How fair is fashion's water footprint?

Tackling the global fashion industry's destructive impacts on Africa's water and workforce health

Water Witness leads action, research, and advocacy for a global future of shared water security, where all people have access to the water needed to thrive, and are protected against pollution, droughts, flooding, water conflict and degradation of water-related ecosystems.

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Cover image

Pollution of the Caledon River, near Maseru in Lesotho caused by untreated industrial effluent discharge from denim and jeans manufacturers. **Credit**: Robin Hammond/Panos

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List of abbreviations

AFD	Agence Francaise de Dévelopment
ACC	Association pour le Dévelopment Durable (Mauritius)
AGOA	African Growth and Opportunity Act
AfDB	African Development Bank
ANDEA	Autorité Nationale de l'Eau et de l'Assainissement à Madagascar
AU	African Union
AWS	Alliance for Water Stewardship
BDA	Basin Development Authority (Ethiopia)
BHRRC	Business and Human-Rights Resource Centre
CDP	CDP - Formerly Carbon Disclosure Project
DDIEE	Directeur du Développement des Infrastructures Electrique à Madagascar
EBA	Everything-But-Arms Treaty
EBDM	Economic Development Board of Madagascar
EIC	Ethiopian Investment Commission
ETIDI	Ethiopian Textile Industry Development Institute
EMS	Environmental Management Systems
EPEP	Enterprise Partners/Private Enterprise Programme (UK FCDO)
EU	European Union
ETGAMA	Ethiopian Textile and Garment Manufacturers Association
FCO	Foreign and Commonwealth Office (United Kingdom)
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
GEFP	Groupement des Entreprises Franches et Partenaires à Madagascar
GDP	Gross Domestic Product
GMOs	Genetically Modified Organisms
GWP	Global Water Partnership
FECCO	Forest, Environment, and Climate Change Commission (Ethiopia)
IGOs	Inter-Governmental Organisations
IPDC	Industrial Parks Development Corporation (Ethiopia)
IWRM	Integrated Water Resource Management
LDCs	Least Developed Countries
LIDI	Leather Industry Development Institute (Ethiopia)
LNDC	Lesotho National Development Corporation
MEAH	Ministère de l' Eau, de l' Assainissement et de l' Hygiène à Madagascar
MEDD	Ministère de l'Environnement et du Développement Durable à Madagascar
MFA	Multi-Fibre Agreement
MOTI	Ministry of Trade and Industry (Ethiopia)
MoWIE	Ministry of Water, Irrigation, and Energy (Ethiopia)
NGO	Non-Governmental Organisation
NTM	Non-Tariff Measures
OECD	Organisation for Economic Cooperation and Development
ONE	Office National pour l'Environnement à Madagascar
Ran'Eau	Le réseau de référence pour tous les acteurs de l'Eau, l'Assainissement et l'Hygiène.
RBO	River Basin Organisation
SACU	South African Customs Union
SADC	Southern African Development Community
SDC	Swiss Agency for Development Cooperation
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
SMEs	Small and Medium-sized Enterprises
UK	United Kingdom
UNIDO	United Nations Industrial Development Organisation
US	United States of America
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene
WCS	Wildlife Conservation Society (Madagascar)
WITS	World Integrated Trade Solution
WRI	World Resources Institute
WTO	World Trade Organisation
WWI	Water Witness International

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Executive Summary

***How fair is fashion's water footprint?* reports on the water-related impacts of textile and apparel production in Africa to supply the ever-growing needs of the global fashion industry.** It represents the results of research by Water Witness in five case study countries, analysis of data from across Africa and interviews with experts in government, business, and civil society.

Although pockets of good practice exist, our research shows that production of clothing, including for high street brands in Europe, the UK and the USA is killing Africa's rivers through polluting discharges of untreated industrial wastewater. We find that the sector competes with communities and nature for access to scarce water, and that in some cases, factory needs are prioritised over the human right to water. We also find that factory workers, around 80% of whom are women, often lack access to safe water, washing facilities and toilets, and that this undermines their dignity, wellbeing and health, including through exposure to Covid-19 transmission. Notably, a lack of access to clean water and toilets in the workplace is a widely recognised indicator of modern slavery.

We demand accountability and leadership from fashion sector stakeholders to reverse this unacceptable and seemingly widespread trend of irresponsible and illegal water use. Immediate adoption of good water stewardship across the sector, factory certification against best practice standards, and transparent disclosure of performance on water are urgently needed so that responsible businesses can be differentiated.

We are not calling for an end to fashion sourcing in Africa. Instead, we call for action and assurance that sourcing and production of goods in Africa are based on sustainable resource use, decent working conditions and basic principles of social justice.

Producers, brands, retailers, investors, governments, and high street customers must act now to ensure that the fashion industry has a 'fair water footprint' in Africa, so that much needed job creation and growth are decoupled from the destructive water impacts we observe. We set out what each of these groups must do to guarantee zero pollution, safe water and sanitation, equitable withdrawals, climate resilience and ecosystem protection, so that Africa can become a global role model of sustainable production and decent employment in the fashion sector rather than another victim of 'fast fashion'.

Africa – the rising star of global textile and clothing production

Reformed trade agreements, tax incentives, targeted aid programmes, and the cheapest labour costs on earth have stoked the rapid growth of garment manufacturing across Africa. Pre-pandemic, Africa's fashion exports generated revenue of US$ 4.6 billion a year, a figure which exceeds the annual flow of aid into Africa from any European donor. Africa now has an important toehold in the global fashion industry that in 2019 was worth US$ 2.5 trillion and employed 75 million people.

Irrespective of the pandemic's economic repercussions, the fashion industry can play an important role in Africa's social and economic progress. Its ability to generate jobs, foreign investment and export revenue give the textiles and apparel sector top billing in the growth strategies of many African states, where reducing youth unemployment is a priority because of its links to instability, conflict, and the

tragedies of outward migration. Although accurate figures are difficult to find, it is estimated that textile and apparel production already supports, directly or indirectly, the livelihoods of as many as 50 million people in Africa.

Realising these socio-economic benefits must be based on judicious resource stewardship, particularly because fashion is one of world's thirstiest and most polluting sectors and poses significant risks to Africa's environment. The region's water resources, and water ecosystems are highly vulnerable and already face severe stress because of depletion and degradation, rocketing demand, climate change and deep-seated financial, capacity, and governance challenges.

Addressing the problems identified in our report, and safeguarding Africa's water and workers must be a priority. The continent's fledgling fashion sector, governments, suppliers and workers can ill afford to fall victim to the pollution problems, slave-labour scandals, and reputational risks that have dogged the sector elsewhere.

Who's who within Africa's fashion value chain?

Several countries are already heavily dependent on the sector which can generate up to 60% of national export revenue, and as much as 30% of gross domestic product (GDP). Beyond the North African giants which account for 50% of Africa's exports, key producers include South Africa, Eswatini, Mauritius, Madagascar, Burkina Faso, Lesotho, Kenya and Ethiopia and a further 10 countries where the fashion sector is being actively nurtured.

Key consumer markets are in Europe, most notably France, the UK, Germany and Italy, East Asia, and the USA, which alone imports clothing worth US$ 685 million a year from Africa. The list of those sourcing from Africa is a who's who of high street names and brands including: Adidas, Asos, Calvin Klein, Carrefour, Disney, Dockers, Etam, G -Star, GAP, George (ASDA), H&M, Hanes Inc, Hugo Boss, Levi's, Mango, Marks and Spencer, Monsoon, Next, Otto Group, Primark, Puma, Reebok, Ralph Lauren, Tesco, Tommy Hilfiger, Walmart, and Zara.

These markets and customers are supplied with garments produced in factories owned by multi-national corporations, or more commonly by hundreds of supplier companies and small to medium sized enterprises (SMEs) which manufacture to order. Most production sites are owned and operated by Asian companies, although locally owned enterprises are increasingly involved. The supply chains are complex, with fabrics imported from Asia or locally produced, using foreign or African cotton – which itself supports over 3.5 million smallholder farmers who face a multitude of water-related problems.

Fashion industry impacts and water risks

In our case study countries of Ethiopia, Lesotho, Madagascar, Mauritius and Tanzania, the rapid growth and strategic importance of textile and apparel production coincides with significant water challenges. The primary impacts and risks identified are set out here, supported by illustrative stakeholder testimony:

> *Pollution from textiles production is a very significant problem in Africa. Untreated effluent from textile factories is killing our rivers - there is no life downstream. These businesses need to stop polluting Africa's waters. We need economic growth, but it must never come at the expense of our environment and the health of our children.*

Sareen Malik, Executive Secretary, African Civil Society Network for Water and Sanitation

The situation (of pollution from the textiles factory) has been brought to the attention of the authorities on several occasions but there has been no improvement or action. The pollution threatens our health as we eat vegetables irrigated with the water. Contact with the pollution results in burnt skin and disease.

Community Leader, Tanzania

Industries cause water pollution in surrounding towns...poor solid waste management by the industry is a major problem in our river systems. There are tensions between the communities and the textile industry because of water pollution turning rivers blue. Communities complain about the smell of water and health issues for livestock and people living close by.

Senior Government Official, Lesotho

Wastewater management is the main issue for Madagascar. Downstream communities face water pollution challenges because there is no water treatment. Our water law obliges companies to treat their wastewater, but industries and industrial zones are not complying, except for a handful, who do so voluntarily.

NGO Director, Madagascar

Pollution by untreated industrial effluent and wastes

Reliable water quality monitoring data is not widely available, but we find credible evidence in all countries of non-compliance with pollution control law by textile and apparel manufacturers and impacts on human health and nature as a result of untreated wastewater discharges. The textile industry produces potentially toxic metals, dyes, bleaching agents, and other pollutants with cardiovascular, respiratory, carcinogenic, and neurotoxic impacts on human health. Without proper treatment, wastewater discharges render rivers lifeless and unfit for use. Whilst some businesses are taking a responsible approach to wastewater treatment, our case studies also show how untreated effluent from textiles manufacture has contaminated the water needed by many thousands of vulnerable people for domestic use and food production, and how downstream businesses have been forced to close as a result.

Inadequate water supply, sanitation and hygiene (WASH)

Access to water supply, sanitation and hygiene at factories is very poor. It affects women the most.

Senior Government Official, Lesotho

Many thousands of women are employed in the textile and apparel sector in Africa. We don't know how well their WASH needs are provided for in the workplace or in their communities because the data isn't reported. We don't know if they have the services needed to protect against COVID or for menstrual hygiene.

Sareen Malik, Executive Secretary, African Civil Society Network for Water and Sanitation

Many workers live without proper sanitation.

Researcher/Academic, Madagascar

Multiple sources raise serious concerns about the adequacy of access to clean water, washing facilities and toilets in Africa's garment factories, as well as in the communities where workers live. According

to the International Labour Organisation and Ethical Trading Initiative, a lack of water, washing facilities and toilets in the workplace is one indicator of modern-day slavery. Access to safe water and sanitation in the workplace is a legal requirement and has been an international convention for over 50 years. Despite its importance, the adequacy of WASH services does not appear to be regularly monitored or disclosed by clothing manufacturers in Africa.

Whilst companies do not have direct responsibility for water and sanitation services in the communities where workers live, safe access for staff in their homes should be a priority because of well-documented benefits for health, and wellbeing and productivity. Many argue that the sector shares responsibility for inadequate services in communities where the influx of garment workers has overburdened outdated local infrastructure.

Ensuring sustainable access to safe water supplies, sanitation and hygiene services is an urgent priority, not only because of their roles in controlling Coronavirus, but because of their importance for health, menstrual hygiene management, and the dignity of the women who make up the majority of the workforce. Progressive action by business, such as ensuring full workplace access and joint advocacy toward the water Sustainable Development Goals (SDGs), could achieve much in Africa's garment production countries where typically, 90% of people lack basic sanitation and 50% lack basic water supplies.

Sustainable, equitable and resilient water use for production

> *Industries are prioritised for water provision over communities, who can be forced to manage for several days without water. There are tensions between water users and industries in urban areas.*
>
> **Senior Government Official, Lesotho**

The reliable availability of water for production in the textiles and apparel sector is a current or emerging challenge. Concerns include the sustainability of withdrawals where knowledge of the available water resource is limited, and conflict and competition for water with existing users, including water needed by people and nature.

The examples we found where water for textile and apparel production is prioritised at the expense of the domestic needs of local communities are a cause for alarm. Such privileged access to water by businesses runs counter to the principles of water justice and represents a direct contravention of the human right to water. There are also concerns regarding the resilience of supply to the sector and the ability to respond to increasingly frequent drought and flood events without impacting on community needs.

Water risks in the supply chain

The production of cotton and leather as inputs to clothing manufacture pose significant water risks, and a lack of disclosure and transparency raise questions about the responsible sourcing of these raw materials. The use of agricultural chemicals, insecticides, herbicides, and fertilisers is especially intensive in cotton production, and the controls in place to ensure safe use, handling and disposal are particularly weak in Africa. The health of cotton farmers supplying the sector, and ecosystems and communities downstream are therefore at risk. Cotton production can impose high water demands, and potential for soil degradation in production areas.

Water governance challenges

> *The pollution is blatant and well known, and the laws are strong but never enforced. Regulators are blind to the pollution. It is as if the industry has a free pass to pollute.*
>
> **Herbert Kashililah, National Water Board, Tanzania**

> *It is unclear who manages what in terms of water resources management. The public sector is under financed.*
>
> **Factory Group, Mauritius**

> *Regional water councils lack capacity in all regards to be able to manage water resources. Regional water councils lack the capacity to engage with stakeholders. They are barely able to respond to complaints.*
>
> **NGO Director, Madagascar**

The root cause of these impacts and risks is inadequate water management and governance, both by those working in the sector and more widely, at municipal, basin and national scale. The ability of utilities, regulators, and government authorities to control the water impacts of the textiles and apparel sector is severely constrained by a lack of data, staff, finance, accountability, and political will. In one country, corruption was cited as a problem. Alongside these stubborn institutional challenges, there is also evidence that water is a low priority for corporate governance in the sector.

> *As brands go into new countries and regions and conduct due diligence to determine risks, they should follow up on the promises made. At a global scale we frequently see that effluent treatment plants at factories and industrial parks are not maintained, if running at all.*
>
> **Sean Ansett, President, At Stake Advisors**

> *There is negligence and lack of commitment from companies while the regulators are not strongly enforcing the required standards. Companies become responsive only when a letter/warning is given from government regulatory bodies.*
>
> **Factory/Site Manager, Ethiopia**

> *Some companies have the sustainability commitments in their documents but lack proactivity in terms of actual commitment on the ground.*
>
> **Sustainability Manager, Global brand sourcing in Ethiopia**

> *Foreign business owners do not engage on national interest issues like water.*
>
> **Senior Government Official, Lesotho**

> *Water management is not our issue, it is the responsibility of the government*.
>
> **Factory Group, Mauritius**

Unprincipled businesses may view these governance and regulatory shortfalls as being beneficial to the sector, for example, by reducing short-term costs of wastewater treatment. However, this laissez-faire approach to environmental and social protection is highly destructive within an industry where responsible sourcing is now a basic expectation of investors and customers. Unless responsible water use becomes the operating norm, the reputational risks associated with poor water performance could destroy Africa's fashion sector in its infancy, derail sectoral growth and deny the continent of valuable contributions to sustainable and inclusive development.

Fair Water Footprints through credible water stewardship

Our ability to deliver social and economic development for our people is dependent on our adoption of water stewardship.

State Minister Teka Gebreyesus, Ethiopia's Minister for Trade and Industry.

There is a clear case for water stewardship among industries in Lesotho.

Senior Government Officer, Lesotho

It is time for these businesses to step up, to show leadership and demonstrate their credibility as responsible players. They have the potential to make an important contribution to delivering on the goal of universal water, sanitation and hygiene access.

Some authorities like those in Kenya are starting to get to grips with the pollution challenge, but they need help, and we need stronger accountability for water from all stakeholders. Politicians, producers, buyers, retailers, investors, communities and consumers need to take responsibility for improved water stewardship right now.

Sareen Malik, Executive Secretary, African Civil Society Network for Water and Sanitation

Stakeholders in all countries recognise the opportunity offered by improved water stewardship as a means of de-risking sectoral growth and ensuring a fair water footprint for the sector. Water stewardship is the use of water, which is socially equitable, environmentally sustainable and economically beneficial. Proactive involvement in good water management by businesses at site level and beyond, offers multiple benefits. For companies it has been shown to reduce operational costs, and interruptions to production, drive resource efficiencies, innovation and full compliance with water-related law, improved supplier, staff, and government relationships as well as generating new investment and market share with 'future facing' customers. It also holds companies to account for protecting workers, ecosystems and communities, planning for floods, droughts and resilience, alignment with government policy, and for contributing to addressing shared challenges at basin or municipal scale. Several leading companies in the sector are already adopting water stewardship and seeing benefits. The problem is that they are the exception rather than the norm.

The Alliance for Water Stewardship (AWS) has devised a voluntary international standard which guides and recognises good performance on water through third-party audit. It has been shown to be a cost-effective mechanism for mitigating water risks in supply chains, globally and in Africa. It drives benefits for communities, government, and businesses, and differentiates responsible water users to investors, buyers, and customers. Other voluntary initiatives and standards, such as the Higg Index, Sustainable Apparel Coalition, Textile Exchange and ZDHC exist to guide responsible production in the textile and apparel sector, but they have been shown to fall short in their ability to safeguard water, and water users.

There is a clear opportunity for textile and apparel sector stakeholders to adopt AWS water stewardship as a practical and strategic contribution to sustainable development and COVID recovery in Africa. Promisingly, a number of sector stakeholders such as Tooku in Tanzania, Indochine, H&M, PVH and the Industrial Parks Development Corporation in Ethiopia are committing to good water stewardship through alignment with the AWS Standard.

Investor and customer action to trigger change.

The adoption of water stewardship can be incentivised through market drivers. New demand by customers, buyers and financiers can drive certification against best practice standards, which in turn can enhance investment and competitiveness by providing assurance of responsible water use. In turn this can result in greater investment in, and preferential purchasing from water stewards. Therefore, as well as equipping producers with the knowledge needed to adopt water stewardship there is a need to stimulate demand for credible stewardship, and to strengthen the mechanisms through which it can be incentivised, disclosed, and rewarded. Some of these, such as CDP's Water Disclosure Initiative can be powerful forces for positive change on the ground, in globalised supply chains, and in investment portfolios. CDP's water disclosure mechanism provides the transparency needed for investors to hold companies to account for mitigating risks and 'doing no harm'. Their global benchmarking has helped raise the importance of water management in the board room and to change corporate culture and practice.

As it emerges from the wreckage of 2020, when profits plummeted by 95%, the fashion industry must reforge its social relevance and embed resilience in its business models. Industry leaders themselves identify justice, sustainability, and meaningful value chain partnerships as essential components for recovery.

> Consumers, and increasingly, investors, will reward companies that treat their workers and the environment with respect, and the deeper relationships that emerge will bring benefits in agility and accountability.
>
> **McKinsey & Co, State of Fashion Report, 2021**

Countries and companies that champion water stewardship and which demonstrate and disclose good water performance within textile and apparel production will see considerable benefits. Those that do not, are likely to see water insecurity and reputational issues emerge as an impediment to future growth.

The immediate actions we need to see in response to our findings.

Our analysis shows that everyone has a role to play in ensuring that global fashion, and the cotton, textile and apparel production behind it, has a fair water footprint, so that the sector's socio-economic benefits in Africa and elsewhere do not come at the cost of polluted rivers or the denial of human rights to workers and communities. In the following table we set out what producers and suppliers, brands, retailers, buyers, investors, governments in producer and consumer countries, the media, citizens and consumers can do. Water Witness and our trusted partners stand ready to help all these stakeholders to learn from our findings, and to collaborate to forge the fairer water footprints, and the fairer water future we all need.

Action needed by all:

Commit to a Fair Water Footprint in the fashion sector which ensures:

- *full access to safe water supply, sanitation and hygiene (WASH) for workers*
- *zero pollution*

- *sustainable water withdrawals*
- *protection of ecosystems and the human right to water*
- *preparedness for floods and droughts*
- *compliance with water-related law and an end to illegal water use.*

Demand assurance & accountability for a Fair Water Footprint through responsible water stewardship:

- *farm-to-factory certification against the Alliance for Water Stewardship (AWS) standard*
- *disclosure of corporate water performance to CDP's Water Disclosure Programme*

Action needed by specific stakeholders:

Textile & apparel producers & suppliers	Brands, retailers, buyers & designers	Investors	Government - producer countries	Government - consumer countries	Fashion sector initiatives & standards	Media & civil society	Concerned citizens & customers.
1. Assess and understand water risks & opportunities across the business. 2. Set targets for better water performance & report on progress. 3. Innovate & collaborate to ensure sustainable water use, pollution control & support for supply chain producers, workers & their communities. 4. Benefit from programmes of support & training for good water stewardship 5. Certify sites against the AWS Standard.	1. Map, track & disclose water risks & stewardship within supply chains & target support for AWS certification. 2. Establish stewardship as a condition of doing business through supplier codes & due diligence. 3. Tie C-Suite remuneration to improved water performance. 4. Talk to customers about water to drive action 5. Improve traceability so that water stewardship is recognised and rewarded. 6. Join & lead local and global forums to drive stewardship performance in the sector.	1. Engage companies, raise resolutions & vote down Boards that do not prioritise water stewardship 2. Screen investments for good water stewardship, demand corrective action & divest where necessary. 3. Assess & disclose portfolio water risks, & management strategies. 4. Join & lead local & global forums to drive water stewardship performance.	1.Prioritise water governance through financing, oversight & regulation. 2. Target capacity, financing, & action for wastewater treatment, & reform tariffs to reflect the value of water. 3. Make water stewardship a condition of business & investment licences. 4. Scale water stewardship in Industrial Parks to attract & safeguard responsible businesses. 5. Convene stakeholders to trigger action on shared water challenges.	1. Require mandatory disclosure & due diligence by companies & financiers on water performance. 2. Legislate so that imported goods meet domestic labour, health, safety, & environmental standards. 3. Understand the water footprint of goods & services, & and take action for sustainability 4. Collaborate globally to ensure that global trade and consumer society have a Fair Water Footprint	1. Ensure that initiatives to improve social & environmental performance include proper handling of water & WASH related issues & have credibility through accountability & disclosure. 2. Avoid piecemeal or partial handling of water issues – efficiency or ZLD are not enough! 3. Seek alignment & coherence within standards & avoid fragmentation, 'initiative overload', stakeholder fatigue & consumer mistrust.	1. Investigate & report on the water footprint of consumer society & its social & environmental impacts. 2. Demand & advocate for sustainable & just resource use by companies, financial institutions & governments 3. Provide compelling & tenacious coverage of water issues, and the constructive steps which can be taken by decision makers and citizens to drive positive change.	1. Use people power! Only purchase from certified water stewards & call out corporate water abuse. 2. Demand disclosure on water impacts & credible water stewardship. 3. Ask retailers, banks, pension funds & government for their water stewardship credentials 4. Demand guarantees that your custom & investment only supports responsible water stewards.
Champion, recognise and reward responsible water stewards							

1. Introduction

This report is an output of the 'Putting Water Stewardship to Work Programme'[1] which aims to embed responsible water use at the heart of the growing textiles and apparel sectors in Africa. With support from the Swiss Agency for Development Cooperation (SDC), the initiative targets technical support to 'sherpa' countries in the fashion value chain to establish the value of improved water stewardship for the sector, for delivery of the Sustainable Development Goals and for shared water security (see boxed definitions). Lessons will be shared across Africa, and across the global fashion sector to support the transition to sustainable resource use.

