That said, as mentioned at the beginning of this paper, the draft JRC Report considers 10 industries, of which it finds textiles and footwear the most promising. Presumably, however, the same methodology will eventually be applied to all sectors, including food and food crops.

8 cottonaustralia.com.au/cottons-water-use

Cotton and Land Use

The draft JRC Report states, *"Projections show that at the current pace, by 2030 the fashion industry will increase by 35% its use of land for cotton cultivation, forest for cellulosic fibres, and grassland for livestock (3)."*

Endnote 3 refers to Global Fashion Agenda & The Boston Consulting Group, 2017, **Pulse of the Fashion Industry report**.[9] Indeed, the sentence beginning with *"Projections show"* in the JRC report is cut and pasted from page 15 of the Pulse report.

The Pulse report did not apportion the 35% increase in land use among cotton, forest and grassland, so it is not possible to know how much of an increase in each was forecast. Nevertheless, since much of the textiles and footwear section of the draft JRC Report is focused on cotton, many readers will presume that the 35% forecast refers to cotton, or at least includes a significant increase in cotton area.

The reality, however, is that the world cotton area is not increasing. Certainly, no one with knowledge of the world cotton industry would have forecast an increase in area of 35% between 2015 and 2030.

Indeed, as of 2023, the world is already halfway through the 15-year forecast period in the Pulse report, and there is no indication that an increase in cotton area is occurring.

Since recovering from the effects of WWII, the world cotton area has been in a range between 30 million hectares and 35 million hectares, with no indication of an upward trend developing. Over the last seven decades, all the gain in world cotton production has come from increased yields linked to improvements in technologies developed through agricultural science. We can state without equivocation that the world cotton area is not going to increase by 35% between 2015 and 2030. Indeed, it is perhaps one of the tragedies of fast fashion that the huge explosion in global apparel consumption in recent decades has not helped to lift the very poorest out of poverty and into food security, because almost all the increase in volume has come from the plastics sector. The requirement to compete with the lower (and historically, decreasing) price of polyester has placed a firm cap on cotton prices and so the incomes of cotton farmers.

9 *globalfashionagenda.org/product/pulse-of-the-fashion-industry-2017/*

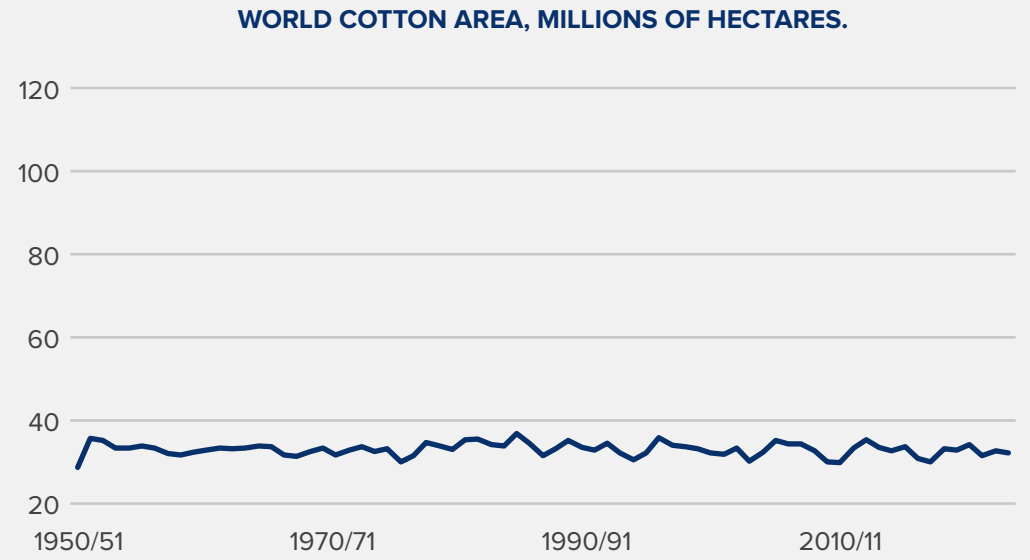


Chart 1. Source: ICAC data

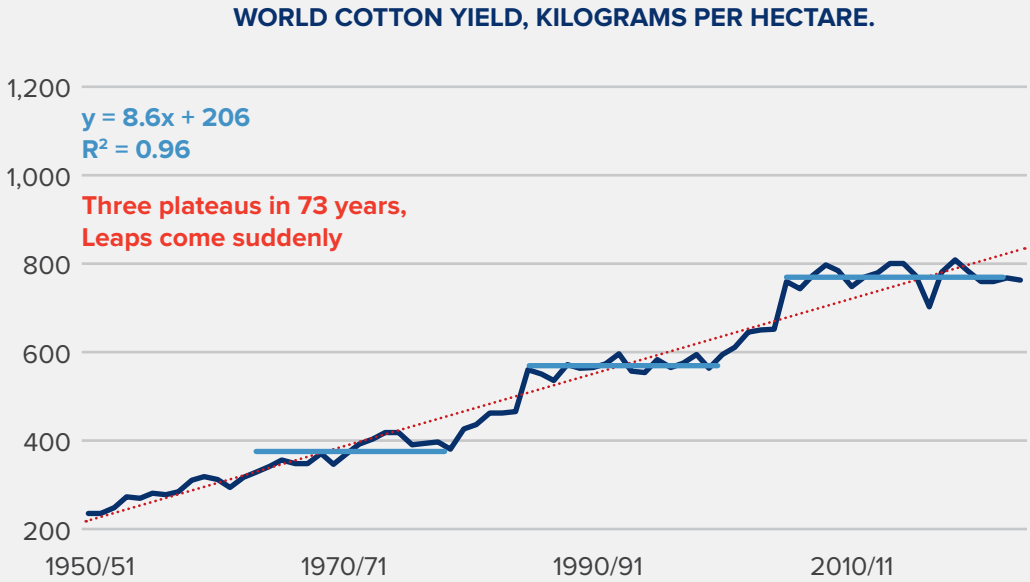


Chart 2. Source: ICAC data

WORLD PRODUCTION OF FIBRES USED IN APPAREL, MILLIONS OF TONNES

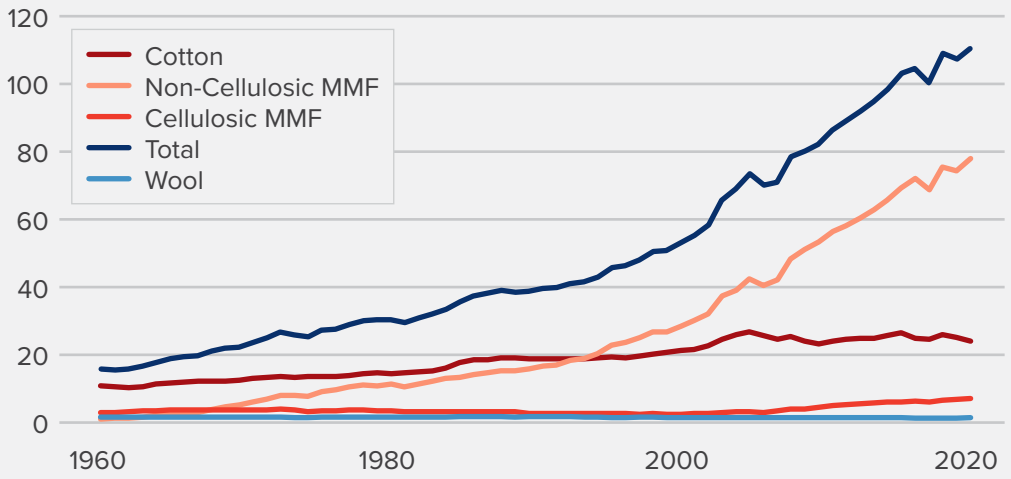


Chart 3.

SHARE OF WORLD FIBRE USE

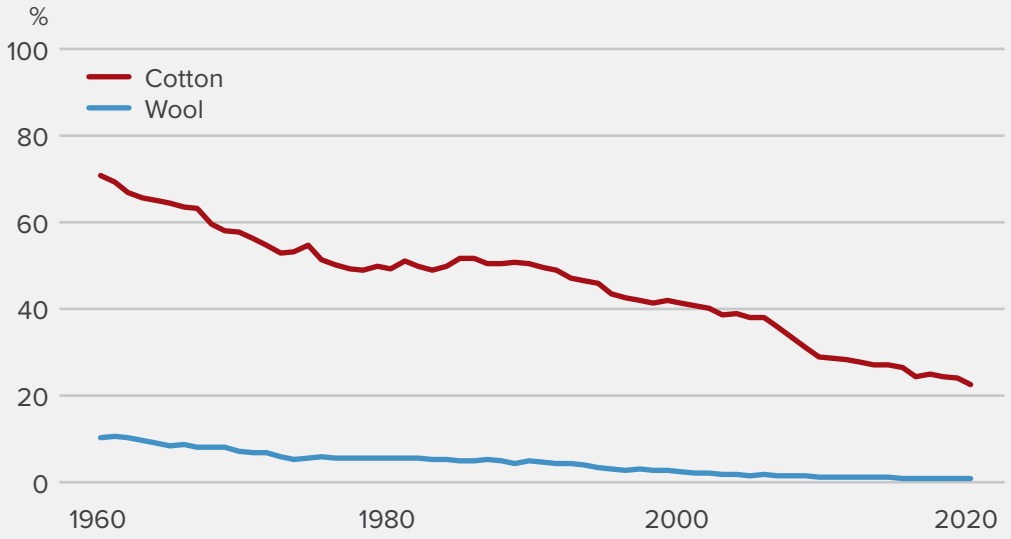


Chart 4.

Cotton and Pesticide Use

All animals are attracted to food. Because cotton is a woody, broad-leaved perennial with a tap root, it is a hardy plant and is often the lushest in the arid and semiarid regions in which it is typically grown. Consequently, insects are drawn to cotton, and savvy farmers use cotton in rotations and intercrop systems to draw pests away from food crops. By controlling pests in cotton, farmers control pests across multiple crops in adjacent fields. This is one of the reasons that food production tends to rise in areas where cotton is grown.

The draft JRC Report uses subjective language to say that cotton requires “huge quantities” of pesticides. The report says in another location that cotton cultivation is linked to “large” use of pesticides.

Cereal crops, maize, soybeans, rice, and fruits and vegetables as a group account for more pesticide use than cotton.

