

AFCOT ANNUAL FORUM 2026 · ACA-AFCOT SEMINARS

The textile industry's plastic footprint

and key takeaways, including the future of accumulated synthetic textile waste stocks, water contamination, air emissions, and the work of Earth Action

Julien Boucher · Co-founder & Scientific Director, EA – Earth Action · Lille, 6 October 2026

PART 1 · WHY WE ARE HERE

We are not here to talk about plastic. We are here to talk about the value of the cotton industry, through its impact:

**measured, measurable,
reducible.**

WHY · 1

The robustness bet



Energy

Fossil prices drive input, transport and processing costs, and they swing.



Climate & resources

Water stress, yields and extreme weather reshape where and how fibre is grown.



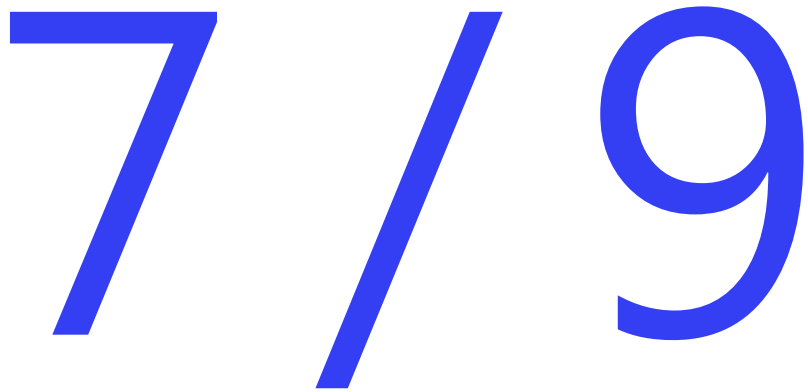
Regulation & markets

EU textile strategy, EPR schemes, green-claims rules: proof is becoming a licence to trade.

In a volatile world, the business models that last are those **least exposed to fragile resources.**

WHY · 2

Operating within planetary boundaries



planetary boundaries are now transgressed, all at their highest recorded levels.

Novel entities is one of them

Plastics belong to the **novel entities** boundary. Plastic pollution is no longer a niche topic: it is one of the limits of the safe operating space for humanity, and for business.

WHY · 3

Value creation and impact can be reconciled

Impact as a cost

- Reported because it is required
- Generic, average data
- A defensive posture



Impact as an asset

- Measured with specific data
- Turned into claims, access to markets and premiums
- Proof of resilience for buyers and investors

The condition: being able to prove it.

WHY · 4

Cotton runs on the natural cycle, not on fossil resources

139 Mt

fibres produced worldwide in 2025

59 %

polyester alone: a fossil-based plastic

18 %

cotton (25.7 Mt), the second fibre

Grown by photosynthesis, not made from oil: a structural advantage, if it is demonstrated with numbers.

WHY · 5

Plastic is not the problem. Cheap, short-lived material is.

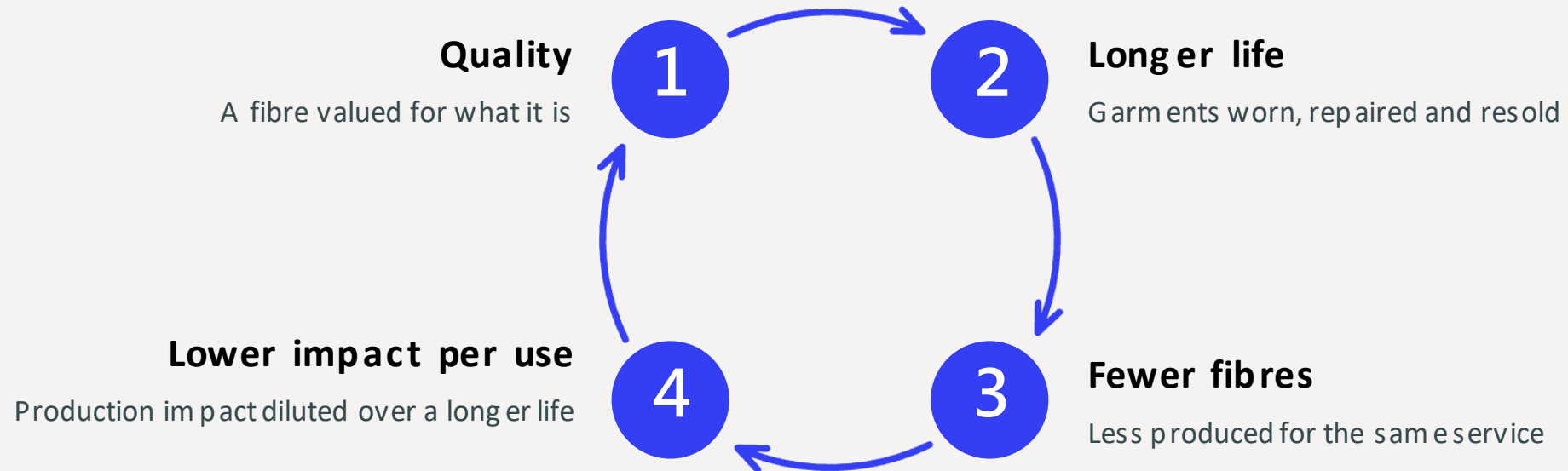
Ultra-fast fashion, like single-use packaging: when a material costs almost nothing, it is **designed to become waste**.



