Reducing uses and releases of chemicals of concern, including POPs, in the textiles sector

Part I: Project Information

GEF ID
10523

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
CBIT **No**
NGI **No**

Project Title
Reducing uses and releases of chemicals of concern, including POPs, in the textiles sector

Countries
Regional, Asia/Pacific, Bangladesh, Indonesia, Pakistan, Viet Nam

Agency(ies)
UNEP

Other Executing Partner(s)
Basel & Stockholm Convention Regional Centre South East Asia (BCRC-SEA), Natural Resources Defense Council (NRDC)

Executing Partner Type
Others

GEF Focal Area
Chemicals and Waste

Taxonomy

Focal Areas, Persistent Organic Pollutants, Chemicals and Waste, Influencing models, Private Sector, Stakeholders, Type of Engagement, Sound Management of chemicals and waste, New Persistent Organic Pollutants, Uninentional Persistent Organic Pollutants, Best Available Technology / Best Environmental Practices, Demonstrate innovative approache, SMEs, Partnership, Gender Equality, Gender results areas, Capacity Development, Capacity, Knowledge and Research, Innovation, Eco-Efficiency, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Convene multi-stakeholder alliances, Beneficiaries, Civil Society, Community Based Organization, Non-Governmental Organization, Communications, Awareness Raising, Behavior change, Public Campaigns, Strategic Communications, Local Communities, Consultation, Participation, Information Dissemination, Gender Mainstreaming, Sex-disaggregated indicators, Gender-sensitive indicators, Knowledge Generation and Exchange, Knowledge Exchange, South-South, North-South, Learning, Adaptive management, Theory of change, Indicators to measure change, Knowledge Generation, Training, Workshop

Rio Markers

Climate Change Mitigation

Climate Change Mitigation 0

Climate Change Adaptation

Climate Change Adaptation 0

Submission Date

12/21/2021

Expected Implementation Start

5/1/2022

Expected Completion Date

4/30/2027

Duration

60In Months

Agency Fee($)

840,750.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
CW-1-1	Strengthen the sound management of industrial chemicals and their waste through better control, and reduction and/or elimination	GET	8,850,000.00	43,272,506.00
		Total Project Cost($)	**8,850,000.00**	**43,272,506.00**

B. Project description summary

Project Objective

Significant and documented reductions in use, releases, and exposure to chemicals of concern (CoCs) including POPs in the textiles sector in selected countries

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 1: Information sharing and chemical management pilots on priority CoCs including POPs in textiles facilities	Technical Assistance	Certification and voluntary compliance measures leading to Tier 2 and Tier 3 textile companies restricting use, releases and exposure to priority CoCs including POPs	Output 1.1: Chemical inventories for POPs and COCs delivered to at least 500 chemical suppliers and SMEs Output 1.2: SMEs report use of POPs and CoCs to clients and regulators via textile value chain chemicals information sharing campaign and tools Output 1.3: Company-specific business strategies and operational plans developed, and support provided to implement them in at least 10 textile mills Output 1.4: Chemicals knowledge compiled and delivered to SMEs for risk reduction measures	GET	5,128,000.00	26,202,921.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 2: Eco-innovative strategies towards a non-toxic and circular textiles? economy	Technical Assistance	Governments and global textile value chains strengthen and apply policies for phase out of CoCs and POPs	Output 2.1: Global eco-innovation and circular economy guidance piloted with global value chain actors and textile mills SMEs	GET	1,796,500.00	11,074,954.00
			Output 2.2: Actions to coordinate and raise ambition of supply chain policies and initiatives are proposed and agreed by global supply chain stakeholders			
			Output 2.3: National regulations for textile SMEs submitted for adoption and implemented by national stakeholders			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 3: Knowledge management for scaling up	Technical Assistance	Upscaling of project results to global textile and garment sectors and reporting to MEAs	Output 3.1: National capacity and awareness programs developed and implemented to increase ability of textile sector and policy makers to control POPs and CoCs	GET	1,130,500.00	4,179,349.00
			Output 3.2: Global Knowledge Exchange and Management tools produced and accessed by users globally			
			Output 3.3: Gender and Social Action Plan implemented, and benefits accrued to women workers			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Component 4: Monitoring and Evaluation	Technical Assistance	Project partners adopt and act upon project results and lessons	Output 4.1: Monitoring and evaluation of project outcomes and outputs to include quarterly financial reporting	GET	375,000.00	481,552.00
			Output 4.2: Mid-term and terminal evaluations results shared with stakeholders			
				Sub Total ($)	**8,430,000.00**	**41,938,776.00**
Project Management Cost (PMC)						
				GET	420,000.00	1,333,730.00
				Sub Total($)	**420,000.00**	**1,333,730.00**
				Total Project Cost($)	**8,850,000.00**	**43,272,506.00**

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Government of Viet Nam - Environment Protection Fund	Loans	Investment mobilized	1,000,000.00
Other	IDH - sustainable trade initiative	In-kind	Recurrent expenditures	150,000.00
Other	IDH - sustainable trade initiative	Grant	Investment mobilized	150,000.00
Private Sector	Clean Production Action	In-kind	Recurrent expenditures	461,960.00
Private Sector	Clean Production Action	Grant	Investment mobilized	70,000.00
Private Sector	Hohenstein Institute	In-kind	Recurrent expenditures	11,200,000.00
Private Sector	GoBlu	In-kind	Recurrent expenditures	156,500.00
Private Sector	Bluwin	In-kind	Recurrent expenditures	150,000.00
Recipient Country Government	Government of Indonesia	In-kind	Recurrent expenditures	3,368,378.00
Recipient Country Government	Government of Bangladesh	In-kind	Recurrent expenditures	1,760,000.00
Recipient Country Government	Vietnam - Ministry of Natural Resources and Environment	In-kind	Recurrent expenditures	800,000.00
Private Sector	Apparel Impact Institute	In-kind	Recurrent expenditures	4,000,000.00

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Private Sector	Green Theme Technologies	Grant	Investment mobilized	4,000,000.00
Private Sector	Green Theme Technologies	In-kind	Recurrent expenditures	175,000.00
Donor Agency	UNECE	In-kind	Recurrent expenditures	26,000.00
Donor Agency	UNECE	Grant	Investment mobilized	100,000.00
Civil Society Organization	NRDC	In-kind	Recurrent expenditures	4,700,000.00
Private Sector	Zero Discharge of Hazardous Chemicals	In-kind	Recurrent expenditures	500,000.00
Civil Society Organization	NRDC	Grant	Investment mobilized	6,250,000.00
GEF Agency	UN Environment Programme, Economy Division	In-kind	Recurrent expenditures	76,056.00
Recipient Country Government	Government of Pakistan	In-kind	Recurrent expenditures	2,070,000.00
Other	GIZ	In-kind	Recurrent expenditures	2,108,612.00
			Total Co-Financing($)	**43,272,506.00**

Describe how any "Investment Mobilized" was identified

Vietnam Environment Protection Fund is allowed to provide preferential loans for environment protection activities including emissions monitoring equipment of factories, centralized wastewater treatment projects in industrial zone and industrial cluster (which may include textile factories). The fund will commit 1.000.000 USD (equivalent to 23 billion VND) in cash co -financing through preferential loans for monitoring equipment of textile factories (according to customers? demand), centralized wastewater treatment projects in industrial zone and industrial cluster, which may include a number of investment

projects within the framework of the GEF project as long as meet the loan requirements regulated in Circular 03/2017/TT-BTMT issued by Ministry of Natural Resources and Environment. The IDH-sustainable trade initiative will support the GEF project in the form of collaborative activities with their existing projects (Building sustainable chemical management capacities as best international practice in Ethiopia and Vietnam; Cleaner Production and Resource Efficiency program) in the five years of the project. Clean Production Action will engage brands in participating in the project and sharing knowledge across the value chain, developing and implementing substitution plans, creating and implementing supply chain and brand policies, creating case studies and good practices, and producing trainings to utilize these resources through their BizNGO programme. NRDC?s financial support comes from foundation projects focusing on protecting public health and eliminating toxic chemicals from the environment. Green Theme Technologies plans to invest in the expansion of the the chemistry, process and proprietary machinery to create a PFC-free and Water-free technology platform.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
UNEP	GET	Bangladesh	Chemicals and Waste	SAICM	875,000	83,125	958,125.00
UNEP	GET	Indonesia	Chemicals and Waste	SAICM	875,000	83,125	958,125.00
UNEP	GET	Pakistan	Chemicals and Waste	SAICM	875,000	83,125	958,125.00
UNEP	GET	Viet Nam	Chemicals and Waste	SAICM	875,000	83,125	958,125.00
UNEP	GET	Bangladesh	Chemicals and Waste	POPs	1,337,500	127,062.5	1,464,562.50
UNEP	GET	Indonesia	Chemicals and Waste	POPs	1,337,500	127,062.5	1,464,562.50
UNEP	GET	Pakistan	Chemicals and Waste	POPs	1,337,500	127,062.5	1,464,562.50
UNEP	GET	Viet Nam	Chemicals and Waste	POPs	1,337,500	127,062.5	1,464,562.50
			Total Grant Resources($)		**8,850,000.00**	**840,750.00**	**9,690,750.00**

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount ($)

200,000

PPG Agency Fee ($)

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
UNEP	GET	Asia/Pacific	Chemicals and Waste	SAICM	79,096		
UNEP	GET	Asia/Pacific	Chemicals and Waste	POPs	120,904		
				Total Project Costs($)	**200,000.00**	**0.00**	**200,000.00**

Core Indicators

Indicator 9 Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products (metric tons of toxic chemicals reduced)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
25.00	25.00	0.00	0.00

Indicator 9.1 Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (POPs type)

POPs type	Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
SelectPerfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride	25.00	25.00		

Indicator 9.2 Quantity of mercury reduced (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.3 Hydrochloroflurocarbons (HCFC) Reduced/Phased out (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.4 Number of countries with legislation and policy implemented to control chemicals and waste (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
4	4		

Indicator 9.5 Number of low-chemical/non-chemical systems implemented, particularly in food production, manufacturing and cities (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
10	10		

Indicator 9.6 Quantity of POPs/Mercury containing materials and products directly avoided

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
5,500.00	5,500.00		

Indicator 10 Reduction, avoidance of emissions of POP to air from point and non-point sources (grams of toxic equivalent gTEQ)

Grams of toxic equivalent gTEQ (Expected at PIF)	Grams of toxic equivalent gTEQ (Expected at CEO Endorsement)	Grams of toxic equivalent gTEQ (Achieved at MTR)	Grams of toxic equivalent gTEQ (Achieved at TE)
2.30	2.30		

Indicator 10.1 Number of countries with legislation and policy implemented to control emissions of POPs to air (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 10.2 Number of emission control technologies/practices implemented (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	6,000	6,000		
Male	4,000	4,000		
Total	10000	10000	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

The targets for the above shown Project Core Indicators are the same as those originally estimated in the PIF and have been validated during the PPG as noted in the corresponding notes and assumptions below.. The targets for indicator 9.1 include POPs and several priority chemicals initially described in textile sector voluntary tools (such as Restricted Substance Lists and Manufacturing Restricted Substance Lists, MRSL). The POPs target includes PFOS, PFOA and PFHxS at a minimum, and the project will also address additional PFAS chemicals that are candidate or potential future POPs, based on rapidly evolving regulatory landscape in many countries which are increasing the number of PFAS chemicals that are identified as having persistent characteristics. The target for PFAS reduction is based on quantitative data on documented use of a wider group of perfluorinated compounds (PFC) in the industry. Every 100,000m of fabric may contain up to 600 kg of active polymer chemicals, including typical durable water repellent (DWR) coatings usually containing 20-50% fluorine content. A PPG study of three mills? chemical inventories in Pakistan documented an average use of 43 tonnes of PFC based chemicals per mill per year. The Safety and Technical Data Sheets (SDS) that accompany these technical chemicals do not provide information on chemical impurities or by-products contained in the product, and it has proven impossible to identify which PFC chemicals may contain PFAS and specific POPs. However, the PPG did find evidence of residues of POPs on finished textile products (see Baseline section), confirming that POPs are still used. In the absence of quantitative SDS data, we assume that an average of 5% of PFC chemicals will be listed or candidate POPs chemicals, and therefore that the Core Indicator 9.1 target of 25 tonnes of PFOS/PFOA will be readily met by pilot projects in at least 10 mills, each using an average of 40 tonnes of PFC chemistry per year (5% of 40 tonnes PFC used x 10 pilots = 20 tonnes used per year). Other POPs such as PBDEs may also be identified during the inventory and will further increase the GEB. The Core Indicator 9.6 target of 5,500 tonnes of POPs and CoCs contaminated waste will be readily met during the project implementation. The same PPG study showed the mills export an average 296 tonnes of fabrics treated with PFC finishing each year, so the 10 mills can achieve the target of 5,500 tonnes of PFC-contaminated textiles in 2 years. The four participating countries have legislation and policy to control chemicals and waste ? where regulators access textile sector data on new POPs and other CoCs. The ten pilot demonstration low-chemical systems projects implemented to reduce CoCs in textile production is anticipated to have a more scalable impact as brands will be encouraged to replicate the eco-innovation approaches widely throughout their value chains. The target for indicator 10 (POPs emissions to air) is based on the NIP of Pakistan and Bangladesh, which respectively calculated 23gTEQ/a from the textile sector and 51 gTEQ/a from textile plants. The project target estimates a 10% reduction of this quantity from Pakistan alone.

Part II. Project Justification

1a. Project Description

The project design remains the same as at PIF and no major changes are required. Some changes to the output descriptions have been made to improve clarity. These include Output 1.1 (originally ?*Chemical Inventories and risk reduction measures for POPs and CoCs delivered to at least 500 chemical suppliers and SMEs?)* where ?risk reduction measures? has been moved to Output 1.4 which was previously limited to compilation of results which was considered more of an activity than an output (new prasing ?*Chemicals knowledge compiled and delivered to SMEs for risk reduction measures*?). Similarly, Output 2.3 (original phrasing ?*National actions to facilitate enabling conditions for textile SMEs adopted by national stakeholders*?) is simplified to relate to regulations, since other elements of the enabling conditions (notably financing) are addressed in Output 2.1.

The GEF budget split between project components is altered, but within 10% of the original amounts per component.

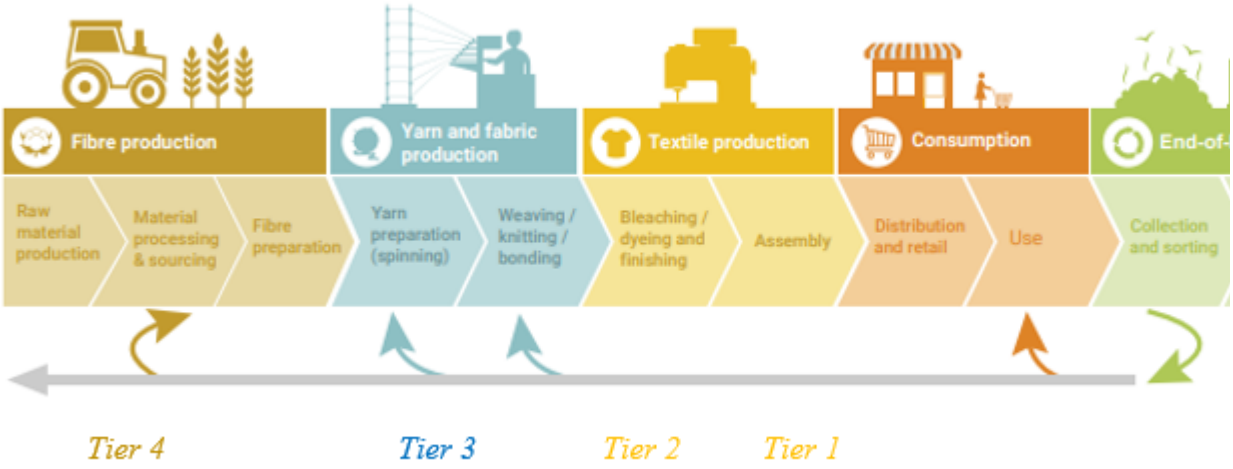
A1. Global environmental and/or adaptation problems, root causes and barriers that need to be addressed

A1.1. Global environmental problem

The textile sector covers all activities that are involved in the production, distribution, selling, and consuming of textile products (see Figure 1 below). The value chain starts with the fibre production that can be either the growth of natural fibres such as cotton, flax and wool or the extraction of crude oil and polymerisation into the manufacturing of synthetic fibres. In both scernarios the fibre production is followed by production of a yarn for subsequent use in fabric production. The production process includes a number of steps such as bleaching, dyeing, finishing of the fabric, garment assembly and retail ultimately resulting in the disposal of the used product. Globally, the industry?s global market size reached up to 1000 billion USD in 2020[1] and employs over 75 million people[2]. The textile industry?s market value chain is estimated to increase to 1,412.5 billion USD by the end of 2028, with and annual growth rate of 4.4%[3]. The textile value chain involves different stages of production that are described in a tier system[4]:

- **Tier 1:** Fabric assembly factories (garment)
- **Tier 2:** Processing factories where materials are turned in fabrics ready for assembly through printing, dying, laundering and embroidery.
- **Tier 3:** Processing facilities where spinning, knitting and weaving take place. Dyes and bleach can also treat yarns.
- **Tier 4:** Raw material suppliers

Figure 1: Linear representation of the different stages along the textile value chain



Although the textile value chain is global, the early stages of the textile value chain (Tier 1-4) are concentrated in Asia.[5] The textile industries in Bangladesh, Indonesia, Pakistan, and Viet Nam account for about 15-20% of global clothing exports.[6] The wet processing stage is mainly located in China, Bangladesh and Turkey, with 28% in Bangladesh.[7]

The growth of the sector directly leads to an increase in the production of the chemicals used, and the Asia-Pacific chemicals industry is expected to experience the fastest growth globally.[8] The chemical industry?s global market value is estimated to increase to 33.4 billion USD by the end of 2027. China, India, Viet Nam, Bangladesh and Indonesia are projected to be the global hubs for textile production[9]..Besides apparel and footwear, demand is also rising for technical textiles used in various sectors such as construction, building, automobile, protective equipment, furniture, medical, hygiene, or sporting applications. This in turn increases the demand for technical, and frequently hazardous, chemicals.

The increase in the industry?s market value is closely associated with the global trend of textiles and garments items being produced for a shorter lifespan, and in larger quantities, notably in the ?fast fashion? sector. Therefore, quantities of chemicals used and released are rising, further waste is generated, and the production of the textile fibres uses increased resources.

Besides agrochemicals used for natural fibre production and additives to polymers in synthetic fibres, chemicals are mainly used at the textile wet processing (bleaching, dyeing, and finishing) stage. More than 3,500 different chemical substances are used to establish the desired properties in the processing of textiles. Only 2,000 of the 3,500 chemicals used in the textiles sector were analysed, as around 1,500 chemicals were listed as commercially confidential[10]. 350 of the assessed (not confidential) chemicals, or 15%, were classified as hazardous for human health or the environment. Yet only 20% of these identified hazardous chemicals are currently regulated under the EU REACH regulation, which is more comprehensive than regulations in many other regions. Some of these chemicals have been classified as Persistent Organic Pollutants (POPs) under the Stockholm Convention or Chemicals of Concern (CoCs), which are identified as an Emerging Policy Issue (EPI) under the Strategic Approach for International Chemicals Management (SAICM). REACH and global regulations only account for active ingredients noted in the Materials Safety Data Sheets (MSDS). They do not address impurities or by-products that may occur in the traded product, which is usually a formulation of the active ingredient with other chemicals. Furthermore, although the Stockhom Convention restricts the use and

production of POPs, exemptions are registered for PFOS and related chemicals for certain textile uses[11].

These hazardous chemicals are known to cause cancer (carcinogens) and disrupt hormonal systems (endocrine disrupting chemicals, EDCs) in humans and animals. They are released to the local and global environment during all phases in the textile life cycle (production, use, disposal, and as recycled products) thus impacting the environment and the health of workers, communities, and consumers. The wet processing stage (bleaching, dyeing, and finishing) has been identified as an environmental ?hotspot? in life cycle assessments in terms of ecosystem, human health, and climate impacts[12] due to the high use of chemicals and of fossil fuel-derived energy. The chemicals used in the wet processing of textiles often contribute to breast cancer and reproductive problems, meaning that women have the highest risk of occupational injuries caused by exposure to hazardous chemicals.[13]

For textiles manufacturing, large amounts of water are needed, resulting in large quantities of contaminated wastewater. The textile sector is one of the primary sources of chemicals that are discharged into nearby water bodies, often untreated,[14] and 24% of all water used in the value chain is used at the wet processing stage[15]. A wet mill with a production of 220,000m of fabric per day is estimated to consume 13,870 KL water and produce 8,000 KL of effluent per day,[16]. Many water bodies around factories in Asia are heavily polluted[17] [18] [19] and flow into the environment. An estimated 5.6 Mt of synthetic microfibers were emitted from apparel washing between 1950 and 2016[20], with half of this amount emitted during the last decade. These microfibers are contaminated with CoCs, including POPS, and are released into the ocean from washing and chemical management of textiles[21].

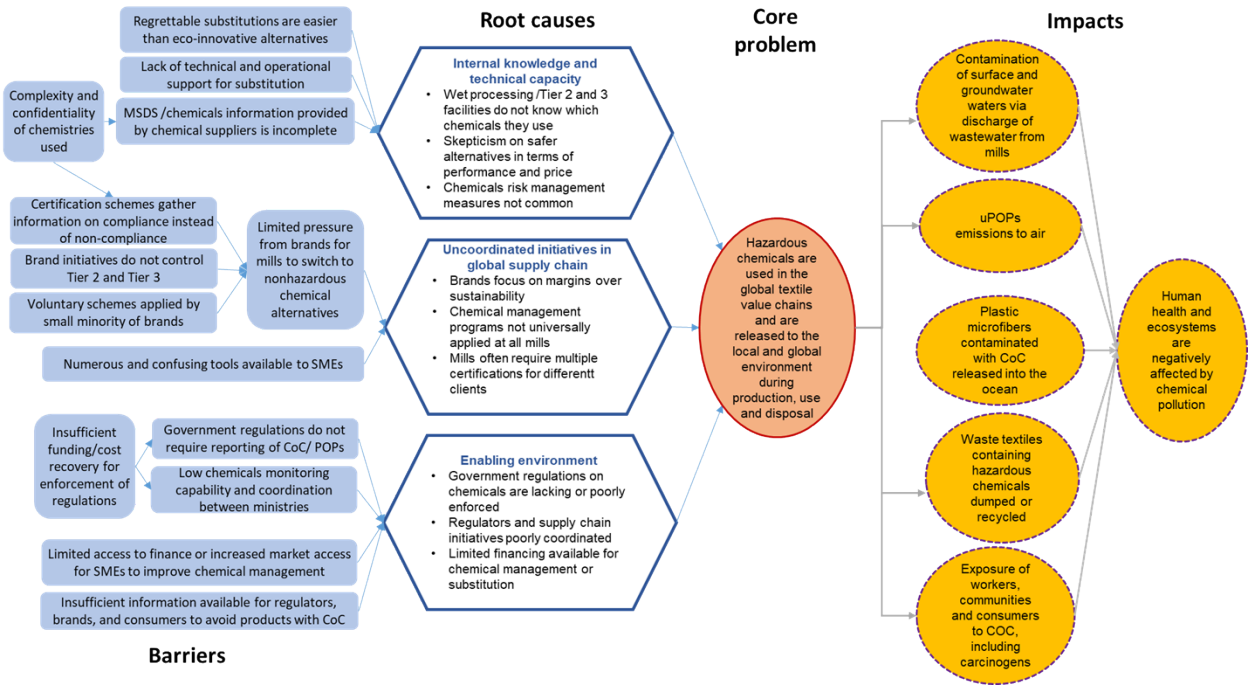
During their life cycle, textiles are also a potential source of emissions of unintentionally produced POPs, including dioxins (PCDD) and furans (PCDF). PCDD/PCDFs emissions are released during production due to contaminated raw materials, the use of fabric dyes or PCDD/PCDF-contaminated chemicals, boilers and heaters, incineration of process residues, and disposal due to incineration of POPs contaminated textiles [22] [23]. Besides air pollution, the presence of POPs at measurable concentrations in final products, also leads to unsound recycling and production of new articles from contaminated recyclates.

Poor chemical management also translates into significant economic losses. The value opportunity of eliminating occupational illnesses in the industry by 2030 is estimated at ?7 billion per year.[24] Furthermore, the sector creates almost 17m tonnes of waste per year in the US alone,[25] making it a priority for transition to a more circular economy approach to production. This transition is only possible if waste textiles can be recycled or reused, which is not possible without reducing and phasing out the use of hazardous chemicals in textile production.

The above global environmental problems are driven by five intermediate states that directly result from the project problem analysis (see Fig 2 and Appendix 1).

- Surface and groundwaters are contaminated via the discharge of wastewater coming from textile mills.
- Unintentional POPs are released into the air.
- Plastic microfibers contaminated with CoCs released into the ocean from washing and waste management.
- Waste textiles containing hazardous chemicals are dumped in unlined landfills, further polluting surface and groundwater or are recycled into other products.
- Exposure of workers, communities, and consumers to CoCs, including carcinogens.

Figure 2: Problem tree



A1.2. Root causes

The core problem of hazardous chemical use in the textile value chain directly leads to their release into the environment, leading to exposure and impact on human health and ecosystems. All four project countries face similar challenges related to the continued use of hazardous chemicals in the textile product value chains, their release during production, use and disposal, and their impact on human health and the environment. The lack of transparency on chemical use means that brands, civil society organizations and consumers cannot verify and make informed decisions on the sustainability of the textiles products. Governments are unable to meet their information provision obligations under the Stockholm Convention (e.g. NIP updates, periodic reporting on use and management of industrial POPs, and one-off requests for information to the Secretariat or the POP Review Committee).

The PIF identified three root causes leading up to the key problem and were confirmed during the PPG. These root causes were refined and validated through consultations with partners and beneficiaries, and form the basis of the project intervention (see section A3 Alternative scenario). The problem tree displays these root causes and barriers (see Figure 2).

A. *Root Cause A, Internal knowledge and technical capacity at wet processing mills:* A majority of Tier 2 and Tier 3 mills who are heavy users of chemicals have a low level of knowledge of the chemicals they use, the impacts of the chemicals, and available alternatives. This particularly applies to small and medium enterprises (SMEs) and businesses that supply national or non-developed markets, who do not have access to chemical expertise. Factory management are skeptical of safer alternatives in terms of performance and price, which leads to slow acceptance and adoption of either alternatives or of risk management and mitigation measures to limit exposure and environmental leakage when hazardous chemicals continue to be used. A number of barriers must be overcome to fully address this root cause, including the complexity of chemicals used, and quality of information provided by chemical suppliers and recorded by mills in chemical inventories (see section A.1.3 below).

B. *Root Cause B, Limitations and Overlap of Initiatives in Global Supply Chain*: Global brands and retailers are starting to focus on sustainability but with uncoordinated, unclear, or unambitious requirements and limited scope. Brands? sustainability commitments focus on climate change, biodiversity, and ocean plastic pollution (see KM baseline section A2.1.6) without explicitly adopting policies on chemical management. Labour inspection and control processes focus on garment assembly (Tier 1) rather than Tier 2 and 3 where the chemicals aspects of occupational health and safety dominate. Certain voluntary chemical management tools are coordinated (e.g. ZDHC, bluesign, Oeko-Tex, Outdoor Brands, etc.), but are only taken up by a minority of companies in the sector. The plethora of solutions that are available (negative- vs. positive-list approaches, need for multiple certifications to satisfy different clients) is a barrier for SMEs who may not have time, financial or human resources, or inclination to choose among different solutions.

C. *Root Cause C, Missing Enabling Environment*: The policy, regulatory, and financial environments do not provide incentives for the phase out of CoCs. There is little political will to adopt and implement national regulations, complicated by the strategic importance of the sector, which is a major generator of employment, national income, exports, and foreign currency in all the project countries. Thus legal and policy frameworks are insufficiently ambitious, despite brands citing regulatory levers as important in driving changes to business practices (see Baseline section A2.1.5). Regulators have insufficient funding to support the enforcement of existing policies and regulations or develop the needed new regulations or standards. Financial support and investment for mills to introduce new chemical management or processing improvements is limited and difficult to access for SMEs.

The first two root causes are the priority to the textile mills themselves in terms of changing chemical management practices. However, since global supply chain actor are influenced by regulatory requirements, the third root cause has been identified as a priority intervention for this project.

A1.3. Barriers to be addressed

A number of specific barriers must be addressed to reduce use, release and exposure to CoCs including POPs in the textile sector, and underpin one or more of the above described three root causes.

i. Information provided by chemicals suppliers is inadequate and prevents factories knowing what chemicals risks they face and how to implementing controls or alternatives, from appropriate handling and storage to reduce risks of worker exposure or fire, to phase-out of the use of toxic chemicals. Suppliers are cautious to share information which is perceived as raising legal compliance issues or business threat, as they fear penalization. SDS may not accompany all chemicals and may be out of date, incomplete, or wrong. Chemicals are traded under commercial names and as formulations, with active ingredients CAS numbers not always provided, either due to confidentiality or because of trade in generic or fake products. This barrier is linked to root causes A on technical knowledge & C on the enabling environment, as sufficient regulations and enforcement are not in place to require full information provision.

ii. SME manufacturers in developing countries lack in-house chemical expertise (e.g., dedicated ?Chemical Management Responsible Person? or environmental and occupational health and safety engineers) that larger companies can afford. As indicated by a survey on textile companies in Viet Nam, capacity to understand and interpret a Safety Data Sheet (SDS) to identify hazards and CoC risks in chemical formulations are missing.[26] Even if they are aware of hazardous substances used in their processes, many lack the expertise in various interdisciplinary fields needed to assess and identify viable alternatives to hazardous chemicals. Mills thus continue with business as usual, or implement

direct chemical replacements, including?regrettable substitutions? where chemicals are replaced with structurally similar chemicals, requiring substantial effort but yielding little benefit in reducing overall risk. Factory managers miss opportunities to increase efficiency by applying the principles of Green Chemistry and Resource Efficient and Cleaner Production or eco-innovative approaches that can help identify ways of designing textile products that are novel and no longer require the function that the POP was providing in the first place. Even when alternatives assessment has already been conducted globally, developing countries lack the necessary expertise to select and implement the most cost-effective ones for their cases. This barrier is linked to root cause A on technical knowledge.

iii. The complexity of chemistries employed in the sector, including chemical identities and environmental and human health-related impact and risk information, create traps and barriers for producers. For example, PFOS-related chemicals were replaced by structurally similar chemicals perfluorooctanoic acid (PFOA), itself listed as a POP in 2019. This process continues with thousands of PFAS chemicals continuing to be used in place of confirmed POPs. The most challenging chemical use cases for the textile industry are flame retardants and PFC-based water and stain repellency, where the replacement chemicals do not yet provide the legally required performance on products such as home furnishings, protective workwear or tents. One example is international flammability standards in importing countries, which define material requirements for ignitability that can often only be met by using brominated flame retardents including POPs.

iv. At higher value chain levels, retailers, brands and assembly facilities (Tier 1 facilities) do not know what chemicals their suppliers are using, and in many cases, don?t even know who their Tier 2 and 3 suppliers are. This exposes them to reputation, regulatory, and economic risks as they cannot certify clean production and missing opportunities to design safer products.

v. Existing voluntary schemes do not meet all needs for information exchange on chemicals. Firstly, they do not have the capacity to deliver solutions universally across the entire textile sector. The ZDHC Gateway programmes includes about 3,200 facilities and is expanding this network to reach 8,000-10,000 facilities worldwide. In contrast, the total number of textile SMEs in Viet Nam is about 7,000 companies. This process is too slow and requires appropriate incentives to be established (Section A1.2.3). Even multi-stakeholder voluntary initiatives such as ?Race to the Top? in Viet Nam only involve a limited number of vendors for big brands and no Tier 2 companies or SMEs are participating. Secondly, certification companies share information on compliance rather than non-compliance, with confidentiality requirements a key barrier to establishing transparent, wider schemes to ensure information on the presence of chemicals is also available to regulators and downstream value chain actors such as garment workers or consumers.

vi. The tools available to SMEs to identify problem chemicals and feasible alternatives are numerous and confusing[27].. Clean by Design[28] and the Asian Garment Hub[29] have addressed this by including training facilities to understand the similarities and differences among the existing tools and platforms by collecting all sources in one digital library. ZDHC and Clean by Design provide tools for facilities to review their inventory, identify regulated CoCs, and screen the chemical products and wastewaters. Additional practical tools are also proposed to identify excess chemical usage, estimate CoC reduction, and check the manufacturing process. However, these trainings are not universally available or shared. This barrier is linked to the Root Cause B concerning the uncoordinated approach of global initiatives.

vii. National regulations do not explicitly ban POPs. Viet Nam has banned azo dyes but lacks enforcement capacity to deliver this ban. Key regulatory tools such as the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) are not fully implemented in the project countries. Even in cases such as Viet Nam where national chemicals regulations do require labelling and MSDS according to the GHS, implementation is still weak, often due to limited funding available for regulators to promote compliance and enforce regulations. Cost recovery mechanisms to fund regulatory activity do not exist in the project countries.

viii. Countries have insufficient analytical capacity to enforce regulations adequately. Many countries have laboratories and equipment for measuring organic compounds but cannot identify and analyse all different POPs or CoCs with a reasonable cost. Low coordination between regulators and ministries leads to missed opportunities on sharing knowledge on hazardous chemicals use (Section A1.2.1). Labour ministries and inspectorates are only starting to be technically capable of monitoring and controlling chemical management by textile companies and are in poor coordination with environment ministry counterparts with unclear allocation of responsibility and mandates. Import data is not systematically used to inform and monitor chemical use in the sector, and databases monitoring the use and sound management of chemicals do not exist. Access to data held by voluntary schemes is not publically available or available to regulators (see barrier v above).

ix. Subsidies and financial flows continue to sustain business as usual. Despite growing attention towards sustainability, the lack of strong and ambitious policies from brands at the highest level and incentives from customers fails to create the required enabling environment. Most brands still do not require non-hazardous alternatives and CoC-free parameters are included only on buyer request and no incentives are offered to CoC-free or third-party certified practices The criteria to use chemicals are predominantly price and availability, followed by extended credit terms and quality consistency. The Covid pandemic has led to extreme competition in the sector which forces the facility management to cost-cutting and reuse of contaminated raw materials. Many processing mills have insufficient funding and access to finance to implement the necessary changes and do not have a firm understanding of the benefits of switching to sound chemical management.

A2. Baseline Scenario and any associated baseline projects

A2.1. Global and Regional Baseline Scenario

A2.1.1. Textile sector and chemicals use

Textiles sector structure and size

Textiles, clothing, and fashion are part of one of the largest industries in the world economy (see section A.1.1). Garments and textiles represent about 5% of total manufactured goods exported in the world[30].. China is likely to remain the world?s largest textiles and apparel manufacturer, but the Asia-Pacific textile industry is expected to experience the fastest growth. Many companies are exploring new manufacturing facilities in other Asian countries (including Bangladesh, Viet Nam and Pakistan) to benefit from the lower-cost labour pools and utilize regional trade agreements to contain costs.[31] [32] The textile industries in Bangladesh, Indonesia, Pakistan, and Viet Nam account for a significant, and growing, portion of this amount, about 15-20% of global clothing exports,[33] particularly Bangladesh and Viet Nam (see section A2.2 National Baseline Scenario). Gender issues are particularly important in the textile and garment sector which has a high proportion of female workers globally. While monitoring data on female participation in the workforce at the wet processing stage does not exist, national PPG consultants estimate that women only make up 5-15% of the total labour force in the wet-processing mills. Please refer to Section 3 below for full information on gender aspects of chemical management in the textile sector.

The textile value chain is long and complex, with apparel producers commonly having more than 1,000 suppliers in several dozen countries.[34] The value chain goes from retailers and brands to spinning, knitting, weaving, bonding, processing, and back to fibre producers and chemical suppliers. In processing facilities (tier 2 and 3), textiles undergo various chemical treatments to establish their desired characteristics. This includes fabric pre-treatment, dyeing, refinement or finishing yarn formation, laminating, finishing, and coating. Chemical products are broadly divided into three categories: dyestuffs, textile auxiliaries, and functional finishes. Special chemicals such as flame retardants, water repellents and yarn warp sizers are used. Most hazardous substances are used and released into the environment during the wet processing stage of the cycle and particularly the printing

stage, with high risks from solvents and thickeners used, followed by dyeing & finishing, where CoCs from dyes, pre-treatment auxiliaries and speciality/ functional finishes can lead to risks of CoCs in the chemical formulations.[35]

In Viet Nam, textile factories are mostly found in industrial zones, while in Bangladesh they can also be found outside of them. In case of the latter, the chance of more people being indirectly affected by the chemicals is higher. Location of factories, waste disposal method and communities residing nearby are very important criteria to understand in view of reducing the indirect effects of chemicals. Factories of different sizes and different ownership structures have different levels of compliances on chemical management. Factories operated by large scale enterprises and/or under foreign owned enterprises are likely to maintain better compliance to national rules and buyers? code of conduct given their willingness and capacity to invest into chemical management. Such investment is limited for small scale and locally owned enterprises.

Textiles containing hazardous chemicals

Every kg of textiles produced requires an input of 0.58 kg of chemicals[36] and a full quarter of the chemicals produced in the world are used in textiles.[37] As addressed in the global environmental problem section (section A1.1), these are around 3,500 substances of which 750 are classified as hazardous for human health and 440 as hazardous for the environment.[38] Some of these are classified as CoCs or POPs, listed under the Stockholm Convention. The convention?s risk profiles for the following POPs identify past or current use as additives in textiles: PFOS and PFOA, hexabromobiphenyl (HBB), technical mixtures of tetra- and penta-bromodiphenyl ethers (cpentaBDE), technical mixtures of hexa-, hepta- and octa-bromdiphenyl ethers (c-octaBDE), decaBDE, hexabromocyclododecane (HBCD) and short-chain chlorinated paraffins (SCCPs).[39] A comparative overview of commonly restricted chemicals organizes them into six broad classes (amines, dyes, halogenated chemicals, metals, monomers and solvents).[40]

Even though the convention restricts these POPs, exemptions exist and are still in force in the project countries. Some Parties, such as Bangladesh, do not automatically ratify amendments to the Convention annexes, meaning that the use of these newly added POPs may still occur and influence the presence of these substances in products traded around the world.[41]

In the wet processing mills, POPs are used as durable water repellents (PFOS & PFAS) and flame retardants (deca-BDE, HBCD, and SCCPs). PFOA/PFOS, Polyaromatic hydrocarbons (PAH) and SCCPs are used in amounts surpassing limits set by the Apparel and Footwear International RSL Management (AFIRM) Group and ZDHC?s MRSL. Furthermore, a scan of Safety Data Sheets (SDS) of chemicals used in chemical factories show that formulations containing POPs (e.g., Dieldrin, Endosulfan, Lindane, PCB, SCCPs, and deca-BDE) are used.[42]

Many other POPs and CoCs are used throughout the entire value chain of textile production, on all types of materials, both synthetic and natural (see table 1 below).[43] Products most likely to contain or use POPs and CoCs include technical apparel and outerwear, rainwear, carpets, furniture upholstery, firefighting and military uniforms and protective gear.[44]

Table 1: CoCs used throughout the textile value chain

Material or Processing	CoC
Natural Fibres	Highly Hazardous Pesticides
Spinning and Texturizing	Alkylphenol Ethoxylate (APEO) and Polycyclic Aromatic Hydrocarbons (PAHs)
Viscose and Lyocell (Rayon)	Sulfuric Acid and Carbon Disulfide
Acetate	Acetone
Wool	APEO, Permethrin, and Chromium
Polyester	Antimony Trioxide
Polyimide	Caprolactam and Nitrous Oxide

Modacryl (Polyacrylonitrile)	Acrylonitrile, Formamide, and Dimethyl Formamide
Ethylene Vinyl Acetate (EVA)	Acetophenone and Formamide
POM	Formaldehyde
Polyurethane	Isocyanates, Toluene, Phenol, and other organic solvents
Polyvinyl Chloride (PVC)	Phthalates
Leather	Chromium and Chlorinated Solvents
Artificial Rubber and Latex	Isoprene, chloroprene, styrene, and butadiene

Textiles containing CoCs, including POPs, manufactured in Bangladesh, and sold in Argentina contained 29.7?g/ kg ionic PFAS and 6967?g/kg volatile PFAS which exceeds EU PFAS regulatory limits by approximately 30-fold to 7000-fold for ionic and volatile PFAS respectively.[45] A 2014 Greenpeace investigation[46] found five types of soccer shoes manufactured in Indonesia that contained PFOA and PFBS. The levels ranged from 5.28 ? 14.5 ?g/m2 for PFOA and 14.5 ? 37.9 ?g/m2 for PFBS. DecaBDE was detected in the range of 24.4?107 ?g/ cm in 4 out of 11 tent fabric samples, including for tents produced in Bangladesh and Indonesia and imported into the US.[47] Furthermore, a study from the German Federal Environmental Agency found a coat made in Indonesia with a variety of PFAS substances at a total level of 42.9 ?g/m2. To illustrate how significant these levels are, note that the EU regulates PFOS at 1 ?g/m? in textiles.[48]

Pakistan indicated in its NIP[49] that some PBDEs were likely to be found in textiles, with some possible stocks of flame retardants in the industry or that certain synthetic carpets/textiles produced or imported after 2002 might contain PFOA and related substances.