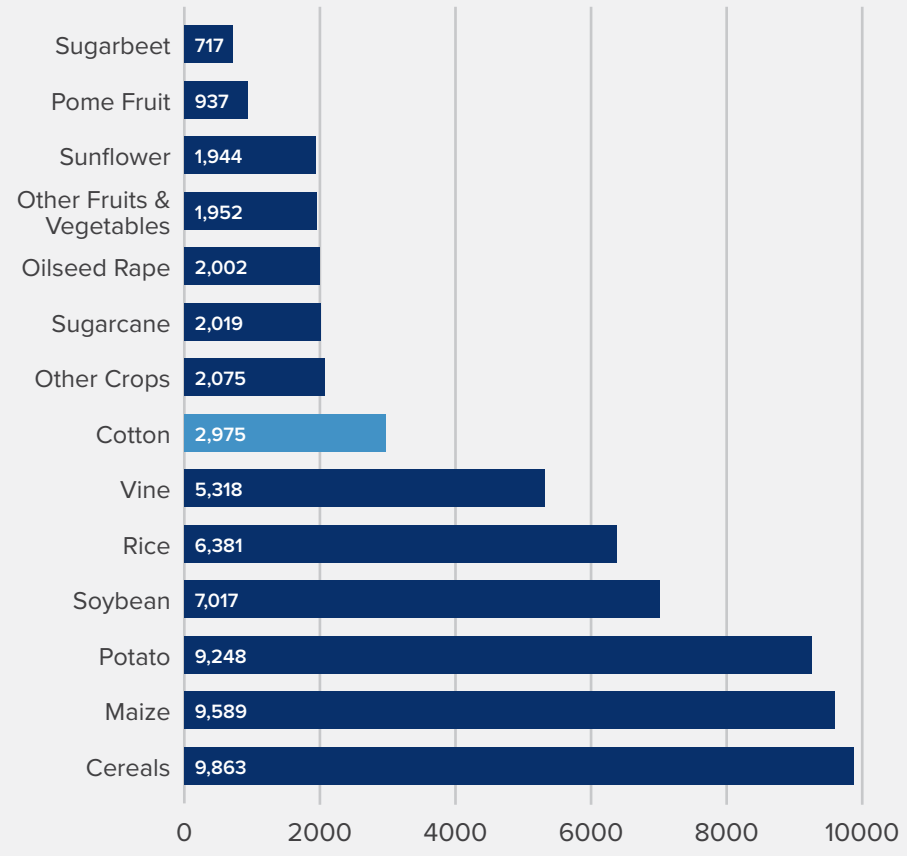


Chart 5. Source: ICAC Cotton Data Book 2022

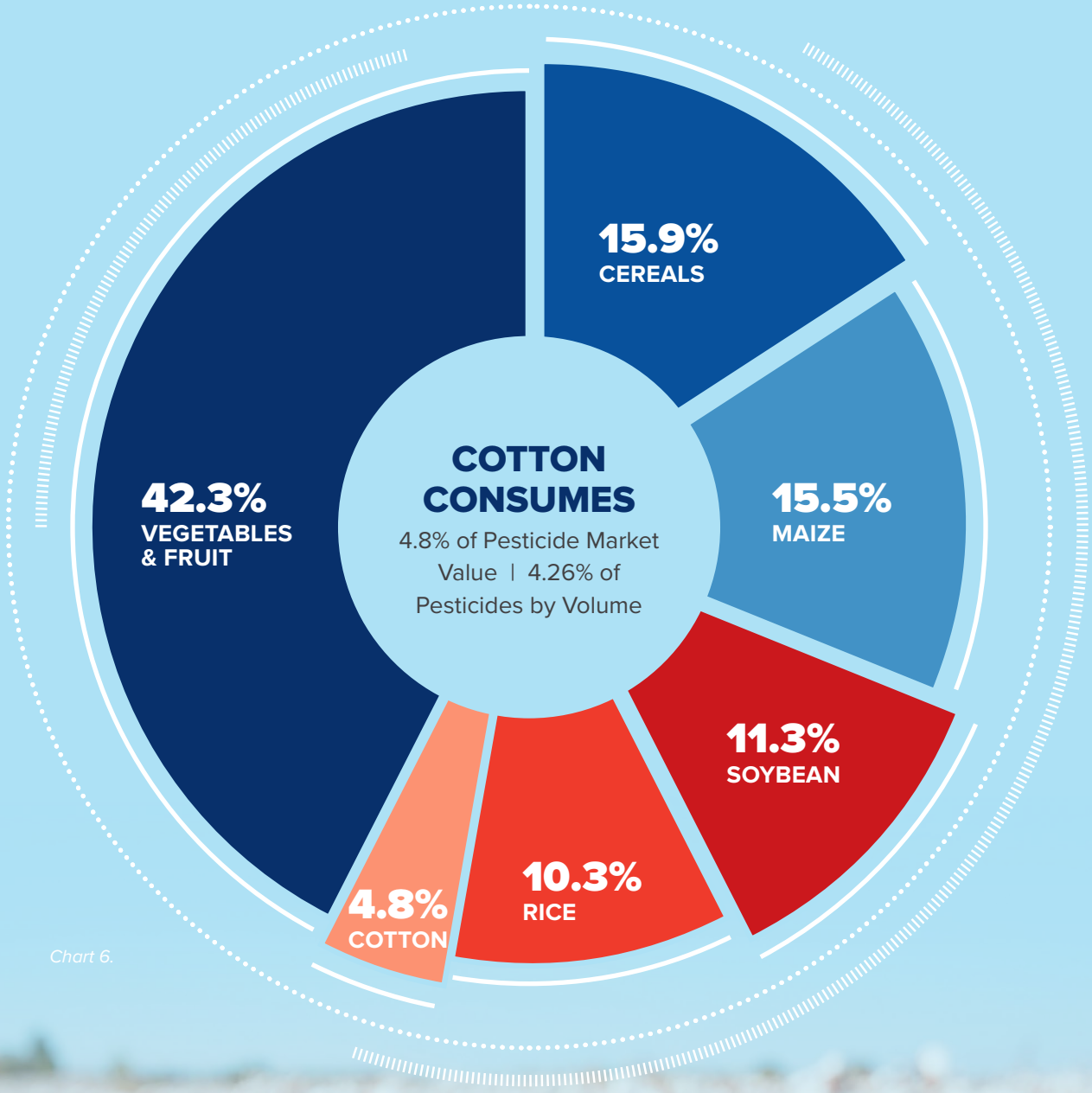

15.9%
CEREALS
15.5%
MAIZE
11.3%
SOYBEAN
10.3%
RICE
4.8%
COTTON
42.3%
VEGETABLES
& FRUIT
COTTON
CONSUMES
4.8% of Pesticide Market
Value | 4.26% of
Pesticides by Volume

Chart 6.

As shown in the Cotton Data Book 2022, pesticide applications vary widely by country, resulting in large differences in pesticide applications per kilogram of lint. Pesticide applications vary by country mostly because of differences in weather. Countries like Brazil with year-round growing conditions, naturally have higher pest pressures than the United States where annual freezes across most cotton growing areas limit insect populations. Economic factors also affect application rates as resource-poor farmers apply suboptimal levels of inputs.

The basic principles underlying the use of Integrated Pest Management (IPM) techniques, where farmers manage pest populations with a combination of chemical and non-chemical means, are well-known across the world cotton industry. Cotton farmers have been receiving training in IPM since the 1960s, and today it is probably true that almost all cotton farmers in the world are aware of IPM principles.

Even in some of the most disadvantaged countries in the world, cotton farmers have received training in Good Agricultural Practices. For example, in Benin, the national cotton company, Société Nationale Pour La Promotion Africole (SONAPRA), has functioned since the 1960s to provide inputs, purchase and gin seed cotton, and deliver training to farmers. In Burkina Faso, Société Burkinabè des Fibres Textiles (SOFITEX), has performed these roles. In other countries, there are other companies or government agencies. In country after country, from Argentina to Zimbabwe, because of the outsized role of cotton as an engine of economic growth, cotton is usually the most highly organized segment of the agricultural sector of national economies.

The value of pesticides applied per hectare of cotton in 2020 varied from $19 in Uganda to nearly $700 in Brazil. If averaged over all 32 million hectares planted to cotton in a typical season, about $95 in pesticides are applied. Based on average national yields, the cost of pesticide applications per kilogram of lint produced in major growing countries varies from $0.09 in Uzbekistan to $0.13 in India, $0.16 in Pakistan and the USA, $0.22 in Australia, $0.26 in China and $0.38 in Brazil.

As an illustration of the knock-on effects of legislation, the cost of pesticide applications per kilogram of lint production is toward the top end of the range in Spain ($0.28) and Greece ($0.36), where every kilogram of cotton is grown in full compliance with all EU environmental and health regulations. This is because the use of the tools of biotechnology (GMOs) is banned in the EU. Consequently, cotton farmers must use insecticides in place of planting varieties exhibiting genetic resistance to chewing pests.

It is worth noting that all Brazilian export cotton - despite receiving among the highest levels of pesticide application in the world, at almost 4 times the global average - is certified “preferred” by Textile Exchange and the apparel sector as a whole because it’s ‘Better’ or BCI cotton.[10] Indeed, for the 2021-22 season, Brazil supplied almost half of the global supply of Better Cotton; 2.0 MT on a total of 5.4 MT.[11]

10 bettercotton.org/where-is-better-cotton-grown/better-cotton-is-thriving-in-brazil/

11 bettercotton.org/wp-content/uploads/2023/10/2022-23-Annual-Report.pdf

PESTICIDE COST USD PER HECTARE ON COTTON BY COUNTRY, 2020

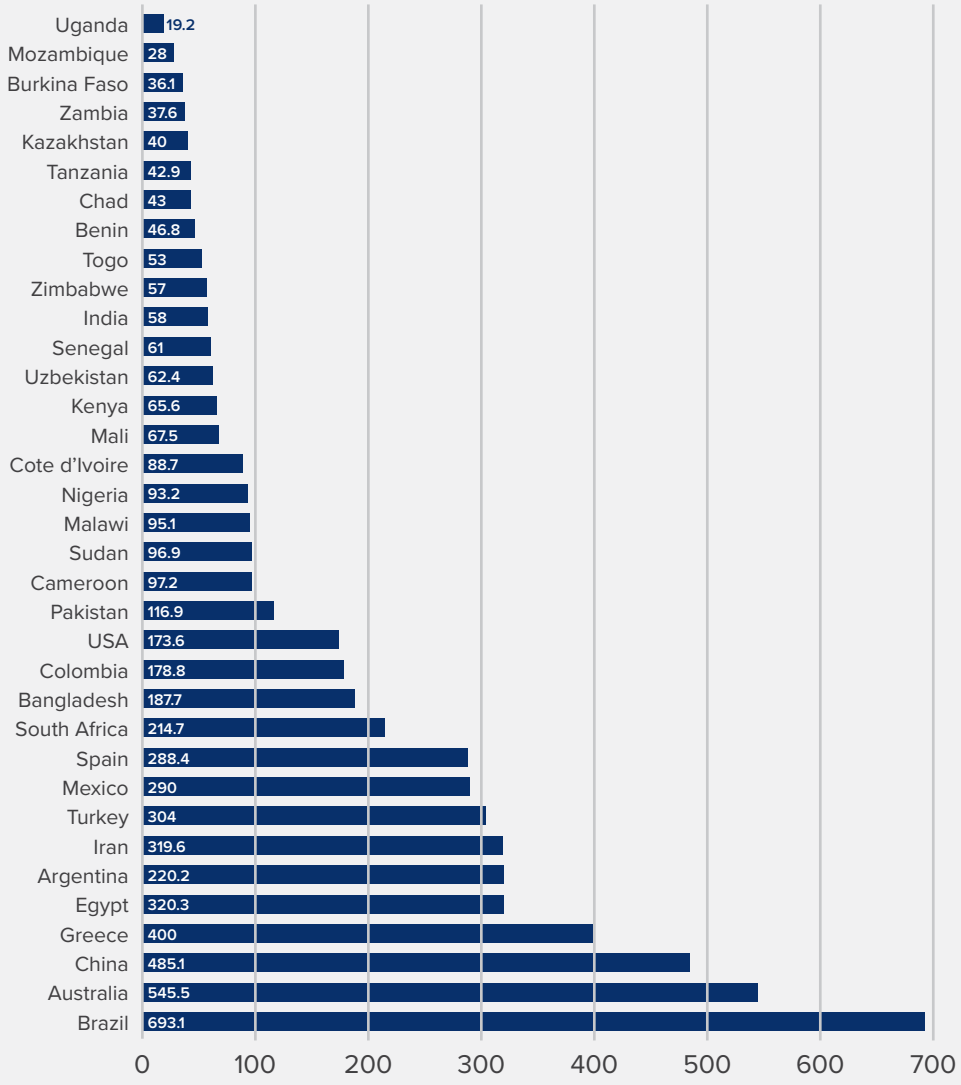


Chart 7. Source: ICAC Cotton Data Book 2022

Note: in this chart, the relatively high level of pesticide costs per hectare shown for Australia reflects application expenses and license fees paid for the transgenic (GM) traits. Australian cotton is 100% GM, which has resulted in a reduction in insecticide applications of more than 90%. Data for other countries includes the costs of license fees for GM traits in the cost of planting seed rather than in pesticide costs.

PESTICIDE COST USD PER KG OF COTTON LINT BY COUNTRY, 2020

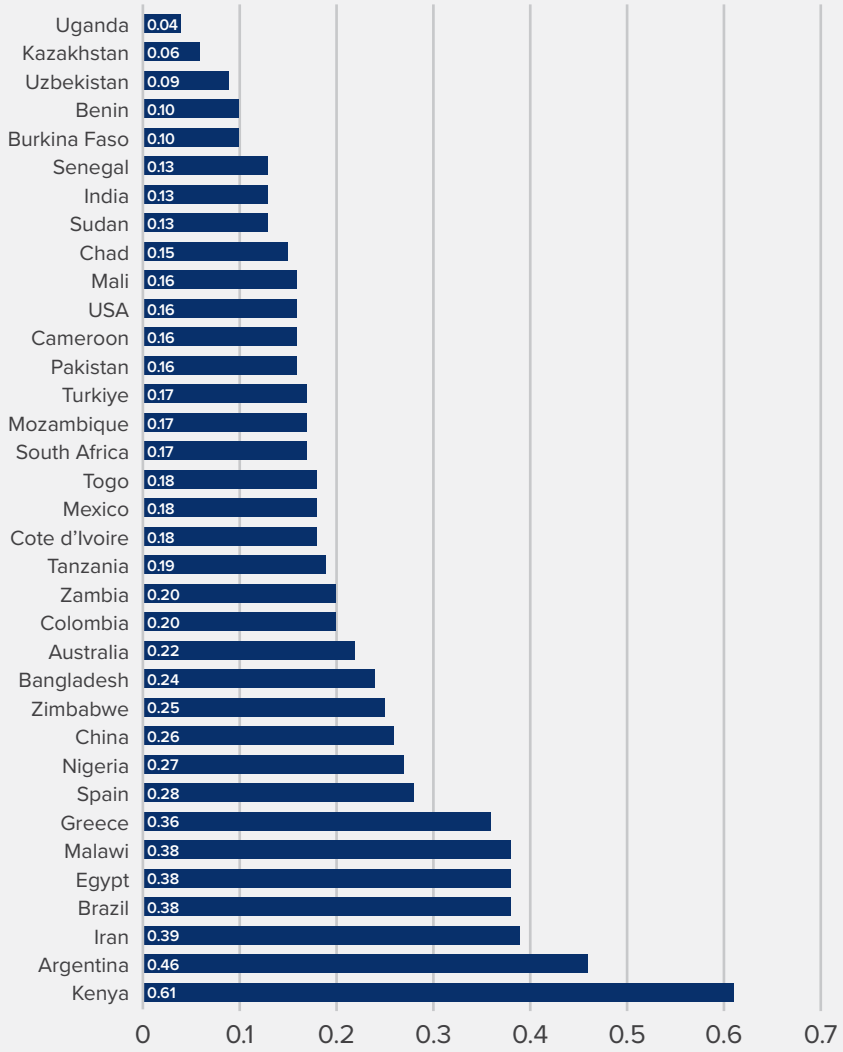


Chart 8. Source: ICAC Cotton Data Book 2022

As with water use, the draft JRC Report includes suggestions for limits on pesticide applications per kilogram of cotton production. However, unless such limits are tailored to the specific environmental and regulatory situations in different countries, they would result in effective bans on imports of products containing cotton from Kenya, Argentina, Brazil, Egypt and even Greece and Spain, depending on where the limits were set. Moreover, as already mentioned, Brazil has the 4th highest pesticide use per kilo, but all Brazilian export cotton is certified as preferred and more sustainable. In this case, which of the proposed performance measures would apply? The proposed *"performance requirement on maximum limit of fertilisers, pesticides and insecticides to the production of cotton?"* Or the *"performance requirement on minimum content of material with sustainability* certification per kg or unit of textiles and footwear"*?