WHY · 5

Cotton's case is a virtuous circle:

quality → durability → fewer fibres → less impact.



PART 2

Who we are: footprint specialists

WHO · 1

Our roots: measuring environmental footprints



Life-cycle assessment

The full picture, from field to end-of-life



Carbon footprint

Greenhouse gas emissions and trajectories



Water footprint

Use, scarcity and pollution of water



Plastic footprint

The missing piece, which we helped build

Twenty years of footprinting: from co-founding **Quantis** (2006) to **EA – Earth Action** and **PLASTEAX** (2021). A science-driven, Lausanne-based team.

WHO · 2

Plastic was the blind spot of life-cycle assessment

LCA counted CO₂, water and toxicity, but not the plastic that **leaks into nature.**

So we set out to **understand** the phenomena, **measure** them with new methods, and **convene** industry around them.



WHO · 3

The Plastic Footprint Network, convened by EA

A pre-competitive network of brands, consultancies, NGOs and scientists, building shared guidance to measure plastic leakage, sector by sector, **including textiles.**

This working group was led by:



PFN secretariat is led by



&



Scientific Committee

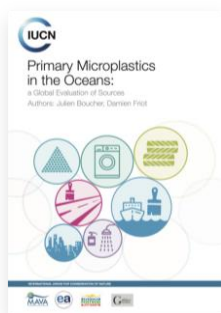


2023 members



WHO · 4

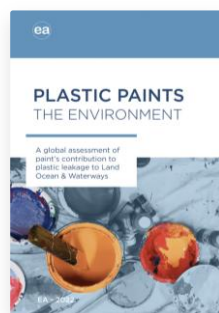
Flagship research, one source at a time



2017 · IUCN

Primary microplastics in the oceans

Textiles 35 %, tyres 28 % of sources



2022 · EA

Plastic paints the environment

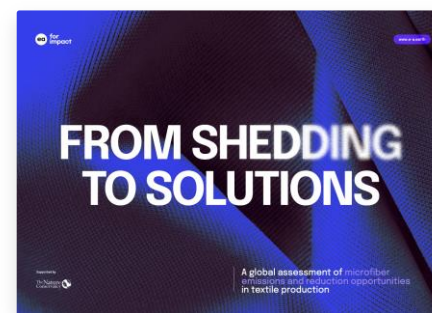
Paint: the largest source of microplastic leakage