Per and polyfluorinated alkyl substances

Per- and polyfluoroalkyl substances (PFAS) contain bonds between carbon and multiple fluorine atoms. These strong carbon-fluorine bonds give PFAS useful chemical properties for making products oil, stain, water-repellent, or non-stick. These same carbon-fluorine bonds also make PFAS extremely resistant to breakdown and resulted in PFOS and PFOA being listed under the convention as POPs. PFAS are found in the bodies of 99% of Americans and are used in a countless number of manufacturing and product applications. In textiles, PFAS are mainly used for oil, stain, and water resistance applications, particularly apparel, footwear, carpets, curtains, backpacks etc. However, they can also be used in metal plating manufacturing, dye formulations, the manufacture of Polytetrafluoroethylene (aka Teflon), and many, many others.

As a class of substances PFAS are:

- **Persistent**: Do not break down into safer substances in the environment. We can continue to be exposed from food, drinking water, and products years after a chemical is banned or phased out.
- **Mobile**: Travel far and are distributed around the world. PFAS are present in the deep oceans, mountain lakes, and polar regions far from where they were produced and used.
- **Bio accumulative**: Build up in people and animals. Certain PFAS bioaccumulate--they remain in the bodies of humans and animals for years. Bio accumulative PFAS are most concentrated at the top of the food chain, in marine mammals, birds of prey, and humans.
- **Toxic**: Harmful to humans and ecosystems. The best studied PFAS, PFOA and PFOS, are linked to liver damage, high cholesterol, obesity, diabetes, cancer, thyroid disease, asthma, immune system dysfunction, reduced fertility, low birth weight, and effects on children?s cognitive and neurobehavioral development.

Risk reduction programmes for PFASs, are being rolled out in OECD countries[50], but many of the PFASs continue to be produced and used in other parts of the world, including in textiles. market

research has identified the textile sector as the biggest user with an estimate of 36% of the total market of 26,000 tons in 2015 and projected to continue being on the top of the list in the coming years.[51] According to the Swedish Chemicals Agency, PFAS contribute to around 2-3% and 15% of the fibre weight in textiles and carpets respectively.[52] A study by Supreeyasunthorn et al.[53] shows that PFOS and PFOA migrate from textiles and are released into the environment, with disappearance percentages of 29.8% for PFOS and 99% for PFOA. That same study concluded that, although the average concentration of PFOS found in textile samples was below European Union (EU) Commission regulations (<1 mg m^{-2}), the average concentration of PFOA was 2.74 mg m^{-2}, and 68.75% of textile samples had PFOA concentrations exceeding 1 mg m^{-2}.

Although PFOA and PFOS and their salts are included in the POPs list, many current alternatives used to replace PFOA and PFOS could easily change into the regulated PFOA and PFOS during the production or use become ?regrettable substitutions?. Thus, it is important to manage and eliminate this whole class of more than 4,700 substances simultaneously.

Since PFOA and PFOS (C8 or long-chain PFAS) have been added to the global regulatory radar, certain industries have or are in the process of migrating to PFAS chemicals also known as ?C6? and ?C4? or ?short chain PFAS.? These PFAS substances are viewed in the scientific and regulatory communities with extreme caution as they belong to the same PFAS class of chemicals as PFOA and PFOS. As such and with the framework of ?The Precautionary Principle? in mind, there is a growing body of scientific data that these PFAS will surely be determined as regrettable substitutions for C8. Further, they are not as technically proficient as C8, which will most likely lead to increased environmental loading.

As per the AFIRM chemical sheet on PFCs, alternatives to C8-based PFCs are available for most applications in apparel and footwear. Short chain fluorinated polymer finishes that cannot chemically degrade into PFOA or PFOS are available, and the use of non-PFC chemistries (such as wax, silicones, acrylic polymers, polyurethanes, dendrimers, and more) are additional alternatives depending on performance needs. Materials exist that are naturally repellent due to other chemical or mechanical properties. AFIRM states that any alternative selected must be carefully vetted to ensure a regrettable substitution is not made. Any chosen alternative should also be ZDHC MRSL compliant if applicable.[54]

Similarly, highly brominated flame retardants have come under scientific and regulatory scrutiny including by the Stockholm Convention. These chemicals, though structurally and functionally different from PFAS, contain bromine-carbon bonds rather than fluorine-carbon bonds. As such, they exhibit similar behaviour to PFAS regarding persistence, mobility, bioaccumulation, and toxicity. The root cause of both is the carbon-halogen bond, which is anthropogenic. Therefore, there are no known natural mechanisms to effectively process these chemicals to non-toxic metabolites that can be recycled into the natural world in a circular fashion. Hence though the GEBs of this project are based on PFOS, PFOA, and the brominated flame retardants identified in the Stockholm Convention, activities will cast a wider net by applying a ?Class? perspective and model covering all PFAS substances.

Use of CoCs in textile mills

Very little information is publicly available on actual use of POPs and CoCs in textile mills. As covered in section A1.2 Root causes and barriers, the mills have a low level of knowledge on the chemicals they use and lack reliable information provided by chemical suppliers. Besides that, the service providers that support mills in establishing qualitative chemicals inventories have stringent non-disclosure policies. Tier 2 and 3 facilities are often afraid to share information on chemical use due to fear of penalties.

Two studies have been carried out during the PPG, in Pakistan and Bangladesh respectively, by supply chain experts. The study in Bangladesh[55] shows that periodic testing by eco-certification agencies or global apparel brands of discharged wastewater and/or sludges at ZDHC certified textile factories for

ZDHC Wastewater Guidelines or of finished goods for RSL norms do not reveal many failures for CoC substances. However, industry insiders indicate that representativeness of the samples, dilution of wastewater discharges, lack of proper information in Safety Data Sheets and the small size of chemicals listed in the ZDHC Gateway could indicate otherwise. Only a long-term study on the input chemistry could reveal the real use of CoCs in these textile mills as wastewater testing only provides information on output chemistry.

Investigation of Safety Data Sheets of more than 100 chemical formulations from local chemical companies in Bangladesh show a lack of information displayed in Section 3 (Composition and ingredient information) with questionable or no details on CAS numbers of hazardous ingredients or the percentages used in the formulation. Ingredient information is often not displayed as ?proprietary? and thus SDSs hardly reflect any CoCs being used in the chemical industry.

An analysis of ZDHC wastewater test reports from ZDHC supplier shows that in October 2020, approx. 83% of these reports met the ZDHC MRSL parameters given in the ZDHC Wastewater Guidelines V1.1. The MRSL parameters (CoC analytes) detected above the permissible limits are CoCs, but not POPs: Nonyl Phenol Ethoxylates, 1,4 Dichlorobenzene, Organotins, Specific Heavy metals such as Zinc, Copper, Para chloroaniline, Methylene chloride and Cresols. These substances were detected from dyeing and finishing mills as well as printing units. The 2020 compliance number is an improvement over the approximately 64% conformance to the ZDHC MRSL parameters in April 2018. However, these figures represent a small portion of the textile processing industry that is also focused on the textile facilities that have started to make efforts in the reduction of hazardous chemical use. Hence, a representative number and amount of CoCs in the Bangladeshi textile value chain is still unknown.[56]

In Pakistan, the PFC chemical usage was assessed in three big exporting textile factories that mainly export home textiles to Europe and North America. Each of these mills used between 7,000 and 71,000 kg of PFC-based chemicals/year with an average PFC loading on articles by recipe between 70-150 g/L. In the mills, on an average 230 ? 250 gm of PFC based chemical is present on one kg of articles produced that have been treated with these finishing chemicals. Of all the fabrics exported from these mills, around 0.8-6% are finished with PFC containing finishing products.[57]

Furthermore, between two and five PFC based chemicals were used in each factory. Of the total of seven different PFC based chemicals used in the mills, three chemicals were part of the C6 PFCs, one was classified as a fluoropolymer, and three were classified as PFC free.[58] This latter indicated that, as identified as a barrier (see Section A1.2 Root causes and barriers), there is a lack of reliable information provided from chemicals suppliers. Only thorough engagement with the chemical manufacturers and suppliers reveals the actual content of many chemical products used in the textile mills.

Unintentional Persistent Organic Pollutants (uPOPs)

As indicated in Section A1.1 Global Environmental Problem, textile production industries are potential sources of unintentionally produced POPs including dioxins (PCDD) and furans (PCDF). Bangladesh has reported a high level of releases of PCDD/PCDF of 51 g TEQ/a from textile plants in its Stockholm Convention National Implementation Plan (NIP) in 2005[59] and Pakistan estimated a release of 23g/TEQ in the textile sector in its latest NIP (2020).[60] Furthermore, Viet Nam estimates the main POPs emitted in the Vietnamese textile industry are PCDD/PCDFs although no quantitative release estimates were done for this source group in the NIP. These PCDD/PCDFs emissions are due to several potential sources like contaminated raw materials, the use fabric dyes or PCDD/PCDF-contaminated chemicals, boilers and heaters, and incineration of process residues.[61]

A2.1.2. Wastewater pollution

One of the main impacts of hazardous chemicals in the textile value chain is improperly managed wastewater containing hazardous chemicals causing water pollution (see section A1.1 Global environmental problem). Toxic chemicals, such as alkylphenols and PFCs are particularly problematic as wastewater treatment plants cannot remove them, and microfibers in the wastewater can carry POPs

and result in leaching of toxic substances, such as dyes and fire retardants.[62] The industry consumes high volumes of water, with total consumption estimated to be around 215 trillion litres per year;[63] natural fibre production (cotton cultivation) and the consumer use phase account for a particularly significant portion of the water scarcity impact of the sector.[64] Further, the textile industry is not a high-tech sector of the industrial economy, often with outdated or absent infrastructure including for wastewater treatment.

In Viet Nam, the textile industry is seen as the second most important source of water pollution. The pollution from wastewater is very diverse, depending on the technology stages, the product, and its quality. The whole industry produces around 70 million m? of wastewater/year of which only 45% is treated. Only a small fraction of this wastewater is recycled into fibre material. Reports show that in the surface water collected from lakes and rivers, the highest levels of PFCs, including PFOS and PFOA (both concentrations around 7ng/L), were observed in surface water collected from trade villages for textile dyeing products in Bac Ninh province.[65] Other reports also show the presence of PFOS, PFOA and PFAS in surface water near textile and dying villages with PFOS concentrations above 0.65 ng/l which the Dutch National Institute for Public Health and the Environment (RIVM) has determined as the maximum permissible concentration for surface waters based on the high tolerable daily intake of the European Food Safety Association. An initial investigation on PFOA/PFOS in Viet Nam was carried out in 2014-2015.[66] PFOS and PFOA were identified in waste sludge samples from a detergent manufacturing facility (PFOA = 47 ppb; PFOS = 56 ppb) and were also found in other local areas such as dumpling sites, urban areas, textile and dye facilities, and plastic recycling sites.

In Pakistan, estimates suggest only 1% of industrial wastewater is treated, with overall lax handling of chemicals widespread (see section A2.2.4 Pakistan). Measurements showed the presence of heavy metals in water far exceeding WHO standards[67]. Further problems related to wastewater treatment in Pakistan are the lack of knowledge as well as financial and human resources to measure water quality and implement steps to improve it.

The Bangladesh Department of Environment reported that 535 out of 704 water polluting industries have installed effluent treatment plants (ETPs) in their premises as of June 2012[68]. However independent analysis of the Buriganga River near Dhaka, a historically significant source of freshwater with numerous textile factories located nearby, suggests that few of the local mills have any sort of effluent treatment system, releasing their wastewater directly into the Buriganga River.[69] Another source indicates that the industry is potentially an important sector for PFAS use and releases. Paper and pulp industries, textile, and plastic industries situated on the bank of Karnafuli river, and the coastal areas are the possible sources of PFAS releases in Chittagong and Cox?s Bazar.[70] Another study examining the wastewater from textile factories in Bangladesh found chemicals far beyond the allowed concentrations being released without treatment.[71]

In Indonesia, hazardous chemicals linked back to the textile sector have been measured in riverwater. 60% of modern textile companies of Indonesia are located in Bandung (West Java Province, Indonesia) and release wastewater effluents to Citarum River.[72] An investigation detected high levels of nonylphenols (NP) and nonylphenol ethoxylates (NPE) [73], both used as detergent and surfactants in textile manufacturing processes and both are recognized as endocrine disrupting compounds[74]. The Citarum River is also used to irrigate rice fields and plantations in the region, and this thus poses a risk to human health. Other compounds found at high concentrations in the Citarum River were tributyl phosphate (TBP), antimony (Sb), quinolines, ethylene glycol ethers, and p-terephthalic acid.[75] TBP is a substance used for certain dyes or pigments carrier, plasticizer and antifoaming in textiles. Antimony, a metalloid, is a substance used in polyester production. Meanwhile, quinolines are a group of azo compounds linked to textile dyes. The TBP is suspected to have hazardous characteristics, and antimony is toxic to humans. Greenpeace International also investigated hazardous chemical releases from the PT Gistex and PT Kahatex facilities located near Bandung in West Java. PFOA at 12 ppt was found in one sample from the PT. Kahatex factory in the wastewater discharging into the main discharge channel. The updated NIP report reported that wastewater and sludge discharged from textile industries could be considered as PFOS hotspots.[76]

A2.1.3. Voluntary initiatives

The substitution of POPs and CoCs by safer chemical or non-chemical alternatives with acceptable performance is a widely recognised goal in the global textile sector. This is in alignment with the Stockholm Convention, the Principles of Green Chemistry and the SAICM objectives. The following are well-established, voluntary initiatives by service providers that directly support sustainable production by wet processing mills. They are membership organizations with a specific focus or tools on chemicals management:

a) Oeko-Tex? / Hohenstein Institute: The Hohenstein institute is the founder of the OEKO-TEX association. The latter is a certification and label provider with a range of certification schemes and labels (ECO PASSPORT, STANDARD 100, LEATHER STANDARD, STeP, and MADE IN GREEN). The association conducts testing and certifying textile chemistry, components, products, and mills. Their programs and certifications are designed to support chemical management and elimination of hazardous substances and the open-source library guides its customers toward POP and CoC free textile chemicals, components, and fabrics. Oeko-Tex has a significant presence, including offices, in the project countries with almost one hundred auditors, educators, and technical staff. There are tools available for knowledge exchange and management, most notably Oeko-Tex? and bluesign? approved libraries of certified chemicals, textiles, components, and facilities. These are open and free to use by brands, the public, policy makers, etc.

b) Zero Discharge of Hazardous Chemicals (ZDHC): ZDHC is an NGO with a vision of widespread implementation of sustainable chemistry, driving innovations and best practices in the textile, apparel, leather, and footwear industries to protect consumers, workers, and the environment. ZDHC has a presence in Bangladesh and Pakistan and has accepted laboratories in all four project countries. ZDHC?s position in the textile industry is well known and has significant reach throughout the textile value chain from chemical suppliers and service providers to brands. Their networks include offices, auditors, trainers, tools, technical experts in each of the project countries, as well as experience in assisting with policy making. The ZDHC?s ?Gateway? mimics their service provider libraries and is only open to members.

c) Sustainable Apparel Coalition/ Higg.org: A global, multi-stakeholder non-profit alliance for the fashion industry which developed the Higg Index and is a well-known global leader in educating and connecting brands to the important social and environmental issues surrounding textiles. The Higg Index consists of various tools for the standardized measurement of value chain sustainability. First is the Higg Facility Environmental Management (FEM) Module, a standardized and centralized self-assessment tool that measures a facility's environmental impact and finds opportunities for improvement based on a self-audit. Their Social and Labour Module performs a similar function related to labour conditions. A Life Cycle Assessment (LCA) tool allows brands to perform comparative analysis on materials they intend to use. The LCA also includes space for carbon accounting, which is a major focus for many of its customers. The Materials Sustainability Index (MSI) grades the sustainability of materials, finishes, etc. by use of Life Cycle Assessment software. These tools intend to provide a singular platform for suppliers to communicate important information to their customers (Brands), and for brands to make informed decisions on material selection. H&M, Target and Patagonia are among the early adopters. Higg.org?s Social and Labour Module, Facilities Environmental Management (FEM) Module, and (MSI) contain a wealth of pertinent data, but is not available to the public. The organization has wet mills using their tools in all four project countries.

d) Apparel Impact Institute (AII): The institute identifies, funds, and scales up proven quality solutions to accelerate positive impact in the apparel and footwear industry. It also manages the Clean by Design project that was established by NRDC.

e) Bluesign?: A holistic system that provides solutions in sustainable processing and manufacturing to industries and brands. It is a well-known global leader in certifying textile chemistry and mills regarding responsible management. They are a member of the ZDHC community and are viewed by many as best in class in the industry.

f) Amfori: Non-profit business association of global commerce with 2,400+ members with Bangladesh, Viet Nam, Indonesia, and Pakistan as sourcing countries for their members. The association enables companies to monitor and improve environmental performance in their supply

chains. They add value add in areas of education and training programs, policy and awareness raising, and basic facility audit and improvement programs.

g) Outdoor Industry Association (OIA): Membership-driven trade organization for the outdoor industry. They are the connection to the brands in the US whose supply chain firmly resides in the countries in scope for this project. European Outdoor Group (EOG): EOG is OIA?s European counterpart.

The following companies provide technology or tools to mills, with express functions to support improved chemical management:

i) Green Theme Technologies (GTT): Textile innovation company with the mission to create products that out-perform existing technologies while eliminating water usage and pollution. GTT?s EMPEL (Elevate performance. End pollution.) process is one of the best available technologies (BAT) for dyeing and finishing of textiles i.e., durable water-repellent treatment (DWR). Their process is waterless and CoC, including POPs-free. While GTT?s technology? technical performance measures up against its fluorinated predecessors i.e., PFOA and similar compounds, it?s one of the major inhibitors to other PFC-free DWRs.

j) Bhive: A chemical inventory management tool that allows to develop accurate chemical inventories and showcase chemical compliance. The tool also allows brands and producers to view and compare the safety of their chemicals, increasing the textile?s value chain transparency. The ZDHC and Oeko-Tex? have endorsed the Bhive tool.

The following NGOs have all worked with textile mills on chemicals management programmes and have successful experiences.

k) Natural Resource Defence Council (NRDC): A nnonprofit international environmental advocacy group with capabilities in both technical and policy making areas of the project. It created the Clean By Design Programme in 2009 that was implemented in more than 200 textile mills globally and has since been taken over by the Apparel Impact Institute (see above). The programme aims to improve efficiency and reduce environmental impact by reducing energy, water, and chemical use in wet-processing facilities. Furthermore, they produced a report and a policy brief to the SAICM secretariat regarding ?PFAS as a Class in the Textiles Sector.?[77]

l) Clean Production Action: Clean Production Action designs and delivers strategic solutions for green chemicals, sustainable materials, and environmentally preferable products. It implements a pilot project on PFOA and brominated flame retardants to textiles use in furniture. However, it does not include any project countries nor are their current clients located there. They have a suite of chemical and environmental management training sessions including their Green Screen tool and service which assesses chemicals and mixtures for hazardous substances while also making recommendations for vetted and greener substitutions.

m) Green Science Policy Institute (GSPI): The institute educates government, business, academia, and public interest groups and builds partnerships to develop innovative solutions for reducing harmful chemicals in products. The institute concentrates on policymaking based on the ?Six Classes? of toxic chemicals used in a multitude of products across multiple industries.[78] Focusing on POPs and COCs at a ?class? level, they have worked with the US carpet industry to eliminate PFOA/PFOS and halogenated flame retardants in the industry. These POPs and CoCs have been used historically and heavily in these textile sectors. Their ?Six Classes? framework has been recognized globally as a science-based, disruptive approach to engaging industries and governments on policy. GSPI produced the ?Scientific Basis for Managing PFAS as a Chemical Class? paper in June 2020. Besides this, they also carry out a lot of policy work.

Table 2 below presents the presence of these above voluntary initiatives in the project countries. Many companies supplying specific European brands insist on certifications such as Global Organic Textile Standard (GOTS), EcoPassport and bluesign for the chemical products they purchase from vendors. Due to COVID travel restrictions during the PPG, it was not possible to confirm exact numbers of total wet mills in all countries (the table below seems to show a higher number of certified mills than total

mills in some cases). During inception and inventory stages, attention will be given to completing a reliable mapping of these facilities.

Table 2: Presence of voluntary initiatives in the project countries

Countries	Bangladesh	Indonesia	Pakistan	Viet Nam
Total number of wet mills in country	1,530[79]	1,540	464	240
OEKO-TEX? Program				
STeP	80	5	61	12
ECO PASSPORT	3	16	3	5
STANDARD 100	1750	204	712	365
Bluesign?				
Mill System Partners	2 (5)	1	0	7
Chemical Supplier Partners	0	4	0	4
Amfori				
# of Textile & Garment Production Facilities	2751	182	891	575
# Chemical Management Audits	63	0	8	1
# of Environmental Self-Assessments	1277	21	404	37
HIGG ? FEM				
# of Mills	700	237	209	606
# of Mills ?Yes? Chemical Inventory	606	193	193	469
Higg ? Wet Mills by Type				
Screen Printing	429	168	94	385
Product Wet Processing	408	100	146	245
Material Manufacture Wet Processing	177	58	88	148
ZDHC				
ZDHC Gateway	567	TBD	TBD	TBD
GOTS certification	835	TBD	TBD	TBD

As mentioned in section A1.2, eco-certification or participation in brand initiatives like the ZDHC Roadmap to Zero Programme is only due to pressure from buyers and is often seen as an additional burden. Mills express the need to have a single standard for the industry as multiple certifications lead to duplication of work and additional financial burden and resources. The high numbers of certified mills compared to the estimated total numbers of mills in the project countries in the above table also supports the existence of multiple certification demands from buyers. A survey conducted of 264 members of the Bangladesh Textile Mills Association (BTMA) during the PPG reveals that 130 members had no certification, 37 members had at least one, 17 members had two certificates, 30 members had 3 certificates, 33 members had 4 certificates, and 14 and 3 members respectively were certified with 5 and even 6 certification schemes.

Apparel brands often have their individual requirements and favour a particular eco-certification as part of their sustainability programs. Most of these certifications require onsite audits and testing of finished products, which puts an additional financial burden on these companies and requires dedicated human resources only for certifications. Textile facilities complain that despite these certifications, they are not

assured of regular business, nor any premium is given to them in the product pricing when a brand is sourcing from them. This reflects the root cause in section A1.2 that states that most brands sustainability teams are not working in tandem and the certifications tools lack connection. Examples of leading brands initiatives particularly on PFC include Inditex (recognized by Greenpeace in 2016)[80]; Patagonia[81], including interest to apply the GTT technology[82] ; Nike[83], and Puma[84]. Even these leading brands may still experience the problems mentioned in section A2.1.1, with residues still being found, possibly due to shared production lines with other brands and retailers, and gaps still possible in monitoring due to representativeness of samples, dilution of wastewater discharges, lack of proper information in Safety Data Sheets and the small size of chemicals listed in the ZDHC Gateway.

Brand voluntary initiatives are not covering the whole supply chain, and it is questioned whether self-regulation can ever be sufficent. A Greenpeace Detox campaign from 2011, covering an estimated 15% of the global clothing production (80 companies), was reviewed in 2021[85]. While many of the brands have managed to eliminate hazardous chemicals from over 90% of their facilities, the report also indicates that brands that are carrying out more in depth testing and reporting appear to be doing worse, only because they are looking more carefully. According to the report, self-regulation under pressure from NGOs is a starting point, but can never be a permanent, or complete solution. Regulation is needed to make toxic free production mandatory through supply chain responsibility legislation, to force the rest of the industry to follow the Detox brands? example as a significant majority of the fashion brands still use waterways in the Global South as a convenient dumping ground for their hazardous chemicals.

The Fashion Pact, launched in 2020, is a global coalition of over 200 companies in the fashion and textile industry (30% of the industry)[86] committed to the common goals in the areas of climate change, biodiversity and ocean health. It aims to provide its members the best analyses, data, and tools to design effective strategies using science-based targets to drive the delivery of The Fashion Pact?s biodiversity, climate and ocean commitments. However, chemical pollution is not directly included as one of the pact?s pillars. The Pact uses impacts on biodiversity as a lens to focus attention and prioritize action on a range of supply chain activities that lead to negative environmental impacts such as chemical pollution and land use change but could be missing out on the opportunity to have companies establish explicit goals and strategies on chemical pollution. These would in turn also help these companies achieve their commitments in biodiversity and ocean.

Examples of chemicals management from other sectors like the electronics industry can also be instructive. The established material declaration processes in which companies can protect their confidential business information (CBI) while also communicating the absence of restricted substances, can apply for textiles too. In response to EU RoHS, REACH, Prop 65 and other emerging regulations, the electronics industry created several material declaration processes, using a standardized form[87]. These allow suppliers, manufacturers, assemblers, and brands to collect and report important and detailed product content and substance data to all members of the value chain.

A2.1.4. Climate Change Links

The climate impact of the global apparel industry is substantial, with one source finding that the global apparel and footwear industries accounted for an estimated 8% of the world?s greenhouse gas emissions in 2016.[88] With the expected increase in production and consumption, the amount of GHG emissions will only rise. Asian countries, particularly India, China, and Bangladesh, all account for a high proportion of the different global textile manufacturing stages and all rely heavily on fossil fuels for energy generation.[89] Increasing re-use, repair/repurposing, and closed-loop recycling will decrease climate emissions across all stages of the value chain except for the use phase.[90]

Across the global apparel value chain, the wet processing stage has the highest climate impact[91]. Large volumes of water need to be heated, causing this stage to be very energy intensive. Chemicals use in this stage also makes it a hotspot for impacts on ecosystem quality and effects on human health. Interventions in this production stage thus have the potential to tackle multiple environmental issues simultaneously.

All project countries are particularly vulnerable to the effects of climate change. In many countries, such as Bangladesh, climate change is considered one of the greatest threats to the livelihoods, security and wellbeing of their people. Areas of Bangladesh, Indonesia, Pakistan and Viet Nam are only a few meters above present sea level and may face serious threat of permanent inundation from sea-level rise. Combined with the lack of resources to adequately address vulnerability to climate change, this presents a significant barrier to the sound management of hazardous chemicals used in the global textile value chain, as textiles facilities also risk inundation by floods, cyclones or sea level rise. This increases the risk of release of hazardous chemicals to the local and global environment by the textiles sector during production, use and disposal as wastes. In addition, sound chemicals management in the textiles sector can reduce greenhouse gas emissions. Section 5 on risk management describes the climate vulnerabilities of the four project countries in more detail.

A2.1.5. Global Circular Value chains ? brand and government policies

An important driver for improved reporting and information sharing on chemicals use and management can be regulatory requirements. A 2017 survey of fashion industry executives shows that the most influential stakeholder groups in shaping the company's sustainability agenda is policymakers and regulators.[92] Various approaches have been developed for strengthening regulatory requirements for reporting on use of POPs and CoCs. A project in China published a Green Supply Chain Map, linking official supplier factories for brands and government-provided data on monitoring manufacturing pollution.[93] The OECD Due Diligence on global supply chain initiative contributes to transparency and other supply chain sustainability initiatives such as Amfori, SAC, ZDHC, ICS, ITC, etc. The project ?Defining and Demonstrating Best Practices for Exchange of Information on Chemicals in Textile Products? (GEF ID 5662) in China developed a reporting tool for SMEs to share their chemical inventories with the government. Due to a lack of incentives, the tool did not prove to be sustainable beyond the project. The BRS Secretariat has issued guidance on conducting PFOS and other POPs inventories and is currently combining these into sector-specific technical guidance on inventories of all relevant POPs in the textile sector.

The USEPA SARA Tier Program is an annual reporting system which users of chemicals are required to report to state and the federal government the quantities and specific chemicals they use each year. This information is also required to be provided to local fire departments and made publicly available to satisfy the Emergency Planning and Community Right to Know Act. Safety Data Sheets (which must be formatted according to the Globally Harmonized System for the Classification and Labelling of Chemicals, GHS), including quantities, are required to be reported on an annual basis. Further, in one state, Vermont, the annual quantities for reporting are set at 100 pounds for most chemicals. This is an important granularity of the rule as it allows for more complete and informed reporting to first responders and the public. Moreover, the data can be presented in a geographic overlay to which can create an accurate state and national mapping of what is being used where and how much. Lastly, there are fees associated with the quantities reported which help pay for the program.

One regulatory compliance challenge is that companies may be reluctant to share evidence of improvement, as it may have the effect of proving previous noncompliance, for example in the case of POPs and chemicals of concern. Confidential traceability and information sharing can complement regulatory requirements by focusing on product improvements rather than on identifying specific noncompliant actors. There are ongoing collaborative projects such as on organic cotton traceability under the leadership of UNECE with some brands and other organizations by using blockchain technology with verified data. The UNECE found that traceability was a crucial component of success to improving the environmental and social performance of the cotton value chain, however only about 34% of companies track and trace their value chains, of which half have visibility up to their immediate suppliers only[94]. Advanced technologies, such as blockchain, provide an opportunity to increase traceability and sustainability through the creation of a common (and confidential) source of verifiable information on transactions, accessible to all supply chain parties. As part of the UNECE blockchain project, sustainability claims (including on chemicals used at specific stages of cotton production) were identified, monitored, and verified against existing standards (including ZDHC), with this information being made visible to all participating actors in the pilot?s value chain. This approach has produced tools to train value chain actors to identify the data and documents needed to verify a claim on

chemicals in products and helped identify key points for intervention. This project's scope will extend to Man-Made Cellulose Fibres with ZDHC collaboration and other synthetic fibres.

Internationally, the lack of sufficient CiP information exchange throughout and outside the supply chain was recognized as a priority Emerging Policy Issue in May 2009 at the second International Conference on Chemicals Management at its second session (ICCM2). UNEP led a CiP project on textiles, electronics, toys and building materials and analyse the extent of existing CiP information exchange in relation to stakeholders? information needs. A textiles sector case study noted that negative lists (absence of chemicals in products) may exist in certain parts of the value chain, but systematic information of what chemicals are present is largely missing.[95] The CiP programme identified three core information objectives:

i. know and exchange in supply chains information on what chemicals are in products, associated hazards and sound management practices;
ii. disclose information of relevance to stakeholders outside the supply chain to assist in informed decision making about CiP; and
iii. ensure, through due diligence, that information is accurate, current and accessible.

The draft Terminal Evaluation of the previous GEF textiles project in China (GEF ID 5662) confirmed that voluntary disclosure of chemical information is not effective in the absence of mandatory policy and regulations. Furthermore, it found that ?*chemical users were the most willing to report and the chemical suppliers were the most reluctan*t?, and therefore recommended controls on chemical imports and manufacture/ formulation (rather than at point of use).

At UNEP?s fourth Environmental Assembly (UNEA 4), resolutions were adopted by UNEP?s Member States, including Resolution 4 stating that ?sustainable business can increase productivity and technical capacity, attract investment, increase profitability along the value chain and be an innovative solution through which to address environmental challenges? and called on Member States to encourage the private sector, policymakers, and other stakeholders to encourage the broader adoption of sustainable business practices. The textiles industry is highlighted as a sector with potential for achieving sustainable consumption and production. Across the globe, the private sector, textiles industry, financing institutions, and brands are taking positive steps towards circularity and sustainable practices. [96] [97] [98] [99]

UNEP has developed a number of tools to support these resolutions, including the LIRA guidance, ?Development of Legal and Institutional Infrastructures and Measures for Recovering Costs of National Administration for Sound Management of Chemicals (LIRA)?. This guidance covers establishing a regulatory system to control chemicals placed on the market and provides a model for cost recovery to ensure maintenance and enforcement of the system. It proposes a chemicals declaration system for chemical mixtures and formulations placed on the market, requiring sellers to report on presence of certain chemicals (e.g. POPs) to obligations to disclose an approximate chemical composition (noting that confidential business information remains protected). Work-related diseases and injuries caused by exposure to 19 occupational risk factors were responsible for the deaths of 1.9 million people in 2016, according to the first joint estimates from the World Health Organization (WHO) and International Labour Organization (ILO). In relation to non-fatal occupational accidents, ILO estimates reveal over 360 million cases in 2016, representing an increase when compared to the figures of 2010 (340 million). More than four per cent of the world?s annual gross domestic product (GDP) is lost as a consequence of work-related injuries and diseases. In recent years, building and fire accidents in the sector called the attention to take immediate action for improving safety and health and working conditions in textiles, clothing, leather and footwear industries. In this regard, experts from governments and employers? and workers? organizations have adopted in October 2021 a code of practice on safety and health in textiles, clothing, leather and footwear ? the first for these industries. Based on international labour standards and other sectoral guidelines, the code provides comprehensive and practical advice on how to eliminate, reduce and control all major hazards and risks. This includes chemical substances, ergonomic and physical hazards, tools, machines and equipment, as well as building and fire safety. More than 60 million workers around the globe will benefit from the new code, which will be of particular importance to developing countries and emerging economies.

The German Corporation for International Cooperation (GIZ) manages ?Digital Solutions for Substitution of Hazardous chemicals in the Fashion Supply Chain (DSHC)? project in Bangladesh, Pakistan, India, Ethiopia, China and Turkey. It provides training on chemical management and works with the Bhive tool to set-up over 600 digital chemical inventories in its project countries. It has established a training platform[100] that offers courses on multiple topics, from digital skills and transformation, heath and agriculture to climate action for the fashion industry and chemical management. These chemicals management tools are also used in the Promoting Sustainability in the Textile and Garment Industry in Asia (FABRIC) project in Bangladesh, China, Cambodia, Pakistan and Viet Nam. Other activities under this project include the establishment of a regional forum of environmental authorities, the development of national chemical management guideline and cooperation with ILO on the Asia Garment Hub platform[101]. The latter is a single digital library for the existing initiatives, tools, websites, hubs, and resources on for the textile and garment industry. The GIZ Green Button Initiative aims to provide a visible certainty to consumers that they purchase clothing that has achieved certain social and environmental standards through a certification scheme. It raises awareness of sustainable textile production and supply chains among companies and consumers.

The Ellen MacArthur Foundation is an international charity that develops and promotes the circular economy in order to tackle some of the biggest challenges of our time, such as climate change, biodiversity loss, waste, and pollution. They work with a network of private and public sector decision-makers, as well as academia, to build capacity, explore collaborative opportunities, and design and develop circular economy initiatives and solutions. The Fashion Initiative was launched by the Ellen MacArthur Foundation as ?Make Fashion Circular? at the Copenhagen Fashion Summit 2017, and brings together leaders from across the fashion industry to work with cities, philanthropists, NGOs, and innovators. Fashion companies that are in the Foundation's Network include: Strategic Partner - H&M Group, Partners - Inditex, Lacoste, Primark, PVH Corp., Ralph Lauren and Zalando, and members. The Foundation?s Fashion Initiative is leading international efforts to stop waste and pollution by creating a circular economy for the industry, where products are used more, are made to be made again and are made from safe, recycled or renewable inputs.

In 2019, the UN Alliance for Sustainable Fashion was launched to coordinate fashion across the UN system to optimize impact across the Sustainable Development Goals. UNEP is a founding and active member of the Fashion Alliance, with ongoing activities involving stakeholders across the fashion value chain. Many UN global initiatives seek to counter the environmental and social impacts of textile production that disproportionately fall on marginalized groups in developing countries. These initiatives are based on the concept of circularity. The Global Alliance on Circular Economy and Resource Efficiency (GACERE) was initiated in 2020 by the EU and UNEP in coordination with UNIDO. It advocates for a global just transition to circular economy and resource efficiency, to advance sustainable consumption and production and sustainable and inclusive industrialization.

Circularity, as conceptualized in the UNEP circularity platform,[102] provides a model to transform the current textile economic model towards a sustainable future. It requires governments, businesses, and consumers to look beyond the current ?take, make and dispose? extractive industrial model, and to redefine growth, focusing on positive society-wide benefits. Tracing and phasing out chemicals of concern from textile products is an essential pre-requisite to move the value chain towards more circularity. This starts at design phase, when determining which substances and materials will be used, and whether products are for instance designed for longer use or disassembly. It also impacts end of life decisions: Knowing the composition (fibre mix) and chemical content of material for recycling is critical as this determines the application in which the recycled material can be used, as well as for reduce by design, reuse, refurbish, remanufacture, repurpose processes.

Eco-innovation provides a concrete approach which businesses can follow to advance circularity, and its methodology uses the value chain approach as a basis to analyse the internal and external impacts of a business. This allows the identification of new business models and strategies that improve social and environmental impacts while increasing resilience and competitiveness. Eco-innovation has been championed by the EU since 2011 including through the Eco-innovation Action Plan,[103] which integrates eco-innovation into EU environmental and industrial policies, ensures appropriate funding for scaling, identify impact areas, services to SMEs, and promotes technology transfer and best practice

exchange with developing and emerging economies. UNEP?s eco-innovation approach focuses on SMEs for their deep roots in local communities combined with their enormous collective potential to effect large-scale influence in value chains. UNEP?s direct work in applying eco-innovation has reached over 45 SMEs in 9 countries, with ongoing local capacity built through collaborations with technical intermediary partners. UNEP?s latest work on eco-innovation implementation includes the EU-supported InTex project, aimed at the textiles industry in 3 countries in Africa (Kenya, South Africa, and Tunisia), including methodologies to reduce and replace hazardous chemicals in textile products. UNEP is also applying the eco-innovation methodology for chemicals in the textiles sector, with forthcoming Chemicals Supplement, a textiles-specific companion to the eco-innovation manual, and planned chemicals-related training materials on textiles.

The PPG phase determined several guidance tools that are already available on circularity in textiles. An up-to-date list is being kept by UNEP, which is convening an expert community on sustainability and circularity in the textile value chain, with over 400 members.[104] Consultations led by UNEP on transforming the textile value chain towards more sustainability and circularity (including a focus on non-toxic models) identified three gaps that need addressing: 1) stronger governance and policies; 2) collaboration and financing; 3) changes in consumption habits. Under the second point, more guidance and technical support into new business models and practices, as well as funding for their development and scaling were identified as priorities.

