Private Sector Financing

Session on aligning financial flows with the Global Framework on Chemicals to mobilize public and private finance across value chains

GFC OEWG Multi-Stakeholder Day

26th Jun 2025, 11:30 a.m. – 12:45 p.m

Agenda

#	Agenda Item	Speakers
1.	**Opening remarks** (5 min)	Sheila Aggarwal-Khan, UNEP
2.	**Assessing financial flows and financial needs across chemicals value chains** (15 min) Mapping chemicals value chain in a select high impact sector: cotton value chain (clothing)	Rory Sullivan/Tanya Cox, Chronos Sustainability
3.	**Panel discussion: Key levers of transformation of chemicals value chains and respective roles of public and private finance actors - examples in two high impact sectors (Agriculture and Textiles)** (30 min) Panelists: • Mercy Investment Services, Caroline Boden • Rabobank, Marijn Lanting • GEF, Anil Sookdeo • Bureau Veritas, Rakesh Vazirani	Facilitated by Peggy Lefort, UNEP FI
4.	**Open discussion with the audience** Possible objectives and activities for a Finance Thematic Workstream (20 min)	Facilitated by Johannes Heister, World Bank
5.	**Conclusion** (5 min)	Johannes Heister, World Bank

Speakers

Sheila Aggarwal-Khan
UNEP
Opening

Peggy Lefort
UNEP FI
Facilitator

Johannes Heister
World Bank
Facilitator

Rory Sullivan
Chronos Sustainability
Presenter

Tanya Cox
Chronos Sustainability
Presenter

Anil Sookdeo
Global Environment Facility (GEF)
Panelist

Caroline Boden
Mercy Investment Services
Panelist

Marijn Lanting
Rabobank
Panelist

Rakesh Vazirani
Bureau Veritas
Panelist

Assessing financial flows and financial needs across chemicals value chains

CHRONOS
INTELLIGENT SUSTAINABILITY

Mapping the chemicals value chain in a select high impact sector: cotton (apparel)

By: Dr Rory Sullivan & Tanya Cox

Phase 1 of 2 towards ascertaining financial flows and financial needs in Chemicals Value Chains.

OEWG Presentation June 2025

About Chronos

Chronos Sustainability Ltd is a UK-based sustainability consultancy specialising in corporate responsibility, responsible investment and multistakeholder initiatives. Nominated for Consultancy of the Year 2025 in the UK Green Business Awards, Chronos works builds strong relationships with a broad range of clients and partners to deliver transformative change in the social and environmental performance of key industry sectors.

To find out more, visit www.chronossustainability.com

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Setting the scene – context for the study (1/2)

The Global Framework for Chemicals (hereafter referred to as the GFC) was formally adopted in 2023

"to prevent, or where prevention is not feasible, minimise harm from chemicals and waste to protect the environment and human health".

Resolution V/3 called for: *greater clarity on the **current status** of financial and investment flows as well as **financial needs** associated with implementation of the GFC.*

Key GFC targets:

D1 – By 2030, companies consistently invest in and achieve innovations towards advancing sustainable chemistry and resource efficiency throughout the life cycle of chemicals.

D3 – *By 2030, the private sector, including the finance sector, incorporates strategies and policies to implement the sound management of chemicals and waste in its finance approaches and business models…*

D6 – *By 2030, sustainable chemical and waste management strategies have been developed and implemented for major economic and industry sectors that identify priority chemicals of concern and…reduce their impact…*

E3 -*Adequate…financial resources from all sources needed to support achieving the sound management of chemicals and waste are identified and mobilized…including…private finance…innovative and blended-finance schemes.*

Setting the scene – context for the study (2/2)

- **The project is being delivered in two phases:**
  - **Phase 1:** Defining the chemicals value chain and producing a detailed analysis of key, specific sector specific value chains (cotton apparel).
    - Identifying key stakeholders at distinct stages of the value chain
    - Understanding current practices with regards to chemicals use
    - Capturing emergence of more sustainable chemical alternatives
    - Highlighting opportunities to align sector with the GFC targets
  - **Phase 2:** Work with key stakeholders across the cotton textile (clothing) value chain, including the finance sector, to determine key actions– and associated costs – needed to align the value chain with the GFC targets.
- **Today, we present the results of Phase 1 and outline next steps for Phase 2.**

Introduction – Defining the chemicals system

Defining the chemicals value chain

- **The global chemicals industry was valued at EUR 5.2 trillion in 2023.**

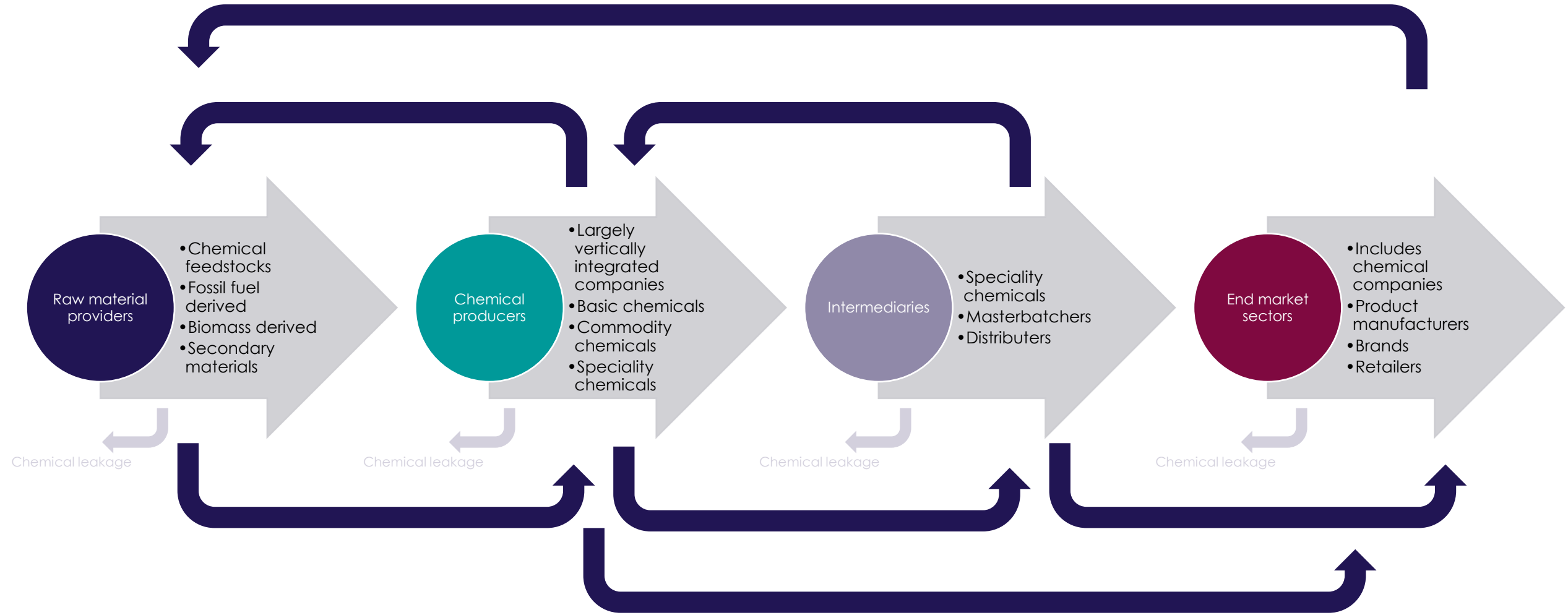
- **Chemical production is concentrated in:**
  - China (43.08% of total) & the wider Asian region (14.13%)
  - EU27 (12.61%)
  - USA (11.26%)

- **The WHO states 160 million chemicals exist.**
  - 40,000-60,000 are used commercially
  - 6,000 chemicals make up 99% of the total volume of chemicals produced globally

- **Chemical sales are projected to double by 2030, relative to 2017 levels.**

Image Source: macrovector / Freepik

Defining the chemicals value chain



Source: Conceptual outline of the chemicals value chain. Chronos, 2025

Refining project scope

- **The Chemicals industry and associated value chains are complex.**

- **Focus of the Phase 1 study was refined to:**
  - **Define specific interventions and needs for a chemically-dependent, sectoral value chain**
  - **Sectors with the highest dependencies on chemicals are identified as:**

Mining	Agrichemicals
Textiles	Pharmaceuticals
Electronics	Construction

  - **Aim is to create a methodology to map financing needs for this and for other value chains**

- **The apparel industry, as a chemical dependent sector, was chosen for the study, with a specific focus on Cotton.**

Image Source: kjpargeter / Freepik

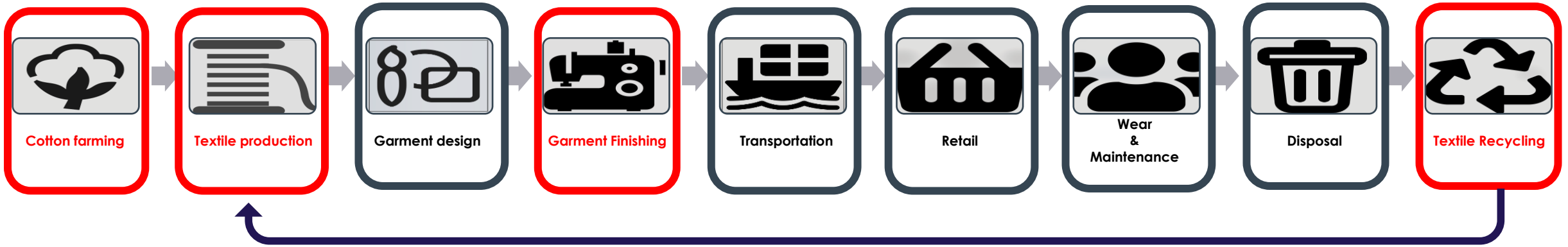
From system to sector: Cotton Value Chain Analysis

Why cotton?