2024 · NATURE COMMS

Apparel's overlooked plastic leakage

With Cotton Incorporated: 8.3 Mt in 2019



EA · WITH TNC

From shedding to solutions

Microfibres from textile production, and how to cut them



YEARLY · EA

Plastic Overshoot Day

31.6 % of plastic waste managed in 2026



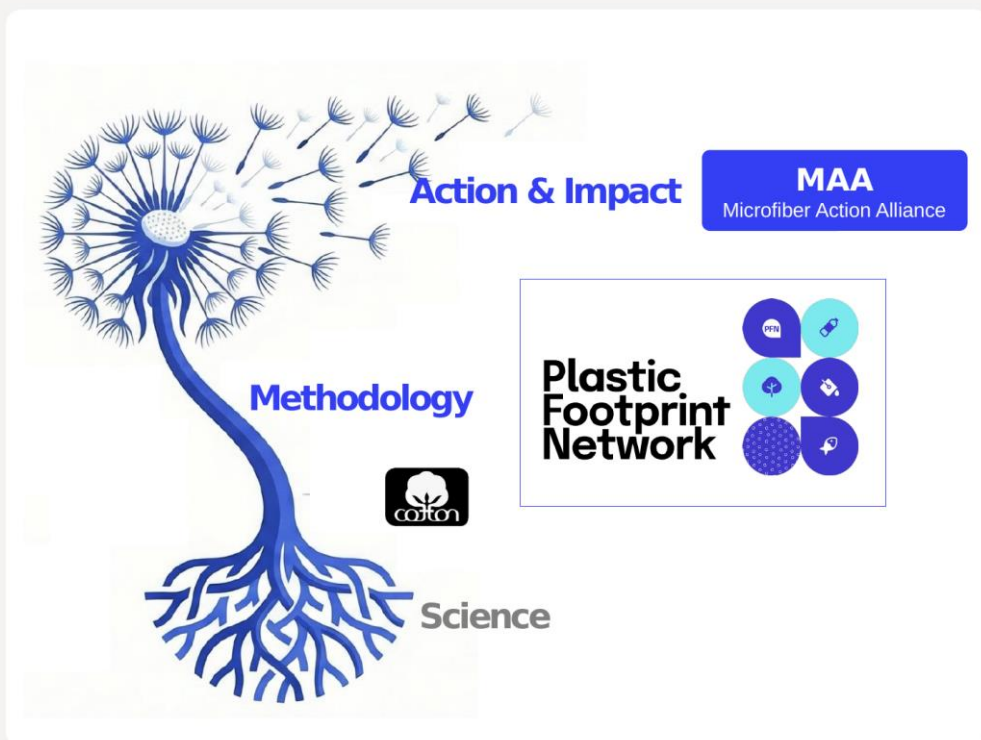
2026 · EA

The plastic we breathe

Textile emissions to air: as large as to water

WHO · 5

Three facets of EA: our path to systemic impact



01

Engineering the numbers

Science and methods: robust, transparent, reproducible

02

Consulting: the what and the how

Where to act, then how to act and track progress

03

Collaboration: building together

Sector-wide alliances: PFN, Microfiber Action Alliance

PART 3

What: the textile industry's plastic footprint

WHAT · THE BIG PICTURE

Plastic Overshoot Day: since 6 September, the world has been overflowing

116 days

of the year when plastic waste exceeds our capacity to manage it



227 Mt

of plastic waste generated in 2026

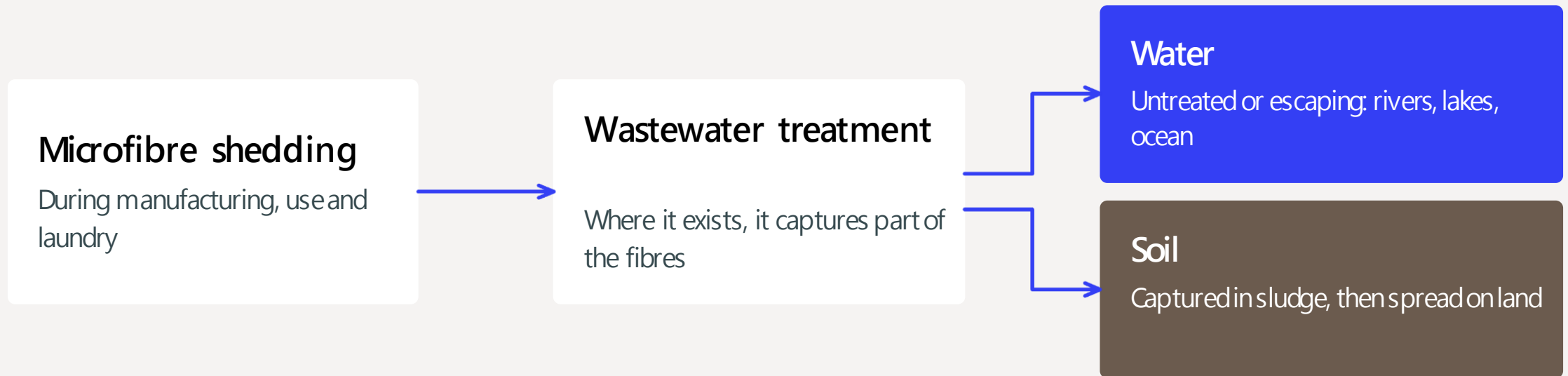
~72 Mt

mismanaged at end of life: 31.6 %

Textiles are part of this flow: **7 Mt** of synthetic garments were mismanaged in 2024, and they keep releasing microplastics long after.