WATER SECURITY

Water security is the reliable availability of an acceptable quantity and quality of water for production, livelihoods, health and ecosystems, coupled with an acceptable level of risk from hazards including droughts, floods, pollution and water conflicts (Grey and Sadoff, 2005).

Our study explores the importance of the textile and apparel sector for economic and social development in Africa and identifies the priority water challenges facing the industry. It complements related studies on the cotton sector, at a national scale in Ethiopia, and in the textiles and apparel sector globally[2], and fulfils the following objectives:

- **i)** **Learning**: draws on knowledge from multiple sources to provide a state-of-the-art assessment of socio-economic, environmental, and institutional contexts, stakeholders, water and climate risks and their root causes; and opportunities for positive change.
- **ii)** **Focus:** enables the selection of locations, initiatives, and stakeholders which the programme should target for maximum impact.
- **iii)** **Baselines:** sets and verifies data for monitoring, evaluation & learning, and impact tracking.
- **iv)** **Communications:** generates reliable knowledge for sharing with a broader set of stakeholders

Ultimately, the work contributes to ensuring that Africa does not fall victim to the social, environmental, and reputational problems associated with fast fashion, and instead, develops as a role model for judicious economic development strategy, where people and planet are prioritised alongside profit.

WATER STEWARDSHIP

Water Stewardship is the use of water that is socially and culturally equitable, environmentally sustainable, and economically beneficial, achieved through a stakeholder-inclusive process that includes both site- and catchment-based actions. Alliance for Water Stewardship (AWS, 2014).

[1] A joint initiative by Water Witness, the Alliance for Water Stewardship (AWS), Aid by Trade Foundation/Cotton Made in Africa, Solidaridad and CDP Water to stimulate and support sustainable water use within the cotton, textile and apparel sectors in major production countries across Africa.

[2] By CmIA/Solidaridad; Water Witness Ethiopia; AWS and CDP Water respectively– forthcoming 2021

A rigorous method and triangulation between data sources and scales helps us to characterise the most pressing issues. Review and analyses of literature were combined with 26 key informant interviews (KIIs) with experts from civil society (CSO/NGOs), government (Ministry staff, industrial development authorities, pollution control bodies and environmental regulators), external support agencies (researchers and donors), and the private sector (international brands, textile and apparel industries, industry associations), (see Appendix 1).

The geographical scope is the African continent where case study countries have been identified which share two common features: a strategic emphasis or economic dependency on textiles and apparel production, and significant water related challenges. The rationale for selection is presented in Section 2 and detailed analysis to explore the relevance of water stewardship is undertaken for Ethiopia, Lesotho, Madagascar, and Mauritius.

Our report introduces the history and trends of textile and apparel production in Africa. It details the contributions to national economies and employment in key production nodes, as well as companies involved, and markets served (Section 2). The context of Africa's challenging water environment is introduced in Section 3. Section 4 explores the double materiality of water - the specific water impacts caused by and affecting textiles and apparel enterprises – and draws on evidence to examine whether or not the sector's water footprint is 'fair'.

Case study countries are profiled in Section 5, and evidence is synthesised in Section 6 to summarise key risks and water stewardship opportunities for the sector. Conclusions are drawn in Section 7 along with recommendations for future work and the actions needed across the value chain to improve water stewardship.

This work was conducted during 2020, at the height of the COVID-19 pandemic. Whilst travel restrictions prevented face-to-face interviews, key informants were able to provide valuable insights via virtual meetings.

2. Africa's textile and apparel sector

2.1. A brief history

Since the industrial revolution, the labour-intensive manufacture of textiles and apparel has played a central role in national economic strategies. This continues to be the case in Africa, where several governments are proactively nurturing the sector to attract foreign investment, create much needed jobs and export revenue. International trade agreements have also facilitated sector growth in Africa. Most significant has been the elimination of the Multi-Fibre Agreement (MFA) in 2005, which allowed for quota-free textile and apparel exports from developing countries. The African Growth and Opportunity Act (AGOA) in 2000 offered African countries duty-free access to consumer markets in the USA. More recently, the European Union launched the Everything-But-Arms (EBA) scheme which grants duty and quota free access to the EU market for all products, except arms, from Least Developed Countries (LDCs). Meanwhile, the African Union (AU) has taken steps towards a single African market, with regional trading agreements such as the South African Customs Union (SACU) easing the movement of raw materials and labour in the region.

Proximity to raw materials including cotton, and increasingly accessible markets in Asia, Europe, and North America, have attracted new investors to Africa's textile and apparel sector. 'Vertically integrated' facilities and industrial parks which centralise production within a single site are a favoured model for public and foreign investors. Often located in 'Special Economic Zones' they benefit from significant tax incentives and duty-free imports of raw materials and intermediate goods to increase foreign exchange earnings and promote non-traditional exports.[3]

Sourcing in Africa by international brands has triggered investment in modern technologies by larger producers to increase productivity and product quality standards.[4] Locally owned African companies and small-medium sized enterprises (SMEs) have also acquired new technical capabilities to supply and compete with foreign-owned factories. In 2019, SMEs contributed more than 90% of the net output value of Africa's textiles and apparel sector, estimated as US$31 billion/yr. by the African Development Bank (AfDB).[5] Improved management practices, such as lean manufacturing, Six Sigma and Environmental Management Systems (EMS), have been adopted across the sector to improve output. External factors such as logistical efficiency, availability of support, finance, and training are also accelerating the competitiveness of Africa's textile and apparel industries[6]. The Organisation for Economic Cooperation and Development (OECD) countries of Germany, France, Netherlands, Sweden, Switzerland, the UK, and the USA have each recently invested in socially and environmentally

[3] Robeck, J., Rosunee, S. and Pattison, J. (2012) 'The Mauritius Apparel Manufacturing Industry: Explorations of the Past to the Present', 1(2), pp. 163–174.
[4] Ibid.
[5] AfDB (2018b) 'Report on the Feasibility Study for the Development of the online Fashionomics Platform', pp. 1–78. Available at: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Final_Report_AFDB_Fashionomics_-_Investing_in_the_African_Creative_Industries_for_the_Continent_s_Inclusive_Growth.pdf
[6] Van Biesebroeck, J. and Zaurino, E. (2019) *Effects of Trade Liberalization on Textile and Apparel Exports from Sub-Sahara Africa*. 8936. Available at: https://openknowledge.worldbank.org/handle/10986/32056.(Accessed: 16 April 2021)

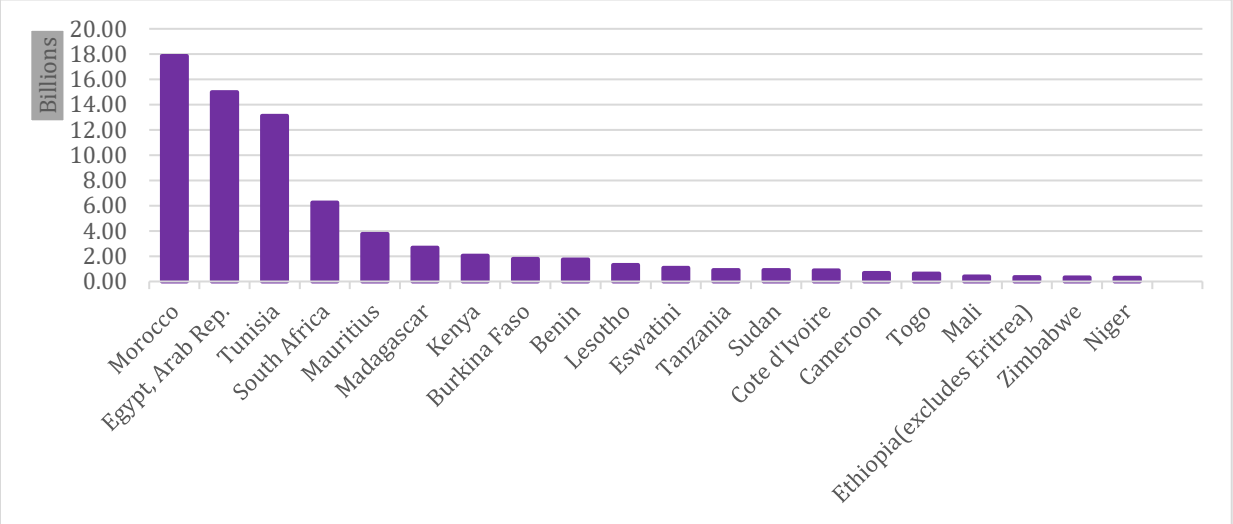
sustainable production in Africa's textile and apparel hubs. The UK is now looking to develop new trade agreements with Africa as a potential post-Brexit 'ethical trading' strategy.[7]

Sections 2.2., 2.3. and 2.4. detail the sector's growth, export and production centres, contributions to employment and livelihoods, and current growth trajectory, including a consideration of the effects of the COVID-19 pandemic.

2.2. Producers and consumers of Africa's textiles and apparel

North Africa continues to dominate in terms of Africa's textile and apparel exports, with Egypt, Morocco, and Tunisia accounting for more than 50% of total export value between 2015-2019 (see Figure 1, more detailed export figures by region and country in Annex 3).[8]

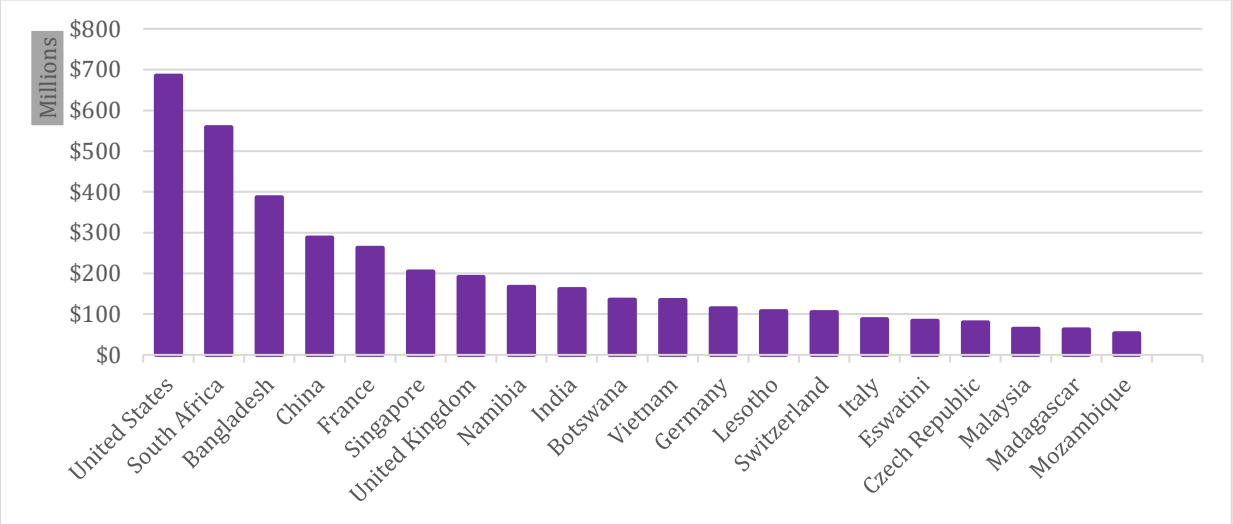
Figure 1 Total value of textile and apparel African exports by country from 2015 to 2019, Billion USDs. Source: World Bank (2021)



In 2019, the net value of sub-Saharan Africa's textiles and apparel exports was US$4.85 billion (bn), with approximately 62% of this trade outside Africa (US$3 bn). 21% was exported to buyers in Europe (US$1.03bn), 16% to East Asia (US$768 million) and about 14% to North America (US$698 million).[9] Asia is an important destination for African textile and apparel products and raw materials, including cotton. In 2019, both Bangladesh and China, which are big textile and apparel production countries – were among the top 10 importing countries of textiles and apparels produced in southern Africa (see Figure 2).

[7] House of Commons Environmental Audit (2019) 'Fixing Fashion': *Fixing fashion: clothing consumption and sustainability*, (February).
[8] World Bank (2021) *The World Integrated Trade Solution (WITS) software provides access to international merchandise trade, tariff and non-tariff measures (NTM) data,* Available at: https://wits.worldbank.org/ (Accessed: 15 June 2021).
[9] Ibid.

Figure 2 Total value of textile and apparel exports from Sub Southern Africa to top 20 destination countries (2019), Million USDs. Source: World Bank (2021).



The growth in exports to Asian markets is driven in part by new investment from several large Asian producers who are expanding textile and garment production in Africa. Although much of the fabric used is still imported, increasingly sophisticated production in Africa is changing this pattern and offers greater 'value-add' as the sector develops. Increased dynamism and adaptability to global market demand is being supported by targeted government support.[10],[11]

Rapid sectoral growth for the export market now means that some countries are heavily dependent on textiles and apparel. For example, in 2017, textiles and apparel exports accounted for 78% of total export revenue in Lesotho, 34% in Mauritius, and 20% in Madagascar. Very rapid growth is being seen elsewhere, for example, in Ethiopia textile and apparel exports have grown almost tenfold in a decade, from an average of $13.7m/yr. between 2005-2009, to $110m /yr. in 2017.[12] These four countries have been selected for further analysis in Section 4 with the aim of identifying priority risks and opportunities and the key stakeholders with whom to collaborate.

[10] McKinsey&Company (2015) 'Sourcing in a volatile world The East Africa opportunity', Available at: https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/retail/pdfs/sourcing_in_a_volatile_world_the_east_africa_opportunity.ashx

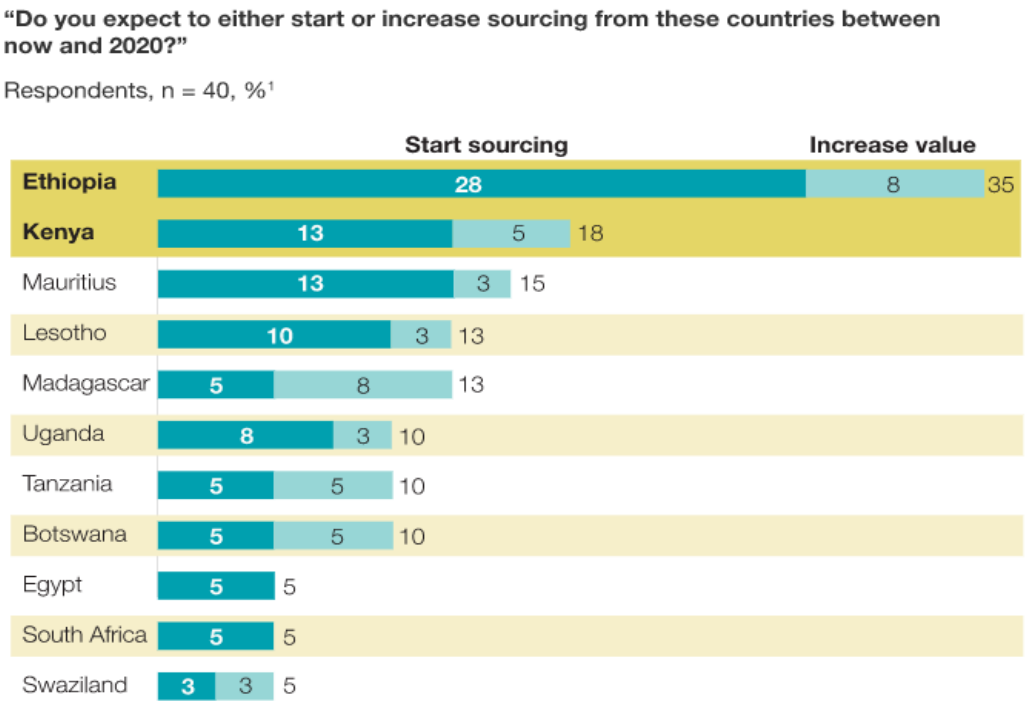
[11] Tang, X. (2014) 'The Impact of Asian Investment on Africa's Textile Industries - Carnegie-Tsinghua Center - Carnegie Endowment for International Peace', *Carnegie-Tsinghua Center for Global Policy*. Available at: https://carnegietsinghua.org/2014/08/27/impact-of-asian-investment-on-africa-s-textile-industries-pub-56320.

[12] MVO Netherlands (2019) 'Sourcing Textile and Garments in Ethiopia'. Available at: https://www.dieh.dk/dyn/Normal/3/23/Normal_Content/file/1617/1580811277/report-sourcing-textile-and-garments-in-ethiopa-bottom-up-dec2019.pdf

2.3. The role of international brands

International brands are initiating or increasing production in Africa, with Ethiopia, Kenya, Mauritius, Lesotho and Madagascar, cited as the top five future sourcing countries of interest for major brands (See Figure 3). [13]

Figure 3. Interest and intent to source from African countries by 40 Chief Procurement Officers of leading fashion brands interviewed in 2015. Source: McKinsey



Over the past decade, leading fashion multinational corporations (MNC's) have increased their presence, and the frequency and volume of orders from Africa.[14] Brands and companies identified as currently, or historically sourcing in Africa – specifically from our four countries of interest - are set out in Table 1. Drivers for sourcing from Africa cited by companies include new price competitiveness driven by reformed trade agreements, government incentives, and low labour costs, as well as the potential for vertical integration and absorbing best practices in newly built facilities.

> *Factors that drove us to increase sourcing from Ethiopia include long-term price competitiveness, import tax incentives, proximity to cotton fields and integrated and vertical production using state of the art technology.*[15]

[13] McKinsey, 2017. Ibid·
[14] Pers. Comm. Annika Schwagerl, the Fashion Director at Otto International-Scan Thor Group
[15] Schwagerl, A., Cill, N. (2020) The future of sourcing from Africa – conditions for a successful textile supply chain from Ethiopia (Webinar) Available at: https://www.dieh.dk/arrangementer/181 (Accessed 17 September 2020)

Table 1. Brands and buyers sourcing from selected African textile and apparel production countries (See Appendix 2. for sources of data and references)

Brands and buyers
Ethiopia
Lesotho
Madagascar
Mauritius

The ability to meet strict Environment, Social and Governance (ESG) requirements and sustainability criteria also appear to be important drivers. According to Annika Schwagerl, the Fashion Director at Otto International-Scan Thor Group, her company is sourcing from Africa due in part to the potential for sustainable production practices. They currently source from Ethiopian facilities which report 'zero-liquid discharge', source energy from non-fossil fuels, and use eco-friendly dyes. She notes that new production countries may not be able to produce sustainably over-night, and that it may take years of dedicated investment before Africa reaches its potential as a sustainable source of textiles and apparel.[16] This view is echoed by H&M Ethiopia Sustainability Program Manager, Bezait Amare:

> *The water problem might not be critical yet, but it will come. The question is what can be done before that? Acknowledging the challenge and taking action is important.*

Others see poor social and environmental governance performance in traditional sourcing countries in Asia as a driver of increased brand interest in African. For example, international buyers recently raised serious concerns about, or no longer source cotton and fabrics produced in Xinjiang, China's largest cotton producing province, citing human right's issues related to the treatment of the local Uyghur population[17].

These factors may drive a boom in cotton, textile and garment production in Africa in the years ahead, but this is likely to be contingent on whether African producers can effectively mitigate their own social and environmental risks.[18]

This view is echoed by Anton Earle, Regional Director for the Stockholm International Water Institute:

> *We are seeing continuous adaptability in the textile and apparel production sector across Africa by both locally owned and foreign-owned businesses. In South Africa, the sector has…switched to more eco-friendly production processes to cater for more environmentally aware customers.*[19]

2.4. The importance of textiles and apparel for job creation and livelihoods in Africa

In the previous section, the need to mitigate social and environmental risks emerges as a driver of global demand for apparel produced in Africa. This Section sets out the socio-economic context of the sector in Africa and the social imperatives for strong sectoral performance, including the need to create jobs which are safe, healthy and resilient to climate and other shocks.

[16] For more information, see Water Witness Ethiopia study

[17] See: [Online] PVH Corporation (2020) *Statement on Xianjing*. [Online – since removed] https://responsibility.pvh.com/wp-content/uploads/2020/07/PVH-Corp-Statement-on-Xinjiang.pdf (Accessed 28 September 2020). Although note that some buyers (PVH, Inditex, Muji Hugo Boss) retracted their statements and policies, allegedly following pressure by the Chinese government. See *Forced Labour Fashion [Online] https://www.forcedlabourfashion.org/forcedlabourfashion-cowards (Accessed 20 June 2021)*

[18] Ansett, 2020, KI

[19] Pers. Comm. Anton Earle, Africa Regional Director, Stockholm International Water Institute (SIWI)

Africa is home to 1.35 billion people, almost a fifth of humanity.[20] The number of young people is growing rapidly and is expected to double to exceed 830 million by 2050[21]. If properly harnessed, this increase in the working age population could support increased productivity and stronger, more inclusive economic growth across the continent. But this asset remains untapped, with two-thirds of non-student youth unemployed, or in vulnerable employment. For the twelve million young Africans that enter the workforce each year, only three million formal jobs are available[22]. Women are particularly impacted, often facing greater barriers to accessing opportunities and earning equal pay[23]. There are individual, national, and global benefits to improving youth employment in Africa. Employment leads to increased incomes, higher standards of living, and better health and education access. It also fuels inclusive growth, lowering the youth unemployment rate to that of adults would translate to a 10 to 20% increase in Africa's GDP[24]. Conversely, unchecked unemployment has severe social and political consequences. 40% of those who join rebel movements are motivated by lack of economic opportunity[25]. Unemployment also fuels outward migration both within and from Africa and contributes to the tragic deaths of many thousands of people every year who die trying to reach Europe[26],[27]. In response, governments are nurturing 'job intensive' industries and the textile and apparel sector is seen as a vehicle for creating job opportunities at scale, especially for women and young people from disadvantaged rural and urban backgrounds.