The gap on financing for new business models is also confirmed through lessons learned from UNEP?s past work on eco-innovation. This is especially challenging for smaller businesses: in developing countries more than 40% of formal micro, small and medium enterprises (MSMEs) have an unmet financing need of $5.2 trillion every year, limiting their growth, innovation and their capacity to secure employment.[105] The PPG phase identified that in the target countries, there were no known financial incentives for innovation for textile SMEs, and that SMEs faced particular isolation from market, financial, information, and institutional support. Partly this is caused by companies? lack in capacity to create bankable proposals (including the requirement to provide collateral as assurance), and partly by low awareness of the finance sector on the needs and benefits of funding circular and eco-innovation solutions. Further, gender aspects must be considered here ? as in many countries it is more difficult for women to access finance. Another key challenge is the traditional risk averseness of the finance sector ? with a potential role that public funds can play in ?de-risking? investments in the circularity and eco-innovation space. Finally, often the finance landscape in place does not correspond to the needs of SMEs, for instance not being ready to lend at small scale. During the PPG consultations, country participants noted that the wet processing sector faces reputational challenges due to real and perceived environmental and social impacts, which in some cases (for instance in Viet Nam) have even resulted in investment bans.

The PPG phase found a gap when it comes to global coordination amongst textile value chain actors. Consultations led for UNEP?s upcoming report ?Recommendations for action for a sustainable and circular textile value chain: Global roadmap? identified the need for a global coordination mechanism to facilitate dialogue between actors, support the development of data and decision support tools to help evaluate progress, and coordinate existing action. Many initiatives aiming at sustainability in textiles exist already, however they do not have a central coordination structure to draw from (see section A2.1.6 Knowledge Management and section A1.2).

Additionally, gaps were identified regarding SMEs, notably the lack of information or tools on alternatives to POPs, testing for longer use phase, return on investment for sustainable production (see section A1.2), and the proportion of Tier 2 or 3 suppliers established in green product design, resource efficiency or recycling.

A2.1.6. Knowledge management

A baseline analysis on the different knowledge generated and shared on chemicals and sustainable textiles showed that numerous existing knowledge platforms and information sources exist. This mapping exercise has been divided into three sections: global knowledge management platforms; trade

fairs, events, and global campaigns; and project websites and components. The full mapping is presented in Appendix 11 on the Knowledge Management Baseline and Strategy.

Under the first section of the KM Strategy, platforms are listed that provide or share knowledge on chemical use in the textile sector globally. Several UN platforms exist; the UNEP circularity platform, One Planet network (with a dedicated section led by UNEP on sustainability and circularity in the textile value chain), and the SAICM Knowledge Management Platform on Chemicals in Products. The Green Growth Knowledge Platform provides sector-and country-specific technical and practical knowledge to support a green industrial transformation. Different academies, gateways, and other platforms from service providers (e.g., Hohenstein, Bluesign, ZDHC) provide technical training courses, e-learning videos, and other knowledge sources.

The KM strategy also mapped available tools on inventories, chemical management, the identification of CoCs and alternatives, the connection of buyers and sellers of safer alternatives, tools to measure companies? sustainability performance (Bhive, Higg Index, ChemSec?s marketplace and Textile Guide, GreenScreen Certified, etc), and tools for chemical management (e.g. Restricted Substances List (RSLs) and Manufacturing Restricted Substances Lists (MRSLs) ? both brand-specific and industry-wide ones such as AFIRM, AAFA, SIN List. The most widely used voluntarily MRSL are those developed by ZDHC and Bluesign.

The KM Strategy maps trade fairs, events, and global campaigns, where working groups on chemicals exist under different outdoor associations (European Outdoor Group), events gathering industry leaders and brands (Copenhagen Fashion Summit, Intex South Asia, Textile Sustainability Conference), the UN Fashion Alliance for Sustainable Fashion, and the UNEP Textile Expert Community that shares knowledge and solutions, events, initiatives, and others among their members. Finally, under the last section of project websites and components, projects and project components that work on sustainable textiles and chemicals use are listed.

This complex landscape of platforms, websites, tools, and guides may be confusing for beneficiaries and other stakeholders (see section A1.2). Other projects have identified this barrier, such as the Asia Garment Hub that has established their platform as a single digital library for the existing initiatives, tools, websites, hubs, and resources on for the textile and garment industry through a decent work and sustainability lens.

A2.2. National Baseline Scenario

The following baseline presents national situations on the textile sector and its chemicals use; and on national government policy, regulation and enforcement including data and information sharing on key chemicals issues.

A2.2.1. Overview and common aspects

Each country has some level of written policy on the production, supply and use of industrial POPs according to the Stockholm Convention. However, environmental regulations do not explicitly list specific POPs (PFOS PFOA, HBCD decaBDE, SCCP, etc.). POPs are identified in Indonesian policy, but not explicitly mentioned. PFOS & PFOA are not explicitly covered by the Bangladesh policy report either.

Pesticides and herbicides listed under the Stockholm Convention are the main focus of the policies in these countries and is beyond the scope of this project. In Indonesia, the ?HS? coding for chemicals does not immediately identify whether the chemicals or formulations contain POPs or CoCs. This should be addressed to strengthen policy in Indonesia. In Pakistan, there are provincial policies that contribute to a lack of harmonization across the country.

An overarching theme across the countries is a lack of harmonized, credible, and adequately funded enforcement programs. Policies without the oversight of enforcement are ineffective. However, in the four project countries at the national level, governments and stakeholders have initiated efforts to better manage the health and environmental impacts of chemicals used in the textile sector.

All four project countries have submitted their initial NIP for the Stockholm Convention (see table 3). While most countries could not obtain precise data on the use of POPs regulated under the Stockholm Convention in their national textile industries, some surveys and data exist.

Table 3 presents the different policy elements that apply in the four project countries. All countries have insufficient POPs/chemical regulations, with industrial POPs only being covered in Viet Nam, and none of the countries? textile regulations include CoCs or banning industrial POPs. Furthermore, POPs and CoCs are often not included in wastewater regulations, nor are they monitored. Viet Nam has a GHS policy in place. Finally, only a few ILO conventions on equal opportunity and no ILO conventions on OSH are covered, and other Occupational Health and Safety (OHS) regulations are only partly covered in the project countries.

Table 3: Policy elements present in the project countries

Policy element	Bangladesh	Indonesia	Pakistan	Viet Nam
Stockholm Convention				
Date of Latest NIP Transmission	08/05/2009 (Initial NIP)	20/05/2015 (COP 4); COP5 expected in 2021	12/02/2020 (COP 5 Amendment)	26/09/2018 (COP 8 Amendment)
POPs/ chemicals regulations				
Industrial POPs are explicitly covered	No	No	Partial	Yes
Textile sector regulations include CoCs limits/ bans	No	No	No	No
Customs regulations ban industrial POPs (PFOS, PBDE, etc)	No	Partial	No	Partial
Wastewater regulations				
POPs/ CoCs are included in water quality standards	No	No	Partial	Partial
Monitoring capacity exists	No	No	Partial	Minimal
Occupational health & safety				
Regulations cover chemicals issues	Partial	Partial	No	Yes
Ratification of ILO Conventions on OSH:				
- Convention Chemicals Convention, 1990 (No. 170)	No	No	No	No
- Asbestos Convention, 1986 (No. 162)	No	No	No	No
Ratification of ILO conventions on equality of opportunity:				
- Equal Remuneration Convention, 1951 (No. 100)	Yes	Yes	Yes	Yes
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111)	Yes	Yes	Yes	Yes
- Workers with Family Responsibilities Convention, 1981 (No. 156)	No	No	No	No
- Violence and Harassment Convention, 2019 (No. 190) and Recommendation No. 206	No	No	No	No
Globally Harmonized System for the Classification and Labelling of Chemicals (GHS)	No	No	Partial	Yes
Enforcement capacity				

Customs inspections	No	No	No	Partial
Wastewater monitoring	No	No	Partial	Partial

Free trade agreements in the region can also represent drivers for improving environmental and social standards. In 2019, the Viet Nam-EU Free Trade agreement and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) were both signed, facilitating the movement of textile from China and other countries to Viet Nam. These agreements will increase access to capital, production technology, skilled labour, experience in advanced management and equipment from developed countries. They also provide the opportunity to enhance the Viet Nam textile sectors? competitiveness. They also come with some challenges for the Vietnamese garment and textile companies. Many lack raw materials, advanced technology, human resources, and the capital for investment in production of these raw materials and auxiliary materials, and the technology level in the textile and dyeing industry is generally considered lower than in other countries in the region, leading to inadequate capacity in global value chains[106]. Compliance with the free trade agreements (FTAs) in terms of working environment and labour will be challenging. The principal obstacles Vietnamese enterprises face when implementing chemical management are the lack of information on quantity, quality, and the characteristics of toxic levels of their used chemicals, dealing with unlabelled chemicals, limited financial and human resources, unregulated management of documentation and information systems and not prioritizing chemical management.

Occupational health and safety initiatives focusing on chemical use and exposure have also been initiated by governments and the International Labour Organization (ILO), including through their Better Work programme. The sector has experienced serious incidents and worker safety campaigns, including on women workers? conditions. Positive steps towards broader occupational safety initiatives have been taken, including Bangladesh?s legally binding Accord on Fire and Building Safety, established after a building collapse at the Rana Plaza garment factory in 2013 and supported by unions and workers who are calling for a similar accord for other countries.

A notable feature of stakeholders in the textile value chain is the large number of small and medium sized enterprises (SMEs) that carry out the activities. These include small-scale cotton farmers, fibre, yarn, and fabric producers, dyeing and finishing facilities, apparel manufacturers and recyclers. The high proportion of groups such as women and rural migrants, often marginalized in formal employment or typically employed in the informal sector in some production regions, is a particular feature of the workforce in these value chain activities.[107]

The following sections describe the project country?s baselines (see table 4a-4d).

A2.2.2. Bangladesh

Table 4a: Bangladesh Baseline Information

Textile sector & Chemicals use	**Gaps & recommendations**

Size of textile sector and description of mills to be targeted by the project	- 1521 members of which 521 are dying, printing, and finishing mills with a total annual processing capacity of 4000 million meters (BTMA) - 2198 knitting factories (BKMEA) and 4500 garment factories (BGMEA) - Approx. 3,000 ? 3,500 small and large wet processing facilities in Bangladesh where use and discharge of textile chemicals takes place (ZDHC) - Bangladesh textile sector is estimated to contribute to 13% of the country?s GDP and >85.50% of the export earnings (BTMA) - The textile and apparel sector in Bangladesh employs 5 million people and provide indirect employment to another 10 million - Textile manufacturing industry is concentrated in and around its capital city Dhaka a few facilities located in Chittagong - The industry covers: knits, woven, denim, sweaters ? and is predominantly focussed on cotton processing.	Further mapping needed to include SMEs and non-member businesses. Further analysis needed to identify SMEs and/or domestic-market focused mills that may still use POPs/ CoCs.

Chemicals used and controls available	- Chemical industry size is estimated at USD 1500 million+ turnover per year (45% constitutes dyestuff, 35% textile auxiliaries, and 20% basic (commodity) chemicals) - Basic (commodity) chemicals are manufactured and sold locally - Dyes and auxiliaries are import-driven (China, India, Taiwan, and South Korea). - Local manufacturers have the capacity of 200 tons/day of various chemicals.[108] - Most of the chemicals used in the textile industry are imported (India, China, and Europe) - Approx. 15 major multinational chemical companies sell their branded products in Bangladesh - Approx. 100 local companies import the dyes and auxiliaries on a large scale and sell locally, - Approx. 5000 SMEs engaged in resale and/or mixing of chemicals to the textile industry - The amount of chemicals imported or produced is unknown due to the secrecy of the business. - Approx. 1.47 million metric tons (USD 2 billion) of chemicals had been consumed by the textile sector of Bangladesh in the fiscal year 2017?2018. [109] - Forecasted the Bangladesh textile chemicals market to grow from USD 864 million in 2018 to USD 1.38 billion by 2024.[110] - 32 chemical companies registered in the ZDHC Gateway from Bangladesh and 400+ products conformant to the ZDHC MRSL uploaded. - Bangladesh identified textile sources of uPOPs, textile and leather dyeing (with chloranil) and finishing (with alkaline extraction) in its 2017 NIP. - International brands and suppliers are members of international initiatives. Export oriented textile industries are beginning to maintain SDS according to GHS. However, GHS has not been adopted nationally yet. - Factories also organize campaigns on uses of chemicals and organize workshops to inform their employees on chemical hazards.	Chemical controls are largely through paid service provider programs. National laws and enforcement across the country are needed to cover all textile manufacturers Establish a national campaign for the textile industry to adopt policies and programs in alignment with ZDHC?s Detox to Zero program.
Policy & regulations		
Industrial policy	- **Textile Policy (2017)** o Waste disposal, waste reduction, reuse, recycling, and effective measures on installation of Effluent Treatment Plants (ETPs) o Promotes common ETP or community based ETP for textile industries, industrial zones, and pollution hotspots. - The **quality of effluents from textile facilities** is governed by the norms stipulated by the Department of Environment (DoE). - Bangladesh **Import policy** (Bangladesh Gazette 2016) bans import of the original 12 POPs covered by the Stockholm Convention	The policy does not include any clear text on control of Hazardous Chemicals in the textiles. Add list of new POPs / CoCs to chemicals banned for import

Environmental policy	- Bangladesh **ratified the Stockholm Convention** in 2007 o Amendments which include the **POPs (in scope of project) not ratified** - **Environment Conservation Act, 1995** (Amended in 2010), o Defines hazardous chemicals and waste and has oversight of the use and transboundary movement of such wastes and chemicals. - **National Environment Policy 2018** - Address the issues of chemical management (paragraph 3.22.1, 3.22.2, & 3.22.4))	Confirm these programs are being enforced and amend them to align to the most recent and relevant regulations in the textile industry. Put both the inspection and surveillance system and the impact assessment system practically in place
Social policy	- **National Occupational Health and Safety Policy** (2013) o obligation of owners or employers on ensuring the highest level of safety in case of transport, storage and use of hazardous chemicals/other substances to workers.	No clear list or annexes of hazardous chemicals and the particular use of those chemicals
Enforcement status	- Very little is understood regarding enforcement in Bangladesh. - Indicates that little enforcement, if any, is happening by national regulators. - Enforcement is more likely carried out through service provider programs and certifications which are typically on a three-year renewal cadence.	A national program for the verification and enforcement led by Bangladesh?s own environmental ministries will be required.
Data & Information		
Data sources on chemicals use in textile sector	- No data management systems for tracking the distribution and use of specific POPs and CoCs - There is no updated country communication on the new POPs with inventories to the Stockholm Convention on POPs. - Some factories may prepare and maintain inventories on chemicals for their own records.	Develop a national reporting system for the communication of chemical use like US EPA SARA Tier and EU PRTR programs.

Stakeholders, awareness, and information	- Awareness and information sharing is largely in the one direction - mills have headcount for chemical and environmental programs. However, most information comes from brands and service providers.	Development of a national program for the textile industry to be informed of changes to laws and policies in combination with verification of implementation from the Environmental Ministries is recommended.

A2.2.3. Indonesia

Table 4b: Indonesia Baseline Information

Textile sector & Chemicals use		**Gaps & recommendations**
Size of textile sector and description of mills to be targeted by the project	- Total amount of textile-related industries in Indonesia: 5627 (Approx.) - Total production capacity: 13.17m tons/year - Large and medium garment industry: 2295 companies; Weaving, knitting, dyeing, printing, and finishing: 1540 companies; Spinning: 294 companies; Fibre making: 33 companies - Spinning companies produce 30% (9.97 million tons) of the total Indonesian textile production capacity - Fibre making industries (25%) and weaving, knitting, dyeing, printing, and finishing (24%) have a similar production capacity of 3.31 and 3.13 million tons of textile, respectively. - Working population in the manufacturing sector: 13.6% of total potential workforce - Female workers specific in textile industries is 1% (approximately 1.28 million workers) of total real workforce. - Gross Added Value (GAV) / NTB increased by 0.7%P.A. (2012 ? 2016) - Import and export of textile products and textiles increased (2015-2018), but Import and export trends decreased in 2018, with further sharp decrease of textile and apparel growth due to COVID-19 (2020). - Many raw material and processing entities can provide and executing in Indonesia, except for cotton (~100% imported from other countries such as US, Brazil, Australia, India, and China) - Cotton textile: 42% of all national textile production. Synthetic textiles: 50% of all national textile production. Rayon textiles: 8%. Other imported required raw materials: caprolactam, adipic acid, polyamide, and polypropylene.	Tariff protection in the form of safeguards for environmentally certified apparel products as a continuation of the harmonization of tariffs from upstream to downstream intended for downstream producers of TPT (Textile and Textile Products) and IKM (Small Medium Enterprises)

Chemicals used and controls available	- POPs chemicals being imported are not readily confirmed by Customs, particularly for substances that are part of finished products. - Preliminary assessment was done for PBDEs and SCCPs, with further studies on PBDEs (Ministry of Industry with UNDP) and SCCP (with the BSCRC and Agency for the Assessment and Application of Technology); and on Regulation Impact Assessment on PBDEs (done by the government). - Data on the HS code specifically for SCCP was not available but the immediately higher category (chlorinated paraffins with degree of total chlorinated mass in the range 50 ? 54%) gave total import of 10,971 tons from India & China in 2016, of which an estimated 2,194 tons may be SCCPs.[111] - CP (chlorinated paraffin) imports from 2014 to 2016 originating from China, India, Japan, Singapore, South Africa, Taiwan, and Thailand of 13,521 tons (11,342 tons from India).[112] - Chemicals of concern (CoCs), applications in the textile sector, have not been inventoried in depth. - Pigments and nonylphenols (NP) and nonylphenol ethoxylates (NPE) were found in wastewater effluents to Citarum River. - A large amount of the textile companies in Bandung (the region of which 60% of modern textile companies of Indonesia are located) delivers effluents to the river.[113] - Last two compounds are used as detergent and surfactants in textile manufacturing processes, and both EDCs.	The Indonesian Customs Tariff Book does not cover all POPs (e.g., SCCP and PCN) No comprehensive inventory for industrial POPs Nonylphenols or nonylphenol ethoxylates are not listed in Indonesian Laws regarding chemicals regulated for textile products or wastewater quality standard for textile industry.
Policy & regulations		
Industrial policy	- **Regulation of Minister of Industry Number 13 of 2019** establishes and governs green textile industries. o Implementing Standard of Green Industry (= Standar Industri Hijau or SIH) technical and management activities in textile industry related to dying, printing, and finishing o SIH also regulate two criteria on product aspect, (1) industry must fulfil Oeko-Tex 1000 or Indonesia National Standard (SNI) with Eco Label Criteria and (2) PFOS content should be tested by accredited laboratory based on ISO/IEC 17025 o The companies that have complied with with SIH for dying, printing and finishing are allowed to apply for the Green Industry Certification. - A specific Regulation also addresses the batik industry (**Regulation Number 32 of 2019 Green Industry Standard for Batik Industry**). - **Ministry of Trade Regulation Number 85/M-DAG/PER/10/2015** o Provision of Textile and Textile Product Import (updated by the Ministry of Trade Regulation Number 64/M-DAG/PER/8/2017 and later revised by the Ministry of Trade Regulation Number 77 of 2019) improves national competitiveness and simplicity to get permits on import of textile and textile products. The regulation includes a list of 430 items completed with HS code, but no POPs are stated in that list.	Specifically add CoC and industrial POPs in the SIH requirements. Add products containing POPs and CoCs to the list.

Environmental policy	- Hazardous substances are referred to by **B3 (Bahan Berbahaya dan Beracun).** o List includes several types of POPs pesticides and hexachlorobenzene, PCBs, hexachlorocyclohexane and lindane. o POPs used in the textile industry Maximum level of penta-BDE and PFOA/PFOS in textile already included in the Ministry of Trade Regulation Number 18 Year 2019 - **Ministry of Environment Regulation Number 5 of 2014** o Determines the maximum permissible contaminant levels in wastewater of 62 types of industries including textile industry and the maximum permissible contaminants levels are described. o This regulation?s second revision in 2019 (Ministry of Environment and Forestry Regulation Number P16 of 2019) is specifically dedicated to textile mills for 13 parameters including the maximum permissible contaminant levels in wastewater. o **POPs and CoCs not included** - Air quality standards for industrial activities **do not include POPs** and are not specified for the textile industry, but mention the maximum permissible content of the emitted air contaminants o **Govermental Regulation Number 22 of 2021** (Environmental Protection and Management), o **Ministry of Environment and Forestry Regulation Number 14 of 2020** (Air Pollution Standard Index) o **Ministry of Environment Regulation Number 7 of 2007** (Quality Standard of Determinate Source Emission for Steam Boiler) o GHS implementation is regulated by Ministry of Industry Regulation Number 23/M-IND/PER/4/2013 concerning Amendments to Ministerial Regulations Industry Number 87/M-IND/PER/9/2009 concerning the Globally Harmonized System of Classification and Labelling of Chemicals?	New industrial POPs not included in the hazardous substances list (B3) POPs limits are not included in the wastewater quality parameters to be monitored. Add POPs and CoCs to the air contaminant list and develop a maximum permissible content thresholds specifically for the textile industry.
Social policy	- **Ministry of Industry Regulation Number 35 of Year 2020** o Development of qualified human resource in textile industries, by implementing the Indonesian National Qualification Framework (called KKNI) in the Garment Industry that consistes of 6 (six) qualification levels. o Competency, capacity building, and education - **Governmental Regulation Number 50 of 2012** o Occupational Health and Safety Management System is mandatory for any companies with 100+ employees or any companies with any production process with unsafe work environments. - **Regulation Number 5 of 2018 of the Ministry of Manpower** o Requirements on the control of physical factors and chemical factors to be below Threshold Levels Value - **Ministry of trade Regulation Number 18 (2019)** o Provides a maximum permissible value of chemicals contained within a textile product, including PFOS/PFOA and pentaBDE.	Specifically refer to CoCs and POPs in the chemical factors.

Enforcement status	- There are no public records regarding infractions - Twenty-nine textile and garment industries in Central Java Province have violated industrial waste management, resulting in environmental pollution. - Furthermore, from 2015 ? 2017 the Ministry of Environment and Forestry received 137 case reports regarding violation of toxic and hazardous wastes dominated by textiles and hospitals.	A clearer accounting of enforcement activities is recommended.
Data & Information		
Data sources on chemicals use in textile sector	o For chemicals that are classified as hazardous substances: Any industrial or other usages are compulsory to apply registration to the Ministry of Environment and Forestry, according to the Governmental Law Number 74 of 2001 on Hazardous Substances Management. **State Minister for the Environment Number 02 of 2010** o Use of an Electronic System for Registering Hazardous and Toxic Substances the application of hazardous chemical substance for either normal or limited usages is implemented through Indonesian National Single Window managed by the Ministry of Environment and Forestry (MoEF) the Republic of Indonesia. **Minister of Trade Regulation Number 12 of 2020** o Prohibited Imported Goods: include hazardous and toxic materials, but only cover the twelve initial POPs chemical components are difficult to detect. - **Indonesian Cleaner Production Centre (ICPC)** o Development and implementation of Cleaner Production in industrial activities including textiles.	The Indonesian Customs HS codes do not include the chemical names for goods screening. For example, SCCPs are detected only as ?Electroplating salts; water treatment chemicals; ion exchanger; correcting fluid; precipitated silica and silica gel; oil well chemicals: Other?. The Ministry of Trade Regulation Number 12 of 2020 On Prohibited Imported Goods needs to be updated as such covering the new POPs as listed in current Stockholm Convention Data on other CoCs is not available.
Stakeholders, awareness, and information	New policy and industrial activities are commonly publicised by public hearings, national dialogues, and specific workshops. These may be arranged by the Government or relevant industrial partners such as Indonesian Textile Association, Indonesian Batik Craftsmen and Entrepreneurs Association, Indonesian Garment Association and Association of Sectoral Spinning Industries Society.	

A2.2.4. Pakistan

Table 4c: Pakistan Baseline Information

Textile sector & Chemicals use		**Gaps & recommendations**
Size of textile sector and description of mills to be targeted by the project	- The textile industry is the largest manufacturing industry in Pakistan - 8.5% national GDP, ~25% of industrial value-added, 40% of the industrial labour force and 60% of total country exports. - 8th largest exporter of textile commodities, 4th largest producer of cotton, and 3rd largest spinning capacity in Asia, and contributes 5% to the global spinning capacity. - The Government of Pakistan has been granted duty-free access to the European market. - Textile supply chain consists of activities spanning cotton ginning, spinning, weaving, finished fabrics, textile components, and garments. - Large-scale organized sector: spinning - Highly fragmented cottage/small scale sector: sewing, knitting, clothes and towels - All Pakistan Textile Mills Associations (APTMA) enlists approximately 464 textile spinning, weaving, and composite mills[114] - Pakistan?s textile mills are currently manufacturing Yarn, Fabric, Loungewear, Activewear, Sleepwear, Athletic, Sportswear and Underwear and more. - Total capacity of 636,000 tons pa. - ~90,000 looms mainly located in cities	Due to covid-19 enough textile mills couldn?t be visited to better connect and coordinate with higher management. Further analysis and mapping needed to better coordinate with all targeted stakeholders.

Chemicals used and controls available	- POPs are not currently sufficiently tracked by customs or internal production and distribution. - Most chemicals are imported. However, a small portion of local chemical manufacturing occurs. - Several traders, importers, manufacturers, and suppliers are attempting to improve conditions in the textile industry through provision of required chemicals. - PFC-based chemicals used in three big exporting textile factories.[115] - 7,000 - 71,000 kg of PFC-based chemicals/year with an average PFC loading on articles by recipe between 70-150 g/L.	Institutional arrangements and effective coordination mechanism need to be established for the management of textile COCs. A heavy polluter pay mechanism need to be established and strictly monitored. Very little is known at this time regarding the production, import, use, and management of chemicals in Pakistan. Because different governmental departments are working with 50% staffing due to covid-19, applications for accessing import and use of chemicals were not answered by relevant departments.
Policy & regulations		

Industrial policy	- **2014-2019 policy** explicitly noted global stringent environmental requirements and the need for the sector to remain competitive, including by compliance with international conventions (Goal 9). - The draft **Pakistan Textile Policy for 2020-2025** o Industry and government investments on effluent treatment and water recycling plants (subsection 1.2), and Regulatory Regimes and International Compliance (Subsection 1.7). o Includes a roadmap to Establishment of Combined Effluent Treatment and Water Recycling Plan within 12-24 month. - The **Import Policy Order (2020)** of the country specifies the goods which are banned for import. 13 dyes containing benzidine are also listed. A safety plan for Formaldehydes is given and its import shall be allowed only to industrial consumers who have valid license issued by the environmental agency/department concerned under the Pakistan Environmental Protection Act, 1997.	POPs and textile chemicals not addressed in the current textile policy. Ensure Textile Policy 2020-2025 includes the issue of POPs and COCs in the textile sector POPs retained in textile products; hence some rules or regulations must be formulated for the management of POPs through whole lifecycle of textile products. Institutional arrangements and synergetic coordination mechanism should be established for the management of textile POPs and COCs. Import Policy Order doesn?t currently list new POPs as being banned for import. The list of Industrial consumers was inaccessible. Recommended to increase accessibility and transparency.

Environmental policy	- Pakistan ratified the Stockholm Convention in 2008 and updated the NIP in 2020. - **Pakistan Environment Protection Act 1997 (PEPA)** o Prohibit import of hazardous wastes and handling of hazardous substances (Sections 13 and 14) o Prohibits any emissions or discharges more than national environmental quality standards (Section 11) including chemicals of concern of textile sector. - **Production, supply, and use of industrial POPs (Textile POPs, PFOS, PFOA, HBCD decaBDE and SCCP etc.) are not specifically regulated.** - **Self-Monitoring and Reporting Rules (2001)**, the industry will voluntarily provide their levels of pollution to the Environmental Protection Agency (EPA). These reports are not received regularly, and the reported data accuracy is questionable. o The textile sector falls under category A, the high polluters, both for liquid and air emissions. - PEPAs **Pollution Charges and Collection Rules (2001)** determine the pollution charge for industries that exceed the permissible levels of their liquid effluents and air emissions. - **Hazardous Substance Rules (2003)** for safe handling, storage of hazardous substances are made for generally all hazardous substances. o CoCs used in textile industry are mentioned in Schedule III. Section 17 (Safety Plan regarding Major Accident), Section 18 (Notification of Major Accident), Section 19 (Waste Management Plan), Section 20 (Import of Hazardous Substances) and Section 21 (Transport of Hazardous Substances) could be applied for dealing with POPs and COCs use in textile sector. o **Industrial (textile) POPs (PFOS, PFOA, HBCD decaBDE and SCCP etc.) are not mentioned.** - **National Environment Policy (2005)** o Ensure effective enforcement of the National Environmental Quality Standards (NEQS), self-monitoring rules and reduction and control of harmful emissions through regulatory program (section 3.2). o Waste Management (Section 3.3) - The draft of **Pakistan Persistent Organic Pollutants (POPs) Management Rules (2020)** addresses the management of both agriculture and industrial POPs. The rules will give a comprehensive roadmap for the manufacturing, handling, transportation, storage, sale, purchase, management, usage, import, export, trade, and disposal of POPs in Pakistan. **However, it doesn?t particularly address the POPs management in textile processes and textile products.** - **Chemical Policy (2020)** has been drafted. o Mitigating the effects of chemical waste management and tackling the illegal import of hazardous chemicals in Pakistan. **It does not specifically mention POPs and COCs of the textile sector.**	There is no specific legal document which set permissible levels specifically for textile sector pollutants i.e., POPs and COCs. Include industrial POPs and COCs in the textile sector into the PEPA Act. Under the NEQS, it should be made an annual requirement for the industry to provide pollution levels to EPA. Specific legislation on POPs pesticides exists but no regulation for industrial POPs (i.e., PFOS) is present. Integrate the textile sector relevant chemicals including POPs specifically into the relevant legislation. The National Environment Policy can be applied as regulatory instrument for management of POPs and chemicals of concern of textile sector as it deals with air emissions, wastewater, and solid waste sludge etc. Integrate the textile sector relevant chemicals including POPs and COCs specifically in the National Chemicals Policy POPs management

Social policy	- Pakistan lacks a comprehensive nation-wide law on occupational health and safety (OHS) as it falls under the mandate of the four provinces. - After the Ali Enterprises Garment factory deadly fire accident in 2012, a **specific OHS law has been drafted** by the Ministry of Overseas Pakistanis & Human Resource Development. - **Joint Action Plan for Promoting Workplace Safety and Health in Sindh, 2013-2016**. o Prepared by: Labour Department of the Sindh provincial government, Employers Federation of Pakistan (EFP), Pakistan Workers Federation (PWF) and ILO. o Sindh government has completed most of its commitments made in the Joint Action Plan?s - ILO, WWF-Pakistan and EU are jointly running **International Labour and Environmental Standards (ILES)** application in Pakistan?s SMEs (September 2016 - September 2022). - Improve competitiveness of the industrial sector and strengthen the capacity of the public sector along with facilitating implementation of MEAs and national laws and standards in Pakistan. Compliance with international and national standards will promote enterprise efficiency, supports competitiveness, and protects workers health and safety. It is expected that ILES will lead to increased understanding and capacity of federal and provincial governments for enforcing the updated environmental and labour laws and standards in Pakistan.	Drafted OHS law to be approved by legislators.
Enforcement status	- For enforcing all environmental legislative tools huge financial and human resources are needed. - Currently the EPAs staffs are not qualified, lack relevant practical experience, proper equipment and infrastructure, manpower and supporting infrastructure to cover and monitor	Funding and capacity building of relevant agencies is needed.
Data & Information		

Data sources on chemicals use in textile sector	- Multiple relevant **ministries, departments, and private sector are mandated to keep data on chemicals**, including COCs and POPs in the textile sector - Data is fragmented and not always fully implemented - Data inaccessible during the PPG - Limitations due to confidentiality and access - **Ministry of Climate Change responsible for sound chemicals management** - Data of CoCs of the textile sector attained from the Ministry of Communication and Pakistan Bureau of Statistics. - Import statistics should be collected by Customs, Federal Board of Revenue (FBR), Statistics and Ministry of Commerce, with the Board of Investment (BOI), FBR, Customs, Ministry of Commerce and Ministry of Industries also concerned for export statistics. - Chemical use statistics, industrial accident reports, occupational health data, and a **Register of Toxic Industrial Sector Chemicals** are collected under the Federal and Provincial EPAs (under the **Pakistan Environment Protection Act (PEPA)**), Delivered Duty Paid (DPP) and industrial sector. An Inventory of Existing Chemicals and a Register of Producers is the responsibility of Ministry of Industries and Production, Ministry of Commerce, FBR. - **Chemical Profile of Pakistan** (2019) assesses current situation of managing chemicals in relevant national infrastructure, institutions, and capacity. - **<u>Covers the data of COCs including POPs used in the textile sector of Pakistan</u>**	Many gaps like human and financial constraints, lack of effective coordination mechanism, and slow data updating process exist in the data tracking system for the use and distribution of COCs in Pakistan Data on CoCs of the textile sector and records about raw chemicals exported and imported were found to be inaccessible during the PPG. Recommended to increase the accessibility and transparency of this data. Create a strong link among all these departments through establishing a centralized database management system. A proposal of ?Specialized directorate for chemicals and hazardous waste management? is under consideration under a UNEP funded project on ?Strengthening of national legislation and capacity building of stakeholders for sound chemicals and hazardous waste management in Pakistan?. The database system could be established under this directorate. The Register of

Stakeholders, awareness, and information	- **National University of Textile** conducts research on the life cycle of chemicals of Concern in the whole life cycle. - **Several associations related to textile CoCs:** All Pakistan Textile Mills Association, All Pakistan Textiles Processing Mills Association Karachi, Pakistan Chemical Manufacturer Association (PCMA), and Pakistan Chemicals & Dyes Merchants Association.	

A2.2.5. Viet Nam

Table 4d: Viet Nam Baseline Information

Textile sector & Chemicals use		**Gaps & recommendations**
Size of textile sector and description of mills to be targeted by the project	- Top 5 global textile exporter - 4-5% of global market share - 3 million workers including 1.3m unskilled workers - >10% of all industrial workers. - Average labour growth rate of >10% pa - Industry average growth rate is 15% pa - Export turnover 10 - 15% pa (2011-2019), - Led by foreign direct investment (FDI) enterprises with more than 60% of the total export turnover. - The US and EU receive over 75% of export turnover, followed by Japan. - Decrease of over 13% in export turnover and of almost 16% of import turnover due to Covid-19 - **Signed many trade agreements** to help domestic enterprises increase market share and access investment incentives - Shifts of corporations and companies from China to Viet Nam - ~6,000 companies in the textile and garment industry (mainly SMEs). About 84% are private companies and 15% are FDI companies with a capital of 19,286 billion USD. Two thirds of companies are located in the south, 30% in the north, and just 8 % in the central and central highland regions. 70% are garment assembly companies. The remainder are textile manufacturers (17%), spinning (6%), dyeing (4%), and supporting industries (3%). Viet Nam imports most of its textile raw materials; from chemicals to cotton and synthetic fibers and technological levels in for the sector is mostly low to medium.	The industry lacks links between stages. Using the advantages of the 4.0 industrial revolution such as automating processes, improving productivity, product quality

Chemicals used and controls available	- 100% industrial POPs imported However, little chemical information along the global supply chain regarding POPs and POPs in articles are not provided and/or observed. - **Law on Chemicals developed** (2007) and chemical registration framework has been continuously strengthened since then - **National Chemicals Inventory** is underway with the draft including 48,857 chemical substances, of which 9,618 have been approved, 9,578 substances are under examination, and the remaining 29,661 substances have yet to be reviewed. - A draft of the **new substance regulation** has been prepared and it is expected to be published in 2021, entering into force sometime thereafter. - **List of banned chemicals** for textile industry and **List of restricted chemicals** in production and business for textile industry. - Regulation of management of new POP chemicals are under development within the framework of **environmental protection law**. - **PRTR system** in development and pilot project with information system and phase out of POP and CoC releases from industrial facilities, including Dye and Textile companies. - Sound management of chemicals issues identified: chemical storage, labelling, staffing, inventory, and management.	No comprehensive inventory for industrial POPs. However, report from Custom declaration system using HS code indicate that there is significant amount of potential new POPs are being imported to Viet Nam. Identification of POPs used in textile related chemicals and materials are difficult because of the use of commercial names and mix of chemicals in the practice.
Policy & regulations		

Industrial policy	- Minister of Industry and Trade **Decision No. 07/2013/TT-BCT** on hazardous chemicals for the manufacture of products and goods in the industrial sector, providing for registration of using dangerous chemicals (including 117 chemicals in appendix 1). - These include SCCP (C10-13), decaBDE, some PFAS (perfluoroundecanoic acid), and hexabromocyclododecane. - **National Technical Regulations on Safety** (2020) in the production, trading, use, storage, and transportation of dangerous chemicals together with **Circular No.48/2020/TT- BCT**. - sets requirements for exposure to dangerous chemicals, chemical incident response and environmental protection, workshops and warehouses, equipment, vehicles and labels, production, trading, use and storage of flammable and explosive chemicals and corrosive substances, production and business using and preserving toxic chemicals, outdoor chemical storage vehicles, transport of dangerous chemicals, and process of loading and unloading dangerous chemicals. - **Technical regulations** (2017) sets maximum limits for formaldehyde and aromatic amines converted from Azo dyes in textile products. - Two **technical regulations on industrial wastewater and textile wastewater** - **QCVN 40:2011/BTNMT** on industrial wastewater specifies 33 pollution parameters, including POPs (PCBs and POPs pesticides) but not "new POPs" belonging to the group of fluorine, bromine, or short-chain paraffin. - **QCVN 13:2015/BTNMT** on textile wastewater only regulates 10 pollution parameters, with no POPs included. - Air quality standards do not include any POPs - **QCVN 06:2009/BTNMT** covers 36 hazardous chemicals and **QCVN 20:2009/BTNMT** covers 100 organic substances including halogen compounds. - Several regulations also control the production of uPOPs from waste incinerators and disposal.	There is no comprehensive inventory for industrial POPs. Therefore, limited data exists on the current status of use and emissions of new POPs. Implement new or existing policy mechanisms to gain clear understanding of the import, production, and use of POPs in Viet Nam?s textile sector. Need a life cycle approach for assessment and management, considering the global supply chain of the industry Ensure wastewater standards include new POPs.