WHAT · 1

What is plastic leakage?



Leakage is the plastic that escapes into nature, in mg or fibres per kg of textile. The **plastic footprint** adds where it ends up and what it does there.

WHAT · 2

Plastic leaks from many sources. Textiles come first.

35 % 28 %

synthetic textiles

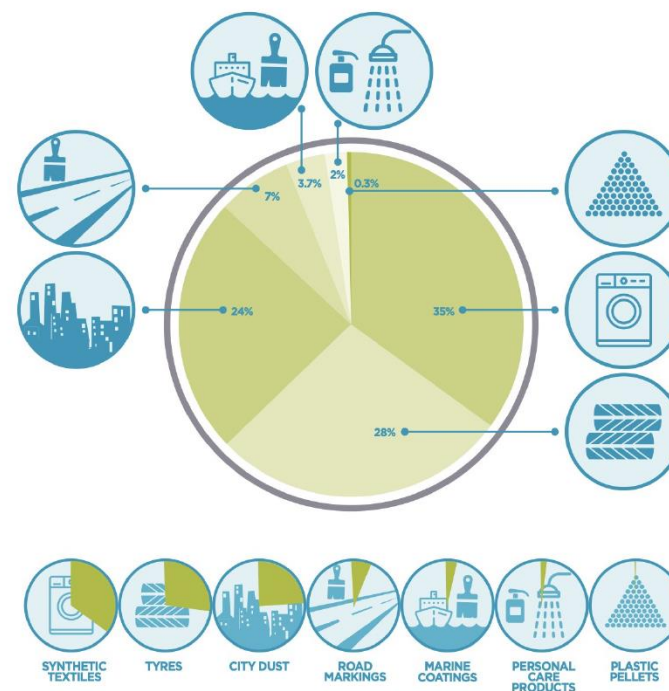
tyres

of global releases of primary microplastics to the oceans

Source: Boucher & Friot, Primary Microplastics in the Oceans, IUCN (2017)