Accurate figures of those employed in and supported by Africa's textile and apparel sector are difficult to come by. In 2017 the International Cotton Advisory Committee (ICAC) estimated that the population employed in, or directly supported by cotton growing and cotton-related industries in Africa was between 43 - 55 million.[28] Elsewhere, it is estimated that between 60-75 million[29] people globally are directly employed in the textile and apparel sector. Analysis in Kenya suggests that every job in the sector supports five other jobs. In terms of the demographics of sector employment, it is also commonly reported that 80% of those directly employed by the sector are women, often from disadvantaged socio-economic backgrounds.[30]

[20] The World Bank (2021) *The World Integrated Trade Solution (WITS) software provides access to international merchandise trade, tariff and non-tariff measures (NTM) data,* Available at: *https://wits.worldbank.org/* (Accessed: 28 July 2020).
[21] AfDB (2018a) 'Jobs for Youth in Africa: Strategy for Creating 25 Million Jobs and Equipping 50 Million Youth 2016 - 2025', p. 64. Available at: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Boards-Documents/Bank_Group_Strategy_for_Jobs_for_Youth_in_Africa_2016-2025_Rev_2.pdf
[22] AfDB (2012) *Libya 2012. African Economic Outlook*. Available at: http://www.undp.org/content/dam/rba/docs/Reports/African Economic Outlook 2012 En.pdf
[23] United Nations Development Programme (2015) *Human Development Report Work for Human Development*.
[24] AfDB, ibid.
[25] World Bank (2011) World Development Report 2011: Conflict, Security, and Development. Available at: https://openknowledge.worldbank.org/handle/10986/4389
[26] McIntyre, N., et al (2018). *It's 34,361 and rising: how the List tallies Europe's migrant bodycount*. [online] the Guardian. Available at: https://www.theguardian.com/world/2018/jun/20/the-list-europe-migrant-bodycount.
[27] Youth unemployment is a major driver of economic migration to other African countries, the MENA region and Europe. The number of African migrants in 2000, 13.2 Million, almost doubled to 23.6 Million in 2019.
United Nations (2019a) *International Migration 2019 report, (St/Esa/Ser.a/438)*
[28] International Cotton Advisory Committee (ICAC) (2017) 'COTTON: Review of the World Situation', *Cotton. Review of the World Situation*, 70(5).
[29] World Bank (2015) *Kenya apparel and textile industry*. Available at: www.wbginvestmentclimate.org
[30] Labour Behind the Label. (n.). *The women who make your clothes*. [online] Available at: https://labourbehindthelabel.org/the-women-who-make-your-clothes/

It is beyond the scope and resources of this current study to provide unequivocal figures on the African sector workforce and livelihood beneficiaries. However, based on extrapolation of the data available it seems reasonable to suggest that the number of people directly or indirectly dependent on the textiles and apparel sector and its supply chain for their livelihoods in Africa is very significant, and could number well over 50 million. More exacting analysis, including of the proportion linked to global value chains, and the demographic and gender make-up of this workforce is worthy of further study and will benefit from greater transparency and disclosure in the sector.

The quality of this employment and the adequacy of pay and conditions are regularly contested.[31] Women's wages remain lower than those of men in the industry across Africa.[32] The counter argument is that for disadvantaged women from rural communities, the sector offers the chance to obtain a stable income as opposed to subsistence farming. According to a Senior Official in the Ministry of Water in Lesotho:

> *As climate change impacts increasingly on farmers, more women move to work within textile factories to earn a steady salary, even if its below what is considered a living-wage.*[33]

National data also show the gendered nature of sectoral employment. Approximately, 80% of Lesotho's 47,000 sector workers[34], of Madagascar's 120,000,[35] and up to 95% of Ethiopia's 70,000 workers, are women[36]. In Mauritius approximately half of the 120,000 workers employed in the sector are foreign workers, primarily trained labourers from Bangladesh, as local labourers graduate to higher positions or other sectors.[37]

2.5. Effects of COVID-19 on the sector in Africa and prospects for growth.

In 2019 it was projected that the sector in Africa will maintain a 5% compound annual growth rate (CAGR) and create an additional 400,000 jobs in Sub-Saharan Africa to generate US$ 5 billion in exports

[31] Barrett, P. M. and Baumann-Pauly, D. (2019) 'Made in Ethiopia: Challenges in the Garment Industry' s New Frontier', *Stern Center for Business and Human Rights*, (May). Available at: https://issuu.com/nyusterncenterforbusinessandhumanri/docs/nyu_ethiopia_final_online?e=31640827/69644612
[32] ILO (2000) *Labour Practices in the Footwear, Leather, Textiles and Clothing Industries*, *ILO Sectoral Activities Programme*
[33] Pers comm., 2020.
[34] Ministry of Trade and Industry of Lesotho (2017), *Lesotho's textile, apparel, and footwear manufacturing industry synopsis.* [Online] https://www.tralac.org/news/article/11501-lesotho-s-textiles-apparel-and-footwear-manufacturing-industry.html (Accessed 16 October 2020)
[35] De Coster, J. (2017) *Destination Madagascar. An overview of the textile and apparel industry in Madagascar.* Fiber2Fashion. [Online] https://www.fibre2fashion.com/industry-article/7957/destination-madagascar (Accessed 16 October 2020)
[36] IndustriAll (2019) Organizing the garment and textile sector in Ethiopia [online] http://www.industriall-union.org/profile-organizing-in-the-garment-and-textile-sector-in-ethiopia (Accessed 2020/11/06)
[37] IndustriAll (2019) Organizing the garment and textile sector in Ethiopia [online] http://www.industriall-union.org/profile-organizing-in-the-garment-and-textile-sector-in-ethiopia (Accessed 2020/11/06)16)

by 2025. (See Figure 4).[38] With many workplaces partially or completely closed, cancelled orders and reduced market demand, COVID has potential to derail this. African businesses lost more than 110 million working hours during the first three quarters of 2020 due to the pandemic,[39] and significant dips in economic growth are projected alongside potential recovery in 2021. (See Figure 5).[40]

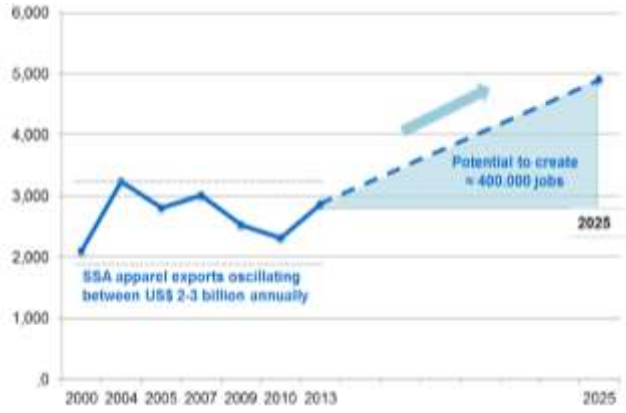


Figure 4 Pre-COVID projections of textile and apparel sector growth. Source: AfDB

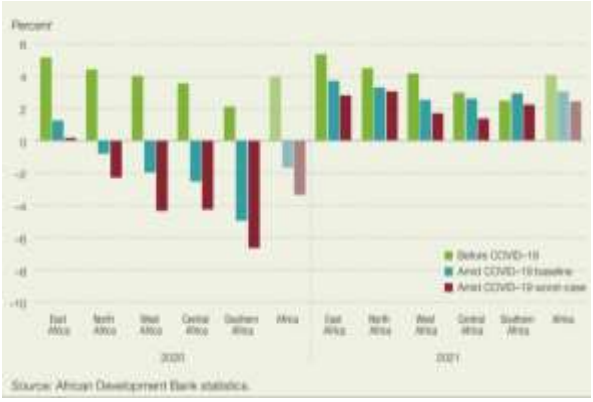


Figure 5. Growth decline and recovery during 2020-2021 by African region. Source AFDB.

According to the ILO, the pandemic has 'exposed vulnerabilities within the global garment sector.'[41] A collapse in demand in 2020 and non-payment for ordered stock triggered a global US$16.2 billion dip in revenue between April and June 2020[42]. McKinsey (2021) estimate that the sector globally will see a 95% reduction in profits in 2020, although recent figures suggest a rebound through online purchases.[43],[44]

These impacts have cascaded to manufacturing firms in Africa's supply chain. Workforces face fewer working hours and reduced incomes, impacts on livelihoods of workers, drawdown on savings or borrowing to survive. Women and youth are most vulnerable to income reductions due to working hour losses and employment challenges because of COVID-19 in the short term.

[38] AfDB (2018b) 'Report on the Feasibility Study for the Development of the online Fashionomics Platform', pp. 1–78. Available at: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Final_Report_AFDB_Fashionomics_-_Investing_in_the_African_Creative_Industries_for_the_Continent_s_Inclusive_Growth.pdf

[39] ILO (2020b) *ILO Monitor: COVID-19 and the world of work: Updated estimates and analysis*. Available at: https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_749399.pdf

[40] AfDB (2020) *African Economic Outlook 2020 Amid COVID-19 SUPPLEMENT*. Available at: https://www.afdb.org/sites/default/files/documents/publications/afdb20-04_aeo_supplement_full_report_for_web_0705.pdf#page=60

[41] ILO (2020a) *CoVID-19 and the garment and textile sector in Ethiopia: workers' perspective on CoVID-19 Responses* [Online] https://www.ilo.org/africa/technical-cooperation/inclusive-industrialization/WCMS_751045/lang--en/index.htm (Accessed 20 October 2020)

[42] BHRRC (2020) Major brands refused to pay for $16 billion of goods during COVID 10, leaving overseas suppliers unable to pay garment workers (online) https://www.business-humanrights.org/en/latest-news/major-us-european-fashion-brands-refused-to-pay-for-16bn-of-goods-during-covid-19-leaving-overseas-suppliers-unable-to-pay-garment-workers/ (Accessed 20 October 2020)

[43] Panjiva Research (2020) *Tracks not suits, throws not sweaters – Q3, 2020 Apparel Scorecard* [Online] https://panjiva.com/research/tanks-not-suits-throws-not-sweaters-q320-apparel-scorecard/36871 October 2020. (Accessed 20 October 2020).

[44] McKinsey&Company (2021) 'The State of Fashion 2021: In search of promise in perilous times', *McKinsey & Company*, pp. 8–118. Available at: https://www.mckinsey.com/industries/retail/our-insights/state-of-fashion

Factories have had to adapt quickly to the COVID challenge, with widespread need for safety measures including facemasks, social distancing, and improved water supply and washing facilities[45].

For the textile and apparel industry is to weather the coming economic downturn and fulfil its potential for growth and job creation in Africa then an ability to ensure access to safe water, hygiene, and sanitation (WASH) at facilities and communities, and to manage the wider range of water and climate related risks it face will be imperative.[46]

3. Water security in Africa – understanding the context

An understanding of the water challenges facing Africa's economies is important to situate water stewardship efforts in the textile and apparel sector. Despite a wealth of water resources, their uneven distribution and deep-rooted capacity, governance and financing challenges continue to hold back the ability of many countries to harness water for social and economic progress. Water security challenges organised are summarised here with reference to relevant Sustainable Development Goals.[47]

3.1. Water, sanitation and hygiene for human well-being

Only 27% of sub-Saharan Africa's population in sub-Saharan Africa use a safely managed drinking water (SDG indicator 6.1.1., 2017), 18% use safely managed sanitation service (SDG indicator 6.2.1a, 2017) and 25% have access to a basic handwashing facility (SDG indicator 6.2.1b, 2017).[48] Inequalities in levels of access are on the rise, between urban and rural communities, and between the less well-off and better off in towns and cities where 90% of projected population growth is taking place (See Figure 6).[49] In many cities, levels of access to safe water and sanitation are in reverse.

[45] ILO (2020b) *ILO Monitor: COVID-19 and the world of work: Updated estimates and analysis*. Available at: https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_749399.pdf
[46] AfDB (2020) *African Economic Outlook 2020 Amid COVID-19 SUPPLEMENT*. Available at: https://www.afdb.org/sites/default/files/documents/publications/afdb20-04_aeo_supplement_full_report_for_web_0705.pdf#page=60
[47] United Nations (2019b) *The United Nations World Water Development Report 2019 Leaving No One Behind*. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000367306
[48] UN Water / World Bank (2017) SDG Progress data for Sub-Saharan Africa [Online] https://www.sdg6data.org/region/Sub-Saharan%20Africa (Accessed 11 November 2020)
[49] The Joint Monitoring Programme of the World Health Organisation (WHO) and United Nations Children's Fund (UNICEF) (2020) SDG Progress data for households in Sub-Saharan Africa [Online] https://washdata.org/ (Accessed 11 November 2020)

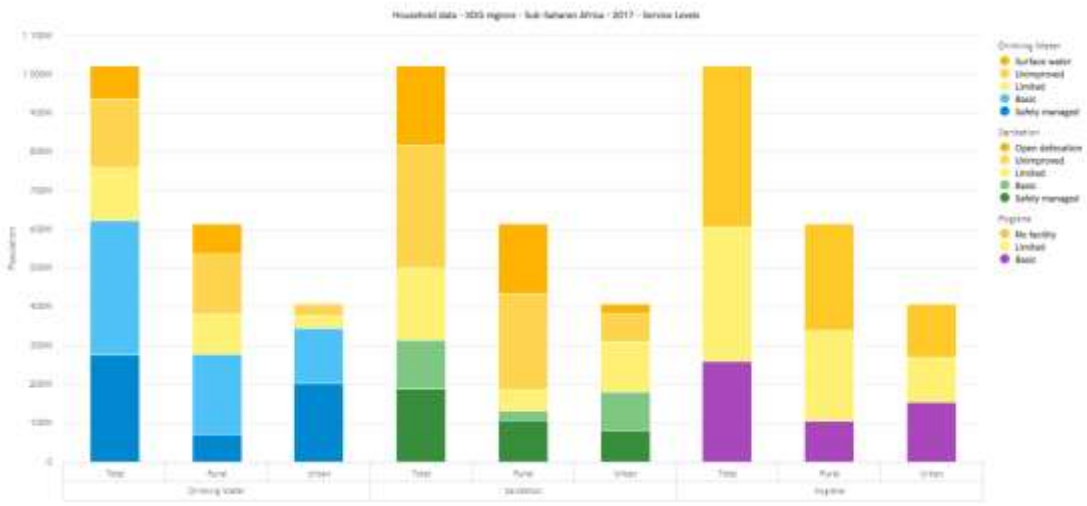


Figure 6. Household access to WASH in Sub Saharan Africa. Source: JMP 2018.

Increased demand for domestic and municipal water supply must be met alongside increased demands for water for energy, agriculture and industry, whilst demand for investment in water and sanitation services competes with financial need across the spectrum of social needs, education, healthcare and transportation infrastructure.[50]

Poor and inequitable coverage of improved water supply and sanitation continues is calculated to cost from 3.3% to more than 5% of regional GDP, figures which exceed the total flows of aid and debt relief into the region[51]. Currently, more than 99 million school days are lost due to poor sanitation across Sub-Saharan Africa.[52] Advice to improve hand washing, hygiene and to self-isolate at home assumes reliable access to WASH, yet 63% of those living in Africa's cities cannot access basic services.[53] The lack of universal WASH access continues to exert an unacceptable human and economic cost in Africa, with particularly severe impacts on the life opportunities and well-being of women and girls, who bear the brunt of its impacts and hardships. Delivery of universal WASH in Africa within our generation must be seen as the priority for global development and justice.

3.2. Water dependent ecosystems

Maintaining the health of water-related ecosystems: wetlands, rivers, and lakes, is vital for human wellbeing, food security and socio-economic progress. Southern Africa's wetlands are among the most diverse of any in the world but under severe threat. 84% of river ecosystems are threatened in the

[50] United Nations (2019b) *The United Nations World Water Development Report 2019 Leaving No One Behind*. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000367306

[51] Hepworth, N. and Warren, N. (2011) 'Strengthening the evidence base for DFID engagement on Water within the Southern African Development Community', pp. 1–76.

[52] AUC/AMCOW (2015) 'The 2015 Africa Water and Sanitation Sector Report: Reviewing Progress and Positioning Africa for 2030 SDGs & Agenda 2063 on Sustainable Water Management and Sanitation', *African Ministers Council on Water*, 1(July 2008). Available at: http://www.au.int/en/happening

[53] World Bank Blogs. (2020). *COVID-19: Solving Africa's water crisis is more urgent than ever*. [online] Available at: https://blogs.worldbank.org/nasikiliza/covid-19-solving-africas-water-crisis-more-urgent-ever

region, and 54% are critically endangered.[54] Ecosystems in our case studies countries: Ethiopia, Lesotho, Madagascar and Mauritius are all classified as critically endangered, or vulnerable biodiversity hotspots (See Figure 7).

Among the drivers of biodiversity and ecosystem loss, habitat destruction and pollution play a significant role and recent assessments indicate their dramatic rise (see Figure 8).[55] Dam construction and over-abstraction, alters natural flow patterns and also drives degradation of ecological systems and services. Land degradation, untreated industrial and municipal wastewater, over-abstraction, and inefficient water use are depleting and polluting river systems across Africa.[56] This degradation of water related ecosystems in Africa mirrors the alarming loss of biodiversity and ecosystem services seen globally and has significant implications for climate resilience, livelihoods and economies.

Figure 7 IUCN classification of Africa's biodiversity hotspots (2013). Source IPBES.

[54] IPBES (2018) The regional assessment report on biodiversity and ecosystem services for Africa, Intergovernmental science-policy platform on biodiversity and ecosystem services. Available at https://www.ipbes.net/assessment-reports/africa
[55] IPBES, ibid.
[56] McClain, M. E. (2013) 'Balancing water resources development and environmental sustainability in Africa: A review of recent research findings and applications', *Ambio*, 42(5), pp. 549–565. Available at: https://link.springer.com/content/pdf/10.1007%2Fs13280-012-0359-1.pdf

Figure 8 Assessment of the drivers of change of biodiversity. Source IPBES.

3.3. Water-related hazards and climate change

Africa experiences a naturally dynamic climate with regular cycles of drought and flooding which create challenging conditions for communities and economic growth. Flooding and drought events are projected to increase in frequency and intensity under almost all climate change scenarios.[57] Climate change is likely to exacerbate poverty and outward, and rural urban migration, in particular as a result of water crises and land degradation.[58]

The SADC region has experienced frequent droughts as temperatures increased by 0.5% on average during the last 100 years. Water scarcity is intensified by disrupted rainfall patterns, increased evaporation loss and increased water demand in all sectors. Consecutive dry spells and prolonged droughts in some areas have led to food shortages and famine in recent decades. Additional climate related challenges include a projected increased burden of waterborne or insect-borne disease, and increased vulnerability to pandemics.[59] Future climate change will lead to additional and potentially very large economic costs. These are uncertain, but aggregate models indicate additional net economic

[57] . United Nations (2019b) *The United Nations World Water Development Report 2019 Leaving No One Behind*. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000367306
[58] WWAP, Ibid.
[59] SADC, ibid.

costs that are equivalent to a loss of 1- 3% of GDP each year by 2030 in the region[60]. Building resilience to climate change and shocks, in particularly through improved water services and governance is therefore an economic and social priority.

3.4. Water dependent economic growth

Increasing demand across all economic sectors, particularly mining, agriculture and manufacturing impose further imperatives for water security in Sub-Saharan Africa (See Figure 9)[61]. Growing competition between and among sectors, need to be reconciled and well managed to support sustainable economic growth.[62]

Agricultural production is by far the largest consumer of water by sector and output will need to grow by 3.3% per year to ensure food security in the region. Obtaining new and reliable water resources or using available resources more efficiently through sustainable intensification is a challenge for both large scale irrigated agriculture and small-scale subsistence farming.[63]

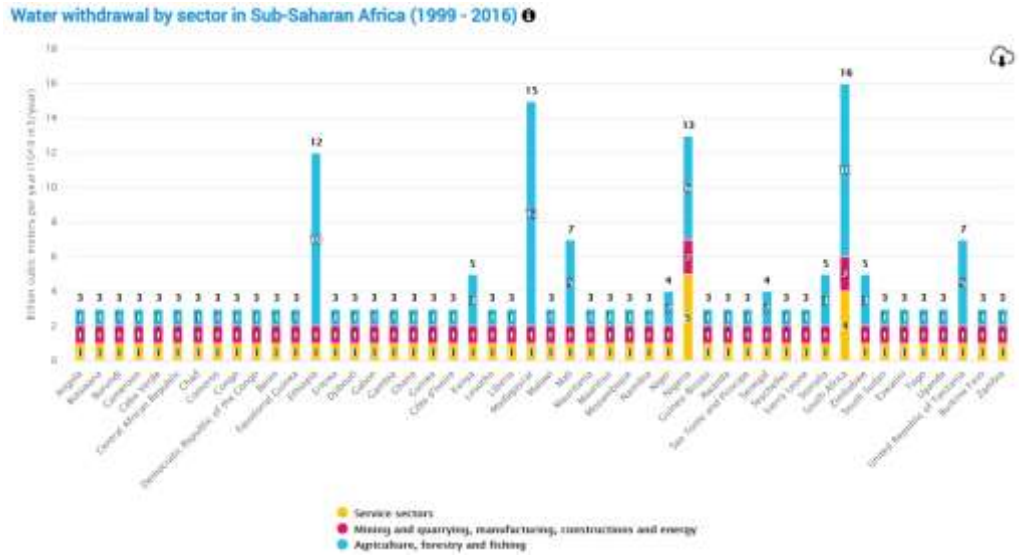


Figure 9. Water withdrawals by sub-sectors in Sub Saharan Africa (1999-2016). Source: UN Water.

Africa's main export sectors: agriculture, mining, minerals, petro-chemicals/energy, and textiles each exert demand and water quality pressures. Improved water management is vital to both ensure adequate supplies for these sectors, but also to mitigate the externalities of sector development – in particular unsustainable abstraction, water pollution, heightened climate vulnerability and ecosystem

[60] Simonsen Hauge, S. (2010). Economics of Climate Change in East Africa. [online] SEI. Available at: https://www.sei.org/projects-and-tools/projects/economics-climate-change-east-africa/.
[61] UN Water / World Bank (2017) SDG Progress data for Sub-Saharan Africa [Online] https://www.sdg6data.org/region/Sub-Saharan%20Africa (Accessed 11 November 2020)
[62] United Nations (2019b) *The United Nations World Water Development Report 2019 Leaving No One Behind*. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000367306
[63] Hepworth, N. and Warren, N. (2011) 'Strengthening the evidence base for DFID engagement on Water within the Southern African Development Community', pp. 1–76.

degradation. Africa's economic wellbeing and that of its people is tightly bound to the ability to manage the water risks and impacts associated with these 'big-five' users. However, these industrial sectors also receive government favour and lax regulation in the misplaced assumption that this will hasten economic progress. Without effective water management economic growth will continue to be stymied by disruptions to production, ill health, chronic pollution problems, damaged ecosystem services, and damaging cycles of flooding and drought – and a corresponding flight of global investment.

