Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste in Ethiopia

Part I: Project Information

GEF ID
10683

Project Type
FSP

Type of Trust Fund
GET

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

Project Title
Promotion of circular economy in the textile and garment sector through the sustainable management of chemicals and waste in Ethiopia

Countries
Ethiopia

Agency(ies)
UNIDO

Other Executing Partner(s)
Ethiopian Textile Industry Development Institute (ETIDI)

Executing Partner Type
Government

GEF Focal Area
Chemicals and Waste

Taxonomy

Focal Areas, Chemicals and Waste, Open Burning, Persistent Organic Pollutants, Disposal, Best Available Technology / Best Environmental Practices, Industrial Emissions, Sound Management of chemicals and waste, Waste Management, Industrial Waste, Hazardous Waste Management, Influencing models, Deploy innovative financial instruments, Convene multi-stakeholder alliances, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Demonstrate innovative approache, Stakeholders, Private Sector, SMEs, Individuals/Entrepreneurs, Large corporations, Beneficiaries, Communications, Public Campaigns, Strategic Communications, Awareness Raising, Education, Behavior change, Type of Engagement, Information Dissemination, Partnership, Participation, Consultation, Civil Society, Non-Governmental Organization, Community Based Organization, Academia, Local Communities, Gender Equality, Gender results areas, Knowledge Generation and Exchange, Access to benefits and services, Capacity Development, Participation and leadership, Gender Mainstreaming, Gender-sensitive indicators, Women groups, Sex-disaggregated indicators, Capacity, Knowledge and Research, Enabling Activities, Innovation, Learning, Theory of change, Knowledge Generation, Course, Master Classes, Training, Workshop, Knowledge Exchange, Conference, Twinning, Field Visit

Sector
Mixed & Others

Rio Markers
Climate Change Mitigation
Climate Change Mitigation 0

Climate Change Adaptation
Climate Change Adaptation 0

Submission Date
2/25/2022

Expected Implementation Start
9/1/2022

Expected Completion Date
9/30/2027

Duration
60In Months

Agency Fee($)
285,000.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
CW-1-1		GET	3,000,000.00	30,590,273.00
		Total Project Cost($)	**3,000,000.00**	**30,590,273.00**

B. Project description summary

Project Objective

To promote the concept of circular economy (CE) in the textile and garment (TG) sector of Ethiopia through value chain approach that addresses the sector?s upstream: resource use; green and sustainable chemistry as well as downstream by the reuse, recycling and conversion of textile/garment discards and related wastes into economically viable and socially beneficial products and services.

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
1. Strengthening of regulatory and institutional capacities for adoption and promotion of Circular Economy in the textile and garment (TG) sector.	Technical Assistance	Strengthened regulatory and institutional framework and capacities for adoption of Circular Economy in the TG sector.	Output 1.1: Legal and institutional framework for life cycle management of the TG supply/value chains. Output 1.2: Regulations and incentive scheme for promotion and sustainability of circular economy in the TG sector. Output 1.3: Technical Committee for Circular Economy in the TG sector.	GET	250,000.00	2,549,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
2. Efficient and POPs-free textile manufacturing process through the implementation of BAT/BEP and RECP investments.	Technical Assistance	BAT/BEP/RECP and Circular Economy concept are implemented through technical assistance in selected textile production facilities for the ESM and prevention / reduction of POPs, hazardous chemicals and wastes while improving process efficiency and profitability at plant level.	Output 2.1: Technical guidelines for environmental sound management of POPs chemicals and wastes Output 2.2: Standard operating procedures (SOPs) and checklists concerning POPs pollution prevention and control Output 2.3: Techno-economic feasibility of BAT/BEP and RECP options Output 2.4: Training and Capacity building in BAT/BEP, RECP and Circular Economy.	GET	261,000.00	2,661,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
2.	Investment		Output 2.5: BAT/BEP and RECP options identified and implemented in at least two facility for the country.	GET	286,000.00	2,917,500.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
3. Introduction of Circular Economy concept for UPOPs emission reductions through ESM of textile and garment wastes and pilot demonstration of textiles/garment wastes recycling and reuse.	Technical Assistance	BAT/ BEP and Circular Economy concept are implemented through technical assistance in selected TG and recycling facilities for the reuse, recycling and ESM of textile and garment wastes.	Output 3.1: Environmentally sound management (ESM) plan for textile/garment wastes. Output 3.2: Training and capacity building in ISWM and BAT/BEP for ESM of textile and garment wastes. Output 3.3: Financing mechanisms and business models for circular economy. Output 3.4: Techno-economic feasibility study of BAT/BEP options for recycling/reuse of textile and garment wastes. Output 3.5: Socio-economic impact assessment of project intervention Output 3.6: Partnership and cooperation mechanism supply chain management	GET	317,000.00	3,232,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
3.	Investment		Output 3.7: BAT/BEP demonstration for ESM of POPs chemicals and textile/garment wastes	GET	1,430,000.00	14,581,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
4. Knowledge management for scaling up	Technical Assistance	Upscaling of project results to global textile and garment sectors and reporting to MEAs	Output 4.1: National capacity and awareness programs developed and implemented to increase ability of textile sector and policy makers to control POPs and CoCs	GET	208,750.00	2,128,500.00
			Output 4.2: Regional and Global Knowledge Exchange and Management tools produced and accessed by users globally			
			Output 4.3: 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($)	Confirmed Co-Financing($)
5. Monitoring and evaluation.	Technical Assistance	5.1 M&E framework in accordance with UNIDO and GEF requirements	Output 5.1: Project progress monitoring and reporting Output 5.2: Mid-term review and terminal evaluation conducted.	GET	107,250.00	1,093,665.00
				Sub Total ($)	**2,860,000.00**	**29,162,665.00**

Project Management Cost (PMC)

GET	140,000.00	1,427,608.00
Sub Total($)	**140,000.00**	**1,427,608.00**
Total Project Cost($)	**3,000,000.00**	**30,590,273.00**

Please provide justification

The figures assured proportionality between figures from GEF financing and resulting from the co-financing.

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	Ministry of Industry	In-kind	Recurrent expenditures	400,000.00
Recipient Country Government	Environment, Forest & Climate change Commission	In-kind	Recurrent expenditures	200,000.00
Recipient Country Government	Ethiopia Textile Industry development institute (ETIDI)	In-kind	Recurrent expenditures	300,000.00
Private Sector	Al-Asr Industries PLC	In-kind	Recurrent expenditures	500,000.00
Private Sector	Al-Asr Industries PLC	Equity	Investment mobilized	500,000.00
Private Sector	Combolcha Textile Factory Share Company	In-kind	Recurrent expenditures	800,000.00
Private Sector	Combolcha Textile Factory Share Company	Equity	Investment mobilized	50,000.00
Private Sector	Kanoria Africa Textile PLC	In-kind	Recurrent expenditures	500,000.00
Private Sector	Kanoria Africa Textile PLC	Equity	Investment mobilized	300,000.00
Private Sector	ETUR Textile PLC	In-kind	Recurrent expenditures	5,000.00
Private Sector	ETUR Textile PLC	Equity	Investment mobilized	60,000.00
Private Sector	Muya Ethiopia PLC	In-kind	Recurrent expenditures	22,567.00

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Private Sector	Muya Ethiopia PLC	Equity	Investment mobilized	65,000.00
Private Sector	EPIC APAREL PLC	In-kind	Recurrent expenditures	2,500.00
Private Sector	EPIC APAREL PLC	Equity	Investment mobilized	2,500.00
Private Sector	Bahir Dar Textile Share Company	In-kind	Recurrent expenditures	700,000.00
Private Sector	Bahir Dar Textile Share Company	Equity	Investment mobilized	40,000.00
Private Sector	Yirgalem Addis Textile PLC	In-kind	Recurrent expenditures	550,000.00
Private Sector	Yirgalem Addis Textile PLC	Equity	Investment mobilized	40,000.00
Private Sector	Hawasa Industrial Park	In-kind	Recurrent expenditures	168,000.00
Private Sector	Hawasa Industrial Park	Equity	Investment mobilized	23,875,000.00
Civil Society Organization	NRDC (Natural Resources Defense Council)	In-kind	Recurrent expenditures	487,500.00
Civil Society Organization	NRDC (Natural Resources Defense Council)	Grant	Investment mobilized	375,000.00
Other	Bahir Dar University (Ethiopian Institute of Textile and Fashion Technology)	In-kind	Recurrent expenditures	300,000.00

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Other	The Ethiopian Chemical Engineers Association	In-kind	Recurrent expenditures	10,586.00
Other	Cambridge University Circular Economy Centre (CEC)	In-kind	Recurrent expenditures	8,500.00
Other	Sustainable Fashion Academy (SFA)	In-kind	Recurrent expenditures	3,120.00
Other	Zero Discharge of Hazardous Chemicals (ZDHC)	In-kind	Recurrent expenditures	75,000.00
Other	Africa Institute for Environmentally Sound Management of Hazardous and other Wastes?(Africa Institute)	In-kind	Recurrent expenditures	50,000.00
GEF Agency	UNIDO	Grant	Recurrent expenditures	50,000.00
GEF Agency	UNIDO	In-kind	Recurrent expenditures	150,000.00
			Total Co-Financing($)	**30,590,273.00**

Describe how any "Investment Mobilized" was identified

As per GEF co-financing guidelines, investment mobilized is co-financing that exclude recurrent expenditures. Investment mobilized was identified mainly from the commitment of the private sector. The private sector was requested to provide co-financing letters to show interest, commitment and sources of co-financing provided for the pilot projects. Co-financing is a condition for pre- selection of pilots and pilot companies were informed that they would be required to provide co-financing to participate in the project. Due to the national impacts of the COVID-19 pandemic, country co-financing contribution differs among the partners, however, efforts will be made during the project inception phase to obtain additional co-financing. Through the consultation meetings held to develop the PIF and during the PPG phase, the Government committed to invest to support the project's objective. This is through the Government?s conducive investment friendly program, attracting more investments and foreign capital and through their involvement in developing and strengthening of regulatory and institutional capacities, incentive scheme for promotion and sustainability of circular economy in the TG sector. A significant amount of co-

financing has been mobilized during the project preparation grant phase and additional co-financing from other partners is expected to materialize during implementation, totaling 54,090,273 USD. This co-financing is the result of extensive consultations with public and private partners before and during PPG to identify needs and shared priorities where the GEF grant could have the largest impact. There is confidence that this co-financing and investment will materialize but given the large amount, the project will set a total of 30,590,273USD as a co-financing target as a risk mitigation measure in case the larger amount is not realized due to ongoing uncertainty from the COVID-19 pandemic or other circumstances change during the course of the project. In particular, 47,000,000 USD in co-financing has been committed by the Hawassa Industrial Park to provide a Waste Management System based on the activities under component 3 but the CEO endorsement is only accounting the contribution of more than half of this investment (23,875,000) to this project. Financial intermediaries and institutions will be engaged under Component 3. It is still expected that the project will be able to deliver on all planned activities in the project document even if this full co- financing amount does not materialize. The project will report on the co-financing figures in the PIRs and in the MTR and TE reports. Africa Institute for Environmentally Sound Management of Hazardous and other Wastes?(Africa Institute) as the Regional Executing Entity committed to this project as well as the NRDC (Natural Resources Defense Council) as the will be managing the Global Knowledge Management. The main partners and service providers committed to the project through their co-financing letters. Cambridge University Circular Economy Centre (CEC) will assist in developing new business models and financial mechanisms for the promotion of circular economy, provide executing services for training of trainers (ToT), the development of tools, school curricula and university research programmes. The Sustainable Fashion Academy (SFA) will provide services related to the development of relevant toolkits, ToT on sustainable apparel and development of business cases for supply chain management and circular economy and Zero Discharge of Hazardous Chemicals (ZDHC) will build capacity on good chemical management practices and the he project will benefit from their training programmes and workshops. The project got several letters of support and partnerships including GIZ through their Sustainable Industrial Clusters (S.I.C.) project, the Ministry of Women and Social Affairs and Ethiopian Textile and Garment Manufacturers' Association (ETGAMA). UNIDO is in talks with international brands and their involvement in this project will be finalized during the project implementation. Bi-lateral contributions (e.g. Italy, China and Japan). There is advance ongoing talks with AfDB for the African Development Fund (ADF).

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($)
UNIDO	GET	Ethiopia	Chemicals and Waste	POPs	3,000,000	285,000	3,285,000.00
			Total Grant Resources($)		**3,000,000.00**	**285,000.00**	**3,285,000.00**

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 ($)

100,000

PPG Agency Fee ($)

9,500

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
UNIDO	GET	Ethiopia	Chemicals and Waste	POPs	100,000	9,500	**109,500.00**
				Total Project Costs($)	**100,000.00**	**9,500.00**	**109,500.00**

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)
3.50	3.50	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	3.50	3.50		

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)
1	1		

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)

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)
3,690.00	3,690.00		

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)
7.50	7.50		

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)
1	1		

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	2,000	2,000		
Male	1,000	1,000		
Total	3000	3000	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 detailed in the corresponding notes and assumptions in the Global environmental benefits section. It is estimated that project will reduce, dispose/destroy, phase out, eliminate, and avoid 3.5 tons of PFOS/ PFOA /PFAS/ PFHxS and assuming 5% of waste stock is contaminated then 3,690 tons of POPs contaminated wastes will be avoided in the environment and in processes, materials, and products. Furthermore, the project will result in the reduction of 7.5 grams of toxic equivalent gTEQ of emissions of POPs to air from point and non-point sources. The numbers were calculated based on the following assumptions: I. Metric tons of toxic chemicals reduced: This figure (5.5 Metric tons of toxic chemicals reduced) based on the initial assessment of the industries in terms of POPs used in the textile and garment production. 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. Other POPs such as PBDEs may also be identified during the inventory and will further increase the GEB. This is the estimated direct benefit, however indirect benefits will also be derived through information exchange and experience sharing with other industries and the co-financing mobilized by the Government and other counterparts. II. Amount of wastes: The preliminary estimates of the amount of waste in tons burned, incinerated or dumped in landfills in the country is detailed in the bassline section of the country. However visits were undertaken only in some of the industries and there are still many to be visited. Hence the estimated uPOPs emission reduction is direct benefits. Indirect benefits will also be derived from resource efficiency and productivity improvement that will increase the economic competitiveness and profitability of the textile and garment sector companies and increase their outputs and reduce the volume of wastes generated. Based on UNEP uPOPS emission toolkit for open burning of wastes operation, the uPOPs emission factor is 300 ?g TEQ/ tons of wastes. The emission is calculated by multiplying the emission factor with the wastes burnt giving an estimated 11.5 TEQ. Based on initial estimate of 5% contamination of the amount of waste disposed in open dumpsites, this gives 4,000 tons of contaminated wastes. These targets will be achieved within the lifespan of the project. However, based on the buy-in by other players in the TG sector, these targets can be exceeded. Direct beneficiaries of this project will be: - Private sector companies? employee (with an estimated number of 2 companies for the pilot demonstration) involved in the production, who will be trained on BAT/BEP/RECP. This training will also be open for the wider TG sector companies. - Policy makers will be trained on legal and institutional framework for Environmentally Sound

Management (ESM) of POPs and Circular Economy concept. 8 - Regulatory, compliance monitoring bodies and custom officers will be trained on Hazardous chemicals tracking, monitoring and enforcement. - Training banking and financial institutions on green financing appraising. - Prospective entrepreneurs who are interested in recycling business will be trained. - Training NGOs and public awareness raising on hazardous chemical including POPs, recycling, and investment opportunities The project will address the entire value chain, in and outside the country. The project will facilitate regional outreach and dissemination of information through the project Knowledge Management platform and building of synergies with ongoing national and regional initiatives within the African continent especially through the cooperation with GIZ and AfDB and their platforms in the continent. Particularly, the project is partnering with international brands and will benefit from their knowledge platforms, best practices, CSR initiatives, not only their suppliers in participating country but in neighboring countries will benefit from the project activities. Thus, the best practices will be adapted by other countries and suppliers which greater GEBs will be achieved. The projects activities under component 2 will address chemicals and wastes management to along TG value chain for products free of hazardous chemicals. Under component 3, the project will establish partnership and cooperation with global fashion brands, their suppliers and global textile organizations (Output 3.6). Component 4 will support capacity building, knowledge sharing, information, education and communication across the different components and scale up project results nationally, regionally, and globally, by creating and curating knowledge, information, education, safer alternatives, and sound management practices. In the course of the PPG phase the support and involvement of all stakeholders along the value chains have been enlisted in the project i.e. input raw suppliers; the textile industries, garment production companies; waste recycling companies; international brands and retail outlets; municipal waste management authorities/agencies; regulatory agencies; business associations; and banking and development financing institutions, etc. In the course of implementing the full-size project further engagement of and consultations with the relevant stakeholders in order to broaden the network of supply/chain involvement and participation in order to be able to close the resource loop and enhance the project impacts/GEBs.

Part II. Project Justification

1a. Project Description

A1. Changes in alignment with the project design with the original PIF

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. This includes Output 2.2 to include chemical inventories due the outcome of the PPG assessments which show the lack of clear data and information of the chemicals used in the facilities.

The National Executing Entity in Ethiopia changed from the Ministry of Industry of Ethiopia to Ethiopian Textile Industry Development Institute (ETIDI) based on the recommendation of the Government of Ethiopia.

Based on the necessary information that has been gathered from intensive and extensive consultation with various stakeholders during PPG phase, the budget allocation was modified as per the table below. As the PPG phase determined the lack of data and information regarding the use of POPs and CoCs in the textile and garment value chains of the country, more money has to be allocated to Component 2 to establish chemical management systems and inventories.

Components	PIF		CEO Endorsement	
	GEF Budget	Co-financing	GEF Budget	Co-financing
1	286,000	1,608,500	250,000	2,549,000
2	429,000	3,538,500	547,000	5,578,499
3	1,787,500	12,062,500	1,747,000	17,813,001
4	250,250	1,608,000	208,749	2,128,500

A2. Global environmental and/or adaptation problems, root causes and barriers that need to be addressed

A2.1 Global environmental problem

The textile and garment (TG) industry is globally important, providing many jobs, foreign exchange revenue, and products essential to human welfare. The value of textiles to human society goes beyond their utilitarian benefits, warmth and comfort. How people dress and adorn their living spaces are important aspects of people's cultural and individual identity.[1][1] Africa has a growing Textile and Garment industry sector with many countries showing a marked increase in raw materials supply, manufacturing, and consumer retail consumption. Many companies who operate global supply chains

of which some parts of these brands operate within Africa, and they may be in the textile manufacturing, garment production as well as retail sector.

Worldwide, the USD 1.3 trillion clothing industry employs more than 300 million people along the value chain, and the production of cotton alone accounts for almost 7% of all employment in some low-income countries.[2][2] The textile and garment 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 cotton or the extraction of crude oil into the manufacturing of fibres, followed by yarn and fabric production, bleaching, dyeing, and finishing of fabric, garment assembly, retail, up to the end of life of textile products. It is estimated that the industry?s market value chain will increase to 1,412.5 billion USD by the end of 2028, with and annual growth rate of 4.4%[3][3]. The textile and garment value chain involves different stages of production[4][4]:

? Fabric assembly factories (garment)

? Processing factories where materials are turned in fabrics ready for assembly through printing, dying, laundering and embroidery.

? Processing facilities where spinning, knitting and weaving take place. Dyes and bleach can also treat yarns.

? Raw material suppliers

Fabric production stage is where materials are turned in fabrics ready for assembly through printing, dyeing, laundering and embroidery. Key steps such as dyeing are commonly applied to fabrics before being sent to garment assembly. However, wet processing steps - including dyeing - can also occur both earlier and later in the life cycle. For example, wool fibre typically goes through a shrink-proofing chemical step in Fibre Preparation before being processed into yarn. Another example is ?sizing?, which includes applying natural or chemical inputs on yarns to strengthen them, so that they can withstand the tension applied during the weaving process. After weaving, ?desizing? is performed to remove sizing chemicals from the woven fabrics. The dyeing process usually performed by production units referred to as ?dye houses? and using a range of dyeing techniques can be applied to fibres, yarns, woven, knitted or non-woven fabrics, or even to a finished garment. A prominent example of yarn dyeing is with denim, where the warp yarn (running lengthwise) is traditionally dyed blue, while the weft yarn (running crosswise) is white. Printing (including digital printing) is also considered a wet process, and imparts color using inks and pigments, typically on the fabric before garment assembly, or on the finished garment. ?Finishing? is usually the final step in wet-processing operations and is used to improve the look, softness, or performance of the fabric or garment, for example, stain resistance, water repellence, anti-microbial. Laundering is also a common wet process for finished garments. While being machine-driven, there is typically as well a moderate level of labor involved. Wet processing, particularly dyeing and printing, can also be performed on an artisanal level, for instance batik dyeing and block printing. At this stage some waste offcuts can be generated which is usually the edge of the textiles being cut off for consistency. This was typically landfilled or recycled depending on the region of the dye house.

Garment Manufacturing/textile production stage is labor-intensive and primarily involves cutting fabric, sewing, ironing, and packaging, as well as processes mentioned in wet processing such as laundering and printing. This stage consists of the bulk of the textile waste as many offcuts are generated here.

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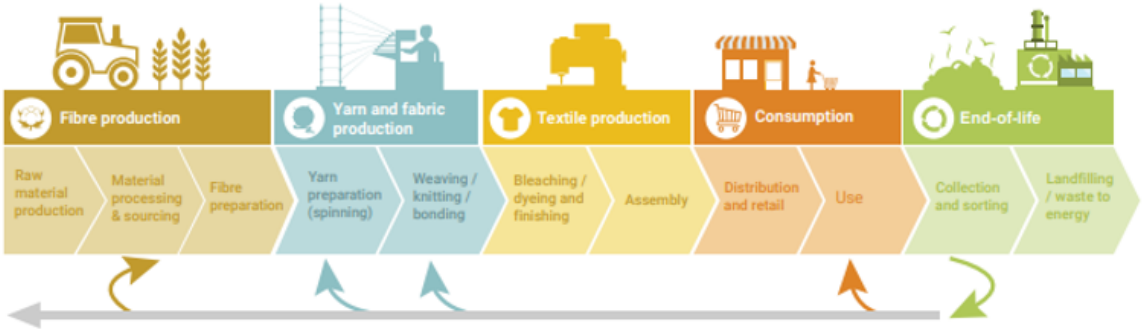


Figure 1: Linear representation of the different stages along the textile and garment value chain

The growth of the sector directly leads to an increase in the production of the **chemicals** used in the sector.[1] The industry?s global chemicals market value is estimated to increase to 33.4 billion USD by the end of 2027. 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 ? increasing the demand for technical, and frequently hazardous, chemicals.

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

Besides agrochemicals for fibre production, 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. 750 of these chemicals are classified as hazardous for human health and 440 as hazardous for the environment.[2] 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). 2,000 of the 3,500 chemicals used in the textiles sector were analysed, the remaining chemicals were listed as confidential and 15% of these were identified as highly hazardous. Yet, only 20% of these are currently regulated under the EU REACH regulation, which is more comprehensive than regulations in many other regions. Many of these regulations only account for active ingredients noted in the Materials Safety Data Sheets (MSDS). Still, they do not address impurities or by-products that may occur in the formulations. Furthermore, although the convention restricts the use and production of POPs, exemptions exist and are still in force in Africa.

These hazardous chemicals are known to cause cancer (carcinogens) and disrupt hormonal systems (endocrine disrupting chemicals, EDCs) in humans and animals, and 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 [3] due to the high use of chemicals and of fossil fuel-derived energy at this stage. 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.[4] 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.[5][5]

For TG manufacturing, large amounts of water are needed, resulting in large quantities of contaminated wastewater. The textile dyeing & finishing industry has created an issue of pollution, as it is one of the most chemically-intensive industries, worldwide, and is a major polluter of clean water. The World Bank estimates that, 17% - 20% of industrial water pollution comes from textile dyeing and finishing treatment. Regulatory authorities such as the U.S. Environmental Protection Agency (EPA) and the European Union (EU) have set stringent regulations on dyestuff, which is anticipated to restrain the global textile chemicals market in the near future.[6][6] Plastic microfibers contaminated with CoCs, including POPS, are released into the ocean from washing and chemical management of textiles.

During their life cycle, textiles are also a potential source of emissions of unintentionally produced POPs, including dioxins (PCDD) and furans (PCDF). These 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 and open burning[7][7] [8][8].

Besides air pollution, the presence of POPs at measurable concentrations in final products, also limits the opportunities for recycling and production of new articles from contaminated recyclates. Less than 1% of material used to produce clothing is recycled into new clothing, representing a loss of more than USD 100 billion worth of materials each year. In the US alone the sector creates almost 17m tonnes of waste per year.[9][9] As well as significant value losses, high costs are associated with disposal: for example, the estimated cost to the UK economy of landfilling clothing and household textiles each year is approximately GBP 82 million (USD 108 million). Across the industry, only 13% of the total material input is in some way recycled after clothing use (see Figure **2**). Most of this recycling consists of cascading to other industries and use in lower-value applications, for example, insulation material, wiping cloths, and mattress stuffing ? all of which are currently difficult to recapture and therefore likely constitute the final use.[10][10]

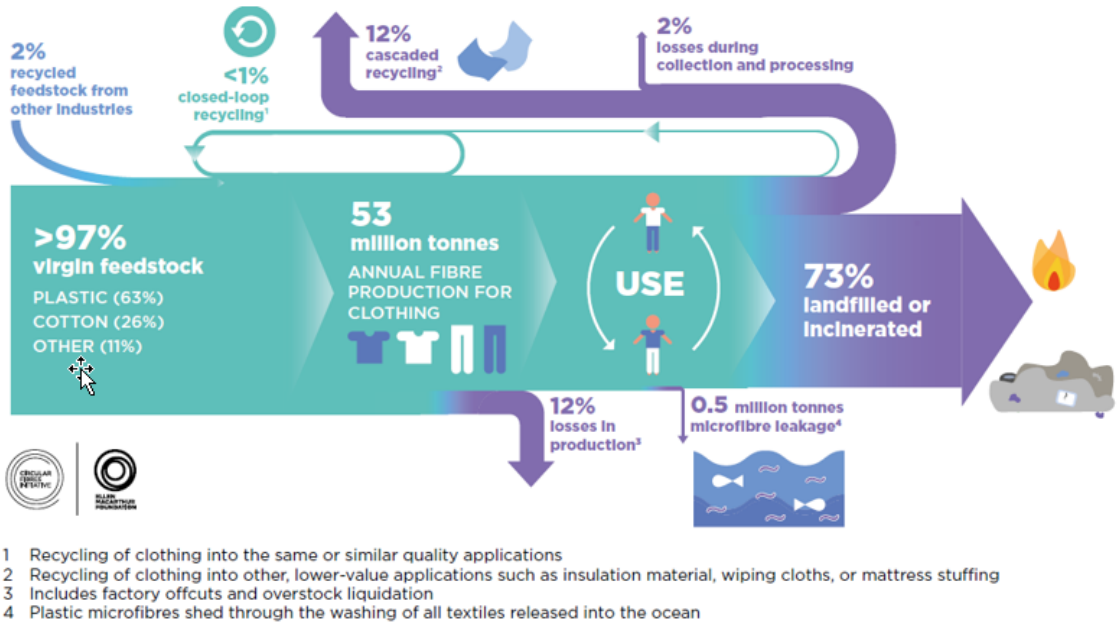


Figure 2: Global Material flows for clothing in 2015

The amount of waste generated, significant value losses and the impact on human health and the environment, making it a priority for transition to circular economy. This transition is only possible if the textile and garment waste can be recycled or reused, which is not possible without reducing and phasing out the use of hazardous chemicals in textile production.

A2.2 Root causes and barriers

Several root causes and barriers to the full implementation of Circular Economy in the TG sector including commitments set by the Stockholm Convention (SC) have been identified in Ethiopia, the interlinked project problem Tree is shown in the figure below.