Environmental policy	- **Chemical Law 2018** (Law No.28/2018/QH14, amended from 2008) Framework for chemicals management - Provisions covering storage, transport, safety measures, chemical incident prevention and response, monitoring and disposal of chemicals. - This law is supported by several specific Decrees and Circulars detailing the implementation of the articles, **Decree No.113/2017/ND-CP** [116] - POPs included in the lists include endosulfan, PFOS (in list 2 and 5) lindane, DDT, PentaBDE (in list 2 and 5), SCCPs (in list 2 and 5) but not PFOA, decaBDE, and HBCD. - Administrative requirement issues (responsibilities, application forms/dossiers) on control of purchase and sale of toxic chemicals, chemical operations, chemical incidents, classification and labelling of chemicals based on GHS, import chemical declaration and others. - **Article 24** requires use of GHS and that safety data sheets be prepared in Vietnamese - **Environmental Protection Law 2020 (No.72/2020/QH14)** - Covers POPs explicitly (**Article 69**) - Companies in the textile industry that have emissions of POPs compounds require environmental permits if the POPs content in the material or waste exceeds the specified level (**Point b, Clause 5, Article 28** and **Article 39**). - Ministry of Natural Resources and Environment is preparing the content of the Government's Decree to implement the requirements - Circulars issued on soil monitoring (Circular No. 33/2011/TT-BTNMT), hazardous waste level (QCVN 07: 2009/BTNMT), industrial wastewater (QCVN 40:2011/BTNMT), and sediment quality (QCVN 43:2012/BTNMT). - **Prime Minister?s Decision No.1598/QD-TTg** (2017) promulgated the Stockholm NIP by 2025, with a Vision to 2030. - 14 projects on POPs approved and to be implemented between 2018-2030 - **Civil criminal Code** set a strong regulation and penalty for transferring, giving, buying, and selling, mismanagement, importing and illegal disposal of hazardous waste and POPs in Appendix A of the Stockholm Convention (**Article 235. Causing environmental pollution, Article 236. Offences against regulations on hazardous waste management and Article 239. Bringing wastes into Viet Nam?s territory**). - Viet Nam Environmental Authority (2020) issued technical guidance on uPOPs from different sectors, and management of POPs used in industries. - **The textile sector is mentioned for PBDEs and HBDEs.**	Develops and issues (i) specific regulations on the list and content of POPs and UPOPs for some other industries and industrial products such as textiles-garments and textile products; (ii) additional regulations on POPs and UPOPs emission to the environment; (iii) the update and guiding documents for POPs and UPOPs inventory. Ensure that chemical accident plans are required for facilities handling PFOS, PBDE and other new industrial POPs Develops a clearer legislation mechanism that stronger support the risk assessment, management inspection on activities related to these substances. Develop regulation and technical guidelines of BAT/BEP for textile industry (As required in LEP 2020 for environmental permit) Develop of technical guideline for identification and reporting of POPs in the textile industry. Reporting obligations of industrial POPs, and POP containing materials should be more clearly

Social policy	Viet Nam has special rules and regulations for women working in wet processing mills. For example, women are not allowed to work for more than 4 hours at each of the shifts in the wet processing units. The ingredients that are harmful for health particularly for female health are not sprayed in the same area that the female are staying at. For the chemical intensive tasks, men are always preferred rather than females in the textile sector of Viet Nam.	
Enforcement status	Enforcement still lacks effectiveness.	A clearer accounting of enforcement activities is recommended.
Data & Information		
Data sources on chemicals use in textile sector	Vietnamese **regulations have adopted GHS**. The **Decree 113/2017/ND-CP** (see above) requires organizations and individuals that produce, trade-in, and use chemicals in lists 1 and 2 to be licensed by the Department of Industry and Trade or Viet Nam Chemicals Agency. These lists of individuals and organizations importing chemicals must be licensed by the Viet Nam Chemicals Agency and importers also by Customs. Customs units and Viet Nam Chemicals Agency manage POPs through CAS codes; Harmonized System code (HS); the report of the Department of Industry and Trade to the Viet Nam Chemicals Agency; reports by enterprises to the Viet Nam Chemicals Agency. For chemical substances on the list of chemicals subject to compulsory declaration (annex V) and classified mixtures containing substances on annex V, producers shall declare them every year through the annual reports. Chemical importers shall declare imported chemicals before customs clearance through the national single-window website. Required info includes chemical info, sale and purchase invoices, and safety data sheets. Textile machinery enterprises must annually report management, use, and incidents of chemicals to the Department of Industry and Viet Nam Chemicals Agency. Viet Nam is conducting a uPOPs inventory generated from manufacturing sector.	An accounting/ audit of the Vietnamese Environmental ministries data of companies and individuals producing, trading, using, and importing chemicals from List 1 and 2 can be performed with a gap analysis. This could help the project fill gaps in institutional capacity and improve mechanism of reporting and sharing data from Customs, but also the Viet Nam Chemicals Agency. Need for a comprehensive review and assessment of current policy and regulation framework regarding POPs management in the textile industry.

Stakeholders, awareness and information	According to the report on Implementation of the Stockholm Convention on Persistent Organic Pollutants in Viet Nam 2005-2015, before 2001 public awareness related to POPs of society, environmental management groups at state agencies and businesses about the risks posed by POPs is still very vague. Up to now, perception has changed markedly. Communication about POPs appeared in the mass media, information about POPs was integrated into teaching activities in many universities, and people were more aware of the use of pesticides...	Communication work will continue to be carried out and integrated into the activities of projects on POPs in Viet Nam.

A2.3. Associated Baseline Projects

The following specific co-financing projects are underway or planned by the project partners (Table 5) with which the GEF project will coordinate and adopt lessons learnt from.

In the project countries, many initiatives have taken place over the years. Current highlighted projects include Bangladesh Department of Environment is developing a roadmap toward zero liquid discharge, and implementing two GIZ funded projects on sustainable textiles. The Programme for Sustainability in the Textile and Leather Sector (STILE, 2020-2024) and the Fostering and Advancing Sustainable Business and responsible Industrial Practices in the Clothing Industry in Asia (FABRIC, 2019-2023). In Indonesia, the Ministry of Industry is currently implementing the Textile 4.0 programme to respond to the fast development in information and communication technology (2021-2024). Furthermore, the country has some initiatives on wastewater in the sector, the printing and dyeing industries, and certification.

In Pakistan, many projects and initiatives have been implemented over the years. These were mainly GIZ and ILO projects on water efficiency, labour and environmental standards, and employment conditions in the textile and garment sector. The Viet Nam Race to the Top Programme aims to demonstrate the significant returns achievable when manufacturers advance towards sustainable practices in Viet Nam. The Viet Nam Improvement Programme and different initiatives by WWF and ILO focus on greening the industry and establishing better working conditions.

Table 5: Associated baseline projects

Project (title, donor, duration)	**Relevant activities**
National projects	
Bangladesh	
Roadmap for textile industries towards Zero Liquid Discharge (ZLD), by the Department of Environment	Textile sludge will be disposed to cement factories in the country such as Lafarge Cement
Programme for Sustainability in the Textile and Leather Sector (STILE) GIZ, 2021-2024	The projects? objective is to have the government and companies in Bangladesh implementing social and environmental standards in the textile and leather sector more effectively. It included activities on promoting occupational safety, environmental protection, qualifying companies for certification and COVID-19 awareness. Bangladesh is supported on the development of chemical substance control rules, and training on chemical management guidelines for regulators is provided by the project.
Fostering and Advancing Sustainable Business and Responsible Industrial Practices in the Clothing Industry in Asia (FABRIC) GIZ, 2019-2023	The project aims to support the Asian textile industry in its transformation towards fair production for people and the environment. And will work on regional dialogue and knowledge sharing, cooperation with the private sector, social and labour standards with special focus on gender, and environment. On the latter it will disseminate new approaches that have been piloted.
Indonesia	
Digiwastewater project for Textile and Product Textile industries in Citarum Watershed	Development of information of chemicals present in textile and textile product industries wastewater that might contain COCs or POPs
Revitalization program for printing and finishing textile industries	Development of methodology & roll out inventory taking process with mills (considering existing good practices e.g., at ZDHC and other certified mills)

Program certification for human resource in managing wastewater of Textile and Product Textile industries	Capacity and awareness raising programme focusing on capacity to identify presence and use of CoCs / POPs in chemical products used in mills
Indonesian Ministry of Industry: Indonesian Textile 4.0. 2021 ? 2030	The program was introduced in response to fast development in information and communication technology. In relation to this, 10 initiatives have been proposed. Three textile companies have been chosen as a lighthouse sector, namely Asia Pacific Rayon, Globalindo Intimates, and Pan Brothers Tbk.
Indonesia Ministry of Industry / UNDP recently concluded project on Reducing PBDEs	The GEF funded project aimed to reduce PBDEs and UPOPs emissions by improving production management cycle and processing of plastics containing PBDEs. Regulation Impact Assessment or SEA conducted for policy is an interesting model for the textile sector.
Pakistan	
Water Efficiency in the Textile Industry (WETI) programme in Pakistan GIZ, 2015-2018	The project focused on developing the capacities of governmental institutions, providing advisory services to the textile sector and enhancing the industry to be more resilient regarding climate change.
Special Programme for Strengthening of National Legislation and Capacity Building of Stakeholders for Sound Chemicals and Hazardous Waste Management in Pakistan?	This project has a small component on introduction of GHS in Pakistan, which can be further implemented by the GEF project.
International Labour and Environmental Standards (ILES) application in Pakistan?s textile and leather sector ILO, WWF-Pakistan, and EU, 2016-2022	This initiative will improve the competitiveness of the industrial sector and strengthen the capacity of the public sector along with facilitating implementation of MEAs and national laws and standards in Pakistan. Compliance with international and national standards will promote enterprise efficiency, support competitiveness, and protect workers? health and safety. It is expected that ILES will lead to increased understanding and capacity of federal and provincial governments for enforcing the updated environmental and labour laws and standards in Pakistan.
Pakistan Decent Work Country Programme ILO, Ministry of Overseas Pakistanis and Human Resource Development (MOP&HRD), the Employers? Federation of Pakistan (EFP) and the Pakistan Workers? Federation (PWF) (2016-2022)	This programme has embedded health and safety in its key components like employment conditions, social security, rights at the workplace, along with social dialog.

Buyers? Forum ILO, IFC, and the Dutch Ambassy (2014-?)	The form focusses on cooperation and partnership among all stakeholders in sustainable growth in SMEs and aims to support improved working conditions and compliance with labour and environmental standards in the Pakistani SMEs. By joining the forum, half of Pakistani clothing/apparel industries, home textiles and garment companies profess to commit to sustainable practices, enhance compliance with all requirements under Pakistan's Generalised Scheme of Preference-Plus (GSP+) country status, and report on environmental, labour and OHS standards.
Joint Action Plan for promoting workplace safety and Health in Sindh The Provincial Sindh government, Sindh labour Department, Employers Federation of Pakistan (EFP), Pakistan workers Federation (PWF), and International Labour organization (ILO) (2013-2016)	The Sindh Government has fulfilled many of its commitments made in the joint action Plan, 'including the formulation of the province's first occupational safety and health policy, the adoption of legislation, and the establishment of a safety council to oversee its implementation.
Life and Building Safety (LABS) Integrated Diagnostics (IDH) (2019-.)	LABS is an industry-driven program, in which various brands and retailers work with public organizations to implement a plan to reduce the risk of fire, electrical and structural safety risks in SMEs.
Improving Labour Standards in Pakistan's textile Industry, GIZ, German Federal Ministry for Economic cooperation and Development (BMZ) (2017-2020)	The project pursuits to enhance implementation of labour standards in Punjab, increase the capacity of the Labour inspectorate and associated institutions. The program attempt to enhance safety and other labour conditions through enhanced communication with factories.
Strengthening Labour Inspection system for promoting Labour standards and ensuring workplace compliance in Pakistan ILO, Dutch Ministry of Foreign Affairs (2015-2018)	The Pakistan Government agencies, worker, employer and industry associations carried out this project. The project's desired outcomes include the promotion of Labour Standards and ensuring compliance with workplaces in Pakistan, the development of legal and labour plan for inspection, a computerized labour inspection system, and the establishment of a new private sector program to increase access to labour inspections.
Better work Program, ILO, IFC (2021-2024)	The Better Work Program aims to bring key stakeholders within the garment enterprise, government, employers, trade unions and brands together to improve current OHS conditions and compliance with ILO core labour standards in participating SMEs.
Supporting Social Standards in the Textile and Garment Industry in Punjab, Labor and Human Resource Department, GIZ (August 1, 2014 ? July 31, 2016)	The implementing partners include associations in the textile and garment industries, employer and workers organizations, NGOs, Ministry of Textiles, Trade Development Authority of Pakistan (TDAP), Small and Medium Enterprises Development Authority (SMEDA) and the Ministry of Labor and Ministry of Finance. The project had aimed to improve working conditions and develop appropriate platforms for dialogue regarding OHS status in SMEs.

Public Private Partnership on Labor Law Compliance , ILO and Pakistan Textile Exporters Association in Faisalabad (PTEA) (2016)	The target audiences of this project are 45 textile mills, labour inspectors, and provincial labour departments. The objectives of the ILO and PTEA partnership are improving the adherence to national laws, improve the image of Pakistan textile industries, develop buyers? confidence and establish a coordination mechanism between textile Industries, labour unions and Labor Departments on compliance and reporting on labour laws.
Labor market information systems (LMIS) Labor and Human Recourse Department (GOP) and International Labor Organization (ILO) (2016)	LMIS provides an important basis for employment and labour policies, implementation, monitoring and evaluation of better-focused and better targeted policies. It also assists policymakers in making informed decisions, looking at future market trends for employment and economic growth.
Strengthened Capacity of Constituents to Address Unacceptable Forms of Work in the Textile and Garment Sector in Pakistan ILO (July 2014-September 2015)	The project strengthens national capacity at state and provincial levels to increase compliance with International Labor Standards. The partners in this project include Federal Ministry of Overseas Pakistanis & Human Resource Development, four Provincial Labor Departments (Punjab, Sindh, KP, Baluchistan); Employers Federation of Pakistan (EFP), Pakistan Workers Federation (PWF); and Textile Industry Associations.
Pakistan Institute of Labor Education and Research (PILER) Initiatives towards Health and Safety at Workplaces (2012-2014)	With support of the Government of Pakistan, these initiatives aim to halt the decline in occupational health and safety, make all stakeholders aware of the importance of keeping the workplace safe and healthy, and urge the government and other key stakeholders to put in place effective and efficient laws and effective implementation of policies and procedures in order to improve OHS conditions in SMEs.
Li & Fung Initiative on Electrical Safety at Garment Factories (2014)	Under this Private Compliance Initiative by Li & Fung and Government of Pakistan electrical safety standards have been improved. Providers are trained on these standards and are integrated to apply these standards. General Society of Surveillance (SGS) Pakistan, started SGS Awareness Raising Campaign on Fire Safety. In accordance with CSR policy, SGS conducts awareness campaigns in various parts of the country on fire safety.
Labor Standards in Global Supply Chains- a Program for Action in Asia and the Garment Sector (2014-2015) ILO, BMZ (German Federal Ministry for Economic Development and Cooperation), Federal Ministry of Overseas Pakistanis and Human Resource, Provincial Labor Departments, Employers? Federation of Pakistan, Pakistan Workers? Federation, Sector-wide Industry Associations	Outcomes under this project include strengthening wages adjustment and co-operative approaches, increased access to information on wages, working conditions; improved quality of social negotiation standards; improved labour quality assurance programs at industry level; and strengthening capacity.

Implementation of Social Standards Support Program to the Textile and Garment Industry in Punjab, Pakistan German Federal Foreign Office, (2014-2016)	The project worked in collective development of approaches enhancing the implementation of labour standards. The project?s lead executing agencies are Labor and Human Resource Department, Government of Punjab.
Program for industrial sustainable development (PISD) Cleaner Production Institute, Embassy of the Kingdom of The Netherlands, All Pakistan Textile Processing Mills Association (APTPMA), Pakistan Sugar Mills Association (PSMA), Punjab Industrial Estates Development & Management Company, and Korangi Association of Trade and Industry, (2007)	Among others, the programme supported compliance with environmental standards in SMEs, and implementation and demonstration of sustainability framework for SMEs.
Viet Nam	
Viet Nam Race to the Top Programme Sustainable Trade Initiative (IDH), Vietnamese Ministry of Natural Resources (MONRE), Vietnamese Apparel and Footwear Industry, Global Consumer Brands (Gap Inc., NIKE, Inc., M&S and Levi Strauss & Co.), International Organisations, and civil society organisations.	The programme, facilitated and managed by IDH, was created to demonstrate the significant returns achievable when manufacturers advance towards sustainable practices. As part of its work to support this programme, a Chemical Management Guideline was developed and adopted by Vietnamese public partners. The Guidelines can also be used by textile and garment enterprises to improve their chemical management. The cooperation with The Ministry of Natural Resources and the Environment paves the way to help inform policy and legislation that will improve the localized application of chemical management (ZDHC) metrics in Viet Nam, increasing local aptitude. The agreement with VITAS, the Viet Nam Textile and Apparel Association will build the localization of capacity building projects, and collaboration with LEFASO, the Leather and Footwear Association expands local guidance for sustainability monitoring and spreads the adoption of best practices such as the Higg Index and ZDHC metrics in the wider Vietnamese footwear industry. The IDH Mill optimization program has supported Tier 2 factories of textile to reduce the chemicals used and promoting the green chemicals in manufacturing. The Programme facilitate a close collaboration with brands to promote the resources efficiency work in their supply chain, which includes the chemicals management in Tier 2 program.
IDH - The Sustainable Trade Initiative: Building sustainable chemical management capacities as best international practice in Ethiopia and Viet Nam	This project supported by IDH and implementation by ZDHC with the objective of improvement of chemicals management and wastewater management in 10 textile industrial parks and 98 factories in Viet Nam.

Greening Viet Nam?s textile sector through improving water management and energy sustainability WWF and Ministry of Industry and trade	The textile project vision is making textile businesses more active participants in the Mekong River resource planning and management, as well as in the sustainable energy planning, by working directly on impact reduction and financial solutions to scale best practices, and by creating an opportunity for these businesses to discuss collective action to achieve sustainable investment and development in the textile sector. The focus is on water management and includes best practices in chemical management to improve water quality.
Viet Nam consult with financial institution for green credit for textile industry WWF 2021	Other related projects in Viet Nam include a UNDP/GEF project on green chemistry, and a Viet Nam Environment Administration project on strengthening control of chemical pollution, including textile industry and introduce life cycle impact assessment approach; however, still lack of implementation capacity.
Decent Work in Garment Supply Chains Asia project , Swedish International Development Cooperation Agency (Sida), WWF 2019-2022	The project aims to improve rights and working conditions for men and women in the garment sector in Asia. The project also works on improving the social dialogue, gender equality, environmental sustainability, and productivity in the sector.
Viet Nam Textile and Apparel Association (VITAS) joined the Sustainable Apparel Alliance (SAC) 2018	VITAS will use the SAC?s sustainable performance measurement toolkit, the Higg Index, to promote the Viet Nam textile and apparel industry in an environmentally and socially sustainable journey.
Textiles sector assessment and feasibility study to implement wastewater reuse in industrial parks World Bank and the Viet Nam Cleaner Production Centre (as implementation organisation)	The project aims to assess the potential for recycling and reuse of wastewater for the textile sector and identifying opportunities to implement public-private-partnerships (PPP) projects as per Law of PPP investment (approved by the National Assembly on 18th June 2020 and valid from 1st January 2021). The project?s main activities are an assessment of wastewater treatment, recycle and reuse practices in Viet Nam textiles industry; and development of two feasibility reports detailing the wastewater to recycle/reuse potential in industrial parks and development of a summary of PPP models in wastewater recycle/reuse projects and clear recommendations for Viet Nam.

Viet Nam Improvement Program (VIP) IFC Implemented since 2015 in partnership with the Clean Technology Trust Fund and Korean Green Growth Trust Fund. 2015	IFC, a member of the World Bank Group, is assisting local apparel and textile suppliers of VF Corporation and Target Corporation to improve their resource efficiency and reduce operating costs under IFC?s Viet Nam Improvement Program (VIP). During the past 18 months, 28 selected VF and Target suppliers ? with cut-and-sew, dyeing-and-printing, and garment-washing operations ? collectively invested $9.9 million in resource efficiency measures, which have helped them save $15 million in water, energy, and chemical operating costs. By implementing a combination of low cost and more complex factory projects, suppliers achieved average water and energy savings of more than 20 percent, with the highest-achieving factories attaining more than double these average savings. When all the recommended interventions are fully implemented over the next two years, the $26-million capital investment required for retrofits and new, more efficient equipment could collectively save 2.8 million cubic meters of water and 562,000 tons of GHGs annually, with associated productivity and environmental benefits.
Viet Nam Environmental Protection Fund?s programs	Viet Nam Environmental Protection Fund (VEPF) is a state-owned financial institution established by the Prime Minister with the function of attracting and mobilizing financial resources at home and abroad to support the activities of environmental protection. Over the past years, Viet Nam Environmental Protection Fund has provided financial support for hundreds of environmental protection projects with the amount of more than USD 100 million, sponsored activities of environmental protection with the amount of over USD 400,000, subsidized price for project products under the Clean Development Mechanism (CDM) of USD 10 million. VEPF allocates separate loans to UNIDO projects in the field of wastewater, waste, industrial symbiosis, resource efficient and cleaner production (RECP) with a loan mechanism that assures the progress of the project and the enterprise, including textile and wet-mill facilities

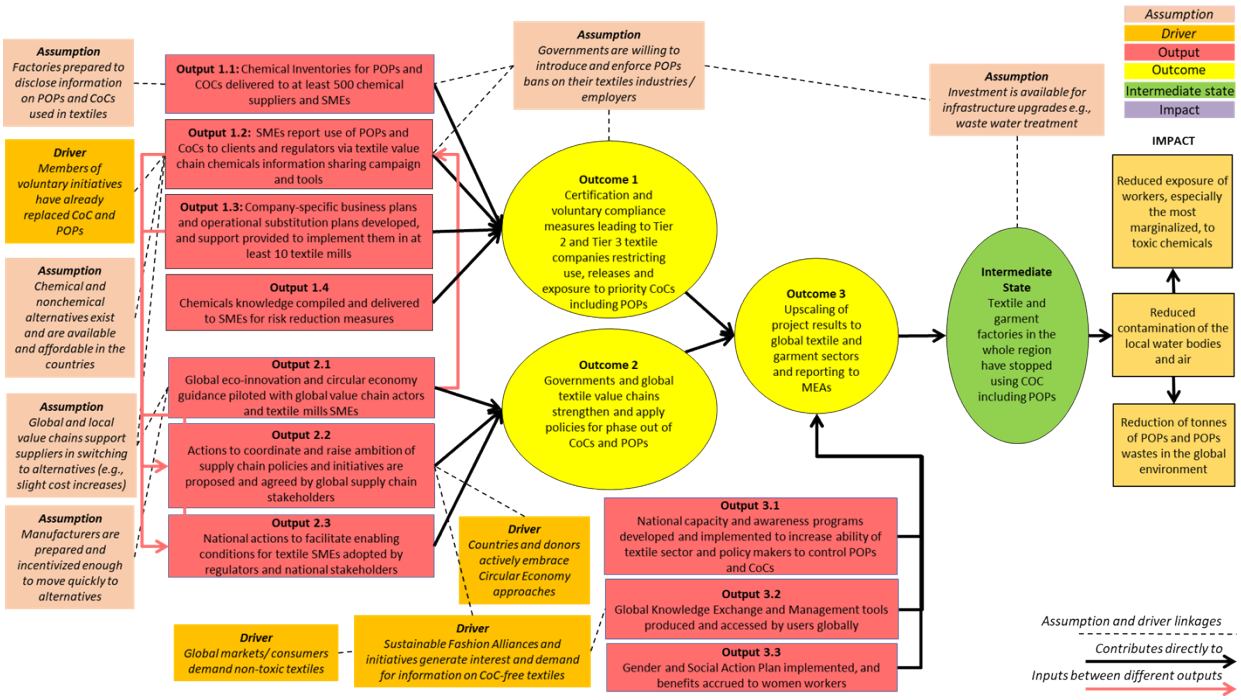
A3. The proposed alternative scenario with a brief description of expected outcomes and components of the project

The project intervention will achieve significant reductions in the use, release, and exposures to Chemicals of Concern (COCs) and Persistent Organic Pollutants (POPs) in the textile sector under the Stockholm Convention. The project will work with individual facilities, the public and private sector, industry organizations, Non-Governmental Organizations (NGOs), national governments, and global brands to scale proven approaches within certified voluntary schemes and elsewhere.

The Theory of Change: (TOC, see Figure 3 and Appendix 1) presents the three approaches to identify and address root causes underlying the continued use of hazardous chemicals in the global textile value chain, and the barriers to achieve the reduction and elimination of COCs, including POPs in textile and garment factories. Each of the approaches is the basis of one of the three project components as follows:

- Information sharing and chemical management pilots on priority COCs including POPs in textile facilities (Component 1)
- Eco-innovative strategies toward a non-toxic and circular textiles economy (Component 2)
- Knowledge management for scaling up (Component 3)

Figure 3: Theory of Change Diagram



A3.1. Component 1: Information sharing and chemical management pilots on priority COCs including POPs in textile facilities

Component 1 addresses the first root cause *lack of technical knowledge on chemicals use and management in wet processing mills* (see section A1.2 of the problem analysis). The component outcome is that Tier 2 and Tier 3 textile companies restrict use, releases, and exposure to priority CoC including POPs, and this will be achieved by providing education and technical support at facility level. The outputs cover four stages that are required for wet processing mills to manage chemicals, namely 1) identifying chemicals used, 2) sharing chemicals data with regulators and downstream value chain buyers, 3) transitioning to safer and more sustainable alternatives, and 4) using the knowledge gained to improve storage and handling, occupational health, facilities, and environmental management practices. Activities will focus on chemical suppliers and Tier 2 and Tier 3 facilities where chemical usage is most significant.

Output 1.1: Chemical Inventories for POPs and CoCs delivered to at least 500 chemical suppliers and SMEs

The PPG phase determined little is known regarding the use of POPs and CoCs in the textile value chains of the target countries beyond what is historically and globally known through academic channels. Neither country regulators nor individual textile mills have sufficient data to determine the scale of the use of POPs. The PPG reports did identify priority sectors and brands most likely to be using POPs and C8 chemistry, including products for public procurement (e.g., military, health sector, firefighting); outdoor industry (water repellency); and home textiles (flame retardancy, oil and stain repellency).

Therefore, it is critical that POPs accounting be created. The best available means to achieve this are full chemical inventories, covering both POPs and other CoC (see the baseline section A.2.1.1 for the rationale for widening the scope of inventories beyond the narrow list of POPs). Testing of chemicals will also be required to determine which chemicals protected under trade secret are CoCs and POPs in violation of the Stockholm Convention. This component creates a mechanism to ?Know? in the ?Know, Assess, Decide? framework of normal and best business practices. The expected result is that value chain members are trained and proficient in quantifying chemical usage, using basic accounting practices.

Activities:

1.1.1 Mapping of all SME wet processing mills (Tier 2 & 3), including informal/ illegal facilities which may number in the thousands as identified during PPG. This process will be completed through multistakeholder workshops and compilation of data from regulators (including tax authorities e.g., Pakistan Federal Board of Revenue, Indonesia Ministry of Industry, Directorate of upstream industry and Directorate General of Small and Medium Industry), textile associations (All Pakistan Textile Mills Associations), and global brands and chemical service providers. Some lessons learnt and good practices from the recent China textiles project are relevant for proactively engaging SME mills, including face to face scoping visits early on by project teams to help collect data; and using existing quality standards (e.g., ISO 9000) listed facilities to identify mills, since a much larger proportion of all factories have the ISO quality certification compared to environmental or chemical management. Certified mills will be included if they have non-certified production as well. The mapping data will be delivered in a format to be agreed for each country separately, in order to complement existing databases or records that textile associations or ministries of industry maintain.

1.1.2 Developing practical inventory guidance and methodology. The guidance will set the scope of chemicals to be included in inventories (based on review of SDS of CoC including auxiliary chemicals for water repellence, flame retardancy & dyes); identify relevant information on CoCand related awareness raising training available to use; document alternatives and best practices on green and sustainable chemistry technologies and innovations; describe the data collection and recording methodology, including a chemical analysis testing protocol to verify chemical ingredients where identification of chemicals being used is not possible; and select tools and templates to be used, with focus on use of existing tools wherever possible (e.g. modification of STeP tools by Hohenstein, ZDHC Chemical Gateway, Bhive, HIGG FEM?). The inventory guidance will ensure that inventories can be readily used later, including interoperability of inventory data (via SDS and CAS numbers), coordination with BRS national inventory guidance and pilot projects (see baseline section 1.2.2); and will also gather gender data, to quantify participation of women and gender-disaggregated exposure and impacts in the wet processing sector.

1.1.3 Recruiting mills and roll-out of site-level inventories. Multi-stakeholder engagement meetings and workshops to introduce project & future inventory requirements to encourage them to join the pilot projects. Mills will be assigned to different providers who will use off the shelf tools to complete inventories in line with the inventory guidance (activity 1.1.2 above). All parties to communicate that this project is intended to assist with the elimination of POPs and identify safer substitutions, not to penalize or prohibit any illegal findings. Confidential data, trade secrets and the like (for non-certified chemistry) will be verified through the testing protocol (part of the inventory guidance, activity 1.1.2). Site inventories will also establish the gender dimesion in the wet-processing sector, and also collect existing quantitative or qualitative data on health impacts (for both genders) caused by chemicals use and exposure.

1.1.4 Mapping of chemical suppliers to the textiles industry. National chemical industry associations (e.g., BCDMEA in Bangladesh) and major suppliers of technical chemicals for the textile sector will be identified to confirm who, where, and how many importers, formulators and repackagers there are in each country. The mapping will also populate a chemicals database or listing for textile auxiliary chemicals to identify the trade names or commercial products containing PFAS and other high priority CoCs. This database will be made available to mills in conjunction with the existing approved libraries of certified chemicals (ZDHC, Oeko-Tex? and bluesign?) to identify substitutions for pilot projects (Output 1.3) or for improved management controls (Output 1.4).

1.1.5 Monitoring of chemical imports and trade. The chemicals database or listing produced in Activity 1.1.4 will also be made available to customs and ministry of industry to support tracking of priority chemicals imports and distribution in countries. While many technical chemicals are imported from EU, US, China or Japan, the SDS and HS codes do not always permit regulators to track them; and chemicals imported from other countries such as India may not be tracked at all. The project will also seek to develop Public Private Partnerships between customs, importers and private sector accredited laboratories to provide analytical services for sampling and control of imported chemicals in the priority categories identified in the chemicals database.

1.1.6 Developing inventory reports. Each mill and chemical supplier will produce a chemical inventory report in a format that would allow annual updates to be readily produced and reported (see Output 1.2). Best practice is to produce and report inventories on an annual basis, and this can be required as part of a regulatory mechanism (See policy Component 2 below).

Output 1.1 will begin immediately upon project start but is anticipated to run for the full 5 years of the project to reach the intended 500 facilities.

Output 1.2: SMEs report use of POPs and CoCs to clients and regulators via textile value chain chemicals information sharing campaign and tools

Building on Output 1.1, the textile value chain will be able to report chemical usage to regulators, service providers, brands, and NGOs to assure continual alignment with the Stockholm Convention, RSLs and MRSLs. This output directly addresses the barrier to action identified in the problem

analysis, on trade secrets limiting the accuracy of labels and of chemical suppliers? and mill owners? reluctance to share information with their buyers and regulators (barrier 1, section A1.3).

Chemicals information reporting exists only in voluntary schemes that certify absence, not presence, of CoCs. Mandatory reporting on the presence or use of CoCs is challenging to achieve as it generally involves disincentives (loss of market, regulatory penalties). The output will focus on demonstrating benefits of reporting, such as identifying opportunities for safer alternatives; consolidating data to show cost savings including avoided /indirect costs associated with occupational health and safety, emissions, and waste management; targeting enforcement efforts; and increasing transparency and traceability. This latter is a key metric in textile product labels, standards, benchmarks, voluntary certifications, pledges and agreements, to build confidence in the application and robustness of standards.

This is the ?Assess? component of the ?Know, Assess, Decide? framework. Activities will include:

1.2.1 Modify and develop sector specific tools to measure and report chemicals pollutants use by the textile sector in the 4 countries. The tool would support governments in regularly collecting information from the textile industry on reduction of POPs regulated under the Stockholm Convention. The tool would be based on existing but not currently used government reporting tools where they exist (e.g., Pakistan Self-Monitoring and Reporting Tool software of the Sustainable Development Policy Institute and Pak-EPA; Indonesia National Environmental Law), or industry tools, with review to ensure compatibility with the Stockholm Convention reporting requirements. Tools will be widely consulted in each country to ensure relevance, ease of use and operational aspects including requirements or incentives for chemical supplier and/or users to complete them.

1.2.2 Training and piloting of the declaration and reporting tools with chemical suppliers and textile mills. Once reporting tools and modalities are agreed, the project will set them up and conduct a trial operation phase. Depending on the exact formats and modalities agreed in the countries, this will include IT services to create or modify databases; online hosting and management of data protection requirements and standards; promotion, surveys and consultation on motivation and incentives for users to register with the system; technical support to users to submit reports; and collection, analysis and reporting of data including via automated database reporting tools.

1.2.3 Piloting of blockchain technological solutions to collect and exchange reliable and confidential data on chemicals in textile value chains. In coordination with UNECE?s project ?*Enhancing Transparency and Traceability of Sustainable Value Chains in the Garment and Footwear Sector?*, implement a blockchain pilot, tracing the value chain of one brand (with suppliers in at least one of the countries). The GEF project would identify and code the key chemicals-related data entities to update the existing tool, in the form of claims and sustainability risks around chemicals of concern (including POPs) in the blockchain; onboarding and coaching of companies to feed inventory data from Output 1.1 into the blockchain.

Output 1.3: Company-specific business plans and operational substitution plans developed, and support provided to implement them in at least 10 textile mills

The pilot projects will be developed in priority mills that are using POPs and other chemicals of concern. Criteria for section of mills will be proposed by the Executing Agency and approved by the Steering Committee. The pilot projects will take a holistic and diverse approach to address the root causes of the problem analysis. The pilots will be planned and coordinated under the lead of the technical coordinator, with consultation and support from Ministries and the regional Executing Agency.

This is the ?Decide? component of the ?Know, Assess, Decide? framework. Activities will include:

1.3.1 Preparing the pilot delivery methodology. This will include selection of mills and technical approaches to be deployed in the pilot projects, based on consultation with all textile associations, service providers, regional and global technical experts, and governments. The pilot delivery approach will provide diverse solutions ? covering input chemistry (inventory management tools, chemical screen schemes, MRSL certifications); product processes (production protocols, voluntary process improvement initiatives, supply chain management policies, government regulations) and products and waste management (product quality standards, waste treatment and management protocols). The delivery approach will use both existing private sector service providers and public sector training or technical assistance institutes (e.g., Viet Nam Technical Training College in the Ministry of Environment). An assessment of the capacity and skill set gaps that the mills face will be included and inform the training and technical assistance models to be applied in each case.

1.3.2 Developing technical guidance documents to be used by pilot service providers and partners. The technical documents will include: a) Evaluation on PFAS Alternatives (to avoid regrettable substitutions); b) List of best practices for POPs and PFAS use reduction/elimination in textile production[117]; c) Evaluation on market-available certification schemes on POPs and PFAS management efficiency, including improvement recommendations for the certification schemes, when applicable (feeding into Output 2.2) and d) Guidance for wet-processing mills PFAS elimination workplan for different product materials and articles (feeding into Output 2.2) and e) factory chemical management and monitoring policy that provides on how mills can establish a good system on ensuring no priority chemicals of concern are not used in their productions or discharged via RSL, MRSL, and wastewater testing (feeding into Output 2.2,).

1.3.3 Rolling out phase 1 pilots in an initial group of wet processing mill confirmed to be using POPs. Technical service providers will be matched to mills based on existing and best practices chemical management approaches (ZDHC, Hohenstein, see table 2 in baseline section) and by government industrial development and training institutes. Roll-out of the pilots will include all steps in the factories from substitutions of chemicals, procurement, training, monitoring etc. Technical training will seek to establish sustainable capacity such as engaging chemical engineers from national university and graduate networks. Access to laboratory services for analysis of chemicals used to identify POPs and PFAS containing products (this activity will further reinforce the chemical databases created under Output 1.1).

1.3.4 Prioritizing and selection process of the mills submitting their chemical inventories (Output 1.1) to select and engage additional mills for phase out and substitution pilots. Criteria for prioritization will be adopted by the project Regional Steering Committee, but include level of commitment, type of textile produced, chemicals and POPs use as per Output 1.1 inventories), and focus on smaller companies that are least likely to voluntarily join a certification scheme. Selection criteria to include female employment and participation.

1.3.5 Rolling out of phase 2 mills pilot projects, based on the experience in Phase 1 and adding additional technical solutions in line with international and national requirements (e.g., Viet Nam & Indonesia Laws on Environment Protection 2020). These may include among others, BAT/BEP, solutions for industrial parks & wastewater treatment and minimisation technologies (also linked to the financing/ investment pilots under Output 2.1).

For the selection of mills (Activity 1.3.4) the Regional Steering Committee will also be required to endorse the methodology to ensure an impactful and equitable split of the pilot projects between the countries in the project. Country distribution will be based on a combination of ensuring all countries benefit from pilot projects but also ensuring that lessons are available relevant to the whole sector. Countries with a larger wet processing sector, covering more specific processes and chemical uses, may require additional pilots to cover all use cases.

Output 1.4: Chemicals knowledge compiled and delivered to SMEs for risk reduction measures

The project will ensure a high level of analysis of data collected from the inventory and pilot project outputs and seek to generate learning and knowledge to inform both policy (Component 2) and scaling up (Component 3). Data analysis and knowledge compilation will be developed under the lead of the technical coordinator, with consultation and support from Ministries and the regional Executing

Agency. The output will then put this technical knowledge into useable formats and training packages for the 500 SMEs directly participating in the project, to support them taking risk reduction measures in cases where hazardous chemicals continue to be used.

1.4.1 Developing a social and economic analysis of potential costs and benefits of phasing out, and sharing information on, chemicals of concern at company and society levels. It will assess the return on investments, both qualitative and quantitative when feasible, from an economic, social and environmental perspective. The publication will be developed in 2 phases: initially highlighting international illustrations, complemented with case studies from the pilots of Output 1.3.

1.4.2 Producing analysis and knowledge products based on results and learning from the chemical inventory, chemicals reporting and pilot project outputs above. Key knowledge products will include compilation and analysis of the inventory data collected in output 1.1, and developing country-level POPs and CoCs usage reports in textile sector, with a focus on POPs and PFAS use that will be delivered to the Stockholm Convention Focal Points to support national reporting. Knowledge products related to the pilots output 1.3 will include a comparison of the different service providers and tools for chemicals substitution, eco-innovation and other approaches

1.4.3 Supporting initial safety measures in textile facilities to reduce releases of and exposure to CoCs. Where the chemical inventories (Output 1.1) confirm use of hazardous chemicals, the technical service providers will provide tailored advice for risk reduction measures that can be implemented by mills that are not able to immediately phase out use. Risk reduction measures may include improved practices around storage, labelling, PPE, worker access to chemicals, waste water, and air emissions. Existing chemical training packages will be adapated and used in preference to creating new ones (e.g. Clean Production Action, ZDHC, Hohenstein, OIA Chemicals Management Guide for Brands and Suppliers, GIZ, IDH, see Baseline section A2.1.5). A package on occupational health and safety will be delivered by the ILO, including guiding participating mills to apply guidelines and standards of the Just Transition Toolkit for the garment and textile sector (i.e., promoting C100; C111; C156; C183 and C190 and the newly approved Code of Practice, see Baseline section A2.1.5).

A3.2. Component 2: Eco-innovative strategies toward a non-toxic and circular textiles' economy

Component 2 identifies and triggers policy changes by the private sector and governments to transition away from the use of POPs and other chemicals of concern in the textile sector.

This transition will facilitate Stockholm Convention compliance, as well as national chemical safety reforms. Partnership with UNIDO and UNEP will also include waste management and recycling companies, consumers, and supporting actors including Green Chemistry researchers and civil society. It addresses the second root cause, *recognizing the influence wielded by global buyers and regulators in driving changes in practices and adoption of best practice*.

This component will go beyond the shift to chemicals alternatives, towards a non-toxic and circular economy approach in the textile sector and will inform both government (Output 2.3) and corporate (Output 2.2) policy development at the national, regional and global level. A shift in business and regulatory models towards circular economy in textiles and an enabling environment to support this shift is only possible if hazardous substances are eliminated from the supply chain. A systemic approach, from the raw material sourcing, design, production, consumption, waste management, including recycling, to the end-of-life stage, can offer new business opportunities as well as generate other economic benefits to mill owners. Examples are choice of raw materials of quality and redesign for durability, to reduce the industry waste especially through fast fashion, to increase re-use,

repairability of textile products, remanufacturing as well as recycling of fibers, and reduce inputs of resources for an overall lifecycle impact that is lower.

The component will build on learnings of component 1.

Output 2.1 Global eco-innovation and circular economy guidance piloted with global value chain actors and textile mills SMEs

This output will pilot UNEP?s recent guidance on sustainable and circular business models in the textiles sector (?eco-innovation textile supplement?) with SMEs in the project countries, to explore how a comprehensive eco-innovation approach can cover chemicals issues systematically while creating incentives for SMEs to adopt change. There are market drivers for eco-innovation in the countries, such as bad environmental reputation of the wet processing sector calling for more sustainable and circular practices (see Baseline section A2). The support to SMEs will build on guidance and support under Output 1.3 pilots.

One known constraint to adoption of eco-innovation is the access to finance and investment. The output will include activities to address these financial barriers. Lessons learnt will be integrated into UNEP?s ongoing promotion of sustainable textiles and eco-innovation and finance.

