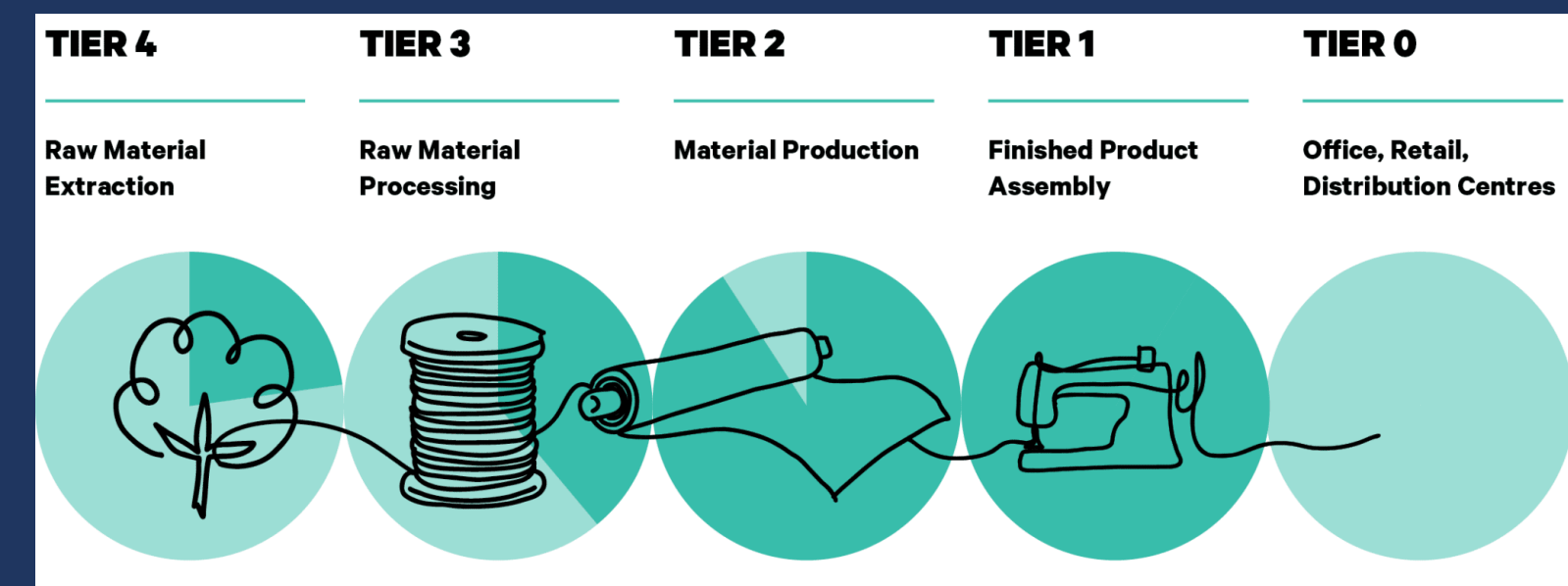


The EU Textile Sustainability Revolution

Streamlined LCA's for Fast and Scalable Impact Assessment of Textile Products

Anton Luiken

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Agenda

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02 Why the EU is raising the bar

03 Environmental claims and accountability

04 The textile data chain

05 bAwear: turning textile data into impact

06 Demonstration of the bAwear platform

07 From LCA data to DPP

08 Closing

INTRODUCTION

Co-founder and textile sustainability expert at bAwear

- Development of proprietary LCA software tool
- Environmental footprint calculation
- Consultancy on options to reduce the footprint

Owner of Alcon Advies (since 2008)

- Consultancy on textile sustainability / circular textiles
- Based on > 20 yr applied R&D in textiles
- Involved in many EU and national funded projects

Advisor to Modint and Euratex/ETP

- PEFCR – Product Environmental Footprint Category rules
- ESPR – Ecodesign for Sustainable Products Regulation
- DPP – Digital Product Passport



Anton Luiken

Founder / CTO

Textile Specialist

INTRODUCTION

bAwear's activities

Textile-specific LCA's

Environmental impact assessment built around textile products and processes, using a proprietary textile model

Stream-lined LCA's

ReCiPe 2016 Midpoint (Hierarchist), aligned with ISO 14040/14044.