- Cotton fibre represents approximately 20% of all fibres produced for textiles.
  - 80% of cotton produced is used for apparel.
  - ~1% of fibre produced is from recycled content
- Over 350 million people's livelihoods are directly dependent on cotton value chains.
- Cotton value chain is associated with:
  - Heavy, unsustainable use of highly hazardous pesticides (HHPs).
  - Environmental and socioeconomic impacts from harmful chemical use in manufacturing.
- Sector under pressure to become more circular, presenting opportunity to align with GFC targets

Defining the cotton apparel value chain

Source: Chronos, 2025



- **The use and exposure to high volumes of harmful and hazardous chemicals and substances of concern were identified at four key stages of the cotton textile value chain.**

Cotton farming

Textile production

Garment finishing

Textile recycling

- **These 4 stages were the focus of this study.**

Key takeaways (1/3)

- Cotton is grown in 85 countries around the world
  - Major production & manufacturing concentrated in ~ 10% of nations
  - Key stakeholders identified across value chain to support transition to GFC-aligned value chain
- 4.8 million tonnes of ginned lint exported in 2023 at a combined value of USD 9.8 billion
  - Annual demand for cotton fibre grows x 1.7 inline with population growth and emerging markets (e.g. notably across Asia)
- Cotton exports (fibre and finished garments) are an important source of foreign exchange revenues for LMICs (e.g. C-4 nations: Benin, Burkina Faso, Chad, Mali)
- The cotton apparel value chains is dominated by high numbers of small and medium sized enterprises (SMEs).
  - Operating margins are low.
  - Exposure harmful & hazardous chemicals and substances of concern is high.

Key takeaways (2/3)

- Priority chemicals including Highly Hazardous Pesticides (HHPs), Endocrine Disrupting Chemicals (EDCs), Persistent, Bioaccumulating Toxins and nanomaterials are used in high volumes across the value chain.
  - Driving degradation of ecosystems and harming human health.
- Key factors increasing risk of exposure to harmful chemicals across the value chain:
  - Changing climate (extreme weather, yield reduction, water access)
  - Inconsistent regulatory frameworks and chemicals classification
  - Limited transparency & traceability of chemicals
  - Poor, unsafe working conditions
  - Prize squeeze driven by fast fashion
  - Limited technology transfer & access to training
- A fair and just transition towards a chemically-safe and circular economy for cotton must protect upstream stakeholders who face the highest risk of impact.
  - This can be achieved by mix of voluntary and mandatory financial measures including subsidies, crop insurance, procurement policies and a price premium for organic/low-chemical cotton fibre.

Key takeaways (3/3)

- **Transition to sustainable, circular textile economies presents a timely opportunity to align GFC targets across the life cycle of cotton and other textiles.**
  - **Safe chemicals criteria needed across the value chain to indicate GFC-compliant transitions**
  - **Sectoral implementation programmes important for alignment and consistency**

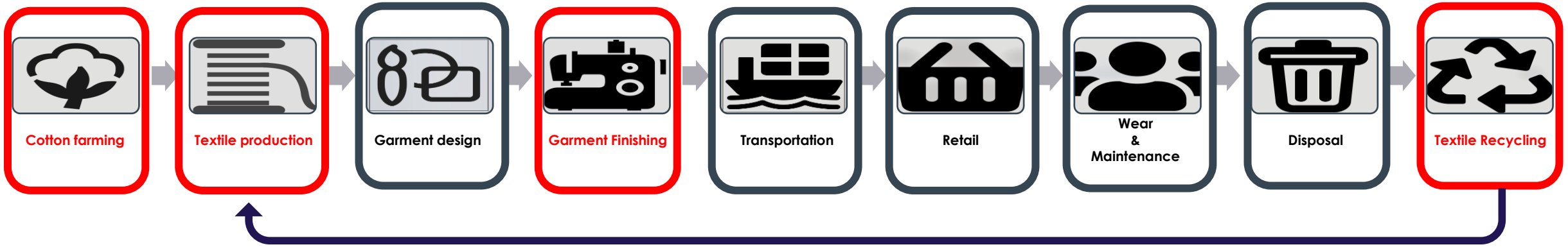
- **Textile recycling technology – both mechanical and chemical – is improving but requires rapid and extensive expansion and investment in innovation to overcome today's limitations.**
  - **Safe, sustainable recycling is critical to enable a more circular economy for textiles that is also aligned with GFC targets.**

- **Policy is a key enabling factor to transition to safe, sustainable future chemicals value chains – for all sectors.**
  - **To avoid regrettable substitutions, policy must be: Science-led and precautionary, following the mitigation hierarchy and adopt a hazard-based approach**

Phase 2: Finance needed to implement key actions and interventions that reduce harmful chemical use across the value chain

Defining the cotton apparel value chain

Source: Chronos, 2025



- For each of the major stages of the value chain, Phase 2 of the study will determine:
  - What are the specific actions needed and what are the expected outcomes (in terms of harm reduction, etc)?
  - Who takes these actions?
  - How much do they cost (a) individually, (b) in aggregate?
  - Who bears this cost and where does the finance come from?
  - What are the practical features of taking action (challenges, barriers, etc)?

Examples of Interventions

Voluntary measures	• Scaling adoption of sustainable chemical **best practice measures** including third party certification. • **Capacity building** (e.g. GFC-aligned chemical use, handling, use and disposal of chemicals across the value chain. • Provision of effective, climate-appropriate **personal protective equipment** to reduce exposure risks. • Support transition to **safer,** more **circular technologies and practices** (e.g. closed loop fibre sourcing, dry-dye techniques, reusable yarn treatments).
Mandatory measures	• **Import restrictions** to control access to internationally identified harmful substances. • Implementation of **adequate filtration and effluent treatment systems** to prevent harmful emissions to air and water. • International **prioritisation and prohibition of the most hazardous substances** in use. • **Phased out use of substances of concern** and harmful chemicals. • **Traceability and disclosure schemes** for chemical use (e.g. digital product passports). • Effective, **ventilation and protective equipment requirements** to protect worker health.
Financial measures	• Financial incentives to support **safer chemical use** across the value chain. • **Longer-term procurement contracts** to support transition to more sustainable production. • **De-risking investments** to facilitate transition to GFC-aligned, circular textile industry.

Examples: Using a value chain approach to assess the cost of action

	Transition to low/no pesticide cotton farming	Pollution prevention at apparel manufacturing facilities
Action needed:	**Capacity building and training** in small-scale agroecological farming practices and integrated pest management	Implementation of **adequate filtration and effluent treatment systems** to prevent harmful emissions to air and water
Relevant GFC Targets:	A3, B5, D4, D5, D7, E2	A3, B4, D1, D6, D7, E6
Cost Scenario:	Low cost High number of stakeholders	High cost Lower number of stakeholders
Considerations:	Financial features of the investment. Sources of finance. Attractiveness to the finance sector. Capacity to raise money (willingness to take on debt, ability to repay). Who bears the cost/who reaps the benefit.	

Call for feedback

- Have we identified the major stages of the cotton value chain correctly?
- Have we captured the main issues?
- Have we identified the key barriers/challenges to action?
- Are the recommended actions and next steps appropriate?

- Wider Question: Does the way we have analysed the cotton value chain provide a robust model for analysing other chemical value chains? Is there are better way to approach the issue?