2.1.1 Piloting UNEP?s 2020 global eco-innovation textiles supplement guide. Brands or associations will act as entry points to identify SME suppliers in two of the project countries, to change business models through eco-innovation methodology (with a target to eliminate POPs). Focus will be on upstream interventions involving a whole value chain (ie multiple companies), including design, durability of products, reuse, business models, procurement and eco-labels. Global experts will coach country partners and SME networks (?replicators?) to implement eco-innovation methodology with identified SMEs (including a criteria to find women-owned or women-run enterprises), including identification of hotspots, development of new business strategies and models to phase out chemicals of concern, development of roadmaps and regional and global expertise to implementation of eco-innovation pilots, with ongoing links to chemicals-related learning and tools from Component 1 outputs on inventory (Output 1.1) and substitution or phase out (Output 1.3).

2.1.2 Piloting country financing for eco-innovation and production of bankable proposals. The eco-innovation partners will map financial mechanisms, institutions and instruments in-country and in value chain and summarize these in a resource library. Global experts will review financial institutions and initiatives? financing policies for chemicals; and circular textiles business models? criteria to contribute to the resource library, and also inform pilots (Activity 2.1.1 above). Global and national eco-innovation replicators will provide regional training including guidance (multimedia format) to SMEs involved in activity 2.1.1 on data needed for bankable proposals as well as emphasis on gender-specific challenges and potential solutions. The global partners will provide global and regional expertise on bankable proposals developed by the SMEs.

2.1.3 Developing case studies and updates of training materials from eco-innovation pilots. Case studies will be disseminated via the project KM strategy (see Output 3.2). UNEP will integrate findings and recommendations into their eco-innovation and sustainable textile value chain networks for wide uptake. This will also provide incentives for SMEs to participate, by giving visibility to their successes e.g., at industry conferences (link to outcome 3).

Output 2.2 Actions to coordinate and raise ambition of supply chain policies and initiatives are proposed and agreed by global supply chain stakeholders

Existing private sector policies warrant considerable improvement, both as to scope and substantive commitments. UNEP?s upcoming report ?*Recommendations for action for a sustainable and circular*

textile value chain: Global roadmap? identified the need for a global coordination mechanism. This should facilitate dialogue between actors, support the development of data and decision support tools to help evaluate progress, and coordinate existing action. The output will link to existing initiatives and increasing their ambition when it comes to POPs and chemicals, as most initiatives look at cross-cutting issues. There is further need to bring SME voices into these global discussions. This output will be delivered in coordination with Output 3.2 on global knowledge management but provide more technical and detailed support to bring about actual changes in chemical management policies and practices by brands and retailers.

The following activities are therefore proposed for this output:

2.2.1 Monitoring of brand and value chain initiatives and advocating for higher ambition levels. The project team will reach out to brands & retails at global and regional levels via existing networks such as the ZDHC, Ellen MacArthur Foundation, Fashion Pact, and UN Sustainable Fashion network. The output will connect global initiatives and project stakeholders and propose concrete actions by value chains to raise ambition levels on chemicals issues. These actions will be presented as a ?private sector Action Plan on chemical management? and bring together inventory & phase out pilot results (Outputs 1.2 and 1.3) and circularity and eco-innovation resources (Output 2.1) including a model company procurement policy and supply chain management system.

2.2.2 Supporting participation of SME suppliers at global events. The project will cover the participation of SMEs from the pilot projects (Output 1.3 and 2.1) at international value chain consultations, meetings and industry events, to make their voice heard and share the results of the pilots. They will have the opportunity to advocate directly with brands and buyers to accommodate any additional costs and practical support for SMEs and mills trying to adopt environmental and social best practices.

2.2.3 Developing and delivering brand engagement strategy. The project will engage with member companies of Clean Production Action and other global partners (e.g., Green Biz, IDH in Viet Nam), developing and rolling out training on strengthening chemicals requirements and practically implementing eco-innovative and green chemistry strategies.

Output 2.3 National regulations for textile SMEs submitted for adoption and implemented by national stakeholders

The results of consultations during the PPG phase identified important policy development and implementation activities that require support. In all the countries, a lack of chemical production and use data is a major concern. And while the countries are in various stages of policy development, all need support to complete the policy development process to create enforceable requirements and explicitly address POPs in the textile sector. All countries highlighted the need to strengthen enforcement and implementation assistance to operationalize a transition away from toxic chemical use in the textile sector.

The following is therefore proposed for this output:

2.3.1 Developing and adopting national circular textiles, policy and enforcement roadmaps. Government focal points will organize national consultation workshops with all stakeholders to confirm priorities and establishing detailed roadmaps for the textile sector. Initial priorities mapped during the PPG phase are presented in Table 6 below, and will be confirmed by this activity. The roadmaps will include workplans and budget allocation for GEF project activities and KPIs on how to measure success.

2.3.2 Developing international guidance to support the agreed country roadmaps. Roadmaps are anticipated to include requests for support on cost recovery and declaration systems for placing chemicals on the market, and on implementing circular and sustainable textiles roadmaps. Global

experts will develop national adaptations of UNEP?s LIRA guidance and Global Roadmap on Sustainable and Circular Textiles (see Baseline section A2.1.5). This may include national gap analyses, capacity gaps and monitoring and enforcement mechanisms. UNEP will also promote new regulations via its chemicals regulation database under development.

2.3.3 Drafting and submission of new policies, regulations and guidelines on chemicals. Governments and legal experts will update legal texts to support chemical reporting and management, based on the agreed Roadmaps. Types of policy instrument to be updated will include existing draft legislations (e.g., Pakistan draft regulations on chemicals & textiles), statutory Enforcement Plans for recently adopted regulations (e.g., Indonesia 2020 Environment Law), GHS, and others.

Table 6: Country policy priorities and gaps to be confirmed in the national roadmaps (Activity 2.3.1)

Country	**Policy or regulatory instruments to be updated/ strengthened**
Bangladesh	Deposit instrument of ratification to SC for the new POPs New Rules on POPs and new POPs /CoCs, under Environmental Act with updated lists of CoCs and PoPs regarding manufacture and import by the Directorate of Environment involving relevant Ministries and Departments and including provisions for penalty for non-compliance
Indonesia	GHS adoption and implementation updated with Directorate of Upstream Industry Enforcement Plans for 2020 Environment Law and 2023 Chemicals Law Strategic Environment Assessment (SEA) for textile sector, based on Law Number 32 of 2009 (KLHS), and Government Regulation No. 46 of 2016
Pakistan	Technical guidelines to integrate POPs and CoCs issues in existing policies and regulations (e.g., drafts of National Chemical management policy, POPs Management Rules, Textile policy 2020-2025, Hazardous Waste Management Policy) Regulations and roll out of chemicals declaration system for putting industrial chemicals on the market Support the implementation of GHS being developed under Special Programme project Monitoring cell in government to track compliance with policy roadmaps
Viet Nam	Technical Guidelines on Environmental Permit and BAT/BEP application for textile mills including BAT/BEP Technical Guideline for textiles sector Technical Guideline for chemicals reporting and management as per Law on Chemicals Monitoring system for releases of POPs from textile mills Reporting system on chemical production, import, and use e.g., Compulsory chemical use reporting regulations

2.3.4 Strengthening compliance promotion and enforcement actions. Based on the roadmaps, the project will directly support compliance and enforcement actions in the countries. Typical activities will include capacity needs analyses, sustainable financing analyses (Indonesia), training of customs to control imports based on HS codes, awareness and compliance promotion with relevant government officials at various levels of government, (Indonesia, Viet Nam), modifying environmental permits to consider sound chemical management (Viet Nam), and developing compliance-assistance materials for the regulated community. Monitoring and analytical capacity will be built for both imports & mill emissions linking to private sector accredited laboratory facilities, possibly including development of PPP to sustain project funded analytical capacity. Laboratory service contracts will also include provision of training to government laboratory personnel in analysis of POPs. This activity will be closely coordinated with Output 1.2 on strengthening existing but un-enforced chemicals reporting databases (Pakistan, Viet Nam).

A3.3. Component 3: Knowledge management for scaling up

Component 3 scales project results nationally and globally, supporting Component 2 by creating and curating knowledge, information, education, safer alternatives, and sound management practices. The component outputs will scale up pilot project practices within the project countries (Output 3.1) and globally (Output 3.2). The last output on gender mainstreaming will disseminate the technical work of the project among a very well established baseline and network of initiatives in the wider textiles & garment sector which focus on gender, social and labour issues.

Output 3.1 National capacity and awareness programs developed and implemented to increase ability of textile sector and policy makers to control POPs and CoCs

3.1.1 Developing a national KM and awareness plan for each country, further refining the basic audience and messages analysis conducted during the PPG (see Table 7 below). The national awareness plans will identify priority national actors and the necessary behaviour changes that are required for them to support technical project activities (Component 1) or to comply with regulations and policies (Component 2). NGOs, trade unions and other civil society organizations will be included in the national audience & messages analysis to ensure a diversity of voices & messages are addressed in the plans.

Table 7: Identified priorities by the project countries on knowledge management

Country	National information and knowledge management targets & key messages
Bangladesh	National Textile Association / mill owners expect from the global brands and retailers to allow sufficient time to accommodate the new chemical management systems. issues related to CoCs and PoPs to be disseminated first to the owners and senior management staff and subsequently to the lower-level workers.
Indonesia	SMEs on meeting their obligations under regulations Support to Customs to operationalize their new database on POPs inspection in products
Pakistan	Development of guidelines (safety) and conducting training sessions of relevant stakeholders. Social and electronic media campaigns including guideline documents, relevant regulations, pamphlets, brochures etc
Viet Nam	Training program for Government Authorities and relevant stakeholders: objective to Bring knowledge and regulation to monitoring and enforcement into practice. Messages/ topics: Inventory, risk identification management, technical guidelines, new regulations, BRS guidance Public awareness raising program: relevant regulations, environmental health related to POPs/CoCs Training on chemical risks for women workers in the supply chains

3.1.2 Developing national awareness materials and modules for the textile sector. Based on the National Awareness Plans (Activity 3.1.1), relevant partners including textile associations, government departments, private sector partners or civil society and labour groups will develop common and country-specific information materials for the different audiences, to be approved by the National Working Groups. Materials and messages to be included in the national awareness campaigns will be based on technical results of project (Output 1.2, 1.4) as well as regulatory requirements (Output 2.3).

3.1.3 Developing and delivering of awareness and capacity building training. Information and awareness campaign annual workplans will be developed by the national teams and endorsed by the National Working Group. These may include information campaigns but also personalized advisory services by the Ministries. Beneficiaries of capacity building and information campaigns will be targeted by the mapping of textile sector and chemical suppliers conducted in Output 1.1. Partners will

roll out national awareness/ communications strategies and replicate training modules and materials created under Activity 3.1.2.

Output 3.2 Global Knowledge Exchange and Management tools produced and accessed by users globally

This output will deliver a global knowledge management strategy (see Appendix 11) together with the UNIDO sister project, with the basic aim to create global momentum and incentives for widespread adoption of the project activities. As described in the Strategy, and given the budget limitation, priority will be given to creating links to existing platforms with well-established user bases. The whole output will be coordinated by an Advisory Group on Knowledge Management, common to both UNEP and UNIDO projects, comprised of global partners (brands, governments, industry associations and networks) who will advise on the KM strategy and its delivery (see Implementation Arrangement section and KM Strategy Annex). Regional knowledge hubs (Asia Garment Hub and AfDB).

The projects? Executing Agencies (BCRC SEA & Africa Institute for the UNIDO project) will provide the liaison with the project countries and ensure representation and inclusion of national knowledge and knowledge networks including links with regional knowledge hubs such as the GIZ Asia Garment Hub.

The project funded activities (with costs shared with the UNIDO sister project in Africa) are:

3.2.1 Refining the Global KM strategy. The draft KM strategy (Appendix 11) will be further refined during the inception phase and in consultation with global stakeholders and particularly by the Global Advisory Board on KM (see implementation arrangements, section 6 below and Appendix 4 on Implementation Arrangements). Further details will be provided on Personas (Identification of major target groups, their needs, motivations and behaviour), including using survey tools to gather feedback on the knowledge strategy design. The updated Strategy will identify gaps and opportunities to strengthen knowledge flows; survey on international brands, and give the direction for the Communication strategy, including social media, aligned with UNEP & GEF & UNIDO communication guidelines; Visual identity and Social media strategy. It will also propose an annual workplan and budget including calendar of events or publications to be done in each year.

3.2.2 Creating a Global KM Hub. As has been identified in the baseline mapping (Appendix 11 and Baseline section A2.1.6 above), there are a lot of KM initiatives and actors on sustainable textiles. The project online presence will therefore focus on a central resource providing easy access for other platforms to connect to on chemicals in textiles and their relevance for enabling a circular textiles economy. From the initial analysis, the Green Growth Knowledge Partnership and Green Industry Platform would be well suited for cost-effective hosting of such a resource (to be confirmed during inception). Among others, the platform will host a database of multimedia resources classified by country, purpose, year, type (website, video, document) and topic (tools and best practices, training materials, toolkits, policy and legislation, meeting documents, etc.), interactive collaboration spaces including discussion forums and moderated Q&A, collaborative calendar with user-input events and others (to be further defined based on the user needs assessments to be conducted under Activity 3.2.1 above).

3.2.3 Delivering of the KM strategy including social media & media engagement, events including participation in industry events with side events and/or information booths on chemicals and textiles and bringing the voice of SMEs to global value chain stakeholders. The Global Advisory Board will support the development and dissemination of knowledge products including refining messages to be appropriate and actionable for global audiences.

3.2.4 Organising a global meeting bringing stakeholders from the two projects in Asia and Africa together to exchange information and connect stakeholders for South-South learning and networking opportunities, after project mid-term.

The KM strategy will be finalized in Year 1 but the roll out of the KM actions will start after Year 2 once project results and coordination efforts become available.

Output 3.3 Gender and Social Action Plan implemented, and benefits accrued to women workers

The output will deliver on the Gender and Social Action plan (see Appendix 5), to achieve a gender sensitive project that will help factory owners, value chain actors, government officials and even consumers to understand how reduction of uses and release of CoCs will help social, physical and environmental aspects of men and women. primarily by consolidating and compiling gender-relevant results from across the project components and other outputs on female participation in the textiles sector, occupational health and safety, social security and access to equal pay, and other gender relevant issues. The Output will link to work done in mills under Component 1 by ILO on the newly approved Code of Practice on safety and health in textiles, clothing, leather and footwear industries.

The outcome of the gender action plan will be focused As mentioned in the project outline, gender analysis as part of the facility visits to identify and describe gender differences in handling, exposure and impacts of chemical management practices; training and awareness raising specifically targeting women workers, e.g. by provision of childcare to encourage participation and increasing access to training and jobs. Prioritizing women-owned or women-managed businesses for demonstration pilots and capacity building, creation of safe spaces for dialogue on chemical safety, labour and women?s rights in the workplace, including access to training and protective equipment and practices through transitioning to a chemical free more sustainable economy are the results that should be looked forward to.

3.3.1 Organising national stakeholder workshops to adopt national gender action plan. These workshops will confirm and validate the project wide Gender and Social Action plan on chemical safety issues, and raise awareness of wider and well-established gender issues and initiatives in the industry around workplace rights, violence and access to training and jobs. National Gender Action plans will ensure that gender activities are seamlessly integrated with the technical components, bringing a gender lens to identify and mitigate impacts of unsound chemical management on women and marginalized groups including children or illegal laborers.

3.3.2 Gender assessment of key project outcomes and reports. Gender experts will be tasked throughout implementation of the technical components with reviewing key documents including the methodologies for developing inventories (output 1.1), pilot projects (output 1.3), policy and value chain guidance (outputs 2.2 and 2.3), training materials (outputs 1.4, 2.3, 3.1) and knowledge products (all outputs) and especially before dissemination in output 3.2. The gender assessments will select KPIs to be included in different documents (see Gender and Social Action Plan, Appendix 5) and ensure data collection formats and approaches, such as creating women-only discussions to ensure full participation by women. These reviews will be integrated into the annual country workplans and findings will be reported to the National Working Groups to ensure consideration and adoption at the highest levels.

3.3.3 Delivering gender-specific training for women workers. Following the compilation of the results of the technical inventories and pilots (Output 1.4), the project will organize and deliver training for downstream value chain actors who may be exposed to hazardous chemicals. This training will raise awareness of workers in cut and sew garment facilities where workers (predominately women) are handling contaminated textile products. The trainings will be rolled out in partnership with existing initiatives in the garment sector, notably by ILO and GIZ, to ensure maximum reach and sustainability of the chemical specific information provided by the GEF project.

A3.4. Coordination with Other Relevant Projects and Initiatives??

The relevant baseline projects and initiatives are presented earlier (Section A2.3 Associated Baseline Projects). Coordination with these other initiatives is done through a combination of a) co-financing partnerships, b) the knowledge management component and c) regional SC meeting and National Working Groups. The coordination will include information sharing and exchange of experience with other initiatives; joint actions, particularly in the Global Knowledge Management output to ensure engagement of global brands and private sector initiatives. Please also refer to the Stakeholder Engagement Plan for details on modalities to engage partners from these projects.

In addition to these, the project will coordinate with three GEF projects which overlap in some way with the current project. These are the following:

- UNIDO textiles projects in Africa (GEF ID 10543, ?Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste in Lesotho, Madagascar and South Africa? and GEF ID 10683, ?Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste in Ethiopia?), with which there is a shared global KM output (see Output 3.2) which overlaps with UNIDO?s Output 4.1.1 and includes: common KM strategy development (see Appendix 11); cost sharing for the implementation of the KM activities; and South-South global meeting of partners from the two projects.
- Conservation International MSP on fashion (GEF ID 10658, ?Transforming the Fashion Sector to Drive Positive Outcomes for Biodiversity, Climate, and Oceans?), with which a coordination call was held during the PPG and has identified sharing of information and pilot project results with the Fashion Pact initiative. CI and/or partners from the Fashion Pact will participate in the Global KM Advisory Group to ensure coordination continues throughout the duration of the projects.
- Green Chemistry FSP in Viet Nam by UNDP (GEF ID 9379, ?Application of Green Chemistry in Viet Nam to Support Green Growth and Reduction in the Use and Release of POPs/Harmful Chemicals?), which addresses some similar project components such as eco-innovation and policy for green chemistry, but explicitly excludes the textiles sector. The coordination will be ensured through an invitation for the UNDP project manager to participate in the National Working Group for Viet Nam to ensure regular updates and identification of shared activities where relevant, e.g., in policy consultation and development and others.

? UNIDO textiles projects in Africa (GEF ID 10543, ?Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste in Lesotho, Madagascar and South Africa? and GEF ID 10683, ?Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste in Ethiopia?), with which there is a shared global KM output (see Output 3.2) which overlaps with UNIDO?s Output 4.1.1 and includes: common KM strategy development (see Appendix 11); cost sharing for the implementation of the KM activities; and South-South global meeting of partners from the two projects.

A4. Alignment with GEF focal area and/or Impact Program strategies

The project aligns with CW?1?1 ?Strengthen the sound management of industrial chemicals and their waste through better control, and reduction and/or elimination?. It will support the elimination of the use of POPs and other priority SAICM chemicals in products, by supporting the phasing out of these chemicals in textile manufacture; promoting the introduction of safer chemical and/or non-chemical alternatives and the avoidance of any regrettable substitution. The components adopt both a bottom-up approach working with textile companies, linking up to a top-down approach to ensure the enabling policy and financial incentives are present to support decision making.

A5. Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

As per the GEF?s operational guidelines[118], incremental costs were determined compared to the business-as-usual scenario described under the problem and baseline sections (section A1 and A2). Under current conditions, sound management of chemicals is done by a small minority of textile companies and brands, largely in a voluntary manner. While the trend is for this proportion to grow, the project activities (see alternative scenario in section A3) are needed to give participating countries a set of effective instruments to assess and manage chemicals manufactured by the chemical industry and used in the textiles sector, under the guidance and regulatory oversight of governments. This will ensure that all textile companies are subjected to some level of sound chemical management, thus levelling the playing field and ensuring that minimum standards (e.g., the ban on use of POPs) are met universally. Furthermore, this will enable and strengthen national capacities to comply with requirements under the Stockholm Convention on current and future POPs and to proactively prevent contamination by and harmful impact on human health from other priority CoCs used in the textile sectors, as well as businesses? (particularly SMEs) capacities to develop eco-innovative strategies that cut across the textile value chain, to contribute to a circular economy.

The projects? co-finance and investment are mainly mobilised through the countries? governments and key private sector partners. The project will build on their existing initiatives, policies, commitments, tools, and schemes and thus shows their commitment to working to scale up their existing initiatives and work together to reduce the use of hazardous chemicals in the textile sector. Through the project intervention (section A3), the baseline work on this reduction will be scaled up significantly in the four project countries and outside of these. The latter will be accomplished through the project?s knowledge management component (component 3 and see section 8 on KM) that will work to share case studies, guidance, best practices, and lessons learnt outside of only the project countries. Also, the coordination with three other GEF projects working inside and outside the Asian region (see section A3.4) will ensure further synergies and scaling up outside of the four countries. Furthermore, coordination between the existing initiatives and stakeholders (see section 2) will be strengthened by the project.

Component 1 of the project enables participating countries to identify POPs and other priority CoCs existing as ingredients, impurities and/or cross contaminants in the textile sector. The incremental benefit is significant, as application of existing tools beyond the current limited base will bring benefit to other non-participating production facilities within supply chains and to outside-supply chain stakeholders. It will also equip companies to proactively address potential POPs that may be listed in the future. The Component will then implement technical training in alternative assessment and transition to safe alternatives and supporting the companies shift to eco-innovative models, that include alternatives to POPs, POP candidates and other priority CoCs identified in component 1. By working closely with government and public sector training institutions the knowledge currently limited to private sector stakeholders will be more readily available, particularly to the less organized SMEs who are not included in export value chains.

Component 2 will support this shift through a circular economy push in the textiles sector, a national level enabling framework, and a review and access facilitation to incentives (financial, market based, or information based). Under Component 3 the project will support development of data collection and reporting tools: i) for local governments and communities, to demonstrate performance, and ii) to national governments to enable reporting under the Stockholm Convention and SAICM. The data collection and reporting tools will build upon the CiP information exchange systems developed in Component 1.

Contribution by project partners will include the financial and technical support of coordinating existing initiatives of CiP information exchange, the implementation of the CiP Programme and identified best practices, facilitation of knowledge and lessons learned, and alternative identification and assessment and substitution activities for POPs, POP candidates and other priority CoCs. These seeding activities will lead to the further advancement of dialogue that strengthen the framework for actions throughout the project. Co-financing by project partners will include the development costs for these initiatives and resources required to carry them through the duration of the project.

Annex A and section A3 lay out the strategy on how this project will achieve its GEBs and contribute to the strategic objective and outcomes under the Chemicals and Waste Focal Area (see also section A4) in more detail.

A6. Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

This project will deliver significant reductions in the use of POPs, POP candidates and other priority CoCs in the manufacture of textiles processing chemicals and textile products in Bangladesh, Indonesia, Pakistan and Viet Nam. These countries are all among the world?s top ten textiles or clothing producers[119], with a combined export value of US$63 billion in 2015[120]. Achieving the targeted reductions will, internationally, avoid the distribution of textiles products contaminated with these chemicals, reduce uPOPs releases that can travel across borders and, nationally, will lead to decreased exposure to chemicals by workers and consumers and to reduced releases of POPs and other chemicals to the environment.

The project expected outcome in the participating countries is the avoidance of an estimated 5,500 ton/yr of textiles contaminated with POPs, candidate POPs and other CoCs. A PPG study carried out in 3 textile mills in Pakistan[121], showed that these mills exported between 13,371 kg ? 580,057 kg of fabrics treated with PFC finishing each year between 2019 and 2021. Of course, these numbers vary depending on mill size. If the average of this value (296,714 kg) is used and multiplied by 10 (the minimum number of mills where pilot projects on hazardous chemical use reductions will take place) and multiplied by 5 (the duration of the project), the project would lead to a reduction of 14,835,700 kg of textiles contaminated with PFAS finishing. As this value also only focuses on PFAS, it more than meets the GEB target of 5,500,000 kg of textiles contaminated with POPs, candidate POPs and other CoCs. By working with the entire textile supply chain in four major textiles producing economies and by leveraging the use of the project outputs in global supply chains through direct involvement of global actors, the project will achieve GEBs well beyond the project countries: global brands will use the tools and replicate the successes demonstrated under this project in other countries where they source production.

According to ILO, exposure to hazardous substances in the workplace kills over 400 thousand people annually[122]. Through facility-level work, the project will identify and promote safe production practices and pilot green chemistry alternatives, and responsible production practices, resulting in

reduced exposure of workers to hazardous chemicals. The project will work with the chemicals manufacturing sector which formulates chemicals supplied to the textiles industry, to improve labelling and communication of the risks of the chemicals of concern and leading to a decrease in the demand for the manufacture and supply of hazardous chemicals to textile manufacturers and less hazardous waste from textile product manufacturers. Reduced content of the targeted chemicals in the textile products will additionally benefit textile consumers globally, through reduced risk of chemical exposure, and reduced volumes of hazardous waste being released into the environment through post-consumer textile waste in downstream market countries and of hazardous chemicals released to the environment throughout the product?s lifespan.

The project aims to reduce several priority chemicals initially described in textile sector voluntary tools (such as Restricted Substance Lists and Manufacturing Restricted Substance Lists, MRSL) by a total of 25 tonnes (under indicator 9.1). This includes PFOS, PFOA and PFHxS at a minimum, and the project will also address additional PFAS chemicals that are candidate or potential future POPs, based on rapidly evolving regulatory landscape in many countries which are increasing the number of PFAS chemicals that are identified as having persistent characteristics. The target for PFAS reduction is based on quantitative data on documented use of a wider group of perfluorinated compounds (PFC) in the industry. Every 100,000m of fabric may contain up to 600 kg of active polymer chemicals, including typical durable water repellent (DWR) coatings usually containing 20-50% fluorine content.[123] A PPG study of three mills? chemical inventories in Pakistan[124] documented an average use of 43 tonnes of PFC based chemicals per mill per year. The Safety and Technical Data Sheets (SDS) that accompany these technical chemicals do not provide information on chemical impurities or by-products contained in the product, and it has proven impossible to identify which PFC chemicals may contain PFAS and specific POPs. However, the PPG did find evidence of residues of POPs on finished textile products (see Baseline section), confirming that POPs are still used. In the absence of quantitative SDS data, we assume that an average of 5% of PFC chemicals will be listed or candidate POPs chemicals, and therefore that the target of 25 tonnes of PFOS/PFOA will be readily met by pilot projects in at least 10 mills, each using an average of 40 tonnes of PFC chemistry per year (5% of 40 tonnes PFC used x 10 pilots = 20 tonnes used per year). Other POPs such as PBDEs may also be identified during the inventory and will further increase the GEB.

Textile manufacturing is also listed as a key source of dioxin and furan emissions[125], which the project aims to reduce in the participating countries, hence contributing to reduced global emissions. The target for indicator 10 (POPs emissions to air) is based on the NIP of Pakistan[126] and Bangladesh,[127] which respectively calculated 23gTEQ/a from the textile sector and 51 gTEQ/a from textile plants. The project target estimates a 10% reduction of this quantity from Pakistan alone.

Furthermore, the project aims at 10,000 direct beneficiaries (of which 60% are women) through training, awareness raising and knowledge and capacity strengthening activities of textile facility personnel, customs, and government partners.

Other GEB related to CO2 emissions, water and resources consumption as well as waste generation could be identified through the application of circular economy. The consumer-facing brands/ producers will be encouraged to communicate those benefits (the GEB) to consumers, following the UNEP Guidelines for providing product sustainability information (2017), including to highlight where

and how consumers themselves can contribute to environmental benefits, e.g., through a certain use behaviour.

A7. Innovativeness, sustainability and potential for scaling up

The project engages stakeholders along the value chain including non-supplier stakeholders and those stakeholders who are not involved in existing initiatives particularly SMEs and producers for non-export markets (see Appendix 6 Stakeholders). This project leverages ambitious voluntary initiatives that are well established but not universal, thus providing incremental benefit through replication, scale-up and broadened stakeholder engagement. The project is also innovative in explicitly targeting Tier 2 and Tier 3 producers who are typically less engaged in voluntary schemes despite being the heaviest users of hazardous chemicals.

Component 1 will generate open-source knowledge and information from the pilot projects on the costs and benefits of improving chemical management in all types of businesses. The issue of transparency and openness of data is reflected in two of the barriers described in the Problem Analysis (see Section A.1.3). The first barrier is the lack of knowledge on chemicals at mills and pilots. The project will ensure that mills and brands are able to access existing open-source information sources include databases operated by OekoTex (see Baseline), but also public chemicals data such as those available from the BRS Secretariats, EC and other regulatory bodies. These available data sources will be essential for both regulators and textile companies to be able to efficiently navigate the sometimes complex chemicals information.

A second information barrier (number (v) in the Root Causes & Barriers section), is the lack of sharing of data collected on chemicals use, and lessons learnt in chemical management improvements in the process of certification. While many mills and companies do have such information, they are bound by non-disclosure agreements that limit the use of this data for the benefit of the wider sector, and this barrier was already encountered during the PPG phase. The project will seek to identify minimum data that may be excluded from such confidentiality clauses, for example by drafting and making available relevant language for non-disclosure agreements to allow sharing of key health, safety and environmental information. The project will also develop reporting modalities that allow data to be anonymized or shared in controlled ways, including by conducting a blockchain pilot to apply new technologies to support transparency.

To ensure that potential for scaling up is maximised, the project is partnering with global brands to map and engage their manufacturing partners in Bangladesh, Indonesia, Pakistan and Viet Nam, and will be able to apply the successful project learning in other countries they source from. Thus, geographic replicability will be achieved. Application of this approach will be further enhanced through engagement with the UN Fashion Alliance, SAICM community, and sector partnerships such as the Fashion Pact, bringing a new and strengthened cooperation between industry (particularly SMEs) and governments.

Under Component 2 the project will innovate by linking decisions on POPs and CoCs to a much wider concept of a non-toxic circular economy and a full lifecycle perspective applied to the textile sector, through the Eco-innovation pilots and the focus on financing. Outputs 2.2 and 2.3 will harness the

UN?s role as mediator to enhance precompetitive collaboration between companies and governments for sustainability goals that benefit everyone. The momentum of a regional project in four major textile producing economies, with practical activities from a range of private sector initiatives, will accelerate and align stakeholders toward implementing and scaling up sound management of chemicals in circular and sustainable textiles initiatives. Component 3 will further scale and sustain project results and best practices. Within the UN, visibility will be gained by those private sector and other stakeholders who are engaged in the project and exemplary government and corporate performance will be disseminated including via the UN Alliance for Sustainable Fashion and the SAICM Knowledge Management platform and other mechanisms (refer to section 8 on Knowledge Management).

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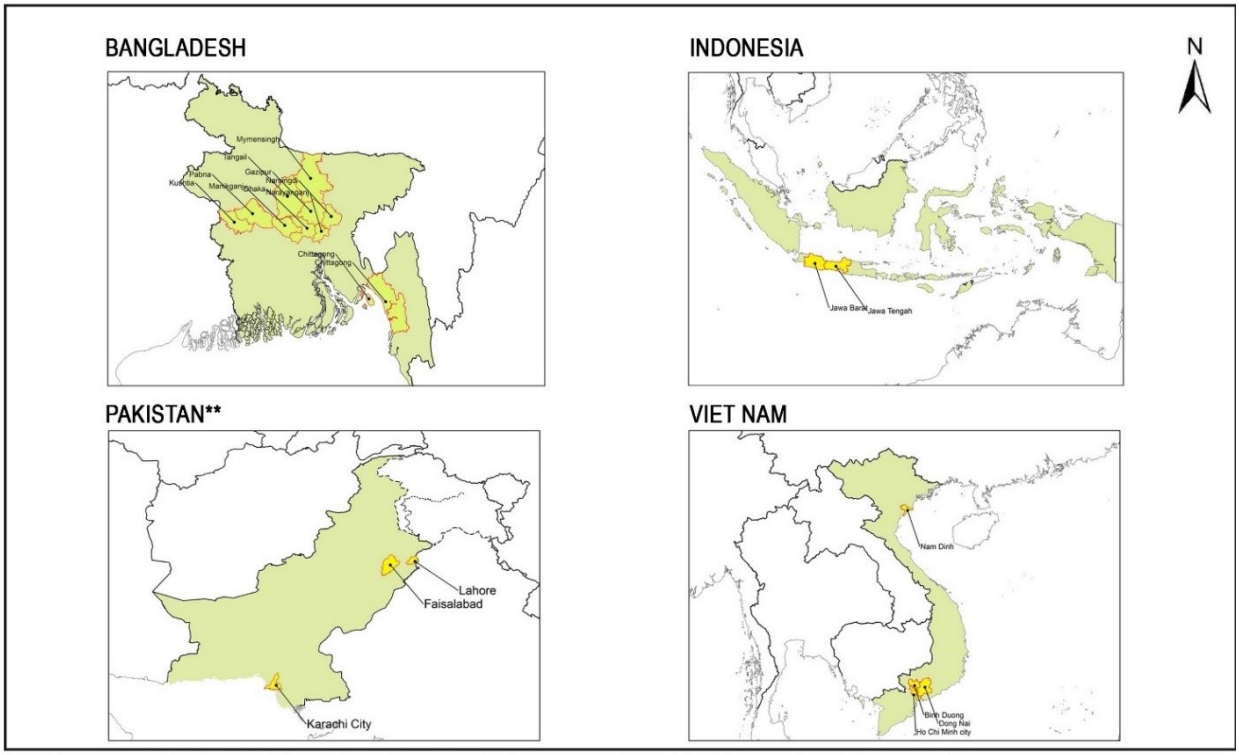
1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Reducing uses and releases of chemicals of concern, including POPs, in the textiles sector



The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries

Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan.The final status of Jammu and Kashmir has not yet been agreed upon by the parties

This map is intended for illustrative purposes only and should NOT be used to derive any information regarding the project's operations. No activities planned in any disputed territories

The maps above show the following areas where the project interventions will take place:

- Bangladesh: Dhaka, Narayanganj, Gazipur, Narsingdi, Manikganj, Mymensingh, Chittagong, Tangail, Pabna and Kushtia districts
- Indonesia: Jawa Barat and Jawa Tengah
- Pakistan: Lahore, Faisalabad and Karachi
- Viet Nam: Nam Dinh, Dong Nai, Ho Chi Minh City, and Binh Duong

Geocoordinates will be provided once pilot mills are selected.

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

/

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities

Private Sector Entities Yes

If none of the above, please explain why:

/

Please provide the Stakeholder Engagement Plan or equivalent assessment.

1. Stakeholders, their relevant interests, and rationale for inclusion

Stakeholders were mapped and analysed during the PPG to identify their relevant interests and concerns. These are presented in Table 2 of this plan.

2. Stakeholder roles and responsibilities, and timing of the engagement throughout the project cycle:

Stakeholders will be engaged throughout the project cycle through meetings, workshops, trainings, interventions, and the development of different types of guidance that will be made available at the global management platform. National and regional workshops and meetings will be organised with and between different stakeholder groups (mills personnel, regulators, textile and chemistry industry associations, customs, global brands, and chemical service providers). Training will be provided for chemical supplier, textile mills, customs, government laboratory personnel, government authorities, brands, and women specifically. Furthermore, guidance documents will be developed for regulators, brands, and SMEs.

The regional project coordinator at the Executing Agency and the national working groups will be responsible for monitoring stakeholder engagement and reporting regularly to the Regional Steering Committee, Implementing Agency and GEF Secretariat on the status and progress against the below Stakeholder Engagement Plan.

The table below outlines stakeholder roles and responsibilities during the project implementation and the level of engagement during the project preparatory phase (PPG). During project delivery when the detailed annual workplans are being developed, the Stakeholder Engagement Plan will be further detailed in terms of frequency and modalities of engagement.