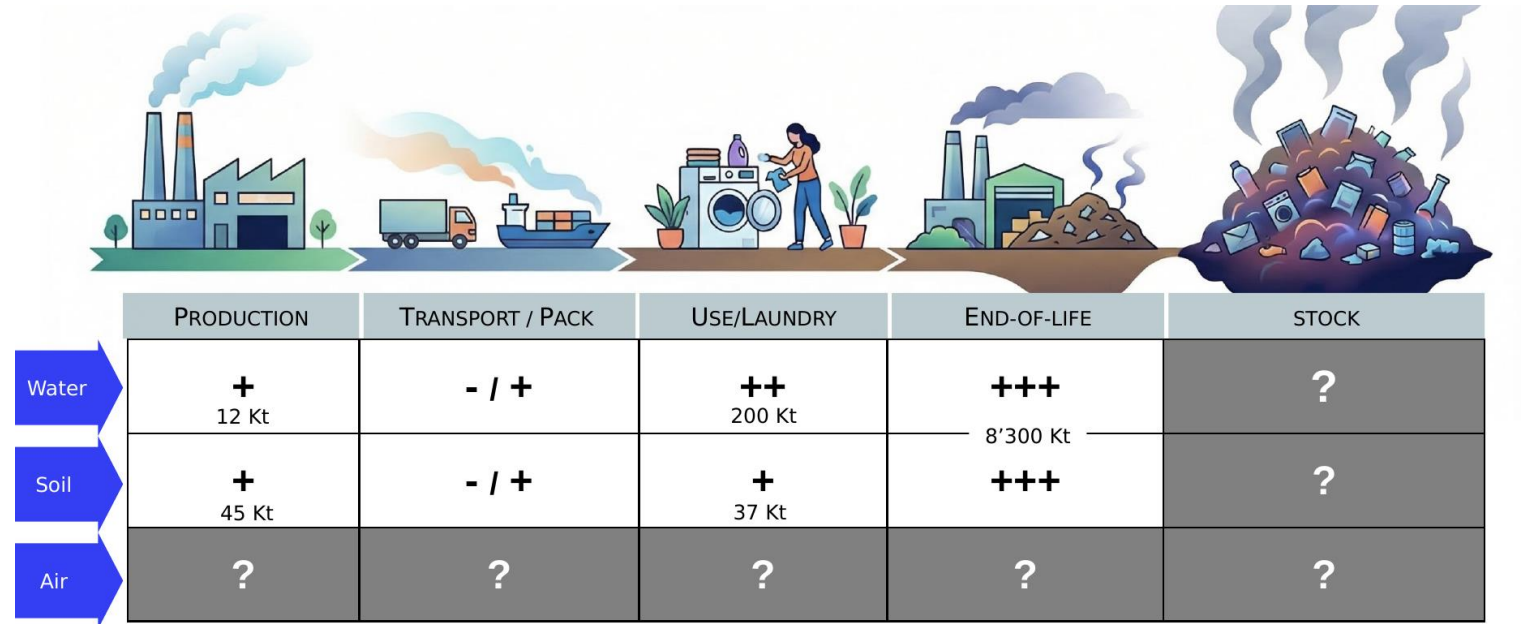
GLOBAL RELEASES OF PRIMARY MICROPLASTICS TO THE WORLD OCEANS

BY SOURCE (IN %).



WHAT · 3

Hotspots and unknowns across the life cycle



+ to +++ = relative magnitude

? = still unknown

End-of-life
dominates, by
far.

WHAT · 4

The biggest flow is not where we usually look

PRODUCTION

**57 kt**

per year, 80 % of it to soil via sludge

USE & LAUNDRY

**237 kt**

per year, mostly to water



Microfibres are not only an ocean story, and the washing machine is not the main source. Discarded clothes are.

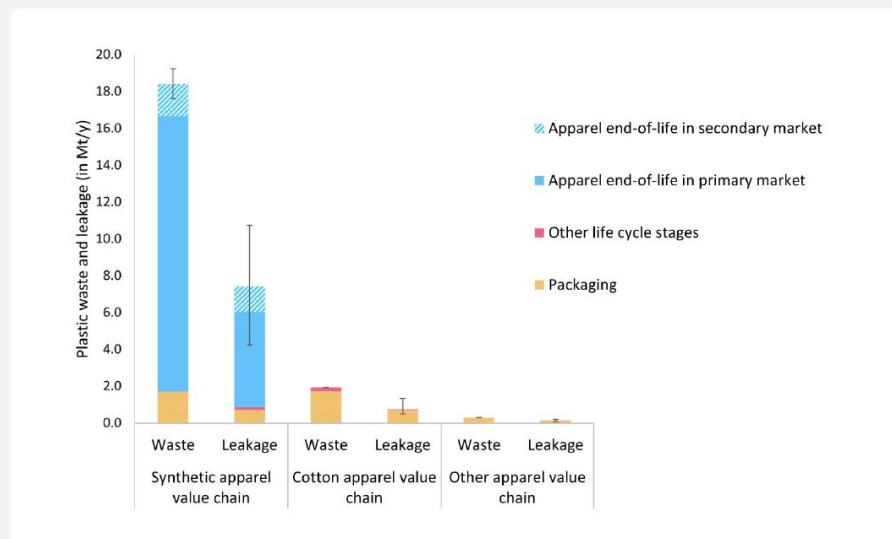
WHAT · 5 · WITH COTTON INC.

Synthetic clothing drives apparel's plastic leakage

8.3 Mt

of plastic pollution from apparel in 2019, 14 % of the total.

The main source: synthetic clothing mismanaged as waste, including in countries receiving used apparel exports.