Survey accessible via QR code or following link:

https://forms.cloud.microsoft/e/xMVSUyQwSe

Image Source: studiogstock / Freepik

Thank you

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Panel Discussion

Panelists

Anil Sookdeo
Senior Environmental Specialist
Global Environment Facility
(GEF)

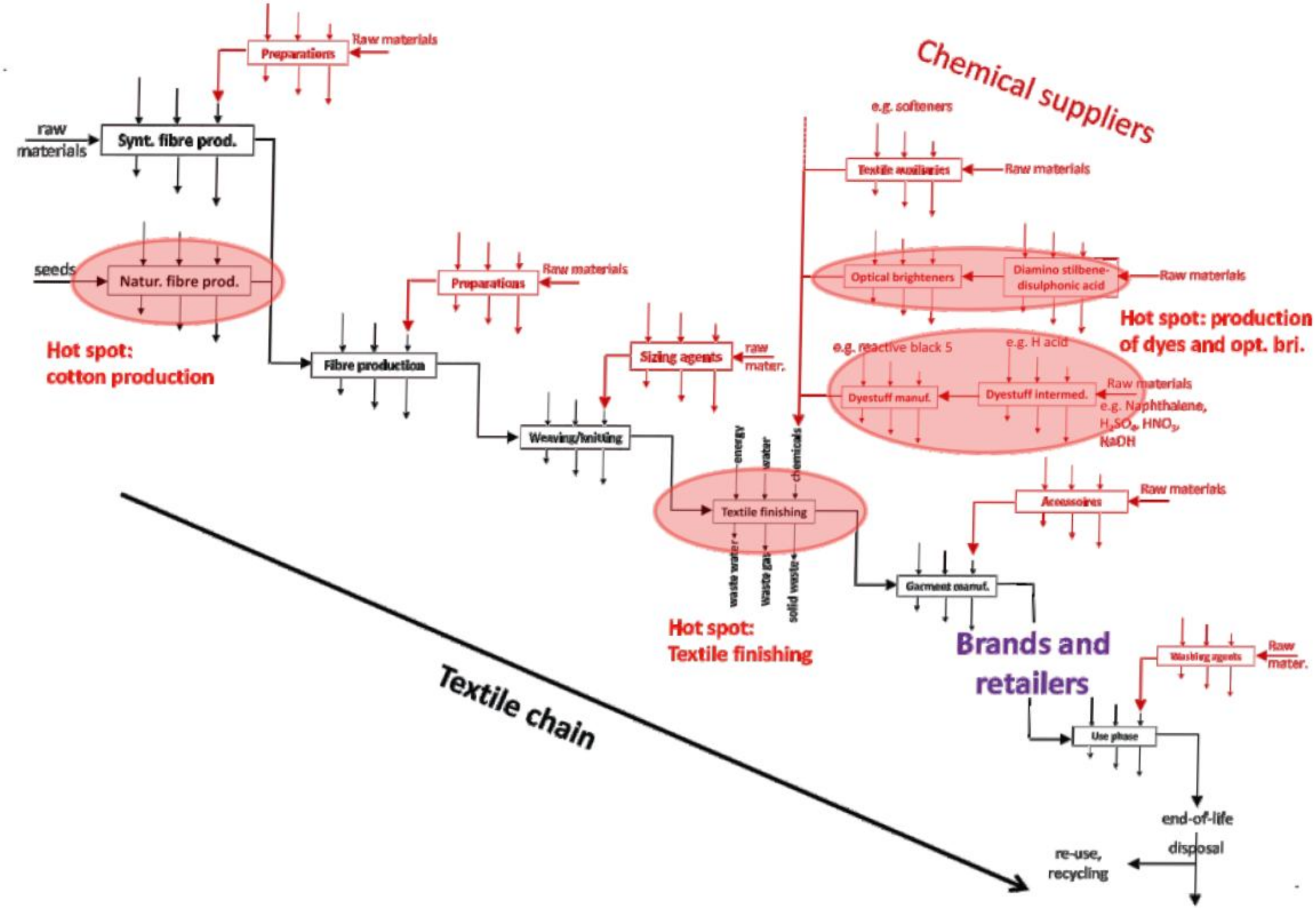
Marijn Lanting
Sustainability Advisor – Nature
Rabobank

Caroline Boden
Director, Shareholder Advocacy
Mercy Investment Services

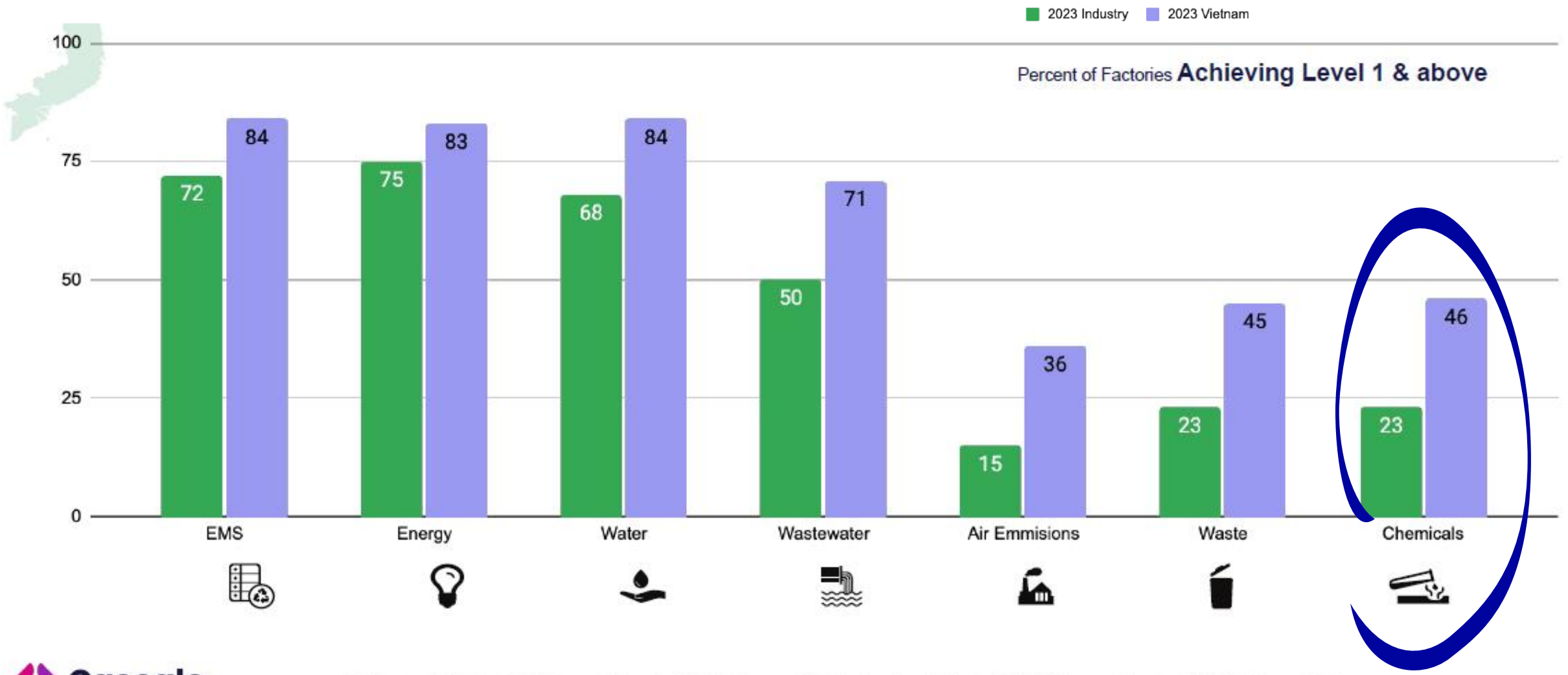
Rakesh Vazirani
Director of Decarbonization & Cleaner Production, Supply Chain Sustainability
Bureau Veritas

Retailers	Brands	Agents & Trading Companies	Tier 1: Finished Goods Assemblers (+ Trims)	Materials "Converter"	Tier 2: Dyers, Printers, Finishers, & Laminators	Tier 2: Weavers, Knitters & Nonwovens	Tier 3: Spinners & Fiber Processers	Tier 4: Raw Material Suppliers

created by Matt Thurston, REI, with further modifications from OIA


Chemical suppliers
Preparations
Raw materials
raw materials
Synt. fibre prod.
seeds
Natur. fibre prod.
Hot spot: cotton production
Preparations
Raw materials
Fibre production
Sizing agents
raw mater.
Weaving/knitting
energy
water
chemicals
Textile finishing
waste water
waste gas
solid waste
Hot spot: Textile finishing
e.g. softeners
Textile auxiliaries
Raw materials
Optical brighteners
Diamino stilbene-disulphonic acid
Raw materials
Hot spot: production of dyes and opt. bri.
e.g. reactive black 5
e.g. H acid
Dyestuff manuf.
Dyestuff intermed.
Raw materials
e.g. Naphthalene, H_2SO_4, HNO_3, NaOH
Accessoires
Raw materials
Garment manuf.
Brands and retailers
Washing agents
Raw mater.
Use phase
end-of-life
disposal
re-use, recycling
Textile chain

Link



Link

Cascale

Vietnam: Total of 1287 modules in 2023 Higg vFEM, Industry :Total of 12566 modules in 2023 Higg vFEM
Data as of April 2025

Top 10 Least Performing Level 1 Questions

Section	Ref	Question Text	% Answered egative
issions	airmobile	Has your facility created an inventory of all mobile and fugitive air emission sources at your facility? *	48.44%
wastewater	wwsludgedomesticreporting	Does your facility track its domestic wastewater sludge generated in the reporting year? *	46.07%
chemicals	chemfailresolution	Does your facility have an established process to investigate and resolve a potential RSL failure? *	44.48%
chemicals	chemtrainingr	Does your facility train employees responsible for the chemical management system on Restricted Substance Lists (RSLs)? *	29.64%
hemicals	chemtrainingm	Does your facility train employees responsible for the chemical management system on Manufacturing Restricted Substance Lists (MRSLs)? *	28.69%