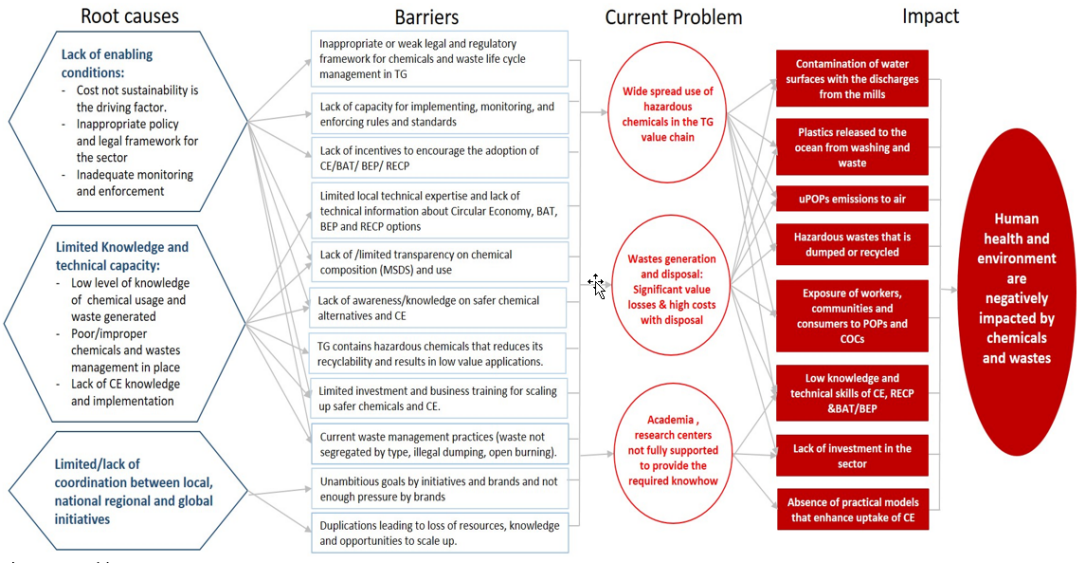


Figure 3: Problem tree

The country faces challenges related to the continued use of hazardous chemicals in the TG value chains, their release during production, use and disposal, generation and disposal of wastes, offcuts and discards, and their impact on human health and the environment.

As presented below, the problem analysis of chemicals and wastes management in the TG value chain has identified three root causes leading up to the key problem. Each root cause underpins specific barriers which must be addressed to reduce use, release and exposure to CoCs including POPs and waste valorization in the TG sector. The barriers lead to two main global environmental problems identified in section ?A2: the continued use of hazardous chemicals in the TG value chain, the amount of waste generated disposed in unsustainable way and their release to the local and global environment during production, use, and disposal. Reduced use of hazardous chemicals during textile production would directly reduce their release into the environment along their lifecycle, enhance the recyclability and reuse of textile and garments wastes, reducing exposure and impact on human health and ecosystems.

The problem tree displays these root causes and barriers (see Figure 3). This project is structured around their mitigation (see section ?A4). The three main root causes are:

Limited Knowledge and Technical Capacity

The lack of transparency and capacity to manage chemicals is the first main root cause for factories, governments, or consumers to act and reduce chemical risks. Non-third-party certified textile processing facilities have a low level of knowledge on the chemicals they use. At higher value chain levels, retailers, brands and assembly facilities do not know what their suppliers are using. This exposes them to reputation, regulatory, and economic risks as they cannot certify clean production and missing opportunities to design safer products. Also, these processing facilities do not have sufficient technical capacity to substitute the use of CoCs and POPs with non-hazardous alternatives, particularly among small and medium enterprises (SMEs) and a significant number of exporting businesses that supply international value chains. This leads either to business as usual, or ?regrettable substitutions?, when one chemical from a group of structurally similar chemicals was removed from the market and replaced by other chemicals from the same group, requiring substantial effort but yielding little benefit in reducing overall risk.[1] For example, PFOS-related chemicals have been largely replaced by structurally similar chemicals derived from long-chain fluorotelomers, which often contain perfluorooctanoic acid (PFOA) ? a fluorochemical listed as a POP in 2019.[2] The most challenging 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.

Furthermore, there is insufficient literature on the amount of generated textile and clothing manufacturing wastes and its export. There is lack of technical capacity for solid waste handling, ISWM, RECP and CE which is leading to most of the wastes, offcuts and discards from the TG industries to be disposed through open burning operations and at dumpsites and improvised landfills.

There is a lack of CE knowledge and implementation in the continent, CE as a concept is still vague in Africa, although case studies exist they have, so far, remained largely hidden. The legal and regulatory frameworks needed to foster circularity are still in their infancy in most African countries as mechanisms to realize the transition towards green economies are often not in place The CE literature in Africa has mainly focused on the management of e-waste and agricultural waste, the recycling of composite materials, renewable energy and the appropriation and acceleration of CE principles by governments and businesses.

Limited Coordination between local, regional and global initiatives

UNEP?s report Sustainability and Circularity in the Textile Value Chain has identified coordination of initiatives as one of the priority actions needed to advance circularity and sustainability in textile value chains. [3] There are different previous and ongoing local, regional and global projects and initiatives but there are limited coordination and low level of knowledge sharing between them. This led to a failure to disseminate research and studies, replicate good practices and lessons learned, and sufficiently to build capacity in the sector. Furthermore, this lack of coordination will lead to duplications resulting in a loss of resources, knowledge and opportunities to scale up.

Global supply chains are starting to focus on sustainability but with uncoordinated, unclear, or unambitious requirements and limited scope. Brands with sustainability commitments focus on climate change, biodiversity, and ocean plastic pollution (see KM baseline section) without explicitly adopting policies on chemical management. Labor issues, including inspection and control processes, focus on garment assembly rather than fabric and textile facilities where the chemicals aspect of occupational health and safety dominate. While chemical management tools and actors (ZDHC, bluesign, Oeko-Tex, Outdoor Brands, etc.) are reasonably coordinated, a relative lack of connection between these tools with broader sustainability agendas undermines faster adoption. Uncoordinated responses have led to multiple solutions being proposed by actors (such as negative- vs. positive-list approaches, duplication through requests for similar sets of CiP information). Confusing SMEs who may not have time, financial or human resources, or inclination to review many different options.

Lacking of Enabling Environment

The policy, regulatory, and financial environments do not provide incentives for the phase out of CoCs and adaptation of CE/BAT/ BEP/ RECP. Competition on costs remains a key driver over sustainability, both for the SMEs and different governments. Legal and policy frameworks are insufficiently comprehensive and ambitious to incentivize value chain actors or lack the necessary enforcement mechanisms, even though brands cite regulatory levers as important in driving changes to business practices (and are indeed the only driver for companies outside of global value chains and voluntary standards). Regulators have insufficient funding to support the enforcement of existing policies and regulations or develop the needed new regulations or standards. 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 Ethiopia. Additional ?red tape? and initiatives which may impact on the competitiveness of the sector are therefore very challenging to introduce and must be developed in a participatory, systematic, and effective manner to avoid negative economic consequences.

All of these causes have a number of barriers faced by different textile and garment industry actors that prevent the achievement of circular economy in the Textile and Garment sector through chemicals and waste management. The following are the main barrier, which need to be addressed during the project, whose linkages are also shown in Figure 3:

- Insufficient or weak legal and regulatory framework. No specific BAT and BEP legal framework and promotion in the TG industry exists in the country.
- Lack of capacity for implementing, enforcing and monitoring rules and standards;
- Limited financial resources and lack of incentives to encourage the adoption of BAT/ BEP/ RECP;
- Information provided by chemicals suppliers is inadequate and prevents factories implementing controls or potential alternatives, including appropriate handling and storage, which can reduce risks of worker exposure or fire even without phase-out of the use of toxic chemicals.

- The textile processing facilities are sceptical of safer alternatives in terms of performance and price, which leads to slow acceptance and adoption across the value chain.

- The tools available to SMEs to identify problem chemicals and feasible alternatives are numerous and confusing.

- 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. 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.

- Brominated Flame Retardants (BFR) in textiles depend on the flammability standards in the different production and import countries. For each specific application, the material requirements are defined for ignitability. This triggers the use of BFR.

- TG contains hazardous chemicals that reduces its recyclability and results in low value applications. Governments, brands, civil society organizations and consumers cannot verify and make informed decisions on the sustainability of the textiles products.

- Lack of technical information about Circular Economy, BAT, BEP and RECP options;

- Absence or limited local technical expertise;

- Inadequate physical infrastructure for sound management of solid wastes.

- TG wastes disposal through open burning operations and at dumpsites and improvised landfills.

A3. Baseline Scenario and any associated baseline projects

A3.1 Global and Regional Baseline Scenario

Textiles, clothing, and fashion are part of one of the largest industries in the world economy, generating annual revenues of around 3 trillion USD,[4] employing over 300 million people across the value chain[5](many of whom are women), and providing clothing and other furnishings for over seven billion people inhabiting the planet. Furthermore, garments and textiles represent about 5% of total manufactured goods exported in the world[6]

Many African countries have been experiencing rapid industrialization particularly in the agro-industry and agro-allied sector in which the continent enjoys some comparative advantages due to abundance and low cost of raw materials and labor. The rapid industrialization has resulted partly because of the incentives and opportunities offered by the African Growth Opportunity Act (AGOA), a preferential trade agreement to facilitate exports from African countries to the United States through duty-free entrance of certain products into the United States including textiles. The combined apparel and footwear market in sub-Saharan Africa is estimated to be worth US$ 31 billion, according to data from Euromonitor International. Many African countries had vibrant textile industries, with long-standing links to EU-based brands and retailers. Although the biggest textile-producing countries today are China and India, ?made in Africa? is gaining traction, and many brands are moving their production from Asian to African countries, with Ethiopia positioning itself as a leader in the development of the textile industry in East Africa. Africa's textile and garment industry is optimistic that, its shipments to the United States, the world's biggest market for such products, will surge following the 10-year renewal of AGOA. In 2013, ten countries (all of them located in Eastern and Southern Africa) saw some US$ 2.5 billion in apparel exports from sub-Saharan Africa. With the growing population and expanding middle-classes, the demand for clothing (both local and imported) is expected to rise, it is estimated to grow at a CAGR of ~5% over the forecast period of 2019?2024.10 The textile and clothing industry is the second largest

employer after agriculture in Africa. A large percentage of its workforce is made up of women. The industry is labor intensive and offers large employment opportunities, particularly for youth and women.

However for African countries to be able to benefit maximally from the opportunities offered by AGOA, they also need to minimize the environment impacts and footprints of their businesses in other to remain economically competitive and comply with global standards and norms. Firstly, conventional textile manufacture is associated with excessive consumption of raw materials, water, and energy; use of persistent organic pollutants (POPs) in industrial operations; as well as water and air pollution. [7]Moreover, many textile industries in many African countries are still using POPs chemicals in their industrial operations and due to lack of waste management policy framework and infrastructure; off cuts and textiles discards are either disposed in open burning operations and or in open landfills. The open burning operations results in the emission of dioxins and furans and greenhouse gases with serious harmful effects on humans and the environment. As big brands are increasingly seeing Africa as a new destination for their production facilities, the risks of replicating the same environmental and social negative outcomes seen in some Asian countries are high.

The textile value chain is long and complex, with apparel producers commonly having more than 1,000 suppliers in several dozen countries.[8] The value chain goes from retailers and brands to spinning, knitting, weaving, bonding, processing, and back to fibre producers and chemical suppliers.

A3.1.1. Textile and garment sector?s chemicals use

Every kg of textiles produced requires an input of 0.58 kg of chemicals and a full quarter of the chemicals produced in the world are used in textiles[9].

In wet processing facilities, textiles undergo various chemical treatments to establish their desired characteristics. This includes pre-treatment, dyeing, printing, final finishing, , laminating, , and coating. For these treatments, the industry consumes various products from commodity chemicals to research-driven specialised products divided into three categories: dyestuffs, textile auxiliaries, and basic chemicals. For final finishing, special chemicals such as flame retardants, water repellents, and biocides are used. POPs are used as durable water repellents (PFAS) and flame retardants (deca-BDE, HBCD, and SCCPs). In wet textile processing, most hazardous substances are used and the non-fixed part is released into the environment, in surface and groundwater, soil and air. CoCs can be released dyeing, printing and final finishing.[10] Products most likely to contain or use POPs and CoCs include technical apparel and outerwear, rainwear, carpets, furniture upholstery, firefighting and military uniforms, safety working clothing and protective gear.[11][11]

As detailed in the global environmental problem section above, there are around 3,500 substances of which 750 are classified as hazardous for human health and 440 as hazardous for the environment. Some of these are classified as CoCs or POPs, listed under the Stockholm Convention, such as: 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) [12][12]. A comparative overview of commonly restricted chemicals organizes them into six broad classes (amines, dyes, halogenated chemicals, metals, monomers and solvents). [13][13]

Per and polyfluorinated alkyl substances (PFAS)

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 biological and chemical breakdown and resulted in PFOS and PFOA being listed under the Stockhom Convention . PFAS are found in the bodies of 99% of Americans and are used in a countless

number of manufacturing and product applications. For textiles, PFAS are mainly used for oil, stain, and water resistance applications, particularly apparel, footwear, carpets, curtains, backpacks, safety working clothing etc. However, they can also be used in metal plating manufacturing, dye formulations, the manufacture of polytetrafluoroethylene (known as Teflon which is a commercial name), 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. However, often PFAS are part of a bigger molecule and this PFAS part can be separated from the rest of the molecule by biodegradation

? **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.

? **Bioaccumulative**: Build up in people and animals. Certain PFAS bioaccumulate--they remain in the bodies of humans and animals for years. Bioaccumulative 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 are PFOA and PFOS; they 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[14][14], but many of the PFAS continue to be produced and used in other parts of the world, also for in textiles. Market research has identified the textile sector as the biggest user of PFAS 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.[15][15] According to the Swedish Chemicals Agency, for specifc textile products, PFAS may be contained to around 2-3% and to 15% weight-% in synthetic carpets respectively.[16][16] A study by Supreeyasunthorn et al.[17][17] 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, as already indicated above, many current alternatives used to replace PFOA and PFOS could release regulated PFOA and PFOS and are considered as ?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. the Non-PFC chemistries (such as wax, silicones, acrylic polymers, polyurethanes, dendrimers, and more) are 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.[18][18]

Similarly, highly brominated flame retardants have come under scientific and regulatory scrutiny including 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 behavior 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.

Therefore, though the deliverables of this project are firmly with PFOS, PFOA, and other PFAS, as well as with brominated flame retardants identified in the Stockholm Convention, we strongly suggest casting a wider net into the sources and use of these substances in the textile industries of Bangladesh, Indonesia, Pakistan, and Viet Nam by applying a ?Class? perspective and model.

The use and possible release of chemicals used in the textile finishing industry is to a certain extend already addressed under the framework of the European Industrial Emissions Directive (IED) and the related Reference Document on Best Available Techniques in the Textiles Industry (Textile BREF)[19][19]. However, the full extent of potentially hazardous substances applied in the sector has not yet been systematically and comprehensively assessed, and until date, no BAT conclusions are available for the textile sector. To minimize the release of hazardous chemicals into the environment (and the exposure of workers) an improved, systematic consideration of hazardous substances in the currently ongoing revision of the 2003 Textile BREF and the compilation of the BAT conclusions has to be achieved. In this context, it is of particular importance to adapt and add BATs for substances with an increased risk potential either in toxicological terms or in terms of environmental fate and behavior. The objective must be that, by complying with the revised Textile BREF and BAT conclusions, public authorities and operators can ensure that the release of substances of concern is at least reduced to a level at which the hazards posed by these chemicals are acceptable. Table 1 provides a classification for the various substance categories relevant to this report.

Table 1: Classification of substances

Hazardous substances	Substances of concern	Relevant substances

Listed CLP Regulation (1272/2008) annex VI (very) persistent, (very) bio-accumulative and/or toxic ? PBT/vPvB Endocrine disruptors Cause negative impacts Listed as a Substances of Very High Concern (SVHC) Listed as a WFD (2000/60/EC) Annex X priority substance	Potential to be released into the environment Low degradability Difficult to eliminate Mobile (low adsorption) May show toxic properties	Specific fate or behaviour in the environment

Within the HazBREF[20][20] project, a list of target substances as applied in the textile sector by scanning the ECHA chemical database was identified. Hereby, reference was given to textile specific use categories and additional descriptors obtained from REACH-Registrations (such as descriptions containing the string 'textile*'). As a result, the scan identified around 940 potentially relevant substances. However, a cross-check with the substance used, as derived from the four case studies in Europe, showed that only about one third of the substances identified were actually used. Possible reasons for the low compliance rate may be differences in the definition of usage categories and technical usage descriptors. In addition, several substances not identified in the scan may have been registered for use in other industries, although they may also be used in the textile sector. Further research on substances used in the textile sector is therefore required before data from the ECHA chemical database can be used to review the Textile BREF.

In the absence of a specific tabular list of hazardous chemicals used in the textile industry, competent authorities and operators can refer to a variety of regulatory and voluntary chemical lists, some of which are briefly touched upon in the following.

Regulatory chemical reference lists

The followings lists have been identified:

- ECHA chemical database

ECHA maintains one of the world's largest regulatory databases on chemicals. Users have easy access to information on 120 000 chemical substances on the EU market through three layers: infocard, brief profile and source data. However, the data sets for the chemicals vary from very detailed to very few information.

- Priority substances under the Water Framework Directive

In 2018, Directive 2013/39 /EU listed 45 substances (or substance groups) to WFD Annex X (Annex of EU priority substances). The European Commission reviews the list of priority substances every 6

years according to Art. 1 2013/39/EU. In practice, the list was reviewed twice: in 2008 (2008/105/EC) and in 2013 (Directive 2013/39/EU) since the setting of the priority substance list for first time in 2001. Art. 16 par. 2 WFD introduces a scientifically based methodology for selecting priority substances based on their significant risk to or via the aquatic environment.

- REACH SVHC List

Candidate list of substance of very high concern recommended for authorisation. This list is updated at regular intervals by ECHA, with the first substances listed on 28 October 2008.

REACH Authorisation List

It contains a list of substances subject to authorization under REACH. Substances on this list are selected from the REACH SVHC list and they cannot be placed on the market or used after a given date ("sunset date"), unless an authorization is granted for their specific use, or the use is exempted from authorization.

- Substances Restricted under REACH

Annex XVII to REACH includes all the restrictions adopted in the framework of REACH and the previous legislation, Directive 76/769/EEC. Each entry shows a substance or a group of substances or a substance in a mixture, and the consequent restriction conditions.

- List of Polluting Substances under Annex II of the Industrial Emissions Directive (IED)

A short list of the most relevant polluting substances under the IED.

- Typical Pollutants (and potential sources) in air emissions from textile processes (Annex V, Textile BREF, 2003)

List of chemical compounds with dangerous properties that are typically present in waste gas of textile factories. The list also includes possible sources of the listed compounds. This list is contained as an annex in the revised Textile BREF.

Non-regulatory chemical reference lists:

- Manufacturing Restricted Substances List (MRSL)

A MRSL is a list of priority chemicals, which specifies the maximum concentration limit of each substance within commercial chemical formulations. The most well-known MRSL was developed by ZDHC brands for the apparel and footwear industry which are used by brands (NIKE, PUMA, Adidas, Levi, etc) and retailers (C&A, Gap, Inditex etc.). The basic approach is that any hazardous chemicals avoided to be used is the best prevention measures for hazardous chemicals in wastewater, sludges from wastewater treatment, emissions to air, and textile products. Thus, MRSL directly correlate with Restricted Substances Lists (RSL) which limit the presence and content of hazardous substances in marketed textiles (Michel/Kaelble, 2020).

- bluesign? ? bluesign? System Black List (BSBL)

The BSBL sets limit values for chemical substances for specialty chemicals such as textile auxiliaries and colorants. The composition of the substances in the BSBL is an excerpt from the bluesign? TOOL, a web-based software application for chemical assessment and rating.

- ChemSec ? SinList

The SinList is a comprehensive database of chemicals likely to be restricted or banned in the EU. It is publicly available and regularly updated.

- Oekotex STeP MRSL

List of chemical substances prohibited within the framework of the STeP by OEKO?TEX? certification.

Material Safety Data Sheets (MSDS)

Material Safety Data Sheets (MSDS) are a well-introduced/accepted and effective method for the provision of information on chemical substances and mixtures to recipients and users of substances and mixtures in the EU. They further form an integral part of the system of Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Although the availability of MSDS in the textile sector is generally given, spot checks of MSDS show lapses as well and inconsistencies of the information contained. A particular problem in this context is that chemical suppliers rarely include information regarding the chemical composition of the marketed chemical products which are usually chemical formulations. Furthermore, impurities such as solvents and by-products from previous synthesis or isolation operations, which are contained in chemicals of technical grade, are usually not listed in MSDS. Information gaps can also occur when MSDS are not updated on a regular basis. In this context, a sample review of MSDS used in four selected textile finishing industries shows that the majority of MSDS are older than the three (3) years (59%), with one in three safety data sheets not having been reviewed for more than 5 years (31%). Although end-users are theoretically entitled to demand missing information on chemical substances and particularly formulations/mixtures from their chemical suppliers, they might face practical challenges as the majority of chemical nowadays are supplied from outside the EU. As a result, the precise assessment of chemical properties and compliance with Industrial Emissions Directive (IED) regulations is often a major challenge for both companies and competent authorities. As per the results of the IMPEL Project on linking the IED and REACH regulations, the collection and evaluation of MSDS may also be complicated by number of chemical substances, as some enterprises use a large variety of chemical products (which are usually formulations (more than 250 at a single site).

Systematic approaches and tools can help operators and competent IED authorities to assess the quality of MSDS. However, only a few are available even in the European market. According to the IMPEL report on linking the IED and REACH Regulation the region of Marche in Italy is one of the first that uses an electronic database for the assessment of MSDS provided by the manufacturer, downstream user, importer, or operator of an industrial installation[21][21]. Other tools for the assessment of MSDS quality include among others a checklist (for both suppliers and recipients) developed by ECHA in cooperation with the (Enforcement) Forum and the online tool MSDS-Check which is specifically designed for recipients of MSDS. To address the challenge of the large varieties of substances used at certain sites, IMPEL furthermore recommends the development of a procedure for prioritization.

To close potential information gaps in MSDS, it is recommended to further specify the current REACH regulations with respect to the information contained in the MSDS. To this regard, especially aspects such as bio-degradability data and mixture composition should be considered. While there is no time-bound obligation to revise the MSDS, it is still highly recommended to check whether they are up to date on a regular base. In this context the ZDHC Chemical Management System (CMS) Guideline and international brands refer to a proof of review at least every three years. MSDS generally remain up to date until new information is available in accordance with Article 31 (9) of the REACH Regulation. Suppliers shall update the safety data sheet immediately as soon as (1) new information which may have an impact on risk management measures or new information on hazards becomes available, (2) an authorisation has been granted or refused or (3) a restriction has been imposed. The new, dated version of the information shall be marked "Revised on (date)" and made available free of charge on paper or electronically to all previous customers to whom suppliers have supplied the substance or mixture in

the previous 12 months. Annex 7.4 provides a selection of commented Best Practice MSDS, which additionally contain recommendations for the specific use of MSDS information in the context of permit requirements.

Chemical inventories

Textile finishing industries use a considerable number of chemical products. To allow for an effective chemical management, it is therefore necessary to clearly identify what chemicals are used, how they should be used, and what substitutes can be used in their place. This requires that established inventories are continuously updated and archived. Chemical Inventories allow among other things for a targeted compilation and assessment of chemical related information, which can serve the specific information requirements of different organizational units within the installation. They can also serve as an important reference and information tool for stakeholders such as IED permitting authorities (e.g. to assess compliance with lists of restricted substances or other chemical related regulations), thus going beyond the mere purpose of fulfilling storage requirements.

To ensure the availability and completeness of all information necessary for a responsible chemical management that can be used for both internal and external requirements, the inventory should include all substances present throughout the production cycle (raw materials, intermediates, products, by-products, solvents, waste, etc.).

A3.1.2. Textile and garment wastes

Discarded textile products can be handled in different ways and by different types of organizations: collected by charitable organizations as donations, by commercial organizations - including retailers - either as donations or in exchange for a ?reward?, or by municipalities, either as a separated fraction or as unsorted waste. Infrastructure for collection varies in terms of extent and efficiency, thus resulting in large differences among countries. In some of the largest economies of the world (e.g. USA and China), collection rates range from merely 10% to 15%, whereas in many low-income countries in Asia and Africa, no collection infrastructure can be found whatsoever. However, a couple of European countries have significantly higher collection rates, especially Germany with about 75 % (bvse, 2015) followed by Denmark (44 %), the Netherlands (37 %) and France (36 %) (ECAP, 2018). As most second-hand textiles from high-income countries are exported to those regions, this represents a major issue as they lack the means and infrastructure to dispose the waste[22][22]. In African countries second-hand clothing is increasingly exported with the clothing waste leaving a devastating impact on those countries. In the capital of Ghana, Accra Metropolitan Assembly picks up around 70 metric tons of imported clothing waste from Kantamanto market every day, six days a week. A lack of capacity to collect and recover textiles leads to clothing being disposed of informally ? meaning it is burned and the ashes are swept into the gutters, where it makes its way to the sea; or it is brought to ?informal? dumpsites. The total impact of leaching dyes, chemicals, and microfibres on the environment, people?s health, and biodiversity loss is significant[23][23].

For used textile products disposed as unsorted waste, the material can either be incinerated - and thus potentially contribute to some degree of energy recovery - or be added to landfill. However, even sorted textiles can end up in incineration or landfill, for example in cases of oversupply of second-hand garments where no markets or alternative use is available at a cost-efficient level. Unsold retail stock can sometimes be destroyed through incineration or sent to landfill. A study by UNIDO Switch Med programme of the textile waste mapping in Morocco and Tunisia showed that more than 60% of the total textile waste generated by textile processes is cutting waste and 20% of total waste is made up of finished products, whether deadstock or overproduction. The landfill space of ten million tons of textiles clogs up approximately 126 million cubic yards of landfill space ? and that?s just one year?s worth of discards.. The waste clothing still contains various chemicals from finishing, most visibly the dyestuffs but also optical brighteners, and the chemicals applied for so-called final finishing. The latter concern manifold chemical as they provide certain properties to the textile products such as softness,

wrinkle resistance, water repellency, dirt repellency, flame retardancy, and biocidal properties. There are few chemicals applied which fall under POPs.

The recycling process can be traced back to the manufacturing/production stage of yarn to the post-consumer where the garment is discarded by the consumer to the landfill site where some of this waste is again collected and processed back into the circular waste loop. The typical process according to the PPG study is that most of the activity occurs between the fabric manufacturer and the garment manufacturer and very little at post-consumer stage.

In most cases with hazardous chemical free textiles, products have a chance to return into circulation in their current form - in which case the products can be considered as having reached end-of-use and not yet end-of-life - or in a downgraded form where at least the material is to some extent recovered and put into another use.

A3.1.3. Wastewater pollution

Textile production (including cotton farming) uses around 93 billion (93 million in Europe) cubic meters of water annually, which is about 4% of global freshwater withdrawal. Garment manufacturing uses over 66% of this water. Each year, around 0.5 million tonnes of plastic microfibers, equivalent to more than 50,000 million plastic bottles, resulting from textiles washing are estimated to be released into the ocean.

One of the main impacts of the use of hazardous chemicals in the textile value chain is improperly managed wastewater containing hazardous chemicals causing water pollution. Toxic chemicals, such as alkylphenols and PFAS are particularly problematic as wastewater treatment plants cannot degrade them, and microfibers in the wastewater can carry POPs and result in leaching of toxic substances, such as dyes and fire retardants.[24][24] The textile finishing industry also consumes high volumes of water, with total consumption estimated to be around 215 trillion litres per year;[25][25] corresponding with 50 ? 250 L/kg (as the usual range); natural fibre production (cotton cultivation) and the consumer use phase account for a particularly significant portion of the water scarcity impact of the sector.[26][26] Further, the textile industry is not a high-tech sector of the industrial economy, often with outdated or absent infrastructure.

A3.1.4. Climate Change impact of the TG sector

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.[27][27] Beside aluminum, the production and use of textiles are associated with most greenhouse gas emissions per kilogram (Kissinger et al., 2013). . In 2015 alone, the industry?s greenhouse gas (GHG) emissions from textiles production totaled 1.2 billion tonnes (1,200 million tonnes in Europe) of CO2 equivalent, more than all international flights and maritime shipping emissions together[28][28]. The high carbon footprint results from high energy consumption for textile production and during the consumer use phase and from the type of energy used (Sandin et al., 2019; Sch?nberger, 2019). Figure 4 shows the carbon footprint along with the specific energy and water consumption for the most important six different types of fibres. The percentage of energy

consumption and CO2 emissions respectively are highest for synthetic fibres and for wool whereas they are significantly lower for cotton and hemp.

Figure 4 : Carbon footprint, specific energy consumption and specific water consumption of six important fibres (Niinim?ki et al., 2020)

Across the global apparel value chain, the wet processing stage has the highest climate impact. Large volumes of water need to be heated, causing this stage to be very energy intensive. This stage also uses the largest amount of (often hazardous) chemicals and is 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.[1]

With the expected increase in production and consumption, the amount of GHG emissions will only rise. African countries rely heavily on fossil fuels for energy generation.[2] According to a report produced by Quantis, 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.[3]

All project countries are particularly vulnerable to the effects of climate change, climate risk screening in APPENDIX 1 describes the climate vulnerabilities of the three project countries in more detail. 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 and wastes used in the global TG value chain, as TG 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 sector during production, use and disposal as wastes.