Two levels of depth

From simplified product assessment to detailed Expert calculations.

ESPR-ready

Product data prepared for ESPR requirements and the Digital Product Passport.

Advising

Advise on sustainability and reduction of the environmental footprint.

bAwear[®]
S C O R E

Streamlined LCA's

Aspect	Full LCA	Streamlined LCA
Purpose	Comprehensive assessment of environmental impacts	Rapid assessment to support decisions and comparisons
Data requirements	Extensive primary and secondary data for many processes	Reduced data requirements; uses selected datasets, assumptions and/or averages
Impact categories	Can cover a broad range of impact categories	Focuses on a limited set of key indicators
Accuracy & detail	Highest level of detail and methodological robustness	Lower detail; sufficient accuracy for screening, benchmarking and decision-making
Time & cost	Time-consuming and relatively expensive	Fast and cost-effective , enabling many products to be assessed
Typical application	Detailed environmental studies, verification, research and regulatory purposes	Product development, supplier comparison, screening, benchmarking and communication

THE TEXTILES INDUSTRYS FUNDAMENTAL DATA PROBLEM

We cannot manage what we cannot measure, and we cannot prove what we cannot trace.

Transparency and traceability is under-developed in most globalized textile supply chains



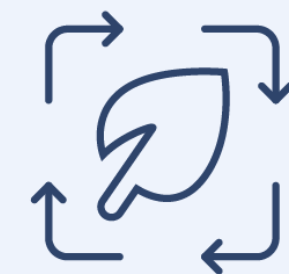
Global warming
kg CO2 eq



Energy use
MJ



Water use
L



Land use
m2

THE FUNDAMENTAL PROBLEM

How much do we know about a garment?