Data as of April 2025
Based on 12566 vFEM 2023

*Questions marked with * are least performing for Vietnam region also,*

Link

Link

Title: Toxic Threads: Assessing Nonylphenol Contamination in Indian Textiles & the Environment
Publication Type: Research Reports
Year of Publication: 2025
Abstract: The report **"Toxic Threads: Assessing Nonylphenol Contamination in Indian Textiles & the Environment"**,aimed to assess the presence of NP in textile products available in the Indian market, investigate NP contamination in river water, sediment, and effluent samples from major textile hubs in India, and evaluate the potential environmental and human health risks associated with NP and NPE exposure.The study underscores significant NP contamination in

INVESTORS WANT TO KNOW

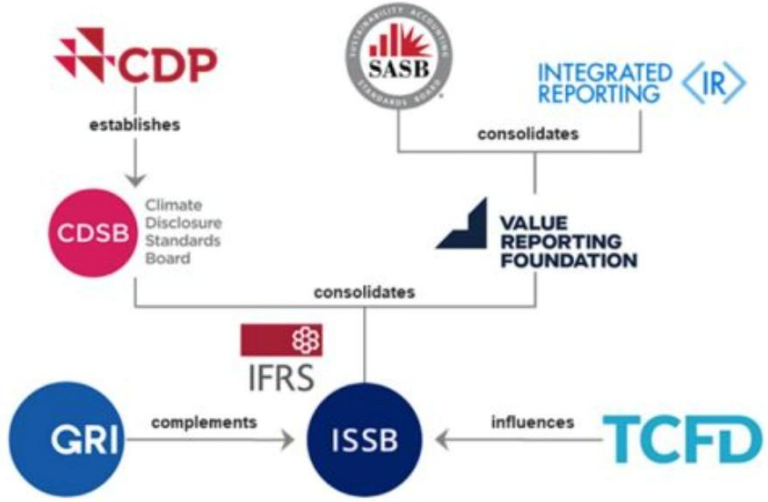
Industry: Apparel, Accessories & Footwear — Prev 1 of 5 Next

General Issue Category: Product Quality & Safety — Prev 1 of 3 Next

Disclosure Topic: Management of Chemicals in Products

Accounting Metric(s)

- CG-AA-250a.1: Discussion of processes to maintain compliance with restricted substances regulations
- CG-AA-250a.2: Discussion of processes to assess and manage risks and/or hazards associated with chemicals in products



Environmental Impacts in the Supply Chain | Labor Conditions in the Supply Chain

Accounting Metric(s)

- CG-AA-430a.1: Percentage of (1) Tier 1 supplier facilities and (2) supplier facilities beyond Tier 1 in compliance with wastewater discharge permits and/or contractual agreements
- CG-AA-430a.2: Percentage of (1) Tier 1 supplier facilities and (2) supplier facilities beyond Tier 1 that have completed the Sustainable Apparel Coalition's Higg Facility

atingi | Federal Ministry for Economic Cooperation and Development | smart africa | giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

e-REMC - Chemical Management Training

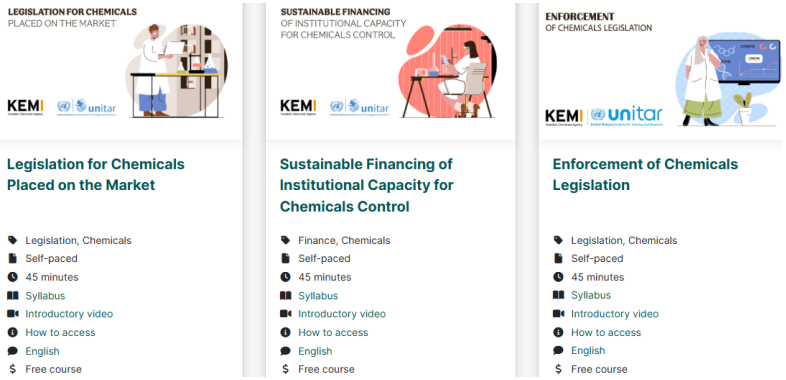
The objective of the training course is to support process of sustainable chem health and safety of workers. The training aims to develop a sound knowledg environment, safety and health and resource management in relevant industr

CM

View this result in context - in course e-REMC - Chemical Management Traini

Sustainable Chemistry and Climate Change

Participants should have solid knowledge in the areas of chemical productior public or private sector institution, in companies, academia, education or con LEARN?



SIA WORKING GROUP Sustainable Industrial Areas | giz | UNIDO UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION | WORLD BANK GROUP

ACADEMY

By Ø ZDHC

chemsec MARKETPLACE

Safer alternatives for "Textiles, upholstery, leather"

148 available alternatives found

Alternative to | Sector | Use | Alternative level | Supplier | Third-party labels and certifications

Sector: Textiles, upholstery, leather × Clear filters

SDS available | TDS available | Bio-based | Popular alternative | Sort by: Relevance

BUREAU VERITAS 1828

GLOBAL ORGANIC TEXTILE STANDARD

ECOLOGY & SOCIAL RESPONSIBILITY

APPROVED CHEMICAL INPUTS

Free Text (e.g. trade name, name of company)

Type / Utilisation

- Adhesives
- Colourant
- Detergent & Washing Aide
- Dyeing Auxiliary
- Enzymes

GATEWAY By Ø ZDHC

Product Expansion: The ZDHC Gateway hosted **102,406** published products **by February 2024**.

than 150 enterprises. Until the end of 2018, the CiE chemical module recorded more than 350 corporate users, including over 200 chemical enterprises and more than 150 textile enterprises. The user base soared 300% year on year, and the module traced over 26,000 chemical items.

Source

MORE DETAILS … (DETOX, PRTR, CARBON)

Source

Phthalates

Phthalates		CAS Number	First Quarter		Second Quarter		Third Quarter	
			Data (mg/L)	Data Source	Data (mg/L)	Data Source	Data (mg/L)	Data Source
邻苯二甲酸二辛酯	Di-(2-ethylhexylphthalate	117-81-7	<0.01	3rd-party monitoring data (manually sampled)	-	-	-	-
邻苯二甲酸二丁酯	Dibutyl Phthalate	84-74-2	<0.01	3rd-party monitoring data (manually				
邻苯二甲酸丁酯苯甲酯	BBP	85-68-7	<0.01	3				
邻苯二甲酸异丁酯	DIBP	84-69-5	<0.01	3				
邻苯二甲酸二正辛酯	Di-n-octyl phthalate	117-84-0	<0.01	3				
邻苯二甲酸二异癸酯	DIDP	26761-40-0,68515-49-1	<0.01	3				
邻苯二甲酸二异壬酯	DINP	28553-12-0,68515-48-0	<0.01	3				

PRTR

Primary Products		染色
Description of Production Process		印染
Description of Pollutant Production Processes		废水：印染产生；废气：定型、涂层产生
Possesses On-site Treatment Facilities	Sewage Treatment Facilities	Yes
	Industrial Emissions Treatment Facilities	Yes
	Boiler Emissions Treatment Facilities	No
Wastewater Discharge Destination	Industrial Effluent	杜桥第二污水处理厂
	Domestic Sewage	杜桥第二污水处理厂
Effective Wastewater Discharge Standard/ Wastewater Treatment Plant Acceptance Standard	Industrial Effluent	纺织染整工业水污染物排放标准DB4287-2012间接排放标准
	Domestic Sewage	纺织染整工业水污染物排放标准DB4287-2012间接排放标准
Effective Air Emissions Standard		纺织染整工业大气污染物排放标准DB33/962-2015表一新建企业排放要求
Name of the industrial park		

Brominated & Chlorinated flame retardants

Brominated & Chlorinated flame retardants		CAS Number	Data (mg/L)	
六溴环十二烷	Hexabromocyclododecane	25637-99-4	-	
磷酸三(2,3-二溴丙基)酯	Tris (2,3-dibromopropyl) phosphate	126-72-7	<0.005	3
磷酸三(2-氯乙基)酯	Tris(2-chloroethyl)phosphate	115-96-8	<0.005	3
四溴联苯醚	TetraBDE	40088-47-9	-	
五溴联苯醚	PentaBDE	32534-81-9	<0.005	3
六溴联苯醚	HexaBDE	36483-60-0	-	
七溴联苯醚	HeptaBDE	68928-80-3	-	

Detected Pollutants in Effluent

Please refer to the "Proposed Pollutant Inventory for China Priority Pollutant Release and Transfer Register", in which the substances marked with * are the emerging contaminants mentioned in the "Key Controlled Emerging Contaminants List (2023 Edition)" and the "List of Emerging Ecological Environment Monitoring Standard System (2024 Edition)"