3.5. The root causes of water insecurity in Africa

Integrated Water Resource Management (IWRM), where water resource use and pollution control is adminsitered by a basin authority or regulator on behalf of the state is widely recognised as the optimal approach to managing shared water resource risks. Progress on SDG 6.5.1., the implementation of IWRM in Africa is limited, with most countries registering medium to low levels of implementation.[64] (See Figure 10). In most countries, legal and policy frameworks are in place, and the priority challenge which hold back water security is effective implementation and financing.[65] 98% of African countries report insufficient funding for effective water management and infrastructure,[66] and there are strong arguments that improved water infrastructure is the precondition for national economic growth, and new public and private investment.[67]

This funding and infrastructure gap which holds back progress in water resource management is mirrored in the WASH sector. Around US$15 billion of new financing is required every year until 2030 to achieve the WASH-related SDGs in East and Southern Africa[68].

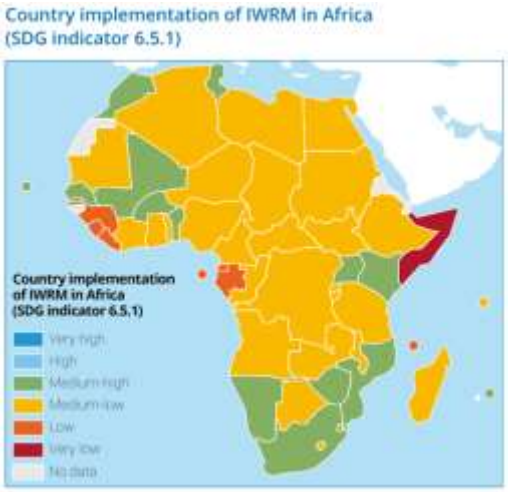


Figure 10 IWRM Implementation in Africa (2018). Source: AMCOW

[64] AMCOW (2018) *Status Report on the Implementation of Integrated Water Resources Management in Africa: A regional report for SDG indicator 6.5.1 on IWRM implementation*. Available at: https://ceowatermandate.org/wp-content/uploads/2018/11/2018_Status_Report-IWRM-Africa_Web_EN_(1).pdf
[65] AMCOW, ibid.
[66] AMCOW, ibid.
[67] Banerjee, S. *et al.* (2009) 'Access, affordability, and alternatives: Modern infrastructure services in Africa', (February), p. 36.
[68] UNICEF (2019) *The State of WASH Financing in Eastern and Southern Africa: Regional Level Assessment*. Available at: https://www.unicef.org/esa/sites/unicef.org.esa/files/2019-10/UNICEF-ESARO-2019-WASH-Financing-Regional-Assessment.pdf

Yet 44% of African countries report that no revenue is raised from users[69]. The financial and operational mismanagement of water utilities are reported to cost the region 0.15 percent of its GDP[70], and are a major contributor to public health challenges[71].

Transboundary water governance is particularly important in the region, including for security and economic cooperation. 48 countries sharing 134 transboundary basins or aquifers across Africa and organizational frameworks are in place for the most important transboundary basins and aquifers amongst these.[72],[73] However, even where basin or aquifer institutions may exist, capacity is generally insufficient for planning and implementation of water security, such that key functions including disaster risk management, pollution control, water allocation and ecosystem protection are not delivered. [74] The AfDB identifies a long list of capacity 'weaknesses' in the African water sector which hold back effective institutional performance including policy, leadership, regulation, human resources, planning, organisation, coordination, data, reporting, awareness and communication.[75]

In summary, whilst Africa's challenging hydrology provides an important backdrop, the continent's water challenges emerge from an absence of adequate financing, infrastructure and the wider effective governance needed to deliver sustainable water management. That the root cause of Africa's water woes, and the socio-economic problems and barriers to growth that they impose, lies in governance provides an opportunity. Knowing where the challenges lie provides a useful signpost towards promising solutions, and it is in the good governance and adequate financing of water, and efforts of all stakeholders towards these where hope lies.

Stakeholder participation can play a vitally important role in improving water governance – engendering compliance, mobilising resources, innovation, political will, oversight and accountability.[76] Levels of stakeholder participation in decision making and action in sub-Saharan Africa are currently limited[77]. As will be discussed, enhanced water stewardship which drives meaningful stakeholder participation, particularly within and by growing sectors which enjoy political visibility and support therefore offers an opportunity to improve water governance and drive the shared water security that is so badly need by all stakeholders in Africa.

[69] AMCOW (2018) *Status Report on the Implementation of Integrated Water Resources Management in Africa: A regional report for SDG indicator 6.5.1 on IWRM implementation*. Available at: https://ceowatermandate.org/wp-content/uploads/2018/11/2018_Status_Report-IWRM-Africa_Web_EN_(1).pdf
[70] AfDB/World Bank, ibid.
[71] Schreiner, B. (2011) *State of the Water Sector in Mauritius, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe*.
[72] AMCOW, ibid.
[73] SADC (2000) *Revised Protocol on Shared Watercourses*.
[74] AMCOW, ibid.
[75] AfDB/World Bank, ibid.
[76] Hepworth et al. Ibid.
[77] AMCOW (2018) *Status Report on the Implementation of Integrated Water Resources Management in Africa: A regional report for SDG indicator 6.5.1 on IWRM implementation*. Available at: https://ceowatermandate.org/wp-content/uploads/2018/11/2018_Status_Report-IWRM-Africa_Web_EN_(1).pdf

4. Does Africa's textile and apparel sector have a fair water footprint?

In this section we present evidence of the emerging water-related impacts and risks associated with the growing textile and apparel sector in Africa, which allows us to reflect on the sustainability of the fashion sector's water footprint.

Recognition of the environmental and social impacts of the global fashion, textiles and apparel industry has increased rapidly over the past decade, with wave after wave of damning analyses and reports.[78] It has been ranked as the second most polluting industry globally, with substances of concern for human and ecosystem health used across the value chain, and textile production in particular discharging high volumes of hazardous chemicals into the environment[79]. As much as 20% of industrial water pollution globally has been attributed to wet processing of textiles, including bleaching, scouring, dyeing, printing, and laundry.[80,81]

The global textile sector is also reported to be the second thirstiest, with production (including cotton farming) reported to consume 93 billion cubic metres of water annually and contributing to problems in water-scarce regions.[82] The water demand for cotton production varies depending on the location and context of production. For example, the WWF have calculated that between 10,000 – 20,000 litres of water are needed to produce 1 kilogramme of cotton.[83] More recent assessments suggest a lower total water demand of around 1600 litres of water per kilogramme of cotton[84]. Water demand by unit of cotton production in Sub Saharan Africa is relatively low compared to global norms because the majority of cotton farms are rainfed. Small-holder cotton farmers are dependent on rainfall and face major risks from drought, flooding, and erratic rainfalls as a result both natural climate variability and human induced climate change (see Box 1).

The emergence of water foot-printing methodology[85] allows us to estimate the amount of water required to produce, or the 'embedded' water within, goods and services, including textiles and apparel. This methodology considers the water needed to grow and process raw materials and to dilute wastewater created and provides a useful indicator of the typical magnitude of water needed for production. The water footprint of clothing is considerable, with estimates of 10,850 litres needed to

[78] Foreman, R. L. (2014) 'Dirty laundry', *Fourth Genre: Explorations in Nonfiction*, 16(1), pp. 59–64. doi: 10.14321/fourthgenre.16.1.0059; House of Commons Environmental Audit (2019) 'Fixing Fashion': *Fixing fashion: clothing consumption and sustainability*, (February).
[79] Niinimäki, K., Peters, G., Dahlbo, H. 2020. The environmental price of fast fashion. Nat Rev Earth Environ 1, 189–200 (2020). https://doi.org/10.1038/s43017-020-0039-9
[80] Kant, R. (2012) 'Textile dyeing industry an environmental hazard', *Natural Science*, 04(01), pp. 22–26.
[81] Loetscher, S., Starmanns, M. and Petrie, L. (2017) 'Changing Fashion: The Clothing and Textile Industry at The Brink of Radical Transformation', *Environmental Rating and Innovation Report 2017 WWF Switzerland*, p. 44. Available at: https://www.wwf.ch/sites/default/files/doc-2017-09/2017-09-WWF-Report-Changing_fashion_2017_EN.pdf
[82] EMAF (2017) 'A new textiles economy: Redesigning fashion's future', *Ellen MacArthur Foundation*, pp. 1–150. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf
[83] WRAP (2017) 'Valuing Our Clothes: the cost of UK fashion', *Wrap*, (July), p. 54. Available at: http://www.wrap.org.uk/sites/files/wrap/valuing-our-clothes-the-cost-of-uk-fashion_WRAP.pdf
[84] Cotton Inc, (2017) Life Cycle Assessment update of Cotton Fibre and Fabric Life Cycle Inventory
[85] See Hoekstra, A, Y, et al. 2011. The water footprint assessment manual: setting the global standard, Earthscan.

produce a single pair of jeans, and 2720 litres needed to produce a tee-shirt[86] (see Figure 11). Or put another way, for each tee-shirt and pair of jeans produced, around 76 bathtubs or water are needed.

Figure 11. The typical combined water footprint of a tee-shirt and jeans, based on analysis by Chapagain et al.

It is important to note that the volumetric water footprint of a product or service does not necessarily indicate how sustainable or responsible the production process is, because in many places water is available and can be used within the limits of sustainable resource yield without exerting negative impacts. The most important consideration for any water footprint is therefore not its total size, but its impact. Key questions include whether or not water withdrawals from an aquifer, river or lake are made at a sustainable rate? do they deny nature or communities of their water needs? or exacerbate drought or flood impacts? or, does the footprint create pollution, or degrade or deplete resources?

For those seeking sustainable development which supports inclusive social and economic progress within the limits of finite resource availability, the ultimate goal is not the reduction of water footprints per se, but to ensure that water footprints are fair. A fair water footprint is defined here as:

> *freshwater appropriation by humanity for the production of goods and services in a manner which is sustainable and equitable, which avoids deleterious impacts on legitimate uses, functions and values of water through pollution, depletion or ecosystem degradation, and which advances climate resilience, good water governance and universal fulfilment of the human right to safe water and sanitation.*

[86] Chapagain A. K. et al. 2005. The water footprint of cotton consumption. UNESCO-IHE, Research Report 18

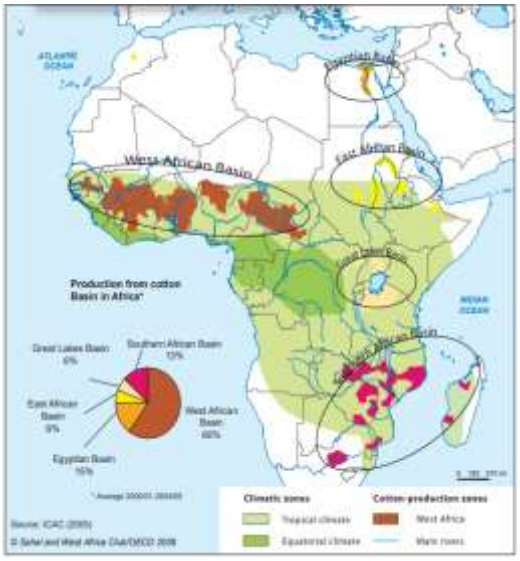
In more simple terms, a fair water footprint is water use at production sites and in supply chains which guarantees zero pollution, sustainable withdrawals, preparedness to droughts and floods, ecosystem protection, legal compliance and full access to safe water, sanitation and hygiene.

Irrespective of the total volumetric water demands of the sector and its supply chain in Africa, our interest therefore turns to the potential and actual impacts of this water use. Figure 12 illustrates the water related impacts which can arise as a result of production within the textile and apparel value chain. In the remainder of this section, we explore sector impacts on water in Africa as well as the water-related risks likely to undermine sectoral performance and potential for growth.

Figure 12. Water impacts within the garment value chain.

Box 1. Understanding cotton production and water risks in Africa

Africa produces approximately 8% of the world's cotton and cotton production makes an important economic contribution in 37 African countries. 70% is exported, primarily to Asian textile producers, notably China, Indonesia, and Thailand.[87] Africa's cotton is primarily grown on small family-owned farms of under 4 hectares, typically accounting for 60% of household income. [88],[89],[90]. Major production zones have been mapped against the transboundary basins of Great Lakes, Nile, West Africa and South Eastern/Zambezi. [91]



Main basins for cotton production in Africa. Source: OECD

Cotton in Africa is mostly rainfed, with exceptions of South Africa where cotton is irrigated, and countries including Ethiopia, Nigeria, Kenya and Sudan, where some farms are irrigated. [92] Water impacts arise from unsustainable irrigation, where withdrawals exceed sustainable yields, result in conflict with other users or lead to soil degradation. Rainfed cotton can also impose impacts through soil management challenges, loss of cover, soil degradation and soil erosion. At scale, conversion of land to rainfed cotton production has potential to modify catchment responses to rainfall, and can potentially lead to higher frequency, and higher flood peaks and longer periods of low flows downstream.

Cotton requires intensive and frequent application of fertilizers, insecticides, and herbicides.[93] 4 per cent of all global pesticides, or 10 per cent of all insecticides are used in cotton-growing.[94] Pollution risks are therefore significant and are associated with storage, preparation, spray drift, inappropriate application and disposal. With trained extension services thin on the ground, there is little to help farmers use pesticides rationally. According to a 2017 review: 'In general, data is lacking on the impacts of pesticides in Africa, however, it is widely accepted that serious problems exist.'[95]

Cotton is also particularly vulnerable to climate change, with seasonal variability, extension of dry seasons and intensification of wet seasons problematic. Floods have also impacted large swathes of cotton producing agricultural land across the continent in recent years. Data on levels of access to WASH within the cotton sector are not available, though are likely to mirror wider trends in rural Africa – and hence are among of the lowest levels of safe and sustainable access globally.

[87] International Trade Centre (ITC) (2013) *Improving Africa's Cotton Value Chain for Asian Markets*.
[88] International Plant Biotechnology Outreach (2017) Fact Series - *Cotton in Africa*.
[89] UNCTAD, 2019. (Online) Unlocking the hidden value of cotton by-products in African least developed countries. Available at https://unctad.org/news/unlocking-hidden-value-cotton-products-african-least-developed-countries
[90] Badiane, O. *et al.* (2002) 'Cotton Sector Strategies in West and Central Africa', *IMF Working Papers*, 02(173), p. 1. doi: 10.5089/9781451858648.001, The ICAC Recorder (2018) *International cotton advisory committee*, *International Organization*. doi: 10.1017/S002081830000953X.
[91] ECOWAS-SWAC/OECD (2006) 'Atlas on Regional Integration in West Africa Cottom', (January).
[92] The ICAC Recorder, 2018, ibid.
[93] According to key informant Tobias Meier, Chair, Organic Cotton Coalition Africa.
[94] Pesticide Action Network UK (2017) 'Is cotton conquering its chemical addiction?', (October), pp. 1–76. Available at: http://www.pan-uk.org/cottons-chemical-addiction/
[95] Ibid.

4.1. Water impacts of textile and garment production.

4.1.1. Key issues: Pollution control

The expansion of textile and garment production in Africa brings significant risks of water impacts. This is particularly the case for textile production which requires a range of processes to turn natural or synthetic fibres to fabrics. The three main types are: Cellulose (cotton, linen, hemp, etc), protein (wool, silk, cashmere) and synthetic (polyester, nylon, spandex, etc). Each requires specific chemicals treatments for dyeing, printing, and washing, and typically, large volumes of water for processing. Additional chemicals are added for softening or hardening of water, and for the removal of heavy metals in dyeing processes. Water is also used for machine cooling, waste separation, cleaning, hand washing and in bathrooms at factories. Treating textile effluent also requires a range of chemical additives which can be passed forward to receiving waters adding to pollution loads (see Table 2).[96]

Process	Emission	Wastewater	Solid Wastes
Fibre preparation	Little or none	Little or none	Fibre waste and packaging waste
Yarn spinning	Little or none	Little or none	Packaging wastes, sized yarn, fibre waste, cleaning and processing waste
Slashing/sizing	VOCs	BOD, COD, metals, cleaning waste, size	Fibre lint, yarn waste, packaging waste, unused starch-based sizes
Weaving	Little or none	Little or none	Packaging waste yarn and fabric scraps, off - spec fabric, used oil
Knitting	Little or none	Little or none	Packaging waste, yarn, fabric scraps.
Tufting	Little or none	Little or none	Packaging waste, yarn, fabric scraps, off-spec fabric
Desizing	VOCs from glycol esters	BOD from sizes lubricants, biocides, anti-static compounds	Packaging waste, fibre lint, yarn waste, cleaning and maintenance materials
Scouring	VOCs from glycol ester and scouring solvents	Disinfectants, insecticide recisues, NaOH,detergents oils, knitting lubricants, spin finishes,spent solvents	Little or none
Bleaching	Little or none	H_2O_2, stabilizers, high pH	Little or none
Singeing	Small amount of exhaust gases from the burners exhausted with components	Little or none	Little or none
Mercerising	Little or none	High pH, NaOH	Little or none
Heat setting	Volatilisation of spin finish agents-synthetic fibre manufacture	Little or none	Little or none
Dyeing	VOCs	Metals, salt, surfactants, organic processing assistants, cationic materials, colour, BOD, COD, sulphide, acidity/alkalinity, spent solvents	Little or none
Printing	Solvents, acetic acid- drying and curing oven emission combustion gases	Suspended solids, urea, solvents, colour, metals, heat, BOD, foam	Little or none
Finishing	VOCs, contaminants in purchased chemicals, formaldehyde vapours, combustion gases	COD, suspended solids, toxic materials, spent solvents	Fabric scraps and trimmings, packaging waste

Table 2. Wastes produced during production processes for textiles and garments.

[96] Ghaly, A. *et al.* (2013) 'Production, Characterization and Treatment of Textile Effluents: A Critical Review', *Journal of Chemical Engineering & Process Technology*, 05(01). doi: 10.4172/2157-7048.1000182

Processing Subcategory	Water Consumption (m^3/ ton fibre material)		
	Minimum	Median	Maximum
Wool	111	285	659
Woven	5	114	508
Knit	2	84	377
Carpet	8.3	47	163
Stock/yarn	3.3	100	558
Nonwoven	2.5	40	83
Felted fabric finishing	33	213	933

Table 3. Average water consumption to produce 1 metric tonne of fibres. Source: Ghaly et Al.

Typically, 200 litres of water are required to produce 1 kg of textiles[97]. Treated wastewater often still carries solvents and heavy metals such as lead, chromium, cadmium used in dyes, and which are harmful to the environment and human health - including as a carcinogen. Chemical sludge containing solid dye residues is a byproduct of the wastewater treatment process and is seldom well regulated or properly monitored in production countries. It is often dumped in unlined and poorly regulated landfills where there is a significant risk of leachates seepage and pollution of ground and surface water sources[98]. More than 200 out of 2000 substances used in textile production are considered by the EU to be hazardous to the environment, ecosystems and human health. Many are highly toxic and yet, are not properly controlled or handled within the global textile industry.[99] Table 2 sets out the range of pollutants arising from textile and garment production. A new report by UNCTAD (2020) highlights the risks:

> *The textile industry in Africa produces potentially toxic metals, dyes bleaching agents, and air pollutants, which cause water and soil pollution, affecting public health. The effects include cardiovascular & respiratory effects, irritation & inflammation, carcinogenic, neurotoxic effects.*[100]

The main pathways for pollution from the textile sector are effluent/wastewater discharge without treatment or where only partial treatment is applied because of inadequate infrastructure, capacity or poor operation and maintenance of treatment facilities (whether at site, centralized within industrial park facilities or at municipal scale). Where treatment does occur, improper handling of chemical sludges are also sources of pollution. Although comprehensive reporting and datasets are not available, our research finds evidence of very significant pollution caused by Africa's growing textiles sector[101],[102]. Key informant testimony lays the problem bare:

> *As brands go into new countries and regions and conduct due diligence to determine risks, they should follow up on the promises made in due diligence processes. With frequency globally, we see that effluent treatment plants at factories and industrial parks are not maintained, if running at all.*
>
> **Sean Ansett, President, At Stake Advisors**

[97] Ghaly et al, ibid.
[98] Jonstrup, M. (2011) 'Treatment of textile wastewaters using combinations of biological and physico-chemical methods', Doctor, Biotechnology.
[99] Narte, R. Kamath, S. (2017). Lessons learned from scaling up a global textile initiative – a presentation to the EU Commission. Belgium.
[100] UNCTAD, 2020. (Online) Manufacturing pollution in sub-Saharan Africa and South Asia: Implications for the environment, health and future work. SEI/SMEP, UK Aid/UNCTAD.
[101] According to key respondents in Ethiopia, Lesotho, Madagascar, and Mauritius (see Section 3. Cases for Engagement for testimonies).
[102] Jonstrup, M. (2011) 'Treatment of textile wastewaters using combinations of biological and physico-chemical methods', Doctor, Biotechnology.

Untreated industrial wastewaters are known to contain carcinogens and very high pH so that downstream water is unfit for any use. Many people are impacted, particularly the poorest, who with no other options are forced to use polluted water to irrigate crops and in their homes. When the rivers are high - this pollution flows into homes and schools, even health clinics.

The pollution is blatant and well known, and the laws are strong but never enforced. Regulators are blind to the pollution. It is as if the industry has a free pass to pollute because it creates jobs.

Herbert Kashililah, National Water Board, Tanzania

Pollution from textiles production is a very significant problem in Africa. Untreated effluent from textile factories is killing our rivers - there is no life downstream. These businesses need to stop polluting Africa's waters. We need economic growth, but it must never come at the expense of our environment and the health of our children.

Sareen Malik, Executive Secretary, African Civil Society Network for Water and Sanitation

Two indicative case studies which illustrate the impacts of textile sector pollution in Africa are set out below and draw on evidence generated by the DFID funded Fair Water Futures Programme.

Case study 1. Pollution of the Ngerengere River

- Pollution from Morogoro Industrial Complex in Tanzania is severely polluting the Ngerengere River which is an important source of water for downstream communities and Dar es Salaam.
- Industrial discharges to the river include those from 21st Century Textiles Ltd and leather industries with high levels of heavy metals, pH and colourants.
- Water in the river is unfit for domestic and agricultural use, according to TBS/EMA standards. Analysis shows electrical conductivity, an indicator of pollution at 1000 times typical level for clean rivers, and faecal coliforms at 8000 times the WHO safe level for drinking water.
- A Water Quality Survey found: *significant water quality problems associated with municipal and industry runoff from Morogoro town.* (GLOWS 2013 pp.44).
- Those living downstream have no choice but to use the polluted water for household purposes, for irrigation, gardening and watering livestock.
- Businesses and farms which use the river have suffered decreased production and lost jobs because of the pollution. Farmers along the river complain that the polluted water damages their crops.
- Communities living and farming at Kipera, Kingolwira, Bomba la Zambia and Sanga Sanga - have no option but to bathe their families, clean their clothes and homes and water their cattle and gardens with industrial waste-water - with severe implications for health.
- Tanzania's National Water Policy and Water Resources Management Act 2009 clearly establish water pollution as a serious offence and provide significant powers to authorities to take action.
- Those affected by the pollution have formally complained to the responsible authorities on many occasions since 2013. Despite formal complaints to the Basin Water Board, the District Health Office and the National Environment Management Council (NEMC), it is not clear what action has been taken to remedy the situation, and the pollution continues.
- Polluters say they cannot afford to refurbish treatment plants - yet the costs imposed on the public are many times greater than the costs of proper treatment.
- NEMC and the Basin Water Board 'do not have adequate budget' to follow up on the issue or inspect the sites.