Stakeholder	Engagement in project preparation	Engagement in project implementation

Global stakeholders		
Service and technology providers	**The service providers were consulted on their different programmes and expertise on the textile sector. Some carried out specific data research and reports. Participated in the Regional Validation Workshop**	**Service providers will support delivery of the project activities in textile mills (C1) by the provision of their expertise on the textile value chain, and the application of their different training programmes, tools and solutions. Service providers include both private sector (e.g., ZDHC, Bluwin etc) and public sector, such as government technical colleges or regulatory capacity development units.** **Service providers will be engaged via the Technical Coordinator (NRDC) with contracts and partnership agreements.**
Brand and downstream buyers	**During the PPG brands were engaged via UNEP?s textile expert community, the service providers? expertise an d the contacts with programmes like the Fashion Pact that represent a section of the biggest global brands.**	**Brands will be primarily engaged in the project via the Component 2 on global value chain policies, to strengthen chemicals management requirements and reporting within their supply chains. This will include sharing of project pilot results and best practices, and engagement via global networks including the UNEP textile experts and others.** **Brands will also be engaged for the global KM output including via industry events, and the global KM platform on the available tools, best-practices, and guidelines. They will be represented on the Global KM Advisory group.**
Global fashion and textile initiatives	**Consultation meetings held with Ellen MacArthur Foundation, Fashion Pact/CI, GIZ**	**These global initiatives will be engaged via regular updates and some will be represented on the Global KM Advisory group (C3).**
Labs and testing houses	**Labs were mapped during the PPG through governments and service providers.**	**Labs and testing facilities will be engaged in monitoring and importing activities (C1). Under component 2, the monitoring capacity on imports and mills emissions of some testing facilities will be strengthened through training on POPs analysis.**
National stakeholders		

Ministry of Environment	**Ministry of Environment led coordination of country inputs into the project design, including supervision of national consultants, hosting national workshops and consultations with stakeholders.**	**Ministries of Environment will be the main focal point for the project in the government and will host national project delivery units. They will play a lead role in defining all activities at country level, including approving the pilot projects methodologies and approaches, to ensure they will be aligned with regulatory requirements (C1); facilitate and lead the development of national policy roadmaps and enforcement measures (C2) and submit new policies and regulations. They will oversee the design and delivery of the national awareness raising campaigns, will be coordinate with global brands through global and government events, and will have access to policy/strategy and tool provision guidance, research findings, international policy developments and industry success stories. They will also be represented in the Global KM Advisory group and project steering committees.**
Ministry of Industry	**Ministry of Industry were closely consulted by the national consultants and Ministry of Environment focal points, presented at national workshops and attended the Regional Validation workshop**	**Ministries of Industry will have a similar role to Ministry of Environment, including as co-focal points. They will be members of the National Working Group and be closely involved in identifying and engaging mills (Output 1.1); training and capacity building on chemicals management (Outputs 1.2, 1.3, 2.1, 2.3) and for the replication and scale up (Output 3.1).**
Customs	**Data provision requests by national consultants. Participated in national workshops.**	**Customs will be engaged through the establishment of PPP with importers and laboratories for chemical import and trade monitoring under Component 1. Furthermore, they will be beneficiaries from training on HS codes under Component 2.**
National industry association and alliances	**The associations were consulted by the project national consultants on the presence of the textile mills in each of the project countries and participated in national workshops**	**Textile associations will be engaged through workshops and partnerships for the mapping of SME wet processing mills for pilot projects. They will directly participate in all the pilot projects, capacity building and knowledge sharing activities of the project to ensure they will be able to continue the pilots after the project.**

Textile SME facilities ? owners, staff and workers	**Textile facilities were contacted during the PPG regarding their interest in participating in the project?s pilot activities. Representatives participated in all the national PPG workshops. Some were interviewed or visited for the collection of baseline data on chemical use.**	**Textile factories are direct beneficiaries of all project activities, mainly under Component 1 (access to services and experts such as chemical engineers and laboratory services, training on chemical inventory, reporting tools, safer alternatives) and Component 2 (eco-innovation, supply chain policies, circular and eco-innovative approaches, consultation on development of national policy & global value chain initiatives) and Component 3 (national awareness & capacity building, access to global industry events). Factories will be engaged via value chains (e.g., brands, national textile associations) and by regulators, to participate in the project. They will be represented on the National Working Groups by the national textile associations.**
Women garment and textile workers	**Literature review and consultations done by gender PPG consultant. Women?s associations represented at national PPG workshops.**	**The female textile workers will be interviewed during the project survey phase to understand their stand on the exposure to harmful chemicals and to map their presence in the wet processing zone. Moreover, they will also be questioned om their knowledge on different OSH and chemical management regulations. The female workers will be one of the main beneficiaries of the project as they are more susceptible to the harmful effects of the chemical exposure due to their difference in their phycological characteristics. As workers in textile facilities, activities include training on chemical inventory, reporting tools, safer alternatives, eco-innovation, supply chain policies, circular and eco-innovative approaches and national awareness and capacity building.**
Upstream suppliers including chemical producers	**Chemical producers were consulted during the PPG through service providers and technical support. National suppliers represented at national PPG workshops.**	**Chemical suppliers are direct beneficiaries of the project and will be supported to contribute to chemical inventories and reporting. They will benefit from project support to phase out import & supply of hazardous chemicals and replace them with less hazardous alternatives (e.g., access to expertise and analysis to identify POPs and CoC; promotion of alternatives at industry events and the global KM platform C1 and C3). They will be engaged in national policy development via consultation (e.g., national roadmaps, C2)**

Researchers (all fields)	**Researchers and textile experts were consulted during the PPG phase.**	**Researchers are engaged through the global KM strategy (C3). They will provide their expertise on solutions for chemical management, disseminate project results through their networks and align definitions and goals.**

Table 2: Stakeholder Mapping and Analysis

Stakeholder group	Key expectations	Key concerns	Recommendations for engagement
Facilities staff and workers	**Improved chemical management and OHS knowledge and practices** **Improved knowledge on chemical alternatives; circular and eco-innovative approaches and relevant regulations and policies** **Reduced exposure to hazardous chemicals**	**Cost implications** **Ensure worker safety** **Protect local environment** **Increased product visibility**	**Involvement in certifications schemes** **Training provision**
Service and technology providers	**Expansion of their services** **Achieve objectives via collaborations**	**Usage of their methodology** **Protection of environment**	**Provide expertise on solutions for chemical management issues in the textile value chain** **Disseminate project results among their networks** **Collaborate and coordinate existing ongoing initiatives**
Upstream suppliers including chemical producers	**Improved knowledge on the content of their chemical formulations and on relevant regulations and policies** **Increased knowledge on alternatives for POPs and other CoC**	**Negative implications on of their POPs containing products** **Cost implications**	**Training on accurate SDS sheets with health and environmental information**

Brand and downstream producers	**Increased transparency in their supply chains** **Support in setting and compliance to chemical management policy and systems**	**Increased brand and product visibility** **Reputational damage by identification of use of COC, including POPs in their supply chains/products** **Cost implications**	**Support in meeting their sustainability targets** **Connecting sustainable retails to brands**
Industry association and alliances	**Increased mapping of textile mills** **Increased knowledge on relevant regulations and policies**	**Cost implications and regulations for member facilities that could decrease their competitiveness**	**Mapping of textile mills and chemical suppliers** **Training on relevant regulations and policies**
Global fashion and textile initiatives	**Increased uptake of their initiatives** **Promotion of their goals on elimination of COC**	**Protection of environment**	**Coordination of initiatives**
Labs and testing houses	**Increased demands for testing activities** **Increased testing capacity**	**Testing capacity**	**Monitoring and testing of imported chemicals and mills emissions**
Researchers (all fields)	**Increased sharing and dissemination of their research on COC in the textile value chain** **Requests for their expertise**	**Protection of environment**	**Dissemination of research and requests for expertise**

Country policy makers	**Increased transparency in the textile value chains** **Increased knowledge on the best practices on different types of legislation and enforcement to require transparency, the phase out of the use and presence of CoC, and environmentally sound waste management practices in textiles and garment industry**	**Protection of national environment and communities** **Implications of competitions of national textile sector**	**Training on best practices for legislation and enforcement**
Women textile workers	**Improved knowledge on chemical management** **Reduced exposure to hazardous chemicals particularly in the wet processing zone.** **Knowledge on chemical alternatives, circular economy, and eco-innovation**	**Worker safety** **Protection of communal environment**	**Survey for the chemical used in the wet processing zone** **Training provision** **Improving the certification schemes**
Customs	**Increased capacity to enforce regulations**	**Illegal imports**	**Training provision**

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

Global, regional and national project stakeholders were mapped and consulted during the PPG. Their key expectations, concerns and recommendations for engagement were analysed. Stakeholders will be engaged throughout the project cycle through meetings, workshops, trainings, interventions, and the development of different types of guidance that will be made available at the global management platform. National and regional workshops and meetings will be organised with and between different stakeholder groups (mills personnel, regulators, textile and chemistry industry associations, customs, global brands, and chemical service providers). Training will be provided for chemical supplier, textile mills, customs, government laboratory personnel, government authorities, brands, and women specifically. Furthermore, guidance documents will be developed for regulators, brands, and SMEs.

The regional project coordinator at the Executing Agency and the National Working Groups will be responsible for monitoring stakeholder engagement and reporting regularly to the Regional Steering

Committee, Implementing Agency and GEF Secretariat on the status and progress against the Stakeholder Engagement Plan.

Appendix 6 presents the stakeholders envisaged to be engaged during the project implementation and how they were engaged during the project preparatory phase (PPG) phase.

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor; Yes

Co-financier; Yes

Member of project steering committee or equivalent decision-making body; Yes

Executor or co-executor;

Other (Please explain)

/

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

A detailed gender baseline review and assessment, and Gender Action Plan were developed during the PPG. These are provided in Appendix 5. The brief findings of that assessment are provided here.

While women are prominently engaged in the garment sector, female participation is low in the textile segment of the value chain, especially in the wet-processing mills. According to the projects? national consultants? estimates women make up between 5-10% of the total labour workforce in these mills, and therefore, men may be more exposed to direct contact with hazardous chemicals in the workplace. These estimates could not be validated during the PPG but it is a priority action for the project phase and will be integrated into the chemical inventories (Output 1.1), since the recent GEF China textiles project achieved an average participation of 33% female at their training workshops. A low female participation in the wet processing sector can be explained due to machine-oriented and technical activities taking place there with the underlying assumption that male workers are more technically skilled than female workers. Female worker participation is also discouraged in mills with manual work. Very few women have managerial positions at the textile factories, irrespective of their qualification, with few opportunities to voice their opinion or take part in decision-making procedures. As women cannot be deprived of working in the textile sector, the project gender action plan will seek to reduce barriers for women to work in the wet processing sector by mapping of female participation, labelling CoCs and identifying their hazardous impacts on both men and women?s bodies, and taking

measures to ensure a safe working environment attractive and accessible for all. This will ultimately support a just transition towards a circular and sustainable textile economy.

Women that do not work in the wet processing part of the value chain are still indirectly exposed to contamination. This can be through men working in the mills or through contact with treated fabrics at different stages, notably garment assembly. Men and women in communities are exposed to treated or untreated effluents from textile mills that have adverse effected on their health. Besides the lack of knowledge sharing concerning the impact of chemical of concerns, including POPs, there is little to no research related to the impacts of their use in the textile sector on human health, particularly on female health. Location of factories, waste disposal method and communities residing nearby are important criteria to understand in view of reducing the indirect effects of chemicals. Factories of different sizes and different ownership structures may have different levels of compliance on chemical management, and factories in or outside industry zones have different impacts on the local communities (see section A2.1.1).

The project countries are lagging in the ratification of different ILO conventions on equal opportunity and OSH (see section A2.2.1). Furthermore, due to weak focus of gender issues in different ILO rules and conventions such as the Occupational Safety and Health (Convention No. 187, 155, 161, 115, 139 etc.), Working Environment (Convention No. 148, 162 etc.) and Chemical Management (No. 170), it is difficult to address gendered dimensions in a focused manner. Viet Nam has made relatively better progress in chemical and gender management compared to other project countries with limitations on the time women can be potentially exposed to hazardous chemicals in the workplace (see section A2.2.5).

Recommendations from the China textiles project terminal evaluation on gender include ensuring proactive monitoring of potential social or environmental negative effects and on the anticipated social benefits of the project, such as reduced time off from work, and reduced exposure to harmful chemicals and related workplace absence. These lessons have been considered in the development to the Gender Action Plan for this project. Accordingly, the proposed intervention has integrated a gender perspective into all project outputs. The Gender Action Plan (Appendix 5) proposed by the PPG gender consultant proposed concrete actions to address all the above summarized points. It has been integrated into the results framework (Annex A) and will be further developed and continuously monitored during project implementation.

During the project implementation, multiple activities will address different gender aspects. For example, under component 1, gender criteria will be considered during pilot mill selection, gender segregated data will be collected, and a gender expert will be present on multi-stakeholder roundtables. Under component 2, the project will identify gender gaps related to eco-innovation, and incorporate gender equality in guidance on government and value chain policies. Lastly, under the third component, training will touch upon gender differentiated vulnerabilities relating to chemical exposure and the use and interpretation of gender data from reporting tools The Gender Action Plan (Appendix 5) gives an overview of all gender related activities.

Four national gender experts and one regional gender and socio-economic expert will support the project implementation, mainly under Output 1.1, 1.3, 1.4, 2.1, 2.3, 3.1, 3.2 and 3.3. Gender aspects will be monitored through the following project indicators (see Annex A, project logframe):

1. % female project direct and indirect beneficiaries (GEB Indicator 11)
2. No. of people accessing information and with reduced exposure and health impacts of CoC (% of women) (Outcome 1)

3. Number of people demonstrating increased knowledge and capacity (% of women) (Output 1.4)
4. No. of users of KM or awareness materials who report changes in behaviour or practices (% of women) (Outcome 3)
5. No. of users accessing textile information and providing feedback and user experiences (gender & regional breakdown) (Output 3.2)
6. % of project documents with explicit gender mainstreaming (Output 3.3)

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project?s results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

Private sector engagement is critical to achieve measurable reductions of POPs and CoCs. Voluntary industry and procurement measures play an important role in chemical substitution and elimination, as regulation of chemicals of concern is often slow and difficult before legally binding restrictions are in place. This is especially true for large classes of chemicals like PFAS. Private sector is involved in many elements of this program, engaged in three key functional roles: brand engagement and connectivity; delivery of inventories & chemical substitution; and training and capacity building.

Utilizing global brands and retailers? purchasing power is essential to ensure reductions and ultimately elimination of POPS and CoCs. Many textile brands and retailers have made meaningful and transparent commitments on phasing out POPs and CoCs from their supply chains. Some even apply the precautionary principle that align with this program and manage PFAS as a class. Furthermore, specific policies, implementation plans, and tools have been developed and adopted in the private sector. Examples include Restricted Substances List (RSL) and Manufacturing Restricted Substances List (MRSL) to control chemicals used in production processes; and using emission and monitoring controls to reduce POPs and CoCs released into the environment.

Although some examples exist, further engagement is needed for brands to expand their chemical phase out commitments, enhance management practices and policies, and provide support to all stakeholders along their entire value chain. The global brands and retailers? purchasing power can also be used in ensuring the gender safety issues in terms of production. They can help introduce codes of conduct that would encourage the suppliers to adopt gender action plans and ensuring gender safety guidelines to be adopted for the mills. The newly adopted code of practice targeting the chemical safety for the textile and other industries can also work as a benchmark for the mills. Brands and buyers should encourage the mills for the implementation of this code. The project will therefore engage these

brands at global level to encourage and support them to further adopt chemical elimination policies at the highest corporate levels, via the Global KM Advisory Group; and targeted awareness and training program as part of the KM Strategy roll-out (Output 3.2). In addition, brands will be engaged by the technical coordinator & lead consultant to obtain their support in mapping their supply chain for the inventory (Output 1.1) and for eco-innovation pilot project (Output 2.1).

Second, the private sector includes several technical service providers who are key partners of the project. The project technical components can be built upon these exiting tools and schemes. Examples include RSL lists developed by AFIRM and others, MRSL and wastewater guidance developed by ZDHC, chemical certificates from Cradle to Cradle, OekoTex, Bluesign, and GOTS, and inventory tools and apps such as Bhive. Using these tools and partners is both more efficient than developing them from scratch. However, it is important to note that all existing schemes have room for progressive improvement. Some organizations and companies also provide alternative technology or green chemistry solutions, like Clean Production Action, Green Theme Technologies, and others.

Many of these institutions have also developed training modules to help brands and suppliers to establish and implement effective chemical management systems. These service providers also operate in a decentralized manner in the project countries through networks of accredited and experienced training mechanisms.

Both chemical use (inventory) baseline collection best practices, technologies and validation, as well as related trainings will be delivered in close coordination using service providers who have already developed these tools, solutions, and materials. The private sector partners will be engaged as contracted service providers and will also engage them as co-financing partners in the further development, scaling up their use across the sector. They will play a key role in advising the development of the project level inventory & pilot project strategies (Outputs 1.1 and 1.3), in engaging their national networks of trainers, laboratories, and audit or verification partners, and delivering training and brand engagement activities.

Please refer to the Stakeholder Engagement Plan and co-finance letters to see the specific businesses and private sector partners who will be engaged in each of the roles described above.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

An overview of risks and potential risk management strategies is listed in Appendix 8 and copied below. The project involves multiple and diverse countries, and risks arise due to different chemicals management systems, political situations, varying access to reliable information and stakeholder commitment. For example, as priority CoCs are substances that are not yet regulated on the local and global scale, it might take time and motivation to identify, assess and transit to relevant alternatives. However, identification and inclusion of important stakeholders, such as key supply chain actors, and development of robust partnerships (covering multiple life cycle stages) in the early stages in the project are planned to address this.

COVID has had an enormous impact on the sector, with huge changes made to many businesses and considerable government mobilization to support the sector. It has coincided with an increase in attention in the sector on chemicals (?forever chemicals? like PFAS) and circular fashion. The potential for significant shifts in the sector is therefore high.

Risk	Impact	Likeli-hood	Proposed mitigation measures	Link to outputs
COVID-19 Risks				
Restricted travel	Medium	Medium	Though most countries have reopened since the COVID-19 pandemic first hit, lockdowns and restricted travel measures continue. Meetings, workshops, and consultations will be held virtually as much as possible.	All
Decreased local support due to shifted priorities	Medium	Low	Due to the pandemic, the project countries have experienced a sharp decrease in growth in the textile and apparel sector. This may result in a decreased support for compliance with regulations, standards, reporting requirements and the other necessary actions to reduce the use of hazardous chemicals in the sector. Furthermore, it is expected that countries? political priorities may shift to recovery from the pandemic. To ensure continued support, activities will be validated with the national stakeholders, and the project will focus on communication that underlines the long-term benefits and business opportunities resulting from of its proposed activities (see also risk mitigation under the social risks). The eco-innovation pilot has been reoriented toward addressing financing to create positive business opportunities at a difficult time for many businesses.	All
Climate Change Risks				
Infrastructure damage due to increased cyclone/flood frequency	Medium	Low	The impacts of climate change will be considered in the implementation of project infrastructure and strategies for sustainable chemicals management in the textiles sector. Activities to climate-proof facilities may be considered.	1.1, 1.2, 1.3.
Shifts in political priorities	Medium	Low	Climate change could lead to a shift in political priorities as governments increasingly address climate change impacts. However, climate change impacts are more likely to increase rather than decrease the need for sustainable chemicals management. Nonetheless, the impacts of climate change will be considered in the development and implementation of project infrastructure and strategies for sustainable chemicals management in the textiles sector.	All
Delays in project outputs	Medium	Low-Medium	Considerations will be made for changes in the project execution timeline to minimise the probability of natural disasters (e.g., floods during monsoon season, storm surges during cyclone season) affecting the project timeline, thereby delaying project execution	1.1 and 1.3

Risk	Impact	Likeli-hood	Proposed mitigation measures	Link to outputs
Gradual climate change impacts such as rising sea levels	Low	Low	Areas of Bangladesh, Indonesia, Pakistan and Viet Nam are only a few meters above present sea level and may face serious threat of permanent inundation from sea-level rise. As such, the chemicals impacts on wastewater is essential to minimize risks from flood events. Where relevant, activities to climate-proof facilities to these gradual impacts could be considered.	1.1, 1.2 and 1.3
Operational/delivery Risks				
Political support is insufficient to drive strong engagement from private sector and/or key government actors resulting in reduced impact from the project.	Medium	Medium	Inclusion of activities related to funding mechanism to support SMEs of the textile supply chain, and political integration to facilitate eco-innovative strategies will build momentum and facilitate implementation. Ministries of Environment have indicated their strong interest in the project, which will provide support to reporting under the Stockholm Convention and meeting its provisions. Awareness-raising among government officials in industry and labour ministries of the needs for addressing potential environmental and human-health related adverse effects associated with exposure to POPs, POP candidates and other priority CoC has already started, with participation in convention meetings. The project will engage with government stakeholder all throughout the implementation to ensure that the countries? national priorities are considered and that political buy-in is ensured. Furthermore, the national focal points will be regularly updated on the project progress to guarantee continued support. Component 2 will drive regional and supply chain ?precompetitive cooperation? (see section A7 on innovation) to introduce minimum standards in all countries and avoid a race to the bottom.	2.1, 2.2, 2.3, and 3.1
The costs and difficulties of establishing and maintaining the initial CiP information exchange infrastructure is prohibitive	Medium	Medium	The project output 1.2 directly addresses the cost of establishing the sectoral (large-scale and homogeneous) CiP information exchange platform. Maintenance and regular updating by chemicals users will be promoted by the government and private sector participants (associations) in the project. The platform design will include considerations of incentives for users to regularly update it, allowing them to benefit from transparency via new business opportunities or peer-to-peer exchange on best practices and improvements.	1.1, 1.2, 1.3, 1.4 2.1, 2.2, 2.3, and 3.2

Risk	Impact	Likeli-hood	Proposed mitigation measures	Link to outputs
The project partners do not sustain the project activities and benefits	Medium	Medium	The project will involve global actors and associations which have been active on this issue for over 10 years. The need for a sustainable solution is clear, and the project will publicize ? through the networks of the numerous and diverse project partners - the gains and successes of the project activities, bringing visibility to their efforts and progress, and stimulating continuity and replication.	All
Changes in governments and country personnel to persons with little awareness and buy-in to the project	Low	Low	Information on the project will be widely distributed to (multi-party) political stakeholders.	All
Technical Risks				
Exposure or environmental contamination due to chemicals handling	Medium	Low	The project site level activities (inventory and especially pilot projects) will involve handling and management of hazardous chemicals including POPs. Exposure or accident risks will be included in a Health, Safety and Environment plan to be part of the inventory & pilot methodology development (Activities 1.1.2 and 1.3.1 respectively)	1.1 and 1.3
Inadequate data collection on POPs use.	Medium	Medium	Collection of data on POPs use has proven difficult. The project will work with and engage all stakeholders during the implementation to collect data.	1.1, 1.2, 1.3, 1.4 and 2.3
Private sector stakeholders have technical difficulties to participate in alternatives assessments and substitution trials	Medium	Medium	Sufficient expertise and incentives will be brought into the project by the private sector associations representing brands and downstream users, the UNIDO and UNDP experiences on BAT/BEP and Green Chemistry in the sector and the region. This will bring best practices and strong market incentives to the in-country stakeholders. Outputs 1.3 on pilot projects and 1.4 on documenting experiences directly address this risk.	1.3 and 1.4
The project will not be able to map enough mills and suppliers for the project interventions to take place	Medium	Medium	The project will work with the governments, textile associations, different brands, and service providers to identify the mills present in the project countries.	1.1
Social Risks				

Risk	Impact	Likeli-hood	Proposed mitigation measures	Link to outputs
Manufacturers and/or users of CoC, particularly smaller less formal and with opaque legal status companies, might consider replacements as an undesired development due to fear of repercussions and may either decide against engagement in the project activities particularly the information exchange; or lobby against such developments to reduce risks associated with these chemicals.	Medium	High	The project will present practical responses to concerns and ensure that difficulties for manufacturers and downstream industrial users are adequately identified and incentives for participation clear. The lack of incentives for SMEs to use the chemical information sharing platform was a key lesson learnt from the China textiles project. This project will address this risk through supporting the following incentives: 1. Springboard and funding and promotion of participating mills to third party certification and access to new customers and markets, e.g., opportunities to advertise or promote them via the platform on which the CoCs use will be recorded 2. Access to technical and practical information for the replacement of CoC or measures to reduce immediate and high-cost risks e.g., of fires breaking out from poor chemical storage. The eco-innovation methodology allows users of targeted chemicals to become actors of their shift to sustainable practices as they have ownership on the eco-innovative strategies they decide to implement. 3. Alignment of the CoC replacement with ILO?s Just Transition and Better Work initiatives, to demonstrate the occupational and community health benefits of safer chemical management 4. The steady introduction and enforcement of regulatory controls and reporting requirements for the most problematic chemicals especially for POPs and being able to respond in a timely manner to avoid future penalties and fines. This will particularly relate to the least formal/ not legally registered companies. 5. Support for transition to alternatives to the supply side, through support to chemical manufacturers for transition to the manufacture of less hazardous alternative. 6. Engagement of textile associations and brands to also put in place appropriate incentives from their side to convince mills	1.1, 1.2, 1.3, 1.4, and 3.2

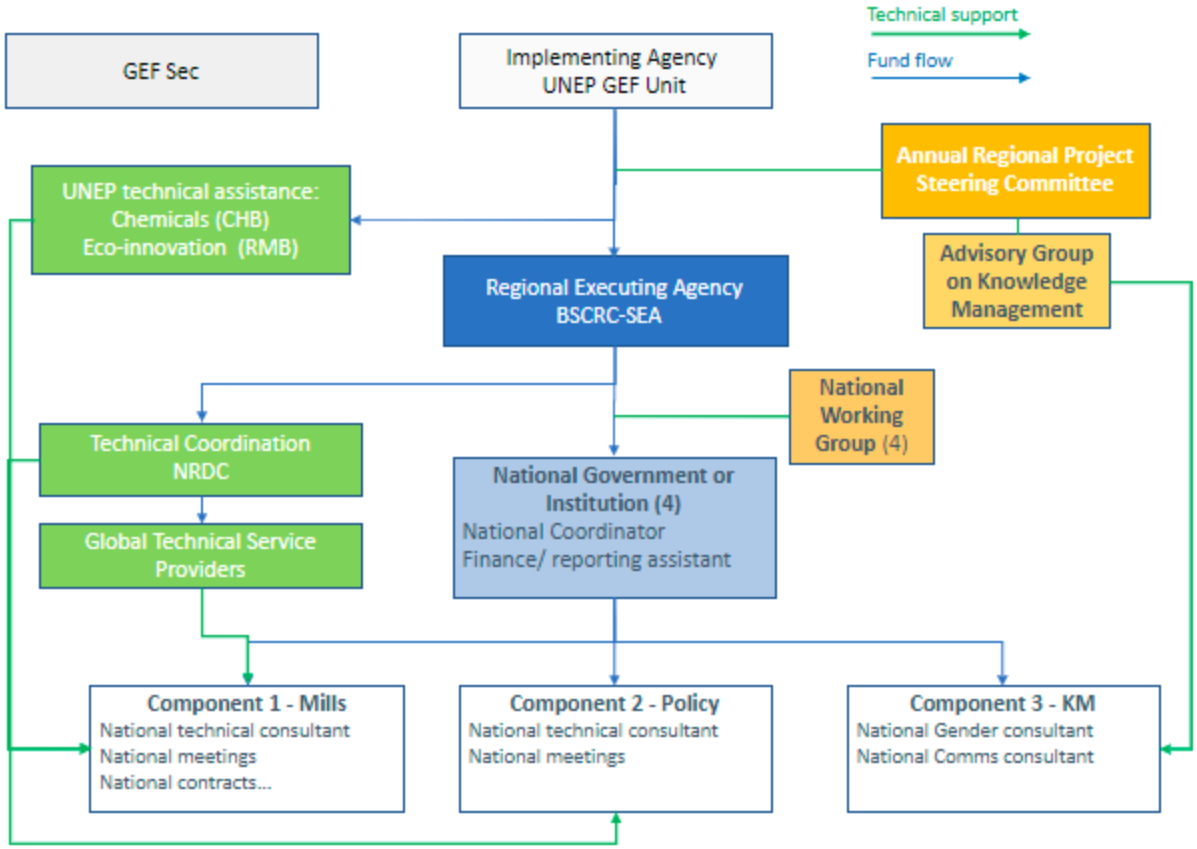
Risk	Impact	Likeli-hood	Proposed mitigation measures	Link to outputs
Stakeholders do not engage fully, resulting in not adequately addressing the project priorities nor achieving the desired outcomes.	High	Low	See above strategies for direct project beneficiaries (users and suppliers of chemicals). Government, supply chain, and related stakeholders will be engaged as described in the Stakeholder Engagement Plan. Project resources are planned for knowledge management and communications materials to raise interest among key stakeholders. Active engagement of UNEP and partner networks to reach out to key stakeholder groups, to build interest and sustain focused efforts.	All
The costs and difficulties of maintaining the use of the information sharing tools.	Medium	Medium	The use will be promoted by the government and private sector participants (associations). Incentives for users to regularly update it, allowing them to benefit from transparency via new business opportunities or peer-to-peer exchange on best practices and improvements.	1.2, 2.2, 2.3, 3.2

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

The organizational structure for the coordination and management of the project is illustrated in?Figure 4.?Each management body is described below.?

Figure 4: Project management and coordination structure



Project?Level Coordination Framework??

The?Implementing Agency?(IA)?for the project?is the?United Nations Environment Program (UNEP)?The IA will be responsible for the overall project supervision, overseeing the project progress through the monitoring and evaluation of activities and progress reports of the established components. It will be responsible for quality assurance procedures, organize contracting with Executing Agency (EA), approve progress reports and clear disbursement. The IA will also monitor progress to ensure the proper quality of outputs. UNEP will report project implementing progress to GEF. The IA will also take part in the Project Steering Committee (PSC) and can request PSC to meet outside of the planned schedule as deemed necessary.?

UNEP?s comparative advantage is its mandate to coordinate the work of the UN in the area of environment, and its experience as a successful and efficient IA specializing in regional and global activities. UNEP?s expertise includes proof of concept, testing of ideas, and the best available science and knowledge to form the basis of GEF investments. UNEP also serves as the Secretariat to three of the MEAs (Stockholm, Minamata and SAICM), for which GEF is the/a financial mechanism. UNEP will take the lead in finalising the project level data flow and reporting to the GEF Secretariat as indicated in the organo-gram in Figure 4 above.

The?Regional?Executing Agency?(EA)?is the?BCRC-SEA?and will execute, manage and be responsible for the project on a day-to-day basis.?It is responsible for the overall management of the financial and human resources directly related to project execution in the countries. It will function as the general oversight for the project and will be accountable to the implementing agency and?the Project Steering Committee (PSC)?for the achievement of project outputs and outcomes. The EA will take guidance from the GEF implementing agency and the PSC in all matters concerning the project. In the delivery of its

functions, it will be a member of the PSC and the National?Working Groups.?BCRC-SEA will also organize an annual financial audit of the project and transmit the report to the implementing agencies.?

The Centre is well positioned for this role as it serves the Parties to the Basel?and?Stockholm Conventions within the?Asian?region, and has?the following mission objectives, among others: provision of training on?the environmentally sounds management (ESM) of hazardous wastes; and identification and strengthening mechanisms, and encouraging the BAT/BEP and methodologies for transfer?of?environmentally sound technology on the management and minimization of the generation of hazardous waste;?e.g. through case studies and pilot projects.?

Technical coordination support for the Regional Executing Agency is required for Component 1 recognizing the specific technical and operational requirements and there will be a parallel executing partner responsible for technical oversight, contracting of regional service providers, and management of the technical activities in the countries. The Natural Resources Defence Council (NRDC) provide this role at regional level based on their network and technical experience in working with mills and SMEs on environmental and chemical management projects, and with support from UNEP providing global expertise on chemicals management and eco-innovation and circular textiles. Please refer to the Implementation Arrangements Appendix 4 for information on the role and selection of these partners.
Pilot project Technical Service Providers will be engaged at a regional level by the Technical Coordinator to facilitate oversight, reporting and comparative assessment of the different approaches proposed by each provider.

A Project Steering Committee (PSC)?will be established?to provide overall guidance to the project, and to ensure country ownership and governance. The decision-making members of the SC will be representatives of the governments and the Implementing Agency.??Further key stakeholders will participate in the PSC to provide guidance but without decision rights. The BCRC-SEA will act as the secretary to the PSC?and?provide regular project updates to the PSC.?The PSC members will support the establishment of national working groups in their respective countries, as needed for each?activity?assign responsibilities amongst national government departments; select and nominate relevant project stakeholders; evaluate and assess the progress of the project; and provide advice, policy and institutional guidance to the implementing and executing agencies. In this regard, relevant governmental institutions will be requested to allocate the necessary human and technical resources to support project implementation through the PSC, where it does not already exist. The TORs for a PSC will be developed during the inception phase of the project, but an initial scope and role is provided in the?Annex on Implementation Arrangements. PSC meetings will be organised on an annual basis to discuss the progress of activities and amendments to the schedule, as needed.?In recognition of the ?new normal? the project will organize only the inception meeting, mid-term and final PSC meetings face to face (COVID situation permitting) while the intermediate PSC will be held virtually or as hybrid meetings.

The project steering committee will include an?**Advisory Board on KM**?which will provide guidance and inform the development of the global KM component. The Board members will include AfDB, GIZ, CPA, SFA, brands TBC (VF, Levis), Ellen McArthur Foundation and Conservation International (TBC).

National?Level Delivery Framework??

National Focal Points?will be an integral part of the project?s execution as part of the?decision-making?body. The focal point agencies will play a key role in ensuring the relevant stakeholders are invited to and engaged at the various meetings and during public awareness activities throughout the project. Engagement in these meetings will help to secure feedback on project progress on a continuous basis and help to facilitate a more positive project outcome?aligned with national priorities. National Focal Points will be from the main agencies responsible for chemicals management?(i.e., Ministries of Environment), and one from the agencies responsible for the textiles sector?(i.e., Ministries of Industry)?in each country.?Please see Stakeholder Engagement Plan for specific details of the agencies per country.???

National Working Groups (NWG) will be established for each country at the onset of the project. The NWGs will supervise and manage the National support information gathering from respective entities, review national project outputs and ensure that national priorities are being met. The NWGs will also provide advice, policy and institutional guidance to support the successful execution of project

activities and the sustainability of the project. The NWG will consist of national stakeholders relevant for each activity and will be chaired by the national focal point. Members will also include representatives from CSOs/NGOs, the private sector and gender affairs groups to ensure that gender mainstreaming is considered throughout the project. Composition of the NWG will be determined at inception for each country but will include gender affairs department. Indication of the composition and terms of reference of the NWG is provided in the Annex on Implementation Arrangements.

National institutions will be engaged by the EA via a legal agreement to host the project at national level, including hosting a project office, receiving, managing and reporting on funds for national activities, and recruiting and managing national consultants. These organizations are confirmed for each country (please refer to Institutional arrangements annex).

Additional information on the implementation arrangements of this project can be found in Appendix 4.

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assesments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

- National Implementation Plan (NIP) under POPs
- Poverty Reduction Strategy Paper (PRSP)
- National Portfolio Formulation Exercise (NPFE) under GEFSEC
- Others

In terms of the country priorities for new POPs:

Bangladesh: Submitted its first NIP in 2009, attributing unintentional releases of POPs to water, largely to releases from the textile sector, and lists addressing this in its priorities. Bangladesh became a Party to Stockholm in 2007 but has not ratified any of the amendments to the convention Annexes listing the new POPs and is currently developing a NIP update. They did not submit a country report or other informational documents so there is a lack of data about used chemicals. Bangladesh?s UN Development Assistance Framework, UNDAF 2017-2020, commits the country to reduce the volume of POPs in the environment by 500 tonnes in 2020 from 2015 levels; means of Verification, Frequency of Monitoring is conducted by Department of Environment.

Indonesia: Submitted its first NIP in 2010, noting that the textiles industry was a major source category for dioxins and furans, prioritising further action in this sector. Indonesia has added every Convention amendment and revised its NIP in 2014. This update notes that textiles are among the top ten fastest growing industry in the country (not counting non-oil and gas). For PFOS, textiles are the third priority sector nationally (after paper and firefighting foams). Chemical suppliers were reported as having stopped the import of PFOS without informing about previous practices. Estimates based on export and import of articles thought to contain PFOS reveal the textile sector as the one with the biggest number of imported products containing PFOS (2,022,057 kg) and the second biggest number of imported products containing PFOS (874,622 kg). The Centre for Green Industry in the Ministry of Industry has initiated an awareness campaign about the use of PFOS and related substances in several textile industries, but the NIP notes gaps in the regulatory framework of chemicals in articles and products. For PBDEs there is no exact information on the production, use and trade of PBDEs, but estimates on the amounts of trade volume are provided. The action plans include strengthening existing regulations, assessing the quantity of PFOS used, building a strategy to examine the stockpiles, assess the amounts of PFOS on stockpiles, conduct an inventory on the articles that contain PFOS, contain an inventory of the sites contaminated with PFOS; development of strategies to eliminate the existing PFOS. Indonesia responded to requests for information from the

Secretariat and POPRC, including on PFOS in 2012, noting lack of detailed inventory data; and in their Country Report in 2015 noting no legal/administrative actions taken on the use of PFOS, or HBB, penta- or octa-BDE and no regulatory schemes for industrial chemicals.

Pakistan: submitted its revised NIP in 2020, identifying the textile sector as a significant contributor to dioxin and furan emissions. According to the update, there is no specific legislation or regulation for PFOS and related substances. Certain synthetic carpets and synthetic textiles might be treated with PFOS or PFOA related substances and polymers. Synthetic carpets are produced in Pakistan, and those produced before 2002 might contain PFOS. Due to the long service life of carpets, some of these carpets might still be in use. Synthetic carpets/textiles produced or imported after 2002 might rather contain other PFAS such as PFOA and related substances. An assessment of potential quantities has not been conducted in this first inventory.

Currently very limited information is available for Pakistan on the PFOS or PFOA contamination in surface and ground water and related drinking water due to the lack of monitoring capacity and therefore an impact cannot be estimated but are urgently needed. In this first inventory of POPBFRs no assessment of the textile sector has been made but will be conducted in implementation when also monitoring capacity is developed. The exposure to HBCD in textiles might have a higher risk from fibers and related house dust ingestion. However, it is not clear to what extent HBCD has been used in textiles in Pakistan. For other minor uses of HBCD (textiles and electronics) no quantitative assessment was made. Pakistan has a large textiles and leather industry operating since decades. Both industries have used chemicals containing PCDD/Fs in the past (e.g., PCP or chloranil). Contamination with PCDD/Fs has been reported in textile and leather products due to the use of chlorinated aromatic chemicals, especially pentachlorophenol to protect the raw materials (e.g., cotton, wool or other fibers, leather); and use of PCDD/F-contaminated dyestuffs (e.g., chloranil or phthalocyanines). For the leather industry 210.5 g TEQ/a (4.7% of total) release is estimated while for textile industry the estimate is 23.1 g TEQ/a release. Assessment of POPs in textiles was prioritized under the NIP action plans. In their response for the third round of Country Reports in 2016, Pakistan notes a lack of technical capacity and financial resources to address PFOS assessment. In the UNDAF, Pakistan identifies textile workers as a priority and the UN commits to enabling textile stakeholders in Pakistan to obtain the knowledge needed for attaining international and regional competitiveness.

Viet Nam: submitted its NIP update in 2017. The NIP estimates that 5% of dioxin and furan goods are from the production of chemicals and consumer goods, including textiles, and prioritizes addressing dioxin and furan release in its action plan. Viet Nam has accepted every amendment and requested a specific exemption for the production and use of PFOS in the textile sector which expired 2015. However, there is no information about their process of phasing it out during that period of exemption or if use stopped after 2015.

The NIP includes a full inventory of PFOS in synthetic carpets and textiles as a priority action, as well as investigations of textile and leather factories where dioxin and POPs chemicals have been historically used.

Viet Nam has a broad legislation on chemical safety management, including POPs. An example is the national plan to implement the Stockholm convention on POPs, it has continuously reconstructed its institutional and administrative system to promote environmental protection. In this context MONRE, who is responsible for environmental management in the whole country, was created in 2002. However, environmental investment is still insufficient.

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

Two GEF funded projects in Asia & Africa are being developed to address chemicals and waste in the textile sector, namely two projects implemented by UNIDO in Africa (GEF ID 10543 and GEF ID 10683) and one implemented by UNEP in Asia (GEF ID 10523). All projects include technical and substantive components on phasing out POPs and Chemicals of Concern (CoC), and promoting sustainable waste

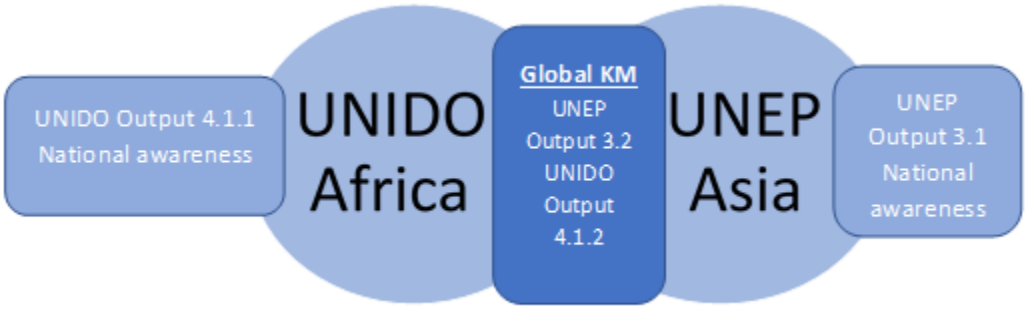
management and recycling of textiles. The projects also include components on knowledge management at both national/ regional level, and at global level. The two Implementing Agencies and the participating countries have agreed to cooperate on the global KM to maximize the reach and influence of the two projects on the global fashion, textiles and garments sector.

The global Knowledge Management (KM) strategy will support the overall project objectives in the first steps towards a circular economy in the textiles and garment industry by phasing out hazardous chemicals use and promoting sustainable waste management. The focus of the global strategy lies on the coordination between global buyers, global suppliers, and governments. In this document, the global knowledge management strategy on chemical use and waste management in the textiles and garment sector is described.

National and regional knowledge management and awareness raising will additionally and separately be developed by each project.

The GEF project documents will describe the individual project outputs and activities for national and regional capacity and knowledge management (see UNIDO output 4.1.2 and UNEP output 3.2), while ensuring maximum alignment with the present global KM strategy (see Figure 5 below). The knowledge generated during each of the projects will be compiled in the respective regional knowledge hubs (Asia Garment Hub and Fashionomics Africa/African Circular Economy Alliance). As these platforms are digital libraries for the existing initiatives, tools, websites, hubs, and resources, the projects will further complement them. Under output 3.1, the project will develop communication and awareness raising strategies, including information materials for different audiences, and develop and deliver training. All awareness campaigns will be monitored by NGOs and other civil society organizations to ensure diverse voices and messages. Knowledge produced and disseminated by the project will be reviewed for technical accuracy and to apply a gender lens.

Figure 5: Visual representation of the different levels of knowledge strategies and awareness raising in both the UNEP and UNIDO projects



The shared global knowledge management component will be coordinated by the NRDC for both projects as the global strategy?s KM Manager. Resources will be shared between the UNIDO and UNEP projects and both will be able to directly pass funds to the NRDC. The project?s Executing Agency (BCRC SEA) will provide a liaison with the project countries and ensure representation and inclusion of national knowledge and knowledge networks. Furthermore, support will be provided from UNEP?s communication division.