Because farmers already optimize pesticide use within the economic and environmental constraints faced by each, limits on the use of cotton based on applications per kilogram of lint would not likely result in lower pesticide use. Rather, such limits would effectively constitute non-tariff barriers to trade in cotton from regions with high pest pressure or, ironically, from countries without access to the tools of biotechnology. In many cases, these are the very countries whose interests the European Union has committed to consider in all its policies.

Cotton and Fertilizer Use

The draft JRC report includes sentences linking cotton cultivation to “huge quantities” of water, fertilizer, and pesticides, and “large” use of fertilizers, pesticides, and insecticides. Fertilizers are non-toxic natural elements whose use is measured in hundreds of kilograms per hectare, while pesticides are toxic chemicals whose use is measured in ml per hectare.

Data provided by the **International Cotton Advisory Committee**[12] in the Cotton Data Book 2022, based on FAO statistics, indicates that cotton accounted for 2.8% of global fertilizer applications in 2020, roughly equivalent to cotton’s share of world cropped area. When averaged over all 32 million hectares of cotton harvested in a typical season, fertilizer applications total about 220 kgs.

12 www.ICAC.org

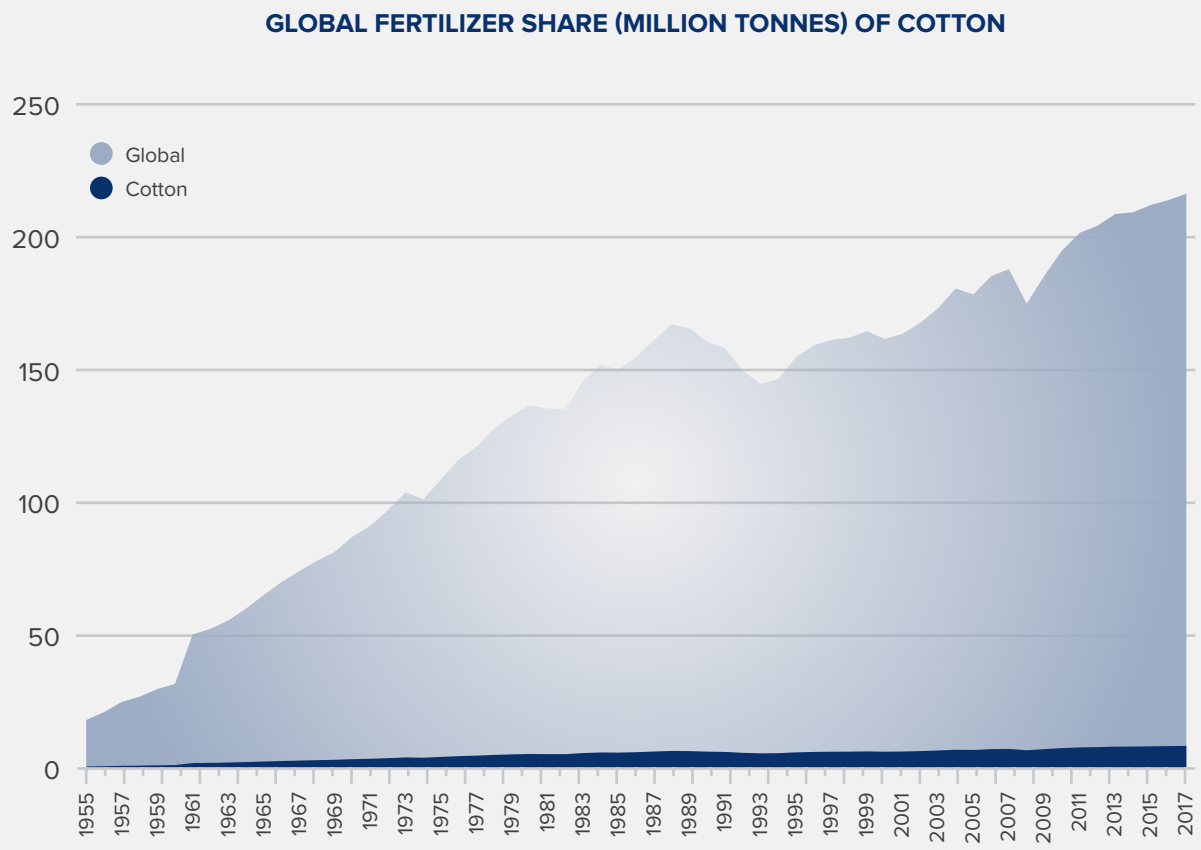


Figure 8. Source: ICAC Cotton Data Book 2022

FERTILIZER COST USD PER HECTARE ON COTTON BY COUNTRY, 2020

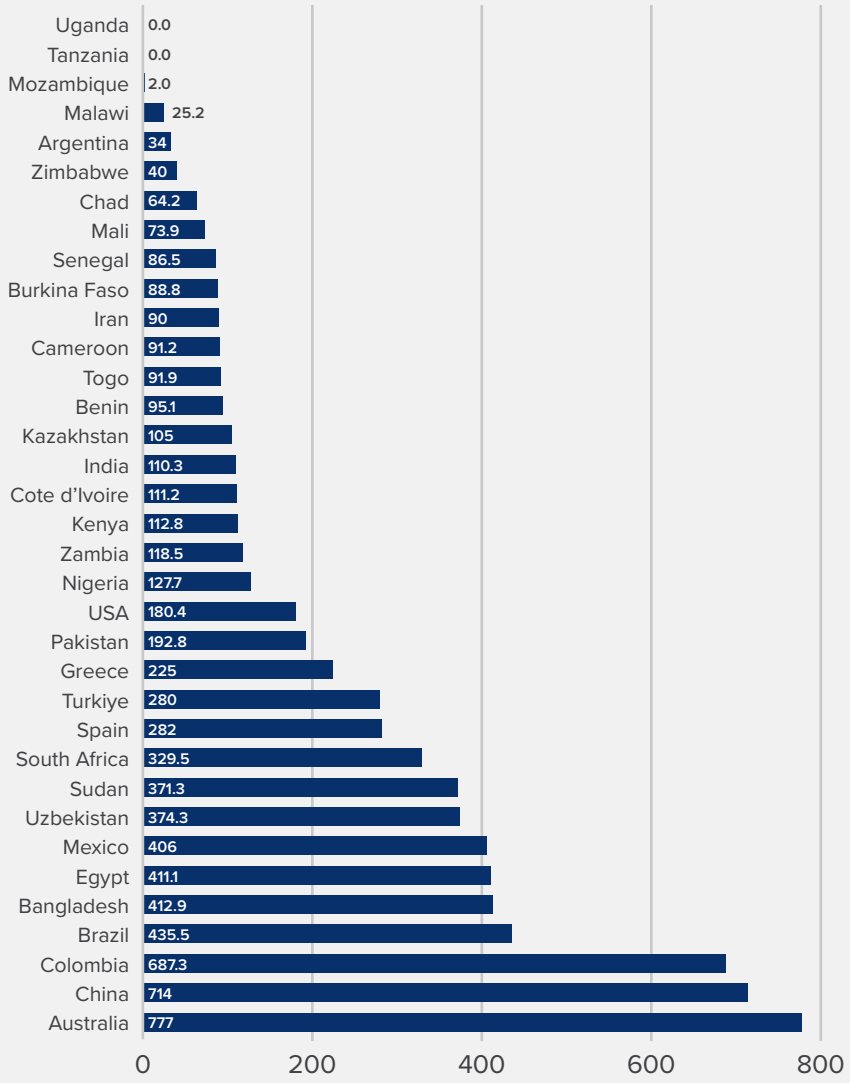


Chart 9. Source: ICAC Cotton Data Book 2022

As shown in the Cotton Data Book 2022, just as with water and pesticides, fertilizer applications vary widely by country, resulting in large differences in applications per kilogram of lint. Fertilizer applications vary mostly because of differences in soil structure (heavy clay soils retain more nutrients than lighter sandy soils), levels of rainfall (higher annual rainfall totals tend to wash out more nutrients from soils, requiring greater input applications), and crop yields (higher crop yields result in the need for greater nutrient replenishment). Other factors include soil parent material since some soils are natively high in nitrogen, potassium, and boron; fertilizer and cropping history; grower objectives based on their anticipated future access to a field; rotational crops and their fertility program. Relative prices also affect farmer's decisions. Other things being equal, higher output prices encourage increased input application, while higher fertilizer prices discourage application.

Fertilizer costs per kg of lint production in major producing countries varied in 2020 from $0.20 or less in Turkey, the USA, and Greece, to $0.24 in Brazil, $0.25 in India, $0.27 in Pakistan, $0.38 in China and $0.54 in Uzbekistan.

FERTILIZER COST BY COUNTRY USD PER KILOGRAM OF LINT

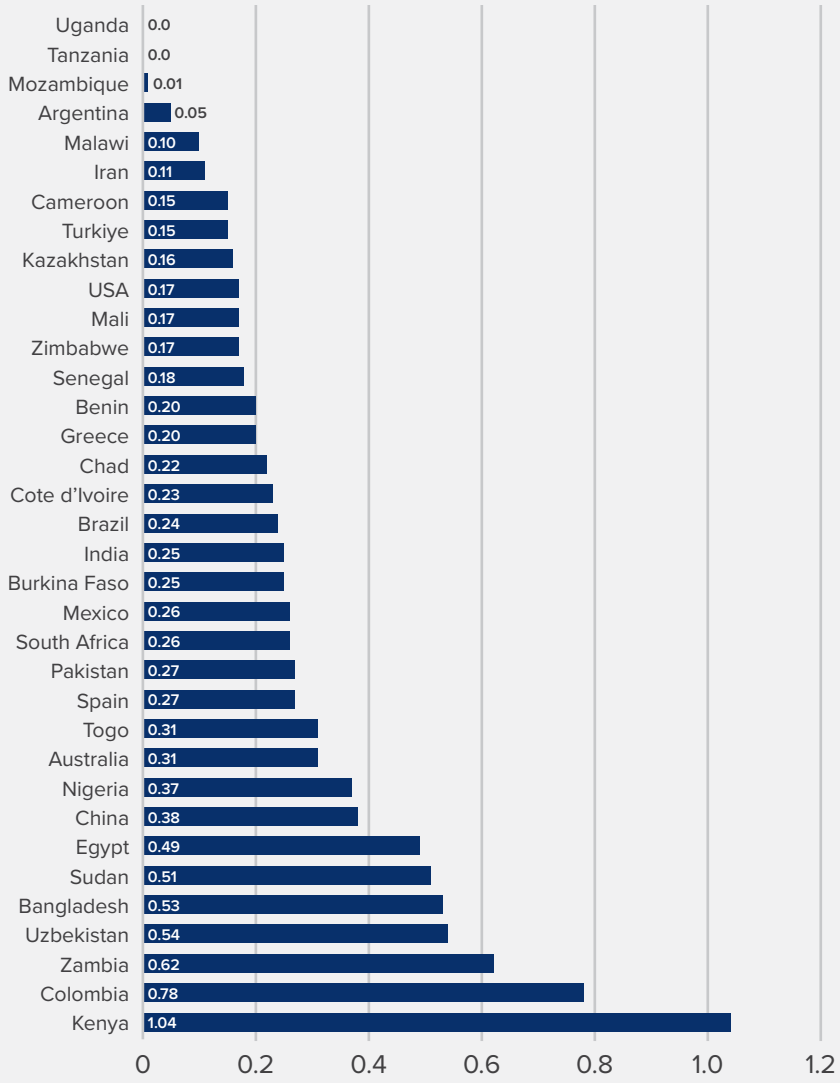


Chart 10. Source: ICAC Cotton Data Book 2022

Most cotton farmers have received training in the four basic principles of fertilizer use: 1. Right quantity, 2. Right time of application, 3. Right kind to be applied, and 4. Right placement to optimize plant uptake. Therefore, differences in fertilizer use per hectare and per kilogram of lint production largely reflect variances in resource endowments and economic realities, not ignorance or whim. Consequently, performance limits on the use of fertilizer in cotton production, as suggested in the draft JRC Report, would effectively constitute (another) non-tariff barrier to trade in cotton. Producing regions with lighter, sandy soils, and regions with heavier rainfall, thus requiring less irrigation but more fertilizer, would be disadvantaged by such performance limits.