A3.1.5. Circularity of the TG value chain

The textile garment (TG) industry sector can transform from the linear ?take-make-use-waste? model to a circular approach that is restorative and regenerative by design. ??A circular economy for fashion and textiles creates better products and services for customers, contributes to a resilient and thriving fashion industry, and regenerates the environment. It prioritizes the rights and justice for everyone involved in the fashion value chain and will create new opportunities for growth that are distributed more evenly, diverse, and inclusive. We can build a value chain that designs products to be:

- used more and longer
- made to be made again
- made from safe and recycled or renewable inputs[4]

The value chain includes all the activities that provide or receive value from designing, making, distributing, retailing, and using a textile product (or providing the service that a textile product gives). This includes the extraction and supply of raw materials, as well as the activities that are involved with the textile after its useful life. The value chain covers all stages in a textile product?s life, from supply of raw materials through to disposal after use, and includes the stakeholders and activities linked to value creation such as business models, investments, and regulation.

Figure 1 in the Global environmental problem section summarizes the typical ?cradle to grave? (take ? make ? waste) life cycle activities for textile products. These activities are often shown as a linear representation from raw material production to end-of-life treatment. While the aim of circularity is to shift into a circular system, the linear model is still more common[5]. The shift requires governments, businesses, and consumers to look beyond the current linear extractive industrial model, and to redefine growth, focusing on positive society-wide benefits. Tracing and phasing out chemicals of concern from TG products is an essential pre-requisite to move the value chain towards more circularity. However, there are gaps that were identified during the PPG notably the lack of information or tools on alternatives to POPs, resource efficiency or recycling, and return on investment for sustainable production,

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 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.

The PPG phase identified that in the target countries, there were lack of financial incentives for innovation for TG industry. There is a limited capacity to create business proposals and low awareness of the financial sector on the needs and benefits of funding circular solutions. The activities of this project will address these issues (output 1.2 and output 3.3)

To counter the environmental and social impacts of TG production, initiatives with global scopes have been implemented from the United Nations and beyond. These initiatives are based on the concept of circularity. Initiatives such as the Global Alliance on Circular Economy and Resource Efficiency (GACERE), have been created to advocate for a global just transition to circular economy and resource efficiency, to advance sustainable consumption and production and sustainable and inclusive industrialization. GACERE was initiated in 2020 by the EU and UNEP in coordination with UNIDO. The African Circular Economy Alliance (ACEA), a partner of this project, is a government-led coalition of African nations and global partners committed to advancing the circular economy transition at the national, regional, and continental levels. 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. UNIIDO is a member of the alliance, with its ongoing activities involving stakeholders across the fashion value chain.

There are so many ongoing sustainability initiatives in the TG sector but there is a lack of coordination amongst TG value chain actors. There is a 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 (see APPENDIX 3 Global Knowledge Management strategy).

A3.1.6. Knowledge management

A baseline analysis on the different knowledge generated and shared on chemicals and sustainable textiles and garments 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 3 on the Knowledge Management Baseline and Strategy developed with UNEP project in Asia (GEF ID 10532).

Under the first section, platforms are listed that provide or share knowledge on chemical use in the TG sector globally. 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. ZDHC) provide technical training courses, e-learning videos, and other knowledge sources.

Furthermore, different tools have been established to that support the development of inventories, chemical management, the identification of CoCs and alternatives, the connection of buyers and sellers of safer alternatives, and the measurement of companies? sustainability performance and its products?. Restricted Substances List (RSLs) and Manufacturing Restricted Substances Lists (MRSLs) focus on limiting substances contained in final products and in the production process respectively. Some brands follow voluntary RSLs available in the industry like AFIRM, while some rely on their own RSLs to limit and manage chemicals in final products. Some of the most used voluntarily MRSL are developed by ZDHC.

Under trade fairs, events, and global campaigns, there are working groups on chemicals under different outdoor associations (European Outdoor Group), events gathering industry leaders and brands (Copenhagen Fashion Summit, Textile Sustainability Conference). 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 leaves the local industry confused. Other stakeholders have identified this barrier, The African Development Bank's Fashionomics Africa initiative and the African Circular Economy Alliance (ACEA) have established their platform as a single digital library for the existing initiatives, tools, websites, hubs, and resources on for the textile and garment industry.

A3.2 National Baseline Scenario

Ethiopia is aiming to generate USD 30 billion in export revenue from the textile apparel and accessories sector by 2030, the country is investing in more than10 industrial parks (most of them dedicated to textile and garment manufacturing) to accelerate textile production and the country?s productivity as well as developing a heavy industry that will allow its full industrialization by 2025. The textile and garment sector contributes significantly to the national economy and to the national export of goods and services. The Ethiopian textile and apparel industry has grown an average of 51% over the last 5-6 years. According to McKinsey?s 2019 Chief Purchasing Officer (CPO) survey that reflects the perspectives of 64 participating sourcing executives, who are responsible for a total sourcing value of over USD 100 billion, Ethiopia is the only African country seen as one of the top highly rated countries in terms of its growth prospects. Furthermore, based on the consultation meetings with the international brands, Ethiopia was emphasized as the new hub for textile and garment production in Africa and was dubbed the ?Bangladesh of Africa?.

The textile and garment sector is among the priority sectors identified by the Ethiopian government in transforming the country?s traditional agricultural based economy to industrialization. It is an important source of income that provides employment for over 450,000 people (2013), up more than 200% from2010/11 engaged directly and indirectly in the cotton and textile production chain (International Trade Centre, Textile and Clothing value Chain Road-map of Ethiopia (2016-2020). Besides, there are thousands indirectly employed in the informal, artisanal hand-loom weaving sector comprising SME?s engaged in production of traditional fabrics. The livelihood of thousands of cotton growers depends on the textile industry. Clearly, the government policy encourages the development of the textile industry. This is being achieved by attracting Foreign Direct Investment (FDI), modernization of the existing textile mills, provision of incentives and capacity building measures. The government has established a dedicated Textile & Apparel Industry Development Institute (ETIDI) under the Ministry of Trade & Industry. The institute is responsible for overseeing the development of the sector and formulation and implementation of relevant policies.

Gradually, apparel manufacturers from South and East Asia have become interested in Ethiopia as a possible outsourcing destination. Ethiopia attracted foreign investments of US$1.2 billion in the first six months of the 2016-2017 fiscal year, especially since the Ethiopian government set export-oriented apparel production as a priority in the national development agenda. Based on Ethiopian country data, in the last 5 to 6 years, the textile, and apparel industry have grown at an average of 51% and more than 65 international textile investment projects have been licensed for foreign investors, during this period. The growth in the textile industry is directly linked to the Government?s strong commitment to set up an industrial development strategy. Furthermore, the government is building industrial parks in order to ease logistics constraints for export-oriented apparel producers. Currently, there are more than 10 industrial parks (IPs) most of them dedicated to textile and garment manufacturing. Bole Lemi 1, built in 2014, hosts foreign-owned firms in both apparel and footwear manufacturing, such as Arvind (India), JayJay Textiles (India) or Shin (South Korea). Another example is Hawassa Industrial Park (HIP), inaugurated in 2017, which is estimated to bring USD 1bn in export earnings, almost 10 times the current figure for the entire textile industry, as well as employing 60,000 people when operating at full capacity. The park has attracted the first-wave of world-leading apparel producers in Ethiopia. The anchor investor for this park is PhilipVan-Heusen (PVH), one of the world?s largest apparel companies. Furthermore, cheap labour is the most important explanation for foreign direct investments in flows in the TG industry. According to foreign investors, no other country could offer lower wages, ranging between USD 30 and USD 45 per month at the operator level in assembly operations (the lowest skill segment). Other aspects that attract foreign investors are cheap electricity prices, government support, and low risk of investing. The global brands to which the Ethiopian cotton and

textile market is linked are: PVH, H&M, Asda, Primark, Van Heusen, Tchibo, Tesco, Marks & Spencer, VF Corporation, Inditex, Itochu, etc.

Although in terms of business, the textile/garment manufacturing industry is a great contributor to economic prosperity and poverty reduction, it is also associated with some problems. The following baseline presents national situations on the textile and garment sector, its chemicals use and waste management practices; and on national government policy, regulation and enforcement including data and information sharing on key chemicals and wastes issues.

Ethiopia signed the Stockholm Convention (SC) on 17 May 2002 and ratified the instrument on 2 July 2002. Article 7 of the SC requires member countries to develop a National Implementation Plan (NIP) to meet the requirements of the Convention and communicate such plan to the Conference of Parties (COP) within two years into force of the Convention. Ethiopia prepared the NIP in 2006 and updated in 2017 to meet its obligations under the SC on Persistent Organic Pollutants (POPs). The updated NIP shall provide a framework to develop and implement, in a systematic and participatory way, priority policy and regulatory reforms, capacity building, and investment programs. Moreover, it helps in mitigating the potential threats of POPs on human health and the environment at both the national and global level.

However, analysis of the relevant legislations and their enforcement indicates that, in Ethiopia, the performances of legal frameworks related to the management and use of chemicals in general and POPs in particular is less developed. The major gaps and limitations in this area include the lack of comprehensive approach and coverage of the legal framework; limited rules that ban the production, import and use of POPs pesticides; absence of proper regulatory mechanism for the use of DDT; insufficient legislations and standards that directly and comprehensively regulate the management of industrial chemicals, including PCBs; limited legislations and standards to regulate releases of uPOPs from different sources; lack of proper regulatory mechanism for the management of POPs stockpiles and wastes; lack of regulatory framework on information gathering and exchange as well as limited public awareness and participation.

The POPs inventories carried out for the NIP Update found information for Endosulfan (a pesticide used for cotton pest prevention and control) and for PFOS. Ethiopia has never undertaken the inventory of PFOS. The amounts of PFOS in all use categories were processed through statistics on manufacture, export and import volumes from a national trade bureau over a 14-year period. The estimation of annual PFOS consumption included commercial categories, such as textile, carpets, hydraulic fluids, fire extinguish foams, etc. The total amount was estimated at 3.1Tons/year as higher range value for a conservative approach. With regard to identification of Persistent Organic Pollutants (POPs) chemicals along the value chain, this task requires monitoring and tracking of all kinds of chemicals used along both value chains. Basically, due to the long value chain and many kinds of chemicals used in the different processes of the sectors, it is more likely that some precursor chemicals for POPs (dioxins and Furans) can be found but needs thorough investigation of the kinds of chemicals being used in the whole value chain.

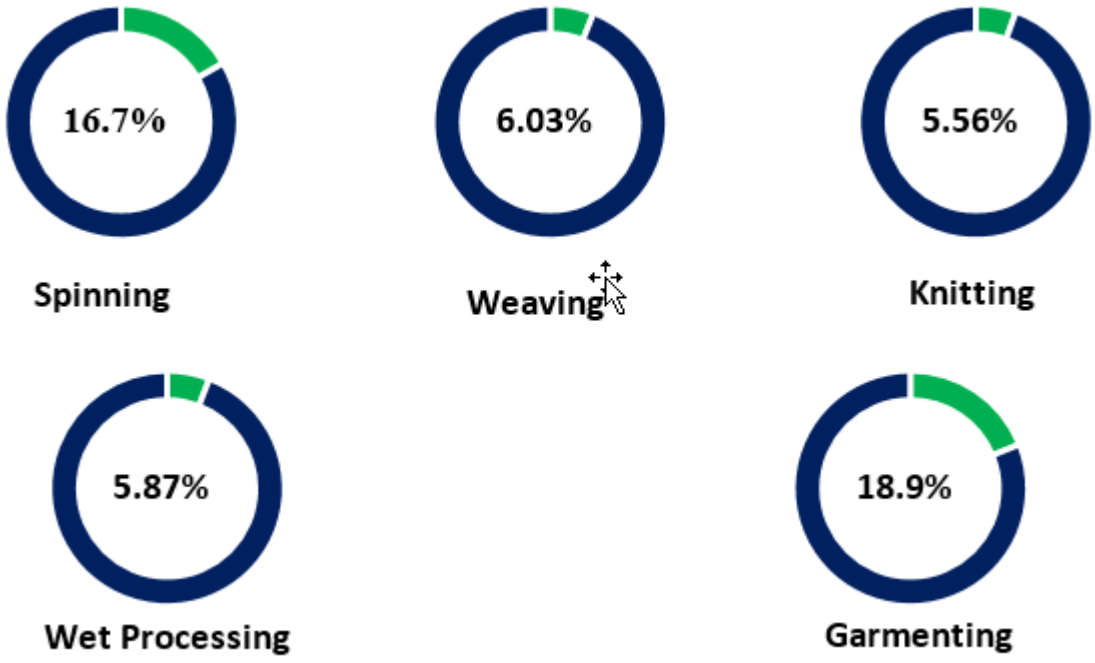
Studies show that textile production processes are typically not sources of PCDD/PCDF formation. Rather, the use of dyes, pigments and chemicals such as fungicides containing or contaminated with PCDD/PCDF to treat raw materials such as cotton appear to be the sources of the detected PCDD/PCDF.

During the PPG assessment and classification of chemicals, dyestuffs and pigments used by the surveyed 7 companies based on their hazardous nature, evidences from the material safety data sheet (MSDS) and other related literatures were used although it was difficult to get the MSDS for some of these inputs. The PPG study survived a total of 292 chemicals in 7 companies and three pigments were

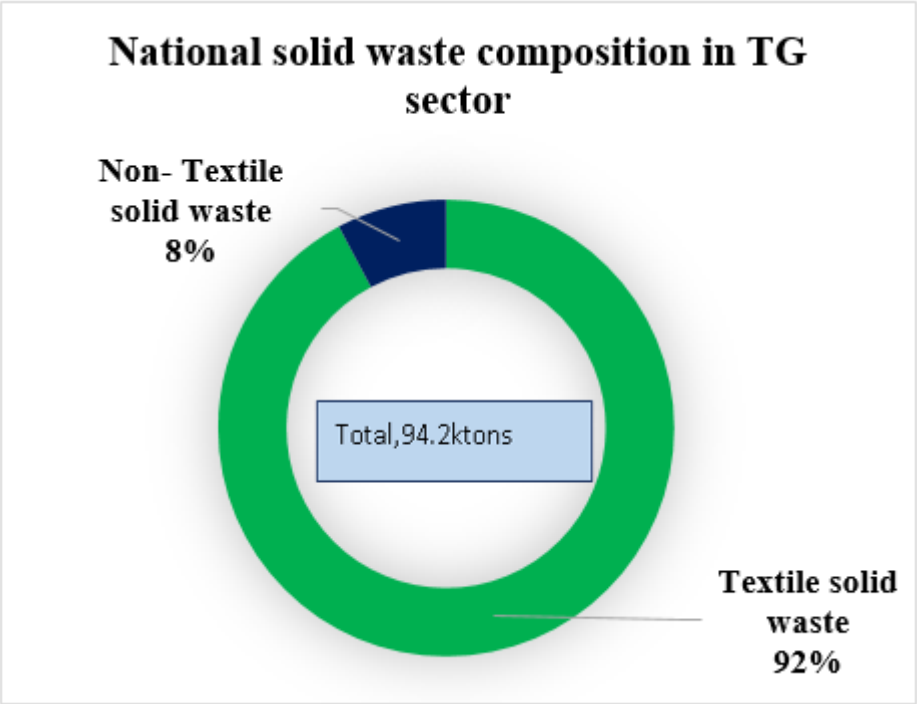
found to be chloranil containing, one chemical was usage banned (Navy blue), and three chemicals were classified as possible hazardous according to directive 67/548/EEC or 1999/45/EC (Vivizol Extra black, Remazol turq Blue G133% and Hicion Blue HE-xl). Of the remaining chemicals 239 were not listed in the RSL and 46 chemicals could not be classified in this study as it was difficult to get MSDS.

Textile waste is one type of solid waste growing rapidly in recent years. Abundant textile waste which includes the waste generated from streams of fiber, textile and clothing manufacturing process, commercial service and consumption has raised increasing concerns worldwide in developing novel circular textiles approach.
The PPG study established a baseline data and information on generation, characterization and management of waste and chemicals in the Ethiopian TG sector employs a descriptive analysis approach to both quantitative and qualitative data generated from primary and secondary data sources. In the view of this Muya Ethiopia PLC, Kanoria Africa Textile Sh.co, Kombolcha Textile Sh.co, Al-Asr Industrial PLC, Al-Mehdi Industrial PLC, and MAA Garment and Textile were selected for the study.

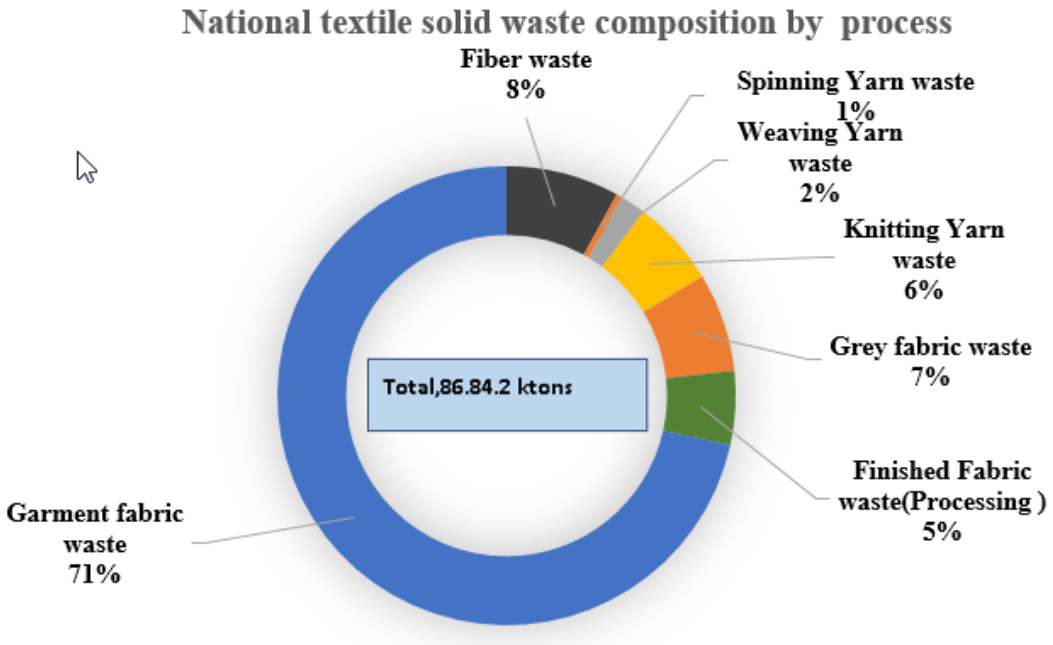
Based on the raw data collected estimated waste generation rate for spinning process, weaving process, knitting process, finished fabric waste in wet processing and fabric waste in garmenting industries is exhibited in the graph below



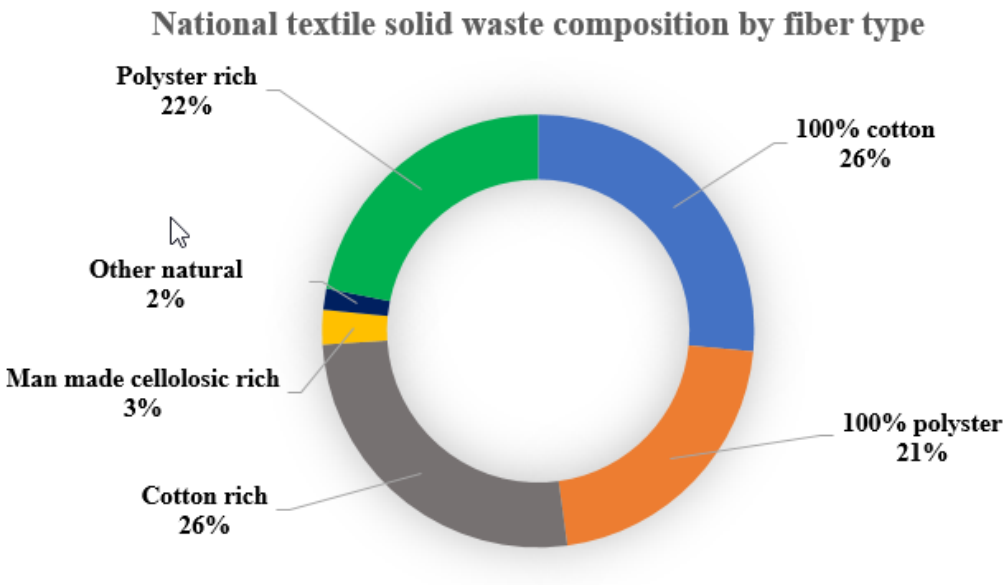
The annual estimated national solid waste is 94,186 tons. More than 92% of the total waste is textile material solid wastes and the rest 7.8 % is non textile solid wastes.



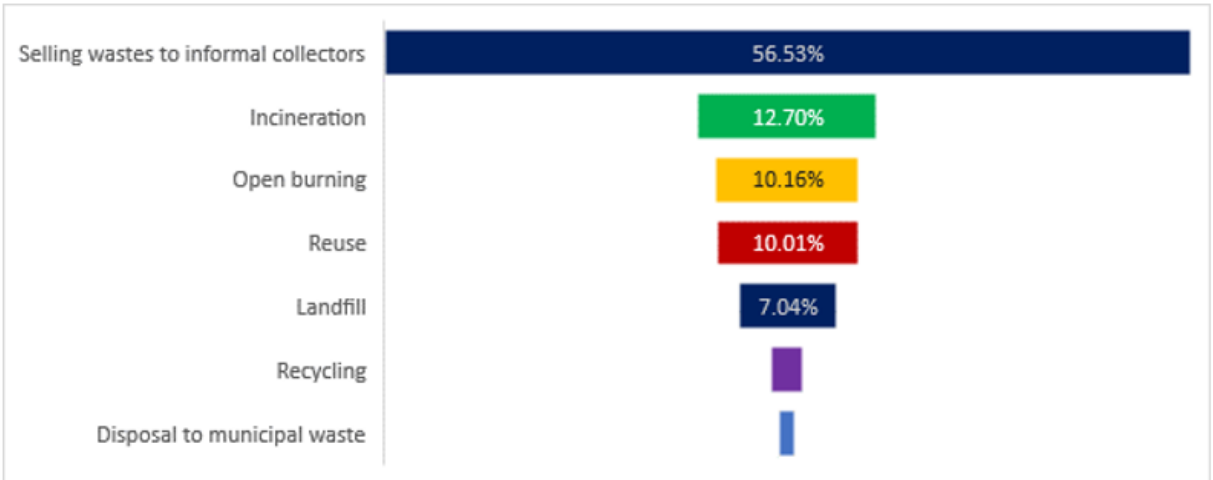
More than 80% of the total textile waste in Ethiopia generated from the textile processes is fabric waste. Over 71% (62,085 tons) of the textile waste is fabric waste from garment manufacturing process due to low marker efficiency, high recut, reject and roll end bits. A staggering 7% and 5% greige and finished fabric waste is generated from the weaving& knitting and wet processing processes respectively.



A significant proportion of fiber waste (8% of the total textile waste) and is generated from the cotton spinning processes. Spinning, weaving and Knitting process in total has generated around 8.3% (7,223 tons) of the total textile waste in the form of yarn waste. On the other hand, about 48% of the total national textile waste is single fibre, 100% cotton (26.5%) and 100% polyester (21.3%). Almost half of the total (48%) are cotton rich (26.2%) and polyester rich (21.8%) blended textile materials which adds additional level of complexity to the recycling process. Other Synthetic fibre materials such as Acrylic and man-made cellulosic accounts 1.6% and 2.57% respectively. On the other spectrum of waste, the annual effluent generated from the sample factories is 474, 634 cubic meters.



The most prevalent and common disposal method of factories solid wastes is selling wastes to informal collectors which accounts for 56.53% of the total share. Next to it, incineration, open burning, reuse, landfill, recycling and disposal to municipal waste holds the share respectively as exhibited in the graph below.



The average annual direct GHG emission estimated from the national solid waste management practice is 12.18 Mt CO2?e. The uPOPs emission due to open burning and incineration of the national solid waste is estimated to be 6.45 g TEQ per year. This figure addresses the conventional industries and as this project will include TG industries such as manufacturers of curtains/blinds, beddings, blood repellent surgical gowns, carpets, oil/water/stains repellent fabrics, outdoor gears, automotive industry textiles, upholstery covers, firefighters and military uniforms, the uPOPs emission will be far more than 6.45 g TEQ per year and meeting the project target of 7.5 g TEQ per year.

POPs contaminated/POPs waste stock to be disposed to the environment from the sample factories is estimated around 563.5 tons per year which is observed at Kombolcha Textile Share Company. On the other hand, non-POPs solid waste to be recycled for the sample factories is estimated at 5,236 tons per year.

In 2004, the Ethiopian EPA established two reports on guidelines for municipal waste management and composting. The municipal waste guidelines discuss environmental impacts, waste minimization, and options for collection and recovery. The EEPA?s largest responsibility is to ensure that all administrative levels and sectors are implementing formal environmental policies and laws. In order to ensure that these standards are carried out, the EEPA has created environmental units within each regional state responsible for implementation. Called Units of Climate Resilient Green Economy (CRGE), these regional groups consider climate adaptation and greenhouse gas mitigation strategies in daily activity.

According to the experts of Addis Ababa Solid Waste Management Agency, in the city, the formal waste management sector is characterized by the primary collection, carried out mainly by pre-collector associations, the secondary collection, and final disposal, mostly carried out by the government, and few SMEs. The only city which started to recycle the municipal solid waste is Addis Ababa, in the Reppie area (locally known ?KOSHE??).

A3.2 Associated Baseline Projects

The following projects implemented or are underway or planned by the project partners and will support the project activities (Table 2).

Table 2: Associated baseline projects.

Project (title, donor, duration)	**Relevant activities**
The National Implementation Plan (NIP) of the Stockholm Convention on Persistent Organic Pollutants (POPs), 2006.	1. Defines activities to be undertaken for implementing the obligations under the Stockholm Convention. The submission of the document to the Secretariat of the SC was done in 2006.
The National Implementation Plan (NIP) Update of the Stockholm Convention on Persistent Organic Pollutants (POPs).	Updates the activities of the initial NIP and define activities for New POPs was not submitted yet. Capacity Strengthening and Technical Assistance for the Implementation of Stockholm Convention National Implementation Plans (NIPs) in African LDCs of the COMESA and SADC sub-regions, implemented by UNIDO and UNEP, funded by GEF (GEF ID 3942), closed in 2016
PCP ? Programme for Country Partnership in Ethiopia, UNIDO, 2014	This project will build on UNIDO PCP especially in the Textile and Apparel sector. Also, the project will collaborate with the Creative Hub in Ethiopia which aim to support creative industries and entrepreneurship as part of the PCP?s focus on leather and leather products.

Investment Promotion on Environmentally sound Management of Electrical and Electronic Waste: Up-Scale and Promotion of Activities and Initiative son Environmentally Sound Management of Electrical and Electronic Waste in Ethiopia, implemented by UNIDO, funded by GEF (GEF ID 5040), closed in 2015	The project will tap on any relevant experiences, cases, best practices, lessons from these project
Capacity-building and job creation for youth and women in textile sector in migration prone areas of Ethiopia, implemented by UNIDO, funded by EUROTrust Funds, approved in 2017	
Sustainable textile investment and operation in Ethiopia, Implemented by UNIDO and GIZ, funded by China: Ministry of Commerce (MofCom) and Germany: Federal Ministry for Economic Cooperation and Development (BMZ).	With this project, resources and information will be shared to ensure synergy and the possibility of using the hydropower energy in the participating facilities will be investigated.
Sustainable Industrial Clusters (S.I.C.) projects, GIZ	The project is partnering with GIZ with a lot of synergies under all components. Resources and information will be shared to ensure synergy and the possibility of using the hydropower energy in the participating facilities will be investigated.
Better Work Programme by ILO	The main objective of the International Labor Organization?s (ILO) Programme strategy is to see improved respect of workers? rights and responsibilities leading to greater incomes and compensation, and enhanced safety, equality, voice, and representation. The plan also aims to lift Industrial productivity and competitiveness and encourage accountable and transparent government institutions. Together with other ILO programmers SCORE, INWORK, Employment Injury Insurance (EII), Labor Inspection/ Occupational Safety and Health Branch and Vision Zero Fund, we aim to: - Establish a system for sustainable and inclusive compliance with national labour law ? guided by international labour standards. - A more productive and competitive garment and textile sector, better able to compete in global supply chains. - Build sound industrial relations systems at the factory and national level. - Establish a sustainable workplace injury prevention, protection and compensation system.