Photo 1. Farmers abstracting polluted water from the Ngerengere River to water crops and livestock (Source: Water Witness)

Photo 2. The discharge from Morogoro industrial Complex to the Ngerengere showing foaming as a result of untreated industrial wastewater. (Source: Water Witness)

Photo 3. People living in Kingolwira without access to piped water are forced to use river water polluted by textiles effluent to meet their basic domestic needs. Source: Water Witness.

We have no alternative water supply, so we must use the Ngerengere River on a daily basis for bathing, washing, cooking and cleaning, watering livestock and vegetable gardens. The water is often very dirty, with a bad smell and colour. Diarrhoea and water borne disease is a big problem. The situation has been brought to the attention of the authorities on several occasions but there has been no improvement or action.

Kingolwira Ward Community

Case study 2. Pollution from textiles manufacture in Dar es Salaam

- Dar es Salaam's main river, the Msimbazi is severely polluted and imposes daily health risks for at least quarter of a million citizens.
- A major source of industrial pollution has been shown to be the city's textile mills, in particular NIDA Textiles Ltd. The discharge (see picture) results in river pH levels as high as 12 which can cause severe burns to skin.
- Chromium VI is a component in textile dye and long-term exposure causes cancer and birth defects. It was found in downstream waters at 75 times the legal limit.
- A Water Quality Survey carried out in 2014 found dangerous levels of heavy metals, pH and pathogenic material indicated by high faecal coliforms.

Photo 4. Untreated industrial effluent from NIDA Textiles Ltd discharging to the Msimbazi River in Dar es Salaam. Source: Water Witness

- Hundreds of thousands of citizens use or are affected by polluted Msimbazi: through irrigation, livestock watering, washing, digging sand, and crossing on foot. The river water mixes with water feeding shallow wells and boreholes: major sources of domestic drinking water. Water delivery pipes with leaking joints are laid in the riverbed. Flooding of the river means that polluted water regularly enters dwellings, clinics and schools.
- Health professionals report that the pollution and flooding have a serious health impact on the population, especially children. Wards along the river report high levels of water borne disease and are hotspots for devastating cholera outbreaks. Up to 231,587 people face serious health risks. The Msimbazi is used to irrigate and wash many of the vegetables consumed in Dar es Salaam, a city of over 4 million people.
- Polluting discharges are in direct contravention of the Water Resources Management Act 2009 and the Environment Management Act 2004.
- Affected communities have reported the issues to responsible authorities at the National Environment Management Council (NEMC), Illala Municipal Council and the Wami Ruvu Basin Water Office on multiple occasions since 2005. A formal report was submitted to the Directorate of Water Resources, the Basin Water Board and NEMC and a presentation in the presence of the Minster of Water at the Joint Water Sector Review 2014 resulted in a public commitment to address the problem.
- Despite these reports, pollution of the Msimbazi continues.
- The Wami-Ruvu Basin Water Board and NEMC have significant powers and a legal duty to control pollution: an offence punishable by fine or prison under WRMA 2009.

We have been channelling complaints to government since 2005 concerning industrial pollution of the Msimbazi River. The pollution threatens our health as we eat vegetables irrigated with the water. Contact with the pollution results in burnt skin and disease
Environment Committee of Kigogo Ward, September 2014

A video report featuring these case studies is available here

4.1.2. Key issues: Safe water supply, sanitation and hygiene

The textile and apparel value chain is highly labour intensive, with large numbers of workers engaged in Cut, Trim and Make (CTM) factories, as well as fabric and yarn manufacture and cotton growing and processing. Access to safe water, sanitation, and hygiene services for workers at facilities, and in the communities where they reside is therefore likely to be a significant factor in worker wellbeing and productivity, particularly given the contexts of WASH under-provision in Africa. The ILO identify safe working conditions including WASH among priority labour related challenges in Africa's garment manufacture sector.[103]

In addition to the risks of lost productivity due to water related illness, companies face regulatory and reputational risks should they not ensure adequate WASH within their own facilities, their supply chain, and under certain circumstances, within their employee's households. The responsibility of companies to ensure adequate WASH facilities for their employees is a long-established convention, and a basic requirement of the International Labour Organisations (ILO), Hygiene (Commerce and Offices) Convention, 1964 (No. 120), in place for 55 years and ratified by 51 countries. In most countries, there is a legal obligation for minimum WASH provisions under workplace health, safety and welfare regulations, and globally, the lack of adequate WASH access in the workplace is an indicator of modern slavery.[104] Low levels of compliance with these basic expectations are hinted at by 'the WASH pledge' developed by World Business Council on Sustainable Development (WBCSD) which requires companies to meet basic requirements for workplace WASH within three years of signing up.[105]

WASH access presents a clear risk and an opportunity for sustainable development in the sector in Africa. These are characterised in Table 4.

	SECTOR RISK	SECTOR OPPORTUNITY
WASH PROVISION ON-SITE	- Provision of adequate water supply, sanitation and hygiene to workers tends to be a local regulatory requirement as well as international labour conventions. - Reputational risk - Lost productivity and absenteeism - Vulnerability to COVID transmission	- Increased productivity and reduced absenteeism - Improved labour relations - COVID control - Demonstrable alignment with global good practice for example WASH4WORK pledge
WASH PROVISION IN COMMUNITIES	- Absenteeism as a result of water related ill-health - Reputational risks associated with under provision due to demographic change driven by company operations.	- Contribute to worker and community wellbeing and stakeholder relationships. - Improved health and wellbeing of staff, their families and communities - COVID control in the community - Demonstrable contributions to

Table 4. Risks and opportunities for textiles and apparel sector associated with on-site and offsite WASH

[103] ILO (2018) *Improving Worker Wellbeing in Ethiopia's Garment Industry Through the Model of Shared Responsibility*.
[104] Ethical Trading Initiative (2017) 'Base Code Guidance: Modern Slavery'. Available at: https://s3-eu-west-1.amazonaws.com/www.ethicaltrade.org.files/shared_resources/eti_base_code_guidance_modern_slavery_web.pdf?BKIEvhNaToVbo7SiBJk9cJlOKXMm5T_2
[105] WBCSD (2012). Available at: https://www.wbcsd.org/Programs/Food-and-Nature/Water/Water-stewardship/WASH-access-to-water-sanitation-and-hygiene/The-WASH-Pledge (Accessed 20 April 2021)

The benefits of improved WASH provision as a result of improved health and wellbeing are likely to be significant. Research shows that for every US$1 invested in WASH, over $4 is generated in economic returns through increased productivity.[106] Research also specifically highlights the importance of good health and WASH facilities for women workers in the textile and apparel sector: the provision of health education and on-site services for women in factories by Levis is reported to have reduced absenteeism by 55% and reduced staff turnover from 50% to 12%.[107] WASH facilities to support menstrual hygiene management are also a priority for the sector: 96% of women workers surveyed in Senegal, reported they regularly do not go to work while they were menstruating. [108]

> *The need for clean, safe water is not just an environmental issue, but a human rights issue. We want to help ensure that everyone touched by our business can have this need met. Not only do we rely on water to create our products, but the people who make our clothes must be able to care for themselves and their families, including with access to water, sanitation, and hygiene – if they can't thrive in the communities where they live, neither can we.*
>
> **GAP Inc**

Others highlight the need and opportunity for the sector to show leadership on this issue:

> *Many thousands of women are employed in the textile and apparel sector in Africa. We don't know how well their WASH needs are provided for in the workplace or in their communities because the data isn't collected. We don't know if they have the services needed to protect against COVID.*
>
> *It is time for these businesses to step up, show leadership and demonstrate their credibility as responsible players. They have the potential to make an important contribution to SDG6 delivery and delivering on the goal of universal WASH access.*
>
> **Sareen Malik, Executive Secretary, African Civil Society Network for Water and Sanitation**

Photo 5: Ace Apparel clothing factory employs c.900 women in the industrial zone of Maputsoe, Lesotho where the owners say they only have water about two thirds of the time and need to store potable water in drums for staff drinking and washing. Water for toilets is collected by bucket from a trough. Source: UNDP/Marinovich.

[106] UN Global Compact Wash4Work initiative (2020) The business case for WASH. [Online] Available at: https://wash4work.org/business-case/ (Accessed 10 December 2020)
[107] UN Global Compact, ibid.
[108] House, S., Mahon, T. and Cavill, S. (2012) 'Menstrual hygiene matters hygiene around the world', *UKaid*, 1(1), pp. 2–343.

4.1.3. Key issues: Emerging examples of good practice on water

Whilst our study identifies multiple serious concerns about the performance of the textiles and apparel sector in Africa in relation to water, we also find multiple examples of good practice. Some producers, brands and government regulators are doing a great job to mitigate risks and ensure that production is based on sustainable production, pollution control and strong safeguarding of employee well-being. This provides both hope for the future – signalling that Africa can be a beacon of responsible sector production – and an established pathway for laggard companies to follow. Examples are provided here:

Case study 3: Commitment to water stewardship by Tooku, Tanzania

Tooku Garments Ltd. employs several thousand workers in Dar es Salaam to manufacture clothing for export, primarily denim jeans for North American and European markets. The company provides much needed employment opportunities, particularly to young people and women in Africa's most rapidly growing city. Site managers are acutely aware of the pollution risks they pose, and of the need for decent facilities for staff. In response to this they are working closely with site managers of the Benjamin Mkapa Special Economic Zone, the Economic Production Zone Authority (EPZA), the NGO Shahidi wa Maji and GIZ to ensure good water stewardship. The company is committed to certifying its operations against the Alliance for Water Stewardship (AWS) standard which will help ensure compliance with local water laws and drive continual improvements in water performance. The company's leadership on responsible water use is also driving collective action with government, NGO's and local communities to improve levels of access to safe WASH in the communities where workers live.

Photo 6,7 and 8. Tooku is working to ensure global best practice in its production site through alignment with the AWS Standard, on safe WASH provision for workers, efficient water use and re-use and proper treatment of industrial wastewater prior to discharge from the site. Source: Franziska Jautz, CSR & Compliance Manager of Tanzania Tooku Garments Co., Ltd.

Case study 4: Collective action for responsible water use at Hawassa Industrial Park, Ethiopia

Hawassa Industrial Park is the jewel in the crown of Ethiopia's economic development and job creation strategy – with a target of creating over 70 thousand jobs almost exclusively in the textiles and apparel sectors. Cognisant of how important good water stewardship is for the realisation of these plans, the Industrial Parks Development Authority is working closely with companies including Indochine, PVH and H&M to ensure zero pollution, safe access to water supply, sanitation and hygiene, ecosystem protection and good water governance. The IPDC has committed to implementing the AWS water stewardship standard at five Industrial Parks to ensure sustainable resource use and to help ensure decent working conditions for staff. Although the work is just beginning and faces multiple challenges including high natural levels of fluoride in groundwater, it looks set to help Ethiopia to realise its ambitions as a globally important and sustainable source of textiles and apparel for global markets (see Section 7.3).

Photo 9 Many thousands of fashion sector workers at Hawassa Industrial Park are set to benefit from commitment to responsible water use and WASH provision by government and the private sector. Source: Water Witness

5. Country level analysis

To support understanding of water impacts, risks and opportunities within the textile and apparel sector, and their relevance for sustainable development, in this section we analyse priority countries where heavy dependence on the sector coincides with significant water challenges. In each country, the textile and apparel sector contributes 20-60% of export revenue and between 5-30% of GDP. Table 5 sets out current performance in each of these countries against key water indicators and provides an overview of water security challenges. Priority water and climate risks affecting or exacerbated by the sector are explored further, along with stakeholders, complimentary initiatives and partners. Data is drawn from World Bank statistics, local sources and key informant interviews.

Table 5. Status of key water indicators in selected countries (Data from JMP/UN-SDG Country Profiles, 2017 unless otherwise stated)

	Ethiopia	***Lesotho***	***Madagascar***	***Mauritius***
Pop. with access to at least basic sanitation	7%	43%	11%	96%
Pop. with basic handwashing facilities on premises	8%	2%	51% (2015)	Not reported
Pop. practicing open defecation	22%	27%	45%	0%
Pop. with access to at least basic drinking water services	41%	69%	54%	100%
Pop. using surface water for Drinking Water source	9%	7%	13%	0%
Implementation of IWRM (2020)	Medium-low 41	Medium-low 45	Medium -low 38	Medium-high 68
Water stress	32% (medium-high)	Low	11% (medium)	26% (medium- high)
Water scarcity	Economic water scarcity	Approaching physical water scarcity	Approaching physical water scarcity	Not scarce
Climate Risk Index (2020)	70	64	40	105
Pop. below poverty line	31%	27%	78%	0%
Water use efficiency (US$ per m^3)	3.2	39.2 (2009)	0.7 (2005)	17.6
Oversees Development Assistance spend on WASH (US$/year)	195 million	10.3 million	24.3 million	0.4 million
Level of user/community participation in WASH	3 - high	Not reported	2 - moderate	Not reported
Level of user/community participation in WRM	3- high	Not reported	1- Low	Not reported
Water bodies with good ambient water quality	Not reported	17%	91%	Not reported
Transboundary water bodies w/ joint management agreements in place	Not reported	50%	n/a	n/a

5.1. Ethiopia*

5.1.1. Sector contexts and trends

- Ethiopia has one of the fastest growing economies globally, and at 110 million people, is the second most populous country in Africa. Is seen as a 'rising star' in the textile and apparel production.
- **Main Products:** denim, yarn, knitted garments, embroidery, accessory cords (for shoelaces, shorts, sport trousers, sport bag draw cords), woven garments, bags, shirts, tops, pants, shorts, home wear, sweatshirts, pajamas, dresses, leggings, skirts, nightdresses, underwear, polos, trousers, singlet, work wear, and bed sheets.
- **Export markets**: Ethiopia's export value grew from $13.7m as average for the 2005-2009 period, to $110m in 2017. Table 6 shows the main destinations of textile and apparel exports from Ethiopia.[110]

Water Risk Map of Ethiopia. Areas highlighted in Grey are main textile and apparel production geographies. The darker the red the higher the business water risk. Adapted from the World Resources Institute Aqueduct (2020)

Table 6. Export values of Ethiopian textile and apparels to top 10 destination countries. Source: World Bank (2021)

Top 10 Export destination	Export Value (US$) 2018
United States	32,848,778.90
Italy	6,566,558.31
Germany	4,845,568.83
China	2,757,406.62
Sub-Saharan Africa	2,375,104.75
France	1,404,765.01
United Kingdom	1,298,866.50
Turkey	1,254,414.40
Kenya	954,923.03
Bangladesh	912,239.33

- **Employment and wellbeing**: 25% of jobs created in manufacturing in 2020 were attributed to the textile and apparel factories. The sector employs c. 70,000 workers of which 80% to 95% are women[111]. Ethiopia has no minimum wage and wages are reported as typically very low: US $26

* Unless referenced, data is drawn from an in-depth Water Security Scan for the Textile and Apparel industry in Ethiopia, which supplements this report. Samuel, E., et al (2020) *Water Security Scan: Ethiopian Textile and Apparel Sector*: *A textile and apparel water risk and water stewardship opportunity analysis*. Water Witness Ethiopia. Addis Ababa.

[110] World Bank (2021) The World Integrated Trade Solution (WITS) software provides access to international merchandise trade, tariff and non-tariff measures (NTM) data, Available at: https://wits.worldbank.org/ (Accessed: 15 June 2021)

[111] MoTI, KI interview

pcm at entry level[112] - a key challenge for the labour force, alongside gender pay disparities, limited career development opportunities, and lack of safe and affordable housing, especially for women.

- **Trends**: Ethiopian aspires to be one of Africa's largest textile and apparel exporters. According to the Ethiopian Investment Commission (EIC), FDI in the textile industry has risen from US $166m in 2014 to US $1.2b in 2017 with exporting firms accounting for 80%[113]. Ethiopia exported only a handful of products to five markets in 2004, but now exports a wide range of goods to over 20 destinations (see Table 4).

5.1.2. Priority water issues and risks

- **Water availability and quality**: poor quality, insufficient quantity, limited waste treatment, and lack of safe solid waste management facilities are key challenges. Industrial parks and SMEs in areas of naturally difficult water quality, such as the Rift valley, face problems with high levels of fluoride. All facilities across the country face water scarcity risks and increased competition over water resources with other sectors and countries.
- **Poor water quality leads to poor quality outputs and costly damage to production machinery**. High water treatment costs to offset these issues lead to increasing production costs. High demand for scarce resources on the other hand impacts production rates and puts production sites in competition for water with local communities and ecosystems.
- **These issues present financial, physical, and reputational challenges for multinational corporations.** These issues may have contributed to making Ethiopia less attractive to global buyers than originally anticipated. This will be a critical GDP and livelihood development risk for the country.[114]
- **WASH:** Access to safely managed water in urban areas is at 63% and in rural areas at 4% (JMP figures, 2020). Sanitation coverage in urban areas is about 20%, and about 7% in rural areas (2017). Data on access to WASH in production areas is not available but is reportedly 'better' relative to other urban and rural communities[115].
- **Water governance:** Effectively tackling pollution from the sectors requires rapid development of public and private sector capacity on pollution control, regulatory compliance, and water infrastructure management. There is some confusion over regulatory mandates for water which need urgent resolution. Unless these issues are addressed, the limited institutional capacity available will be unable to mitigate the risks associated with expanded production aspired to by

[112] Gonsamo, D. D. (2019) 'Challenges and Coping Strategies of Rural Girls to the New Industrial Working Culture: The Case of Female Workers in Hawassa Industrial Park', *IOSR Journal of Humanities and Social Science (IOSR-JHSS*, 24(9), pp. 26–39. doi: 10.9790/0837-2409102639

[113] Staritz C., and Whitfield L., (2019) *The Oxford Handbook of the Ethiopian Economy*, Oxford University Press.

[114] Samuel, E., et al (2020) *Water Security Scan: Ethiopian Textile and Apparel Sector*: *A textile and apparel water risk and water stewardship opportunity analysis*. Water Witness Ethiopia. Addis Ababa.

[115] Samuel, E., et al. Ibid

the government.[116] Water stewardship and greater stakeholder participation in water governance is essential.

5.1.3. Stakeholders, beneficiaries, and existing initiatives

STAKEHOLDER TYPE	STAKEHOLDER ORGANISATIONS
GOVERNMENT	**Ministries**
	Ministry of Trade and Industry
	Ministry of Water, Irrigation and Electricity
	Ministry of Social and Labour Affairs
	Cotton, Textile and Garment sector bodies – gov't and non-gov't
	a) Government led:
	Ethiopian Investment Commission
	Ethiopia Textiles Industry Development Institute
	Industrial Parks Development Commission
	Leather Industry Development Institute
	b) Private sector-led:
	Chambers of Commerce
	Ethiopian Cotton Producers, Ginners and Exporters Association
	Ethiopia Leather Industries Association
	Ethiopia Textiles and Garment Manufacturers Association
	Standards focused bodies
	Ethiopian Authority for Standardisation
	Ethiopia Cleaner Production Centre
	Ethiopian Quality Assurance & Certification
	Water Resource Management and Environment
	Basin Development Authority
	+ Individual Catchment Authorities
	Ethiopia Environment Commission (Forest, Environment, and Climate Change Commission)
	Government and NGOs
	CSA (the charities regulator of local NGOs)
DEVELOPMENT BANKS, MULTINATIONAL ORGANIZATIONS, DONOR AGENCIES	African Development Bank
	Development Bank of Ethiopia
	World Bank
	DFID (UK)
	GIZ (Germany)
	2030 WRG (World Bank)
	International Trade Centre (UN)
	Sida (Sweden)

[116] Samuel, E., et al (2020) *Water Security Scan: Ethiopian Textile and Apparel Sector*: *A textile and apparel water risk and water stewardship opportunity analysis*. Water Witness Ethiopia. Addis Ababa.

	UNIDO (UN)		
PRIVATE SECTOR	**Brands sourcing or have sourced from Ethiopia**		
	Cartoon Network	Levi's	Otto Group
	Children's Place	Mango	PVH (Calvin Klein, Tommy Hilfiger, Izod)
	H&M	Navigare	Superior Group of Companies
	Hanes Inc	Pittards	
	Production units in Ethiopia		
	Almeda textile Plc,	HELA INDOCHINE Apparel PLC	PT SUMBER MAKMUR / Sumbiri Intimate Apparel PLC
	ARVIND Life Style Apparel PLC	HIRDARAMANI Garment PLC	PUNG KOOK ETHIOPIA PLC.
	ARVIND Lifestyle Apparel Africa PLC (ANF GULF)	Huajian Shoe Co Ltd	PVH ARVIND Manufacturing PLC
	Ashton Apparel Manufacturing PLC	INDOCHINE Apparel PLC	QUADRANT Apparel Group
	MAA Garments and Textiles	ISABELA Socks Manufacturing PLC	RAYMOND (SLIVER SPARK Apparel)
	Yuechen Textiles	ITL Ethiopia Labels Manufacturing PLC	Rift Valley Apparel/ Praline
	Ayka Addis	Jas-holding Garment Solutions PLC	SAYTEX SPINNING PLC.
	BEST CORPORATION PLC	JAY JAY Garment PLC	SCM Garments Knit Tex PLC
	C & H Garments PLC	KPR Exports PLC	SEYANG CORPORATION
	EPIC Apparel PLC	JIANGSU GOLDEN ISLAND Group	Shuaije Textile Plc
	CARVICO ETHIOPIA PLC.	JP Textile (Ethiopia) Co. Ltd /Wuxi/	Shunts ETP Garments PLC
	CENTURY Gar. PLC (Busana /PTU)	Kaipu Manufacturing Plc	New wide Garment Ethiopia Branch Company
	Chang Cheng Packaging Co Ltd	Kanoria Africa PLC,	Strathmore Apparel
	CHARGEURS Fashion Technology PLC	KEI Industrial Engineering Consultancy PLC	TAL Garment Manufacturing PLC
	Desta PLC	ONTEX Hygienic Disposal PLC	TRYBUS BRIDGTEX PLC.
	Dongfang Spinning, Printing and Dyeing	KEPA Textile Plc	Vests Garment production PLC
	EVEREST Textile CO. Ltd	Linde Clothing	Haibo Manufacturing Plc
	EVERTOP Sports Wear PLC	LYU SHOUTAO Factory Plc.	Hailemichael Export PLC
	George Shoe Ethiopia Pl c.		
	Influential water-using actors from other business sectors		
	Brewers – AB InBev, Bavaria, Diageo, Heineken Bottled Water – Nestle Chemicals – Dow		
NGOS	Cotton Made in Africa, IDH Trade Initiative, GIZ, PAN Ethiopia		

	Solidaridad, SIWI and the Sweden Textile Water Initiative, WaterAid, WWF
ACADEMIC AND RESEARCH	**ACADEMIC**: Addis Ababa University, Arbaminch University, Axum University, Bahir Dar University – the EiTEX Programme, Hawassa University, Kombolcha Institute of Technology, Mekele University
	ETHIOPIAN RESEARCH CENTRES: Ethiopian Agricultural Research Institute, Land and Water Research Centre
	INTERNATIONAL RESEARCH CENTRES: IWRI, IWMI
INITIATIVES	DFID (with Enterprise Partners) - Green Industry Ethiopia, Enterprise Partners/Private Enterprise Programme (EPEP),
	FAO - Commodity value chain: cotton
	Green Global Green Growth Initiative - Eco-Industrial Parks,
	GIZ – eTex, - NATURES,
	INTERNATIONAL TRADE CENTRE - Resource efficiency in the textile sector,
	SIWI / Sweden Textiles Water Initiative (STWI), USAID - Green economy H20,
	World Bank - Eco-Industrial Parks and Green Industry Ethiopia,
	UNIDO (co-funded by EU) - Modjo Leather City (MLC) in cooperation with the MoTI, Leather Industry Development Institute, IPDC and other institutions - "Leather Initiative for Sustainable Employment Creation".