The global strategy will support the overall project objectives in the first steps towards a circular economy in the textile industry by phasing out the use of hazardous chemicals. As has been described in section A2.1.3 and section A2.1.6 respectively, global brands are expanding on their sustainability initiatives and numerous knowledge platforms and information sources on chemical use in the textile industry exist. However, multiple knowledge gaps remain with global buyers (value chain mapping, absence of

comprehensive requirements, demands of multiple certifications etc), governments (chemical use, gaps in regulatory framework, enforcement capacity, etc), and global suppliers (technical capacity, internal knowledge, uncomplete supplier inventories, etc). This has been described in detail in section A1.2 and A.1.3 on Root Causes and Barriers. Therefore, the focus of the project lies on these global stakeholders and their coordination.

A global knowledge platform will host a database of developed knowledge (best practices, case studies, guidance etc.) and multimedia by both projects. The choice of platform will be decided during the project inception phase but the GGKP (Green Growth Knowledge Platform), the SAICM Platform, the Asia Garment Hub, and Fashionomics Africa and African Circular Economy Alliance (ACEA) platform were identified to connect well. Global stakeholders will attend global industry events and meetings for coordination and exchange. Global buyers will be engaged to incorporate pollution targets into their corporate strategies, and have access to best practices, tools, and guidance to ensure control over their supply chains. Global suppliers will be supported on reporting, monitoring and sharing data to brands and governments so that transparency, accountability and compliance is increased in the sector. Governments will have access to, and be able to share, BAT/BEP and guidance documents on policies, regulations, enforcement and reporting related to chemical use in the sector. Furthermore, researchers and sustainable fashion and textiles experts will share technology, tools, and policy developments alongside advice to industry, brand and government needs and gaps.

Appendix 11 provides more detail on the Global Knowledge Management Strategy, including the organizational arrangement and the role of its Knowledge Advisory Group.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

The M&E plan will be reviewed and revised as necessary during the project inception workshop to ensure project stakeholders understand their roles and responsibilities vis???vis project monitoring and evaluation. Indicators and their means of verification may also be fine?tuned at the inception workshop. Day?to?day project monitoring is the responsibility of the project management team but other project partners will have responsibilities to collect specific information to track the indicators. It is the responsibility of the Project Manager to inform UNEP of any delays or difficulties faced during implementation so that the appropriate support or correlative measures can be adopted in a timely fashion.

The project Steering Committee will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project meets UNEP and GEF policies and procedures is the responsibility to the Task Manager in UNEP?GEF.

In line with the GEF Evaluation requirements and UNEP?s Evaluation Policy, GEF Full-Sized Projects and any project with a duration of 4 years or more will be subject to an independent Mid-Term Evaluation or management-led Mid-Term Review at mid-point. All GEF funded projects are subject to a performance assessment when they reach operational completion. This performance assessment will be either an independent Terminal Evaluation or a management-led Terminal Review.

In case a Review is required, the UNEP Evaluation Office will provide tools, templates, and guidelines to support the Review consultant. For all Terminal Reviews, the UNEP Evaluation Office will perform a quality assessment of the Terminal Review report and validate the Review?s performance ratings. This quality assessment will be attached as an Annex to the Terminal Review report, validated performance ratings will be captured in the main report.

However, if an independent Terminal Evaluation (TE) of the project is required, the Evaluation Office will be responsible for the entire evaluation process and will liaise with the Task Manager and the project implementing partners at key points during the evaluation. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP staff and implementing partners. The direct costs of the evaluation (or the management-led review) will be charged against the project evaluation budget. The TE will typically be initiated after the project?s operational completion. If a follow-on phase of the project is envisaged, the timing of the evaluation will be discussed with the Evaluation Office in relation to the submission of the follow-on proposal.

The draft TE report will be sent by the Evaluation Office to project stakeholders for comment. Formal comments on the report will be shared by the Evaluation Office in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six-point rating scheme. The final determination of project ratings will be made by the Evaluation Office when the report is finalized. The evaluation report will be publicly disclosed and will be followed by a recommendation compliance process. The evaluation recommendations will be entered into a Recommendations Implementation Plan template by the Evaluation Office. Formal submission of the completed Recommendations Implementation Plan by the Project Manager is required within one month of its delivery to the project team. The Evaluation Office will monitor compliance with this plan every six months for a total period of 12 months from the finalisation of the Recommendations Implementation Plan. The compliance performance against the recommendations is then reported to senior management on a six-monthly basis and to member States in the Biennial Evaluation Synthesis Report.

Table 8: M&E Plan

Type of M&E activity	Responsible Parties	Budget from GEF	Time Frame
Inception Meeting	EA (BCRC SEA)	Incl in SC meetings	Within 2 months of project start-up
Inception Report	EA	Included in Project Coordinator budget, gender / safeguards consultant budget & technical support lines	1 month after project inception meeting
Measurement of project progress and performance indicators	EA		Annually
Baseline measurement of project outcome indicators, GEF Core indicators	EA & NRDC		Project inception
Mid-point measurement of project outcome indicators, GEF Core indicators and revisiting the SRIF	EA and NRDCand Safeguards expert		Mid Point
End-point measurement of project outcome indicators, GEF Core indicators	EA and NRDC		End Point
Semi-annual Progress/ Operational Reports to UNEP	EA		Within 1 month of the end of reporting period i.e. on or before 31 January and 31 July
Project Steering Committee (PSC) meetings and National Working Group meetings	EA/ Govt focal points	180,000	Once a year minimum
Reports of PSC meetings	EA	Included in	Annually

Type of M&E activity	Responsible Parties	Budget from GEF	Time Frame
Project Implementation Review (PIR) report	EA and the IA (UNEP)	Project Coordinator budget	Annually, part of reporting routine
Monitoring visits to field sites	EA/ NRDC	20,000	As appropriate
Mid Term Review/Evaluation	IA (UNEP)	30,000	At mid-point of project implementation
Terminal Review/Evaluation [1]	UNEP Evaluation Office	35,000	Typically initiated after the project?s operational completion
Audit	EA	40,000	Annually
Project Operational Completion Report	EA	Included in Project Coordinator budget	Within 2 months of the project completion date
Co-financing report (including supporting evidence for in-kind co-finance)	EA		Within 1 month of the PIR reporting period, i.e. on or before 31 July
Publication of Lessons Learnt and other project documents	NRDC		Annually, part of Semi-annual reports & Project Final Report

[1] Whether a project requires a management-led review or an independent evaluation is determined annually by UNEP?s Evaluation Office

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

As described in section A1.1 (Global Environmental Problem), and section A6 (Global Environmental Benefits), hazardous chemicals are released all along the textile value chain and expose textile workers, local communities and consumers. The contamination migrates offsite from the facilities through workers, the facilities? effluents and emissions (wastewater and uPOPs), the use of textile products, their disposal and as recycled products, into the local and global environment. Through the project interventions, workers in the textile sector will be directly supported by a reduction of exposure to hazardous chemicals with initial safety measures (500 facilities) and pilot projects (at least 10) that substitute or remove hazardous chemicals in the facilities? processes. Reduced exposure will lead to increased productivity, as health impacts are avoided.

The implementation of eco-innovation pilots will also deliver socioeconomic benefits. Indirectly, these pilots and interventions are expected to bring much higher socio-economic benefits to the millions of other workers in the textile sector, through a combination of demonstrating the feasibility and preferability of the reduction of hazardous chemical use, a gradual shift in perception about the risk and dangers (environmental, social and health) of continuing to work with these chemicals. Under Component 2, the policy and enforcement roadmaps and actions will be guided by compliance with national regulations requiring Strategic Environmental Assessment which can provide a lens for assessing the project?s socio-economic as well as environmental impacts and ensuring that appropriate safeguards and actions are taken to maximize positive impacts while mitigating potential negative impacts, for example on informal workers.

Thus, a combination of enforcement of regulations, scalable pilots and interventions, awareness raising, engagement with many different value chain stakeholders, and the increasing availability of alternatives, is expected to contribute to large scale shifts in governments, SMEs, global suppliers, global buyers, and other stakeholders? decisions, which will also support global environmental objectives.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
	Medium/Moderate		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

Section 1: Project Overview

Identification	GEF ID 10523 UNEP ADDIS: 01568
Project Title	Reducing uses and releases of chemicals of concern, including POPs, in the textiles sector
Managing Division	Economy Division

Type/Location	Regional
Region	Asia
List Countries	Bangladesh, Indonesia, Pakistan, and Vietnam
Project Description	The Regonial Asia Textiles project aims to achieve significant reductions in the use, release, and exposures to Chemicals of Concern (COCs) and Persistent Organic Pollutants (POPs) in the textile sector under the Stockholm convention. The project will work with individual facilities, the public and private sector, industry organizations, Non-Governmental Organizations (NGOs), national governments, and global brands to scale proven approaches within certified voluntary schemes and elsewhere. Its activities will be implemented in Bangladesh, Indonesia, Pakistan and Viet Nam. The project intervention will be based on three approaches: information sharing and eco-innovation pilots on priority COCs including POPs in textile facilities (Component 1), eco-innovative strategies toward a non-toxic circular textiles economy (Component 2), and knowledge management for scaling up (Component 3). In this last component, the section on global knowledge management will be shared with a similar textiles project in Africa, implemented by UNIDO (GEF ID 10543). UNEP is the project?s Implementing Agency and the Basel and Stockholm Convention Regional Centre in Indonesia will act as the Regional Executing Agency. The Natural Resource Defense Council (NRDC) will support the latter with the coordination of technical interventions.
Relevant Subprogrammes	Chemicals, Waste and Air Quality
Estimated duration of project	60 Months
Estimated cost of the project	8,850,000 USD
Name of the UNEP project manager responsible	Eloise Touni

Funding Source(s)	GEF Trust Fund
Executing/Implementing partner(s)	Executing Partner: BCRC-SEA Technical coordination partner: Natural Resources Defense Council (NRDC)
SRIF submission version	Version 2
Safeguard-related reports prepared so far *(Please attach the documents or provide the hyperlinks)*	? *Feasibility report [ ]* ? *Gender Action Plan [x]* ? Stakeholder Engagement Plan [x] ? *Safeguard risk assessment or impact assessment [x]* ? *ES Management Plan or Framework [ ]* ? *Indigenous Peoples Plan [ ]* ? *Cultural Heritage Plan [ ]* ? *Others* _____

Section 2: Safeguards Risk Summary

A. Summary of the Safeguards Risk Triggered

Safeguard Standards Triggered by the Project	Impact of Risk[1] (1-5)	Probability of Risk (1-5)	Significance of Risk (L, M, H) *Please refer to the matrix below*
SS 1: Biodiversity, Ecosystems and Sustainable Natural Resource Management	1	1	L
SS 2: Climate Change and Disaster Risks	2	2	L
SS 3: Pollution Prevention and Resource Efficiency	3	2	M
SS 4: Community Health, Safety and Security	2	2	L

SS 5: Cultural Heritage	1	1	L
SS 6: Displacement and Involuntary Resettlement	1	1	L
SS 7: Indigenous Peoples	1	1	L
SS 8: Labor and working conditions	2	3	M

B. **ESS Risk Level**[2] -

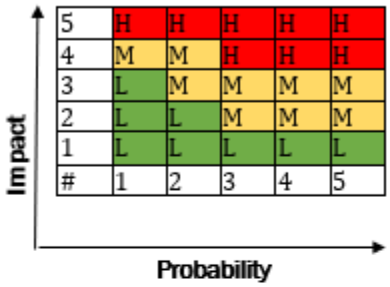
Refer to the UNEP ESSF (Chapter IV) and the UNEP's ESSF Guidelines.

Low risk ☐

Moderate risk ■

High risk ☐

Additional information required ☐



C. Development of ESS Review Note and Screening Decision

Prepared by

Name: Eloise Touni Date: November 8th, 2021

Screening review by

Name: Yunae Yi Date: 19 November 2021

Cleared[3]

D. Safeguard Review Summary (by the safeguard team)

I agree with the risk classification. Risks associated with the SS 3 and SS 8 seem to be manageable through good practices and attention to the workers and SMEs. If unforeseen risks emerge, project team should be ready to develop and implement a risk management plan. Guiding principles (through GP questions 1-10 in the Section 3 below) should be reviewed and complied throughout the project implementation phase.

E. Safeguard Recommendations (by the safeguard team)

- No specific safeguard action required ☐
- Take Good Practice approach[4] X
- Carry out further assessments (e.g., site visits, experts' inputs, consult affected communities, etc.) ☐
- Carry out impact assessments (by relevant experts) in the risk areas and develop management framework/plan ☐
- Consult Safeguards Advisor early during the full project development phase ☐
- Other _____

Section 3: Safeguard Risk Checklist

Screening checklist	Y/N/ Maybe	Justification for the response (please provide answers to each question)
Guiding Principles (these questions should be considered during the project development phase)		
GP1 Has the project analyzed and stated those who are interested and may be affected positively or negatively around the project activities, approaches or results?	Y	The different stakeholders have been analysed and stated in the stakeholder engagement plan. Stakeholder engagement will continue during the project implementation.

GP2 Has the project identified and engaged vulnerable, marginalized people, including disabled people, through the informed, inclusive, transparent and equal manner on potential positive or negative implication of the proposed approach and their roles in the project implementation?	Y	The project identified and considered the impact of the project and paid specific attention to vulnerable people (female workers) in the project design and implementation. The project has ensured to mainstream gender into all the activities mentioned under the Proposed Alternate Scenario and has developed a gender action plan to ensure gender equality in OSH and chemical management of textiles mills. The Gender Action Plan has also identified the possible gender equality constraints in the chemical management of the textile sector.
GP3 Have local communities or individuals raised human rights or gender equality concerns regarding the project (e.g. during the stakeholder engagement process, grievance processes, public statements)?	N	Local communities and individuals have not raised any human rights or gender equality concerns. They are expected to gain from the project through environmental, human health and even economic benefits. A gender action plan has been developed to ensure gender equality in OSH and chemical management of textiles mills. Other than the Gender Action Plan the project has also ensured to make the activities designed under the project sensitive to gender concerns. The people engaged in the implementation of the project are expected to be aware of the gender mainstreaming concerns.
GP4 Does the proposed project consider gender-balanced representation in the design and implementation?	Y	Examples are the gender including selection criteria for facilities to participate in pilot projects, recommendations on the measures for worker protection particularly for women, the development of business strategies that include gender mainstreaming, and the development of tools specifically designed for women to relate the women?s exposure issues for e.g. reproductive health, right to information etc,
GP5 Did the proposed project analyze relevant gender issues and develop a gender responsive project approach?	Y	Gender issues are analyzed in the baseline section and the question on gender in the CEO Endorsement Request template. The proposed gender responsive approach is also detailed and includes generating data on women?s participation and impacts of chemicals / alternatives in textile sector, provide gender responsive training and access to protective equipment, include gender criteria for selection of pilot projects. At policy-level, gender differentiated evidence of women?s needs will be explicitly communicated and for the formulation of policies.
GP6 Does the project include a project-specific grievance redress mechanism? If yes, state the specific location of such information.	Y	UNEP?s Stakeholder Response Mechanism will be made available on the global knowledge management platform.

GP7 Will or did the project disclose project information, including the safeguard documents? If yes, please list all the webpages where the information is (or will be) disclosed.	Y	All project information will be available on the project?s knowledge management platform as well as on https://open.unep.org
GP8 Were the stakeholders (including affected communities) informed of the projects and grievance redress mechanism? If yes, describe how they were informed.	N	Stakeholders will be informed through the Knowledge management platform during the project implementation. The stakeholders will be actively engaged and communicated throughout the project implementation on the grievance redress mechanism.
GP9 Does the project consider potential negative impacts from short-term net gain to the local communities or countries at the risk of generating long-term social or economic burden?[5]	Y	The project follows a sustainable model that should make all project activities financially and socially feasible in the long term. However, this point will be closely monitored.
GP10 Does the project consider potential partial economic benefits while excluding marginalized or vulnerable groups, including women in poverty?	Y	Vulnerable groups (e.g female workers) will be informed, trained and involved in the project activities to ensure equal benefits.
Safeguard Standard 1: Biodiversity, Ecosystems and Sustainable Natural Resource Management		
Would the project potentially involve or lead to:		

1.1 conversion or degradation of habitats (including modified habitat, natural habitat and critical natural habitat), or losses and threats to biodiversity and/or ecosystems and ecosystem services?	N	
1.2 adverse impacts specifically to habitats that are legally protected, officially proposed for protection, or recognized as protected by traditional local communities and/or authoritative sources (e.g. National Park, Nature Conservancy, Indigenous Community Conserved Area, (ICCA); etc.)?	N	
1.3 conversion or degradation of habitats that are identified by authoritative sources for their high conservation and biodiversity value?	N	
1.4 activities that are not legally permitted or are inconsistent with any officially recognized management plans for the area?	N	
1.5 risks to endangered species (e.g. reduction, encroachment on habitat)?	N	
1.6 activities that may result in soil erosion, deterioration and/or land degradation?	N	
1.7 reduced quality or quantity of ground water or water in rivers, ponds, lakes, other wetlands?	N	The quality of ground water or water in rivers, ponds, lakes, and other wetlands is expected to improve due to the reduced use of hazardous chemicals leading to their reduced presence in wastewater.

1.8 reforestation, plantation development and/or forest harvesting?	N	
1.9 support for agricultural production, animal/fish production and harvesting	N	
1.10 introduction or utilization of any invasive alien species of flora and fauna, whether accidental or intentional?	N	
1.11 handling or utilization of genetically modified organisms?	N	
1.12 collection and utilization of genetic resources?	N	
Safeguard Standard 2: Climate Change and Disaster Risks		
Would the project potentially involve or lead to:		
2.1 improving resilience against potential climate change impact beyond the project intervention period?	Y	Poor chemicals management can lead to environmental degradation which can directly lead to or worsen natural disasters. Poor chemical management also worsens water impacts which are ranked among the highest climate risks in the project countries. Thus, the project is expected to improve the climate change resilience of the countries.

2.2 areas that are now or are projected to be subject to natural hazards such as extreme temperatures, earthquakes, extreme precipitation and flooding, landslides, droughts, severe winds, sea level rise, storm surges, tsunami or volcanic eruptions in the next 30 years?	Y	All project countries (Bangladesh, Indonesia, Pakistan and Vietnam) are already, and expected to increasingly be, vulnerable to the effects of natural disasters. Especially Bangladesh is facing a high frequency of tropical cyclones which is projected to increase. Rain intensity and sea levels are also expected to rise, and seasonal droughts will be more intense. Vietnam, with its lying coastal and river delta regions has very high vulnerability to rising sea-levels and temperature rise will increase heat stress. An increase in rainfall and sea level rise are expected in Indonesia. Currently, floods and droughts due to effects of El Nino are impacting the country and climate change will only exacerbate these risks. Projected temperatures in Pakistan are significantly higher than the global average. Increases in the severity of extreme events of both flood and drought seem likely. Improving chemical management will increase resilience to these natural hazards
2.3 outputs and outcomes sensitive or vulnerable to potential impacts of climate change (e.g. changes in precipitation, temperature, salinity, extreme events)?	N	
2.4 local communities vulnerable to the impacts of climate change and disaster risks (e.g. considering level of exposure and adaptive capacity)?	Y	As the project countries are vulnerable to the impacts of climate change, so are the local communities.
2.5 increases of greenhouse gas emissions, black carbon emissions or other drivers of climate change?	N	The project is expected to decrease the emissions of greenhouse gases, black carbon and other divers of climate change due to its eco-innovation approaches that improve energy efficiency and carbon reduction.

2.6 Carbon sequestration and reduction of greenhouse emissions, resource-efficient and low carbon development, other measures for mitigating climate change	N	
Safeguard Standard 3: Pollution Prevention and Resource Efficiency		
Would the project potentially involve or lead to:		
3.1 the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	N	The objective of the project is to establish significant and documented reductions in use, releases and exposure to chemicals of concern (CoCs) including POPs in the textiles sector in selected countries.
3.2 the generation of waste (both hazardous and non-hazardous)?	N	Due to the project?s objective to reduce the use of chemicals of concern (CoCs), including POPs, less hazardous wastewater will be released from textile mills.
3.3 the manufacture, trade, release, and/or use of hazardous materials and/or chemicals?	Y	The project will have activities in facilities that use hazardous chemicals. While the project aims to incentivize the facilities to adopt safer chemical management and reduce the use of these chemicals, there is an inherent risk of working in these contexts. This is partly why the NRDC was appointed to provide technical support to the EA for the site level activities. The site inventory & pilot project methodologies will address potential chemical exposure risk mitigation (see Risk Mitigation Plan Appendix 8).
3.4 the use of chemicals or materials subject to international bans or phase-outs? (e.g. DDT, PCBs and other chemicals listed in international conventions such as the the Montreal Protocol, Minamata Convention, Basel Convention, Rotterdam Convention, Stockholm Convention)	Y	The project will support the participating countries on the elimination and reduction of the use of chemicals listed under the Stockholm convention. However the project design relies on working in facilities that are currently using POPs. As above, the inventory & pilot project methodologies will mitigate any risks during project intervention. In the long run, use of these chemicals will be reduced.

3.5 the application of pesticides or fertilizers that may have a negative effect on the environment (including non-target species) or human health?	N	
3.6 significant consumption of energy, water, or other material inputs?	N	Through its eco-innovation approach the project will reduce the consumption of energy, water, or other material inputs in textile facilities.
Safeguard Standard 4: Community Health, Safety and Security		
Would the project potentially involve or lead to:		
4.1 the design, construction, operation and/or decommissioning of structural elements such as new buildings or structures (including those accessed by the public)?	N	
4.2 air pollution, noise, vibration, traffic, physical hazards, water runoff?	N	
4.3 exposure to water-borne or other vector-borne diseases (e.g. temporary breeding habitats), communicable or noncommunicable diseases?	N	
4.4 adverse impacts on natural resources and/or ecosystem services relevant to the communities? health and safety (e.g. food, surface water purification, natural buffers from flooding)?	N	

4.5 transport, storage use and/or disposal of hazardous or dangerous materials (e.g. fuel, explosives, other chemicals that may cause an emergency event)?	N	
4.6 engagement of security personnel to support project activities (e.g. protection of property or personnel, patrolling of protected areas)?	N	
4.7 an influx of workers to the project area or security personnel (e.g. police, military, other)?	N	
Safeguard Standard 5: Cultural Heritage		
Would the project potentially involve or lead to:		
5.1 activities adjacent to or within a Cultural Heritage site?	N	
5.2 adverse impacts to sites, structures or objects with historical, cultural, artistic, traditional or religious values or to intangible forms of cultural heritage (e.g. knowledge, innovations, practices)?	N	
5.3 utilization of Cultural Heritage for commercial or other purposes (e.g. use of objects, practices, traditional knowledge, tourism)?	N	

5.4 alterations to landscapes and natural features with cultural significance?	N	
5.5 significant land clearing, demolitions, excavations, flooding?	N	
5.6 identification and protection of cultural heritage sites or intangible forms of cultural heritage		
Safeguard Standard 6: Displacement and Involuntary Resettlement		
Would the project potentially involve or lead to:		
6.1 full or partial physical displacement or relocation of people (whether temporary or permanent)?	N	
6.2 economic displacement (e.g. loss of assets or access to assets affecting for example crops, businesses, income generation sources)?	N	
6.2 involuntary restrictions on land/water use that deny a community the use of resources to which they have traditional or recognizable use rights?	N	
6.3 risk of forced evictions?	N	
6.4 changes in land tenure arrangements, including communal and/or customary/traditional land tenure patterns (including temporary/permanent loss of land)?	N	

Safeguard Standard 7: Indigenous Peoples		
Would the project potentially involve or lead to:		
7.1 areas where indigenous peoples are present or uncontacted or isolated indigenous peoples inhabit or where it is believed these peoples may inhabit?	N	
7.2 activities located on lands and territories claimed by indigenous peoples?	N	
7.3 impacts to the human rights of indigenous peoples or to the lands, territories and resources claimed by them?	N	
7.4 the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	N	
7.5 adverse effects on the development priorities, decision making mechanisms, and forms of self-government of indigenous peoples as defined by them?	N	
7.6 risks to the traditional livelihoods, physical and cultural survival of indigenous peoples?	N	

7.7 impacts on the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	N	
Safeguard Standard 8: Labor and working conditions		
8.1 Will the proposed project involve hiring or contracting project staff ?	Y	The executing agency will be responsible for hiring project staff. As per PCA conditions, UNEP guiding principles on selection process and labour and working conditions will have to be adopted. The EA being an intergovernmental organisation under the BRS secretariat, these rules are already integrated in their operations.
If the answer to 8.1 is yes, would the project potentially involve or lead to:		
8.2 working conditions that do not meet national labour laws or international commitments (e.g. ILO conventions)?	N	The project includes collaboration with ILO to include working conditions into the design of the pilot projects being implemented.
8.3 the use of forced labor and child labor?	N	
8.4 occupational health and safety risks (including violence and harassment)?	N	These risks will be monitored and reported on in the project pilot activities and regular reports provided to the Steering Committee.
8.5 the increase of local or regional unemployment?	N	
8.6 suppliers of goods and services who may have high risk of significant safety issues related to their own workers?	Y	Chemical suppliers to textile mills may provide and handle hazardous chemicals. The project includes monitoring and inventorying such trade and chemical suppliers and their staff are included in the training and risk reduction output (Component 1).

8.7 unequal working opportunities and conditions for women and men	N	

[1] Refer to UNEP Environmental and Social Sustainability Framework (ESSF): Implementation Guidance Note

to assign values to the Impact of Risk and the Probability of Risk to determine the overall significance of Risk (Low, Moderate or High).

[2] **Low risk**: Negative impacts minimal or negligible: no further study or impact management required.

Moderate risk: Potential negative impacts, but limited in scale, not unprecedented or irreversible and generally limited to programme/project area; impacts amenable to management using standard mitigation measures; limited environmental or social analysis may be required to develop a Environmental and Social Management Plan (ESMP). Straightforward application of good practice may be sufficient without additional study.

High risk: Potential for significant negative impacts (e.g. irreversible, unprecedented, cumulative, significant stakeholder concerns); Environmental and Social Impact Assessment (ESIA) (or Strategic Environmental and Social Assessment (SESA)) including a full impact assessment may be required, followed by an effective comprehensive safeguard management plan.

[3] This is signed only for the full projects latest by the PRC time.

[4] Good practice approach: For most low-moderate risk projects, good practice approach may be sufficient. In that case, no separate management plan is necessary. Instead, the project document demonstrates safeguard management approach in the project activities, budget, risks management, stakeholder engagement or/and monitoring segments of the project document to avoid or minimize the identified potential risks without preparing a separate safeguard management plan.

[5]For example, a project may consider investing incommercial shrimp farm by clearing the nearby mangrove forest to improve the livelihood of the coastal community. However, long term economic

benefit from the shrip farm may be significantly lower than the mangroves if we consider full costs factoring safety from storms, soil protection, water quality, biodiversity and so on.

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
10523 - Appendix 7 - COVID Screens	**CEO Endorsement ESS**	
10523 - Appendix 8 - Risk Mitigation Plan	**CEO Endorsement ESS**	
10523 - Appendix 7 - SRIF	**CEO Endorsement ESS**	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Project Objective: Significant and documented reductions in use, releases and exposure to chemicals of concern (CoCs) including POPs in the textiles sector in selected countries

Outcome /Output	Outcome/ Output Indicators	Baseline	Targets and Monitoring Milestones	Means of Verification	Assumptions & Risks	UNEP PoW & MTS 2025 Outcomes
Component 1: Information sharing and chemical management pilots on priority CoCs including POPs in textiles facilities						
Outcome 1: Certification and voluntary compliance measures leading to Tier 2 and Tier 3 textile companies restricting use, releases and exposure to priority CoCs including POPs	1. Amount of chemicals and waste reduced and avoided[1]	Textile SMEs are still using COCs, including POPs in bleaching, finishing, dyeing processes. Quantities are not known.	**Mid-term** 5 tonnes PFAS and PBDE reduced 1,000 tonnes of POPs and CoC contaminated waste prevented **End of project** 25 tonnes PFAS and PBDE reduced 5,500 tonnes of POPs and CoC contaminated waste prevented 2.31 gTEQ POPs from air avoided[2]	Inventory reports and verification by service providers	Assumptions: 5% of all PFC chemicals used are POPs banned by the SC Risks: Chemical ingredient information not available for products	MTS 2022-2015: pollution pillar linked to the ?towards a pollution free planet? strategic objective. 2025 Outcomes: 3A and 3C
	2. No. of people accessing information and with reduced exposure and health impacts of CoC (% of women)[3]	Better Work ILO programme on OHS in garment factories No chemicals relevant information available to emergency services & communities	**End of project** 5,500 workers (10 % women) in textile mills[4] 10,000 people (50 % women) living near textile mills at reduced risk from chemical incidents	ILO / OSH data and records Emergency services protocols	Assumptions: 50 workers per pilot mill (min 10). 250 'inventory mills? take effective measures to reduce risk, 20 staff each.	
	3. No. of SMEs obtaining certification or ecolabel[5] and reporting on their chemical use	Small proportion of mills have certificates (see Baseline section)	**Mid-term** 30 mills data is included in country data collection tools **End of project** 10 pilot mills obtain certification 100 mills data is included in country data collection tools	Certificates (ZDHC, Bluesign etc)	Mills can access benefits via certification Regulators able to enforce reporting for priority CoC	

Output 1.1: Chemical Inventories for POPs and COCs delivered to at least 500 chemical suppliers and SMEs	4. No. chemical inventories produced for chemicals suppliers and textile SMEs [6]	Only SMEs that are involved in ZDHC or other voluntary schemes are regularly producing chemical inventories (see baseline), but these are based on absence of chemicals, not presence or use data (as required for the SC reports).	**Mid-term** Inventory methodology available 50 inventories complete **End of project** 500 Chemical inventories	Service provider and mill inventory reports / databases Training reports	Assumptions: A single once-off inventory per mill Risks: The project not able to map enough mills and suppliers The textile mills and suppliers unwilling to join pilots due to fear of repercussions.	Direct Outcomes: 3.12, and 3.13 Indicators (pollution action): (iii)
Output 1.2: SMEs report use of POPs and CoCs to clients and regulators via textile value chain chemicals information sharing campaign and tools	5. No. of revised procedures/ systems/processes for chemicals reporting operationalized [7]	Some countries don?t have a regulatory basis to gather chemicals information. Where data reporting requirements do exist (e.g., Pakistan Self-Monitoring and Reporting Tool software under Rules, 2001; Viet Nam POPs Report under LEP Decree 2021), SMEs don?t share information into these databases. Private sector reporting declares absence of CoC in products, not presence (e.g., ZDHC & others). Data on chemical imports lacking in both scope and specificity.	**Mid-term** Pilot project on blockchain defines key chemicals data points to be reported; & companies to participate **End of project** 4 revised procedures/systems/ processes operational including at least 1 blockchain pilot Report on potential HS code revisions to improve chemical import data	Guidance published Blockchain mapping SME suppliers & data scope (report) Reports of reporting procedures Training reports	Risks: Risk: Companies (SMEs and brands) are hesitant to share information on POPs and identity of suppliers Assumptions It is possible to map the value chain within the project blockchain pilot: Digital awareness and experience of national partners to access and information	Direct Outcomes: 3.1, 3.5, 3.12, and 3.13 Indicators (pollution action): (i), and (iii)

Output 1.3: Company-specific business plans and operational plans developed, and support provided to implement them in at least 10 textile mills.	6. No. of global and company-specific strategies and operational plans implemented[8] 7. No. process optimization, new technology and/or equipment provided[9] 8. No. of mills trained on chemical alternatives[10]	Only certified textile SMEs have business strategies and plans, and are not using CoCs, including POPs in their processes.	**Mid-term** 6 global guidance developed[11] 4 Phase 1 mill operational plans developed Minimum 10 mills selected for phase 2 pilots 4 mills staff trained **End of project** 10 mill pilots completed (operational plans, training) Minimum 5 different approaches or technologies provided to countries	Reports from service providers Training reports Alternative analysis reports	Assumptions: - Risks: Procurement of the technical services will delay the roll out of the pilot projects.	Direct Outcomes: 3.2, 3.4, 3.6, 3.9, 3.12, and 3.13 Indicators (pollution action): (iii), and (iv)
Output 1.4: Chemicals knowledge compiled and delivered to SMEs for risk reduction measures	9. No. of best practices and case studies report developed[12] 10. Risk reduction measures delivered for chemicals suppliers and textile SMEs [13] 11. Number of people demonstrating increased knowledge and capacity (% of women)[14]	The project countries have no knowledge on best practices in textile SMEs.	**End of project** At least 7 best practices & case studies published (country-level POPs and CoC usage based on inventories (4) ; inventory and reporting by chemical suppliers; pilot case study compilation, case studies of cost benefit) Minimum 250 mills with risk reduction measures adopted, including ILO Code of Conduct for Textiles pilots 1000 workers (10 % women) at mills pass trainings	Publications	Assumptions: Pilot projects are effective Risks: Publication of potentially confidential data covered by Non-Disclosure Agreements	Direct Outcomes: 3.12, and 3.13 Indicators (pollution action): (iii)
Component 2: Eco-innovative strategies towards a non-toxic and circular textiles? economy						

Outcome 2: Governments and global textile value chains strengthen and apply policies for phase out of CoCs and POPs	12. Number of textile sector initiatives strengthening chemicals requirements & metrics[15] 13. No. of new policies/ strategies submitted for government adoption[16]	A small proportion of brands require labels/ certification in textile tier 2/3 mills.	**Mid-term** Industry feedback on min 3 project presentations at global value chain events 1 new govt policy/ strategy submitted **End of project** 8 brands or global initiatives explicitly report on chemicals and POPs management 4 new govt policies/ strategies (one per target country) submitted	Govt Regulations & similar Corporate sustainability reports, business strategies		MTS 2022-2015: pollution pillar linked to the ?towards a pollution free planet? strategic objective. 2025 Outcomes: 3A and 3C
Output 2.1: Global eco-innovation and circular economy guidance piloted with global value chain actors and textile mills SMEs	14. No. of technical guidance and publications[17] on eco-innovation 15. Number of eco-innovation plans and pilots[18] completed by SMEs	UNEP eco-innovation textile supplement published but no case studies available for textile sector and chemicals, and no guidance on how SMEs can create bankable proposals. Life cycle analysis used by some companies including Higg	**Mid-term** Guidance for SMEs on accessing finance available 4 SME project plans on financing eco-innovation **End of project** 7 knowledge sources/ materials (6 case studies, Financing recommendations in UNEP eco-innovation materials) 4 SMEs develop eco-innovation business plans and bankable proposals	Guidance including multimedia versions Participant lists 4 banking/ investment/ proposals Post-intervention Evaluation;		Direct Outcomes: 3.2, 3.4, 3.6, 3.9, 3.12, 3.13, and 3.14 Indicators (pollution action): (iii), (iv)

Output 2.2: Actions to coordinate and raise ambition of supply chain policies and initiatives are proposed and agreed by global supply chain stakeholders	16. No of global value chain model policies explicitly addressing POPs and other CoC[19] 17. No. of brands and SMEs actively participating in meetings/ consultations of global initiatives	Various textile initiatives and commitments, but few tracking use/ phases out of chemicals and POPs. Focus on wastewater, not all emissions CM training and guidance document created for the OIA Most textile initiatives targeting multinational enterprises, with less active participation from supplier SMEs.	**Mid-term** Model textile sector procurement policy Model supply chain management policy Project presentations to at least 3 global brand or industry events **End of project** 50 SMEs share voice at least 2 meetings of global textile initiatives	Model policies Meeting reports		Direct Outcomes: 3.11, 3.12, and 3.13 Indicators (pollution action): (iii)
Output 2.3: National regulations for textile SMEs submitted for adoption and implemented by national stakeholders	18. New law, regulations, policies, and/or strategies to transition the textile sector from the use of POPs and COCs are drafted and consulted[20] 19. No of implementation and/ or enforcement initiatives for chemical management & circular textiles economies being implemented[21]	Bangladesh & Pakistan have draft texts but with gaps (see Baseline section & traffic light table). Indonesia and Viet Nam have recently updated chemical laws, but regulations and implementation strategies needed to improve effectiveness. Indonesia may update chemical law in 2023.	**Mid-term** At least 4 national consultations and/or capacity evaluations 4 national roadmaps endorsed (covering chemicals management & or circular textiles **End of project** 5 updated draft laws, regulations, policies, or strategies (Pakistan = 3; Bangladesh =2, see Table 6) At least 500 companies accessing compliance services	Meeting/ assessment reports Roadmaps Draft laws, regulations, policies, and/or implementation plan	-	Direct Outcomes: 3.1,3.5, and 3.14 Indicators (pollution action): (i), (iii)
Component 3: Knowledge management for scaling up						

Outcome 3: Upscaling of project results to global textile and garment sectors and reporting to MEAs	20. No. of users of KM or awareness materials who report changes in behaviour or practices (% of women)[22]	Gender participation rates are known to be high in garment sector but unknown for textile factories where chemical use is heaviest.	**End of project** At least 10 testimonials collected from audiences of KM/ awareness demonstrating changes At least 1500 garment workers (80% women) less exposed to CoC	Testimonials/ social media Gender reports by project	Assumption: project can regularly follow up after KM activities There are at least 80% female participation in garment sector	MTS 2022-2015: pollution pillar linked to the ?towards a pollution free planet? strategic objective. 2025 Outcomes: 3A and 3C
Output 3.1: National capacity and awareness programmes developed and implemented to increase ability of textile sector and policy makers to control POPs and CoCs	21. No. of national beneficiaries with increased capacity for chemical management[23] 22. Number of training modules and resources developed and available for further use[24]	Training resources exist within certification systems (e.g., ZDHC network of approved trainers). GIZ project has created open access online training modules including on chemical management in textiles.	**Mid-term** National capacity & awareness plan endorsed by NWG **End of project** At least 8 national workshops / training (including min 400 female garment workers) 4 national sensitization campaigns	National plans & NWG meeting reports Meeting reports Media materials		Direct Outcomes: 3.5, 3.12, and 3.13 Indicators (pollution action): (iii)
Output 3.2: Global Knowledge Exchange and Management tools produced and accessed by users globally	23. No. of users accessing textile information and providing feedback and user experiences (gender & regional breakdown)[25]	Outline KM Strategy developed during PPG Various hubs and platforms exist on sustainable fashion, textiles, and chemicals (e.g., UN Fashion Alliance, GIZ Asia Garment Hub, UNEP Textile Experts network etc. ? see Baseline section A2.1.6)	**Mid-term** Global KM strategy finalized Collating and indexing of knowledge products Global Chemicals in Textiles Hub created **End of project** At least 3 global events organized (industry events participation; chemicals technology fair; South-South project exchange with UNIDO)	KM strategy Knowledge products on Hub Reports on events		Direct Outcomes: 3.11, 3.12, and 3.13 Indicators (pollution action): (iii)

Output 3.3: Gender and Social Action Plan implemented, and benefits accrued to women workers	24. % of project documents with explicit gender mainstreaming[26]	Baseline gender assessment (see Gender Action Plan)	**Mid-term** Gender reviews of inventory methodology under Outputs 1.1, 1.3, 2.1, 2.3 **End of project** Gender review of policy and value chain guidance under Outputs 2.2 and 2.3, training materials under Outputs 1.4 and 3.1, and key knowledge products (all outputs, especially before dissemination, Output 3.2) 60% of produced documents contain explicit gender mainstreaming	Gender monitoring reports		Direct Outcomes: 3.12 Indicators (pollution action): (iii)
Component 4: Monitoring and Evaluation						
Outcome 4: Project partners adopt and act upon project results and lessons	25. Evidence of continuous improvement and changes implemented by Project SC	No reports	**End of project** PSC members demonstrate learning has been integrated into programming	MTR report	Assumption: active participation in SC by members	MTS 2022-2015: pollution pillar 2025 Outcomes: 3A and 3C
Output 4.1: Monitoring and evaluation of project outcomes and outputs to include quarterly financial reporting	26. Number of quarterly and annual progress reports & annual workplan and budget completed	No reports yet, strong reporting and M&E procedures in place by the Implementing Agency including annual workplan and budget process	**Mid-term** 12 quarterly reports 2 PIRs **End of project** 20 quarterly reports 5 PIRs		Assumption: high quality project management experience exists in the countries	Direct Outcomes: 3.13
Output 4.2: Mid-term and terminal evaluations results shared with stakeholders	27. Number of independent reviews shared	No reports available	**Mid-term** 1 MTR 3 Regional SC meetings (inception, Y1, Y2) **End of project** 1 TE Total 6 Regional SC meetings	MTR and regular reports	Assumption: Regular reporting by EA and project countries Risk: lack of adequate PM support at country level	Direct Outcomes: 3.13 Indicators (pollution action): /

[1] Maps to C&W Unit Outcome Indicator 1 *(Amount of chemicals and wastes reduced and avoided)*

[2] These targets are aligned with the GEB targets under Core Indicator 9 and 10. These results will be largely delivered by Output 1.3.