A.4 The proposed alternative scenario with a brief description of expected outcomes and components of the project

The project intervention will address the above mentioned barriers (section A2.2) by strengthening the sound management of industrial chemicals and their wastes through better

control, and reduction and/or elimination in Ethiopia to promote Circular economy in the textile garment sector. Furthermore, the use of POPs will be prevented by promoting the environmentally sound management (ESM) of POPs and waste through the introduction of BAT/BEP measures to protect human health and the environment.

The project will promote circular economy in the textile and garment sector through the following among others:

- Product and process system design in the entire value chain for durability, multipurpose application, reusability, recyclability, maintainability and repairability; i.e. adoption of a life cycle thinking (cradle to cradle) approach.

- Adoption of low carbon and cleaner technologies through the application of resource efficient and cleaner production (RECP) tools and techniques

- Productivity improvement and waste minimization through process optimization; equipment modification and acquisition of cleaner technologies;

- Non-hazardous manufacturing and production operations for POPs and other toxic chemicals pollution prevention and control through the implementation of BAT/BEP in the textile industries and garment making industries.

- Waste recovery, reuse and recycling enhancement and improvement through avoidance of hazardous chemicals and waste in the textile and garment production process;

- Adoption of ?zero waste to landfill? business strategy in the TG value chain through waste minimization of process wastes, recycling and reuse of end-of pipe wastes with the establishment of green industries that will convert textile and garment wastes and offcuts into cotton fibre for reuse as input materials in the textile fabric making industries and downstream in the garment making industries.

- Support of the regenerative of economy through substitution of recycled natural cotton and synthetic fibre for raw cotton fibre as input resources in the textile manufacturing process; and use of renewable energy, biodegradable inputs and bio-chemicals.

- Restoration of contaminated and degraded land through reduction of wastes to landfill and by keeping materials and products in use.

As the removal of hazardous chemicals in textile production is a prerequisite for sustainable circular models, reducing and phasing out the use of hazardous chemicals in the textile sector is needed. Moreover, under Component 1, activity 1.1.6 will address the imported material (supplier), it will build capacity to test and monitor the supplies to ensure the imported fabric for garment making is POPs free.

The main goal of Component 2 is to implement BAT/ BEP/ RECP methodology and Circular Economy concepts for the prevention and reduction of POPs and other hazardous chemicals and materials used in textile and garment production facilities. This will enhance the recyclability of textile fabric and its wastes that are generated upstream in the textile mills and garment making operations. The POPs free fabric from the textile mills will be used in garment production process, and recycling operations through the introduction of green product design, improved operational efficiency and sustainable municipal waste management plan as part of implementing circular economy concept under component 3. Furthermore, the implementation of RECP methodology will minimize wastes and any wastes generated will be POPs free fabric.
Some of the participating facilities have integrated facilities (fabric and garment) and the project will ensure the elimination of the use of POPs chemicals as well as the minimization of wastes through BAT/ BEP/ RECP especially in the fabric/textile facilities before they are used in the garment facilities, where circular economy concepts will be implanted for the reuse and recycling of the discards.

The project will focus primarily on ?post-industrial/pre-consumption? wastes and not on post consumption waste such as worn garment. However, based on the pilot demonstration location and the assessments results, post consumption wastes might be included. Through the development of ESM plan (output 3.1), the post-consumer can be integrated in the future. Under output 3.7, the project will link to ongoing TG waste initiatives, other TG industrial facilities wastes and municipality TG waste.
The project is partnering with local recyclers and waste management entities as well as ZDHC on CE and sustainable chemicals management.
The TG sector will be strengthened and broadened through the development of waste recovery and recycling segment of the TG value chain that will create new green industries and related services. The project will undertake a technoeconomic assessment of the circularity of the TG sector and development of viable business models and financial mechanisms for the economic viability and financial profitability of the recycling chains. The lessons learnt and experiences gained in the pilot demonstration of the circular economy concept in the TG sector will guide policy reforms and regulatory framework that will be required to promote circular economy in the TG value chain. These will be in form of green products design and standards, tools and methodologies for chemicals tracking; compliance monitoring and enforcement of regulations and standards; development of guidelines for an integrated textile and garment value chain; products traceability and tracking. The outcomes and results of the pilot demonstration of textile/garment wastes/offcuts will have implications for the review of existing municipal solid waste management practices; policies related to establishment of industrial clusters and parks; and transboundary movement of wastes and used clothes and clothing. The technoeconomic assessment of the circularity of the TG sector will also identify investment capital and operating cost regimes that would enable and sustain the implementation of the circular economy concept. In addition the required fiscal and policy incentives, investment financing and promotion guidelines that would support its sustainability will have to be prepared, enacted and implemented. In order to replicate and upscale the activities of the project the requirements for regional and global networking and partnership will need to be identified and the requisite conditions for enabling and implementing it will be addressed. The knowledge management component will establish a platform that will provide the opportunity for interactive information exchange and experience sharing and facilitate the dissemination of the lessons learnt and experiences gained from the pilot demonstration with the active involvement and participation of the international brands and other global players like the Zero Discharge of Hazardous Chemicals (ZDHC).

The selection of sites for the pilot demonstration was based on the following criteria: textile and garment industries at locations with high wastes generation; industrial locations which pose high environmental pollution challenges; national government priorities and preferences to jumpstart the implementation of the circular economy concept; and industrial parks where ancillary support facilities for waste collection, separation; and transfer and transportation can be easily provided and/or upgraded. In addition, through the adoption of the value chain approach, industrial locations and sites where textile manufacturing industries and textile production share contiguous boundaries was also given consideration for ease of logistics.

The industries were identified based on size, production capacity and processes, connection to international fashion brands; willingness to participate in the project; readiness to implement recommendations for process improvement and readiness to provide requisite co-financing to complement GEF resources. Industrial facilities that large production capacities and offer opportunities and operational flexibility for process modifications; equipment retrofitting and upgrade; and ability and capacity to acquire and absorb environmentally sound technologies (ESTs) were given preference. Industries that have combined textile and garment production facilities were also identified as they offer the opportunity for an integrated business model development.

The project will at least has two-demonstration pilots in Ethiopia. The demonstration pilots will target three stages: textile manufacturing, garment making and recycling/reuse.

The project will establish regional cooperation and network for information exchange and experience sharing as well as regional and interregional knowledge management. Specifically the project will be implemented with close linkage with UNEP regional textile project in Asia.

The project will build strong partnerships with various relevant stakeholders to address such root causes under the COVID-19 outbreak. The project has enlisted the involvement and collaboration of partners in the knowledge management and global value chains such as ZDHC, Cambridge University Circular Economy Centre; Sustainable Fashion Academy and the international fashion brands, which will bring their expertise, knowledge and competencies to ensure that the requisite resilience is built into the project to be able to achieve the envisioned global environment benefits. This intervention aims at bringing about convergence, coordination and broader adoption of these initiatives in order to generate a durable change in the TG sector. If all the assumptions made are in place, this transformational change is expected to occur at all levels: social, economic, environmental and governmental, as shown in the theory of change (TOC, see Figure 5)

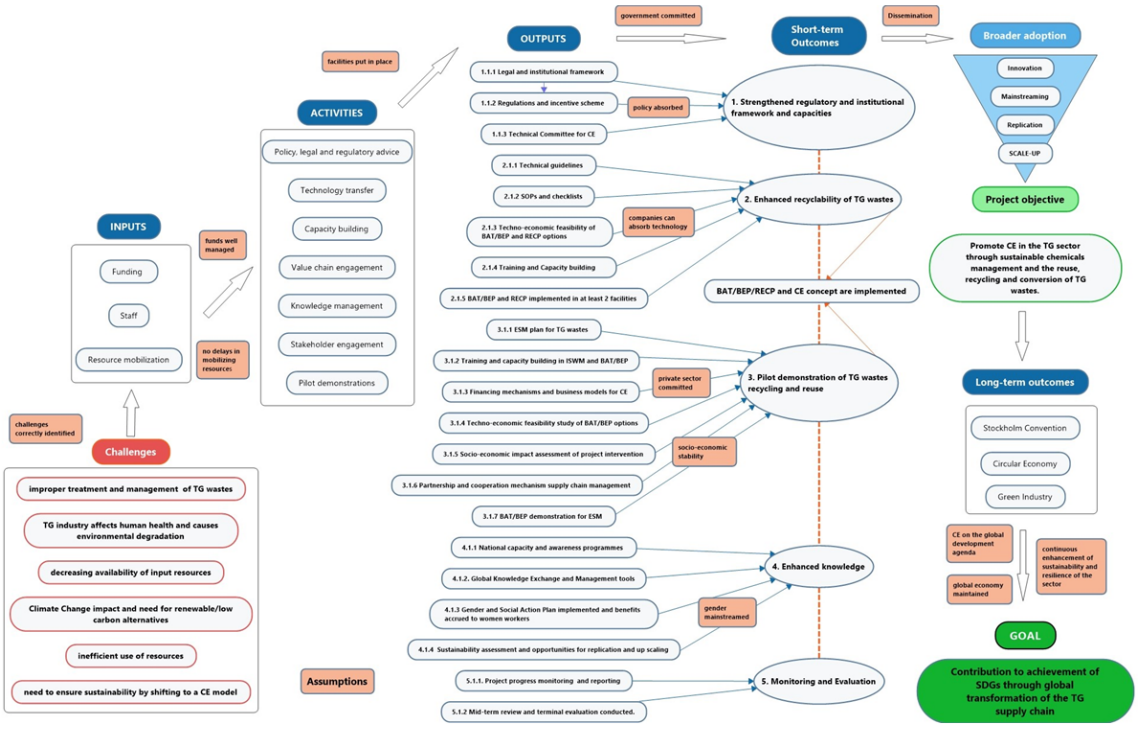


Figure 5: Theory of Change

A4.1. Component 1: Strengthening of regulatory and institutional capacities for adoption and promotion of Circular Economy (CE) in the textile and garment sector

The main goal of Component 1 is the creation of the necessary institutional frameworks, effective policy control and incentives and technical resources to advance in the Circular Economy agenda in the TG sector along the whole value-chain by promoting BAT/ BEP/ RECP while preventing/ reducing POPs and other hazardous chemicals.

The current policy, regulatory, and financial environments do not provide incentives for the phase out of POPs and CoCs. Competition on costs remains a key driver over sustainability, both for the SMEs. The criteria to use chemicals are predominantly price and availability,

followed by extended credit terms and compliance with quality requirements. The COVID pandemic has led to extreme competition in the sector which forces the facility management to cost-cutting.

Output 1.1. Legal and institutional framework for life cycle management of the TG supply/value chains.

Activities will consist of

1.1.1 Gap analysis and evaluation of legal mandates, institutional capacities and review of the relevant existing laws and regulations, leading to proposing a revised legal framework after extensive consultation with wide-range stakeholders engagement (Ministries, private sector, civil society, etc.) to strengthen the legal and institutional framework to promote circular economy in the TG sector including technical infrastructure for implementation of BAT/ BEP on POPs, hazardous chemicals and textile waste management as well as RECP options (energy efficiency, renewables) will be promoted and strengthened.

1.1.2 Incorporate the appropriate hazardous chemicals (including POPs) and wastes specific legislation for a toxics-free TG sector Ethiopia.

1.1.3 Develop policy/strategy to support implementation of EPR programmes/activities for the life cycle management of input and intermediate materials, by-products, products and waste in TG supply/chains

1.1.4 Carry out Capacity building activities and conduct trainings to strengthen governments? bodies to enforce regulations.

1.1.5 An implementation of a national scheme for segregation, storage and management of POPs chemicals and wastes will be also assessed in Ethiopia in accordance with BAT/ BEP guidelines to meet SC/ BC and other relevant criteria. The Environment commission will work with the Ministries of Industry and Ministries of Finance (National Revenue Authority, in particular) among others, to commit in-kind and in-cash contributions towards enforcement of these regulations.

1.1.6 Strengthen the testing and analytical capacities in the country to ensure input materials, products and wastes in TG value chain are free of hazardous chemicals

Output 1.2 Regulation and incentive scheme for promotion and sustainability of circular economy in the TG sector.

Activities will consist of

1.2.1 Set targets and/or incentives to promote/enforce the practices and sustainability of circular economy in the sector, based on the gap analysis and evaluation report and to strengthening the legislative network. For example, incentives for collection and recycling of textile waste while banning its incineration.

1.2.2 Develop a masterplan/national strategy for the transition to circular economy using the TG sector as a pilot case

Output 1.3 Technical Committee for Circular Economy in the TG sector
Activities will consist of

1.3.1. A Multisectoral Technical Committee for Circular Economy in the TG sector will be legally established and made operational. The strengthening of capacity to promote Circular Economy in the TG Sector is multifaceted, involving establishment of a coordination mechanism and targeted training. Coordination with other POPs projects in the African region.

1.3.2. Prepare the Terms of reference (TOR) for the functions and activities of the Committee, its membership, responsibilities including providing technical advice and support to the project.

1.3.3. Reports and recommendations of the Committee will provide inputs into the development of a national strategy/masterplan for transition to circular economy in the country.

A4.2. Component 2: Efficient and POPs-free textile manufacturing process through the implementation of BAT/BEP and RECP investments

The PPG phase determined little regarding the use of POPs and CoCs in the textile value chains of the country beyond what is historically and globally known through academic channels. Country regulators nor TG facilities have sufficient data to determine the scale of the use of POPs specifically. The PPG reports did identify priority sectors and brands most likely to be using POPs and Perfluoro-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 education be provided, and an accounting created. B best available techniques to achieve this action are full chemical inventories, covering both POPs and other CoCs. Testing of chemicals will also be a component of this section to determine which chemicals protected under trade secret are CoCs and POPs in violation of the Stockholm Convention.

During the PPG phase, an assessment of the textile and garment sector was undertaken to identify and quantify the POPs and other chemicals of concern that are being used in the TG sector of Ethiopia. Due to weak regulation, policy and institutional framework for chemicals management, there is insufficient data and information to fully establish the quantity of these chemicals in use. In addition, due to absence of correlation/mapping of the chemicals with their tradenames, it is also difficult for the consumer textile mills/industries to identify and confirm the active ingredients in the specialty chemicals that are being used in the production processes. This is also due to the lack of properly documented database of chemical inventory and tracking tools to for their identification, classification and management.

However, there are textile and garment making industries that are involved in the manufacture of special applications wears, gears and clothing that require the application of POPs and PFAS for stain repellency, water repellency, flame retardancy and fire resistance. There is also a lack of and/or inadequate national capacity and laboratory infrastructure for POPs chemical testing and analysis; in order to ensure their effective management and control.

In Africa, especially in Ethiopia, majority of the textile fabrics used in the garment and apparel making are imported from China, Taiwan, Hong Kong, India, etc. This can be attributed to the fact that compliance with international standards and MRSL requirements by the local TG sector

industries cannot be ascertained/established. The weak regulatory framework and lack of adequate testing and analytical capacities are encumbering the compliance monitoring and enforcement of environmental and quality standards of imported fabrics for garment making with RSL requirements and provisions of the global environment agreements on chemicals and waste management including the Stockholm Convention on Persistent Organic Pollutants.

In order to ensure a comprehensive assessment of POPs and other chemicals of concern in the TG sector and move the sector to a more toxic-free and more circular business model, the scope of the chemicals to be covered will need to be broadened to include per- and poly-fluoroalkyl substances (PFAS) in view of their specific application in the TG sector. The inventory of POPs and other COCs will be the first in a series of activities that will be carried out to identify capacity gaps; policy and institutional deficiencies in order to develop appropriate intervention strategies.

The main goal of Component 2 is to implement BAT/ BEP/ RECP methodology and Circular Economy concepts for the prevention and reduction of POPs and other hazardous chemicals and materials used in textile and garment production facilities as well as its substitution by Environmentally Sound Alternatives (ESA) including non-chemical alternatives, in line with the requirements of the SC and National priorities, while enhancing the recyclability and reuse of textile and garments wastes through POPs-free textiles and garment manufacturing. The component will also introduce RECP options such as wastewater minimization, pollution prevention and control and management, energy efficiency and renewable energy implementation.

In textile manufacturing processes, process improvement strategy will deploy UNIDO/UNEP resource efficient and cleaner production (RECP) techniques to improve production efficiency, reduce resource intensity; minimize waste and prevent pollution. Best available techniques and best environmental practices (BAT/BEP) will be implemented to prevent the use and formation of POPs and CoCs chemicals in the dyeing and finishing sections through the avoidance of chemicals containing elemental chlorine, and other POPs precursors as articulated in the BAT/BEP Guidelines of the Stockholm Convention.

In cooperation with the international brands and ZDHC, some environmental footprint performance improvement programmers such as the zero discharge of hazardous chemicals, restricted substances list management, better cotton initiative, sustainable apparel coalition etc. will be implemented. The adoption of international standards and implementation of certification schemes by the participating industries will be supported by the project

Output 2.1. Chemical inventories for POPs and technical guidelines for environmental sound management of POPs chemicals and wastes

This component will provide technical guidance to participating TG production facilities including the introduction of the Circular Economy concept, RECP for resource conservation and waste minimization and BAT/BEP for prevention/reduction of POPs and improvement of process efficiency along the whole life cycle of the textile / garment sector in selected facilities.

Activities will consist of:

2.1.1 Prepare inventory, database and material flow analysis (MFA) of chemicals used and wastes generated in the TG sector, with information on supply sources, tradenames/commercial names; industrial application/uses; MSDS verification, recovery/reuse, environmental fate and transport.

2.1.2 Prepare technical guidelines, protocols and procedures for safe and environmentally sound management of the chemicals along the TG supply/value chains. This will include identification, labeling, stock-taking, record keeping, retention, tracking, packaging, storage, transportation safety standards; PPE and emergency response equipment; accident/fire prevention and fire alarm system; spill prevention, control and countermeasures, emergency preparedness and response; first aid procedures/instructions etc.

2.1.3 Capacity building and institutional strengthening on establishment of a sustainable chemicals and wastes management system in pilot textile industries in response to MRSL/RSL requirements, and adoption of ZDHC tools and other relevant methodologies. This will include assessing the pilot industries and conducting appropriate training programmes.

2.1.4 Public education and awareness raising programmes on safe and sustainable chemicals and wastes management along the TG value/supply chains.

Output 2.2 Standard operating procedures (SOPs) and checklists concerning POPs pollution prevention and control

Also, the component will provide technical guidance on and standard operating procedures (SOPs) for BAT/BEP, development of investment prioritization criteria, as well as construction supervision, testing and full operation of BAT and BEP, ISWM and RECP interventions.

Activities will consist of:

2.2.1 Develop and implement standards operating procedures (SOPs) for handling and usage of chemicals and auxiliaries in the textile production process: input, process and output optimization and waste minimization in pilot TG industries.

2.2.2 Based on chemicals management assessment carried out, identify and evaluate BAT/BEP options for phase out and prevention/reduction of POPs and other hazardous chemicals in the TG industries. Select POPs-free and non-hazardous alternatives and technologies based on a screening matrix to be developed for selection of the most suitable alternatives/option(s).

2.2.3 Undertake detailed audit of the pilot facilities and identify options/strategies for implementing resource efficient and cleaner production (RECP) techniques and deployment of environmentally sound technologies (ESTs).

2.2.4 Develop business models for sustainable chemicals management such as Chemical Leasing. Access to UNIDO?s Chemical Leasing tools and trainings.

Output 2.3 Techno-economic feasibility of BAT/BEP and RECP options

Techno-economic feasibility of BAT/BEP for POPs alternatives (also non-chemical alternatives) for chemicals, wastes and stockpiles management including financing mechanisms and business models will be carried out.

Based on the PPG studies, preliminary options were identified to achieve the aforementioned objectives, i.e to avoid, at least to substantially minimize the application of chemicals of concern. The list includes good management practices, water, chemical and energy optimization/minimization and chemical substitutions. Some of the potential measures and their justifications:

Options	**Tools**
Equipment maintenance and operations audit	
Maintain equipment even if it not in use and check for leaks in order to avoid any unintentional loss of chemicals and materials.	Improved maintenance procedures, availability spare parts. Ensure flexibility and safety of process operations

Chemicals storage, handling, dosing and dispensing	
Each chemical should be stored according to the instruction given by the manufacturer in the Material Safety Data Sheet	Storage conditions, proper SOP. Chemical safety, loss and accident prevention
Use correct measurements (accurate weighing, dispensing and mixing) of chemical to avoid any over-dosage	Proper SOP?s, calibration procedure, proper utensils. Accident and loss prevention, risks mitigation
Install automated dosing and dispensing systems which meter the exact amounts of chemicals and auxiliaries required and deliver them directly to the various machines through pipe work without human contact.	Investment, production management, technical and economic feasibility, space requirements, automation requirement. Improved operational efficiency and optimization of process operations
Minimization/Optimization of chemicals used	
Establish and implement a chemicals management system (CMS) as part of the EMS to identify and to avoid chemicals of concern following the approaches of ZDHC, bluesign or GOTS	Policy, strategy, procedures, transparency, capabilities, improving production and process management; .Monitoring, tracking preventing and controlling the POPs and other hazardous chemicals pollution
Establish and implement a chemicals inventory with related data base and tracking system as part of the CMS	Traceability procedure, data collection, data analysis. POPs and other hazardous chemicals pollution prevention and control
Elimination of the use dyes which (may) contain POPs and uPOPs such as HCB, PCB or PCDD/F in chloranil-based dyestuffs (e.g. Pigment Violet 23) or in halogenated pigments, especially based on phthalocyanine (e.g. Pigment Green 7 or 36), or other dyestuffs/pigments	Analysis and continuous improvement procedure. Optimization of process chemicals and agents. Shift to green chemicals and new business models for chemicals management
Minimize the losses of chemicals by optimized application techniques (minimized volumes of foulards and preparation vessels) as well as zero discharge of residual formulations by environmentally sound disposal of segregated residues	SOP?s, measurement equipment, improved utilities, data collection, analysis and response. Shift to POPs alternatives and prevention of POPs/U-POPs emissions
Improving of coordination within laboratory and dye house,	SOP, management, development coordination indicators. Better product quality and improved operational performance
Water and Energy use	

Insulation of pipes, valves, tanks and machines	Investment, complexity of valves. Reduced resource intensity of industrial operations. Improved resource and energy efficiency and enhance productivity
Blower and water pump of the printing machine should be switched off when printing is not in operation	SOP, awareness raising Improved energy efficiency and better operations management and reduced severity of machinery and equipment
Optimized cleaning of the equipment (water-free cleaning and multiple cleaning steps with low amounts of water)	SOP, cleanliness indicator and measurement Improved water management and adoption of cleaner production
Re-use of cooling water as process water (and also for heat recovery).	Investment, space requirement, SOP. Process optimization and improved efficiency of operations
Optimizing boiler houses (re-use of condensed water, preheating of air supply, heat recovery in combustion gases	Investment, space requirement Energy recovery and improved resource/energy efficiency
Segregation of hot and cold waste water streams prior to heat recovery and recovery of heat from the hot stream. Application of pinch technology	Investment, space requirement. Process optimization and improved energy management and efficiency.

Activities will consist of:

2.3.1 Based on assessment undertaken under Activities 2.2.2 and 2.2.3 identify all relevant information and data to be collected for the techno-economic feasibility study: potential technology and service providers locally/externally, gather information on socio-economic data on relevant technologies, source and costs of required equipment and tools; availability of local expertise; economic and market conditions; labour costs; training institutions and technical support centres; technology transfer agreement and licensing fees, royalties; taxes, etc. Based on the information and data required, a framework/template for conducting techno-economic feasibility study of implementing BAT/BEP and RECP options will be developed.

2.3.2 Techno-economic feasibility study report (with cost-benefit analysis) of BAT/BEP and RECP options such as POPs pollution prevention and control guidelines; housekeeping measures, process optimization/modification by process- and production-integrated measures, wastes and wastewater minimization, pollution control and management, energy efficiency and renewable energy implementation will be prepared.

Output 2.4 Training and Capacity building in BAT/BEP, RECP and Circular Economy.

Activities will consist of:

2.4.1 The component will provide a training and capacity building of relevant stakeholders including industries? personnel in BAT/BEP, RECP and Circular Economy. The training and capacity building of policy makers, TG industries, business associations, entrepreneurs, financing institutions, participating companies, NGOs, local service providers, consultancy companies, environmental agencies etc. based on the findings and recommendations of the capacity assessment and the feasibility studies (2.3.1 and 2.3.1), as well as BAT/BEP/RECP. This activity will promote inclusivity and implement the recommendations of the Gender Mainstreaming Strategy. Training and capacity needs assessment and gap analysis for the implementation of BAT/BEP, RECP and Circular Economy in the entire TG value chains.

2.4.2 Identify service providers to develop training guidelines, modules and manuals for the various stakeholders and beneficiaries.

2.4.3 Organize training programmes/capacity building activities with gender-balanced participation.

2.4.4 Evaluate training impact and prepare training reports.

Output 2.5 BAT/BEP and RECP options identified and implemented in at least two facility for the country.

The purpose of this intervention is to ensure that textile/garment facilities prevent and reduce the import and use of POPs, new POPs and other hazardous chemicals while textile and garment and TG wastes do not contain POPs and other hazardous chemicals; thereby making them highly recyclable and more available for recycling operations by the implementation of specific private sector investments.

The outcome of this component will be linked to the demonstration of the economic feasibility of the identified BAT/ BEP/ RECP options, even those under development, in the TG sector. Therefore, besides the BAT/ BEP/ RECP implemented in the selected companies, these co-financed investments will encourage wider circular economy investments in the whole TG sector in order to be in line with both national regulations and market demand.

The investment intervention of this component will demonstrate the recommended BAT/ BEP/ RECP options based on the findings of the assessments and the techno-economic feasibility studies such as equipment retrofitting, technology/equipment transfer, process modifications; installation and commissioning of new equipment and related building capacity and training.

Activities will consist of:

2.5.1. Implement the most applicable BAT/BEP and RECP options for environmentally sound management of chemicals/wastes, enhanced productivity and low-carbon textile and garment production.

2.5.2. Select the most technically feasible and economically viable options based on in-plant assessment and audits for each pilot industry.

2.5.3. Prepare the list required equipment/spares/ancillaries, including costs, for process modification, retrofitting and facility upgrade.

2.5.4. Procure the required software, hardware and equipment/spares and undertake necessary in-plant installation/commissioning.

2.5.5. Develop standards operating procedures, occupational health and safety manuals; and training manuals.

2.5.6. Conduct in-plant training programmes and pilot demonstration.

2.5.7. Carry out in-plant assessment of process and operational performance improvement.

2.5.8. Assess the socio-economic impact of the BAT/BEP and RECP options implemented in the pilot industries/facilities. The UNIDO guidelines for Transfer of Environmentally Sound Technologies (TEST) will be used among other tools to implement sustainable production models in industry through integration of RECP into management systems.

A4.3. Component 3: Introduction of Circular Economy concept for uPOPs emission reductions through ESM of textile and garment wastes and pilot demonstration of textiles/garment wastes recycling and reuse.

As the removal of hazardous chemicals in textile production is a prerequisite for sustainable circular models, reducing and phasing out the use of hazardous chemicals in the textile sector is needed. The activities under this component will go beyond the shift to chemicals alternatives, but towards a non-toxic and circular economy approach in the textile and garment sector.

The main goal of component 3 is to promote the implementation of pilot demonstration for the reuse and recycling of textile and garment wastes through the introduction of circular economy concepts, BAT and BEP in existing and future reuse/recycling facilities with the final objective of reusing and recycling 100% of wastes in the future in an environmentally sound manner. The project will focus primarily on ?post-industrial/pre-consumption? wastes and not on post consumption waste such as worn garment. However, based on the pilot demonstration location and the assessments results, post consumption wastes might be included.

In the garment making production process; BAT/BEP will be implemented to avoid the use of hazardous chemicals in garment making and finishing. This will entail the introduction of eco-design techniques to minimize the generation of wastes; off-specifications and offcuts in the production process. The international brands such Nike, Puma, ASOS, Adidas, etc. are already implementing some of these activities under their corporate social responsibility (CSR) programmers individually and in cooperation with other players in their supply chains. This cooperation will be strengthened and coordinated by the project especially for garment makers that are suppliers to more than one global brand.

The project will promote the circularity of the textile and garment value chain through adoption of sustainable waste management plans and strategy. The project will identify opportunities for forward integration by the textile and garment sector through the reprocessing and recycling of TG wastes into the textile manufacturing process. Regarding contaminated wastes, the project will support the disposal in an environmentally sound manner through the application of appropriate BAT/BEP.

Output 3.1 Environmentally sound management (ESM) plan for textile/garment wastes.

The technical assistance task of this component will provide technical guidance to key stakeholders including the introduction of the Circular Economy concept by developing an environmentally sound management (ESM) plan for textile/garment wastes.