5.1.4. Opportunities, innovations, barriers and learning priorities for improved water stewardship

Opportunities

- The interest of Ethiopian public and private sectors to ensure growth and transformation in the textile and apparel sector is strong. The fact that the industry is developing allows adjustments to ensure the application of good environmental practices in the design and development of new industrial facilities, but also to adopt such practices at older ones to maintain competitiveness. There is momentum, interest, and drive to include water stewardship plans and practices at factories and industrial parks to mitigate risks for the industry and to make it a forerunner in terms of social and environmental responsibility. The adoption of water stewardship is timely, for both public and private stakeholders, as changes in the global textile and apparel trade dynamics continue to play in favour of Ethiopia.
- The government of Ethiopia as a key driver of good water stewardship has expressed political commitments towards green development (*policies, Green Legacy Initiative…*).
- The creation of vertically integrated industrial zones and establishment of industrial parks is already a step towards production efficiency and cuts down emission and environmental footprints from the perspective of buying brands. Global brands continue to express interest in promoting sustainable production in Ethiopia.
- In partnership with Water Witness Ethiopia, the IPDC is committed to implement the AWS Standard at five industrial parks that host local and foreign producers.

- A host of other initiatives mentioned above, encourage environmental leadership, and provide space to advance water stewardship to complement other social and environmental actions promoted by these initiatives. An initiative alignment process, driven by IPDC, Water Witness and others will seek to establish these complementarities and value for money.

Innovations:

- There are several innovations in the textile and apparel sector, particularly at vertically integrated industrial parks and several standalone factories. These include:
    - Improved water supply systems providing reliable, good quality water in sufficient, quantity.
    - Wastewater treatment plants and systems promising zero liquid discharge (and advanced conventional treatment).
    - Surface water and landscape management at these parks and factories offer ecosystem and flood/drought management benefits through for example storage ponds and sustainable urban drainage systems.
    - Examples of innovation driven by AWS standard implementation at other facilities in Ethiopia, e.g., by Nestle Water in the Oromia region.
    - Solar sludge drying project in Bole Lemi IP to reduce sludge volume. Research and development activities to turn sludge into construction inputs/building blocks are underway.

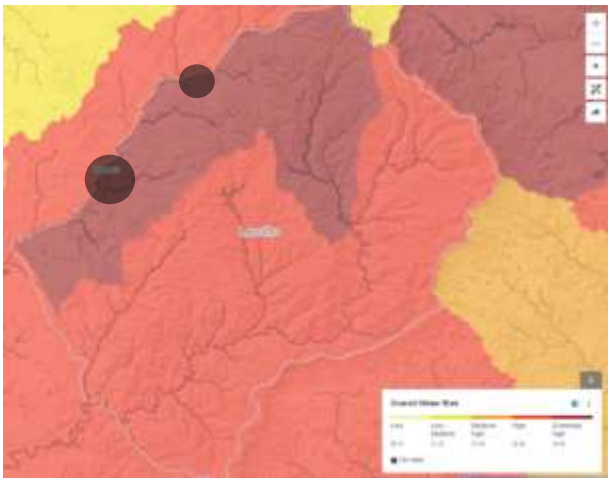
Barriers:

- Water is commonly misunderstood as an abundant resource and its value is undermined by very low cost, cheap annual abstraction permit renewal costs, lack of regulation and enforcement - resulting in inefficient use.
- Businesses in Ethiopia are yet to translate sustainability commitments into practice, possibly due to resourcing, capacity and prioritisation issues. For example: Foreign companies which have signed international sustainability reporting or performance commitments are less pro-active on water stewardship activities than expected (e.g., CEO Water Mandate, EMS, etc).
- Ethiopia's existing textile and apparel sector experts require support to apply modern technology and management systems. Upgrading older factories to meet international standards is cost intensive and may not be attractive for provide quick returns on investment. A lack of finance and weak incentives for improved water stewardship are barriers that need to be overcome.

5.2. Lesotho

5.2.1. Sector contexts and trends

- Despite the water resources of its highlands, land-locked Lesotho is projected to become 'water stressed' by 2025[117]. Textile and apparel production sector accounted for 58% of total export value in 2017. Industry hubs lie in 'extremely high' water risk areas in the low-lying, north-west, around Maseru and Maputsoe[118].
- **Main Products:** include woven garments including denim, workwear, womenswear, and menswear. 80% of fabrics (cotton and polyester) originate from China, India, and Pakistan, the remainder from various African sources.[119]
- **Export markets**:



Map of Lesotho Water Risk - with legend. Shaded areas in dark grey represent the locations of major textile production hubs. Adapted from the World Resources Institute Aqueduct (2020)

Table 7 Export values of textile and apparels exports from Lesotho to top 10 destination countries. Source: World Bank (2021)

Top 10 destinations	Export (US$ Thousand) 2017
United States	305,421,126.86
South Africa	190,378,127.51
Eswatini	10,679,174.49
Canada	5,406,103.66
Germany	3,401,235.28
Botswana	1,658,071.03
Mauritius	1,579,627.48
Zimbabwe	1,115,724.19
Australia	680,172.70
Other Asia, nes	655,367.90

- **Employment**: > 40,000 workers, 80% are young women. Highly competitive wage rates (around $80 US a month for unskilled workers), relatively sophisticated value-adding services, and skilled labour force.[120]
- **Livelihoods**: Most workers come from disadvantaged rural areas, where subsistence farming and livelihoods are vulnerable to climate change and water shortages. Demographic pressure on

[117] UNECA (1999) *Global Environmental outlook*. United Nations Economic Commission for Africa (UNECA), Addis Abeba, Earthscan, London.
[118] According to KIIs.
[119] Fiber2Fashion (2020) Lesotho InfoPack. [Online] Available at: https://www.fibre2fashion.com/industry-article/3009/lesotho-info-pack-overview-of-textile-and-apparel-industry (Accessed 11 November 2020)
[120] Ministry of Trade and Industry of Lesotho (2017), *Lesotho's textile, apparel, and footwear manufacturing industry synopsis.* [Online] https://www.tralac.org/news/article/11501-lesotho-s-textiles-apparel-and-footwear-manufacturing-industry.html (Accessed 2020-10-16)

urban housing and services. Indirect employment opportunities for formal and informal SMEs around factories includes packaging, road freight, courier services, clearing agents, security, passenger transport, food traders, residential accommodation, water, electrical and telecommunication utilities, etc. [121]

- **Trends**: Factories are in constant need for labour, and some are considering moving beyond urban to rural areas.[122]

5.2.2. Priority water & climate issues & risks[123]

- **Water availability and quality:** A lack of effluent and wastewater treatment facilities capable of treating denim wastewater is a major problem for Lesotho. Tensions between communities and industries in urban areas are common. Communities complain of factories disposing of solid waste in catchments, as well as untreated or partially treated wastewater which is blue/indigo and highly visible, foul smelling, and renders receiving water unfit for human and livestock consumption. According to informants:

> *There are tensions in urban areas between the communities and the textile industry because of water pollution turning rivers to blue. Communities complain about the smell of water and health issues for livestock and people living close by.*
>
> **Senior Official, Lesotho Department of Water Affairs**

- Major health problems have been recorded in communities around factories. Water utilities are asked to give water preferentially to industries, sometimes leaving communities without enough water supply to meet their needs for many days. A new government initiative to improve water supply to communities is under way.

- **WASH:** WASH coverage is improving but access to basic sanitation and hygiene still low. In 2020, the government is developing a new WASH policy, primarily to increase access to sanitation. Levels of access for sector workers on-site and in communities are not known.

- **Water governance** Water in the highlands is abundant, but it is diverted to industrial hubs in South Africa, while communities and industries in the lowlands suffer from water shortages. Lack of financing, inadequate infrastructure, coupled with a mismatch between economic development policies and investment in water security provides a clear case for water stewardship among industries in Lesotho, and downstream in South Africa.

[121] Morris, M. and Staritz, C. (2017) 'Industrial upgrading and development in Lesotho's apparel industry: global value chains, foreign direct investment, and market diversification', *Oxford Development Studies*, 45(3), pp. 303–320. doi: 10.1080/13600818.2016.1237624.
[122] According to KIIs
[123] According to KIIs.

5.2.3. Stakeholders, beneficiaries, and existing initiatives

STAKEHOLDER TYPE	STAKEHOLDER ORGANISATIONS		
GOVERNMENT	**Ministries**		
	Ministry of Trade & Industry		
	Department of Water Affairs		
	Offices of the Commissioner of Water		
	Lesotho National Development Corporation		
DEVELOPMENT BANKS, DONOR AGENCIES, MULTILATERALS, UN AGENCIES	USAID		
	GIZ		
PRIVATE SECTOR	**Brands sourcing or have sourced from Lesotho**		
	Adidas	Levi's Strauss	Reebok
	Hanes Inc		
	There is considerable interest for sourcing by Woolworths, Pep, Edgars, and Mr Price in South Africa, and from H&M and Nike globally.		
	Textile and Apparel Producers		
	Ace Apparel (incl. LJJ)	Kopano Textiles	Shinning Century
	Afri-Expo Textiles	Leo Garments	Solomon Trading
	Asia Garments	Lesotho Cartons	Spilla Jeans
	Basotho Leisurewear	Lesotho Knit Garments	Star Sewing Technology
	Boming Lai Teng	Lesotho Paper & Box	Sun Textiles
	Bull Clothing	Lesotho Precious Garments	Super Knitting
	C & Y Garments Co. (Nien Hsing group)	Letsema Textiles	Tai Yuan Garments
	CGM Industrial (CGM Group)	Liberation Clothing	T-Shirt City Maseru
	Chainex Maseru	Long River Garment	Twilight Clothing
	CMT Trading Maputsoe	Lucky Manufacturing	
		Luqy Manufacturers	
	Eclat Evergood Textiles	Mabeoana Craft Matsieng	
	Eco-Solutions	Maseru E Textiles	
	Ever Successful Textile Maseru	Mauri Garments	
	Ever Unison Garment	Shinning Century Maseru	
	Export Unlimited	Max Print	
	Fantastic Clothing	Middle Sky Lesotho	
	Formosa Textiles (Vertical production)	MTS Enterprises	
	Global Garments Co.	Nanabolela	
	GTA Plastics	New Epoch Knitting	
	Hippo Knitting	Nien Hsing International	
	Hong Da Lesotho	Niminta Fashions	
	Humin Jeanswear	Peter Manufacturers Blond Garment	
	J & S Fashions	Presitex Enterprises	
	Jaguar Shoes	Rebirth Recycling	
	Jee Clothing	Reflex Footwear	
	Joans Enterprises	Remmoho Compliance	
	Johane Garment	Seshoeshoe Production	
	Jonsson Manufacturing	Shiang Bei Maseru	

NGOS	Transformation Society Lesotho
ACADEMIC AND RESEARCH	National university of Lesotho
	Institute of Development Management
	Lesotho Textile Exporters Association
INITIATIVES	**Integrated Catchment Management** in Lesotho is a 3-year programme funded by the EU, BMZ 2020-2023 and implemented by GIZ, the Department of Water Affairs and the Ministry of Water, in collaboration with farmer organizations, donors, government institutions and rural communities. The goal of the ICM project is sustainable management of land and water resources in Lesotho. It is aimed at combatting land degradation and the depletion of water catchments in the country

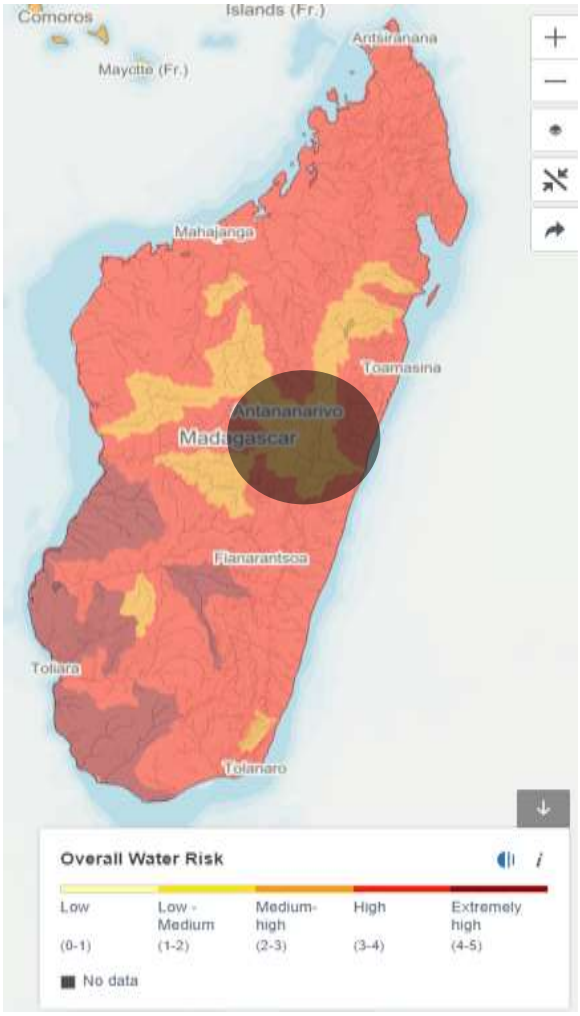
5.2.4. Opportunities, innovations, barriers and learning priorities for improved water stewardship[124]

- **Address disconnects** between economic growth strategy and the management, protection and regulation of water resources. Larger water users should be held to account for responsible use, effective pollution control and for contribution to shared water security.
- **Instigate collective action** on shared water risks and opportunities within the textile, mining, and farming industries through corporate water stewardship.
- **Reform water use tariff systems**: The industrial water and sewage tariffs include a base of US$28 and US$1.12 for every 1,000 litres of water consumed and requires reform to properly reflect the true value of water, to incentivise responsible use and generate revenue for management.
- **Evidence based advocacy on water risks and pollution control, locally and in the value chain.** Buyers and consumers in export markets should be sensitised to the problems created by the sector and apply pressure ion local producers top adopt responsible practice. Water stewardship standards could play a key role to guide and recognise responsible users.[125]
- **Ensure payment for watershed services** by downstream South African businesses (especially in the mining sector), who derive strategic benefit from the transboundary resource, especially those areas benefiting from the Lesotho Highland Water Project.

[124] According to KIIs, unless otherwise referenced.
[125] Hepworth N D and Sojamo S E (2014). Water Partnership Landscape Analysis: Scoping opportunities in SADC, GIZ/SADC Water Division/Water Witness International, Edinburgh, UK.

5.3. Madagascar

5.3.1. Sector context and trends



Map of Madagascar Water Risk - with legend. Shaded areas in dark grey represent the locations of major textile production hubs. Adapted from the World Resources Institute (2020)

- Madagascar's textile and apparel industry includes more than 100 global and local firms responsible for 19.4% of GDP. The main production units are within 'export processing zones' around Antananarivo, and Antsirabe. A new 'Moramanga Textile City' has been developed in the main economic corridor of Antananarivo-Toamasina, where allotments over 80 hectares accommodate factories manufacturing across the entire textile and fabric value chain.[126]
- **Main Products:** Wovens (52%), Knitwear (14%), Lingerie (7%), Embroidery (7%), Denim (4%) Kids wear (7%), Workwear (2%).[127]
- **Export markets**: Madagascar's textile and apparel industry receives the 2nd largest share of FDI after the mining sector. It contributes 30% of export revenues. Madagascar was one of the first in Africa to establish an apparel industry and is currently the largest apparel exporter to European Union in Sub-Saharan Africa.
- **Employment**: The industry employs more than 120,000 people (30% of jobs in the country's industrial sector). Approximately 80% of workers are women[128].
- **Livelihoods**: Most workers come from disadvantaged rural areas, leaving subsistence farming for a secured monthly salary in cities. This creates pressure on cities in terms of housing and services.[129]
- **Trends**: Madagascar has recorded the highest sectoral growth rates in the 2000s, after Vietnam and China due to rigorous proactive development of the sector. The political crisis leading to an economic downturn between 2009-2013, saw production come to a stand-still in many

[126] De Coster, J. (2017) *Destination Madagascar. An overview of the textile and apparel industry in Madagascar.* Fiber2Fashion. [Online] https://www.fibre2fashion.com/industry-article/7957/destination-madagascar (Accessed 16 October 2020)

[127] De coster, Ibid.

[128] UNICEF Wash Programme for Madagascar, Available at: https://www.unicef.org/madagascar/en/programme/wash [Online} (Accessed August 2020)

[129] According to KIIs

factories. Since then, recovery efforts have focused on increasing textile exports. Employment grew from ca 80,000 in 2014 to ca 120,000. The textile and apparel industry remains a major source of GDP– continually contributing between 10-25%.[130]

- European diaspora and Mauritian firms based in Madagascar focus on the EU market are well placed to adopt sustainability standards. Some French-owned producers supply high-end fashion products for luxurious brands. Malagasy firms and water processing units are in a weaker position to lead stewardship efforts and tend to be dependent on subcontracting from European and Mauritian owned firms.[131]

Table 8 Export values for textiles and garments exported by Madagascar in 2019 to top 10 destination countries. Source: World Bank (2021).

Top 10 Export Destinations	Export (US$) 2019
United States	169,767,402.91
France	129,563,667.83
South Africa	65,807,216.62
Germany	52,010,346.91
United Kingdom	39,025,138.56
Unspecified	23,477,555.89
Spain	11,651,447.55
Netherlands	6,287,678.91
Italy	6,193,971.82
Belgium	5,980,969.97

5.3.2. Priority water & climate issues & risks[132]

- **Water availability and quality**: Water availability is not reported to be a current constraint, but there are few groundwater assessments and little knowledge of whether abstraction is sustainable. The main priority issue is waste-water management. Compliance with water laws, which require waste-water treatment, is poor, and enforcement is weak. Factories tend to release untreated water into river systems. Industries are required to conduct an Environmental Impact Assessment (EIA) prior to establishment, setting targets and goals for managing wastewater. However, these are seldom followed-up on. Local government monitoring mechanisms are weak, and in most cases, there are no enforcement or periodic audits due to shortages in staff and integrity issues. Only the capital city has laboratory facilities for wastewater testing, the remaining regions lack both the technical and human capacity to conduct controls. However, each region has a complaint response mechanism and should maintain a log of wastewater-related complaints.

[130] De Coster, J. (2017) *Destination Madagascar. An overview of the textile and apparel industry in Madagascar.* Fiber2Fashion. [Online] https://www.fibre2fashion.com/industry-article/7957/destination-madagascar (Accessed 16 October 2020)
[131] Staritz, C. and Morris, M. (2013) *Local Embeddedness and Economic and Social Upgrading in Madagascar's Export Apparel Industry*, *SSRN Electronic Journal*. doi: 10.2139/ssrn.2237506.
[132] According to KIIs, unless otherwise referenced.

> *Waste-water management is the main issue for Madagascar. We read in newspapers that downstream communities face water pollution challenges because there is no treatment. Our water law obliges companies to treat their wastewater, but industries and industrial zones are not complying, except for a handful companies, who do so voluntarily.*
>
> **NGO Director, Madagascar**

- **WASH:** Madagascar has the third lowest coverage of improved WASH of any country globally, with more than half of the population of Madagascar without access to safely managed water sources. Less than 10% of the population has access to sanitation services.[133] And half the population lacks basic handwashing facilities. There is no data available on levels of access to WASH on site in textile and apparel factories or in communities where workers live.
- **Water governance:** the country is committed to IWRM and catchment-wide planning which is decentralized to the country's 22 regions. However, water boards in most regions are severely understaffed, underfinanced and lack the technical, financial, or human capacity to monitor or manage water resources. The country adopts, in theory, a 'polluter pays' approach, but the approach remains voluntary and is seldom enforced.