Complex supply chain

Data not in a uniform format

Based on different assumptions

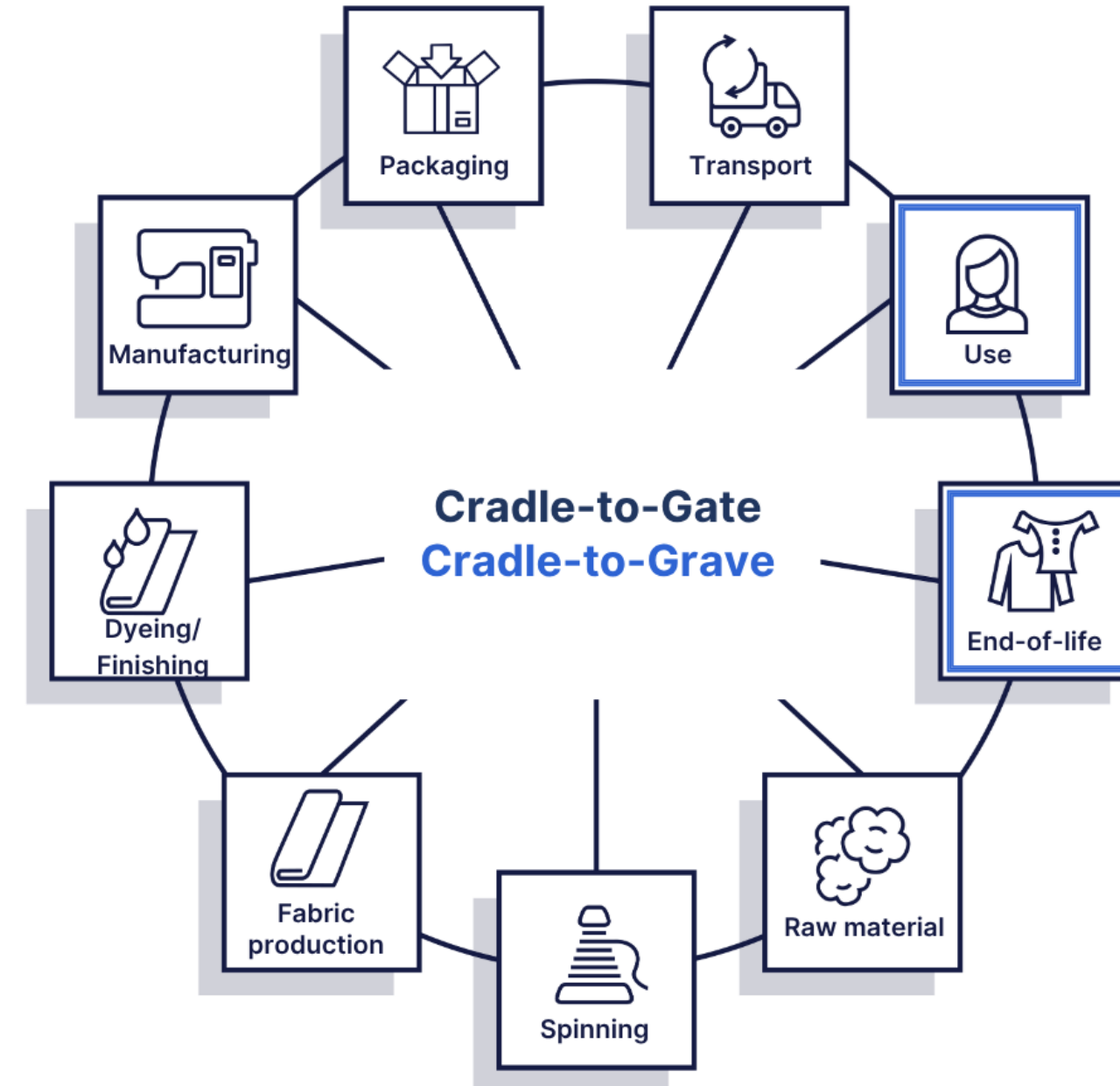
Incomplete information

Difficult to compare

Difficult to verify

All of this information is needed to calculate the environmental impact based on a Life Cycle Assessment.

An LCA quantifies impact across the full life cycle, from raw material to end of life.

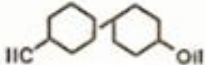


01

Why the EU is raising the bar

Regulation is moving to verifiable data.

Many regulation affecting the textile industry

 Ecodesign and Digital Product Passport	 Extended Producer Responsibility (EPR)	 Waste Shipment	 Green Claims and textile labelling
 Green Public Procurement (GPP)	 Waste Legislation	 Corporate Sustainability Due Diligence	 Corporate Sustainability Reporting Directive
 Industrial Emissions	 Sustainable Finance (Taxonomy)	 Microplastic	 PFAS Restriction
 Skin Sensitisers	 Bisphenol	 REACH Revision	 PFHxA Restriction

The regulations are not independent, but all part of the EU strategy for a circular economy

Ecodesign for Sustainable Products Regulation

FROM

Tell me that your product is sustainable.



TOWARDS

Give me the **data** that allows me to assess and demonstrate its sustainability.

ESPR sets product requirements for

- sustainability,
- circularity,
- resource efficiency
- End-user information.

Textiles are a priority product group.

Product information across the value chain



Product identification	Material composition	Sustainability information	Traceability
Compliance information	Repair, reuse, remanufacturing	Environmental performance	End-of-life

The QR code – RFID is the access point. The real challenge is the data behind it.

Where the Digital Product Passport stands

2026

DPP Registry established

DPP standards being implemented

Testing environment available

2027

Textile-specific requirements
expected

Textile ESPR delegated act planned,
Q3 - Q4 2027

2028+

Implementation and transition
periods

An 18 month transition period is
foreseen

**The question is no longer whether product passports will happen.
The question is whether your product data is ready.
Not only of your own tier, but of the complete supply chain.
This will affect all textile manufacturers exporting to Europe!**

02

Environmental claims and accountability

Claims now need evidence.