Activities will consist of:

3.1.1. Textile and garment wastes mapping and characterization in the participating companies and the sector in general through

- ? Review of the database of textile and apparel companies (provided by local partners such as the Ministry of Industry or textile associations), and subsequent shortlisting of additional companies to be consulted
- ? Asses and consult (circulated a questionnaire to) the short list of companies to collect information on their types of operations, size, market, etc.

3.1.2. Develop a methodology for collecting TG wastes data of the pilot value chains to contribute to the national waste statistics/inventory (team/partner with the national statistic department/office).

3.1.3. Assessment of current TG wastes management and disposal practices, recycling businesses and their linkages with the municipal solid waste management system.

3.1.4. Develop environmentally sound management (ESM) plan for textile/garment wastes in the participating companies which will be integrated to the municipal/national management plan/strategy.

3.1.5. Asses interregional wastes flow/trade especially between countries in the region.

Output 3.2 Training and capacity building in ISWM and BAT/BEP for ESM of textile and garment wastes.

Activities will consist of:

3.2.1. Develop training materials and technical guidelines for sustainable TG wastes management along the supply/value chains based on best available techniques (BAT) and best environmental practices (BEP) for promotion of circular economy and entrepreneurship development.

3.2.2. Conduct trainings and building capacity of key stakeholders and informal sector on wastes data collection and integrated solid waste management (ISWM) and BAT/BEP for ESM of textile and garment wastes/discards for uPOPs/ GHGs prevention/reduction and degraded land reduction/mitigation.

Output 3.3 Financing mechanisms and business models for circular economy.

Activities will consist of:

3.3.1. Review global innovative business practices and economic models in the TG value chain.

3.3.2. Identify and evaluate existing financial mechanisms, facilities, and incentives for green investment financing; incubation schemes, leverage financing and venture capital for innovative business ideas

3.3.3. Develop business models and financing mechanisms for sustainability of TG waste recycling and reuse operations; extended producer responsibility (EPR), entrepreneurship development and business to business (B2B) linkages, socio-economic impact assessment of project intervention on the TG sector and value addition to national economy, including by enlisting the support of the PFAN advisors in the region.

3.3.4. Establishment of entrepreneurship scheme for sustainable TG waste recycling and management.

3.3.5. Link/access to ongoing financial and entrepreneurial African programmes, trainings and resources (eg. AfDB, UNIDO?s Global Cleantech Innovation Programme, UNEP InTex in South Africa, Reach for Change in Ethiopia, GIZ Sustainable Industrial Clusters (S.I.C.) project in Ethiopia, GreenCape in South Africa, etc.).

3.3.6. Entice projects and businesses to access PFAN services to mobilize private sector financing.

Output 3.4 Techno-economic feasibility study of BAT/BEP options for recycling/reuse of textile and garment waste.

Based on the PPG studies, preliminary options were identified to achieve the aforementioned objectives, i.e to avoid, at least to substantially minimize the application of chemicals of concern (Component 2) as prerequisite for sustainable circular models/recycling/reuse. The list includes good management practices, and end-of-pipe treatment options. Some of the potential measures and their justification:

Options	**Tools**
Management of waste streams	
Establish and implement an environmental management system (EMS).	Policy, strategy, procedures, cost for certification, required capabilities. Better/enhance corporate social responsibility; Adoption of best practices and ISO 14000 certification
Separate collection of unavoidable solid waste	SOP, awareness raising. Environmental pollution prevention and control
Reduction of packaging	Communication with suppliers; Ensure green procurement policy and green supply chain management
Use of returnable containers	Communication with suppliers
Recycling of textile wastes	Establish a collection and processing system, involve stakeholders; sound solid waste management plan supported by material flow analysis
Recycling Option	
Reuse of residual printing paste based on its perishability by collecting and sorting.	SOP, containers, storage conditions, labelling Implementing zero to landfill plan as part of circular economy implementation strategies

Reuse and/or recycling of cleaning water to optimize the cleaning of the printing equipment.	Investment, space requirement, SOP, cleanliness indicator. Improved water and resource management for waste minimization and pollution prevention
Collect paste from the drums manually by scrappers	SOP. Environmentally sound solid waste management for pollution prevention and control
Collect and reuse the print paste of all types	SOP. Environmentally sound solid waste management for pollution prevention and control
Collect and reuse the print paste from rotary printing (pumps, pipes and squeezes)	SOP. Environmentally sound solid waste management for pollution prevention and control
Recycle of treated waste water to non-critical areas	Investment, space requirement, quality control

Activities will consist of:

3.4.1. Techno-economic feasibility study of BAT/ BEP options for recycling/reuse of textile and garment wastes will be done in order to see the potential of application of BAT/BEP that would lead to reduction of environmental impact and creation of green jobs. The assessment will also review the main aspect needed i.e. administrative, managerial and technical further improvements.

Output 3.5 Socio-economic impact assessment of project intervention

Activities will consist of:

3.5.1. Review and provide evidence of the environmental and socio-economic impacts of different sustainable economic models in the textile value chain.

3.5.2. Carry out socio-economic impact assessment of project intervention on the TG sector and value addition to national economy. The assessment will include the social impacts (e.g. health), economic impacts (can include effects on employment and jobs creation), new investments, economic growth and environmental impacts.

Output 3.6 Partnership and cooperation mechanism for supply chain management.

The project will establish partnership and cooperation with global fashion brands, their suppliers and global textile organizations. Although currently the cooperation between many of the textile and garment makers and the international brands focuses mainly on meeting contractual obligations and commitments, there are a lot of opportunities for cooperation and partnership between the textile and garment producers and the international fashion brands in jointly implementing mutually beneficial corporate social responsibility programmes. The project will facilitate this cooperation by supporting the textile garment producers to sign in to relevant programmes and encouraging the fashion brands to provide necessary support for TG producers.

Activities will consist of:

3.6.1. Identify potential and emerging supply sources in Africa for the global brand?s supply chains.

3.6.2. Provide support and guidance on the prequalification process for selection as suppliers to the global fashion brands and facilitate linkage

3.6.3. Create clusters of TG waste generation/collection to create larger TG waste streams for recycling operations to benefit from economies of scale.

3.6.4. Contribute/support to RECP/TEST training and demonstration, development of technical guidelines/toolkits/training manuals (output 3.21, 3.2.1 and 3.6.1)

3.6.5. Contribute to /support the Knowledge Management (KM) component (Component 4).

Output 3.7 BAT/BEP demonstration for ESM of POPs chemicals and textile/garment wastes

Activities will consist of:

3.7.1. Based on the assessment findings (output 3.4 and output 3.5), the investment intervention of this component will demonstrate BAT/ BEP options involving technology/equipment transfer, equipment retrofitting, process modifications, development of operation manuals, installation/commissioning of new equipment and related training and building to demonstrate the reuse, recycling and ESM of textile and garment waste in selected TG and recycling facilities, by assuring private sector investment implemented for the ESM of TG waste in selected TG facilities and private sector investment on reuse/ recycling facilities.

3.7.2. Link to ongoing TG waste initiatives, other TG industrial facilities wastes and municipality TG waste

A4.4. Component 4: Knowledge management for scaling up

Component 4 will support capacity building, knowledge sharing, information, education and communication across the different components and scale up project results nationally, regionally, and globally, by creating and curating knowledge, information, education, safer alternatives, and sound management practices.

Output 4.1 National capacity and awareness programs developed and implemented to increase ability of textile and garment sector, policy makers and other stakeholders to control POPs and CoCs as well as promoting CE.

Activities will consist of:

4.1.1 Developing a national KM and awareness for the country.

4.1.1 Assess the capacity of different stakeholders and identify knowledge gaps existing in the country/region.

4.1.2 Developing common and country-specific information materials for the different audiences and roll out of the information and awareness work plans developed on an annual basis by the national teams and endorsement by the National Steering Committees. These may include information campaigns but also personalized advisory services by the Ministries.

4.1.3 Developing and delivering of awareness and capacity building training as per national awareness/ communications strategies, and replicating training modules and materials created under Components 2, 3 and 4.

4.1.4 Development of training modules and teaching resources on ESM of chemicals and POPs-contaminated wastes, and training of users (governments and private sector actors) in the use and interpretation of data from reporting tools, linking to country reporting under the Stockholm Convention and SAICM. These resources can also be used in existing school curricula and university research programmers.

4.1.5 Strengthen and involve academic institutions such as universities and research centres to help improve or complement the curricula on improved technology and issues related exclusively to ESM of chemicals and wastes and all its technical, economic, environmental, and social implications.

4.1.6 Independent grass root mobilization, monitoring and participation in awareness campaigns by NGOs, trade unions and other civil society organizations to ensure a diversity of voices & messages can be communicated.

Output 4.2 Regional and Global Knowledge Exchange and Management tools produced and accessed by users globally.

This output will deliver a global knowledge management strategy (see Appendix 3) together with the UNEP 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 KM Strategy Appendix 3). Regional knowledge hubs (Asia Garment Hub and AfDB).

The projects? Regional Executing Agencies (Africa Institute & BCRC Indonesia for the UNEP 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 AfDB's Fashionomics. This output will as well deliver the regional knowledge management plan. Given the budget limitation and to build on previous and existing efforts already present in the countries, region and continent, priority will be given to creating links to existing platforms with well-established user bases such as The African Development Bank's Fashionomics Africa initiative and the African Circular Economy Alliance (ACEA). The whole output will be coordinated by Africa Institute, the Regional Executing Entity (REE), which will be part of the Global Advisory Group on Knowledge Management, ensure the liaison with the project countries and ensure representation and inclusion of national knowledge and knowledge networks and support NRDC, the global KM manager. Africa Institute will organize the Africa South-South meeting between UNEP Project in Asia and UNIDO Projects in Africa and coordinate/attend regional consultation /industry and media and public events.

Roles for each of the Advisory Group members & projects partners will be further refined in the Global KM Strategy during project inception.

The Global project funded activities (with costs shared with the UNEP sister project in Asia) are:

4.2.1 Refining the KM strategy: Personas (Identification of major target groups, their needs, motivations and behaviour); Survey tools to gather feedback on the knowledge strategy design and progress, aiming to identify gaps and opportunities to strengthen knowledge flows; survey on international brands ? to summarize and we can further refine or confirm during the project inception; Communication strategy, including social media, aligned with UNIDO & GEF & UNEP communication guidelines; Visual identity Social media strategy.

4.2.2 Connecting to an online Platform: As has been identified in the baseline mapping (Appendix 3 and Baseline section A3.2), 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 GGKP Platform would be well suited for cost-effective hosting of such a resource. 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 ? above).

4.2.3 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.

4.2.4 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 Regional activities are:

4.2.5 Map the different sources of information and existing documentation on ESM of chemicals and wastes and CE in the TG sector at the national and regional levels;

4.2.6 Identify gaps and build capacities of local and regional partner to host a sustainable exchange mechanism for the ESM of chemical and wastes and CE in the TG sector in the region ;

4.2.7 Establish physical and/or virtual participatory sustainable exchange mechanism to synthesize and disseminate information and knowledge.

4.2.8 Support national events and organize the regional ones for relevant TG sector stakeholders (symposiums, workshops, conferences, courses, campaigns, exhibitions, expert group meetings, and others, face-to- face as well as virtual);

4.2.9 Co-organize the Africa South-South meeting between UNEP Project in Asia and UNIDO Projects and support/attend the Asia meeting.

4.2.10 Document and disseminate the lessons learned and information produced as a result of the pilot experiences implemented within the project and share these on the Regional Platform website, Global Forums and other global dissemination channels

4.2.11 Explore publishing the results of the project in peer-reviewed journals.

4.2.12 Conduct media and information campaigns to inform the general public and key stakeholders about the challenges and progress present in the sector.

4.2.13 Engagement of global supply chain actors including brands, retailers (including online) to overcome communication barriers between a highly globalized industry, and ensuring that the communicating partners understand each other and that the right information is coming from, arriving to and understood by the correct persons

In addition, the REE will contribute to the Global Knowledge Management strategy level through the following activities:

4.2.14 Develop a regional strategy/plan for communications in alignment with the global communication strategy.

4.2.15 Share relevant visual assets in a timely manner with the global KM for global promotion and dissemination.

4.2.16 The Regional communication manager/consultants/REE PMU will participate in global communications network/meetings, including regular calls, digital communication platforms, trainings and share relevant communication-related activities at regional level;

4.2.17 Support NRDC in organizing the global meeting bringing stakeholders from the two projects in Asia and Africa.

4.2.18 Publish at least one original blog article per year and contribute to other news articles, events, photo essays, videos as materials to the program website.

4.2.19 Adopt the global stakeholder engagement strategy and execute relevant activities at the regional that will contribute to the achievement of its goals

4.2.20 Share relevant (non-confidential) project materials, approaches and documents that may provide relevant information to serve as examples or models for other countries; and,

4.2.21 Ensure that all public facing documents produced by the project are disseminated via the Global knowledge platform.

4.2.22 Organize investment promotion forums to disseminate business and investment opportunities in the TG sector emanating from the projects

The KM strategy finalization will begin 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 4.3 Gender and Social Action Plan implemented, and benefits accrued to women workers.

The output will deliver on the Gender and Social Action plan (see annex K), 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.

Activities will consist of:

4.3.1 Organising national stakeholder workshops to confirm and validate the project wide Gender and Social Action plan and translation to detailed national work plan.

4.3.2 Reviewing and gender assessment of key the project outcomes and reports, including the methodologies for developing inventories, pilot projects, training materials and knowledge products (all outputs) and especially before dissemination.

4.3.3 Delivering gender-specific training for women workers who may be exposed to hazardous chemicals.

A4.5. Component 5: Monitoring and evaluation.

This component relates to monitoring the project impact indicators, evaluation of the achievements and taking corrective measures if needed. All of the above outcomes will be monitored and verified through the activities included in this component.

Output 5.1. Project progress monitoring and reporting

An effective monitoring process of project impact and sustainability will be designed and implemented, including setting a periodic review process to monitor the quality and the state of progress of the project. Gender issues and environmental and social safeguards will be fully integrated in the project's activities.

Output 5.2 Mid-term review and terminal evaluation conducted

Independent mid-term review and independent terminal evaluation are conducted in accordance with established UNIDO and GEF procedures.

A.5 Alignment with GEF focal area and/or Impact Program strategies

This project is aligned with the GEF-7 Industrial Chemicals & Waste Focal Program in the facilitation of enabling environments and strengthening of national legislation and regulatory capacity for meeting obligations, with regard to POPs. Thus, seeking to significantly reduce POPs, hazardous chemicals and waste which are: (i) used by the TG sector along its value-chain; (ii) emitted through unsound processing and (iii) environmentally unsound incineration, disposal and recycling, not implementing improved sustainable recycling initiatives along the entire value-chain of the TG sector aligned with Circular Economy principles. This project is assuring TG private sector engagement while setting up sustainable financial models to ensure project ownership, quality, tradability, sustainability, replicability and scaling up.

The project is addressing the GEF-7 specific area of prevention of waste/ products containing persistent organic pollutants and hazardous chemicals from entering material recovery supply chains (including textile and garment waste management with the aim of preventing TG waste from entering solid waste) demonstrating alignment with the GEF focal area of Chemicals and Wastes especially Chemicals used/emitted from/in processes and products and Chemicals and Waste at end of life. The project will also introduce and use circular economy concepts along the entire life/value-chain with strong private sector engagement at national to global scales, BAT/ BEP / RECP to minimize and ultimately eliminate releases of POPs and other hazardous chemicals which will be pilot-tested in at least six selected demonstration sites.

A.6 Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

As per the GEF?s operational guidelines[1], incremental costs were determined compared to the business-as-usual scenario described under the problem and baseline sections (section A2 and A3). Under current conditions, sound management of chemicals and waste is done by a small minority of textile and garment companies and brands, largely in a voluntary manner. The project activities are needed to give the participating country a set of effective instruments to assess and manage chemicals manufactured by the chemical industry and used in the textiles and garment sector, minimize, and manage the generated TG wastes under the guidance and regulatory oversight of governments. This will ensure that all textile and garment companies are subjected to some level of sound chemical and waste 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.

The project will be implemented as a regional one (linking with Africa Regional project GEF ID 10543), which will facilitate regional outreach and dissemination of information and building of synergies with ongoing national and regional initiatives within the African continent. As earlier stated this project will be implemented in close linkage with UNEP regional project in Asia, and coordinate with other GEF projects working inside and outside Africa to will ensure further synergies and scaling up outside of the country. It should be however noted that more resources will be required in Africa due to differences of level of development of the TG sector, the economies of the two regions and the depth of involvement of the private sector. The textile sector in Africa is not as developed as in Asia, hence the project will address the issue of capacity building, regulatory and institutional framework, appropriate technologies, evaluation and selection, awareness raising and public education will have to be addressed with greater emphasis. There is a lack of capacity in chemical tracking in Africa and the project will identify and apply the appropriate tools SAICM for the tracking and management of the chemicals in the TG sector.

The project?s co-finance and investment are mainly mobilised through the government and key private sector partners. The activities will build on the existing initiatives, policies, commitments, tools, and schemes. The participating companies committed to this project through cash and in-kind co-financing.

The project will be implemented along the entire TG value chain i.e.: textile industry, garment making and wastes recycling and reuse. This implies that the project is not addressing only the issues of POPs chemical but also wastes and create investment opportunities to promote circular economy.

As the current policy, regulatory, and financial environments do not provide incentives for the phase out of POPs and CoCs, component 1 of the project will support participating country in the creation/amendment of the necessary institutional frameworks, effective policy control and incentives and technical resources to advance in the Circular Economy agenda in the TG sector along the whole value-chain by promoting BAT/ BEP/ RECP while preventing/ reducing POPs and other hazardous chemicals.

Component 2 of the project enables participating country to identify POPs and other priority CoCs existing in the textile and garment sector. It will also equip companies to proactively address potential POPs that may be listed in the future. The Component will implement BAT/ BEP/ RECP methodology and Circular Economy concepts for the prevention and reduction of POPs and other hazardous chemicals and materials use in textile and garment production facilities as well as its substitution by Environmentally Sound Alternatives (ESA) including non-chemical alternatives, in line with the requirements of the SC and National priorities, while enhancing the recyclability and reuse of textile and garments wastes through POPs-free textiles and garment manufacturing. The component will also introduce RECP options such as wastewater minimization, pollution control

and management, energy efficiency and renewable energy implementation. 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 3 will support this shift through a circular economy push in the textiles and garment sector, a national level enabling framework, and a review and access facilitation to incentives (financial, market based, or information based). The project will promote the circularity of textile and garment value chain through adoption of sustainable wastes management plans and strategy. The project will identify opportunities for forward integration by the textile and garment sector through the reprocessing and recycling of TG wastes into the textile manufacturing process. For contaminated wastes the project will support the disposal in an environmentally sound manner through the application of appropriate BAT/BEP. Eco design, wastes minimization technique and BAT/BEP will be applied in the garment making process. Opportunities will be identified for establishing of economically viable and financially profitable green investment projects from the recycling and reuse of the textile wastes.

Through the project intervention (section A4), the baseline work on the reduction of POPs and COCs as well as the promotion of CE will be scaled up significantly in Ethiopia and outside. The latter will be accomplished through the project?s knowledge management component (component 4 and see section 8 on KM) that will work to share case studies, guidance, best practices, and lessons learnt outside of the project country. This component will support capacity building, knowledge sharing, information, education, and communication across the different components and scale up project results nationally, regionally, and globally, by creating and curating knowledge, information, education, safer alternatives, and sound management practices. In addition, the project will provide National and regional platforms/networks with AfDB for information and knowledge exchange and experience-sharing on circular economy and a global knowledge sharing platform with GEF regional textile project in Asia (UNEP).

A.7 Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

The project will achieve direct and indirect Global Environmental Benefits (GEBs) through all project components. POPs in textile industry are used to produce water-resistant and fire-protecting fabrics. This project will deliver significant reductions in the use of POPs, POP candidates and other priority CoCs in the textiles and garments manufacturing facilities, processing chemicals and TG products in Ethiopia. The country is among the Africa?s top five textiles or clothing producers in 2013. The combined apparel and footwear market in sub-Saharan Africa is estimated to be worth US$ 31 billion, according to data from Euromonitor International.[2]

The project expected outcome in the country is the avoidance of an estimated 3,690 ton/yr of textiles contaminated with POPs, candidate POPs and other CoCs. In Africa, especially in Ethiopia, majority of the textile fabrics used in the garment and apparel making are imported mainly from Asia. A PPG study carried out by UNEP project in Asia (GEF ID 10523) documented an average use of 43 tonnes of PFC based chemicals per mill per year and showed that one of their Asian countries exported between 13,371 kg ? 580,057 kg of fabrics treated with PFC finishing each year between 2019 and 2021, leading to expected reduction of 14,835,700 kg of textiles contaminated with PFAS finishing (multiplying the average of this value (296,714 kg) by 10 (the minimum number of mills where pilot projects on hazardous chemical use reductions will take place) and the duration of the project of 5 years). Based on

the study conducted during the PPG of this project majority of the cotton, yarn and fabric used in the garment making industries are imported from Asia. Hence there is a high likelihood that a significant percentage of the imported fibres and fabrics might contain PFAS, PFHxS and other perfluorocarbons (PFCs). This could not be ascertained due to lack of or weak capacities for standards testing, analytical and quality assurance in African to identify the presence of these chemicals in the imported fabrics for garment making. The project will achieve higher than target GEBs values if the presence of PFAS, PFHxS and other PFCs are prevented and/or avoided in the supply chains and hence the waste stock. The Asian market is more organized and established and this project will strengthen the testing and analytical capacities in the country (output 1.1) to ensure the imports are free of hazardous chemicals. The project will work along the entire TG value chain in the country and by leveraging the partners and their network in the global supply chains. The project will not only meet the GEB target of 3,690 tons of textiles contaminated with POPs but will achieve higher GEBs well beyond Ethiopia through the use of the tools and replication of the successes demonstrated under this project where brands source production and other partners operate. Furthermore, Chemicals-free TG products will additionally benefit the consumers globally, through 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 and garment sector list such as Restricted Substance Lists and Manufacturing Restricted Substance Lists, MRSL by a total of 3.5 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.[1] Moreover, UNEP PPG study in their project in Asia (GEF ID 10523) documented an average use of 43 tonnes of PFC based chemicals per mill per year. The PPG phase determined little is known regarding the use of POPs and COCs in the textile value chains of the countries beyond what is historically and globally known through academic channels. TG facilities don?t have sufficient data to determine the scale of the use of POPs specifically. 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. 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, the project updated output 2.1 to focus on chemical inventories, covering both POPs and other CoCs. 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 3.5 tonnes of PFOS/ PFOA /PFAS/ PFHxS will be readily met by pilot projects in at least 4 facilities, each using an average of 40 tonnes of PFC chemistry per year (5% of 40 tonnes PFC used x 4 pilots = 6.4 tonnes used per year). Other POPs such as PBDEs may also be identified during the inventory and will further increase the GEB.

Textile and garment manufacturing is also listed as a key source of dioxin and furan emissions[2], which the project aims to reduce in the country, hence contributing to reduced global emissions. An estimate of the global environmental benefit achievable during the life of the project can be carried out on the basis of the prevention and reduction of POPs, uPOPs and hazardous chemicals use and default emission factors using the UNEP Toolkit for Identification and Quantification of Releases of Dioxins, Furans and Other Unintentional POPs under Article 5 of the Stockholm Convention. Assuming that BAT and BEP measures implemented in at least four demonstration facilities during the current project with the support of GEF, this could bring companies from the current, baseline technology level to a BAT/BEP-based level, by preventing/ reducing POPs and hazardous chemicals use and reducing uPOPs and GHG emissions. The PPG study showed that the uPOPs emission due to open burning and incineration of the national solid waste is estimated to be 6.45 g TEQ per year. This figure addresses the conventional industries and as this project will include TG industries such as manufacturers of curtains/blinds, beddings, blood repellent surgical gowns, carpets, oil/water/stains repellent fabrics, outdoor gears, automotive industry textiles, upholstery covers, firefighters and military uniforms, the uPOPs emission will be far more than 6.45 g TEQ per year and meeting the project target of 7.5 g TEQ per year. The target uPOPs emission reduction will be enhanced if the efficiency of coal-fired boilers are improved as this will have resultant uPOPs emission reductions.

According to ILO, exposure to hazardous substances in the workplace kills over 400 thousand people annually[3]. The project aims at 8,000 direct beneficiaries (of which 60% are women) through training, awareness raising and knowledge and capacity strengthening activities of textile and garment facility personnel, customs, and government partners, to promote safe and responsible production practices.

- Private sector companies? employee (with an estimated number of 2 companies in the country for the pilot demonstration) involved in the production, who will be trained on BAT/BEP/RECP. This training will also be open for the wider TG sector companies.
- Policy makers will be trained on legal and institutional framework for Environmentally Sound Management (ESM) of POPs and Circular Economy concept.
- Regulatory, compliance monitoring bodies and custom officers will be trained on Hazardous chemicals tracking, monitoring and enforcement.
- Training banking and financial institutions on green financing appraising.
- Prospective entrepreneurs who are interested in recycling business will be trained.
- Training NGOs and public awareness raising on hazardous chemical including POPs, recycling, and investment opportunities

As co-benefits, the project will reduce the GHGs emissions from the open burning operations and land contamination and surface /underground water pollution and resources consumption. The project also will reduce/prevent land degradation through improving waste management practices and prevention of open burning taking into consideration the limited available land and vulnerability of Ethiopia to climate change.

A.8 Innovativeness, sustainability and potential for scaling up

Innovation

The introduction of circular economy concepts as well as BAT/ BEP/ RECP in the participating companies and the sector in general, is relatively new. The BAT/BET/RECP options will be identified based on the detailed assessment after the inception of the project. The examples and candidates are provided in the proposed alternative scenario sections (Component 2 and 3). Innovative production techniques will be fostered by incorporating means of zero-waste techniques (e.g. using off-cuts right at the production facility) and use of innovative ?green/alternatives? chemicals. This will enhance circular economy of the TG sector by reducing the use of natural resources, preventing/ reducing the use of POPs and hazardous chemicals, reducing health and environmental impacts while improving the efficiency and augmenting the profitability of TG facilities. The scale of the innovation of the options and technologies depends on the status of the company. Whereas innovation in larger companies mostly is centered on increased level of automation, advanced process and production management and state of the art technology, innovation in SME usually concerns implementation of measures concerning resource management, improved production and process management, improved product quality, improved health and safety. In the larger companies also measures commonly implemented in SMEs can be found feasible especially when companies have experienced a rapid development and large production expansion.

Sustainability

The project has a high probability of being sustainable as it will partner directly with private sector companies and associations that has expressed their interest in the project and improving and investing in their environmental performance. The project objectives are aligned with national policies of Ethiopia. The enhancement and improvement of national regulatory mechanisms to promote circular economy in the TG sector will provide the framework for ensuring the sustainability of the project in the future years after project completion. The TG industry (both facilities and National Associations, National Development Agencies and major international brands) involvement in the CEO endorsement preparation as well as in all project stages will ensure ownership, commitment, cooperation and partnership from TG companies top management to move forward in the circular economy agenda. Minimizing chemicals, water, energy, materials consumption and waste generation will bring relevant economic benefits which will balance required BAT/ BEP/ RECP investments improving the TG facilities efficiency while reducing/ avoiding economic, social and environmental risks and impacts.

Project activities will also provide the basis for the support and capacity building of domestic research center and services in the circular economy in collaboration with Cambridge University?s Circular Economy Centre (CEC), BAT/ BEP/ RECP fields in the TG sector or others. This would generate a new breed of professionals with specialized expertise in this field and the development of new job opportunities, thus contributing to the economic growth while supporting moving forward in the circular economy agenda of the TG sector, other industrial sectors and the participating country as a whole.

The circular economy will provide new opportunities for economic diversification, value creation and skills development, going beyond waste management and recycling. Raising resource productivity, improved ?circularity? in product policy and reducing waste can greatly lower both resource consumption and greenhouse gas emissions, as well as reduce the supply risk of raw materials. Creating resilient circular value chains will increase the resilience to crisis (e.g. climate change, pandemics) by reducing raw material inputs. It can provide opportunities, such as improved market

access (e.g. for producers of environmental goods and services) or financial savings from more resource efficient processes. To face any challenges in financing the transition to a circular economy, there is a need to rely on a combination of funding sources: mobilizing finance such as GEF funding and opportunities through the international brands programmes, etc. The project will provide technical assistance to build capacities to prepare investment projects and through engagement of public and private sector locally, regional and globally. Also, the project will develop financing mechanisms and business models for CE which will facilitate the attraction of new investments in green industries. The project will undertake a techno-economic feasibility study which will provide technology, financial and socio-economic data for sound investment decision making.