5.3.3. Stakeholders, beneficiaries and existing initiatives

STAKEHOLDER TYPE	STAKEHOLDER ORGANISATIONS		
GOVERNMENT	Ministry of Water, Energy and Hydrocarbons		
	- Directeur du Développement des Infrastructures Electrique (DDIEE)		
	- Direction de l'Alimentation en Eau Potable		
	Ministry of Environment and Sustainable Development or Ministère de l'Environnement et du Développement Durable (MEDD)		
	National Water and Sanitation Authority or Autorité Nationale de l'Eau et de l'Assainissement (ANDEA)		
	National Office for the Environment or ONE (Office National pour l'Environnement)		
	The Economic Development Board of Madagascar (EDBM) is a reference partner for investments in Madagascar. As an investment promotion agency, EDBM has set objectives to strengthen the competitiveness of the Malagasy private sector, to increase Foreign Direct Investment (FDI), to elaborate and to recommend business incentives for private investments in Madagascar, to support investors in their implementation steps and/or expansion by providing dedicated services by specialized Advisors (chargé of sector portfolio) and through its one stop shop.		
DEVELOPMENT BANKS, DONOR AGENCIES, MULTILATERALS, UN AGENCIES	USAID, European Union, UNICEF, World Bank, AfDB, UK FCDO		
PRIVATE SECTOR	**Brands sourcing or have sourced from Madagascar**		
	Adidas	Levi's Strauss	PVH (Calvin Klein, Tommy Hilfiger etc)
	Asos	Marks & Spencer's	Reebok
	Dockers	Next	SGC
	Etam	Otto Group	Tesco
	George (ASDA)	Puma	

[133] UNICEF Wash Programme for Madagascar, Available at: https://www.unicef.org/madagascar/en/programme/wash (Accessed in August 2020)

	Textile and Apparel Producers		
	Association of free zones companies GEFP (Groupement des Entreprises Franches et Partenaires à Madagascar)		
	Moramanga Textile City in Madagascar, located along the main economic corridor of Antananarivo-Toamasina, is conceived as a Special Economic Zone entirely dedicated to textile-related activities. It is owned and run by a public-private partnership between Madagascar and Mauritius, under the Mauritius-Africa Fund/EDB of Madagascar.		
	Aadil Textiles Pte., Ltd.	Fanavotana	Original Confection Mada
	AB LABEL	Filature Et Tissage De Madagascar	Panther
	ACCESSOIRES TEXTILES S.A.R.L. Madagascar	Floreal	Pilatex
	Akory Aby	Floreal Madagascar	PLG Confection
	Anny Sarl	Gama Textile Madagascar SARL	POLO GARMENTS MAJUNGA
	Antana Production Sa	Gasy design	Pret Export
	Aquarelle Madagascar	GROUPE SOCOTA (Madagascar) S. A	RFH MODES
	Aquarelle Madagascar Sa	Hasy Malagasy	Rimatex
	ATS	Hasy Malagasy (hasyma)	Saditex
	AUXIMAD ON BEHALF OF GAMA TEXTILE	Ibl Madagasikara	Samaf
	Ayra Confetion	K&N Textile	Samourai
	Bali	Kameleon	SATI Sarl
	Baobab Company	La Cotonniere D'antsirabe	Sh Global Mada Sarlu
	Blue Swan	Labeltex	SotaREX - MAD
	Bm Mada	LoreLey	Texam Home Ltd.
	BODOVOAHANGY EXPORT	Madagascar Sales	Tricot Sb
	Boreba Madagasikara	Madakem Sarl	Tropic Mad SA
	CANDYTEX MADAGASCAR	MAD'INNOVATION	TropiTEX Mad
	Carambole	Madtex Recycling & Trading	Ultramaille
	Chimidis	Maki Tee Shirt	Ultramaille Sarl
	Coats Madagascar	Malagasy De Textile	VOLA BOUTIQUE
	Cogemad	MANAMBINA TAILLEUR ET CONFECTIONNEUR	WKM
	Cotona	MCI	Yka
	Cotona Boutique	Min Max Madagascar	Y-ZONE
	CREAMADA	Nagin Textile	
	Dynachimie Sa	Nagin Textile SARL	
	Ets RHP	NCS International	
	Evergreen Knitting Factory	NewCo	
NGOS	WaterAid, Building Capacity Center Sarlu, Alliance Voary Gasy, SEED Madagascar		
	Wildlife Conservation Society (WCS)		
	Environment America		

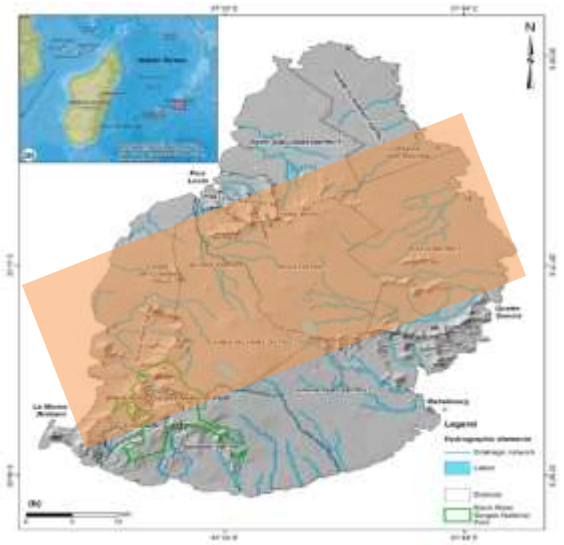
ACADEMIC AND RESEARCH	**Ran'Eau**, le réseau de référence pour tous les acteurs de l'Eau, l'Assainissement et l'Hygiène.
INITIATIVES	**UKTP Madagascar**: Madagascar's textile and clothing sector stands to benefit from better skills, knowledge and exports following the launch of a new capacity-building project. The UKTP Madagascar "Increasing the export competitiveness of the textile and clothing industry" will be implemented by the International Trade Centre. The focus of the project will be to improve competitiveness of Malagasy exporters and generate more sales. To that end, UKTP has selected fourteen companies and their partners to receive individualised support to make their operations more competitive, improve their social and environmental sustainability and connect to buyers.

5.3.4. Opportunities, innovations, barriers and learning priorities for improved water stewardship

- **Mapping of industrial impacts**: Study respondents recommend a nation-wide mapping of watersheds, groundwater resources, and levels of industrial pollution – to set the baselines for an updated national policy on water management targeting the industry.
- **Water stewardship and benchmarking of water performance**: Respondents were enthusiastic about water stewardship standard and there are few available benchmarks for good performance on water in the sector.
- **Advocacy and awareness campaigns**: The industry could benefit from nation-wide advocacy and awareness campaigns on tackling pollution in the textile industry and opportunities for water stewardship.
- **Legal review and institutional reform**: Respondents highlighted the need to better understand weakness in policy and practice through review of existing laws, analysing financial, technical, and institutional capacities to monitor implementation, and the failure of local councils to follow-up on EIAs for the textile industries. New water laws, policies, and plans should be put in place to balance social, economic, and environmental needs, and consider climate-risks. Reforms should also address issues related to integrity.
- **WASH through community mobilisation**: Communities should be supported to demand and develop safe water access points and sanitation facilities across the country.

5.4. Mauritius

5.4.1. Sector context and trends



Map of Mauritius. No water risk map is available, however, most of the county faces risks related to ocean level rise. The orange triangle represents areas where textile production is concentrated. Map Source: Geosciences 2019, 9(12), 493; https://doi.org/10.3390/geosciences9120493

- **Location**: Mauritius is classified as a small island developing state (SIDS) to the east of Madagascar. The textile industry is located across the island, but primarily south of Port Louis, in: Plaines Wilhelms, Moka, Pamplemousses and the Flacq Districts.
- **Main Products:** Knitwear, shirts, denim, and trousers. Mauritius has a long history of making textiles and apparel, and has become one of the most innovative, technically sophisticated, and vertically integrated. Facilities in Mauritius include spinning, knitting, weaving, dyeing, and printing, denim production, finishing.[134]
- **Employment**: The industry employs more than 120,000 workers, mostly women, and has some of the highest wages in Africa, at $100 to $300 pcm. The sector contributes around 5% of the country's GDP. Mauritians face labour competition from Asia, primarily Bangladesh. Foreign workers can pay more than $600 to get a job at a Mauritian factory and the number of foreign workers has increased 5-fold in 20 years.[135]

Table 9 Values of textile and apparels exports from Mauritius to top 10 destination countries (2017). Source: World Bank

Top 10 export destinations	Export (US$) 2019
South Africa	163,738,609.00
United States	126,087,851.32
United Kingdom	103,993,295.05
Madagascar	60,578,449.03
France	53,201,915.99
Netherlands	30,295,546.43
Italy	28,874,087.31
Bangladesh	24,017,748.53
Germany	23,881,867.69
Eswatini	7,008,966.83

[134] Robeck, j., Robeck, J., Rosunee, S. and Pattison, J. (2012) 'The Mauritius Apparel Manufacturing Industry: Explorations of the Past to the Present', 1(2), pp. 163–174.
[135] IndustriAll Union (2020), Ending migrant workers' rights violations in Mauritius – a Press Release [Online] http://www.industriall-union.org/ending-migrant-workers-rights-violations-in-mauritius (Accessed 16 October 2020)

- **Livelihoods**: Mauritius is considered a 'high-income' and the textile industry represents the main source of livelihoods for many urbanised Mauritians, directly or indirectly. It offers a more stable income, than other typical industries such as sugar farming and fishing, which face increasing climate-related risks.[136]
- **Trends**: Textile and apparel producers can deliver high and consistent levels of production capacity and quality. There are significantly more producers who adhere to social standards, compared to good environmental practices. Compliance with international labour standards, chemical regulations, and organic material standards, paves the way for introducing stricter environmental standards and certification systems. Challenges of environmental degradation and increasing cost of labour, are said to be driving investors elsewhere, primarily to Madagascar[137].

5.4.2. Priority water issues and risks[138]

- **Water availability and quality:** Mauritius has one of the highest population densities in the world and is a water scarce with major shortages in freshwater resources. According to respondents, water crises pose a major risk for socio-economic development. Mauritius is highly vulnerable to climate change, drought and shorter wet seasons. Poor water storage capacity has led to a water rationing system across the country, which results in risks for public health due to insufficient flows in water distribution systems. More than 20%-75% of the population currently suffer from intermittent water supply between both seasons. Sea-level rise affects livelihoods and the ecology of the country[139]. Although the textile industry is more compliant to environmental standards than elsewhere, waste-water treatment remains a problem to be addressed, as the industry pollutes surface water systems, and pollutants may seep into ground water reservoirs[140].
- **WASH**: About 99% of the Mauritian population has access to (highly intermittent) supply of safe drinking water, and about 95% of the population has access to basic sanitation services[141]. There is no data on the availability of WASH in textile and apparel production facilities.
- **Water governance:** Mauritius' coastal zone and inland waters feed the whole island. Industrial water pollution affects fisheries downstream, and sea level rise, combined with changing seasonal patterns, leads to increased salination of land and freshwater. The Ministry of Public Utilities is responsible for policy and implementation on water resources. The government has implemented reforms to improve water infrastructure and a Central Water Authority oversees water management (i.e., irrigation, utilities, etc). There is a separate Wastewater Authority with the mandate to address pollution challenges.

[136] Robeck, J., Rosunee, S. and Pattison, J. (2012) 'The Mauritius Apparel Manufacturing Industry: Explorations of the Past to the Present', 1(2), pp. 163–174.
[137] Source Journal (2017). *Country Profile: Sourcing in Mauritius*. [online] Sourcing Journal. Available at: https://sourcingjournal.com/topics/trade/country-profile-sourcing-mauritius-60916/ (Accessed 16 October 2020)
[138] Based on KIIs, unless otherwise referenced.
[139] Schreiner, B. (2011) *State of the Water Sector in Mauritius, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe*.
[140] According to KIIs.
[141] United Nations (2019b) *The United Nations World Water Development Report 2019 Leaving No One Behind*. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000367306

5.4.3. Stakeholders, beneficiaries, and existing initiatives

STAKEHOLDER TYPE	STAKEHOLDER ORGANISATIONS		
GOVERNMENT	Association pour le Développement Durable (ADD) The Association is recognised nationally and internationally for its contributions in implementing some of far-reaching projects in protecting and rehabilitating degraded coasts and historical sites, sensitisation about the environment and support of the sustainable development of several communities.		
	Central Water Authority and Wastewater Authority of Mauritius.		
	Enterprise Mauritius is the country's national export promotion agency.		
	Ministry of Energy and Public Utilities		
	Mauritius Council for Development, Environmental Studies and Conservation		
DEVELOPMENT BANKS, DONOR AGENCIES, MULTILATERALS,	World Bank, AFD, AfDB, ILO, UK FCDO, UNEP, UNDP		
PRIVATE SECTOR	**Brands sourcing or have sourced from Mauritius**		
	Adidas	Levi's Strauss	Puma
	Asos	M&S	Otto Group
	Dockers	Monsoon	
	Etam	Next	
	G- Star Raw	PVH (Calvin Klein, Tommy Hilfiger, etc)	
	Business in cotton, textiles, leather, and garment sectors		
	Baobab Manufacturers	MFM Confection Ltd	VR Creations
	Chemiserie Bellvill & Co. Ltd	Nu Print Ltd	Waveline Ltd
	CIEL Textile Ltd	Oceantex Ltd	Wensum Ltd
	City Fashions Ltd	Palmer Ltee	World Knits Ltd
	Craft Aid Mauritius Co. Ltd	Prosimex Industrial Co Limited	Yulee Group
	Enterprise Mauritius Industry Associations	Ric Actuel Co Ltd	
	Fantasy Footwear	Richfield Tang Knits LTd	
	Fit-U-Garment	Riverwalk	
	FM Group (Firemount textiles Ltd)	Sheentex Ltd	
	FM Group (Fm Denim)	Shivani Manufacturing Ltd	
	GME Ltd	Spy Trading Ltd	
	GNP Wear Co Ltd	Star Knitwear Group Ltd	
	GROUPE SOCOTA (Mauritius)	Tex Avenue Ltd	
	J&P Coats	Tex Group (Tex denim)	
	Just Caps Ltd	Tex Group (Tex Knits)	
	Lindenwear Ltd	Textilama Manufacturing Ltd	
	Meliwear Co Ltd	Tropical Garments Ltd	
NGOS	Mauritius Council for Development, Environmental Studies and Conservation (MAUDESCO)		
	Community Development Programme Agency		
ACADEMIC AND RESEARCH	The University of Mauritius, has the mandate to train professionals for all diversified sectors, and has systematically integrated sustainability throughout the curricula of degree programmes so that graduates are ready to apply the skills and knowledge underpinning sustainable development		

INITIATIVES	Partnership for Action on Green Economy (PAGE) a global initiative with UNEP, UNDP, UNIDO and UNITAR, which was launched in Mauritius in July 2014.
	Since 2011, ILO has been supporting the Mauritian government and social partners in the creation of green jobs. This collaboration helped make operational the links between the green economy and jobs, needed skills, enterprise development and the role of employers' and workers' organizations.

5.4.4. Opportunities, innovations, barriers and learning priorities for improved water stewardship

- **Assessment and mapping of industrial impacts**: Respondents suggest that Mauritius would benefit from an assessment of watersheds, reservoirs, and industrial pollution – to set the baselines for an updated national policy on water management targeting the industry.
- **Water stewardship tools to benchmark water performance**: Respondents reflected that the industry does not have a single tool to benchmark and track their impact on water.
- **Collective action planning:** to address pollution problems and plan for future water needs within textiles and apparel export production, mining, farming, and fisheries[142].
- **Introduction of environmental standards** to the sector and build auditors and regulatory capacity to work with the industry on monitoring and improving their performance.
- **Advocacy and awareness** raising to incentivise improved performance and collective action by customers, investors and buyers associated with production.

6. Evidence synthesis: water risk and opportunity prioritisation

Stakeholders and informants to this study were asked to share evidence and experiences of the economic, social and environmental impacts of the textile and apparel industry in case countries, and of the opportunities for addressing these. Their responses have been organized in Table 10 which provides for comparisons between countries and uses direct testimony of informants to illustrate the issues.

This synthesis of evidence from across case countries validates the nature and extent of sectoral risks and opportunities and for reliable conclusions to be drawn in Section 7.

[142] Hepworth N D and Sojamo S E, (2014). Water Partnership Landscape Analysis: Scoping opportunities in SADC, GIZ/SADC Water Division/Water Witness International, Edinburgh, UK.

Table 10. Water risks and opportunities facing textile and apparel production in Ethiopia, Lesotho, Madagascar and Mauritius. (Sources are coded with ref. to Annex 1)

OUTCOME AREA	RISKS	RISK CHARACTERISATION	WATER STEWARDSHIP OPPORTUNITIES	ETHIOPIA	LESOTHO	MADAGASCAR	MAURITIUS
SUSTAINABLE WATER BALANCE	Increased competition between the textile and apparel industry and other water uses and functions - pressure on available water resources	Understanding the sustainable yield of aquifers and basins, as well as environmental needs and socio-economic demands, provides a baseline for managing water allocations sustainably and equitably.	Contribute to sustainable allocation and seasonal planning, compliance with abstraction permits which prioritise social and environmental needs.	"Water supply and quality are still a major issue for this country" #18	"Industries are prioritised for water provision over communities." #6		"Fisheries downstream suffer from industrial wastewater affecting eco-systems" #12
	Industry locates/relocates to under regulated or underserved rural areas	Industries and communities in urban areas are underserved by utilities and may receive intermittent water supply.	Improve sustainable allocation and seasonal planning, reduce public costs and health risks due to intermittence	"Industrial parks are established in rural areas away from urban centres" #21	"Industries are considering moving to rural areas to access cheaper labour" #7	"Authorities in areas outside the main industrial zones do not have the capacity to monitor industrial wastewater" #9	
	Over-abstraction, unpermitted use and weak charging regimes	Unregulated, unmonitored abstraction reducing water tables in reservoirs beyond replenishment rates. Inability of institutions to monitor water abstraction. Inadequate charging mechanisms	Improve permit and tariff systems and compliance. Improve monitoring of water abstractions	"There is no tariff system for water withdrawals. Only permits for water abstraction." #21 "Water permits are cheap and water withdrawals by are unmonitored" #18	"Industries are prioritised for water provision over communities " #6	"There are abundant water resources, so water quantity is not an issue " #10	"Poor water storage capacity has led to a water rationing system across the country" #13
	Transboundary tensions between upstream and downstream communities, sectors, countries	Tensions caused by the industry's water use: between the industry and other industries, communities, or countries downstream.	Improved water coordination between stakeholders. Improve sustainable allocation and seasonal planning	The Nile Basin is a hotspot for transboundary negotiations.	"There are tensions between water users and industries in urban areas… Communities are affected by upstream mining. Highland water is moved to South Africa leaving low-land communities with less water" #7		

WATER QUALITY	Untreated discharges of hazardous (solid & liquid) waste into and inadequate capacity of waste-water facilities	Lack of or inadequate financial, technical, or human capacity to operate wastewater treatment facilities at industrial sites. Municipal treatment plants are unable to treat industrial effluent. High costs of treatment. Non-compliance, and poor monitoring and enforcement policies and practices.	Investment in infrastructure and water quality monitoring upstream and downstream by public and private stakeholders/ Ensuring compliance and best practice pollution control	"Companies have the sustainability commitment in their documents, but it lacks proactivity in terms of actual commitment on the ground" #18	"Rivers turn into different colours due to textile dying factories untreated discharges…. Major health problems have been recorded in communities surround factories " #6	"Waste-water management is the main issue for Madagascar. Downstream communities face water pollution challenges because there is no water treatment. Our water law obliged companies to treat their wastewater, but industries and industrial zones are not complying, except for a handful companies, who do so voluntarily"#8	"Fisheries downstream suffer from industrial wastewater affecting eco-systems" #12
	Unsafe management of sludge causing both surface and ground water pollution	Chemical sludge and other solid waste (threads, garments, plastics etc) are disposed in landfills, where pollutants seep into natural water systems	Safe management of chemicals, hazardous materials, and solid waste	"There is little transparency on how sludge is treated" #18	"Poor solid waste management by the industry is a major problem in our river systems" #6		
WASH	Poor WASH access for communities in fast growing economic zones	Employment attracts rapid inward migration of workers, but local authorities are unable to provide WASH in communities	Advocacy and support for improved WASH planning, infrastructure O&M in communities	A range of water supply problems affect the sector - including the challenge of natural water contamination (fluoride) in the rift valley.		"Many workers live without proper sanitation"#10	Poor water storage capacity has led to a water rationing system across the country, which results in risks for public health. More than 20%-75% of the population suffer from intermittent water supply, Assaf, 2010
	Poor WASH access at production sites, dorms, etc	Facilities not providing clean water, hygiene, or good sanitation at site leads to iill health, compliance and reputational risks	Site WASH facilities reflect global best practice. Improved health and productivity. I	Levels of WASH access at site are not reported	"Wash access at factories is very poor… it affects women most" #6	Levels of WASH access at site are not reported	Levels of WASH access are not reported
ECOSYSTEMS	Compromised ecology and impacts on livelihoods of fishermen and farmers	Reduced or polluted water flows disrupting water cycles downstream and in coastal zones Dead fish, poor yields, etc caused by reduced water quality or availability	Environmental flow and pollution control requirements known and enforced		"Water in lowlands is dwindling due to uses upstream" #7	"Fishing communities are affected"#10	"Fisheries downstream suffer from industrial wastewater affecting eco-systems" #12
WATER GOVERNANCE	Limited availability of data upon which to base management decisions	Insufficient data availability at either institutional or site levels. No adequate monitoring of water quality, compliance, WASH access, water availability, use or ground water levels.	Investment and data sharing between public and private stakeholders	"We were able to get few figures basin wise, and recommend steps to our suppliers, for example, to say "ensure zero liquid discharge' or "import efficient washing machines "but we do not have	"We are trying to map our water bodies but lack the technical means to do so properly" #6	"We need an updated map of our national water resources" #8	"(we need) a nation-wide mapping of watersheds, reservoirs, and industrial pollution – to set the baselines for an updated national water policy" #13

			clear figures." #18			
Mandates are overlapping or not clear: institutional roles are fragmented and uncoordinated	Ineffective regulation by institutions responsible for water management expose all users to significant risk	Clarification of roles, improving accountability and capacity of key institutions	Significant overlap between the duties of regulatory bodies at municipal, catchment and regional scale for water need reconciling urgently.	"We are in the process of improving coordination between institutions on water and land management since they are interlinked. We had already dammed our catchments to secure water for industries," #6	"Regional water councils lack capacity in all regards to be able to manage water resources" #8	"It is unclear who manages what in terms of water resources management" #13
Water integrity issues	Illegal abstraction, water theft, meter tampering, bribes, etc.	Improved transparency, integrity, and information sharing. Effective accountability mechanisms			"Corruption is a major issue hampering development in the water sector" #11	
Limited stakeholder participation in decision-making, especially for communities.	Communities are not included in consultation, monitoring, or empowered to activate their water rights. Lack of constructive dialogue between public, private, and civil society on how to manage water sustainably.	Stakeholder mapping, engagement, and active roles in WASH and WRM governance and monitoring	Our ability to deliver social and economic development is dependent on our adoption of water stewardship," State Minister, Teka Gebreyesus, Ethiopia's Minister for Trade and Industry.	"Communities don't have proper representation to voice or negotiate their water share" #7	"Regional water councils lack the capacity to engage with stakeholders. They are barely able to respond to complaints." #8	
Limited engagement and disconnect between the textile and apparel and water sector	Limited awareness and proactive action by the sector on water issues which in the context of under-resourced regulation risks impacts for all stakeholders	Proactive action to mitigate water risks and improve industries' cost efficiency, productivity and development impact	IPs are relatively better but standalone factories are not meeting the requirements. There is negligence and lack of commitment from companies while the regulators are not strongly enforcing the required standards." #18	"Foreign business owners do not engage on natinoal interest issues like water" #6		"Water management is not our issue, it's the responsibility of othe government" #13

Limited capacity and technical expertise needed to improve water performance	Institutional, infrastructure and technical capacities are insufficient or inadequately resourced to address water related risks	Clarification of roles, and targeted effort to improve the capabilities of key institutions, businesses and consultants.	"…even the government is not controlling (shortcomings) and those cannot be addressed at company level. Therefore, controlling mechanisms at many levels should be in place" #18	"We need training on international best practices in water management" #6	Authorities in areas outside the main industrial zones do not have the capacity to monitor industrial wastewater" #9	
Inadequate financing	Insufficient financial resources available to support effective water management and regulation, or to control industrial impacts.	Joint advocacy and action to close the funding gap. Private sector contribution and investment to meet regulatory obligations.	Financial resources are a key constraint	"Lack of financing, inadequate infrastructure, coupled with a mismatch between economic development policies and water sector reforms provide a clear case for water stewardship among industries in Lesotho, and in South Africa." #7	"Regional water councils lack the capacity to engage with stakeholders. They are barely able to respond to complaints." #8	"The public sector is under financed" #12

7. Conclusions

7.1. The importance of the textile and apparel sector for inclusive and sustainable growth

Our evidence reveals the strategic importance of the textiles and apparel sector in sub-Saharan Africa for economic growth and job creation. Several countries are already heavily dependent on the sector for export revenue and GDP contributions where the sector contributes as much as 60% and 30% respectively for some nation states. Although exact figures are difficult to find, well over a million workers are directly employed by the sector, 80% of whom are women, and the sector is likely to support the livelihoods of over 50 million people, and many more through tax revenues to government treasuries.