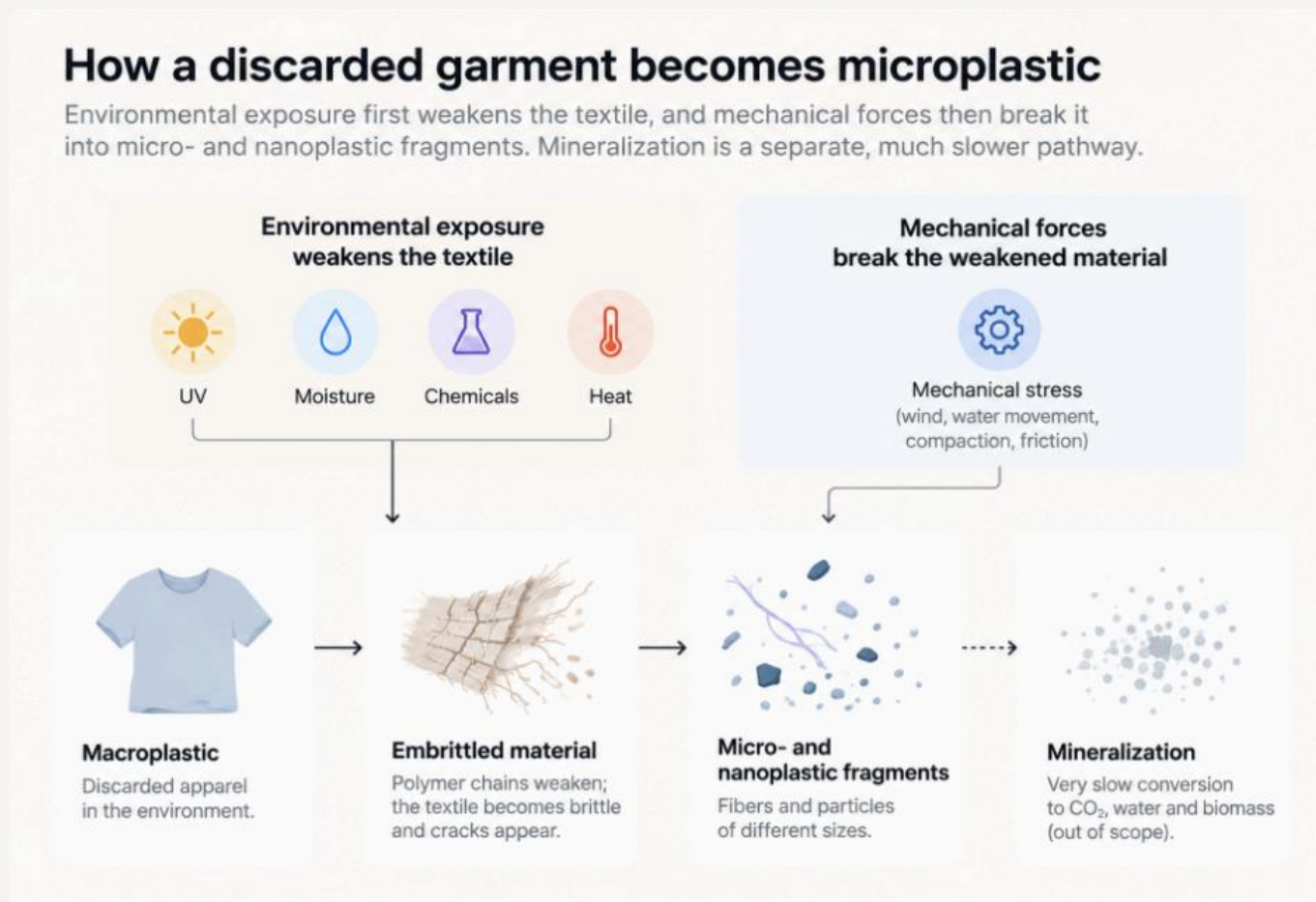
In the cotton value chain, leakage comes mostly from packaging.

Source: Kounina et al., The global apparel industry is a significant yet overlooked source of plastic leakage, Nature Communications (2024), doi:10.1038/s41467-024-49441-4