Scaling up

The basis for scaling up and replication of circular economy in the TG sector is embedded in the training, awareness and capacity building activities with the dissemination of circular economy concepts, BAT/ BEP/ RECP relevant information, experience and lessons learned. The holistic approach to prevent/reduce POPs/ hazardous chemicals use and its substitution by non-chemical alternatives if possible, the application of the RECP methodology including energy efficiency and renewable energy technologies, coupled with an effective promotion and enforcement of BAT/ BEP, could be used as a reference for the TG sector of other countries, the African region and other major TG regions facing similar challenges.

This will also be achieved by the active participation and involvement private sector and global brands/foundations like CEC, Sustainable Fashion Academy (SFA) and ACEA, which has a large repository of information and knowledge on Circular Economy and has also developed a number of training toolkits and methodologies on CE and transformative change with other international partners. The project will use the knowledge, network and expertise of Zero Discharge of Hazardous Chemical ZDHC, which will carry out certified training and capacity building Programme on sustainable management of chemicals in industries. Already most of the global brands in the TG sector have signed up to the ZDHC Programme. With the active involvement of both of them, the project will be able to mobilize and enlist the commitment brands like ASOS, Epsilon, etc. which will drive and realize the expected transformational change. Furthermore, through facilitating access to low cost investment financing sources like Levi?s work on PaCT, suppliers can get access to low-cost financing to invest in up scaling the project.

Component 4 will further scale and sustain project results and best practices. The project will establish regional cooperation and network for information exchange and experience sharing which will be disseminated through the AfDB?s African Circular Economy Alliance (ACEA) and Fashionomics Africa(refer to the Regional Knowledge Management Plan Appendix 4). Furthermore, the project will be implemented in close linkage with UNEP Asia regional textile project (GEF ID 10523). 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 other mechanisms (refer to Appendix 3 on Knowledge Management).

In the process of developing the project, there have been broad based stakeholder?s engagement to be able to establish synergies and complementarities among relevant projects, Programme and initiatives. This has been articulated in the Stakeholders Engagement Plan (Annex I)

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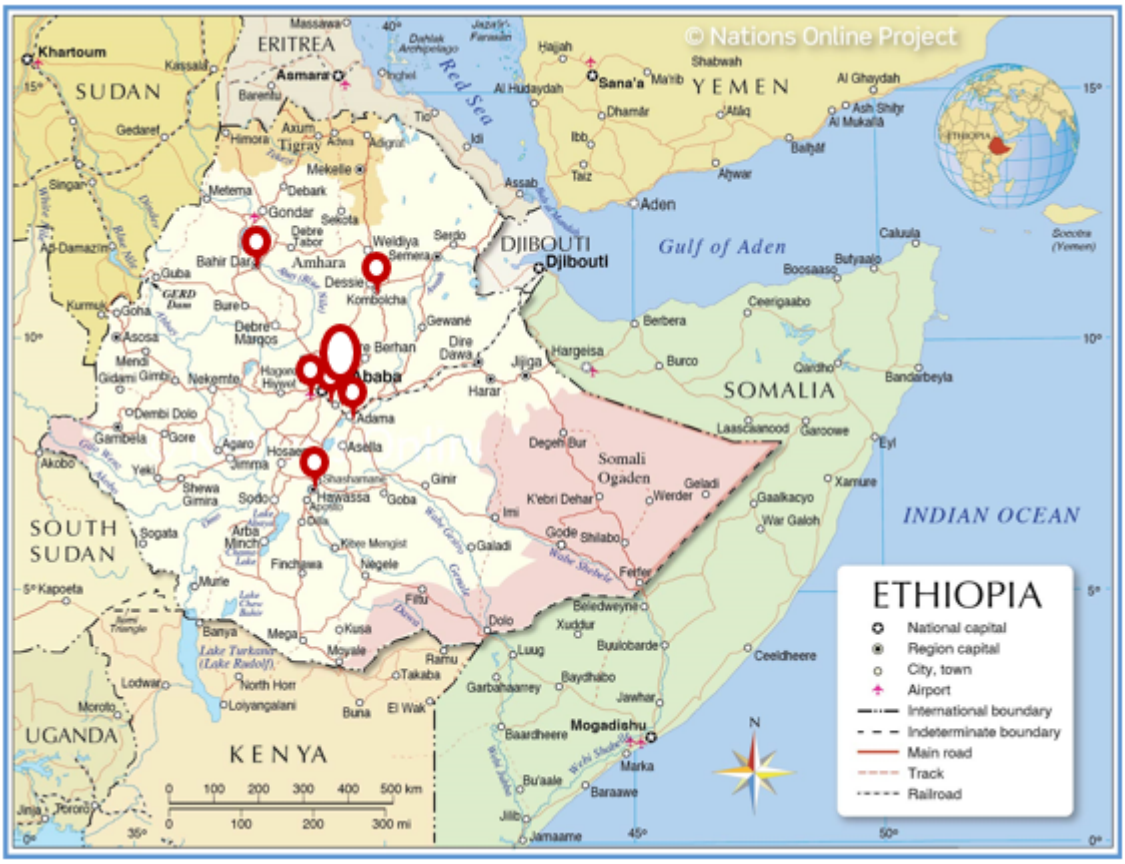
[3] https://www.grandviewresearch.com/industry-analysis/textile-market
[4] https://www.fairify.io/en/knowledge/supply-chain-tiers/

1b. Project Map and Coordinates

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



SN	Factory Name	City	Co-ordinate
1	Muya Ethiopia PLC.	Addis Ababa	9? 0' 19.4436" N and 38? 45' 48.9996" E
2	Kanoria Africa Textile Sh.co	Bishoftu	8? 45' 0" N, 38? 59' 0" E
3	Kombolcha Textile Sh.co	Kombolcha	N 11? 4' 52.8888", E 39? 44' 27.1428"
4	Al-Asar Industries PLC	Dukem	08?48?N 38?54?E? / ?8.800?N 38.900?E
5	EPIC Apparel PLC	Hawassa	7? 3' 1.3464" N and 38? 29' 43.8144" E
6	Yirgalem Addis	Addis Ababa	**9? 0' 19.4436" N and 38? 45' 48.9996" E**
7	Bahir Dar Textile Sh.Co.	Bahir Dar	***Latitude***: 11? 35' 59.99" N Longitude: 37? 22' 59.99" E
8	ETUR Textile	Adama	8? 33' 0.00" N, 39? 16' 12.00" E

1c. Child Project?

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

N/A

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.

Annex I details the Stakeholder Engagement Plan

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 (Annex I). 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 (facilities personnel, regulators, textile, garment and chemistry industry associations, customs, global brands, regional partners and chemical service providers). Training will be provided for chemical supplier, TG facilities, 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 Regional Executing Entity and the National Executing Entities 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 (Table 3) presents the stakeholders envisaged to be engaged during the project implementation, how they were engaged during the project preparatory phase (PPG) phase, and how their engagement will be monitored during the project with specific parameters.

Table 3: Stakeholder Engagement Plan

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 TG sector. Some carried out specific data research and reports.	Service providers will support delivery of the project activities in TG facilities (all components) 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, ICLEI Africa, SFA, University of Vienna, etc.) and public sector, such as government technical colleges or regulatory capacity development units. Service providers will be engaged via the REE (Africa Institute with contracts and partnership agreements.
Brand and downstream buyers	During the PPG brands were engaged via ZDHC, SFA, local partners, UNIDO?s field offices, the service providers? expertise and 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 and 3 on global value chain policies, to strengthen chemicals and wastes 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 SFA and ZDHC. 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 TG initiatives	Consultation meetings held with Ellen MacArthur Foundation, Fashion Pact/CI, GIZ, SFA	These global initiatives will be engaged via regular updates and will be represented on the Global KM Advisory group (C4).
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 (C2). Under component 1, the testing and analytical capacities in the country to ensure, imports input materials, products and wastes in TG value chain are free of hazardous chemicals will be strengthened through training and capacity buildings.
National stakeholders		

Ministry of Industry/ The Environment, Forest and Climate Change Commission	Ministry of Environment or Industry led coordination of country inputs into the project design, including supervision of national consultants, hosting national workshops and consultations with stakeholders. The other ministry was closely consulted by the national consultants, presented at national workshops and attended the Validation workshop	Ministry of Industry will be the main focal point for the project in the government. 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); 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, regional 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 regional steering committees. The Environment, Forest and Climate Change Commission will have a similar role to Ministry of Industry, including as co-focal points. They will be members of the National Working Group and be closely involved in identifying and engaging facilities; training and capacity building on chemicals management and for the replication and scale up.
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 under Component 2.
National industry association and alliances	The associations were consulted by the project national consultants on the presence of the TG facilities in the country and participated in national workshops	Textile associations will be engaged through workshops and partnerships for the mapping of TG facilities 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.

TG facilities ? owners, staff and workers	TG 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 and wastes generated.	TG factories are direct beneficiaries of all project activities. Factories were 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 consultants and international expert. Women?s associations/NGO 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 and wastes 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 and garment 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.	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 CoCs; promotion of alternatives at industry events and the global KM platform C2 and C4). They will be engaged in national policy development via consultation (C1)
Researchers (all fields)	Researchers and textile experts were consulted during the PPG phase.	Researchers are engaged through the global KM strategy (C4). They will provide their expertise on solutions for chemical management, disseminate project results through their networks and align definitions and goals.

Select what role civil society will play in the project:

Consulted only; Yes

Member of Advisory Body; Contractor;

Co-financier; No

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

Executor or co-executor;

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

The TG sector in Ethiopia is growing rapidly. The industrialization of TG manufacturing is at the forefront of the Ethiopian government?s plans to become a lower-middle-income country by 2025. As women are overrepresented in the TG sector nationwide, a gender mainstreamed approach to industrialization in the TG sector has the potential to make a significant contribution to gender quality and the empowerment of women in Ethiopia.
The different needs and priorities of women and men are widely acknowledged in the country and gender sensitive policies are widespread. However, there is a significant implementation gap between regulations and policies on paper and the realities for women workers in practice. Informal workplace expectations disproportionately present challenging barriers for women who remain concentrated in junior and low-skilled roles. There is a general lack of structured and systematic mechanisms to encourage their career progression in the sector. Moreover, additional measures are needed to record, monitor and resolve reports of discrimination or harassment. Increasing the representation of women in decision making roles in government and private sector in the TG sector, as well as in workers? unions is highly recommended.
The TG sector in Ethiopia has experienced significant drops in demand due to the Covid pandemic. Still, the pandemic also presents opportunities for enhancing gender equality and the empowerment of women in the country. The speed of industrialization of the TG sector presents multiple opportunities to speed-up progress towards enhancing women?s experience of climate, environmental and socio-economic change.
In particular, actions that impact the following present entry points for increasing the gender capacity of the TG sector in Ethiopia in impactful ways:
- Closing the implementation gap between regulations and realities in the workplace;
- Publicizing success stories of women in the TG sector;
- Empowering women entrepreneurs and decision makers in the sector and increasing their visibility in the wider public;
- Enhancing gender capacity in unions;
- Enhancing mechanisms for monitoring and reporting gender-based violence and harassment; and
- Providing information on employment opportunities in the TG sector so that women are more aware of work opportunities

Transitioning to a circular economy based on ISID principles of gender equality and the empowerment of women, enhances the impact of actions to foster a sustainable TG sector in Ethiopia.

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.

The private sector engagement is particularly prominent in this project and is expected 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: brand engagement and connectivity; delivery of inventories & chemical substitution; and training and capacity building.

During the development of this proposal, several textile and garment factories were visited and consulted in the country in the project, to seek project collaboration, partnership and sustainability through co--nancing and in-kind commitments. All companies visited were regularly investing and were planning to continuously invest on BAT/ BEP measures and they all agree to collaborate in the project. In addition, National Textile Associations and National Development Agencies in the country were also visited for project partnership, agreeing on collaboration and partnership in the project. Given the local knowledge and representativeness of the TG sector, National Textile and Garment Private Sector Associations such as the Ethiopian Textile/garmentmanufacturers? association (ETGAMA) will be involved on specific project activities to maximize the applicability to the local context and project sustainability and scaling up. The TG private sector will be clearly attracted and incentivized by these National Associations and the project by showing the potential increase of the TG plant edciency and pro-tability through BAT/ BEP/ RECP actions.

Second, UNIDO is in consultation with several international brands in Ethiopia to participate in the project. Utilizing global brands and retailers? purchasing power is essential to ensure reductions and ultimately elimination of POPS and CoCs. Many TG 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 TG and other industries can also work as a benchmark for the facilities. 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 4.2). In addition, brands will be engaged by the technical coordinator & lead consultant to obtain their support in mapping their supply chain for the chemicals and wastes inventory.

Third, 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. 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 country through networks of accredited and experienced training mechanisms.

Both chemical use and waste management (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 in engaging their national networks of trainers, laboratories, and audit or verification partners, and delivering training and brand engagement activities.

This project will ensure national and regional knowledge management sharing to ensure replication of the case studies and a long-term promotion of circular economy edciency, learning innovation in the country and among the partners. On the global level, the cooperation with UNEP similar project in Asia, will ensure global corporations which play an important role to ensure the exchange of knowledge, lesson learnt and case studies.

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 Table 4. In brief, risks arise due to different chemicals management systems, political situation, varying access to reliable information and stakeholder commitment. A Climate risk screening (**Appendix 1**) was done for Ethiopia to identify the hazards, assess vulnerability and exposure, rate the risk; identify measures to manage the risk.

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. Therefore, analyses of COVID-19 impacts, risks and necessary adaptation and mitigation strategies were done for the country (**Appendix 2**)

Table 4: Project risks, impact and likelihood, proposed mitigation measures and links to project outputs.

As per UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), the project has been categorized as ?B?. Category B projects are likely to have less adverse impacts on human populations or environmentally important areas than those of Category A projects. As a result, an Environmental and Social Management Plan (ESMP) was developed during the PPG (Annex J).

Risk	**Impact**	**Likeli-hood**	**Proposed mitigation measures**
COVID-19 Risks			
Restricted travel	Medium	Medium	Though most country 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.
Decreased local support due to shifted priorities	Medium	Low	Due to the pandemic, the project country 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 country?s 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.
Transmission of COVID 19 at pilot sites	Medium	Medium	The project will improve OHS measures in the participating companies. The company?s occupational health and safety management system incorporates the regulations for companies COVID 19 compliance.
Climate Change Risks			
Risk of climate change on the project (increased temperature, drought, etc.)	Medium	Low	The project will take into consideration the vulnerability of these country to climate change. The project will raise awareness with regards of climate change and the project reduction of the GHGs emissions from the open burning operations and land contamination and surface /underground water pollution. Water resource management is important for the Ethiopia and will be addressed in the project through RECP including water recycling and reuse. Where relevant, activities to climate-proof facilities to these gradual impacts could be considered.
Operational/delivery Risks			

Risk	Impact	Likeli-hood	Proposed mitigation measures
Inadequate political support, regulatory framework partly formulated and not fully implemented and enforced. Change of governments leads to change of priorities	Medium	Medium	Policy/ decision makers will be involved from the inception stage of the project, to ensure that the country?s national priorities are considered and that political buy-in is ensured, especially on awareness activities on issues related circular economy, POPs, hazardous chemicals, hazardous waste, wastewater, waste (including textile and garment offcuts), air emissions as well as its environmental and public health implications. This project will provide support to reporting under the Stockholm Convention and meeting its provisions. The project will engage with government stakeholder all throughout the implementation. Furthermore, the national focal points will be regularly updated on the project progress to guarantee continued support.
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.
Lack of cooperation from the informal sector to release textile and garment waste as well other waste potentially containing POPs.	Low	Low	Potential options and financial mechanism designed to incentivize the formal and informal sector. Economic incentive schemes will be explored and implemented to transform the informal sector into formal companies and jobs making the economy more circular
Technical Risks			
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.

Risk	Impact	Likeli-hood	Proposed mitigation measures
Project resources are not sufficient to ensure the necessary interventions to achieve the planned CE and waste management targets.	Medium - Low	Low	Full ownership of the project will be ensured through regular meetings and discussions with the TG private sector, local TG recycling companies and government authorities from the project inception phase to implement BAT/ BEP/ RECP in the TG sector as well as on the reuse-recycling of TG waste, using a Public Private Partnership (PPP) model, in this last case. The project will allocate enough grants and secure co-financing resources to implement sustainable BAT/BEP/RECP to address the issue of hazardous chemical and TG wastes. Furthermore, the private sector pledged or is expected to pledge and fulfil its commitment to scaling-up local investment in TG wastes management.
Lack of key technical capacity from public servants, technicians from the private sector, non-governmental agencies and academia on circular economy, POPs, hazardous chemicals, hazardous waste, TG waste and wastewater ESM as well as energy efficiency and renewable.	Medium	Medium	Promoting and monitoring mechanisms will be established to ensure necessary training, capacities and coordinated efforts in implementation and enforcement of regulations.
The project will not be able to map enough TG facilities and suppliers for the project interventions to take place	Medium	Medium	Extensive consultation and engagement have already been done, which will further be deepened during the implementation. The project will work with the governments, textile associations, different brands, and service providers to identify more facilities present in the project country.
Social Risks			

Risk	Impact	Likeli-hood	Proposed mitigation measures
Stakeholders do not engage fully, resulting in not adequately addressing the project priorities nor achieving the desired outcomes.	High	Low	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 UNIDO and partner networks to reach out to key stakeholder groups, to build interest and sustain focused efforts.

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 6.?Each management body is described below.? The Harmonized Approach to Cash Transfer (HACT) assessment was carried out by for the National Executing Entity. The outcomes and the recommendations of the assessment will be reflected in the Terms of Reference for the Project Executing Agreement.

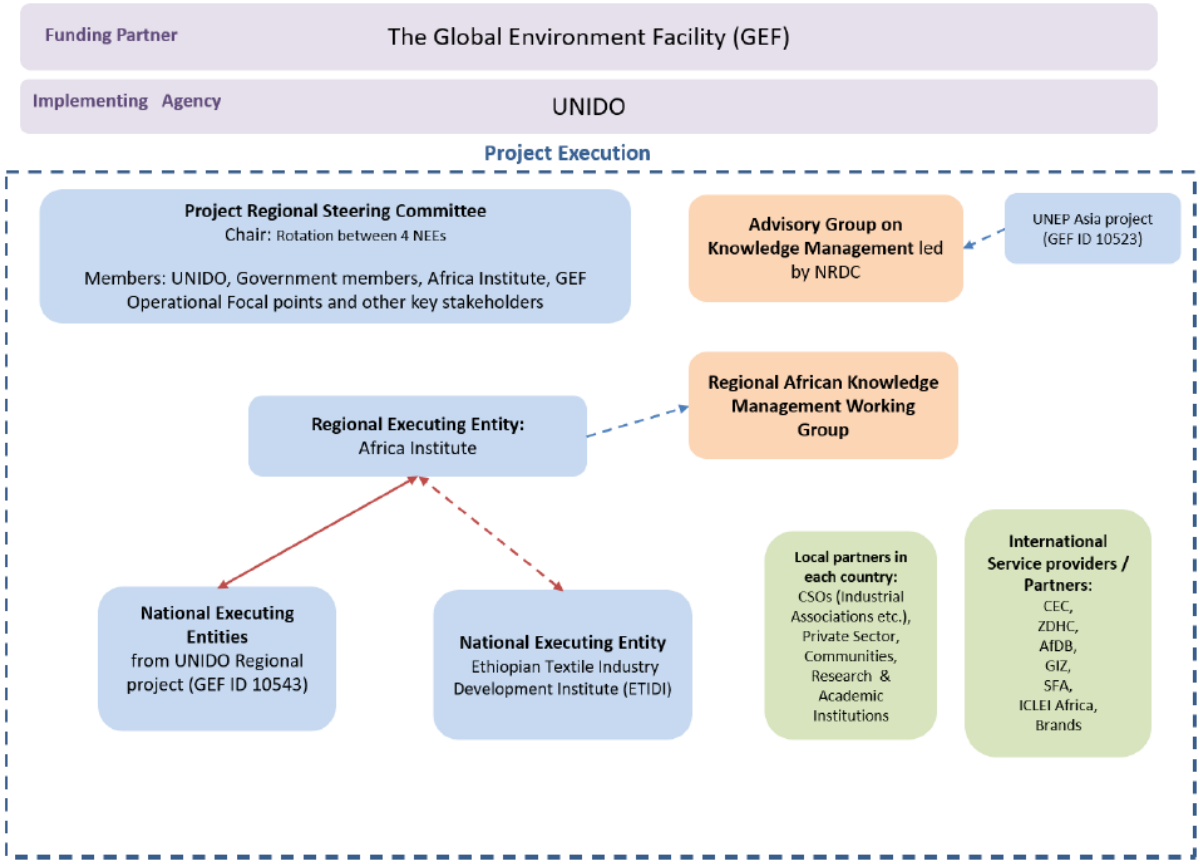


Figure 6: Project management and coordination structure.

The?Implementing Agency? (IA) ?for the project?is the?United Nations Industrial Development Organization (UNIDO). The IA will be responsible for the overall project supervision, overseeing the project progress through the overall monitoring and evaluation of activities and progress reports of the established components. It will be responsible for quality assurance procedures, organize contracting with executing entities, and approve progress reports and clear disbursement. UNIDO will also engage directly the support and services of partners on global forum issues where and when it is found to be strategically and pragmatically more cost-effective and efficient. The IA will also monitor progress to ensure the proper quality of outputs. UNIDO 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.?

UNIDO?s comparative advantage is its mandate to promote and accelerate inclusive and sustainable industrial development (ISID) in developing countries. To support the development impact and effectiveness of its services, UNIDO applies a holistic and integrated programme framework that integrates the Organization's four core functions in: (i) technical cooperation; (ii) analytical and research functions and policy advisory services; (iii) normative functions and standards and quality-related activities; and (iv) convening and partnerships for knowledge transfer, networking and industrial cooperation. UNIDO will take the lead in finalising the project level data flow and reporting to the GEF Secretariat.

The?Regional?Executing Entity?(REE)?is the Africa Institute for Environmentally Sound Management of Hazardous and other Wastes?(Africa Institute) and will execute, manage and be responsible for the project regional activities on a day-to-day basis for this project and the Regional project in Lesotho, Madagascar and South Africa (GEF ID 10543). The regional executing entity (REE) will provide execution, management and coordination services at the regional level in close consultation and cooperation with the national partners and executing entities. The regional executing entity will prepare consolidated project reports and plans; execute regional activities such as regional assessment studies, international experts? meetings, international training and workshops, arrange international study tours and organize industrial visits training and coordinate knowledge management activities. The regional executing entity will arrange regional events such as dissemination of knowledge management results and project steering committee meetings. The regional executing entity will also provide relevant procurement services and also coordinate cooperation/collaboration with international global brands. REE will serve as the secretariat of the regional Project Steering Committee and host its meetings. The regional executing entity coordinate the activities of the national executing entities, which was identified and engaged in the country. The REE 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. The REE will have the primary responsibility for delivering KM objectives and will be part of the Global Advisory Group on Knowledge Management, ensure the liaison with the project countries and ensuring representation and inclusion of national knowledge and knowledge networks; and supporting NRDC, the global KM manager. Africa Institute will also organize an annual financial audit of the regional activities of the project and transmit the report to the implementing agency (UNIDO).?The Centre is well positioned for this role as it serves the Parties to the Basel?and?Stockholm Conventions within the?African?region. The Africa Institute 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. The REE will contract the services of regional/international service providers and a research center for training and dissemination of the knowledge products.

A Project Steering Committee (PSC) ?will be established?to provide overall regional guidance and direction to the projects (both this project and the regional one GEF ID 10543), and to ensure country and regional ownership, integration, and governance. The decision-making members of the PSC 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. Africa Institute (REE) will act as the secretary to the PSC?and?provide regular project updates to the PSC.?The PSC members will support the NEEs in their respective countries. PSC will be chaired in

a rotational manner by the three countries. The primary roles of the PSC are: (1) to provide overall guidance to the execution of the project; (2) to ensure good coordination among participating countries, agencies and other organizations; and (3) to approve any substantial change or addition of new project outputs in response to the emerging issues, including the annual work plan. The TORs for a PSC will be developed during the inception phase of the project. PSC meetings will be organised on an annual basis to discuss the progress of activities and amendments to the schedule, as needed, will be held face to face (COVID situation permitting), virtually or as hybrid meetings. GEF Operational Focal points of the four participating countries will also be invited to the PSC meetings and will be regularly informed about the project progress. The project steering committee will include an?Advisory Group on KM? (AGKM) which will provide guidance and inform the development of the global KM component. The AGKM members will include AfDB, GIZ, CPA, SFA, brands, and Conservation International (TBC).

The **National Executing Entity (NEE)** is Ethiopian Textile Industry Development Institute (ETIDI). The NEE will be responsible for the overall management of activities related directly to the project execution in Ethiopia. The NEE will execute policy and institutional framework review; capacity assessment, provide some procurement services; organize awareness raising and public education; national workshops and training programmes, national stakeholders? mobilization and engagement; coordination of national pilot demonstration; progress monitoring and reporting. The NEE will also prepare national progress reports; provide inputs into regional reports; and arrange and host national Project Implementation Committee (PIC) meetings.

Project Implementation Committee (PIC) will review the implementation and monitor the project activities at the country, resolve disputes, provide guidelines, provide recommendation to the PSC. The PIC will convene as required but at least twice a year.

A Project Management Unit (PMU) will be in charge of the day-to-day management of the project and be set up by the NEEs in the country. The PMUs provide necessary administrative and secretarial support to the PIC and host its meetings. It will be composed of a National Project Coordinator, Project Assistant, Financial specialist and the NEE will identify competent national experts, agencies, institutions, business associations, and NGOs/CSOs that will execute country specific activities and monitor progress of implementation. The PMU will regularly provide updates to UNIDO by submitting quarterly progress reports. UNIDO will share the updates with the PSC members and other relevant stakeholders.

The project will engage with a wide variety of partners and services providers along the entire CTG value/supply chain to holistically and inclusively where applicable address the issue of use of POPs; creation of recycling industries to promote resource efficiency and address un-intentionally produced POPs (uPOPs) emissions from opening burning of TG wastes. One of the major partners that the project (along with the Regional project GEF ID 10543) will engage is the is **Cambridge University Circular Economy Centre (CEC) in order to benefit from the** networks; expertise in and knowledge of circular economy. CEC will also assist in developing new business models and financial mechanisms for the promotion of circular economy. As an education and learning institution the CEC in recognition of the specific technical requirements, will be strategically positioned to provide executing services for training of trainers (ToT), the development of tools, school curricula and university research programmes especially training of and knowledge sharing with two research centers in the region (one in Ethiopia and the other in South Africa).

Regional Technical Service Providers will be engaged at a regional level by the REE to ensure the coordination, compatibility, facilitate oversight, reporting and comparative assessment of the different approaches proposed by each country in Ethiopia, Lesotho, Madagascar and South Africa. Besides their specific services, they will all support the knowledge management activities at the regional level. These service providers include:

? **Zero Discharge of Hazardous Chemicals (ZDHC)** services related to chemicals management, development of techniques, standards and certification for chemicals, water and waste management in the TG sector

? **ICLEI Africa:** services related to CE policy and legislation in the continent.

? **Sustainable Fashion Academy (SFA):** services related to the development of relevant toolkits, ToT on sustainable apparel and development of business cases for supply chain management and circular economy.

Partners who will support the knowledge management activities as detailed in the Regional Knowledge Management plan**:**

? **African Development Bank (AfDB) Fashionomics Africa and African Circular Economy Alliance:**

? **The German Corporation for International Cooperation (GIZ)**

o Component 1 on the strengthening of regulatory and institutional capacities for adoption and promotion of circular economy (CE) in the textile and garment sector positions with GIZ project Sustainable Industrial Clusters (S.I.C.). Output on Improved Sustainability Frameworks. Where we have two intervention areas. The first one focuses on improving the development and revision of sustainability standards, directives and guidelines for Ethiopia?s textile & garment sector and the second on improving institutional capacities of ETIDI to support and an advisory system for local compliance.

o Component 2 & 3 on the recyclability of textile and garment wastes is enhanced and the introduction of circular economy concept for emission reductions, these to align with S.I.C on improving measures for environmental sustainability within the industrial parks.

? **International Labour Organization:**

The project will cooperate in the following areas:

- o Occupational health and safety initiatives in the development of national chemical management guidelines, focusing on chemical use and exposure including through ILO Better Work programme.
- o Use of ILO guidelines and standards for the garment and textile sector.
- o Partnering with ILO existing initiatives in the textile and garment sector in delivering gender-specific training for women workers to ensure maximum reach and sustainability of the chemical specific information provided by the project.

? **Brands:** ASOS (from the regional project GEF ID 10543) and others to later join during the implementation of the full project phase.