GREEN CLAIMS

From adjectives to evidence

UNSUPPORTED CLAIMS are no longer allowed

Eco-friendly

Sustainable product

Low-impact fabric

EVIDENCE

Material composition

Production data

Energy and water data

Calculated environmental impact

Methodology and data source

Traceability

The proposed Green Claims framework aims to make environmental claims reliable, comparable and verifiable, with requirements around substantiation and verification.

EPR and eco-modulation

EPR – Extended Producer Responsibility

Every organisation (producer/importer) that puts textiles on the EU-market is responsible for the collection and end-of-life of discarded products. Most of the organisations are member of a PRO (Producer Responsibility Organisation that manages compliance for companies. They pay fees to the PRO's to run collection and recycling.

Member States must establish textile and footwear EPR schemes. Fees are intended to be eco-modulated, so product characteristics can influence what producers pay. Eco-modulation is set to be implemented in 2027.

Better product → **Better environmental profile** → **Potentially lower EPR cost**

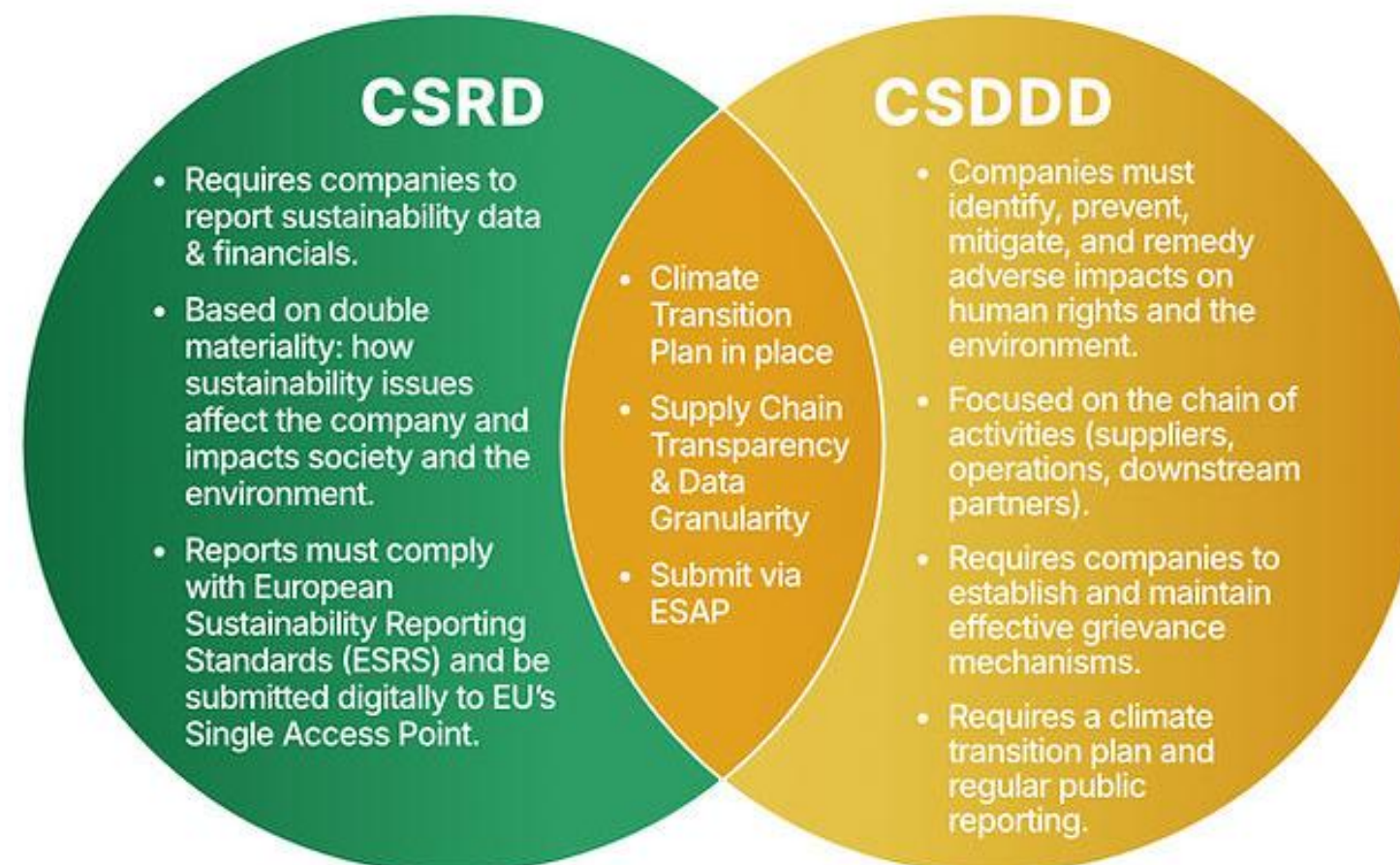
Product-level environmental data becomes financially relevant, not only a reporting exercise.