As is true of every crop, fields vary in nutrition requirements, and soil tests need to be performed regularly to optimize fertilizer application rates and timing. Cotton uses twice as much nitrogen (N) as phosphorus (P) or potassium (K), and it is important to apply fertilizers in ratios commensurate with actual soil deficiencies. A common fertilization schedule is to apply 200 kgs of granular NPK 20-10-10 per hectare at planting, with supplemental

nutrition applied when the crop is flowering. Another common fertilization schedule is to apply 8 equal doses beginning at planting and ending six weeks after flowering. Those farmers with appropriate irrigation equipment may use foliar (over the leaf) applications once a week after the first flowers appear to supplement granular applications at planting time.

As demonstrated by Main, Christopher L, and colleagues in a 2013 article, “Effects of Nitrogen and Planting Seed Size on Cotton Growth, Development, and Yield,” Agronomy Journal, Volume 105, Issue 6, the yield response of cotton to applications of synthetic nitrogen fertilizer varies with soil types and initial nitrogen levels. In nearly half of all test locations, there is no cotton yield response to increased nitrogen applications because soils already contain optimal nutrition levels. However, in other locations, applications of more than 200 kgs of nitrogen per hectare are necessary to achieve optimal yields. The authors conclude that nutrition requirements vary from field to field and from season to season, and soil fertility management plans need to be adapted to conditions each year. Accordingly, a performance limit on the use of synthetic fertilizer on cotton would have to recognize annual variance in the levels of optimal fertilizer applications.

The premise underlying the recommendation for performance limits on the use of fertilizer in cotton production is that fertilizer use is inherently damaging to the environment. Fertilizers can be damaging if misused, but the same can be said of many things in this world. Economic and agronomic pressures lead farmers to optimize fertilizer use according to the four principles enumerated above. Accordingly, a performance limit that measures only the gross quantity of fertilizer use, without considering time, kind, and placement, would constitute a rather crude instrument of environmental control that would disadvantage farmers who apply more fertilizer correctly, advantage farmers who apply less fertilizer incorrectly, and arguably, prevent the very poorest in sub-Saharan Africa for example, whose income would benefit greatly from increased fertilizer application, from accessing the very tools of prosperity enjoyed by their richer farmer brethren in the Global North.

(Other) Water Effects

As already mentioned, the draft JRC Report begins its water recommendations with a series of macro numbers which we find to be unsubstantiated. Much of the data that the draft JRC Report references in the water effects section is out of date. The water footprint report is from 2005. Furthermore, it includes green (rain), and gray (pollution dilution) water, and points out that the amount of blue (irrigation) and green water in cotton is roughly equal, at about 40%. Clearly, if those farmers are prevented from growing cotton, thanks to the ESPR's irrigation requirements, it will make no difference whatsoever to global water availability if the cotton is rainfed. The ESPR recommended performance requirement will only help if the cotton is irrigated, and it will only reduce irrigation if the replacement crop consumes less water than cotton, which would almost surely not be the case.

The Aral Sea report was published in 2007, and states quite clearly in the synopsis that the problem is excessive irrigation. We quote: *"the most recent desiccation started in the early 1960s and owes overwhelmingly to the expansion of irrigation that has drained its two tributary rivers."*[13] It is self-evident that had the Soviets chosen a different export cash crop, the water would still have been drained. The ruin of the Aral Sea had nothing whatsoever to do with cotton per se.[14]

Indeed, as we have just pointed out, cotton is grown in arid and semi-arid regions because it is a xerophyte and so can be grown in such regions. Regions are not arid or semi-arid because - as the draft JRC Report appears to be suggesting - cotton is grown in them. On the contrary, a not insignificant percentage of the global population has not had the good fortune to be born in green and pleasant lands and must eke out a living in difficult circumstances. A full and accurate definition of sustainability requires the EU to recognize this.

As for the 2015 FAO report on Measuring Sustainability in Cotton Farming Systems, one of the authors of the present paper was involved in producing that report and would vigorously contest the notion that it in any way supports the assertion that: *"The water consumption of textiles is also due to the cultivation of cotton (used in ~40% of clothes (13, 15, 18)), which requires huge quantities of water (estimated at 2.6% of global water use (13)), fertilisers and pesticides (2, 14,15),"* as the draft JRC Report claims.

Finally, *"2019, Environmental impact of the textile and clothing industry - What consumers need to know"* makes sweeping statements. For example: *"cotton is considered especially problematic because it requires huge quantities of land, water, fertilisers and pesticides"*. But the paper provides no sources for these claims.

That report also insists that *"polyester's main advantages are that, unlike cotton, it has a lower water footprint, has to be washed at lower temperatures, dries quickly and hardly needs ironing, and it can be recycled into virgin (new) fibres"*.

13 www.annualreviews.org/doi/abs/10.1146/annurev.earth.35.031306.140120

14 www.veronicabateskassatly.com/read/the-aral-sea-cotton-story-or-yet-another-tragedy-of-the-commons

But it is far from clear that fracked polyester feedstock does in fact have a lower water footprint than cotton, in view of the huge volumes of water required by the latest techniques. We quote a recent article in the New York Times:

> *"Fracking wells have increased their water usage sevenfold since 2011 as operators have adopted new techniques to first drill downward and then horizontally for thousands of feet. The process extracts more fossil fuels but requires enormous amounts of water.... Fracking a single oil or gas well can now use as much as 40 million gallons of water or more."*[15]

Whilst, as elaborated elsewhere in this paper, cotton can be, and is, currently commercially recycled fibre-to-fibre. Contrary to the JRC Report's assertion, polyester is not, and a single methanolysis plant in the USA, which does not yet appear to be operational, does not guarantee a global roll-out.[16]

The draft JRC Report then goes on to assert:

> *"One of the main measures to reduce impacts to water is via reusing and recycling textiles. Indeed, it was estimated that at least 16 000 million l water could be saved thanks to reuse and reselling of used clothes (7). Incorporating recycling cotton in the production of textiles, on the other hand, avoids the use of blue water, fertilizers and pesticides during cultivation and the use of water, dyes, wetting agents, softener, and other related products during dyeing (7)."*

Only one source for these two claims - that clothing resale 'saves' 16 billion liters of water, and that using recycled cotton means the need for dying is automatically avoided - is provided: (7) GreenStory, 2019, Comparative Life Cycle Assessment (LCA) of second-hand clothing vs new clothing. Prepared for ThredUp.[17]

ThredUp is an online retailer of used clothing with a direct commercial interest in promoting resale as a 'sustainable' option - or as they put it *"All thrills, zero guilt"*.[18]

The 2019 LCA, cited by the draft JRC report, was commissioned by ThredUp, from a commercial LCA provider, to buttress ThredUp's claims:

> *"This study is meant to provide ThredUP, its investors and consumers with a holistic picture of the environmental impacts and savings of their operations. The findings of the study are intended to be used as a basis* ***for communication and marketing by ThredUP*** *(emphasis added)... This study intends to support comparative assertions intended for public disclosure, with* ***primary audiences being ThredUP, its investors, and customers*** *(emphasis added)."*

As with any LCA produced by a vested interest, ThredUp's LCA should obviously be read with a degree of skepticism. The first place to look is in the assumptions. ThredUp assumes that when customers purchase a garment from ThredUP this is instead of - ie. replacing - buying a new garment (p.43).[19]

As discussed in section g) Waste Generation & Management, and Appendix 6, there is no evidence that second-hand purchases replace new ones, at least not one-for-one. Quite the contrary. What very limited evidence there is, suggests displacement rates of one-third at best.[20] Indeed, despite the purported significant growth in the second-hand market, there appears to have been no equivalent reduction in new clothing sales.

15 www.nytimes.com/interactive/2023/09/25/climate/fracking-oil-gas-wells-water.html

16 www.recyclingtoday.com/news/eastman-naia-renew-fibre-receives-global-recycled-standard-certification/

17 cf-assets-tup.thredup.com/about/pwa/thredUP-Clothing-Lifecycle-Study.pdf

18 www.thredup.com/

19 cf-assets-tup.thredup.com/about/pwa/thredUP-Clothing-Lifecycle-Study.pdf

20 norden.diva-portal.org/smash/get/diva2:957517/FULLTEXT02.pdf

The draft JRC Report's claim that recycled cotton *"avoids the use of blue water, fertilizers and pesticides during cultivation and the use of water, dyes, wetting agents, softener, and other related products during dyeing,"* is literally, copy-pasted from the ThredUp LCA. And, the claim is not substantiated. Where pre-consumer waste is recycled, and so large quantities of identically colored scraps are available - assuming these are in a shade that remains 'of the moment' - dyeing may be avoided. But **Recover**™ fibre, for example, is based primarily on pre-consumer industrial waste and some used garments, appears grayish, and is specifically suitable for overdyeing.[21]

Moreover, as the draft JRC Report notes, recycled fibres are inferior fibres, and so frequently need to be blended with virgin material - with associated dyeing requirements.

The unsubstantiated water-saving claims continue with the following statement:

> *"The environmental impacts of cotton can be drastically reduced also when sourcing it from organic farming, which uses less water and pollutes less (10): it was estimated that organic cotton consumes 79% less water than conventional cotton (12)."*

(10) Textile Exchange, 2014, Life Cycle Assessment (LCA) of Organic Cotton A global average, prepared by PE International.[22]

(12) F.A. Esteve-Turrillas, M. de la Guardia, 2017, Environmental impact of Recover cotton in textile industry, Resources, Conservation and Recycling.[23]

These assertions are not to be found in either of the linked documents.

Source (10), the 2014 organic LCA is quite specific in stating that the apparent difference in water consumption between that study and an earlier LCA for conventional cotton, reflected rainfall in the regions where organic and conventional cotton studied in the respective reports were grown at the time, and could not be attributed to the cultivation system.[24]

Whilst source (12) does not in fact claim any water saving due to organic cultivation, let alone a savings of 79%. Indeed, the figures included for India cite a 2013 study that showed conventional water consumption as 2617 litres per kilogram and organic water use as 2793 litres per kilogram of fibre.[25]

The fashion industry has promoted the claim that the cultivation of organic cotton consumes less water than conventional for almost a decade. In 2022, however, the Norwegian Consumer Authority ruled these claims unsubstantiated and banned brands from making them in consumer-facing claims.[26] As a result, they have disappeared from almost all the major companies' websites.

In reality, a significant percentage of global organic cotton - 18% according to Textile Exchange - currently comes from the Aral Sea nations - specifically Uzbekistan, Tajikistan, Kyrgyzstan, and Kazakhstan.[27] *(Just organic 59,951/342,265 = 18%) And the majority of that comes from Kyrgyzstan (30,945/59,951= 52%).*

The ICAC 2020 Cotton Data book states that in 2018/19 Kyrgyzstan had an average blue water (irrigation water) use, per kilo of lint, of 5,340 lt/kg. It also states that all Kyrgyz cotton is organic. The Data Book further states that in 2018/19 the global average water use for all cotton was 1,214 lt/kg.[28]

21 recoverfibre.com/

22 store.textileexchange.org/wp-content/uploads/woocommerce_uploads/2019/04/LCA_of_Organic_Cotton-Fibre-Full_Report.pdf

23 www.researchgate.net/publication/308907483_Environmental_impact_of_Recover_cotton_in_textile_industry

24 www.veronicabateskassatly.com/read/ibfuw5pssfcl8swm464yyo3eei8a6d

25 www.researchgate.net/publication/308907483_Environmental_impact_of_Recover_cotton_in_textile_industry

26 gcbhr.org/backoffice/resources/the-rise-of-lcas-and-the-fall-of-sustainability.pdf

27 textileexchange.org/app/uploads/2022/10/Textile-Exchange_OCMR_2022.pdf

28 gcbhr.org/backoffice/resources/great-green-washing-machine-report-part-2final.pdf

Far from consuming 79% less water than conventional cotton, almost 20% of global organic production consumes 4.4x more!

Indeed Ambrosetti claims that, and we quote: *"to produce 1 kg of fibres, organic cotton seeds requires 3.5 times more land than the regular ones."*[29] Since crop water requirements are given, in any location, ceteris paribus, 3.5 times more land for the same total yield, means considerably more water consumption per kilo of lint or fibre. As an aside, Ambrosetti does not examine whether, to compensate for these far lower yields, organic farmers are paid commensurately more than conventional farmers per kilo. Our own investigations[30] suggest that the answer is a categorical no.[31]

Of course, average global cotton irrigation varies annually depending on both the weather and local economic conditions. Cotton is only in the ground for 4 to 7 months. Farmers in any given area may focus on cotton one year, and not the next. It follows automatically, that one year, relatively more organic production may be coming from rainfed areas - another year, less. Matching the Textile Exchange (TE) 2022 Organic Cotton Market Report to ICAC data,[32] indicates that 90% of global organic cotton production is irrigated to some extent, and global average water consumption for organic cotton was somewhere around 2,500 L/kg Lint in 2022, compared to 2,068 L/kg Lint for conventional cotton cultivation.