Coordination with ongoing initiatives

The relevant baseline projects and initiatives are presented earlier (Section A3.3 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 meetings. 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.?This project will be implemented in close linkage and synergies with UNDIO?s regional Africa project (GEF ID 10543), both having Africa institute as a Regional Executing Entity (REE)

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:

- UNEP textiles project in Asia (GEF ID 10523, ?Reducing uses and releases of chemicals of concern, including Persistent Organic Pollutants (POPs), in the textiles sector), with which there is a shared global KM output (see Output 4.2) which overlaps with UNEP?s Output 3.2 and includes: common KM strategy development (see Appendix 3); 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.

- UNIDO?s Global Cleantech Innovation Programme (GCIP) in South Africa to support countries to accelerate the uptake and investment in cleantech innovations (GEF ID 10461), which aim to promote coordination, ecosystems connectivity and accelerate the uptake of, and investment in, innovative cleantech solutions under the Global Cleantech Innovation Programme.

Legal context

?The Government of the Federal Democratic Republic of Ethiopia agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed on 26 February 1981 and entered into force on 5 November 1984.?

Transfer of assets

Full or partial ownership of equipment/assets purchased under the project may be transferred to national counterparts and/or project beneficiaries during the project implementation as deemed appropriate by the government counterpart in consultation with the UNIDO Project Manager.

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.

The government of Ethiopia is receptive to new global initiatives and development trends and ready to transition their economy from a linear one to a circular one. A number of recycling and reuse activities and business are currently ongoing in the country but however there is a lack of policy and regulatory framework, business model and financial mechanism to unlock the CE potential in the industrial sector.

- The TG sector has been identified as priority for the reduction of uPOPs emissions from open burning operation in accordance with Persistent Organic Pollutants (POPs), 2006 and The National Implementation Plan (NIP) Update of the Stockholm Convention on Persistent Organic Pollutants (POPs), which updates the activities of the initial NIP and define activities for New POPs was not submitted yet.

- The project will complement and build on current Environmental policies to reduce emissions and protect the environment such as:

o Provisional Environmental standard for Pollution Control in Ethiopia (2003).

o Solid Waste Management Proclamation (Proclamation No. 513/2007)

o Draft Industrial Environmental Policy and Strategy.

Through engaging private sector, greening the industry and creating green industries, the project will align with the country Industry Sector Strategy.

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.

Three 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 10683 & GEF 10543) and one implemented by UNEP in Asia (GEF ID 10523). The projects in Africa projects include technical and substantive components on phasing out POPs and Chemicals of Concerns (CoCs), and promoting sustainable waste management and recycling of textiles. Both 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 Regional knowledge management plan (**Appendix 4**) was developed to build on existing efforts already present in the continent and coordinate between governments, suppliers, brands, manufactures, service providers, educational institutions, financers, associations and buyers. The plan will focus on stimulating regional integration, intra-African trade, entrepreneurship development, forging alliances/partnerships and bringing together tangible examples/case studies of what people are doing to put the circular economy into practice across Africa in the TG sector.

The three 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 7 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.

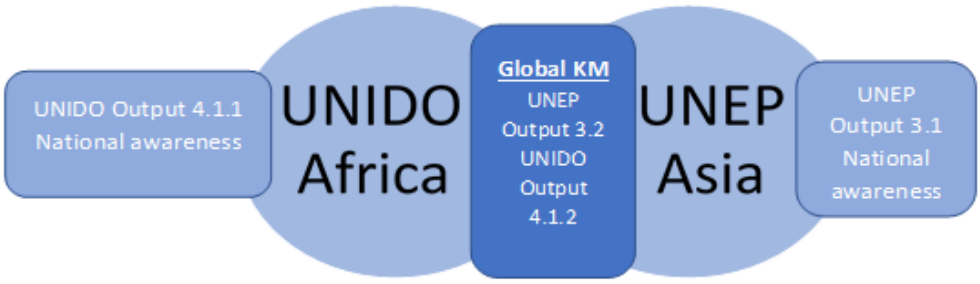


Figure 7: Visual representation of the different levels of knowledge strategies and awareness raising in both the UNEP and UNIDO projects.

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 Indonesia) 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 TG industry by phasing out the use of hazardous chemicals. Global brands are expanding on their sustainability initiatives and numerous knowledge platforms and information sources on chemical use in the TG 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 A3.2 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 TG experts will share technology, tools, and policy developments alongside advice to industry, brand and government needs and gaps.

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 executing entity to inform UNIDO of any delays or difficulties faced during execution so that the appropriate support or correlative measures can be adopted in a timely fashion.

The project Steering Committee (for both projects GEF ID 190323 and 200231) will receive periodic reports on progress and will make recommendations to UNIDO concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project meets UNIDO and GEF policies and procedures is the responsibility to UNIDO?s Manager.

In line with the GEF Evaluation requirements and UNIDO?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 Review at mid-point. All GEF funded projects are subject to a performance assessment when they reach operational completion. This performance assessment will be in the form of an external Terminal Evaluation (TE).

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 UNIDO staff and implementing partners. The direct costs of the evaluation will be charged against the project evaluation budget. The TE will typically be initiated 3-6 months prior to project completion.

The M&E plan is presented in the table below (Table 5).

Table 5: M&E Plan

Type of M&E activity	Responsible Parties	Budget from GEF	Time Frame
Inception Meeting	REE &NEE	Incl in SC meetings	Within 2 months of project start-up
Inception Report	REE&NEE	0	1 month after project inception meeting
Ongoing monitoring (project execution)	REE&NEE		Ongoing (5 years)
Baseline measurement of project outcome indicators, GEF Core indicators	REE&NEE		Project inception

Quarterly reports	REE&NEE	0	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 report	REE	10,000	Once a year minimum
Project Implementation Committees (PICs) meetings and reports	NEE	10,000	Annually
Project Implementation Review (PIR) report	REE, NEE and UNIDO	0	Annually, part of reporting routine
Monitoring visits to field sites	REE, NEE and UNIDO	20,000	As appropriate
Mid Term Review/Evaluation	UNIDO	30,000	At mid-point of project implementation
Terminal Review/Evaluation	UNIDO	40,000	Typically initiated after the project?s operational completion
Project Operational Completion Report	REE and NEE	Included in Project regional and national Coordinator budget	Within 2 months of the project completion date
Co-financing report (including supporting evidence for in-kind co-finance)	REE and NEE		Within 1 month of the PIR reporting period, i.e. on or before 31 July
Publication of Lessons Learnt and other project documents	The NRDC and REE		Annually, part of Semi-annual reports & Project Final Report

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 A2 (Global Environmental Problem), and section A7 (Global Environmental Benefits), hazardous chemicals and wastes are released all along the TG value chain and expose TG 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 TG 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 (at least 15 facilities) and pilot projects (at least 4) 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 TG 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. Broadly, the project will result in the creation of jobs within the circular economy and encourage enterprises operating within the circular TG economy to hire more workers, conduct product innovation and ensure resilience of business models during a transition to the circular economy. First, companies will hire more workers. Secondly, product and service innovation will allow consumers to make more informed choices about their consumption of clothing and alternatives. The support for market making activities such as the promotion

of POPs alternatives and the adoption of circular economy standards for wastes management provides further opportunities to afford consumers a more sustainable consumption choice.
Under Component 3, Socio-economic impact assessment of project intervention will be carry out on the TG sector and value addition to national economy. The assessment will include the social impacts (e.g. health), economic impacts (can include effects on employment and jobs creation), new investments, economic growth and environmental impacts

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	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.

As per UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), the project has been categorized as ?B?. Category B projects are likely to have less adverse impacts on human populations or environmentally important areas than those of Category A projects. As a result, an Environmental and Social Management Plan (ESMP) was developed during the PPG (Annex J).

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
10683_Annex J ESMP Ethiopia_10683	CEO Endorsement ESS	
UNIDO_ESS_Screening_Ethiopia CE_signed-1	Project PIF 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 Strategy	KPIs/Indicator	UNIDO IRFP Indicator	**Baseline**	**Target (for the entire project duration)**	**Means of Verification**	**Assumptions**

Objective: To promote the concept of circular economy (CE) in the textile and garment (TG) sector of Ethiopia through the reuse, recycling and conversion of textile/garment discards and related wastes into economically viable and socially beneficial products and services.	# Regulatory and legal initiatives for promoting CE in the sector implemented # Firms with improved chemicals and wastes management # Pilot demonstrations for Chemicals Management # Pilot demonstrations for wastes Management and CE # Institutional and technical capacity strengthened Number of direct beneficiaries reached (sex disaggregated)	**POL.1:** Cumulative number of new or revised policies adopted by policymakers **ENV.1:** Cumulative reduction of CO2eq emissions **ENV.2:** Cumulative tons of pollutants reduced or phased out **[KASA.2]:** Number of research/training institutions in CE financing mechanisms strengthened **[NOO.1]:** Number of initiatives to promote sustainable TG supply chains with increased transparency designed **IRPF 2.22** (gender-responsiveness marker): Number of new/updated policies adopted by policymakers as a result of UNIDO	Some bassline projects in POPs but none in CE	>1 Legal and institutional framework to promote CE, BAT/BEP/RECP 3.5 tons PFOS/ PFOA /PFAS/ PFHxS 3,690 tons POPs contaminated wastes 7.5 grams of toxic equivalent of emission of POPs to air mitigated >40 with improved Chemical management practices >1 research center with strengthened training capacity on CE > 2 CE/recycling pilot demonstrations, business and financial models, quality assurance and standardization 3,000 direct	Inception report, mid-term review, and terminal evaluation	Key stakeholders along the value chain will actively participate in all project activities

Component 1. Strengthening of regulatory and institutional capacities for adoption and promotion of Circular Economy in the textile and garment (TG) sector.

Outcome 1. Strengthened regulatory and institutional framework and capacities for adoption of Circular Economy in the TG sector	#Policy and regulatory framework for CE in the TG sector is developed / accepted among governmental stakeholders and private sector # new or amended policies and legislation relevant to chemical and wastes management and CE % of women and men in circular economy and TG policymaking organs/structures	**POL.1:** Cumulative number of new or revised policies adopted by policymakers **POL.2:** Cumulative number of new standards adopted or implemented **POL. 3:** Number of policies, policy instruments, or regulatory frameworks with contributions from the project for chemical and waste management and CE at national/local level developed **GOV.1:** Number of institutions established or strengthened **IRPF 2.22** (gender-responsiveness marker): Number of new/updated policies adopted by policymakers as a result of UNIDO **KASA.1:** Number of actors gaining awareness/knowledge on the policy **TCO.1**: Number of capacity building	Policy, regulatory, and financial environments do not provide incentives for the phase out of POPs and CoCs No specific regulatory framework for circular economy in the TG sector	>1 Legal and institutional framework to promote CE, BAT/BEP/RECP 1 CE technical committees	Progress report Meeting reports	Key stakeholders will actively participate in the process of regulatory improvement. Governments are committed to examine and endorse studies, draft legislation and other institutional arrangements developed under the project within the project timeframe.

Output 1.1. Legal and institutional framework for life cycle management of the TG supply/value chains.	# Policy and regulatory framework for CE and toxic-free in the TG sector is developed / accepted # Implementation of EPR programmes #Standards developed/adapted in each country for POPs/hazardous chemicals/waste management and CE in the TG sector # Laboratories testing and analytical capacities Strengthen % of women and men in CE and TG policymaking organs/structures	Above	Policies and strategies to support programmes and activities for life circle management do not exit. Testing and analytical capacity needs strengthening	1 revised legal framework to promote CE and including technical infrastructure for implementation of BAT/ BEP on POPs, hazardous chemicals, and textile waste management as well as RECP options >2 capacity building and awareness raising events conducted >2 local Laboratories certified by ZDHC	Policy document prepared and endorsed by relevant authorities Training reports, minutes, and training support material on BAT/BEP/ RECP and CE capacity building processes	Government officials are interested and able to promote CE in the sector

Output 1.2. Regulations and incentive scheme for promotion and sustainability of circular economy in the TG sector.	# Targets and incentives are set, promoted, and enforced #Master plan for national strategy for transition to CE is developed	Above	Regulations and incentives scheme for the promotion of circular economy are not in place There is not adequate national master plan and strategy on circular economy	1 Regulations and incentive scheme (one in each country) > 2 capacity building events conducted for incentive scheme 1 Master plans for transition to CE	Regulations and incentives scheme document Master plan documents for transition to CE Training reports, minutes of meetings	Government officials are interested and able to promote CE in the sector stakeholders will actively participate in the process of regulatory improvement.
Output 1.3. Technical Committee for Circular Economy in the TG sector	Technical Committee on Circular Economy established and operational	GOV.1: Number of institutions established or strengthened	A formal government organization/committee for supporting a circular TG economy is non existent	1 workplan and Coordination mechanism (one for each country) 2 targeted trainings 5 annual Reports and recommendations of the Committee 50% women participation in the committee	Binding documents, list of committee members and signatures Meetings, number of trainings conducted Reports and evidence based policies TOR prepared and Committee members selected Committee reports, minutes of meetings	Government officials are interested and able to promote CE in the sector Multisectoral participation in the committee
Component 2. Recyclability of textile and garment wastes is enhanced through POPs-free textile manufacturing process and the implementation of BAT/BEP and RECP investments.						

Outcome 2. BAT/BEP/ RECP and Circular Economy concept are implemented through technical assistance in selected textile production facilities for the ESM and prevention / reduction of POPs, hazardous chemicals and wastes while improving process efficiency and profitability at plant level.	Amount of POPs chemical and contaminated wastes phased out # Entities/People trained (total) # men and women who participate in capacity building programmes # Facilities participating in the ESM	**ENV.2:** Cumulative tons of pollutants reduced or phased out **ENV.5:** Number of new or improved green products made available or used **[TEC.3]** Number of pilot projects implemented and operationalized in the selected companies **[KASA.1]** Number of actors gaining awareness/knowledge on POPs-free technologies **TCO.1:** Number of capacity building activities provided **POL.2:** Cumulative number of new standards adopted or implemented	No ESM of POPs hazardous chemicals and wastes	3.5 tons of POPs phased out 3,690 POPs contaminated wastes eliminated > 40 entities with improved knowledge on chemical management and improved Chemical management practices 1,000 actors (50% women) gaining knowledge >1 technical guidelines and SOPs on sustainable chemical management	Progress reports Inception report, mid-term review, and terminal evaluation Reports submitted by service providers, local and international experts working in the sector in coordination with the project Progress reports	Stakeholders are able and willing to participate in awareness raising/capacity building on Chemical management Chemical providers are interested in sustainable Chemical management TG sector companies and chemical providers are willing to share information on chemical use

Output 2.1. Chemical Inventories for POPs and Technical guidelines for environmental sound management of POPs chemicals and wastes	Inventory, database, and material flow analysis (MFA) prepared #Technical guidance developed # Factory Implementation and adoption of ZDHC tools/ relevant methodologies #Capacity building and institutional strengthening on sustainable chemicals management system #People trained (total) #men and women who participate in capacity building programmes % of enterprises complying to new inclusive and legal measures	**POL.2:** Cumulative number of new standards adopted or implemented **TCO.1:** Number of capacity building activities provided	Lack of data and inventories of Chemicals use No available guidelines	Inventories prepared >1 Technical guidelines on Chemical management to participating TG production facilities >5 pilot demonstration facilities implemented ZDHC tools >3 capacity building events conducted >30 people gained knowledge on sustainable chemical management through ZDHC trainings	Inventories Reports and Draft and final version of the Technical guidelines Training reports, minutes and training support material for technical assistance, and advisory processes Training reports, minutes and training support material for technical assistance, and advisory processes	TG sector companies and chemical providers are willing to share information on chemical use Stakeholders are able and willing to participate in awareness raising/capacity building on Chemical management

Output 2.2. Standard operating procedures (SOPs) and checklists POPs pollution prevention and control	# of SOPs developed and implemented in the facilities BAT/BET options on POPs and hazardous chemicals identified #Pilot facilities are audited # Business models for sustainable chemicals management developed.	**POL.2:** Cumulative number of new standards adopted or implemented	No SOPs for handling and usage of chemicals and auxiliaries in the textile production process No access to POPs free and non hazardous alternatives and technologies	> 1 SOPs for chemical management, RECP, BAT/BEP. >5 Assessment report on the identified BAT/BEP/RECP options >5 of facilities audited for RECP and ESTs > 1 business opportunity developed (incl. Chemical Leasing). >100 training participants on SOPs , BAT/BEP/RECP (male and female) > 200 raining participants on New Business models (male and female)	Draft and final version of the SOP documents Assessment report Facilities audit reports Training reports and lists of attendance	Key stakeholders will actively participate in the process
Output 2.3. Techno-economic feasibility of BAT/BEP and RECP options	Technical assessment and feasibility carried out		No technical assessment and feasibility study with cost-benefit analysis, economic and market conditions	1 Techno-economic feasibility assessment reports	Reports, progress reports, findings, and recommendations	Key stakeholders will actively participate in the process

Output 2.4: Training and Capacity building in BAT/BEP, RECP and Circular Economy.	#Capacity building and awareness raising programmes on chemicals and wastes BAT/BEP/RECP and CE # training guidelines, modules, and manuals developed by ZDHC service providers #People trained (total) # men and women who participate in capacity building programmes % of enterprises complying to new inclusive and legal measures	**[TCO.1]:** Number of capacity building events conducted for relevant stakeholders	Limited technical capacity in BAT/BEP, RECP and CE	>2 Capacity building programmes > 3 training guidelines, modules, and manuals 800 training participants (male and female)	Training reports and minutes of meeting Service providers progress reports training guidelines, modules, and manuals	Key stakeholders will actively participate in the process Service providers accredited by ZDHC are available in the region
Output 2.5: BAT/BEP and RECP options identified and implemented in at least one facility for each country.	# Factory Implementation In-plant assessment and training programmes # of participants (sex disaggregated) Socio-economic impact assessment	**TEC.1:** Number of new technologies developed or adapted **TEC.3:** Number of new technologies adopted **ENV.5:** Number of new or improved green products made available or used		>5 pilot facilities that adapt new technologies > 5 In-plant assessment and training programmes 30 In-plant personnel trained (female and male)	Inspection, Progress and assessment reports. Training reports	

Component 3. Introduction of Circular Economy concept for UPOPs emission reductions and contaminated land mitigation through ESM of textile and garment wastes and pilot demonstration of textiles/garment wastes recycling and reuse.

Outcome 3. BAT/ BEP and Circular Economy concept are implemented through technical assistance in selected TG and recycling facilities for the reuse, recycling and ESM of textile and garment wastes.	uPOPs emission reduction Reduction of waste generation Amount of wastes recycled/reused GHG mitigated	**ECO.1:** Number of firms with economic gains (additional sales, savings) **ENV.1:** Cumulative reduction of CO2eq emissions **ENV.2:** Cumulative tons of pollutants reduced or phased out **ENV.5:** Number of new or improved green products made available or used **[INV.1]** Number of financial mechanisms developed, influenced, or supported **[TEC.3]** Number of pilot projects implemented and operationalized **[KASA.1]:** Number of actors gaining awareness/knowledge on CE **[KASA.2]:** Number of research/training institutions in CE strengthened	Open burning leading to uPOPs and GHGs emission Lack of /unsustainable waste management practices	>1 pilot projects implemented and operationalized in each country to reduce and/or eliminate POPs 7.5 grams of toxic equivalent of emission of POPs to air mitigated 400 workers, policy makers, relevant stakeholders (200 women and 200 men) trained in CE 800 actors (480 women and 320 men) gaining awareness/knowledge on waste management and CE > 1 financial mechanisms and business models developed, influenced, or supported >1 training institutions in CE strengthened to include CE in its curricula and carry out Training the trainer (ToT).	Progress reports Training reports, minutes and training support material for technical assistance and advisory processes	TG cooperatives/individual workers are willing and able to implement changes in TG value chain Policy makers are committed to promoting CE

Output 3.1. Environmentally sound management (ESM) plan for textile/garment wastes.	# Textile and garment wastes mapping in each country #ESM plans interregional wastes flow/trade assessment	**[TCO.4]:** Number of plans to improve processing technologies developed	None	1 waste mapping reports for the country >1 plan to improve waste management practices developed 1 Assessment of interregional wastes flow/trade report	Progress reports Draft and final ESM plan Draft and final of waste trade report	Government officials (Ministry of industry, Environment, Statics office, etc.) , TG facilities and TG wastes relevant stakeholders are willing to share data and participate in developing a new plan
Output 3.2. Training and capacity building in ISWM and BAT/BEP for ESM of textile and garment wastes.	# training materials and technical guidelines #trainings and building capacity	**TCO.1:** Number of capacity building activities provided	None	>1 training materials and technical guidelines on BAT/BEP for ESM of textile and garment wastes/discards > 2 trainings and building capacity events on BAT/BEP for ESM of textile and garment wastes/discards	Draft and final documents of training materials and technical guidelines Training reports and list of participants (sex disaggregated)	There is interest from the private sector and relevant stakeholders to implement the new ESP plan

Output 3.3. Financing mechanisms and business models for circular economy.	Review of the global Innovative Business Practices and Economic Models in the TG Value Chain # Business models and financing mechanisms for sustainability of TG wastes # Entrepreneurship Scheme for sustainable TG wastes recycling and management # Access to PFAN services to mobilize private sector financing	**[INV.1]:** Number of financial mechanisms developed, influenced, or supported **[KASA.1]:** Number of actors gaining awareness/knowledge on access to finance and responsible supply chains **[KASA.2]:** Number of research/training institutions in CE financing mechanisms strengthened	None PFAN network in the region but no in the TG sector	>1 financial mechanisms and business models developed, influenced, or supported 500 actors (women and men) gaining awareness/knowledge on access to finance and responsible supply chains >2capacity building events 1 research institutions on CE financing mechanisms strengthened >10 access/use PFAN services	Progress reports	Stakeholders are able and willing to participate in awareness raising/capacity building on access to finance Financial institutions are interested in developing and implementing adequate financial mechanisms for TG wastes valorization
Output 3.4: Techno-economic feasibility study of BAT/BEP options for recycling/reuse of textile and garment wastes.	Technical assessment and feasibility carried out	**[TEC.1]:** Number of new technologies developed or adapted	No technical assessment and feasibility study with cost-benefit analysis, economic and market conditions	>1 Techno-economic feasibility assessment reports	Reports, progress reports, findings, and recommendations	Key stakeholders will actively participate in the process

Output 3.5: Socio-economic impact assessment of project interventio n	Review of the socio-economic impacts of different sustainable economic models in the TG value chain Socio-economic impact assessment of the project intervention			1 Review report of Socio-economic impact of TG sustainable economic models >1 Socio-economic impact assessment reports	Reports, progress reports, findings, and recommend ations	Key stakeholders will actively participate in the process
Output 3.6: Partnership and cooperation mechanism supply chain manageme nt	Mapping of the African TG sector Identify TG waste generation/collec tion hub/cluster #national strategy for the TG supply chain management Training on Brands and global requirements/stan dards # Partnerships signed	[PAO.1] Number of analytical reports on TG supply chain in Africa produced **TCO.1:** Number of capacity building activities provided REA.2: Number of actors engaged (by kind of actor)	None	>1 Waste mapping report including wastes clusters >1 national strategy for the TG supply chain management document Training reports > 1 regional and/or global partnerships/ cooperation agreements signed		

Output 3.7: BAT/BEP demonstration for ESM of POPs chemicals and textile/garment wastes	# investment intervention in pilot facilities # of projects linked to	**[NOO.1]:** Number of initiatives to promote sustainable TG supply chains with increased transparency designed **[TEC.3]:** Number of new technologies adopted **[ENV.5]:** Number of new or improved green products made available or used		>1 Waste management and CE initiatives with technology/equipment transfer		
Component 4. Knowledge management for scaling up						

Outcome 4. Upscaling of project results to global textile and garment sectors and reporting to MEAs	# National capacity and awareness #Regional and Global Knowledge events #Regional and Global Exchange and Management tools produced # specific knowledge material developed on gender # gender references ininformation/knowledge material produced	**[KASA.1]:** Number of actors gaining awareness/knowledge **[REA.1]:** Number of people reached with awareness raising materials, by mode of communication (e.g. online, in-person, via SMS, WhatsApp, etc) and by gender **[KASA.2]:** Number of research/training institutions in CE strengthened	None	1,200 actors (720 women and 480 men) gaining awareness/knowledge on the dangers of POPs and ways to avoid/eliminate its use 30,000 (15,000 women and 15,000 men) reached with awareness raising materials At least 2 South- South Global events with UNEP Asia project 10 original publications (blogs, news articles, events, etc.) on the communication platforms 2 research/training institutions in CE	Progress reports Metrics on communication outreach Blogs, news articles, events, or other publications available on the website	There is interest, participation, and involvement of the different stakeholders

Output 4.1. National capacity and awareness programs developed and implemented to increase ability of textile sector and policy makers to control POPs and CoCs	National KM and awareness plan for each country # Awareness and capacity building training as per the plan # of research/training institutions to develop training modules and teaching resources # gender references in information/knowledge material produced	**[CPO.1]:** Number of events related to chemical management and CE in the TG at national level organized **[KASA.2]:** Number of research/training institutions in CE strengthened **[TCO.3]:** Number of courses developed in academic units	0	1 KM plan to develop a sustainable exchange mechanism for the TG sector in each country At least 3 awareness and capacity building trainings 1 research/training institution in CE > 1 training modules and teaching resources	Progress reports Documents approved by the Ministry of Education	There is sufficient technical and financial support to build the sustainable exchange mechanism Academic and educational conditions are created to implement qualification programmes at professional level
Output 4.2. Regional and Global Knowledge Exchange and Management tools produced and accessed by users globally	Global KM strategy Connecting to an online Platform Regional KM plan Number of original publications (blogs, news articles, events, photo essays, videos, etc.) on digital communication platforms	**[TCO.4]:** Number of plans/strategy to develop a sustainable exchange mechanism for the TG sector hosted by a local partner developed **[CPO.1]:** Number of events related to chemical management and CE in the TG at regional and global level organized		> 2 South ? South Meeting with UNEP 5 Advisory Group meetings >5 Regional industry events in collaboration with AfDB > 6 original publications (Policy, chemical, wastes mapping, waste management, CE, etc.)	Meeting reports Draft and final original publications	There is sufficient technical and financial support from local, regional, and global partners to build the sustainable exchange mechanism Pilot experiences generate relevant lessons learned to be disseminated and replicated Links with the media are generated

Output 4.3. Gender and Social Action Plan implemented, and benefits accrued to women workers	# National stakeholder workshops to confirm and validate the project wide Gender and Social Action plan. Gender assessment of the key project outcomes and reports, # Gender-specific training for women workers who may be exposed to hazardous chemicals.	**[TCO.1]:** Number of capacity building events organized **[CPO.1]** Number of physical/virtual regional events for women workers organized		> 1 National stakeholder workshops to confirm the Gender plan 1 Gender assessment reports of all project activities. > 2 physical/virtual regional events for women workers organized	Detailed national work plan Training reports Meetings reports Asses all reports across all component developed and integrated with inclusiveness and gender responsiveness	Women workers are engaged General public has an interest on gender aspects in TG sector

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).

Annex B: Addressed comments from STAP, Denmark, Germany and France		
Comments from the STAP **General response: We thank the STAP for the thorough review. The specific comments will help to further strengthen the full design of the program. Please see below our response to each of the comments.** **STAP requests that the following requirements are taken into account during the design of the final project proposal for both this project and Regional one (10543):**		
Comments	**Response**	**Reference in documents**
STAP Comment 1 Project objective: The current objective is a disservice to the project's laudable intention, and we recommend that it be revised to capture the overarching intent of the project appropriately	The objective was modified: To promote the concept of circular economy (CE) in the textile and garment (TG) sector of Ethiopia through value chain approach that addresses the sector?s upstream: resource use; green and sustainable chemistry as well as downstream by the reuse, recycling and conversion of textile/garment discards and related wastes into economically viable and socially beneficial products and services.	CEO endorsement

STAP Comment 2 STAP's recent paper on "delivering multiple benefits through the sound management of chemicals and waste" includes an example on how to transform the textile and garment sector based on the systems thinking approach and discusses types of interventions and how projects should be designed to capture multiple benefits. We recommend that the project proponent review the report when developing the PPG.	Throughout the PPG stage, a review of the best practices and reports were done by the local and international experts? in order to design the project intervention.	Across the CEO endorsement activities (section A4 The proposed alternative scenario)
STAP Comment 3 The PIF indicates that an elaborate initial consultation has been carried out with relevant stakeholders, including governments and the private sector. Similarly, the baseline information was well presented. These are commendable, and these consultations and rigor should continue in the design, implementation, and monitoring of the project.	Rigor consultations and engagement were done throughout the PPG period. Global, regional and national project stakeholders were mapped and consulted during the PPG.	More details of the Stakeholder Engagement in the Stakeholder section in the CEO endorsement and the Stakeholder Engagement Plan (Annex I)
STAP Comment 4 The section on barriers only provided a list. It would be useful to elaborate each of the barriers.	Several root causes and barriers to the full implementation of Circular Economy in the TG sector including commitments set by the Stockholm Convention (SC) have been identified in Ethiopia and detailed in the CEO endorsement document	Refer to Section A2.2 Root causes and barriers in the CEO endorsement document
STAP Comment 5 The project recognized that GEF is already funding similar projects in Africa. It is essential to ensure good collaboration between this and other projects.	The relevant baseline projects and initiatives in Africa and globally were listed and contacted. The project will be implemented as part of a similar Regional project (GEF ID 10543) and in collaboration with UNEP textiles project in Asia (GEF ID 10523), Conservation International MSP on fashion (GEF ID 10658) and UNIDO?s Global Cleantech Innovation Programme (GCIP) (GEF ID 10461). The project will also collaborate with GIZ Sustainable Industrial Clusters (S.I.C.) project in Ethiopia.	Refer to Coordination with ongoing initiatives under section 6 Institutional Arrangement and Coordination. as well as A3.3 Associated Baseline Projects in the CEO endorsement document.