The request for data travels down the value chain

Even companies that are not directly subject to CSRD can be asked for sustainability data by their customers.

Regulation → Customer requests → Supplier data → Product data

Most of the reported impact sits in scope 3 (outsourced production), so it has to be calculated from supplier and product data.



03

The textile data chain

Where the information actually sits, and in what shape.

THE DATA CHAIN

A T-shirt is a chain of production steps



AT EVERY STEP

What happened?

Where?

How much material?

How much energy and water?

Which technology?

Which source?

Which chemicals?

Seven suppliers, seven formats

Fibre producer	Spinning mill	Knitting or weaving	Dyeing	Finishing	Cutting and sewing	Retail
Excel	PDF	Certificate	Email	ERP	No data	Generic database

How do you turn this into one consistent product footprint?

04

bAwear: turning textile data into impact

The layer between supply-chain data and product transparency.

WHAT BAWEAR DOES

The data-to-impact layer

Textile product data (primary, secondary, general,...)



bAwear calculation engine



Environmental impact report

Advise on measures to reduce impact, based on primary product data and data on company level



Digital Product Passport

TWO LEVELS OF CALCULATION

Quick Score and Expert

Quick Score

FAST, SCALABLE, INDICATIVE

Screening across many products

Comparison and early design decisions

Works with limited data availability

Expert

DETAILED, CONFIGURABLE, AUDIT-GRADE

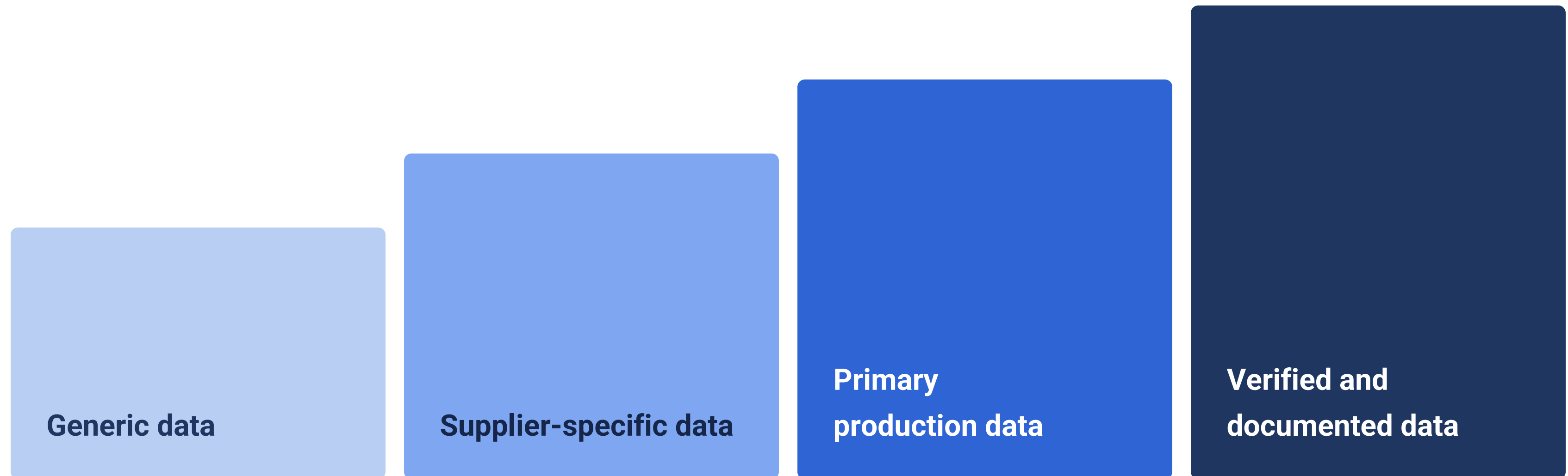
Primary supplier data and company-specific processes