Under the circumstances, a pragmatic approach is required. Presumably, the safest would be to assume that the water consumption of organic and conventional cotton is roughly similar.

The draft JRC Report goes on to claim: *"More than 100 brands have committed to the '2025 Sustainable Cotton Challenge' to achieve 50% of cotton from sustainable sources. (16)*

(16) Textile Exchange, 2025 Sustainable Cotton Challenge.[33]

The 'Sustainable Cotton Challenge' is an industry program. There is no independent evidence that the various identity cottons included constitute anything more than a marketing opportunity. The Challenge came under particular scrutiny in 2020, both for a lack of robust data[34] and because a significant percentage of the two principal identity cottons - Better Cotton or BCI, and organic cotton - were not only coming from Xinjiang,[35] they were coming directly from farms operated by the Xinjiang Production and Construction Corporation (XPCC). Moreover, BCI appears to have given funding - including, potentially, taxpayer money - directly to the XPCC.[36] Indeed, that the proceeds of these 'sustainable' cotton sales were actually funding the CCP crackdown on the Uyghur population, was precisely why the USA issued a Withhold and Release Order against *"cotton and cotton products originating from the Xinjiang Production and Construction Corps (XPCC)"* in December 2020.[37]

For the draft JRC Report to use 'Sustainable Cotton Challenge' identity cottons as a proxy for *"maximum limit of water consumption related to the production of cotton"*, needs to be supported by evidence.

29 www.ambrosetti.eu/venice-sustainable-fashion-forum/just-fashion-transition/

30 gcbhr.org/insights/2021/09/the-great-greenwashing-machine

31 gcbhr.org/backoffice/resources/amplifying-misinformation.pdf

32 textileexchange.org/app/uploads/2022/10/Textile-Exchange_OCMR_2022.pdf

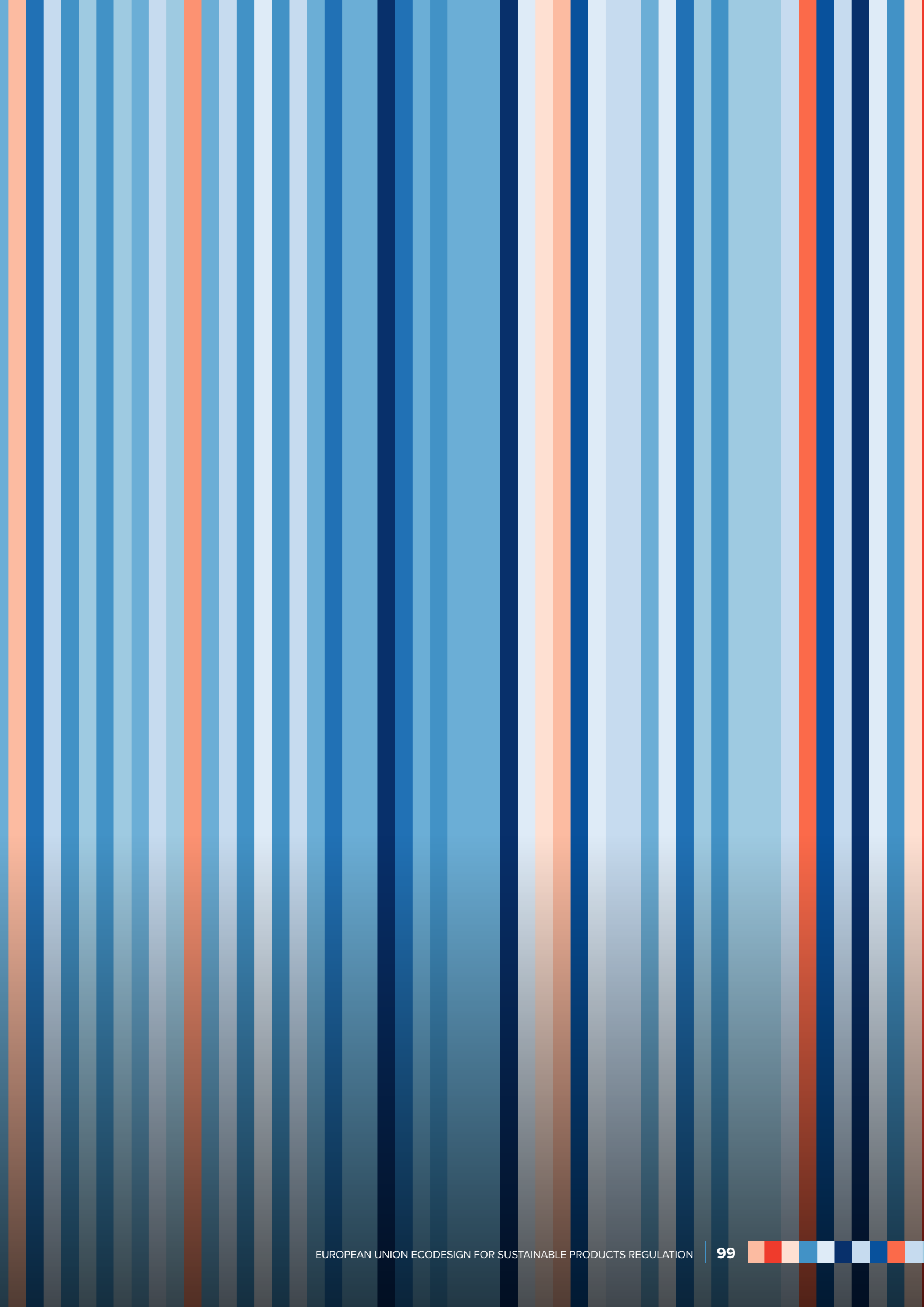
33 textileexchange.org/2025-sustainable-cotton-challenge/?gclid=CjwKCAjwkY2qBhBDEiwAoQXK5cWbpsHXzwYhdIuj9OIMfvIDrd-9n8gES-gmJx3QCTtaw6MwdzSV2QhoCXBcQAvD_BwE

34 www.veronicabateskassatly.com/read/what-is-sustainable-cotton-and-how-is-it-measured

35 www.veronicabateskassatly.com/read/shaking-hands-with-the-devil-sustainable-cotton-and-the-xinjiang-production-and-construction-corp

36 www.veronicabateskassatly.com/read/heaven-is-high-and-the-emperor-is-far-away

37 www.cbp.gov/newsroom/national-media-release/cbp-issues-detention-order-cotton-products-made-xinjiang-production



APPENDIX 4

Micro fibres and fossil fibres

As far as microfibres are concerned, whether from the point of view of biodiversity or water, the draft JRC Report repeats the same statement in both sections:

> *"Several initiatives exist to fight microfibres releases from textiles, resulting for example into guidance for product development, in addition to innovative microfibre free materials (8).*

(8) Textile Exchange, 2021, Preferred Fibre & Materials - Market Report 2020".[1]

We find the fact that the draft JRC Report has consulted only one source on a topic as contentious as microfibres, surprising. That this source is an industry body is concerning - particularly when it appears that Textile Exchange themselves appear to have only consulted a single source for their own analysis, and that source is another industry body - The Microfibre Consortium (TMC). TMC is a UK-registered micro company[2] supported by H&M, Kering, Primark, puma, Boohoo, ASDA, and others. Most recent filings state that it only has 4 employees, and it has no apparent published research (in scientific publications) to its name.

Textile Exchange - and if the French PEF is anything to go by[3] - the JRC, appear to be relying on a single 2021 TMC report, or more exactly literature review. This review was led by Patagonia, with the participation of a number of other athleisure and fast fashion brands including Inditex, Puma, Adidas, Lululemon, Next, Gap, and Pangaia, as well as the Microfibre Consortium. It was published by the latter.[4] The intent of this publication, and indeed both the French PEF and Textile Exchange's use thereof, appears to suggest that plastic microfibres are no more harmful per se, and that all fibre release is only a matter of volume and duration. As a result, animal fibres like silk or wool also have a negative microfibre impact - which the French PEF for example, evaluates at 72% of the impact of plastic fibres.[5]

1 textileexchange.org/app/uploads/2021/04/Textile-Exchange_Preferred-Fibre-Material-Market-Report_2020.pdf
2 find-and-update.company-information.service.gov.uk/company/11647708/filing-history
3 fabrique-numerique.gitbook.io/ecobalyse/textile/complements-hors-acv/microfibres
4 www.microfibreconsortium.com/biodegradability-report
5 https://ecobalyse.beta.gouv.fr/#/explore/textile/materials

The TE assessment of the situation would be disputed by many:

> *"While early discussions mainly focused on the release of synthetic fibre fragments into marine environment as part of the bigger microplastic debate, the discussion is shifting towards seeing it as a challenge that is relevant for all fibre types."*[6]

On the contrary, since 2016, the number of published studies on the presence, prevalence, and potential harm attributable to plastic microfibres has exploded. They have been found everywhere on earth, from the upper reaches of Mt Everest,[7] to the depths of the Mariana Trench,[8] in human placenta,[9] lungs, and blood. Now plastics, including polyethylene terephthalate or PET, have been found in the human heart.[10] Indeed, some specialists believe microplastics may well trigger cancer.[11] And certainly cause endocrine disruption.[12] And, at least in mice, appear to lead to dementia.[13]

Indeed, whilst the draft JRC report only expresses concern about microfibres in the sections covering water and biodiversity, they are, in reality, also a major concern in air quality. A May 2023 review published in Science of The Total Environment collated concentrations, shape, size and polymetric characteristics for microplastics in ambient air, deposition, dust, and snow from 124 peer-reviewed articles. In summary, the authors found that ambient air featured concentrations between <1 to >1000 microplastics/m^3 (outdoor) and <1 microplastic/m^3 to 1583 ± 1181 (mean) microplastics/m^3 (indoor), consisting of polyethylene terephthalate - better known as PET - polyethylene, and polypropylene.[14] Or, in other words, available evidence suggests that there is a strong likelihood that we are breathing in microplastics with every breath we take.

6 textileexchange.org/app/uploads/2021/04/Textile-Exchange_Preferred-Fibre-Material-Market-Report_2020.pdf

7 www.researchgate.net/figure/Mt-Everest-MP-Fibres-A-selection-of-microfibres-found-in-snow-samples-from-Mt-Everest_fig3_346039019

8 oceanographicmagazine.com/news/eurythenes-plasticus/

9 www.sciencedirect.com/science/article/pii/S0160412020322297

10 www.acs.org/pressroom/presspacs/2023/august/microplastics-found-in-human-heart-tissues-before-and-after-surgical-procedures.html

11 www.breastcanceruk.org.uk/microplastics-and-the-human-health-impact/

12 roar-assets-auto.rbl.ms/files/48995/Pete%20Myers%20testimony.pdf

13 www.euronews.com/next/2023/08/30/microplastics-could-be-widespread-in-organs-and-impact-behaviour-new-study-suggests

14 (www.sciencedirect.com/science/article/pii/S0048969723008094?via%3Dihub)

The May 2023 Science of The Total Environment also documented that the number of publications on microplastics in the atmosphere rose from fewer than ten in 2015 and 2016 to more than 100 in 2022, demonstrating the growing concern about the subject within the scientific community.

Indeed, if recent research is correct, microplastics in the air could be adding to climate change.[15]

We have been unable to find any research that indicates that wearing cotton, wool, or silk cause cancer, endocrine disruption, dementia, or other serious health concerns, or that they could be adding to climate change.

Textile Exchange's explanation for the purported switch in concerns is unconvincing:

> *"A key reason for this shift is that shedding of fibre fragments into the environment is not only about the physical presence of non-biodegradable fibre fragments in the environment; it is also about the chemicals that are carried along the fibre fragments."*

Here TE seems to be referring to a common trope in fast fashion and athleisure's response to micro and nano plastic concerns: that fibres from 'natural' sources - silk, wool, and particularly cotton - are even more prevalent in the world's oceans than plastic, and equally if not more harmful - due to the chemicals with which they have been dyed and finished.[16,17,18,19] In reality, since it seems exactly the same chemicals are used on polyester and other plastic fibres, this argument is actually a double-whammy for plastics. But above all, the toxicity of dyes and finishes is a completely separate concern from fibre composition. The two should not be conflated.