STAP Comment 6 Paragraph 34 highlights some of the circular economy issues to be addressed: textile durability, multi-purpose application, reusability, recyclability, maintainability, repairability, low carbon, and cleaner technologies, bio-chemicals, biodegradable inputs, renewable energy, waste recovery, zero landfills, etc. It would be useful for these to be further elaborated to show how they will be implemented in the life cycle of textiles in Ethiopia. With regards to implementing these interventions, we recommend the project proponent review the following example publications: ? Moore & Ausley, 2004. ? Choudhury 2017. https://medcraveonline.com/JTEFT/JTEFT-02-00056.pdf ? Fletcher, K. (2009). Systems change for sustainability in textiles. In Sustainable Textiles ? KEMI. 2013. Hazardous chemicals in textiles ? report of a government assignment. Swedish Chemicals Agency (KEMI). ? Sajn, N. 2019. Environmental impact of the textile and clothing industry: What consumers need to know.	Circular economy approaches were listed under Section A4: The proposed alternative scenario. These include design out waste and pollution through waste minimization, resource efficiency and productivity improvement and extended durability of products. Removal and avoidance of harmful chemicals substances in products is to ensure the recyclability and reusability of wastes; hence keeping materials and products continuously in circulation. The Global and Regional Baseline Scenario summarize the current bassline status of the sector in term of chemical use, waste generated, wastewater, climate change and knowledge Management.	More details of the activities were added under each output in Section A4: The proposed alternative scenario and A3.1 Global and Regional Baseline Scenario

STAP Comment 7 The paragraph on investment mobilization states that "the investment will be mobilized for the acquisition of green technologies and BAT/BEP that will require process plant modification, installation of new equipment, training of operating personal and introduction of innovative techniques and practices. UNIDO, through their supply chains, will get the buy-in of international brands such as PVH and H&M. The aim is to collaborate with the private sectors to implement the international brands CSR and sustainability programs such as: Better Cotton Initiative, Eco design, Partnership for a Cleaner Textile PaCT, Science Based Targets initiative, AFIRM, Zero Discharge of Hazardous Chemicals (ZDHC), etc." These concepts need more elaboration on how they will be applied to assist in the project's sustainability and scaling up.	Concepts were detailed in the CEO endorsement document. Through information exchange and the active participation and involvement private sector and global brands/foundations/entities like the Cambridge University Circular Economy Centre, Sustainable Fashion Academy (SFA), which has a large repository of information and knowledge on Circular Economy and has also developed a number of training toolkits and methodologies on CE and transformative change with other international partners. The project will use the knowledge, network and expertise of Zero Discharge of Hazardous Chemical (ZDHC), which will carry out certified training and capacity building programme on sustainable management of chemicals in industries. Already most of the global brands in the TG sector have signed up to the ZDHC programme. With the active involvement of ZDHC, the project was be able to mobilize and enlist the commitment brands like ASOS, etc., which will drive and realize the expected transformational change. It should be noted that the innovative approach of this project is achieved through the active involvement of the private sector along the supply chain.	Refer to the Innovation, sustainability, and potential for scaling-up section as well as section A4 The proposed alternative scenario in the CEO endorsement
STAP Comment 8 Theory of Change: A good theory of change showing the causal chain leading to desired short- and long-term outcomes and overall impacts was presented. A description or inclusion of alternative pathways (plan B) if the proposed pathway is not feasible will further strengthen the current theory of change.	Feasible Alternatives scenarios were investigated and assessed during PPG phase. The activities were designed to allow the flexibility depending on the countries context. The project collaboration and partnerships will ensure support is provided and when needed modify any of the activities.	Refer to section A4 The proposed alternative scenario in the CEO endorsement

STAP Comment 9 It is commendable that the potential co-benefits from the project were identified and mentioned in the PIF. As indicated, the project can deliver climate benefits by implementing renewable energy, energy efficiency, and clean technologies in the sector. We recommend that the interventions be designed to maximize chemicals and waste, and climate benefits. The potential benefits of improved land degradation were also noted, which is good. The project will also deliver water pollution prevention (important as the location maps show that some of the targeted project sites are close to rivers) and associated benefits to biodiversity, ecosystem services, and natural resource management. These benefits should be recognized and captured. Doing so would provide a more holistic account of the project's impact and highlight the substantial return on investments. This project will also deliver health and economic benefits, which should be accounted for during implementation, monitoring, and evaluation.	Indirect benefits will also be derived from resource efficiency and productivity improvement that will increase the economic competitiveness and profitability of the textile and garment sector companies and increase their outputs and reduce the volume of wastes generated. Mitigation of land contamination will be addressed through the recycling and reuse of textile discards and wastes that are currently being disposed of in open landfills, which are causing the land contamination The greenhouse gas reduction benefits will be established during the implantation of the project and when the detailed assessments and energy audits of the participating industries are carried, energy efficiency gains are estimated, and carbon emission reductions are calculated.	More details under the Global Environmental Benefits
STAP Comment 10 The IEO Terminal Evaluation of Chemicals and Waste projects1 revealed that there is limited evidence that GEF's chemical and waste projects successfully put in place sustainable strategies and financial mechanisms for scaling up. The PIF states that "the project will develop financing mechanisms and business models for the circular economy which will facilitate the attraction of new investments in green industries." We advise that the financing of the project activities post-GEF project should be given more attention.	The project will review global innovative business practices and economic models in the TG value chain and develop business models and financing mechanisms for sustainability of TG waste and sustainable chemicals management. The project will give access to ongoing financial and entrepreneurial African programmes, trainings and resources (eg. AfDB, UNIDO?s Global Cleantech Innovation Programme, UNEP InTex in South Africa, Reach for Change in Ethiopia, GIZ Sustainable Industrial Clusters (S.I.C.) project in Ethiopia, GreenCape in South Africa, etc.). Furthermore, Cambridge University Circular Economy Centre (CEC) will assist in developing new business models and financial mechanisms for the promotion of circular economy	Refer to the project activities in the CEO endorsement (Output 2.2, 2.4 and 3.4)

STAP Comment 11 A good preliminary climate risk screening has been prepared, which answers a good part of STAP's screening questions. This is commendable. We recommend that detailed information on how the climate risk will be mitigated should be provided at the PPG stage, as stated in the PIF.	The detailed climate risk screening was undertaken during the PPG phase in line with STAP guidance.	Refer to the risk section in the CEO endorsement, Annex J: Environmental and Social Management Plan and APPENDIX 1: Climate Risk Screening
Comments from the Denmark Denmark request that the following requirements are taken into account during the design of the final project proposal:		
Comments	**Response**	
Denmark Comment 1 An earlier project in Bangladesh (10523) intended to address also other chemicals of concern (as identified in a private labelling scheme and potential PFAS). If this project intends to phase out only Stockholm POPs we would question why it doesn't go as far as the Bangladesh project. This project proposal should also be clear how it will coordinate and collaborate with the other similar GEF projects referred to in the proposal.	This project will be implemented in close linkage with UNEP regional project in Asia (10523). The project intends to phase out POPs, POP candidates and other priority CoCs in the textiles and garments manufacturing facilities, processing chemicals and TG products in Ethiopia. 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. Across the activities, the relevant projects are mentioned. This project share the same Knowledge Management component with UNEP Asia project under the same KM Manager (NRDC). UNIDO?s Global Cleantech Innovation Programme (GCIP) (GEF ID 10461) and PFAN will support on the development of Develop business models and financing mechanisms. More details in the CEO endorsement.	Refer to the proposed alternative scenario, section A4 in the CEO endorsement as well as the Coordination with Other Relevant Projects and Initiatives and Institutional Arrangement and Coordination.

Denmark Comment 2 We find it particularly interesting that the project will engage renowned international brands and use BAT/BEP but this could be more clearly spelled out with reference to how far this has already been addressed with the specific companies. However, we do not find information on which BAT/BEP that will be used. These may differ from one jurisdiction to the other but will usually require more advanced practices than only avoiding Stockholm Convention POPs. The earlier project in Bangladesh intended to use ecolabels, but that would usually be more demanding than BAT/BEPs.	The majority of the international brands and their supplier are member of the ZDHC and have a chemical management system in place. However the project will work to improve their current practices further and benefit other local companies from their expertise. The international brands are interested in the waste management component of the project as well as the water and energy saving through the RECP. As per the activities in the CEO endorsement document, the project identify and evaluate BAT/BEP/RECP options for phase out and prevention/reduction of POPs and other hazardous chemicals in the TG industries. Based on that a Techno-economic feasibility study of all the BAT/BEP and RECP options will be carried out.	Refer to the proposed alternative scenario, section A4 in the CEO endorsement (Output 2.2 and 2.3)
Comments from Germany: **Germany requests that the following requirements are taken into account during the design of the final project proposal:**		
Comment	**Response**	
Germany Comment 1 Please explain whether compliance with social safeguards and employment standards was taken into account in the pre-selection of sites for the pilot demonstration.	Yes, The project through extensive consultation the government, associations, international brands and relevant stakeholders, ensured the compliance with social safeguards and employment standards by selected sites for the pilot demonstration The projects will seek to collaborate with Better Work Programme by ILO, to see improved respect of workers? rights.	Refer to the A3.3 Associated Baseline Projects in the CEO endorsement and the Gender plan (Annex K)

Germany Comment 2 Please specify in greater detail what type of mechanisms will be established to cope with the lack of technical capacity from both public servants and technicians of the private sector.	The projects through training, awareness raising and knowledge and capacity strengthening activities will target several groups, not only the executing partners, including: Private sector companies? employee (with an estimated number of 2 companies per each country for the pilot demonstration) involved in the production, who will be trained on BAT/BEP/RECP. This training will also be open for the wider TG sector companies. ? Policy makers, regulatory, compliance monitoring bodies and custom officers, etc. ? Training banking and financial institutions on green financing (financing of green investments in processes, products and services) appraising. ? Prospective entrepreneurs who are interested in recycling business will be trained. ? Training NGOs and public awareness raising on hazardous chemical including POPs, recycling, and investment opportunities. The project will develop of training modules and teaching resources that can also be used in existing school curricula and university research programmers. Furthermore, the project will strengthen and involve academic institutions such as universities and research centres to help improve or complement the curricula on improved technology and issues related exclusively to ESM of chemicals and wastes and all its technical, economic, environmental, and social implications.	Refer to the proposed alternative scenario, section A4 in the CEO endorsement

Germany Comment 3 If economic recovery funds are provided to participating companies to prevent that they are not able to meet their financing obligations; how will it be ensured that the recovery funds do not constitute the main (short-term) motivation to participate for those companies?	Through the consultation meetings held to develop the PIF and during the PPG phase, UNIDO. Government, Ethiopian Textile Industry Development Institute (ETIDI) and Ethiopian Textile/garment manufacturers? association (ETGAMA) engaged the private sector companies and extensively explained to the private sector companies the importance of this project. All companies visited were regularly investing and were planning to continuously invest in BAT/ BEP measures in order to move forward on factory efficiency. The identified textile and garment sector industries also have business dealings and/or supply contracts with many of the international fashion brands/retail outlets and other seeking to do so. The project will collaborate with the private sectors to implement the international brands CSR and sustainability programs such as: Better Cotton Initiative, Eco design, Partnership for a Cleaner Textile PaCT, Science Based Targets initiative, AFIRM, Zero Discharge of Hazardous Chemicals (ZDHC), etc. The private sector provided co-financing letters to show interest, commitment and sources of co-financing provided for the pilot projects.	Across the CEO endorsement and the co-financing letters
Comments from France: **France requests that the following requirements are taken into account during the design of the final project proposal:**		
Comment	**Response**	

France Comment 1 Although indicating circular economy as an objective, the project seems to focus on downstream activities. Treatment at source is still necessary.	Refer to STAP comment 1: The project objective is to promote the concept of circular economy (CE) in the textile and garment (TG) sector of Ethiopia through value chain approach that addresses the sector?s upstream: resource use; green and sustainable chemistry as well as downstream by the reuse, recycling and conversion of textile/garment discards and related wastes into economically viable and socially beneficial products and services. The project will target the Raw material/chemical suppliers and Processing factories (mainly component 2) and garment assembly factories and end of life (mainly component 3). Through partners and the coordination with ongoing projects, the project will have an impact on the entire value chain.	Refer to the proposed alternative scenario, section A4 in the CEO endorsement

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

The committed funds will be spent in the project start-up phase, i.e. they will be used predominantly to strengthen the capacity of and provide training to the REE and NEE on the project execution arrangements with due consideration of the updated GEF guidelines on the project and programme cycle policy (the training of the REE and NEE is directly related to project/country preparation and as such its cost is eligible to be financed from the PPG).

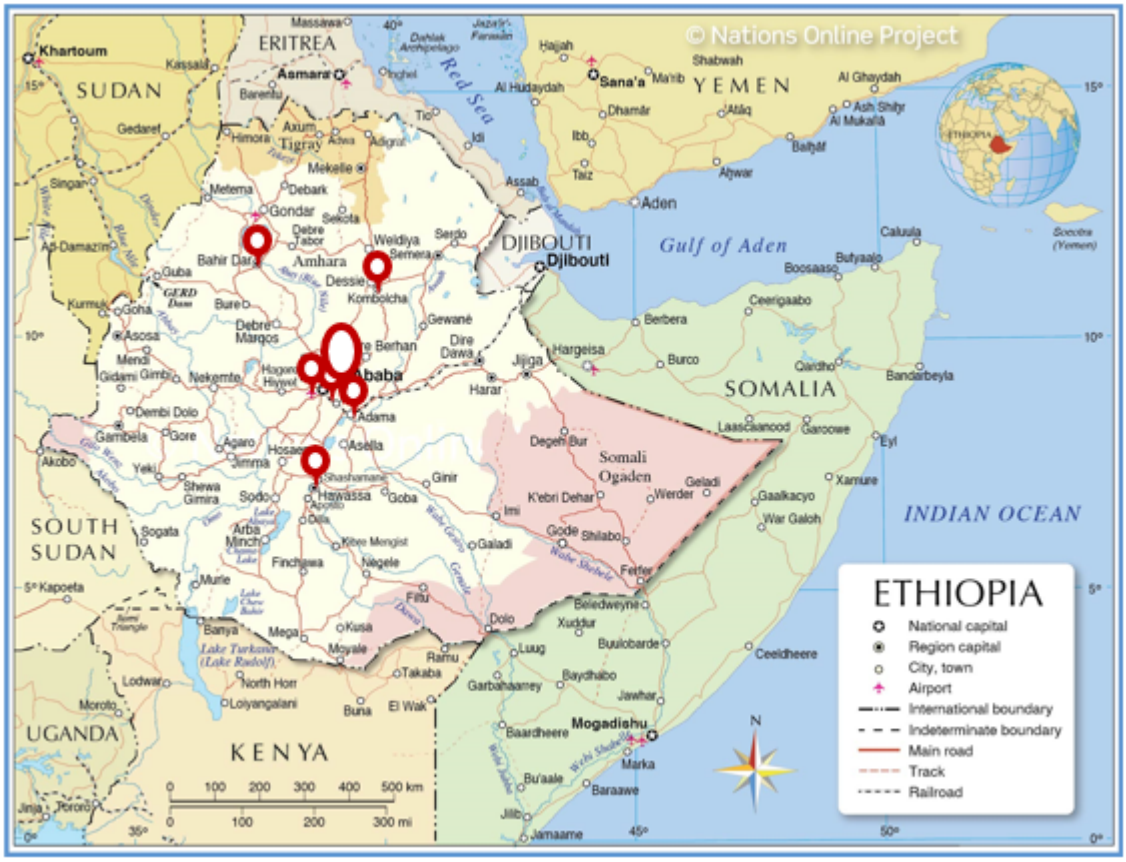
Table 1. Status of Utilization of Project Preparation Grant (PPG)

Project Preparation Activities Implemented	***GETF/LDCF/SCCF Amount ($)***		
	Budgeted Amount	***Amount Spent To date***	***Amount Committed***
Stakeholder engagement activities (consultations, workshops, steering committee, information sharing)	*15,000*	*10,000*	27,500.11
Project implementation/execution modalities (TORs & trainings), and Co-financing letters	15,000		
Preparatory studies and baseline data collection	45,000	Contract for local consultancy: and	

ESS	10,000	international experts: 50,119.11	
Gender Assessments	5,000		
PEE assessment (KPMG)		9,722.10	
Finalization of CEO endorsement for UNIDO internal submission.	10,000	All above contributed plus Research & Project Development Expert: 2,658.68	
Total	**100,000**	**72,499.89**	**27,500.11**

ANNEX D: Project Map(s) and Coordinates

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



SN	Factory Name	City	Co-ordinate
1	Muya Ethiopia PLC.	Addis Ababa	9? 0' 19.4436" N and 38? 45' 48.9996" E
2	Kanoria Africa Textile Sh.co	Bishoftu	8? 45' 0" N, 38? 59' 0" E
3	Kombolcha Textile Sh.co	Kombolcha	N 11? 4' 52.8888", E 39? 44' 27.1428"
4	Al-Asar Industries PLC	Dukem	08?48?N 38?54?E? / ?8.800?N 38.900?E
5	EPIC Apparel PLC	Hawassa	7? 3' 1.3464" N and 38? 29' 43.8144" E
6	Yirgalem Addis	Addis Ababa	9? 0' 19.4436" N and 38? 45' 48.9996" E
7	Bahir Dar Textile Sh.Co.	Bahir Dar	***Latitude***: 11? 35' 59.99" N Longitude: 37? 22' 59.99" E
8	ETUR Textile	Adama	8? 33' 0.00" N, 39? 16' 12.00" E

ANNEX E: Project Budget Table

Please attach a project budget table.

This is a summary of the budget table for the project. Please refer to the uploaded Annex H for a more detailed budget per year.

Summary Budget

		Component (USD)																																		
Cost Categories	**Detailed Description**	**Component 1**				**Component 2**						**Component 3**								**Component 4**				**Sub-total**	**M&E**	**PMC**	**Total GEF**	**Responsible Entity**
		Outcome 1			**Total Component 1**	**Outcome 2**					**Total Component 2**	**Outcome 3**							**Total Component 3**	**Outcome 4.1**			**Total Component 4**													
		Output 1.1	**Output 1.2**	**Output 1.3**		**Output 2.1**	**Output 2.2**	**Output 2.3**	**Output 2.4**	**Output 2.5**		**Output 3.1**	**Output 3.2**	**Output 3.3**	**Output 3.4**	**Output 3.5**	**Output 3.6**	**Output 3.7**		**Output 4.1**	**Output 4.2**	**Output 4.3**													
Local consultants	National Project Coordinator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37.000	**37.000**	NEEs

	Project Assistant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24.333	**24.333**	NEEs
	Financial Specialist	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32.667	**32.667**	NEEs
	National Knowledge managment Specialist	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.416	0	0	4.416	4.416	0	0	**4.416**	NEEs
	Gender Expert	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18.000	18.000	18.000	0	0	**18.000**	NEEs
	Policy and Legal expert	8.000	8.000	8.000	24.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24.000	0	0	**24.000**	NEEs
	BAT/BEP/RECP experts	4.000	4.000	4.000	12.000	0	3.000	3.000	2.000	16.000	24.000	0	0	0	0	0	0	0	0	0	0	0	0	36.000	0	0	**36.000**	NEEs
	Waste and CE expert	4.000	4.000	4.000	12.000	0	0	0	0	0	0	5.000	4.000	4.000	5.000	6.000	9.500	4.000	37.500	0	0	0	0	49.500	0	0	**49.500**	NEEs
	Monitoring Specialist	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17.250	19.001	**36.251**	NEEs
	Sub-total Local Consultants	**16.000**	**16.000**	**16.000**	**48.000**	**0**	**3.000**	**3.000**	**2.000**	**16.000**	**24.000**	**5.000**	**4.000**	**4.000**	**5.000**	**6.000**	**9.500**	**4.000**	**37.500**	**4.416**	**0**	**18.000**	**22.416**	**131.916**	**17.250**	**113.001**	**262.167**	
International consultancy / Event Organization	Regional Project Coordinator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17.999	**17.999**	REE
	Regional Project Assistant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.000	**9.000**	REE
	Regional Knowledge managment Specialist	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40.335	0	40.335	40.335	0	0	**40.335**	REE

	BAT/BEP/RECP expert	0	0	0	0	0	6.667	6.667	10.000	20.000	43.333	0	0	0	0	0	0	0	0	0	0	0	0	43.333	0	0	**43.333**	RE
	International waste expert	0	0	0	0	0	0	0	0	0	0	5.697	3.333	0	7.333	4.000	0	3.363	23.727	0	0	0	0	23.727	0	0	**23.727**	RE
	Expert on new business models (chemical leasing)	0	0	0	0	0	6.667	0	0	0	6.667	0	0	0	0	0	0	0	0	0	0	0	0	6.667	0	0	**6.667**	RE
	Finance and business expert	0	0	0	0	0	0	0	0	0	0	0	0	9.000	0	0	0	0	9.000	0	0	0	0	9.000	0	0	**9.000**	RE
	international supply chain expert	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.000	4.000	20.000	0	0	0	0	20.000	0	0	**20.000**	RE
	Mid-Term Review consultant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	UNIDO
	Terminal Evaluation consultant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	UNIDO
	Sub-total International Consultants	**0**	**0**	**0**	**0**	**0**	**13.333**	**6.667**	**10.000**	**20.000**	**50.000**	**5.697**	**3.333**	**9.000**	**7.333**	**4.000**	**16.000**	**7.363**	**52.727**	**0**	**40.335**	**0**	**40.335**	**143.061**	**0**	**26.999**	**170.061**	

Contractual Services - Company	ICLEI Africa: Policy Act. 1.1.1, 1.1.5	23.806	11.667	0	35.473	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35.473	0	0	**35.473**	RE through service provider (ICLEI Africa)
	ZDHC: chemical Mangment Act. 1.16,2.1.1,2.1.3,2.1.4,2.2.1, 2.4.2	1.000	0	0	1.000	15.667	3.500	0	1.200	0	20.367	0	0	0	0	0	0	0	0	0	0	0	0	0	21.367	0	0	**21.367**	RE through service provider (ZDHC)
	CEC (business models& training) Act. 2.4.1, 3.3.1,3.3.2,3.3.3,3.3.4	0	0	0	0	0	0	0	33.333	0	33.333	0	0	16.667	0	0	0	0	0	0	16.667	0	0	0	0	50.000	0	0	**50.000**	UNIDO
	SFA (market requirments): Act. 1.1.5, 1.1.4, 4.2.1	20.000	0	0	20.000	0	0	0	0	0	0	0	0	0	0	0	26.667	0	26.667	0	0	0	0	0	46.667	0	0	**46.667**	RE through service provider (SFA)

	Research centre Act. 2.4.1, 4.1	0	0	0	0	0	0	0	30.000	0	30.000	0	0	0	0	0	0	0	0	10.000	0	0	0	10.000	40.000	0	0	**40.000**	RE through service provider (Research center)
	Global KM (4.2) (NRDC)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70.000	0	0	70.000	70.000	0	0	**70.000**	RE through service provider (NRDC)
	Waste managment compnay	0	0	0	0	0	0	0	0	0	0	12.333	13.333	0	27.000	4.000	0	0	56.667	0	0	0	0	56.667	0	0	**56.667**	RE/NEEs through service provider
	Technology provider and training: Act. 2.5	0	0	0	0	0	0	0	0	286.000	286.000	0	0	0	0	0	0	0	0	0	0	0	0	0	286.000	0	0	**286.000**	RE/NEEs through service provider

	Technology provider and training: Act. 3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.430.000	1.430.000	0	0	0	0	1.430.000	0	0	**1.430.000**	RE/NEEs through service provider
	Sub-total Contractual Services ? Company	**44.806**	**11.6667**	**0**	**56.473**	**15.6667**	**3.500**	**0**	**64.533**	**286.000**	**369.700**	**123.333**	**13.3333**	**16.6667**	**27.000**	**4.000**	**26.6667**	**1.430.000**	**1.530.000**	**10.000**	**70.000**	**0**	**80.000**	**2.036.173**	**0**	**0**	**2.036.173**	
Travel	International travel	5.000	5.000.000	5.000.000	15.000	5.000.000	5.000.000	5.000.000	5.000	6.6667	26.667	7.500.000	7.500.000	7.500.000	7.500.000	7.500.000	7.500	7.500	52.500	6.667	6.6667	6.6667	20.000	114.167	0	0	**114.167**	RE & NEEs
	Local travel	5.000	5.000.000	5.000.000	15.000	2.500.000	2.500.000	2.500.000	2.500	3.3333	13.333	7.000.000	7.000.000	7.000.000	7.000.000	7.000.000	7.000	7.000	49.000	3.333	3.333	3.333	10.000	87.333	0	0	**87.333**	RE & NEEs
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	RE & NEEs
	Sub-total Travel	**10.000**	**10.000.000**	**10.000.000**	**30.000**	**7.500.000**	**7.500.000**	**7.500.000**	**7.500**	**10.000**	**40.000**	**14.500.000**	**14.500.000**	**14.500.000**	**14.500.000**	**14.500.000**	**14.500.000**	**14.500**	**101.500**	**10.000.000**	**10.000**	**10.000.000**	**30.000**	**201.500**	**0**	**0**	**201.500**	
Office supplies	Office supplies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	RE & NEEs
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	RE & NEEs
	Sub-total Office supplies	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Training /wrksh	Meetings PSC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	50.000	0	**50.000**	RE

op/meeting	Meetings PIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	10.000	0	**10.000**	NEEs
	Meetings TC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	10.000	0	**10.000**	NEEs
	Stakeholders Mobilization workshop	4.302	4.302	4.302	12.906	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**12.906**	10.000	0	**22.906**	REE and NEEs
	Stakeholders Engagment workshop	34.207	34.207	34.207	102.621	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**102.621**	10.000	0	**112.621**	REE and NEEs
	Training and capacity building on BAT/BEP/RECP (2.4.3)	0	0	0	0	0	0	0	33.240	0	33.240	0	8.547	0	0	0	0	0	8.547	0	0	0	0	**41.788**	0	0	**41.788**	NEEs
	Training and capacity building in ISWM and BAT/BEP for ESM of wastes (3.2.2)	0	0	0	0	0	0	0	16.726	0	16.726	0	16.726	0	0	0	0	0	16.726	0	0	0	0	**33.453**	0	0	**33.453**	NEEs

	Developing and delivering of awareness and capacity building training as per national awareness/ communications strategies (4.1.3)	0	0	0	0	0	0	0	13.333	0	13.333	0	0	0	0	0	0	0	0	20.000	0	0	20.000	**33.333**	0	0	**33.333**	NEEs
	Participation at global/ industry events	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.000	0	0	6.000	**6.000**	0	0	**6.000**	REE
	South-South global meeting with UNIDO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.000	0	0	10.000	**10.000**	0	0	**10.000**	REE
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	
	Sub-total Training/ workshop/meeting	**38.509**	**38.509**	**38.509**	**115.527**	**0**	**0**	**0**	**63.300**	**0**	**63.300**	**0**	**25.274**	**0**	**0**	**0**	**0**	**0**	**25.274**	**20.000**	**16.000**	**0**	**36.000**	**24 0.100**	**90.000**	**0**	**330.100**	
DSC																												
	TOTAL YEARS 1-6	**109.315**	**76.176**	**64.509**	**250.000**	**23.167**	**27.333**	**17.167**	**147.333**	**32.000**	**547.000**	**37.530**	**60.440**	**44.167**	**53.833**	**28.500**	**66.667**	**1.455.863**	**1.747.000**	**44.416**	**136.335**	**28.000**	**208.750**	**2.752.750**	**107.250**	**140.000**	**3.000.000**	
			250.000			547.000						1.747.000								208.750						107.250	140.000		

Total component	2.752.750	3.000.000

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