[3] C&W Outcome Indicator 2 *(No. of beneficiaries with reduced Disability-adjusted life year (DALY) from chemical Exposures)*

[4] The direct beneficiaries are aligned with the GEB target under Core Indicator 11. These results are delivered by Output 1.4; and the balance of the GEB target of 10,000 beneficiaries from Output 3.1, 3.2 and 3.3 on scaling up

[5] C&W Outcome Indicator 3 *(No. of beneficiaries adopting best practices/technologies)*

[6] C&W Output Indicator 2.1 *(No. of endorsements of inventories and technical assessments of hazardous chemicals)*

[7] C&W Output Indicator 11.3 *(No. of revised procedures/systems/processes institutionalized)*

[8] C&W Output Indicator 3.2 (*No. of technical tools/toolkits and best practices (BAT/BEP) developed)*

[9] C&W Output Indicator 3.1 *(No. new technology and/or equipment upgraded/provided to developing countries)*

[10] C&W Output Indicator 10.1 *(No. of end-users/beneficiaries trained)*

[11] Pilot project design approach; evaluation on PFAS alternatives; list of best practices; evaluation on market-available certification schemes; guidance for wet-processing mills PFAS elimination workplan; and factory chemical management and monitoring policy

[12] C&W Output Indicator 3.2 *(No. of technical tools/toolkits and best practices (BAT/BEP) developed)*

[13] C&W Output Indicator 2.3 *(No. of occupational, health and safety (OHS) related measures adopted)*

[14] C&W Output Indicator 10.1 *(No. of end-users/beneficiaries trained)*

[15] C&W Outcome Indicator 8 *(No. of beneficiaries changing practices as a result of improved awareness)*

[16] C&W Outcome Indicator 4 *(No. of countries adopting/passing new policies/ strategies)*

[17] C&W Output Indicator 3.2 *(No. of technical tools/toolkits and best practices (BAT/BEP) developed)*

[18] C&W Output Indicator 3.1 *(No. new technology and/or equipment upgraded/provided to developing countries)*

[19] C&W Output Indicator 3.2 *(No. of technical tools/toolkits and best practices (BAT/BEP) developed)*

[20] C&W Output Indicator 4.1 *(No. of new policies, strategies, laws, regulations, guidance, criteria prepared)*

[21] C&W Output Indicator 4.1

[22] C&W Outcome Indicator 8 *(No. of beneficiaries changing practices as a result of improved awareness)*

[23] C&W Output Indicator 10.1 *(No. of end-users/beneficiaries trained)*

[24] C&W Output Indicator 8.3 *(No. of social media and media products published on platforms and websites)*

[25] C&W Output Indicator 8.2 *(No. of targeted audience individuals engaging/accessing/using awareness materials e.g. social media)*

[26] C&W Output Indicator 7.1 *(% of documents with explicit gender mainstreaming)*

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

	US Council Member	Responses

	1. As the term ?circular economy? has no single definition, it is difficult to understand what is meant by the multiple references to project activities contributing to ?the circular economy?. 2. We believe the likelihood of Risk 1 in Table 3 to be high, and that the lack of incentives for SMEs to use the chemical information sharing platform was a key lesson from the China textiles project. In our view, most SMEs are not ready to develop a CSR strategy. 3. We see the likelihood of Risk 2 in Table 3 also to be high, and therefore recommend particular attention to risk mitigation, particularly in countries in which the garment export industry plays a key role in economic growth and employment. 4. In Bangladesh, it may be helpful to additionally coordinate with stakeholders who, in addition to the government, now hold some oversight responsibility within the garment export industry associations, including Bangladesh Garment Manufacturers and Exporters Association (BGMEA), and Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA). Importantly, we understand these oversight roles include the ability to award or suspend export certificates. 5. We feel that some elements of innovation (including funding to adopt new, more water efficient, less environmentally harmful technology, such as the use of lasers instead of acid and water to distress or ?wash? jeans) would likely be more persuasive than the new business opportunities or information exchanges proposed here. 6. We are not convinced that the promotion of regional cooperation will produce marked improvements in the enabling environment to provide incentives for the phase out of CoC. Especially in the wake of COVID-	1. Circularity is used in this project as it is defined on the UNEP circularity platform.[1][1] Circular economy provides a model to transform the current textile economic model towards a sustainable future. It requires governments, businesses, and consumers to look beyond the current ?take, make and dispose? extractive industrial model, and to redefine growth, focusing on positive society-wide benefits. This is also explained in section A2.1.5. 2. This comment has been addressed and the risk assessment has been modified (see section 5). 3. During the PPG phase, the MoI and other government stakeholders have been engaged and consulted, and we believe with the particular attention and mitigation provided for this risk we have retained the medium level (see section 5). 4. The industry associations have been engaged during the PPG phase and will be engaged during the project implementation through supporting the following activities: mapping of textile mills and chemical suppliers, the identification of SME suppliers for eco-innovation pilots, and capacity building and knowledge sharing activities of the project to ensure they will be able to continue the pilots after the project (see section 2 on stakeholders). Furthermore, they will support the project by providing the appropriate incentives for mills to join the project activities. 5. This is noted and such innovative technologies were identified during PPG (e.g., GTT, see Baseline). However, the investment required would be beyond the GEF project budget, so the project is providing support for accessing investment for such technologies (Output 2.1), along with the other elements of innovation (Output 1.3). 6. Section 5 on Risks describes the mitigation measures on impacts of COVID-19. Market

	Germany Council Member	
?	? Outcome 1: In the outcome tier 2 and 3 SMEs are requested to phase out CoCs. More emphasis needs to be put on the role of textile association(s) to define their sectoral requirements regarding the handling of CoCs. The exchange between associations and chambers of textile industry and chemical suppliers should lead to the development of a common Code of Conduct for CoCs (incl. labelling, CAS numbers etc.). ? Outcome 2: National actors (e.g., Ministry for Commerce) should be supported to facilitate the dialogue between chemical suppliers and textile industry to improve enabling conditions and achieve better transparency in the labelling of chemicals. The concept of Responsible Care as ICCA?s contribution to the Strategic Approach to International Chemicals Management (SAICM) reflects the current state of discussion and should be included. ? There are further opportunities for co-operation and synergies with other projects: The BMZ funded Regional Project "Sustainability in the Textile and Clothing Industry in Asia" (PN 2018.2056.2) focuses on chemical management in the textile industry in various Asian countries.	? Outcome 1: The industry associations have been engaged during the PPG phase and will be engaged during the project implementation through supporting the following activities: mapping of textile mills and chemical suppliers, the identification of SME suppliers for eco-innovation pilots, and capacity building and knowledge sharing activities of the project to ensure they will be able to continue the pilots after the project (see section 2 on stakeholders). Furthermore, they will support the project by providing the appropriate incentives for mills to join the project activities. ? Outcome 2: These stakeholders will come together during national consultation workshops that confirm the countries priorities and develop detailed roadmaps on policies and regulations that support chemical reporting and management (output 2.3) ? Outcome 3: This project has been discussed throughout the project document: section A2.1.3 on voluntary initiatives, in the related initiatives table (under section A2.3), and in the Global KM baseline mapping (Appendix 8, Global KM Strategy). The project will cooperate with GIZ. They will be part of the projects? Global Advisory Group, and the project will build on their work done in Bangladesh e.g., use of platforms and tools.
	India Council Member	

	In respect of the Regional, Bangladesh, Indonesia, Pakistan, Viet Nam, Asia/Pacific: Reducing Uses and Releases of Chemicals of Concern, Including POPs, in the Textiles Sector, UNEP (GEF Project Financing: $8,850,000) (GEF ID: 10523), the project locations in Pakistan are not finalized. However, the map in the PIF document, at page 67, shows the Pakistan occupied Jammu and Kashmir, which is a part of India under the illegal occupation of another country, as part of Pakistan and would prima facie amount to a violation of India's Constitution, sovereignty and territorial integrity. For this reason, we record our objections to the map in the PIF, and for this reason to oppose the project and do not join the Council for approval of the project with respect to Pakistan. We further oppose the approval of any component of the project, once locations are finalized, if such location should fall in Pakistan occupied Jammu and Kashmir, which is a part of India under the illegal occupation of another country. The Government of India strongly objects to inclusion of the areas of PoJKL in the project as mentioned above and request UNEP to withdraw or re-design the project to the effect that areas of PoJKL are excluded from the project. We have also noted that all projects that are approved by the Council and endorsed by the CEO should be consistent with the GEF instrument and GEF policies and procedures. We would like to understand from the GEF Secretariat whether GEF has a specific policy regarding projects in disputed areas. If such a policy exists, we would like a confirmation that all the above projects are as per such policy. If such a policy does not exist, we would like to understand the impediment, if any, in GEF Sectt following the principles under the well-established World Bank Operational Policy on Disputed Areas (OP 7.60).	Following an exchange of correspondence with India, UNEP clarified that there was no intention to conduct project activities in the disputed region and apologized for the inappropriate map used in the PIF. We further confirm that there are no project activities planned in the disputed region; and that the maps in the project document (Annex E) correctly show the boundary of the disputed region.
	Norway/Denmark Comments	

	Globally, the textiles sector is a major source of pollution. The project focuses on a region with a significant share of the world's textile production and is thus highly relevant. We welcome the approach to address reductions in the use, release and exposures of not only POPs, but also CoCs (Chemical of Concerns). ? We find it particularly interesting that the project will work to scale up approaches that are already working within certified voluntary schemes. We underline that the schemes chosen must maintain a high standard. We also welcome that the project will enable and strengthen national capacities to comply with requirements under the Stockholm Convention "on current and future POPs" as well as preventing harmful impact from other CoCs, and further facilitate a circular economy. ? There should be more detail on the work at the national level. There seems to be focus on working within geographies, within regions, and on a global level. But little effort is made to link the work with national level policy. In Bangladesh, and possibly in all the countries in the region, policies that relate to textile etc. are determined by the specific ministries, departments that carry the mandate to set industry rules and regulations. Therefore, with regard to policy level changes that this Project wants to trigger, we would like to suggest that enough efforts should be put into influencing and lobbying national policies and engaging with legislation on a national level. ? There should be an assessment of the groundwork that is needed from the individual country?s side and from UNEP to identify gaps and needs in institutional capacity in the sector. Besides, the baseline (Institutional capacity, information gathering, synthesis and dissemination of PCB and other chemicals data etc.) is likely to be different from country to country. This information could be specified in the document to better understand the Project?s approach, or how will that be addressed by the project. ? We would also like to mention that another GEF Project through UNIDO is currently supporting the work of the Bangladesh Government on PCB (a hazardous chemical listed in Stockholm Conventions on POPs). We would strongly encourage this UNEP proposed project to	? The point on the high standard to be ensured from voluntary approaches is well noted. During consultations and stakeholder engagement during PPG, it was decided to recruit an independent and experienced Technical Coordinator to support the Executing Agency in managing the technical methodologies to be adopted by the project. The NRDC is a public interest NGO with a significant program on toxic substances in industry value chains and will be supported by a technical expert whose person specification will include industry experience. By cooperating with all the existing voluntary industry initiatives as described in the Baseline (OekoTex, ZDHC, Higgs, Bluesign, etc) the technical experts will ensure that the best elements are taken from all; and combined in a way that serves the government needs, not simply replicating what each individual standard is already doing. ? Details on national policy activities are described in detail in Output 2.3 in the Alternative Scenario. Baseline policies were mapped in all countries and specific policy strengthening measures are identified (Table 6). During PPG the Ministries of Industry were key stakeholders and are contributing co-finance in all countries in addition to being involved in both selection and recruitment of mills for pilot activities, and policy support. Many of the prioritised policies for further development and/or enforcement support are the industrial policies for the textile sector. As co-financiers, Ministries of Industry will also be key members of national working groups. ? These institutional capacity baselines and gaps have been identified in the national baseline (see Tables 4a-4d) and have informed the development of the alternative scenario. During inception, national policy and capacity building roadmaps will be endorsed by National Working Groups to guide the detailed workplan and budgeting per country for the project. ? The Bangladesh PCB project is being executed via the same office as this textile project in Bangladesh Department of Environment, and links will be made wherever relevant. The different POPs and industrial sectors targeted may limit practical overlap but best practices in GEF projects will be shared. ? Implementation roles are now specified in section 6. Institutional Arrangement and Coordination. UNEP?s

	United Kingdom Comments	
	? Bangladesh ? It will be important to consider implementation and enforcement ? without which regulations and capacity building is ineffective. ? Pakistan ? It is the role of government to see that these eco-innovative strategies are implemented and reported on regularly. UK would ask that the project leads ensure government plays a role.	? Enforcement plays a big role in the project. During the PPG it has been analysed in all project countries and was identified as one of the barriers in the problem analysis. Under Output 3.2 enforcement will be strengthened. ? Eco-innovation pilots will be implemented under Output 2.1 in close cooperation with the national policy Output 2.3. The national roadmaps to be developed during inception will cover the entire Component 2, ensuring government oversight of eco-innovation, circular economy, and national chemicals policy aspects.
	Japan Comments	

	The below comments from Japan were provided prior to the Council meeting. An initial agency response was provided and can be found in the list of documents specific to the project in the GEF Portal. ? Programs and Projects in Chemicals and Waste focal area are barred from producing the global environmental benefits indicated in the Project Identification Forms (PIF) due to the COIVD-19 outbreak, as many developing countries have suspended recycling and waste treatment, in an effort to reduce the risk of waste-treatment workers against COVID-19 virus infections. As a result, wastes including single-use plastic, medical wastes and hazardous materials have surged, resulting in widespread and illegal dumping and storage (a phenomenon which does not happen in Japan). According to our own experts, these problems are caused by a lack of technology and infrastructure (including automated intermediate treatment technology and Waste-to-Energy facilities such as incinerators),weak regulatory systems and low awareness among stakeholders. From this context, Projects (GEF ID: 10353, 10519, 10523, 10543) should be based on developing alternative scenarios that focus on sustainable recycling and waste treatment practices, taking into account pandemic risks arising from the COVID-19 outbreaks, to achieve the Global environmental benefits envisioned in the PIF. We recommend that programs in this focal area build stronger partnerships with various relevant stakeholders to address such root causes under the COVID-19 outbreak. ? On project 10519 (Reduce the impact and release of mercury and POPs in Vietnam through lifecycle approach and Ecolabel), Project 10523 (Reducing uses and releases of chemicals of concern, including POPs, in the textiles sector), and Project 10543 (Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste in Lesotho, Madagascar and South Africa) : These indicate extremely low targets in Core Indicator 9 and 10, compared to the GEF-7 target (Indicator 9: 100,000 metric tons of POPs reduction, Indicator 10: 1,300 gTEQ of reduction of u-POPs), i.e., ID:10519: 35.01 tons (Indicator 9), ID: 10523: 25 tons (Indicator 9), 2.30 gTEQ (Indicator 10), ID:10543: 5.5 tons (Indicator 9), 11.50gTEQ (Indicator 10): These values are significantly less than the other GEF-7 CW projects whose PIF have already been approved	? This project design focuses on upstream value chain interventions that will reduce POPs and COC being added to textile products. The focus on circular economy will allow the project to address end of life practices, since textiles that are free of POPs can be safely recycled, unlike those that are contaminated. The PPG research prioritized professional textile products such as PPE as key sectors for POPs use, where water, oil, stain repellence and/or flame retardancy properties are required. The pilot projects will therefore prioritize these sectors. While hospital PPE destined for pandemic management wasn?t explicitly identified during the PPG (it was rather firefighting PPE), we will make sure to prioritize such manufacturing sites for pilot projects. This would ensure that products can be recycled at their end of life. The project is also cooperating closely with the UNIDO project which does include waste management of offcuts, and this may be prioritized by industries for the eco-innovation pilots. COVID risks are also taken into account (see section 5 on risks). ? The project?s POPs targets are based on inputs of POPs as additives to textile products. This approach is different to waste management or stockpile projects funded by GEF where far higher tonnages of pesticide or PCB can be addressed by a project and by a given funding amount. By intervening upstream to prevent the use of these toxic additives, which are added in grams per kg of finished product, the project takes a preventive approach that will avoid the generation of far higher quantities of contaminated articles. This is the most efficient way to address POPs in textiles since the POPs cannot be separated from the finished article, and therefore the entire article becomes hazardous waste. The Core Indicator for 9.6 (reflecting the articles) is far higher as 5,500 tonnes avoided. However the absolute value of the tonnes of POPs additives is indeed far lower than the corresponding amount of waste generated. The project is confident to reach this target by the end of the project and hopes it might even surpass it. The project also aims to accelerate a transformative approach for many more companies to also eliminate POPs (through the KM and policy activities). These future reductions, as well as the fact that the direct beneficiary SMEs will continue to not use POPs well after the project lifetime, are not included in the GEB target calculation but would be orders of magnitude higher. We believe this preventive approach is the correct and cost-effective way forward for new industrial

	STAP Comment	Response
	Baseline: The PIF provides baseline information in section B. The analysis focuses on the amount of textile s produced in the participating countries, existing industry initiatives, government regulatory controls, circular textiles economies , and eco - innovation initiatives and baseline projects , which are useful . The estimate of baseline POPs and CoC in the countries up on which the indicators of success will be based , was , however, not provided .	Very little information is publicly available on actual use of POPs and CoCs in textile mills. As covered in section A1.2 Root causes and barriers, the mills have a low level of knowledge on the chemicals they use and lack reliable information provided by chemical suppliers. Besides that, the service providers that support mills in establishing qualitative chemicals inventories have stringent non-disclosure policies. Tier 2 and 3 facilities are often afraid to share information on chemical use due to fear of penalties. The baseline section A2.1.1 c provides information on amounts of CoC and POPs used in textile mills that was collected during the PPG phase in Pakistan and Bangladesh.
	It was indicated that a theory of change was prepared and included in Annex F of the PIF . This annex is, however, missing . A problem tree was provided (Figure 1) , which describes the causality pathway that underpins the continued use of POPs and CoCs by textiles producers and form s the basis for the missing theory of change. It will be useful to review the theory of change to ascertain that it accurately captures t he essential components of a functional theory of change, including the underlying key assumptions, causal and alternative pathways, and expected outcomes.	The theory of change is presented in section A3.
	Page 18 - 19 of the PIF, as well as Figure 2 (Problem Tree), highlights the significant impact that chemical pollution has on freshwater bodies in the targeted countries. This suggests a linkage between this chemical and waste s project and the international waters focal area of the GEF. STAP recommends that this inter linkage should be explore d during the PPG stage to ensure that the synergies and any possible trade - offs are well addressed. This will ensure that the global environment al benefits from the project are maximized.	Freshwater impacts from the project areas are likely to be on national water resources. The link to international freshwater resources has been given due consideration during the PPG and will continue to be reviewed during the project activities on waste water treatment issues.

	The term non - toxic circular economy approach is technically incorrect as it assumes that a circular economy can be toxic. The circular economy, by design, removes hazardous and toxic substances from products and their supply chains. Any intervention that continues to have toxic substances does not fit the definition of a circular economy. The use of the term should be corrected when preparing the next project document.	Noted. The term ?non-toxic? was added in the Component 2 title to emphasize the chemicals focus of this GEF C&W focal area project. Circular economy is often applied to the fashion industry to refer to increasing recycling and reducing consumption, but sometimes without explicitly targeting the underlying prerequisites around eliminating toxic components. It is also possible for a textile value chain to be non-toxic, yet not circular. The title is now rephrased as ?non-toxic and circular? to emphasize both aspects.
	?Fast fashion? (a phenomenon characterized by quick turnarounds of new styles, a larger number of collections offered per year, and lower prices coupled with a lower cloth utilization rate) was identified as a critical driver of chemical use and pollution in the textiles sector. The proposal, however, fails to present information on how this project will address this challenge. There are possible opportunities to effectively address this under Components 2 and 3 of the project. For example, through the strengthening of policies related to textile value chains (Component 2) and through awareness raising geared towards behavioral change and knowledge exchange (Component 3). STAP recommends that relevant activities and output for addressing fast fashion should be explicitly present ed when revising the proposal.	During the PPG it was found that much of ?fast fashion? items (garments and accessories) are not the major use contexts for POPs. For this reason, and to ensure the project will achieve its GEBs on POPs reduction, we are focusing on technical textiles, tents, PPE, and other items for public procurement. However, we did consult with the CI MSP on fast fashion and will engage those partners in the in the global conversation on fast fashion, to ensure that chemicals issues are at the forefront, via the Global KM output 3.2. The Eco-Innovation methodology includes alternative business models (going beyond facility practices) to propose pathways out of fast and into more sustainable fashion.
	It is encouraging that this project intends to work with the UNDP project on ecolabel in Viet Nam (GEF ID: 10519). STAP believes that synergistic opportunities can be harnessed between the two projects through cross - fertilization of ideas and coordination of activities.	Thank you. The project will also work in a synergistic way with the related UNIDO project in Africa, and the Conservation International MSP on fashion, to bring a global scale common intervention among four GEF Agencies (see section A3.4)
	Incremental cost calculation: The PIF provides a discussion on incremental costs. The analysis may be improved by referring to the GEF's operational guidelines for the application of the incremental cost principle [2][2]	The section has been updated and expanded in the CEO Request, based on the operational guidance. We feel the project is highly incremental, as it builds on existing private sector voluntary initiatives at facility level, and national government initiatives (see section A5).

	Global environmental benefits: The table of indicators shows the " tentative " estimate of the global environmental benefits that will accrue from the project. STAP notes that a more accurate estimate will be available at the PPG stage, and encourages the project proponent to present information on the methodology and assumptions used in preparing the estimates.	Noted. More information on the estimate and the methodology to calculate the GEBs is provided in section E under part one and section A6 under part 2. These were based on site visits and literature review including expert consultations during the PPG.
	Innovation: The project will implement eco - innovation and circular economy principles through lifecycle thinking. This is good. However, the PIF only presents wastewater circulation as an example of such strategies. More examples will help clarify what kind of interventions the project will implement.	These strategies will be developed under the eco-innovation manual on chemicals[3][3]. This manual provides multiple examples e.g., wastewater circulation, replacing chemicals on a textile industry?s Restricted Substances Lists, alternative business models including recycling and reuse.
	Potential for scaling - up: The PIF does not show clearly how the results from the project will be scaled up. The project proponent may review the GIZ paper: scaling up in development cooperation - practical guidelines [4][4]	The strong demand from our government and private sector partners will drive scaling up. The national/regional and global KM strategies (see section 8 on KM) will ensure scale up.
	Climate change impact and risks: It is essential to carry out an adequate assessment of proposed alternatives and approaches in the project to ascertain that adopted solutions do not contribute to greenhouse gas emissions and other unintended consequences. Also, the risk from a changing climate to achieving project objectives was not consider ed in the PIF. Yet, Bangladesh is known to experience frequent floods and is one of the most vulnerable countries to the impacts of climate change globally[5][5]. STAP recommends that a detailed climate risk assessment should be carried as the project is developed further, to ensure that the GEF investment is not negatively impacted by climate change	A detailed assessment has been carried out and is covered in section A2.1.4. In section 5 on risks, climate change risks have been identified based on the assessment and mitigation measures have been proposed. The SRIF also gives some more detailed information on possible climate risks that would be caused by the project and if so, how the project will mitigate these.

[1] https://www.unep.org/circularity

[2] (https://www.thegef.org/sites/default/files/documents/C.31.12_Operational_Guidelines_for_Incremental_Costs - 2007_0 .pdf).

[3] http://unep.ecoinnovation.org/wp-content/uploads/2017/11/UN_Environment_Eco%E2%80%94i_Manual_Chemicals_Supplement.pdf

[4] https://www.shareweb.ch/site/Learning - and - Networking/sdc_km_tools/Documents/GIZ - Scaling - up - in - development - cooperation.pdf

[5] https://www.arcgis.com/apps/Cascade/index.html?appid=79bf52aefcc74ca1a542658cb47e2d04

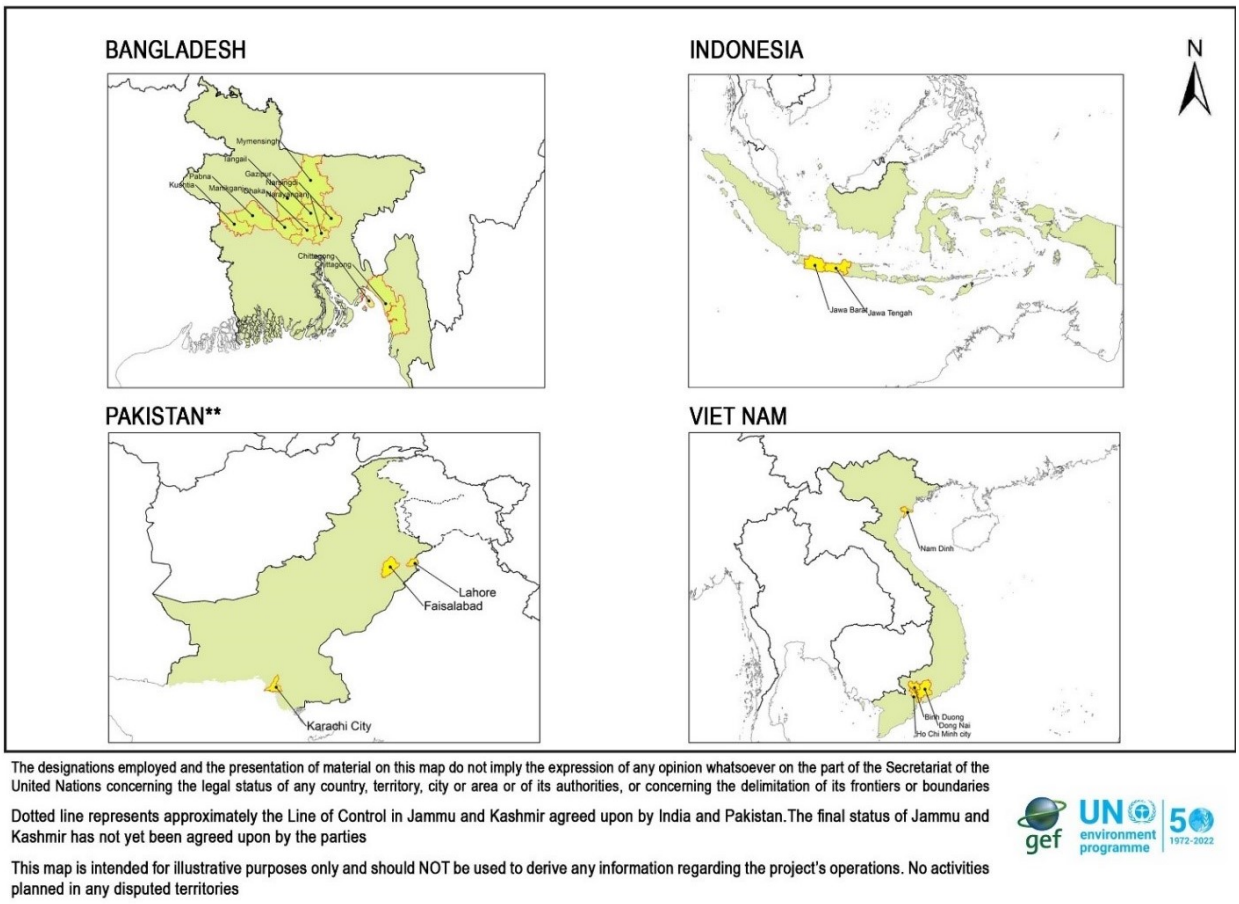
ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: $**200,000**			
Project Preparation Activities Implemented	***GETF/LDCF/SCCF Amount ($)***		
	Budgeted Amount	***Amount Spent To date***	***Amount Committed***
BCRC coordinator	$8,000	$7,000	$1,000
Lead consultant (international expert)	$20,000	$20,000	-
National experts (x4 countries)	$60,000	$60,000	-
Chemicals expert ? Bangladesh survey	$8,000	$7,906	$94
Additional expert ? Pakistan survey	$9,000	$9,000	-
UNEP Technical Assistance	$34,000	$34,000	-
Gender and labour report	$8,000	$8,000	
KM expert	$14,000	$10,000	$4,000
GEF final editing consultant	$10,000	$10,000	
Travel on business (above staff)	$10,000	$1,063	$8,937
Regional workshop	$1,000	$497	$503
National workshops x 4	$16,000	$8,123	$7,877
Bank fees and admin costs	$2,000	$1,500	$500
Total	200,000	177,089	22,911

If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake exclusively preparation activities up to one year of CEO Endorsement/approval date. No later than one year from CEO endorsement/approval date. Agencies should report closing of PPG to Trustee in its Quarterly Report.

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.



The maps above show the following areas where the project interventions will take place:

- Bangladesh: Dhaka, Narayanganj, Gazipur, Narsingdi, Manikganj, Mymensingh, Chittagong, Tangail, Pabna and Kushtia districts
- Indonesia: Jawa Barat and Jawa Tengah
- Pakistan: Lahore, Faisalabad and Karachi
- Viet Nam: Nam Dinh, Dong Nai, Ho Chi Minh City, and Binh Duong

Geocoordinates will be provided once pilot mills are selected.

ANNEX E: Project Budget Table

Please attach a project budget table.

Project Title: 10523 Asia textiles
Executing Ag: Indonesia BCRC

			ALLOCATION PER COMPONENT						ALLOCATION BY CALENDAR YEAR					
			Component 1	Component 2	Component 3	M&E	PMC	Total	Y1	Y2	Y3	Y4	Y5	Total
		UNEP BUDGET LINE/OBJECT OF EXPENDITURE	US$	US$	US$	US$	US$	US$	US$	US$	US$	US$	US$	US$
10		PROJECT PERSONNEL COMPONENT												
	1100	Project Personnel (Project Management 5 % of overall total)												
	1101	Project Coordinator EA				30,000	150,000	180,000	36,000	36,000	36,000	36,000	36,000	180,000
	1104	NRDC Technical & KM Lead	550,000	250,000	220,000			1,020,000	102,000	204,000	204,000	255,000	255,000	1,020,000
	1199	Sub-Total	550,000	250,000	220,000	30,000	150,000	1,200,000	138,000	240,000	240,000	291,000	291,000	1,200,000
	1200	Consultants w/m												
	1201	Regional Lead Consultant	300,000					300,000	30,000	60,000	60,000	75,000	75,000	300,000
	1102	Global expert on chemicals regulations	113,000	51,000	34,000			198,000	19,800	39,600	39,600	49,500	49,500	198,000
	1103	Gloal expert on circular economy and textiles	26,000	97,000				123,000	12,300	24,600	24,600	30,750	30,750	123,000
	1202	National Admin & finance reporting assistant				80,000		80,000	8,000	16,000	16,000	20,000	20,000	80,000
	1203	Country Technical Coordinators (x4)	432,000	126,000				558,000	55,800	111,600	111,600	139,500	139,500	558,000
	1205	National textiles reporting & data experts (x4)	144,000					144,000	14,400	57,600	57,600	14,400	-	144,000
	1206	International economic assessment expert	49,000					49,000	-	24,500	24,500	-	-	49,000
	1207	Regional expert on industrial chemicals regulation & enforcement (LIRA)		75,000				75,000	15,000	30,000	30,000	-	-	75,000
	1208	National indutrial chemicals regulatory expert		132,000				132,000	-	-	66,000	33,000	33,000	132,000
	1209	National Legal Drafting expert		36,000				36,000	-	-	18,000	9,000	9,000	36,000
	1210	Regional eco-innovation expert/ trainer		60,000				60,000	-	30,000	30,000	-	-	60,000
	1211	Regional KM and Communications expert			110,000			110,000	22,000	-	-	44,000	44,000	110,000
	1212	National comms & awareness experts			72,000			72,000	-	18,000	18,000	18,000	18,000	72,000
	1213	Regional Gender and Safeguards Expert			20,000	12,000		32,000	3,200	6,400	6,400	8,000	8,000	32,000
	1214	National gender experts (x4)			72,000			72,000	7,200	14,400	14,400	18,000	18,000	72,000
	1299	Sub-Total	1,064,000	577,000	308,000	92,000		2,041,000	187,700	432,700	516,700	459,150	444,750	2,041,000
	1300	Administrative Support												
	1301	Administrative & procurement assistant					90,000	90,000	9,000	18,000	18,000	22,500	22,500	90,000
	1302	HR, procurement and financial management (NRD	60,000		57,000			117,000	11,700	23,400	23,400	29,250	29,250	117,000
	1600	Travel on official business (above staff)							-	-	-	-	-	
	1601	Travel - NRDC	58,000	22,000	22,000			102,000	10,200	20,400	20,400	25,500	25,500	102,000
	1699	Sub-Total	118,000	22,000	79,000		90,000	309,000	19,200	38,400	38,400	48,000	48,000	309,000
	1999	Component Total	1,732,000	849,000	607,000	122,000	240,000	3,550,000	344,900	711,100	795,100	798,150	783,750	3,550,000
20		SUB CONTRACT COMPONENT												
	2100	Sub contracts (UN Organizations)												
	2101	ILO	140,000	60,000				200,000	20,000	40,000	40,000	50,000	50,000	200,000
	2102	UNECE - blockchain pilot project	125,000					125,000	12,500	62,500	50,000	-	-	125,000
	2199	Sub-Total	265,000	60,000				325,000	32,500	102,500	90,000	50,000	50,000	325,000
	2200	Sub contracts (SSFA, PCAs, non UN) (*not relevant												
	2201	National textile associations	120,000					120,000	12,000	24,000	24,000	30,000	30,000	120,000
	2202	National chemical industry assns	60,000					60,000	6,000	12,000	12,000	15,000	15,000	60,000
	2203	National enforcement actions for customs, regulations		240,000				240,000	-	48,000	48,000	72,000	72,000	240,000
	2204	National NCPCs/ similar - ecoinnovation pilot		160,000				160,000	16,000	32,000	32,000	40,000	40,000	160,000
	2205	Technical services provision (national institutes & privatesector service providers)	1,485,000		80,000			1,565,000	78,250	313,000	313,000	469,500	391,250	1,565,000
	2206	Laboratory services	240,000					240,000	-	48,000	48,000	72,000	72,000	240,000
	2207	Software for inventory / reporting	230,000					230,000	-	76,667	76,667	76,667	-	230,000
	2208	National media & comms	60,000	120,000	40,000			220,000	-	44,000	44,000	66,000	66,000	220,000
	2209	National NGOs or partners to deliver training and awareness	40,000		40,000			80,000	-	16,000	16,000	24,000	24,000	80,000
	2210	Global brand engagement & training		120,000				120,000	-	-	36,000	36,000	48,000	120,000
	2211	Global KM products development (video etc)			75,000			75,000	-	-	22,500	22,500	30,000	75,000
	2299	Sub-Total	2,235,000	640,000	235,000			3,110,000	112,250	613,667	672,167	923,667	788,250	3,110,000
	2999	Component Total	2,500,000	700,000	235,000			3,435,000	144,750	716,167	762,167	973,667	838,250	3,435,000
30		TRAINING COMPONENT												
									-	-			-	-
	3300	Meetings/conferences												
	3301	National workshops to engage mills	96,000					96,000	24,000	57,600	14,400	-	-	96,000
	3302	National training workshops on risk reduction	240,000					240,000	-	48,000	120,000	48,000	24,000	240,000
	3303	National Pilot projects on-site technical training	240,000					240,000	-	-	72,000	120,000	48,000	240,000
	3304	Regional industry stakeholder meetings (NRDC)	32,000	20,000	15,000			67,000	-	20,100	26,800	20,100	-	67,000
	3305	National regulators meetings - data collection / reporting tools	48,000					48,000	-	14,400	9,600	12,000	12,000	48,000
	3306	National Policy consultation events; roadmap and circular roadmap		48,000				48,000	19,200	28,800	-	-	-	48,000
	3307	National training workshops on regulations		32,000				32,000	-	9,600	12,800	9,600	-	32,000
	3308	Participation at global/ industry events		80,000	30,000			110,000	-	-	33,000	33,000	44,000	110,000
	3309	Global value chain consultations		50,000				50,000	-	10,000	-	20,000	20,000	50,000
	3310	National Stakeholders /gender action plan			24,000			24,000	-	12,000	12,000	-	-	24,000
	3311	National awareness raising training /events			80,000			80,000	-	30,000	30,000	20,000	-	80,000
	3312	National gender training (garment workers)			34,000			34,000	-	-	17,000	17,000	-	34,000
	3313	South-South global meeting with UNIDO			30,000			30,000	-	-	-	30,000	-	30,000
	3314	National Working group meetings				100,000		100,000	10,000	20,000	20,000	25,000	25,000	100,000
	3315	Inception & Steering committee meetings				80,000		80,000	20,000	10,000	20,000	10,000	20,000	80,000
	3399	Sub-Total	656,000	230,000	213,000	180,000		1,279,000	73,200	260,500	387,600	364,700	193,000	1,279,000
	3999	Component Total	656,000	230,000	213,000	180,000		1,279,000	73,200	260,500	387,600	364,700	193,000	1,279,000
40		EQUIPMENT and PREMISES COMPONENT												
	4100	Expendable equipment (under 1,500 $)												
	4101	Operational equipment & supplies	100,000					100,000	-	30,000	30,000	40,000	-	100,000
	4199	Sub-Total	100,000					100,000	-	30,000	30,000	40,000	-	100,000
	4200	Non expendable equipment												
	4201	Computer, fax, photocopier, projector (EA)	44,000			8,000		52,000	5,200	10,400	10,400	13,000	13,000	52,000
	4202	Logistic support for country offices					109,000	109,000	10,900	21,800	21,800	27,250	27,250	109,000
	4299	Sub-Total	44,000			8,000	109,000	161,000	16,100	32,200	32,200	40,250	40,250	161,000
	4999	Component Total	144,000			8,000	109,000	261,000	16,100	62,200	62,200	80,250	40,250	261,000
50		MISCELLANEOUS COMPONENT												
	5200	Reporting costs (publications, maps, NL)												
	5201	Translation	80,000		63,000			143,000	14,300	28,600	28,600	35,750	35,750	143,000
	5202	Report development (NRDC)	16,000	17,500	12,500			46,000	4,600	9,200	9,200	11,500	11,500	46,000
	5299	Sub-Total	96,000	17,500	75,500			189,000	4,600	9,200	9,200	11,500	11,500	189,000
	5300	Sundry (communications, postages)												
	5301	Communications (postage, bank transfers, etc)					31,000	31,000	3,100	6,200	6,200	7,750	7,750	31,000
	5399	Sub-total					31,000	31,000	3,100	6,200	6,200	7,750	7,750	31,000
	5500	Monitoring and evalutation												
	5501	Financial audit					40,000	40,000	4,000	8,000	8,000	10,000	10,000	40,000
	5502	Mid term Review				30,000		30,000	-	-	30,000	-	-	30,000
	5503	Final Evaluation				35,000		35,000	-	-	-	-	35,000	35,000
	5599	Sub-total				65,000	40,000	105,000	4,000	8,000	38,000	10,000	45,000	105,000
	5999	Component Total	96,000	17,500	75,500	65,000	71,000	325,000	11,700	23,400	53,400	29,250	64,250	325,000
	TOTAL		5,128,000	1,796,500	1,130,500	375,000	420,000	8,850,000	590,650	1,773,367	2,060,467	2,246,017	1,919,500	8,850,000

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

N/A

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agencys is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

N/A

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies? capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).

N/A