That silk, wool, etc. are not in and of themselves harmful to both human life and the environment is amply demonstrated by the millennia for which we have been using them. It has long been established that mulberry silk was first produced in China in the 3rd millennium BCE. However, recent (2009) discoveries suggest that wild Muga and Tasar silk were produced in neolithic settlements in India by the beginning of the 3rd millennium.[20]

Whilst early neolithic farmers in the Fertile Crescent began to raise sheep around 11,000 years ago.[21] Polyester, on the other hand, was first commercialized in 1951 - and is already causing serious problems.[22,23,24]

We would agree that preventing/minimizing all microfibre releases is desirable. We would also agree that there remains a certain amount to debate and dispute. TE's claim that *"In general, the debate is moving away from "banning microfibres" to "reducing the shedding rates and preventing the release of fibre fragments into the environment by managing them in a responsible way"*, however, is not accurate. Calls for the use of plastic fibres to be taxed on environmental grounds, continue to multiply.[25]

15 www.euronews.com/green/2023/09/29/plastic-air-pollution-microplastics-in-clouds-could-be-exacerbating-climate-change-study-s

16 www.researchgate.net/publication/338122063_TEXTILE_MICROFibreS_IN_MEDITERRANEAN_SURFACE_WATERS

17 www.researchgate.net/publication/348986770_Microfibres_in_the_ocean_are_they_all_made_of_plastic 309

18 www.frontiersin.org/articles/10.3389/fevo.2023.1020919/full

19 www.naturvardsverket.se/contentassets/be04327b5a874955a5402d4f663d1632/webinar-collaborative-study-chemicals-recycled-textiles-hm-ikea.pdf

20 The Chronicles of Silk. International Sericultural Commission, 2023

21 Sally Coulthard "A Short History of the World According to Sheep".

22 www.encyclopedia.com/sports-and-everyday-life/fashion-and-clothing/textiles-and-weaving/polyester

23 gcbhr.org/backoffice/resources/great-green-washing-machine-report-part-2final.pdf

24 www.bbc.co.uk/news/business-57433221

25 trickery_compressed.pdf

Whilst leading scientists are increasingly urging a re-think to eliminate non-essential uses of plastic - and surely fast fashion qualifies as non-essential?[26] Indeed, we would argue that in line with its stated commitments,[27] the European Union is obliged to *"Take a precautionary approach where there is objective scientific uncertainty in order to avoid potential damage to people's health or to the environment and take preventive action."* And must implement measures to mitigate the use of plastics. Indeed, that is the stance that was taken by the European Commission's own Scientific Advice Mechanism - SAPEA - in January 2019.[28]

In light of all of this, we would go further and submit that the EU and the JRC have a responsibility to carefully consider whether it is desirable to recycle plastic fibres at all. And whether money currently devoted to new plastic recycling technologies might, for fashion at least, be better spent on developing means of destroying such fabrics completely, at the least cost and lowest environmental impact.

Finally, in the context of the draft JRC report's treatment of fossil fibres, we feel it important to quickly touch upon whether the report reflects the EU's recent commitment to phase out fossil fuels. And/or, as is currently being argued, will help the fashion industry reduce its reliance on fossil fuels.

Regrettably, once again the answer on both counts is no. Polyester is the predominant global fibre, constituting roughly 54% of the total supply. Cotton constitutes less than half that.

But for reasons that we cannot understand, the draft JRC Report has two performance requirements specifically targeted at cotton, and none targeted at polyester. This seems a surprising omission when, under Climate Change, the report itself states: *"Emissions are mainly related to the production of materials ….especially polyester (the most commonly used fibre)."* Perhaps there is an assumption that this will automatically be covered by the proposed *"performance requirement on maximum level of GHG emissions per kg of product or item of clothing produced"*. Unfortunately, we did not find any evidence that leads us to believe that this will be the case.

We do not know what climate change values for the various fibres will be employed by the EU PEF - which would presumably underlie the ESPR performance requirements. If we use the provisional values shown for the French PEF, however, as of 07/12/2023, these were as follows:

For a standard 100% Cashmere T-shirt: 90.66 $kgCO_2e$.

For a 100% Cotton T-shirt: 9.04 $kgCO_2e$.

And for a 100% Polyester T-shirt: 7.19 $kgCO_2e$[29]

Moreover, whilst the draft JRC report specifically proposes a *"performance requirement on maximum limit of fertilisers, pesticides and insecticides to the production of cotton"*, there is no matching performance requirement for say antimony in polyester, which even polyester manufacturers acknowledge constitutes a harmful material for the environment and health.[30]

26 docs.google.com/document/d/1Y3Dd-kKZR33Wm6Zh4QzOjt37FHTLR7_b6EZcpWQSWhE/edit

27 eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A52005DC0218

28 www.sapea.info/wp-content/uploads/report.pdf

29 fabrique-numerique.gitbook.io/ecobalyse/communaute

30 www.polyestermfg.com/antimony-free-polyester-chips/

Despite polyester being the most prolific fibre in the fashion supply chain, there are moreover, to our knowledge no virgin polyester certifications. While the draft JRC report proposes a "performance requirement on minimum content of material with sustainability* certification per kg or unit of textiles and footwear" we found no rationale for why this is restricted to fibres that represent less than 50% of the total? There is no reason that we can see why polyester should not also be certified - for example, that it is antimony-free.[31]

Moreover, all polyester feedstock is not equal. If it is intended to trace cotton or wool back to the source farm or country, to restrict imports into the EU of fibre that uses excessive water or fertilizer, it seems to us, even more important that polyester should be traced back to see if the feedstock producer fracked or pumped, is notorious for uncapped wells, methane leaks, excessive water use, and burn-offs, or potentially, is located in a region with which the EU is not trading.

For example, China accounts for two-thirds of world polyester production. The proportion is reportedly growing, and the majority of Chinese production appears to be oil-based. Compared with 2022 averages, China's oil imports from Russia increased by 23% (400,000 b/d) in 2023. The 2.6 million b/d of crude oil that China imported from Russia in June 2023, is the largest volume China has ever imported from any country in any month.[32]

By calculation, about one in seven barrels used in China are imported from Russia. Not insignificant amounts appear also to come from Iran.[33]

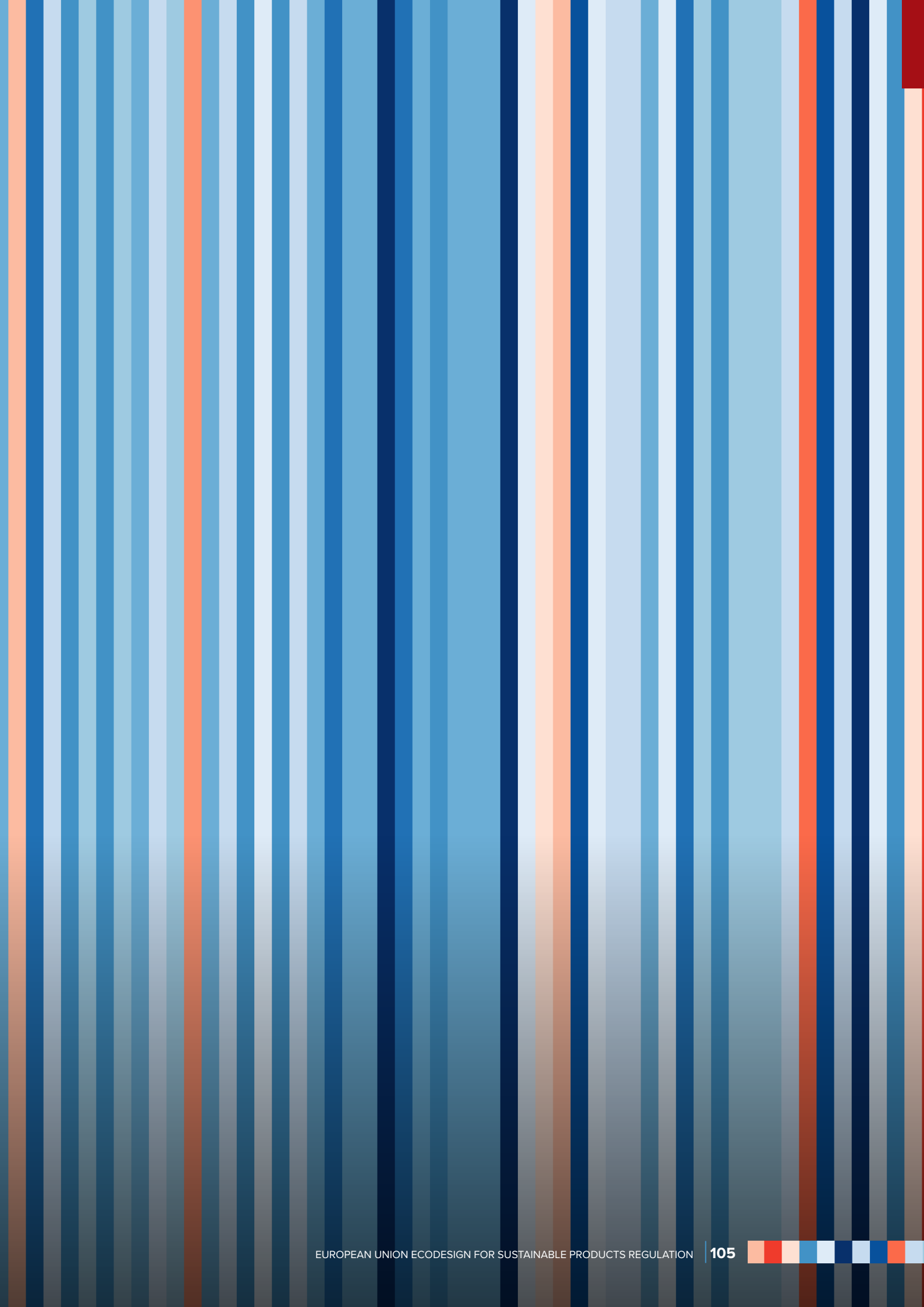
It follows automatically, that it is every bit as imperative that brands know where their polyester feedstock comes from, as it is that they know where their wool or cotton comes from. Indeed, we would argue that is considerably more important. Without this knowledge, the EU could be violating its own sanctions with its apparel imports. Moreover, given that at COP28 the Union publicly pledged to phase out fossil fuels, this commitment must be reflected in any and all legislation - including that applicable to fossil fuel-based apparel.

As it is, the imbalance in performance requirements leads us to believe that complying with those currently proposed, far from reducing fashion's reliance on fossil fuels, could result in brands substituting various fossil fibres - particularly polyester - for farmed or cellulosic alternatives.

31 defendourhealth.org/wp-content/uploads/2022/07/PET-Report-Part1-070622c-3.pdf

32 www.eia.gov/todayinenergy/detail.php?id=60401

33 eur-lex.europa.eu/EN/legal-content/summary/restrictive-measures-against-iran.html



APPENDIX 5

The Definition of Fast Fashion

The term 'Fast Fashion' originated with the New York Times in 1989. On December 31, 1989, to be precise - in an article titled: "Fashion; Two New Stores That Cruise Fashion's Fast Lane" by Anne-Marie Schiro.[1]

1 www.nytimes.com/1989/12/31/style/fashion-two-new-stores-that-cruise-fashion-s-fast-lane.html

The article was a tale of two shops that had recently arrived in New York City. As Schiro put it: *"One shop has a faux French accent and the other a real Spanish one, but they both speak the same fashion language. It's a language understood by young* ***fashion followers on a budget*** *who nonetheless* ***change their clothes as often as the color of their lipstick****" (emphasis added).* The shops were Express and Zara.

The article continued by explaining how both merchants interpreted trends - rather than designed collections. And then came the punch line, 'Fast Fashion':

At Express *"What might an outfit cost? Perhaps $60 for a suede skirt, $48 for a washed-silk shirt and another $48 for a tapestry vest.*

At Zara, too, the emphasis is on ***fast fashion*** *(emphasis added), merchandised in a coordinated style.*

> *"Every week there's a new shipment from Spain,'' said Juan Lopez, who came to New York in February to head Zara's United States operation. ''The stock in the store changes every three weeks. The latest trend is what we're after. It takes 15 days between a new idea and getting it into the stores."*

As for Zara's prices, the article offers the following insights:

> *"Prices range from $5 for knitted gloves to $145 for a coat with a fake-fur collar and cuffs. There are miniskirts for $27, metallic knit dresses for $43 and Shetland wool argyle sweaters for $53."*

In December 1989, the average price of a house/flat in London was £78,385. In June 2018, it was £479,971.[2]

That's an increase of 512%. The price of a Zara metallic knit dress on the other hand has hardly changed in nominal terms, let alone real. It's still $50.[3]

Subsequent research on fast fashion is summarized in a 2010 paper published in the International Review of Retail, Distribution, and Consumer Research.[4]

As this report points out, multiple sources highlight the emergence in the 1990s of a concept of 'throwaway' or fast fashion. This structural change led retailers to prefer low cost and flexibility over more traditional values such as quality, durability, and artisanship, to ensure timely delivery and speed to market. The purpose was maximum exploitation of consumers' *"desire to have variety and instant gratification with price mavenism."*

Price mavens **are defined** as those who *"collect price information in order to share it with others and obtain social returns from their search behavior"*, where traditionally, price is negatively related to purchase possibility.

In short, "cheap", "throwaway", and "fast" fashion are all synonymous, and the latter two are crucially dependent on the former.

Once we accurately define fast fashion, it rapidly becomes apparent that most if not all the preliminary proposals in the draft JRC Report will do absolutely nothing to put "Fast Fashion Out of Fashion,"[5] as the EU intends. Because they simply do not address the root causes.

Fast fashion is cheap clothing, designed, manufactured, and marketed with the specific intent that it should be 'throwaway', in order to maximize commercial exploitation of consumer desire for variety and instant gratification.

To suggest that any of this can be fixed by making clothes easier to reuse, repair, and recycle, or by swapping in supposedly less energy- and water-intensive raw materials,[6] is to fly in the face of the facts. It is to pretend that 'Fast Fashion' is something other than it actually is.