More detailed modelling, more accurate footprints

Complex products and supply chains

**These are not competing calculations. They are two levels of data maturity.
Calculations are based on the same bAwear textile model**

From assumptions to primary data



bAwear works with different levels of data quality, so a company can start immediately rather than waiting for perfect data.

05

Demonstration of the bAwear platform

A cotton polyester polo, followed from data entry to result.

Pre-defined product scenarios

Often clients are not aware of the full supply chain of a product. They only know where the final product is produced. bAwear created over 300 pre-defined product scenarios to calculate the cradle to gate impact in a worst case scenario. Clients can over-write these data with the data they have available. Predefined values are shown when selecting a product in the “bulk-upload file”.

Q Search for your product type

Men	Ladies	Workwear
Sportswear	Children	Bedlinen
Baby	Bathlinen	Interior textiles
Yarns & Fabrics	Miscellaneous	Tablelinen
Home textiles	Swimwear	Activewear
Intimate apparel & Lingerie	Bags & Backpacks	Denim

Click on the individual products ... ⋮ ↕ ⚡ ☀ 🔍 ↗ ⇄ New ▼

 Blouse Cotton	 Blouse Polyester	 Coat Winter Wool
 Dress Knitted	 Dress Woven	 Fleece
 Jacket Summer Polyester	 Jacket Winter Polyester	 Jeans

DEMO

Input data for the cotton polyester polo

Garment weight	320 g
Fibre composition	50% cotton, 50% polyester
Yarn	Open end spinning, 26 Nm
Fabric	Circular knit
Dyeing	Jet dyeing
Finishing	Discontinuous
Production country	Pakistan
Renewable energy	0%
Transport	Container ship and truck to the Netherlands



Quick Score, live in the platform

bAwear Quick Score Bulk Upload Template				
QUICK START GUIDE				
About this template				
This template is used to collect primary data for bAwear Advanced calculations. You can use this template as an input form for cradle-to-gate or cradle-to-grave calculations.				
Important				
Please use Microsoft excel to complete this input file.				
Always select a product scenario.				
Each row is considered one calculation.				
The more primary data you can fill in, the more accurate are your results.				
Always fill in the percentage when entering primary data (where required)				
PRODUCT				
Product ID	Group ID	Description	Weight (grams)	Product scenario
Example: Mens short sleeve polo	F/W26	Mens polo with short sleeve and embroidery on chest	345	Men - Polo
Demo polo		Dark blue polo	320	Men - Polo cotton polyester

Standard product scenario: Men - Polo cotton polyester

ID: Demo polo | GTIN: N/A

Composition: 50% Cotton (World average) ; 50% Polyester fiber

Product weight: 0.32 kg

Amount of products in 1 kg: 3.13

Dark blue polo

The bAwear Score is calculated using a streamlined LCA, based on the ReCiPe 2016 Midpoint (Hierarchist) methodology, combining your primary data with standard secondary data for the selected product scenario. It covers all essential textile supply chain stages from cradle-to-gate or cradle-to-grave, presented as a total and per supply chain step. Results of the bAwear product label are weighted across Global Warming Potential (55%), Fossil Energy Use (22%), and Water Use (23%), based on PEFCR, and positioned against a bAwear reference product. The scoring is indicative.