WHAT · 6 · NEW RESEARCH

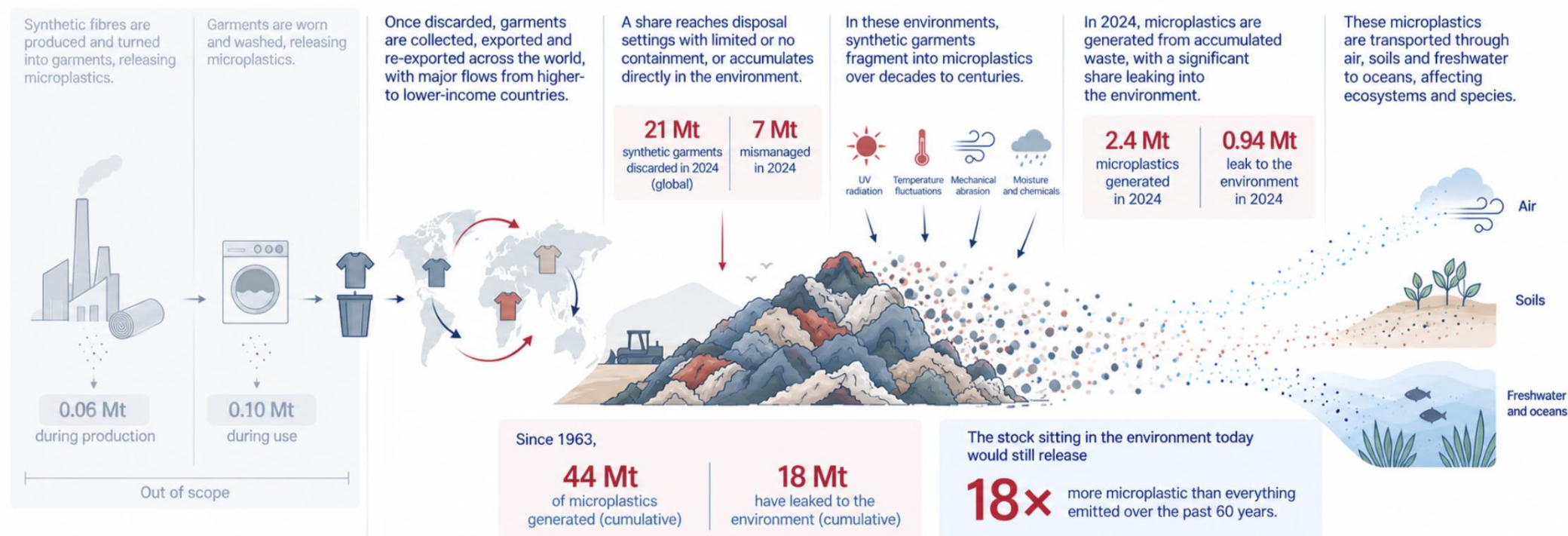
A discarded garment does not disappear

UV, moisture, chemicals and heat weaken it. Mechanical stress breaks it into micro- and nanoplastics. Mineralisation is a separate, far slower pathway.



WHAT · 7 · NEW RESEARCH

From the wardrobe to the dump, then to air, soil and water



WHAT • 8 • NEW RESEARCH

18



The stock in the environment today would still release **18 times more** microplastic than everything emitted over the past 60 years.

WHAT · 8 · NEW RESEARCH

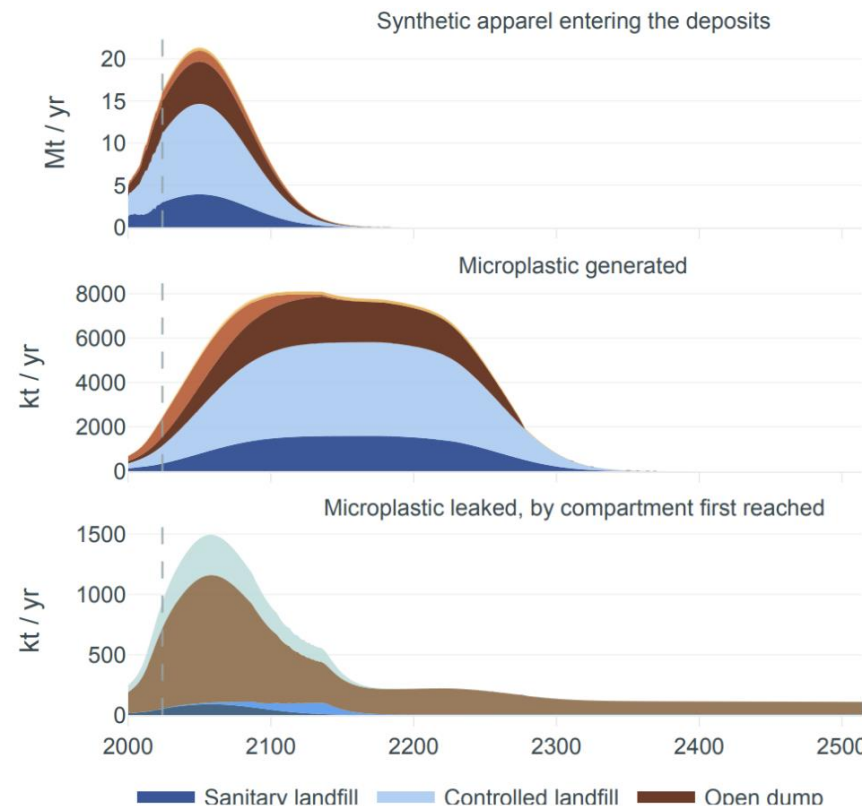
What we bury today leaks for centuries

Since 1963:

44 Mt 18 Mt

of microplastics generated,

leaked.



The illustrative long-run scenario, aggregated world-wide, at the central run. Not a forecast: disposal is extended with a bump and a decline, to show how generation and leakage each follow it. The bottom panel counts only what has left a deposit, before any redistribution between compartments.

THE MICROPLASTIC TICKING TIME BOMB

A global assessment of the secondary microplastic released by discarded synthetic apparel.