Cheapness and disposability are the defining features of the model. If we wish to end fast fashion, both of these variables must change. The negative externalities of fast fashion must be internalized, and consumers must pay for what they use and dispose of.

We cannot emphasize strongly enough that it is our informed belief, that If there is no change in the economic incentives, there will be no real change in brand or consumer practices.

2 landregistry.data.gov.uk/app/ukhpi/browse?from=1977-06-01&location=http%3A%2F%2Flandregistry.data.gov.uk%2Fid%2Fregion%2Flondon&to=2018-06-01&lang=en

3 www.zara.com/us/en/search?searchTerm=metallic%20dress&section=WOMAN

4 www.researchgate.net/publication/232964904_Fast_fashion_Response_to_changes_in_the_fashion_industry

5 environment.ec.europa.eu/topics/circular-economy/reset-trend_en

6 www.europarl.europa.eu/news/en/press-room/20230424IPR82040/ending-fast-fashion-tougher-rules-to-fight-excessive-production-and-consumption

APPENDIX 6

Lifetime Extension and Waste Generation and Management

Whilst they are two different topics under the proposed ESPR, lifetime extension, and waste are two sides of the same coin, and so the underlying analysis is intimately related.

A review of the literature shows that what limited information there is, indicates that in reality, the primary reason that consumers throw out their clothes is entirely affective. Most consumers are not throwing their clothes out because they are worn out or in need of repair. They are throwing their clothes out because, as Figure 9 shows, they are either bored of them or feel they no longer suit them. Of course, increasing the number of times a garment is worn reduces GHG emissions per wear, but to claim that *"This could be achieved by measures that ensure and increase the durability of the items and the resistance to shrinkage/weather"* is belied by the facts.

En Mode Climat undertook a literature review in September 2022.[1] Figure 9 on the following page summarizes their findings.

As we can see, on average, in 56% of cases, the garment was disposed of for precisely those affective reasons. Another much-cited 2015 study by Greenpeace, Germany, found that only 21% of clothing is disposed of because it's damaged. The primary reason was because the clothes were simply not wanted anymore.[2]

1 drive.google.com/file/d/1NjKeeBVUY_Ap4pY5K-4cmsPOud27Dr06/view

2 www.greenpeace.de/publikationen/20151123_greenpeace_modekonsum_flyer.pdf

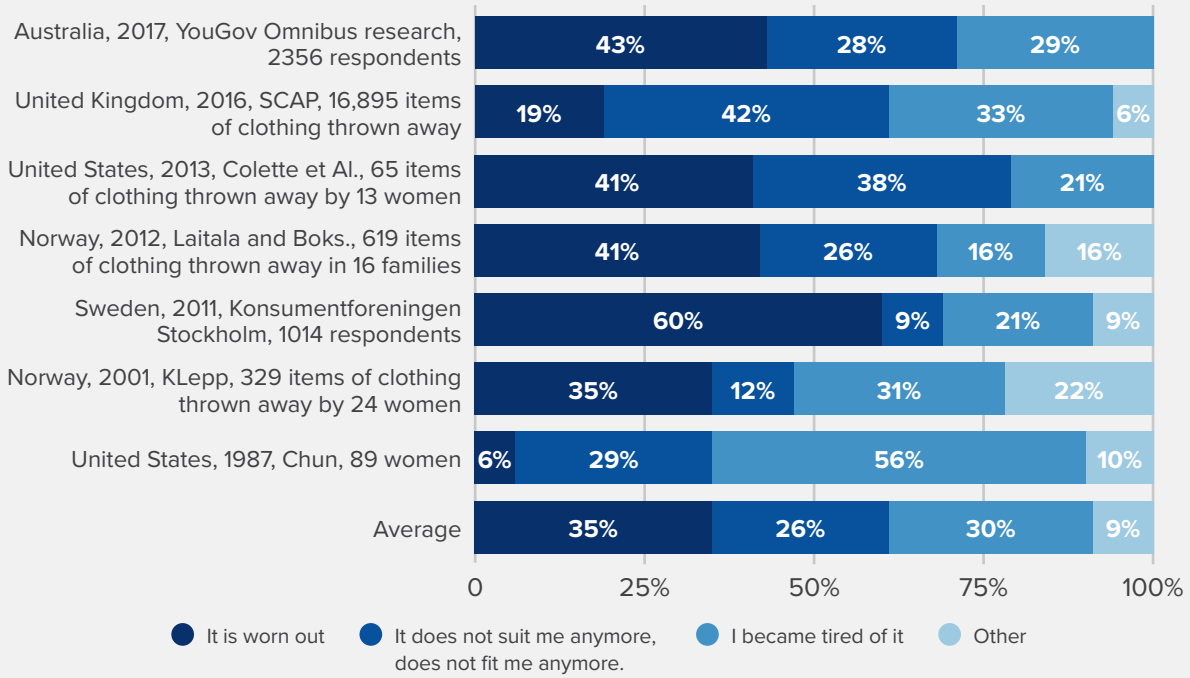


Figure 9.

An October 2022 literature review by Kirsi Laitala and Ingun Grimstad Klepp, of SIFO, Norway[3] found that only 37% of clothing was disposed of due to wear and tear-related issues, and 63% for affective reasons - either the garment was no longer valued, or it didn't fit/flatter the wearer.

It goes without saying that one very important reason for consumer willingness to dispose of large numbers of items of clothing, in perfectly usable condition, based on nothing more than 'boredom', is precisely their cheapness. If clothes cost the same price as a sandwich, consumers will treat them as if they were no more valuable than a sandwich - and simply throw them out when they lose interest.

Just how cheap most clothing purchases currently are, and the ever-increasing purchase volumes that this enables, is illustrated by a 2022 study by leading data, insights, and consulting company, **Kantar**[4] for Refashion (the French Textile, Household linen and Footwear Industry's eco-organisation).[5]

Kantar points out that:

> *"Selon Refashion, sur les 7 dernières années, il en ressort que les achats des Français sont en progression (+ 4 pièces par personne). En 2021, 1 Français a acheté en moyenne 36 pièces d'habillement, 4 paires de chaussures et 5 pièces de linge de maison. A l'échelle nationale, cela représente 300 millions de pièces supplémentaires en 7 ans, malgré les 2 années de crise COVID qui ont largement freiné les volumes."*

According to Refashion, French consumers have been increasing their purchases by roughly 4 pieces per person, per annum. In 2021, the average French consumer bought 36 pieces of clothing, 4 pairs of shoes, and 5 articles of household linen. That represents an increase of 300 million pieces in 7 years for France alone - the brake represented by COVID, notwithstanding.

3 clothingresearch.oslomet.no/2022/10/19/review-of-clothing-disposal-reasons/#:~:text=Conclusion,and%20poor%20fit%20(28%25)

4 www.kantar.com/about

5 www.kantar.com/fr/inspirations/consommateurs-acheteurs-et-distributeurs/2022-fashion-economie-circulaire

At the same time, as Table 2 below shows, the Kantar study found that in 2021, 70% of French clothing purchases cost an average of €8.20. Another 27% cost an average of €24.20. So 97% averaged €24.20 or less.

	Weight of purchases	Weight of spending	Avg purchase price/item
Total TC			
Entry-level	70	41	8,2
Mid-range	27	36	24,2
High-range	3	13	62,4

Table 2.

The average price across all new clothing purchases in France, that year, was €12.50 per garment. The relationship between price and volume is inescapable. Moreover, compare this with the chart below taken from a recent screenshot of the Zara UK website (01/07/2023)

The only repair that would cost less than the average purchase price of 70% of French clothing, is button replacement. Few are going to pay more to repair an item than it costs to purchase/replace it in the first place.

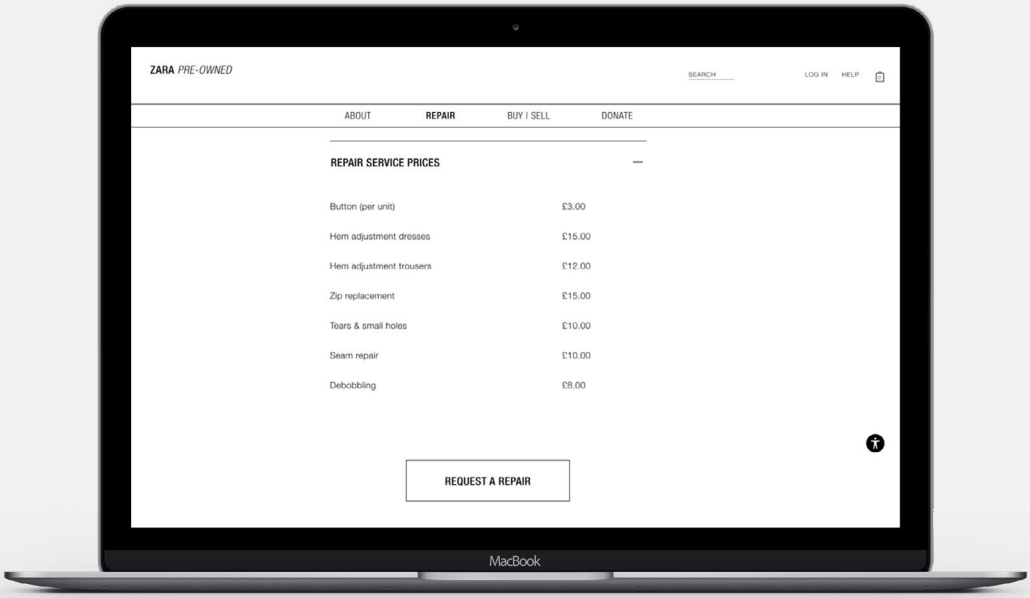


Figure 10. Source: www.zara.com/uk/en/preowned-repair-mkt5796.html?v1=2165615

As for resale - as is discussed in greater detail in the next section - virtually all the fast fashion brands' clothing is ineligible for payout on consignment sites. And that includes the site of the JRC's preferred source of resale data: ThredUp.[6] This is precisely because administration and handling costs consume the entire resale value, leaving nothing whatsoever for the seller. An identical problem arises with rental.

"Consumer awareness", on the other hand, is indeed the key. But as Kantar point out:

> *"La pédagogie est un levier dont la pertinence reste à court terme fortement challengée par la réalité du marché."*
>
> This roughly translates as "Pedagogy is a lever whose relevance remains in the short term strongly challenged by the reality of the market."

By which Kantar mean: how to incite consumers to repair - or, by extension, to rent or resell - *"un vêtement dont le prix moyen neuf est évalué à 12,50€ (tous vêtements) alors que le coût moyen de sa réparation est lui estimé à 20€?"* - a piece of clothing whose average purchase price is estimated at €12.50 while the average cost of its repair is estimated at €20?"

As eminent Professor, Partha Dasgupta, has written an entire report to demonstrate,[7] if the EU wishes consumers to make better choices, they **must** be 'made aware' of the real cost of their clothing. The only fail-safe way to do that is through market mechanisms - the price of fast (indeed, all) fashion must include the cost of the externalities generated by its creation.

Moreover, none of the draft JRC Report's other proposed 'Rs' apply to the vast majority of clothing currently produced - cheap fast fashion - which is not only too cheap to repair/refurbish. It is also too cheap to rent out; too cheap to resell; and even the fibre is too cheap to recycle.

It is essential that any future report evaluates these issues.

Starting with on-demand production, we find little evidence that this will reduce the volume of clothing produced as the draft JRC Report contends - quite the contrary. As Shein's recent rise has amply demonstrated, the smaller and more agile the production runs, the greater the possibility of tapping into every design desire and demographic. **Shein,**[8] an originally Chinese, online-only brand, now headquartered in Singapore, that does not sell in China (it only produces there), has reportedly seen its sales increase from $15 billion in 2021 to *"$23 billion in revenue last year, according to the Wall Street Journal, with a net profit of $800 million, and had its sights to grow its revenue by 40% by the end of this year. It's reportedly on track to hit its target."*[9]

6 www.thredup.com/cleanout/ineligible-payout-brands

7 www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review

8 www.shein.co.uk/

9 qz.com/shein-looks-set-to-overtake-h-m-and-is-closing-in-on-za-1851029312

To quote the US-China Economic and Security Review Commission *"By November 2022, Shein accounted for 50 percent of all fast fashion sales in the United States, ahead of brands H&M (16 percent) and Zara (13 percent)."*[10] Other things being equal, a further 40% growth in sales since 2022, presumably means either - perhaps more likely some mix - that Shein's' share of US fast fashion is now nearer 70%, or that the fast fashion market in the USA has also increased by 40%. And it is not just the USA, according to a report by Money.co.uk,[11] Shein was the top-searched brand in 2022 in 113 countries. *"Some of the countries looking for affordable goods from Shein are Australia, Brazil, Cyprus, France, and Ireland."* The top performer of 2021, Zara, came in a pale second with 28 countries. In 2021, Shein didn't even make the leaderboard.[12]

If you click on Shein's website you are immediately inundated with offers. On the UK site, on August 9, 2023, these included a stepped discount code, starting at 15% off on £29+, rising to 20% off £100+; a specific code for women/Curve/Home & Living of 25% off £60+; free postage for new users on £9.99+ ...and all this on *"Kids and Baby starting at £5", "Back 2 School starting at £2.50"*, and 50% off *"weeklong deals on fashion faves"*.