Pollutant	CAS No.	Total Release and Transfer Volume	Submitted By
Total Nitrogen(TN)	-	9.385 t	Enterprise
Chemical Oxygen Demand(COD)	-	35.652 t	Enterprise
Biochemical Oxygen Demand(BOD_5)	-	7.247 t	Enterprise
Ammonia Nitrogen(NH_3-N)	-	5.871 t	Enterprise
Suspended Solids(SS)	-	6.957 t	Enterprise
Total Phosphorus(TP)	-	23.01 kg	Enterprise
Total Antimony	-	0.74 kg	Enterprise
Total Copper	-	--	Enterprise
Total Nickel	-	--	Enterprise
AOX(AOX)	-	--	Enterprise

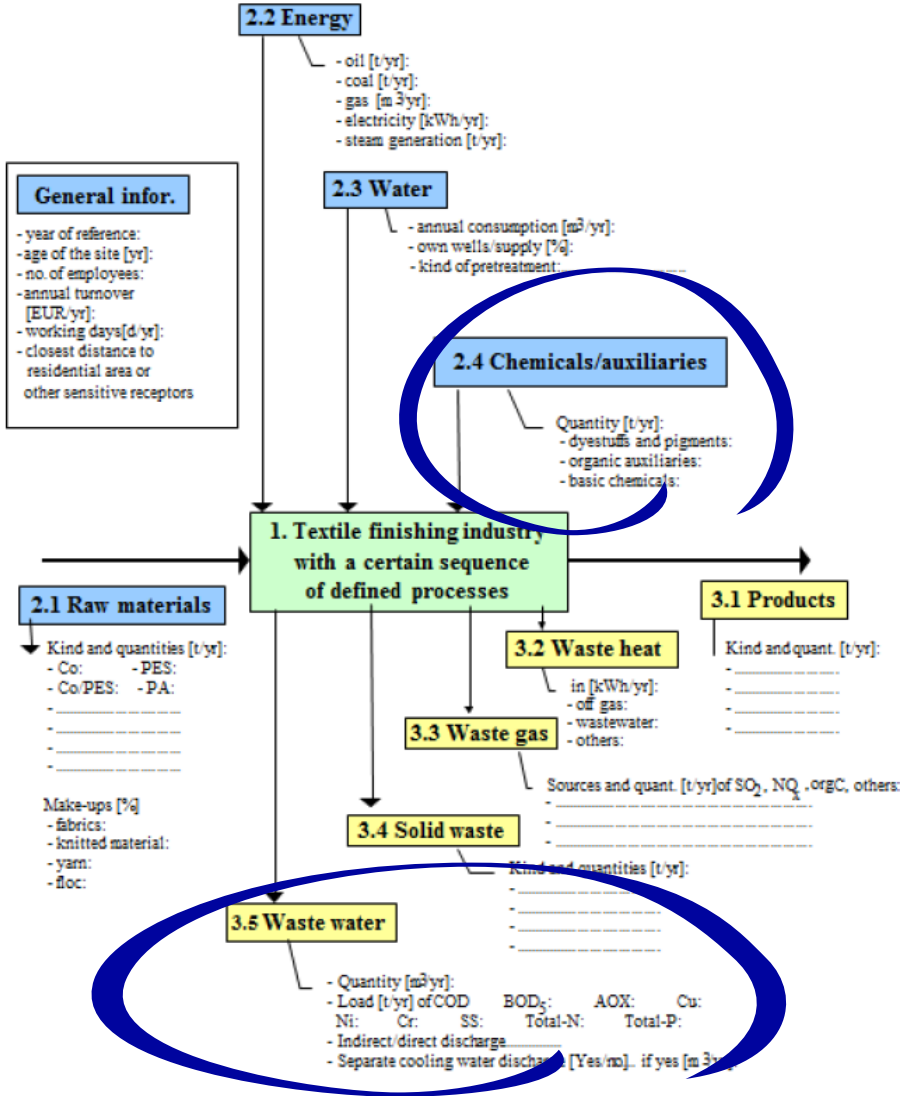
PUBLIC-PRIVATE COLLABORATION & FINANCE FOR SOUND MGMT. OF CHEMICALS NOT POSSIBLE BECAUSE ….

Myth1: we don’t have data …

Myth2: Making a switch to Green(er) chemistry not profitable ….

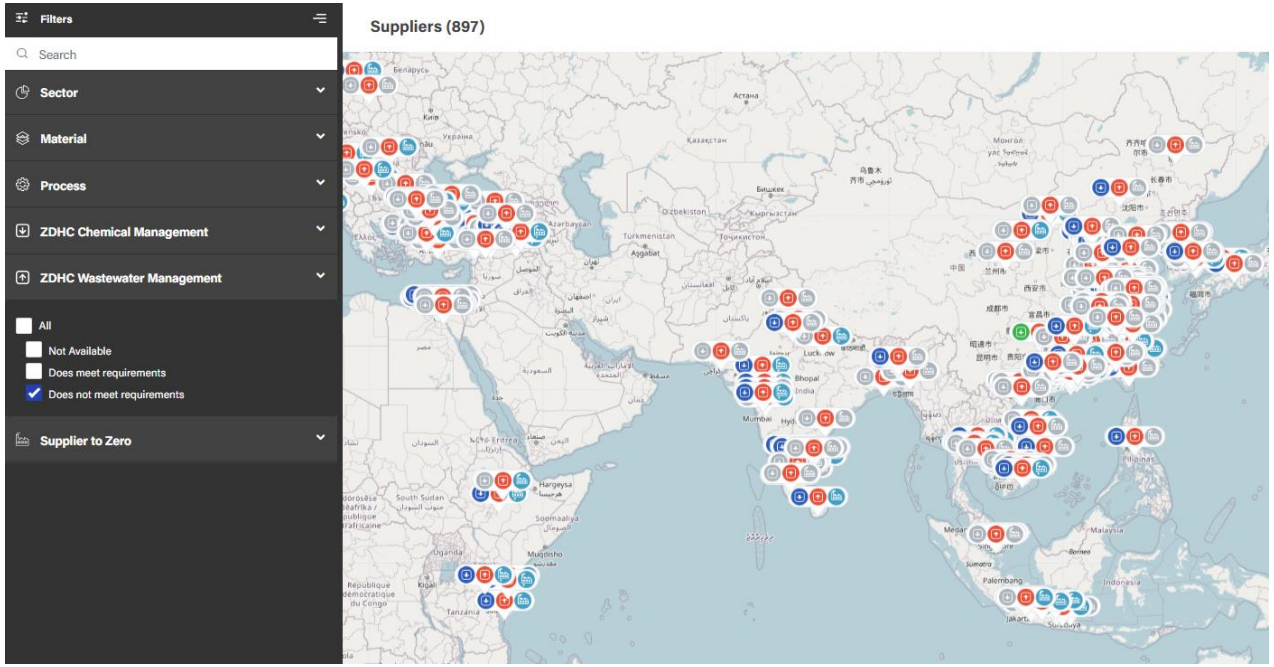
Technical description

All environmental problems are directly linked to input/output streams. In the interests of identifying options and priorities for improving environmental and economic performance, it is therefore vital to know as much as possible about their quality and quantity.



minimization techniques, chemical consumption optimization and substitution. These evaluations have revealed that after the implementation of suggested 22 Best Available Techniques, following reductions could be achieved if those techniques were implemented in the future: 43–51% water consumption, 11–26% energy consumption, 16–39% chemical consumption, 42–52% wastewater flowrate, 26–48% chemical oxygen demand load, 12–32% waste flue gas emissions, and 8–18% solid waste generation. Payback periods of the suggested Best Available Techniques were estimated as 1–26 months.

TRANSPARENCY BOOST > SUPPLY CHAIN'S PERFORMANCE



Source

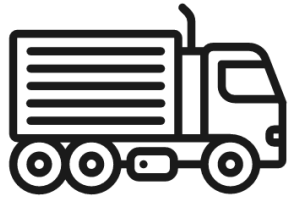
Source

Case Study > VOC elimination

Affected SKUs: 16.1%
Delay days: 9,219
Lost sales China: 1.6M €

1

2



FUMI

VOC =

CASE STUDY A RESULTS

The following are process savings based on an average of 40,000kgs produced per year:

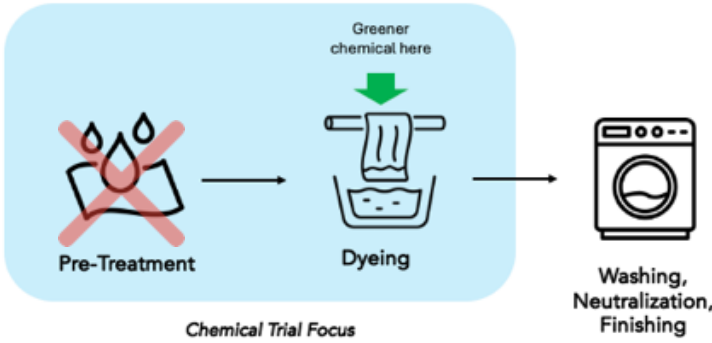
S#	Savings by optimising process modification	Standard process	Greener chemistry process	savings %	Annual Savings	Units
1	Water	4600	3200	30%	1400	m^3/40000 kgs
2	Steam	521	357	31%	164	Tons/40000 kgs
3	Power (electricity)	105	74	30%	31	MWh /40000 kgs
4	Time in hours	965	705	27%	260	Hours /40000 kgs
5	GHG	346	238	31%	108	tCO_{2e}/40000 kgs
6	Total Chemicals cost	8580000	7920000	8%	660000	BDT/ 40000 kgs
					5593	Euro/40000 kgs
7	Total Costs	14850000	12320000	17%	2,530,000	BDT/40000 kgs
					21,441	Euro/40000 kgs

Summary:

- By using the set of 'Greener' chemistry, a **total cost saving of 17%** was achieved (excluding cost of time).