Product label	Impact Indicators	Product value	Unit	Best	Worst
D	Global warming	11.76	kg CO ₂ -eq	5.14	20.80
	Fossil Energy	153	MJ	66.4	284.2
	Water use	884	Liter	170	265
55.0					

Environmental impact per kilogram of product

Supply chain steps	Global warming (kg CO ₂ -eq)	Fossil Energy (MJ)	Water use (Liter)	Land use (m²)
Fiber materials	3.36	47.7	645	4.7
Yarn production	0.39	5.4	1	0
Fabric production	0.21	2.9	1	0
Dyeing and finishing	6.3	77.7	231	0.1
Manufacturing	0.48	5.4	3	0
Transport	1.01	13.8	2	0
Total	11.76	153	884	4.8

Impact Equivalences per kg product

118 km km driving a fuel car	0.98 years years of a 5W LED lamp	1.72 hrs hours of showering	77 sheets sheets of A4 paper
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Report of Quick-Score first page (out of 5)
Other pages show the input, production locations
and explanation of the bAwear Score, the impact
indicators and a Disclaimer

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Total	11.76	153	884	4.8

DEMO

Same polo, different fibers and renewable energy

Garment weight	320 g
Fibre composition	50% regenerative Raddis cotton, 50% recycled polyester
Yarn	Open end spinning, 26 Nm
Fabric	Circular knit
Dyeing	Jet dyeing
Finishing	Discontinuous
Production country	Pakistan
Renewable energy	50%
Transport	Container ship and truck to the Netherlands



Demo related to one of the products of Schijvens!

DEMO

What Expert adds to the same product

Fabric construction		Dyeing and finishing		Manufacturing	
Electricity	2.02	Electricity	0.8019	Electricity	0.91
(kWh per kg)		(kWh per kg)		(kWh per kg)	
Renewable electricity	-	Renewable electricity	0.1881	Renewable electricity	-
(kWh per kg)		(kWh per kg)		(kWh per kg)	
Steam (kg per kg)	0.01	Steam (kg per kg)	2.65	Steam (kg per kg)	1.2
Heat (MJ per kg)	0.02	Heat (MJ per kg)	18.182	Heat (MJ per kg)	0.34
Water (litre per kg)	0.09	Water (litre per kg)	59.72	Water (litre per kg)	1

Generic process assumptions are replaced by the actual primary data of the supplier, per production step.



06

From LCA data to DPP

An LCA report is not a Digital Product Passport.