COMING SOON

New EA report

Publication: [date]

WHAT · 9

Air: the elephant in the room

Air $\approx$ water

Microplastic emissions to air from textiles are of the **same order of magnitude** as those that reach water.

THE PLASTIC WE BREATHE · EA, 2026

A global assessment of microplastic emissions to air from wearing clothes and other textile sources

The pathway everyone ignored is as large as the one everyone studies.

PART 4 · SO WHAT FOR COTTON?

Measured. Measurable. Reducible.

Measured

What science already shows about fibres, release and degradation

Measurable

Methods and models exist to assess a product, a mill, a supply chain

Reducible

Concrete levers in production, product lifetime and end-of-life

MEASURED

All fibres shed. Their fate is what matters.

Synthetic fibres

- Persist for decades to centuries
- Keep fragmenting into micro- and nanoplastics
- Build a long-lived legacy stock

Cotton and natural fibres

- Also shed fibres in use and laundry
- Biodegrade in most environments [source to add]
- Value-chain leakage: mostly packaging, not the fibre

Degradability is part of the impact, and it must be demonstrated, not assumed.

MEASURED

Six key learnings

1

Leakage is not only at the back of the washing machine

2

Leakage is not only aquatic: soils are heavily contaminated

3

End-of-life is by far the largest hotspot

4

Longer-lasting products are a double win

5

Degradability matters for impact

6

Air emissions remain the elephant in the room

MEASURABLE

You cannot improve what you cannot forecast

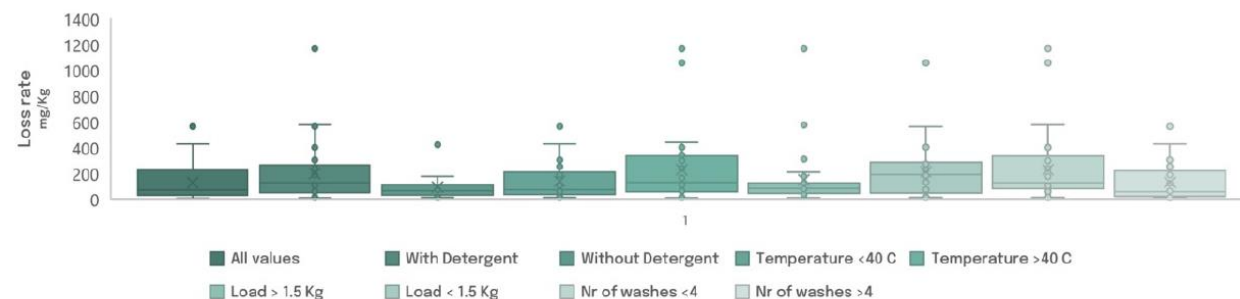
THE CHALLENGE

Shedding rates vary widely, cannot all be measured, and generic values are not enough.

OUR APPROACH

An archetype-based model: product specs × wet and dry process parameters.

Loss rates for use – results from literature analysis



REDUCIBLE

The Microfiber Action Alliance: from uncertainty to action

A pre-competitive industry initiative. Brands commit to **-30 % micro fibre emissions from production by 2032**, against a 2022 baseline.



PART 5 · BEYOND PLASTIC

Cotton grows in soil. Soil can store carbon.

A lever no synthetic has

A crop can do more than reduce harm: managed well, its soils can draw carbon down.

Proven practices

Cover crops, reduced tillage, rotations and returning residues raise soil organic carbon, including in cotton systems.

A French idea

The "4 per 1000" initiative, launched at COP21 in Paris: soil carbon as a climate solution.

Cotton could become part of the climate solution, not just less of the problem.

BEYOND PLASTIC · THE CONDITION

Soil carbon only counts if it is measured

Not forever

Soils saturate, and carbon is lost if practices stop

Hard to measure

High field variability: deep, repeated sampling is needed

Trade-offs

Nitrous oxide, water and yields must be counted too

New rules from 2027

GHG Protocol: traceability, primary data, monitoring, reversals

Measured, measurable, reducible...and potentially regenerative.

NOW WHAT

What the cotton sector could build together

01

Specific data

By origin and process, to replace generic values in footprint databases

02

A sector baseline

Plastic and environmental footprint of cotton, measured and comparable

03

A seat at the table

In pre-competitive work: Plastic Footprint Network textile guidance, MAA, upcoming research

MEASURED · MEASURABLE · REDUCIBLE

**Cotton's value lies in its
impact. Let's prove it
together.**

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