How was this achieved?

- Due to the selection of greener dye selection and chemical products (Dianix XF2 by DyStar), allowed the elimination of scouring, hot washing and acid washing steps at the beginning.
- These steps were no longer needed because Dianix XF2 range dyes address these process needs, allowing dyeing and reduction clearing process **all in one bath.**



Source: giz; BV Annual Sustainability Summit 2024

CASE STUDY B RESULTS

The following are process savings based on an average of 3000 kgs produced per year:

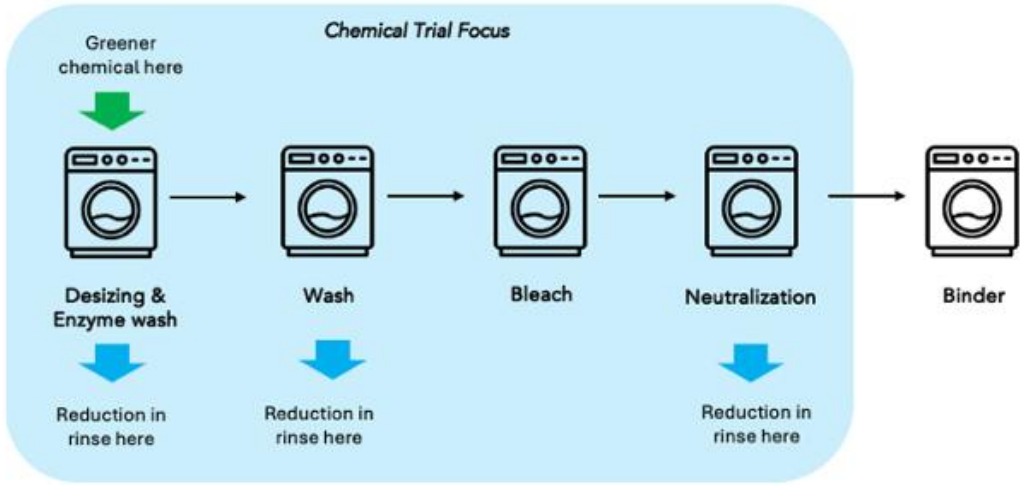
S#	Savings by optimising process modification	Standard process	Greener chemistry process	Savings (3000 kg)	savings %	Units
1	Water	264	204	60	23%	m^3/3000 kg
2	Steam	24.05	14.16	10	41%	Tons/3000 kg
3	Power (electricity)	3.55	3.37	0.2	5%	MWh /3000 kg
4	Time in hours	485	382.22	103	21%	Hours / 3000 kg
5	GHG	15.99	10.15	6	37%	tCO_{2e}/3000 kg
6	Total Chemicals Cost	127600	116600	11000	9%	BDT/ 3000 kg
				93		Euro/3000 kg
7	Total Costs	401500	299200	102,300	25%	BDT/ 3000 kg
				867		Euro/3000 kg

Summary

- By using the set of 'Greener' chemistry, a **total cost saving of 25%** was achieved (excluding cost of time).

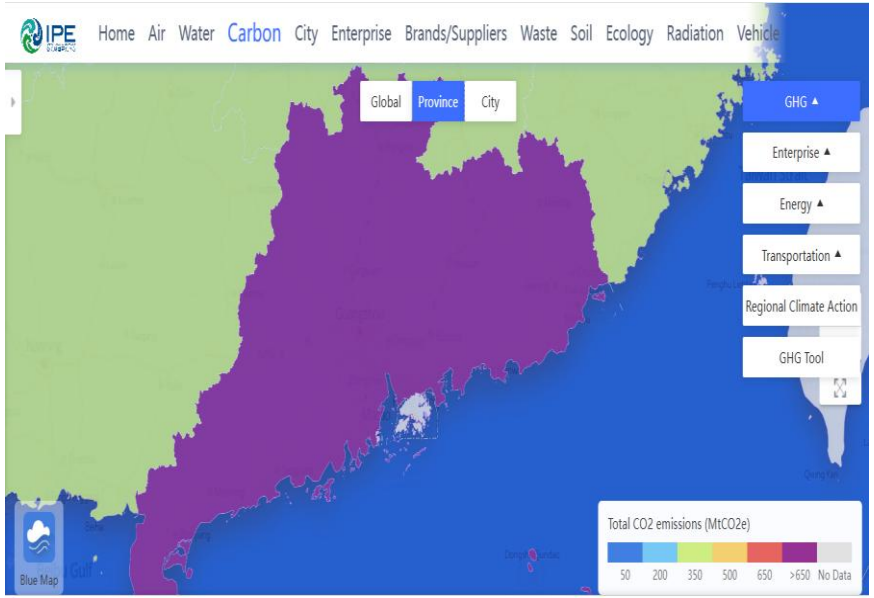
How was this achieved?

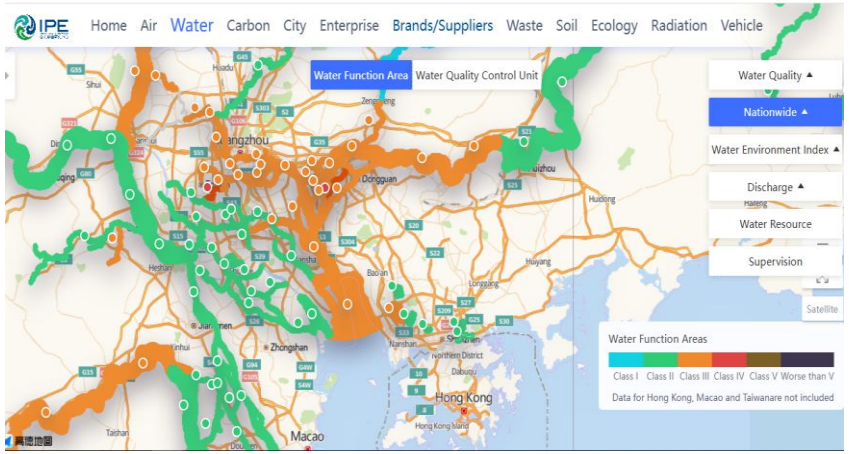
- Using greener bio based multifunctional chemical with de-sizing properties, removes the need of neutralisation process, which directly reduces TDS at the effluent.
- There are also lesser wash-offs, reduced time and lesser additional chemical use.
- The reduced time is a direct contributor to lesser power consumption and reduced GHG emissions.



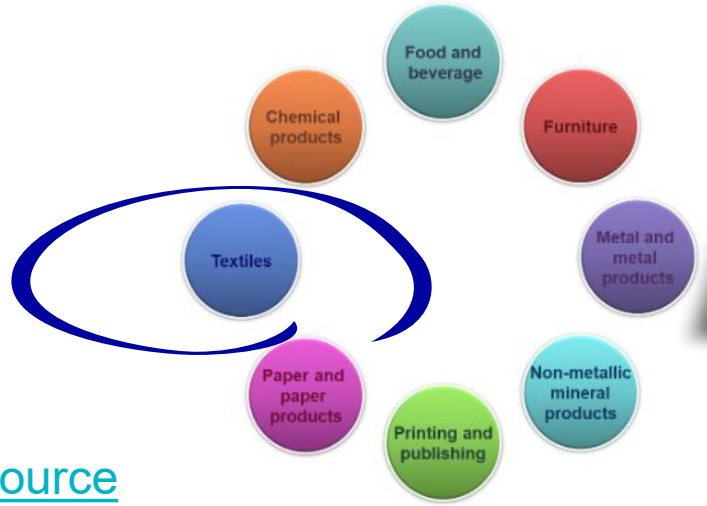
Source: giz; BV Annual Sustainability Summit 2024