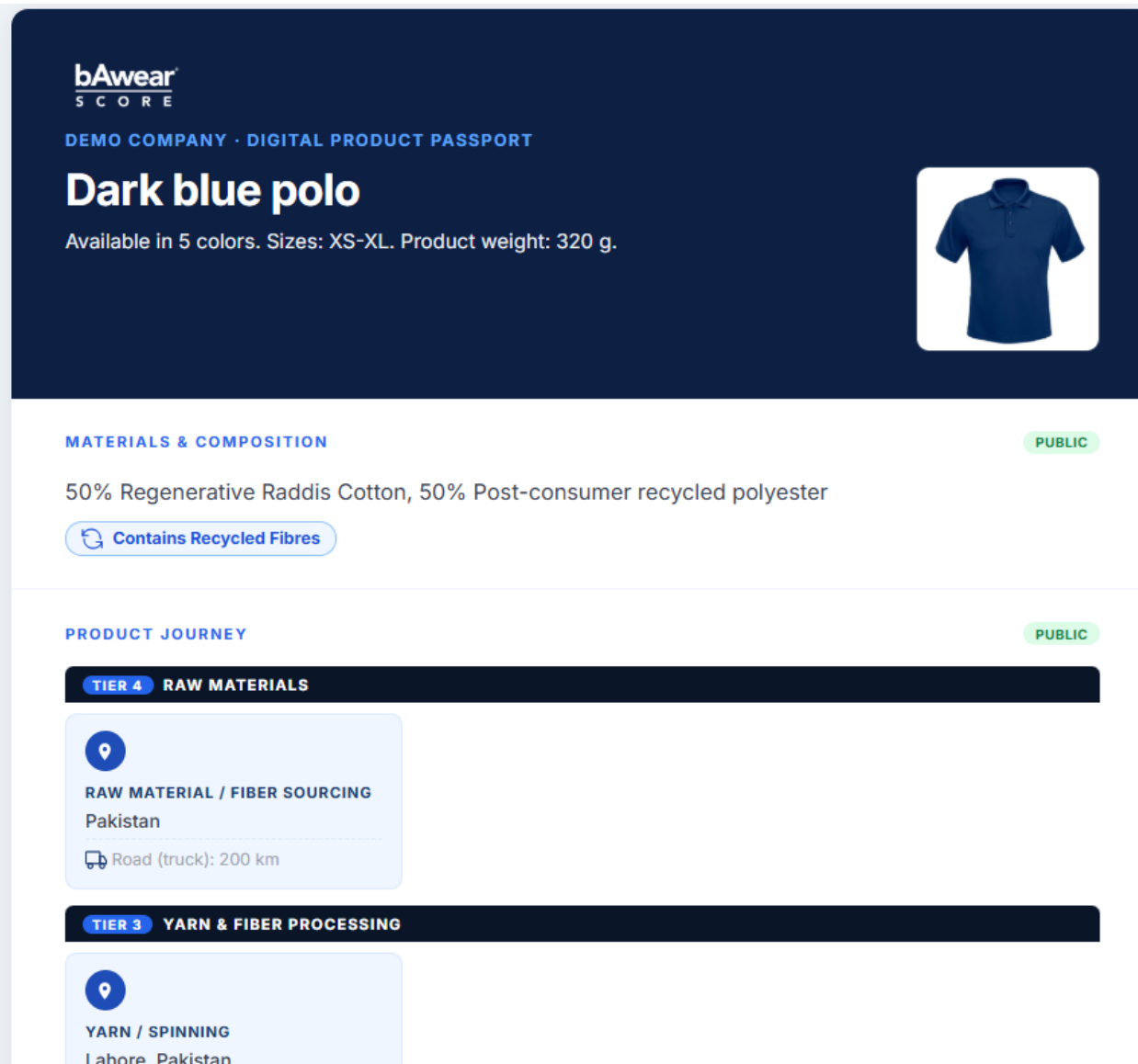
THE MISSING LINK

From calculation to passport

bAwear calculation and environmental impact data

Structured product data

Digital Product Passport



The passport is the visible end of a deeper data and calculation infrastructure.

DPP Builder

bAwear
SCORE

DEMO COMPANY · DIGITAL PRODUCT PASSPORT

Dark blue polo

Available in 5 colors. Sizes: XS-XL. Product weight: 320 g.



MATERIALS & COMPOSITION

PUBLIC

50% Regenerative Raddis Cotton, 50% Post-consumer recycled polyester

Contains Recycled Fibres

50% Recycled Content

PRODUCT JOURNEY

PUBLIC

TIER 4 RAW MATERIALS

RAW MATERIAL / FIBER SOURCING

Pakistan

Road (truck): 200 km

TIER 3 YARN & FIBER PROCESSING

07

Conclusions

Why the data behind the number matters

Primary data, reviewed

Fragmented data from across the supply chain is collected and reviewed, so the calculation reflects the actual product rather than a generic proxy. Textile knowledge is essential to understand the data.

Our own databases

Where supply-chain data is limited, bAwear falls back on its own secondary data for textile materials and processes, based on worst-case values rather than industry averages.

WHY WORST CASE

Many public databases hold no textile-specific data and work with averages and proxys. An average understates the impact of a product that sits above it, and a footprint that is too low is a greenwashing risk.

Four reasons to work with bAwear

1

Textile-specific

Built around the realities of textile products and processes.

2

LCA-based

Impact is calculated rather than claimed.

3

Scalable

Quick Score for large-scale screening, Expert for detailed assessment.

4

Affordable and fast

100's of streamlined LCA's in days for the price of 1 formal LCA that takes months

Transparency starts with data.
Credibility starts with calculation.
Compliance starts with traceability.

bAwear connects all three.



TRY IT YOURSELF

Scan and start calculating

Everyone can start with some free trial calculations and try bAwear Score on their own products. Or book a personal meeting with us.

www.bawear-score.com

bAwear team

Anton Luiken

17 September 2026