Those prices are cheaper than the sandwich prices on the Starbucks UK website on August 9, 2023. These varied from £4.05 to £6.90.[13]

While traditionally fashion brands launched 2 collections per year, and fast fashion moved to weekly (52 collections), Shein uses on-demand production to play a whole new ball game. Or as the Shein 2022 Sustainability report puts it:

> *"Combining accurate demand measurement capabilities with a technology-enabled, flexible supply chain.....changed the industry by allowing us to produce items "on-demand" while minimizing excess inventory waste."*[14]

In hard data, what this *"smallbatch, tech-enabled, on-demand production model"* means, is that while in 2019, reportedly: *"Shein released items carrying 150,000 new stock-keeping units (SKUs) throughout the year, at an average of over 10,000 SKUs each month. In July 2020 specifically, Shein's women's clothing and accessories category saw an average of 2,000 SKUs added to the site each day."*[15] According to **Les Amis de La Terre**[16] by May 2023, that had risen significantly. That month, Shein apparently launched an average of 7,200 new models on its website - every single day - rising as high as 10,800 new additions on May 16, 2023.[17]

10 www.uscc.gov/sites/default/files/2023-04/Issue_Brief-Shein_Temu_and_Chinese_E-Commerce.pdf
11 www.money.co.uk/credit-cards/most-popular-fashion-brands-2022
12 www.money.co.uk/credit-cards/most-popular-fashion-brands-2022
13 www.starbucks.co.uk/delivers
14 sheingroup.com/wp-content/uploads/2023/06/SHEIN_ESG-Report2022_Final.pdf
15 kr-asia.com/decoding-shein-the-rise-of-chinas-newest-retail-decacorn-part-1-of-3
16 www.amisdelaterre.org/
17 www.amisdelaterre.org/wp-content/uploads/2023/06/decryptage-fast-fashion-vdef.pdf

Simple arithmetic shows us that with a minimum manufacturing order run of 100 units, Shein produced at least 22 million garments in May 2023, alone. If we consider that the successful garment runs are reordered, it is more likely to be 1 million new garments daily - from just one brand. A brand moreover, whose agile model is currently promoted by a report from Boston Consulting Group (BCG) no less, titled: *"Agility Is Fashion's New Source of Competitive Advantage"* extolling the Shein model's ability to enable brands to sell yet more clothes!

> *"Greater Potential Revenue. Fashion players will have more shelf space available for in-season products, which could help them generate more sales."*[18]

With the assistance of an uncritical press, this is being presented to consumers and legislators as a win for sustainability:

> *"SHEIN's on-demand agile supply chain facilitates sustainability by effectively addressing over-production through the alignment of production with customer demand, responsive order fulfillment, reduction of excess inventory and waste, and enhancement of overall supply chain efficiency."*[19]

It obviously isn't, and to claim otherwise demonstrates a fundamental misunderstanding of both fast fashion and sustainability. This constant plethora of choices, offered for less than the price of a sandwich, creates its own demand. Indeed, some refer to this compulsion to purchase as 'addiction'.[20] Reportedly, in 2018-2019, Shein's average order value was around USD 100, and its repurchase rate (number of customers who placed more than one order) was over 30%.[21] With many consumers developing Shein 'habits' of several orders a month and ordering at least 8 items each time, how many times can they wear those clothes before the next 'haul' arrives?[22]

Whilst the draft JRC Report never mentions price, Shein is well aware of the role of economic incentives. To quote a recent Time Magazine interview with Shein Executive Vice Chairman, Donald Tang:

> *"You buy clothes for your pets?" "Yes. Also, a leash and harness. And* ***then, because they're very attractively priced, I can buy more****." (emphasis added).*[23]

18 sourcingjournal.com/wp-content/uploads/2023/06/bcg-agility-is-fashions-new-source-of-competitive-march-2023.pdf

19 sourcingjournal.com/topics/business-news/shein-supply-chain-agility-competitive-advantage-boston-consulting-group-goodops-sustainability-438557/

20 kr-asia.com/decoding-shein-the-rise-of-chinas-newest-retail-decacorn-part-1-of-3

21 kr-asia.com/decoding-shein-all-the-world-over-part-3-of-3

22 www.nytimes.com/2022/09/01/style/shein-clothing.html

23 www.linkedin.com/pulse/what-sheins-executive-vice-chairman-regrets-influencer-brand-trip%3FtrackingId=qhPQeMZITOC56VY-2j6aVkA%253D%253D/?trackingId=qhPQeMZITOC56VY2j6aVkA%3D%3D

The outcome of this on-demand model is - unavoidably - ever-increasing manufacturing emissions that are amortized over ever fewer wears, and so automatically - rising global GHG emissions, and rising, not falling, waste.

As for the draft JRC Report's other proposed solutions: "lending, renting, repair and resale", as already explained, for fast fashion, the economic incentives are not aligned. Moreover, the report's assumptions are extremely optimistic - not to say unrealistic. The primary source for the draft JRC Report's resale recommendations appears to be yet another publication by ThredUp.[24]

This in turn, appears to be based on January/ February 2022 surveys by **Global Data.**[25] We are told (see Methodology and Primary Sources) that the consumer survey covered 3,200 US adults (*"Note: Survey data only sampled U.S. women until 2020"*), and the Fashion Retailer Survey covered 50 U.S. fashion retailers. *"In addition, thredUP's Resale Report leverages data from the following sources: Green Story Inc. research and internal ThredUP customer and brand performance data."*

We don't know whether those surveys were commissioned (paid for) by ThredUp, how the consumers were selected, or what questions they were asked. So we don't know how representative of US consumers the responses really are. There is in any case, no reason to suppose that they accurately represent the actions and opinions of global, let alone EU consumers.

As for *Green Story Inc's Comparative Life Cycle Assessment (LCA) of second-hand clothing vs new clothing*, this is based upon the assumption that second-hand clothing purchases replace new purchases, one-for-one (P.43). This appears to be a common misconception. There is no evidence to support this claim. Indeed, the only study that appears to exist (WRAP (2013a):[26] reportedly found *"that the re-use displacement effect in Britain from buying a used item rather than a new one is only 28% for textiles"*.[27]

And this was in 2013. Over ten years later, despite the purported significant growth in the second-hand market, there has been no equivalent reduction in new clothing sales. Rather, the data appears to indicate little more than a transfer of income from charity shops and waste processors to online remarketers. In fact, there is some evidence to suggest that the realization that it is possible to resell clothes so easily, and so profitably, may actually be encouraging new purchases - particularly at the top end of the market. Indeed, the recently launched app **Croissant,**[28] currently only available in the US, appears to be offering a guaranteed resale price to shoppers, specifically in order to encourage them to buy the garments of brands/retailers enrolled in the program, in the first place. Or as they put it: *"Customers spend 50% more when they're empowered with Guaranteed Buybacks™"*.[29]

24 www.thredup.com/resale/2022/#size-and-impact

25 www.globaldata.com/

26 Study into consumer second-hand shopping behavior to identify the re-use displacement effect, WRAP March 2013, Project Code MDP007-001)

27 norden.diva-portal.org/smash/get/diva2:720972/FULLTEXT02.pdf

28 croissant.com/

29 croissant.com/merchants

As another example, it is now apparently a thing to sell 'style bundles' - "selling secondhand clothes that give eco-conscious Gen Z customers the thrill of a shopping spree — without the guilt of a Zara haul."[30]

Even these sellers note'

> *"The popularity of thrifting in recent years, as well as the increasing popularity of micro trends and cheap fast fashion brands such as Shein, has made certain items more difficult to find." There is also an avalanche of low-quality clothing to contend with. "When I go into the thrift store, I'll just see Shein clothing and it's all disheveled."*[31]

Further, the disappearance of the highest quality items from the waste stream, due to their diversion to these much vaunted 'sustainable' resale sites, has reduced the profitability of waste sorting and disposal, as documented by the European recycling industry association EuRIC.[32] This falling profitability automatically both puts pressure on sorting costs - and so sorting quality - and increases incentives to dump unwanted clothing on the Global South.

Investigations undertaken recently by Aftonbladet (Ab)[33] and Changing Markets (CM) substantiate this concern.[34]

As Changing Markets' concealed AirTag trackers found,[35] in direct violation of France's operational extended producer responsibility (EPR) system for textiles - which includes collection, sorting, recycling, and reuse targets - a pair of trousers in mint unworn condition, with the label still attached, deposited in a C&A collection bin in Paris, was, within a week, transported to the SOEX processing plant in Bitterfeld-Wolfen (Germany). Within a month of drop-off, CM believes the trousers were destroyed, likely shredded, at that facility.[36]

Whilst Aftonbladet tracked only H&M take-backs from Sweden, these proved no more 'circular'. Aftonbladet purchased 10 H&M garments from two second-hand shops in a mall in Stockholm. Ab naturally expected that at least some of the clothes would immediately be returned to the most sustainable recycling option - the second-hand market in Stockholm. After all, that is where they had just come from.

None were.[36] *"A gray zip-up shirt, which looks like it has never been worn" ended up at a facility in Germany where clothes are ground down. Whilst despite its clear unsuitability for tropical conditions, a black and white tweed jacket - presumably synthetic - was sent to Cotonou. To quote a Benin reseller: "Who thinks we need those kinds of jackets in Africa?"*[37]

30 www.washingtonpost.com/lifestyle/2023/07/29/gen-z-thrift-style-bundles/

31 www.washingtonpost.com/lifestyle/2023/07/29/gen-z-thrift-style-bundles/

32 euric.org/resource-hub/reports-studies/study-lca-based-assessment-of-the-management-of-european-used-textiles

33 www.aftonbladet.se/nyheter/a/O8PAyb/har-dumpas-h-m-kladerna-du-atervinner

34 changingmarkets.org/wp-content/uploads/2023/07/Take-back-trickery_compressed.pdf

35 changingmarkets.org/wp-content/uploads/2023/07/Take-back-trickery_compressed.pdf

36 changingmarkets.org/wp-content/uploads/2023/07/Take-back-trickery_compressed.pdf

37 www.aftonbladet.se/nyheter/a/O8PAyb/har-dumpas-h-m-kladerna-du-atervinner

Aftonbladet recently published a follow-up report, noting that:[38]

> *"Six of the ten garments we submitted to H&M have been shipped to developing countries, without functioning waste management, where textile waste destroys wetlands and sensitive ecosystems. With the same distribution, 56 of the 94 million garments the fashion giant claims to collect each year would end up in dumping countries."*

If the EU can't recycle polyester and blended fabrics fibre to fibre we believe it has no business exporting that waste to the Global South. Cheap plastic clothes do not have resale potential. Even Business of Fashion (BoF), who previously insisted resale was key to sustainability - and included a resale requirement in their 'sustainability' index,[39] has now realized that it's a Potemkin solution.[40]

The draft JRC report continues its analysis of Waste Generation & Management with the following observations - which are regrettably, no more scientifically founded than those already discussed:

> *Product design, e.g. reducing the complexity of materials used to produce textiles, could enhance durability, thus postponing the end-of-life of the product, and allow easier recycling solutions (31)...*
>
> *...Some brands committed to no production waste sent to landfill by 2023 (42). While the sector is keen on increasing the uptake of recycled fibres, several barriers exist. For example, while the share of recycled polyester reached 14% in 2019, it is not yet advancing at the speed and scale required, also due to the low prices of fossil-based polyester (8). While most recycled polyester on the market is currently based on plastic bottles, the value of polyester fibres in discarded textiles is currently being lost (8).*
>
> *(8) Textile Exchange, 2021, Preferred Fibre & Materials - Market Report 2020.*[41]
> *(31) Ellen MacArthur Foundation, 2017, A new textiles economy: redesigning fashion's future.*[42]
> *(2) Inditex, 2021, Our commitment to sustainability.*[43]

As demonstrated in Part 3: the draft JRC Report policy recommendations - are they substantiated, appropriate, and likely to be effective? The claim that enhanced durability will both postpone product end-of-life and allow easier recycling solutions is regrettably, unfounded.

38 www.aftonbladet.se/nyheter/a/0QxkyA/modets-morker-5-av-10-h-m-plagg-hamnar-i-afrika

39 gcbhr.org/insights/2023/01/amplifying-misinformation-the-case-of-sustainability-indices-in-fashion

40 www.businessoffashion.com/articles/sustainability/resale-wont-fix-fast-fashions-sustainability-issues/?utm_source=newsletter_dailydigest&utm_medium=email&utm_campaign=Daily_Digest_310723&utm_term=P6N6HAI72BFM7EYKXVRIE65DRQ&utm_content=top_story_1_cta

41 textileexchange.org/app/uploads/2021/04/Textile-Exchange_Preferred-Fibre-Material-Market-Report_2020.pdf

42 ellenmacarthurfoundation.org/a-new-textiles-economy

43 www.inditex.com/itxcomweb/en/sustainability

CRDC
www.crdc.com.au