CLEANER PRODUCTION PROGRAMS





Source

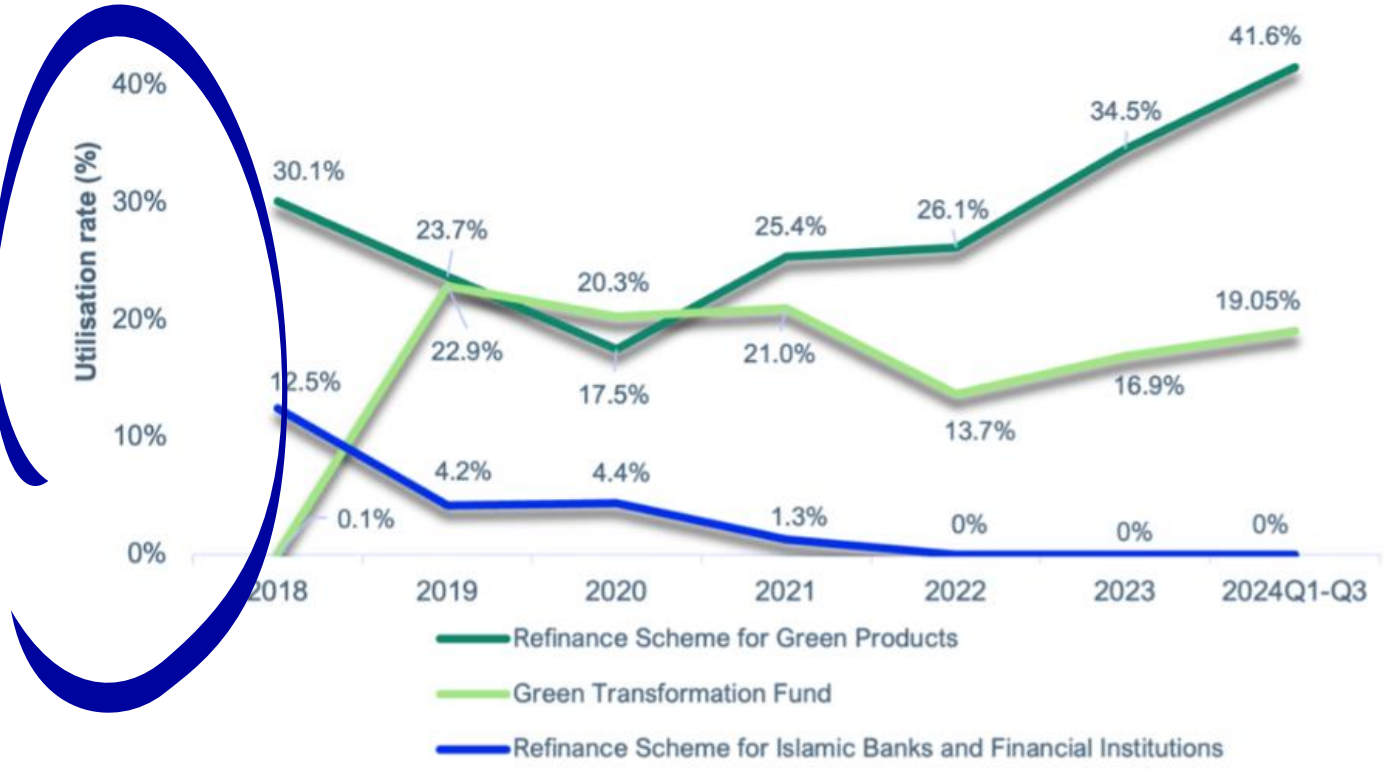


Source

Annual Reduction (328 projects)
VOC reduction :2500/yr
CO2 : 58k tonnes and
effluent discharge :475000 tonnes
Production Cost savings: $110 million

NEED FOR FINANCE WORKSTREAM > YES!

Utilisation Rates of Bangladesh Bank's Green Refinancing Facilities



*Source: Bangladesh Bank; IEEFA's Analysis; * Technology Development Fund is excluded.*

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IN PARTNERSHIP WITH

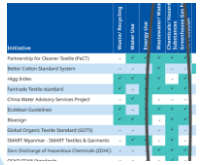
Projects / Activities	Contribution to environmental objective				
	Mitigation	Adaptation	Natural resource conservation	Biodiversity conservation	Pollution prevention and control
Manufacture or trade of sustainable hemp, wool, organic cotton, soy silk, bamboo fabrics, jute, corn fiber	✓		✓	✓	
Application of green enzymes along the stages of textile processing: desizing, scouring, bleaching, dyeing, finishing and composting			✓	✓	✓
Recirculation and water reduction in water consumption per unit of product (e.g. m3 of saved water per m2 of fabric) by more than 20% over the life of the project	✓	✓	✓	✓	✓

TIME TO ENGAGE AND …..

G

Guidance exists

Standards,
Market Demand,
Trainings



R

Reference

Framework,
BREF/BAT
Business case

JRC SCIENCE FOR POLICY REPORT

Best Available Techniques (BAT) Reference Document for the Textiles Industry

O

Openness

Transparency *(PRTR, etc)Development funding to reduce risk*

idh

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

german cooperation DEUTSCHE ZUSAMMENARBEIT

giz

W

Wins Possible

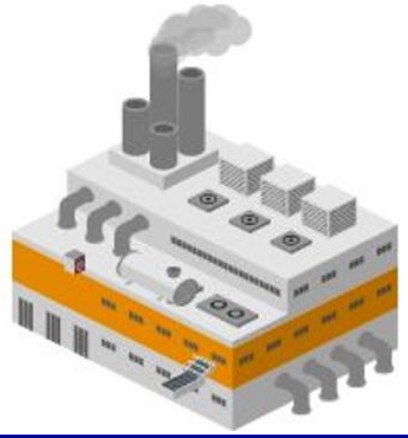
Savings
($, Time, GHG, Water)
Co-benefits
Greater Market

Finance *for* Biodiversity Foundation

IFC International Finance Corporation WORLD BANK GROUP

Creating Markets, Creating Opportunities

$¥



Environmental Assessment

1) Due-Diligence

Higg FEM/FDM, amfori BEPI, PRTR
GHG Report, CDP SME disclosure

2) Minimum Requirements (MR) Action Plan Development

3) Baseline Audit

FDM + Level3 machinery data, PRTR
EWW (Energy Water Waste) Data
Energy Diagnosis

4) Technical Assistance

Resource (Energy, Water, Material) Efficiency
Technical Capacity building

5) Impact Verification

EWW (Energy Water Waste) Data
Cleaner Production Metrics
Savings ($, Time, CO2, Water)

Open Discussion

Possible Objectives of a Workstream on Finance

Thematic workstreams – here "finance" – will …

- ✓Cut across sector and value chain implementation programs
- ✓Offer contributions and solutions to address identified issues

Possible objectives

- ✓Enable identified actions that help achieve GFC targets by
- ✓Shaping financial markets and mobilizing risk-tolerant capital

Potential Activities of a Workstream on Finance

- Identify gaps / issues related to finance in achieving GFC targets
- Develop and propose financial solutions
- Promote institutional and multi-stakeholder support structures
- Others?

Conclusion

Thank you!

Supplementary information

Key stakeholders identified

- **Farmers;**
- Farming cooperatives, associations and unions;
- National cotton board;
- Standards/certification bodies for low chemical or organic cotton production;
- **Pesticide & fertiliser manufacturers and suppliers**;
- Non-Government Organisations (NGOs);
- Agroecologists; and
- **Government agencies (e.g. Ministry of Agriculture)**

- Spinning mills
- Weaving mills
- **Dye houses**
- Cotton brokers
- **Textile dye and treatment manufacturers and suppliers**
- Garmenting factories (procurement)
- Labour unions
- NGOs
- **Brands & retailers**
- **Investors**

- **Dye houses**
- **Dye manufacturers & suppliers**
- Cotton brokers
- **Textile manufacturing companies**
- **Garment manufacturing companies**
- **Manufacturers and suppliers of chemical treatments**
- Cotton traders
- **Brands & retailers**
- Consumers
- **Investors**

- **Brands. & Retailers**
- **Apparel manufacturers**
- Apparel designers
- Consumers
- Local authorities
- Logistics providers
- Material Recovery Facilities
- Textile recycling facilities

Opportunities to align the cotton value chain with the GFC

- **A transition away from the status quo will impact upstream stakeholders most severely (e.g. small-scale farmers, small and medium sized enterprises in LIMCs) where profit margins are smallest but would likely have greatest positive impacts in terms of:**
  - **Capacity building for sustainable chemicals management;**
  - **Global alignment on:**
    - Priority lists of harmful or hazardous substances for immediate elimination;
    - Implementation plans for phase-out and reduction of substances of concern; and
    - Alignment with and transition to circular economy principles.
  - **Developing clear, sector-specific criteria for GFC-aligned alternative chemical use across the value chain to support innovation and prevent regrettable substitutions;**
  - **Identifying and building opportunities for GFC-aligned financial investments;**
  - **Protecting human health by eliminating and significantly reducing exposure to harmful chemical substances; and**
  - **Preventing further degradation of environmental health and restoring biodiversity.**
- **A range of voluntary, mandatory and financial measures spanning public and private finance will be required to facilitate this transition and must protect the livelihoods of upstream stakeholders to ensure a just transition to a more sustainable future value chain.**
  - **All measures should be developed with clear timelines and structured, multistakeholder implementation plans.**

Key challenges for aligning cotton value chains with GFC targets

1. **Fragmented chemical policy frameworks** on a global scale results in inconsistent elimination and phase out of the most harmful substances.
2. **Weak regulatory and licencing frameworks** mean harmful substances are readily available for use, at low costs.
3. **High numbers of diverse stakeholders** whose livelihoods rely on cotton production, sale and manufacturing.
4. **Limited awareness of the risks** associated with use and exposure to harmful chemicals.
5. **Low transparency and traceability** of chemical use across fragmented value chain.
6. **Market dominance of major chemical manufacturers and suppliers** – notably relating to crop protection.
7. Limited capacity for **innovation** and transition to safer chemical use.
8. **Significant data gaps** relating to the **quantities and combinations of chemical substances** used – particularly in post-fibre production stages of the life-cycle – and the **monetary costs associated with social and environmental chemical impacts.**
9. Low capacity , limited infrastructure and technology gaps for **end-of life management of textile waste.**
10. **Investment risks** associated with high numbers of diverse stakeholders operating at low profit margins.
11. **The absence of clear criteria or indicators established for 'GFC-aligned' safter chemical alternatives** and lack of globally agreed assessment methodology or measurement of impact.

Key levers to align specific stages of the cotton value chain with the GFC (1/2)

- **Several existing initiatives aim to consolidate information on chemical use across the value chain which presents a timely opportunity to link to specific targets of the GFC – notably:**
  - **A2 – consolidated guidelines for sound chemicals and waste management;**
  - **B1, B2 and B3 relating to transparency and traceability of chemical use; and**
  - **A7 relating to HHP elimination and D4 which supports R&D and a transition to a safer, future chemicals industry.**
- **Supporting a transition to a more circular economy for cotton textiles would:**
  - **Help drive down harmful and hazardous chemical use across the cotton textile value chain; and**
  - **Align the sector with the GFC strategic objectives and targets.**
- **Transitioning to a more circular economy for textiles presents an opportunity to reduce the reliance on and use of harmful and hazardous substances across the value chain, creating investment opportunities to align the sector with the GFC targets.**
  - **In line with waste hierarchy principles, the transition must first prioritise an avoidance and reduction in the use of chemicals.**
    - Scaling investment in R&D and technological improvements into safer alternatives at each stage of the value chain would facilitate this transition.
  - **Standardised circular design principles are necessary to reduce the overall environmental footprint of cotton garments and to improve the quality of end-of-life materials.**
    - Reduced complexity and composition of final garments and lower chemical application facilitates reuse and recyclability of textiles.

Key levers to align specific stages of the cotton value chain with the GFC (2/2)

- **Recycling – both mechanical and chemical – will play a key role in the transition towards a circular economy but long-term viability on a commercial scale is only possible when coupled with:**
  - **Safer, more sustainable chemical use at each stage of the value chain;**
  - **Circular product design that takes whole environmental footprint into account across product life cycle;**
  - **Significant up-scaling of infrastructure to efficiently recapture, sort and process end-of-life garments; and**
  - **Technological improvements to recycling processes that:**
    - Improve the quality of secondary materials and reduce ongoing reliance on virgin materials; and
    - Reduce broader environmental impacts of recycling methods (such as energy use, chemical use, harmful emissions).
- **Chemical recycling trials reportedly generate higher-grade fibres for use as secondary feedstock in the clothing industry compared to mechanical recycling.**
  - **However, several environmental and social issues have been associated with chemical recycling including:**
    - the addition of chemicals in unknown quantities;
    - significant energy use; and
    - higher levels of harmful emissions (of nano- and microparticles) to the environment.

Opportunities to align with GFC targets (1/3)

Governments:

- **Build and implement awareness raising programmes in partnership with communities and civil society organisations. Awareness programmes should include:**
  - **Work with national and international stakeholders and academic institutions to develop national strategies and sectoral programmes of work that eliminate most harmful chemicals across the life cycle including implementation timelines (GFC Target: C1)**
  - **Raise awareness and educate cotton value chain stakeholders on the hazards of use and exposure to harmful pesticides, chemicals and chemical treatments in terms of health risks (for workers directly and families indirectly), environmental degradation, commercial impact (e.g. water contamination, degrading soil quality reducing crop viability and long-term profit) (GFC Targets: B4, B5, E2, D7)**
  - **Increased understanding on benefits of low/no pesticide farming including farmer training programmes based on agroecological farming practices and integrated pest management principles (GFC Targets: A3, B4, B5, D7)**
  - **Training for healthcare workers to recognise and respond to pesticide poisoning including access to national poison centres (GFC Targets: A6, B5, B7, D7)**

Opportunities to align with GFC targets (2/3)

Governments (cont'd):

- **Incentivise sustainable chemical management across the value chain:**
  - **Subsidise organic and regenerative farming practices (GFC Targets: D1, D2, D4, D5, E5)**
  - **Support access to international cotton markets (GFC Target A1)**

- **Introduce stricter chemicals legislation on production, trade and use, prioritising the most hazardous chemicals for elimination and phasing out substances of concern:**
  - **Prohibit use of HHPs and suspected HHPs in line with international policy frameworks (GFC Targets: A1, A4, A7)**
  - **Obligate the sharing of data on the types/quantities/properties of all chemicals placed on domestic market for cotton growth/processing/finishing/recycling (GFC Targets: B1, B2, B3, B6, B7)**
  - **Notify, regulate or prohibit the export of chemicals used in cotton value chains that have been prohibited nationally (GFC Targets: A5)**
  - **Incentivise innovation in the development of safer, alternative chemicals for use at each stage of the value chain (GFC Target D4)**

Opportunities to align with GFC targets (3/3)

Intergovernmental agencies and development banks:

- Develop multistakeholder guidelines and internationally agreed minimum standards for the safe production, use and disposal of chemicals for each stage of the cotton value chain (GFC Target: A2)
- Foster knowledge exchange to develop regionally appropriate and sector-specific, sustainable chemical and waste management strategies across the cotton life-cycle, sharing best practices, technological developments and lessons learnt (GFC Target: D6, E1, E2, E4)
- Identify funding needs and gaps to support implementation of sector-specific chemical and waste management strategies (GFC Targets: E3, E4)

Investors:

- Develop strategies and programmes to incorporate sound management of chemicals and waste across cotton value chains in finance approaches and business models, strengthening linkages and synergies with wider policies and approaches linked to climate change solutions, biodiversity conservation, human rights and health protection (GFC Target: D3, E3, E6)
- Support transition to low/no chemical cotton production and use by supporting transparency and traceability schemes and supply chain initiatives such as Better Cotton Initiative and Fairtrade Organic cotton farming (GFC Targets: D3, D4, D7).
- Support the development and adoption of international reporting and disclosure standards (GFC Target: D3).

Recommended next steps

- **Identifying sector-specific financial needs for implementing and aligning with GFC targets for specific products used in key value chains can be done by:**
  - **Mapping key value chains in terms of stakeholders represented, chemical use, and barriers and levers for change;**
  - **Understanding current financial needs of value chain stakeholders;**
  - **Determining appropriate sources of finance;**
  - **Ascertaining indicative costs associated with GFC-alignment;**
  - **Establishing time-bound targets to achieve the transition; and**
  - **Adopting a matrix approach including voluntary, mandatory and financial measures (see next slide).**

- **To fully support the implementation of the GFC, and to align stakeholder expectations, it is crucial that indicative criteria need to be developed to help investors determine if investment decisions are GFC-compliant.**
  - **Such criteria could form the basis of future financial disclosures.**
  - **Adopting EU 'No data, no market' rules which stipulate that manufacturers and importers of chemicals must identify and manage risks linked to substances produced or placed on the market would greatly increase transparency in chemical use and reduce risks across product life cycles.**

Recommended next steps

- **Carefully designed, time-bound, multistakeholder Implementation Programmes for highly chemical-dependent sectors, like textiles, are vital to drive change in practices and fully support the implementation of the GFC targets and objectives.**

- **Critical data gaps remain and need to be filled to effectively phase out and eliminate the most harmful substances in use:**
  - **The quantities of hazardous chemicals produced and used by companies in different sectors;**
  - **Location and jurisdictions in which harmful or hazardous chemicals are produced and used;**
  - **Revenue derived from the sale of substances of concern (SoCs) or substances of very high concern (SvHc);**
  - **The flow and fate chemicals through value chains in the form of manufactured products.**

- **In order to avoid regrettable substitutions, future chemicals policies must be science-led, precautionary and follow a hazard-based approach in line with the mitigation hierarchy.**
  - **Green and sustainable design and chemistry principles should be applied to promote system change in combination with the introduction of greener chemicals; and**
  - **All solutions and technologies must be be supported by full life cycle assessments that take into account wider social and environmental impacts.**

- **Policymakers and regulators need to create an enabling environment that facilitates a just transition for all stakeholders and broad value-chain alignment with the GFC.**
  - **Strong policy commitments and buy in from vested stakeholders at all stages of the value chain and across the life cycle will likely build support and create opportunities for financial investments.**