Even with the economic fall-out of COVID the sector has potential to grow further both in current production hotspots - and new ones like Ethiopia - particularly given the combination of tax and duty incentives bestowed by governments, and lowest labour costs globally.

Beyond the three dominant producers in North Africa of Morocco, Egypt and Tunisia which account for 50% of exports, key producers include South Africa, Mauritius, Madagascar, Burkina Faso with a further 14 countries targeting textiles and apparel exports as a centrepiece of economic development strategy. Pre-COVID, in 2018, the net value of sub-Saharan Africa's textiles and apparel exports was US$4.6 billion (bn) with key markets including Europe (notably France at US$ 350 M/yr. export, the UK at US$ 200 M/yr., Germany US$ 140 M/yr. and Italy US$ 100 M/yr.), East Asia (US$ 906 million/yr.) and USA and Canada at 15% or (US$ 685 million/yr.). The USA remains the single biggest national market, with double the value of exports to China.

Major buyers from Africa include recognisable household and high street names and brands. Attracted by significantly lower production and labour costs: Adidas, Asos, Calvin Klein, Carrefour, Disney, Dockers, Etam, G -Star, GAP, George (ASDA), H&M, Hanes Inc, Hugo Boss, Levi's, Mango, Marks and Spencer, Monsoon, Next, Otto Group, Primark, Puma, Reebok, Ralph Lauren, Sears, Tesco, Tommy Hilfiger, Walmart, and Zara.

They are supplied in some cases by directly owned production facilities (for example PVH) or by companies manufacturing products to order, largely owned, and operated by Asian with a growing number of locally owned SMEs contributing to the supply chain.

There is clear potential for the boom in Africa's textiles and apparel production for global markets to deliver significant social and economic development benefits. Creation of decent employment is a

particular priority given rocketing rates of youth unemployment which in turn is a factor in instability and conflict, and massive outward migration.

7.2. Sector impacts and interactions with water security

The context for this growth is Africa's often extreme levels of water insecurity, where levels of access to safe water, sanitation and hygiene are amongst the lowest on the planet, and where rapidly increasing demands for water must be met against a backdrop of increasingly unpredictable climate, regular drought and floods, and a range of stubborn capacity, infrastructure, financing and governance challenges.

As a result, the sector exerts and is affected by a range of water related challenges which threaten to derail sectoral growth and its contributions to sustainable and inclusive development.

Our study collates continent wide experiences and data from four countries selected for analysis because of their dependence on a rapidly growing textile and apparel production coincides with interest from global brands, and significant pre-existing water security challenges: Ethiopia, Lesotho, Madagascar and Mauritius. We draw on 26 key informant interviews with experts from business, government, universities, and civil societies to explore the impacts of the sector on Africa's water security, the priority water risks, and the opportunities to address these in order to ensure genuinely sustainable and inclusive growth.

We find evidence of significant impacts, particularly in terms of uncontrolled industrial pollution from the sector, and its interaction with sustainable access to safe water supply, sanitation and hygiene for workers and communities. Although reliable quantitative data is almost non-existent in relation to the performance of textile and apparel producers in Africa, we find credible evidence and illustrative case studies of unacceptable performance, including widespread non-compliance with pollution control law and threats to the human right to water and sanitation. The priority water challenges facing the sector are:

7.2.1. Uncontrolled pollution

The textile industry in Africa produces potentially toxic metals, dyes, bleaching agents, and other pollutants, which cause water pollution and affect public health. The effects include cardiovascular & respiratory effects, irritation & inflammation, carcinogenic, neurotoxic effects.[143] We find multiple examples of severe pollution caused by the textiles and apparel sector, because of untreated or partially treated industrial wastewater. The impacts of this pollution on downstream ecosystems, businesses and communities where many thousands of highly vulnerable people are forced to use this industrial effluent for domestic uses and irrigation are very significant.

[143] UNCTAD, 2020. Manufacturing pollution in sub-Saharan Africa and South Asia: Implications for the environment, health and future work. SEI/SMEP, UK Aid/UNCTAD.

Pollution from textiles production is a very significant problem in Africa. Untreated effluent from textile factories is killing our rivers - there is no life downstream. These businesses need to stop polluting Africa's waters. We need economic growth, but it must never come at the expense of our environment and the health of our children.

Sareen Malik, Executive Secretary, African Civil Society Network for Water and Sanitation

We have no alternative water supply, so we must use the Ngerengere River on a daily basis for bathing, washing, cooking and cleaning, watering livestock and vegetable gardens. The water is often very dirty, with a bad smell and colour. Diarrhoea and water borne disease is a big problem.

Community leader, Kingolwira Ward, Tanzania

The situation (of pollution from the textiles factory) has been brought to the attention of the authorities on several occasions but there has been no improvement or action...The pollution threatens our health as we eat vegetables irrigated with the water. Contact with the pollution results in burnt skin and disease.

Community leader, Dar es Salaam, Tanzania

Industries cause water pollution in surrounding towns...poor solid waste management by the industry is a major problem in our river systems. There are tensions…between the communities and the textile industry because of water pollution turning rivers blue. Communities complain about the smell of water and health issues for livestock and people living close by.

Senior Government Official, Lesotho

Waste-water management is the main issue for Madagascar. Downstream communities face water pollution challenges because there is no water treatment. Our water law obliged companies to treat their wastewater, but industries and industrial zones are not complying, except for a handful companies, who do so voluntarily.

NGO Director, Madagascar

Fisheries downstream suffer from industrial wastewater affecting eco-systems

NGO lead, Mauritius

Untreated industrial wastewaters are known to contain carcinogens and very high pH so that downstream water is unfit for any use. Many people are impacted, particularly the poorest, who with no other options are forced to use polluted water to irrigate crops and in their homes. When the rivers are high - this pollution flows into homes and schools, even health clinics.

Herbert Kashililah, Rukwa River Basin Board/Shahidi wa Maji, Tanzania

7.2.2. Inadequate water supply, sanitation and hygiene (WASH)

In all production countries assessed, there are concerns in relation to both the adequacy of WASH in factories, as well as levels of access in the communities where workers live. Whilst the responsibility for safe provision is a legal requirement and compliance issue on-sites, companies do not have direct responsibility for community provision, although their influence and interests demand action. Rapid inward migration to textile and apparel towns by those seeking work quickly outstrip the capacity of existing WASH infrastructure. At the same time, safe access at sites and in communities should be a priority for companies because of the well documented health, absentee and productivity benefits, and

the reputational risks associated with inadequate WASH and its associations with modern slavery. Ensuring sustainable access to WASH needs to be afforded special priority in the sector for two additional reasons: its newly important role for control of COVID-19, and the gendered needs for menstrual hygiene management for the women who make up 80% of the sectors workforce.

> *Many workers live without proper sanitation.*
>
> **Senior Researcher/Academic, Madagascar**

> *Access to water supply, sanitation and hygiene at factories is very poor, it affects women the most.*
>
> **Senior Government Official, Lesotho**

> *Many thousands of women are employed in the textile and apparel sector in Africa. We don't know how well their WASH needs are provided for in the workplace or in their communities because the data isn't collected. We don't know if they have the services needed to protect against COVID.*
>
> **Sareen Malik, Executive Secretary, African Civil Society Network for Water and Sanitation**

> *The need for clean, safe water is not just an environmental issue, but a human rights issue. We want to help ensure that everyone touched by our business can have this need met. Not only do we rely on water to create our products, but the people who make our clothes must be able to care for themselves and their families, including with access to water, sanitation, and hygiene – if they can't thrive in the communities where they live, neither can we.*
>
> **GAP Inc**

7.2.3. Sustainable, equitable and resilient water use for production.

In all production countries the reliable availability of water for production in the textiles and apparel sector is a current, emerging or potential challenge. There are concerns regarding the sustainability of withdrawals in light of limited knowledge of the resource yield available. In particular, there are concerns about conflict and competition over water with existing users, including domestic water needs for people. and water for nature. Examples were found where water supply for textile and apparel production was being prioritised at the expense of local communities who are forced to go without water as a result. There are also concerns regarding the resilience of water supply to the sector and the ability to respond to drought events without impacting on local community needs.

> *Industries are prioritised for water provision over communities, who can be forced to manage for several days without water. There are tensions between water users and industries in urban areas.*
>
> **Senior Government Official, Lesotho**

> *Water supply and quality are still a major issue for this country. Water permits are cheap and water withdrawals by are unmonitored.*
>
> **Sustainability Manager, Retailer/buyer, Ethiopia**

> *Poor water storage capacity has led to a water rationing system across the country.*
>
> **Factory Group, Mauritius**

7.2.4. Water pollution and scarcity in the supply chain

The production of cotton and cloth, and leather as inputs to the value chain pose specific and significant water risks. The use of agricultural chemicals, insecticides, herbicides and fertilisers is especially intensive in cotton production, and the controls in place to ensure safe use, handling and disposal are particularly weak in Africa. Although very little data is available, the health of cotton farmers supplying the sector, and downstream ecosystems and communities face significant risk as a result.

In addition to water quality risks from agricultural chemical use, cotton production can impose high water demands, and potential for soil degradation in production areas.

7.2.5. Water governance challenges

In all countries assessed, the root cause of these water impacts and risks is inadequate water management and governance, both by stakeholders in the sector and more widely, at municipal, basin and national scale. Specifically, the ability of utilities, regulators and government authorities to effectively control and mitigate the water impacts of industrial production for the textiles and apparel sector is severely constrained by a lack of data, capacity, financial resources, overlapping regulatory mandates, limited stakeholder engagement, accountability and political will. In one country corruption was cited as a problem for effective water governance. These issues are reflected in the indicators of water governance reported for each country in Table X, and also evident in the testimony of stakeholders:

> *We were able to get few figures here and there basin wise, but we do not have clear figures.*
>
> **Sustainability Manager, Retailer/buyer, Ethiopia**

> *We are trying to map our water bodies but lack the technical means to do so properly… Communities don't have proper representation to voice or negotiate their water share.*
>
> **Senior Government Official, Lesotho**

> *Regional water councils lack capacity in all regards to be able to manage water resources. Regional water councils lack the capacity to engage with stakeholders. They are barely able to respond to complaints.*
>
> **NGO Director, Madagascar**

> *Corruption is a major issue hampering development in the water sector.*
>
> **Factory Group, Madagascar**

> *It is unclear who manages what in terms of water resources management. The public sector is under financed.*
>
> **Factory Group, Mauritius**

> *The pollution is blatant and well known, and the laws are strong but never enforced. Regulators are blind to the pollution. It is as if the industry has a free pass to pollute because it creates jobs.*
>
> **Herbert Kashililah, National Water Board, Tanzania**

Alongside these deep-seated issues for institutional performance, there is also evidence that corporate governance for responsible water management, and limited engagement on the topic are weaknesses and root causes of the water risks observed.

> *As brands go into new countries and regions and conduct due diligence to determine risks, they should follow up on the promises made in due diligence processes. With frequency globally, we see that effluent treatment plants at factories and industrial parks are not maintained, if running at all.*
>
> **Sean Ansett, President, At Stake Advisors**

> *There is negligence and lack of commitment from companies while the regulators are not strongly enforcing the required standards. Companies become responsive when a letter/warning is given from government regulatory bodies.*
>
> **Factory/Site Manager, Ethiopia**

> *Companies have the sustainability commitment in their documents, but it lacks proactivity in terms of actual commitment on the ground.*
>
> **Sustainability Manager, Retailer/buyer, Ethiopia**

> *Foreign business owners do not engage on national interest issues like water.*
>
> **Senior Government Official, Lesotho**

> *Water management is not our issue, it's the responsibility of the government*.
>
> **Factory Group, Mauritius**

The weak governance and regulatory oversight which creates and exacerbates the water risk observed is seen by some as an aid to the sector – reducing short term costs of wastewater treatment for example. The irony is, that this laissez-faire approach to pollution control and water regulation is highly damaging and potentially destructive within a sector where environmentally and socially responsible sourcing is rapidly becoming a universal, guiding ideal.

7.3. The promise of improved water stewardship

> *Our ability to deliver social and economic development for our people, is dependent on our adoption of water stewardship.*
>
> **State Minister, Teka Gebreyesus, Ethiopia's Minister for Trade and Industry.**

Multiple stakeholders in all countries recognise the need for, and the opportunity offered by water stewardship within the sector as a means of addressing the risks identified.

Water stewardship is the use of water, which is socially equitable, environmentally sustainable, and economically beneficial, and can be considered as a water user contribution to IWRM implementation (SDG 6.5). Whilst water management and governance are rightly and should remain state led, the proactive engagement of water using businesses offers multiple benefits – through both improved

operational water use, and important contributions to addressing shared water challenges and good governance. For example, water stewardship entails action to reduce water impacts from site activities, use efficiencies and demonstration of full compliance with water policy and law. It also requires water using sites to engage beyond the fence line to understand and act on the issues and risks which affect their water use and the full range of water stakeholders – local communities, and those in the supply chain; ecosystems and needs of nature; and priority challenges facing utilities and other water managers. Mitigating risks related to water scarcity, pollution, WASH, and climate resilience requires the support and collective action of all stakeholders, through their adoption of water stewardship.

The Alliance for Water Stewardship (AWS) has devised a globally applicable voluntary standard which guides water users on how to adopt water stewardship and recognises their efforts through audit by a third-party compliance audit. Documented applications of the standard around the world show the AWS standard to be a cost-effective mechanism for mitigating water risk, with benefits for communities, nature, government, and businesses, including via demonstrating good performance on water to investors and customers.

Credible water stewardship helps businesses to mitigate water risks in socially legitimate ways and to support improved water governance, management, and resourcing in the sector through proportionately applied policy, laws, and regulations. Whilst some companies are already engaged on water, credible water stewardship through alignment with the AWS standard can help to avoid the reality or perception that companies are working to securitise water access – ensuring their own water security for private benefit at the expense of others and the public good.

A range of voluntary standards already exist to guide water management in the textile and apparel sector; however, they do not provide the comprehensive handling of water provided for in the AWS standard as demonstrated by a recent comparison. [144]

There is a clear opportunity for sector stakeholders to adopt and demonstrate water stewardship practices as a practical and strategic contribution to sustainable development. As well as reducing risks of operational interruption, regulatory enforcement and higher productivity costs, water stewardship can mitigate reputational risks. It is in the enlightened self-interest of business and government to develop textiles and apparel in Africa based on equitable and sustainable principles, to avoid the reputational problems associated with sector in Asia, and to establish Africa as leaders in sustainable production.

> *There is a clear case for water stewardship among industries in Lesotho.*
>
> **Senior Government Officer, Lesotho**

[144] AWS and CDP, 2021. Water Security, Water stewardship and the Textiles and Apparel Sector: A briefing note for sector stakeholders

It is time for these businesses to step up, show leadership and demonstrate their credibility as responsible players. They have the potential to make an important contribution to SDG6 delivery and delivering on the goal of universal WASH access.

Some authorities like NEMA in Kenya are starting to get to grips with the pollution challenge, but they need help, and we need stronger accountability for water from all stakeholders. Politicians, producers, buyers, retailers, investors, communities, and end consumers need to take responsibility for improved water stewardship now.

Sareen Malik, Executive Secretary, African Civil Society Network for Water and Sanitation

7.4. The roles of buyer, investor and customer awareness and incentives to trigger action

The adoption of water stewardship – a voluntary, market-based mechanism – can be best incentivised through market drivers: the demand of customers, buyers, and financiers – customers, financiers. As well as equipping producers with the knowledge needed to adopt water stewardship there is also a need to sensitise those stakeholders to the need for and requirements of credible stewardship, and to strengthen the mechanisms through which improved performance can be demanded. Some of these mechanisms – such as CDP-Water Disclosure Questionnaire are potentially powerful mechanisms for driving improved performance on the ground and in supply chains through investor due diligence and corporate performance targets.

Applying the international water stewardship standard can enhance investment by demonstrating to potential investors that businesses have been 'de-risked' on water. It may also enhance competitiveness by assuring customers, investors, and buyers that responsible water use is practiced, and result in preferential purchasing from water stewards.

As important drivers of change, end consumers and the investment community should be targeted with knowledge about production impacts, the need for change, and opportunities for them to support or demand that change for responsible water use. Given the existing high levels of sensitivity of textile and apparel markets to reputational impacts, and the public interest in environmental and social performance in the sector, there is strong potential to harness this towards improved water stewardship in Africa. Those countries and companies that embrace and champion water stewardship, and which demonstrate and disclose good performance are likely to see considerable benefits as a result. Those that do not, may see water insecurity emerge as a major impediment to growth and job creation.

7.5. Recommendations

Each stakeholder across the fashion value chain has a role to play in addressing the issues identified within this report. Collectively, there is an obligation, and urgent need to transform performance on water throughout the value chain to ensure a fair water footprint for the fashion sector. All stakeholders must commit to and demand this fair water footprint, which ultimately, should ensure:

- full access to safe water supply, sanitation and hygiene (WASH) for workers
- zero pollution
- sustainable water withdrawals
- protection of ecosystems and the human right to water
- preparedness for floods and droughts, and
- compliance with water-related law and an end to illegal water use.

Tried and tested mechanisms to ensure a fair water footprint through responsible water stewardship are available, and all stakeholders should take steps to demand assurance and accountability for responsible water stewardship through:

- farm-to-factory certification against the Alliance for Water Stewardship (AWS) standard
- disclosure of corporate water performance to CDP's Water Disclosure Programme

Here, we build on this cross-cutting recommendation to set out in more detail the steps available to each group of stakeholders.

7.5.1. Textile and apparel producers and suppliers

- Adopt and disclose good water stewardship performance which ensures access to safe WASH for workers; zero pollution; fair water withdrawals; protection of water ecosystems; preparedness for floods and droughts; and full compliance with water related law at production sites and in supply chains.
- Become certified against the Alliance for Water Stewardship Standard which reflects global best practice, and embeds a systems approach to strengthen resilience, credibility, and market differentiation.
- Benefit from programmes of support and training for AWS stewardship in Africa, for example via the Putting Water Stewardship to Work Programme.

7.5.2. Brands, retailers, and buyers

- Take responsibility, show leadership, and use market power to demand good water stewardship within value chains and by suppliers through:
  - Revised supplier codes, due diligence, safeguarding and preferential contracting which require demonstration of credible water stewardship as a condition of doing business.
  - Mapping of value chains against water hot-spots to identify where support should be targeted, and commitment to AWS certification in these locations.
  - Measurement, tracking and disclosure of water stewardship performance within supply chains - including levels of WASH access on-sites and in communities; pollution control; fair withdrawals; legal compliance; resilience and AWS certification.

  - Improved traceability of products and raw materials, so that water stewardship credentials are known, recognised and rewarded.
  - Customer awareness and communication on the water implications of garments, the true costs of clothing production and how action can mitigate impacts.
  - Reformed corporate policy and commitment to water stewardship, and partnerships, human resource development and strategic support to establish it as an operating norm.
  - Join, support, and lead national, regional and global forums to track, negotiate, and improve water stewardship performance in the sector.
- Because of the clear links between the financing gap for water services and limited state tax revenues in Africa, the fashion sector must ensure adherence to principles of fair taxation such at the OECD Guidelines on Responsible Taxation or the B-Team Responsible Tax Principles.

7.5.3. Investors

- Demand that good water stewardship, disclosure of water performance and responsible taxation feature as a due diligence requirements in investment decision-making, and importantly that promises are followed up on and complied with.
- Screening of investment portfolios for poor water stewardship and adequate safeguarding of the human right to water and sanitation, corrective action where necessary, and divestment where breaches persist.

7.5.4. Governments of producer countries

- Prioritise good water governance through adequate financing and oversight for the water sector and environmental regulation so that water risks for business and communities are mitigated, and economic growth is spurred by sustainable resource management.
- Target capacity, financing, and action to enable adequate wastewater treatment, and reform of permitting and tariff systems, to appropriately reflect value of water.
- Establish the demonstration of credible water stewardship as a pre-condition of obtaining and retaining business, investment, and export licences for companies.
- Adopt then demonstrate credible water stewardship performance at scale in strategic Industrial Parks and Special Economic Zones to attract and safeguard responsible businesses and investors.
- Benchmark and reference statutory requirements for good water performance – in planning law, discharge licences and abstraction / water use permit conditions etc. against requirements of the AWS standard.
- Ensure that the media, civil society, and citizens have the freedom to call out the abuse of water by corporations, and denial of the human right to water and sanitation, and that they are adequately protected from reprisals for doing so.
- Convene businesses and other stakeholders to deliberate barriers and opportunities to sustainable water use at national, basin and municipal scales, and channel support towards shared water challenges.

7.5.4. Governments of consumer countries

- Pass legislation to require mandatory disclosure and due diligence by companies and financiers on water stewardship performance including: levels of WASH access on-site and in employee communities; zero pollution; fair withdrawals; ecosystem protection; legal compliance; preparedness for droughts and floods; and responsible payment of tax.
- Legislate so that products imported to and sold within a trading block or country are required to meet the same labour, health, safety, and environmental standards than domestic goods.
- Understand the water footprint of imported and exported goods and produce, their locations, resilience, risks, impacts and implications for sustainable development. Responsible trading partners take action to ensure good water governance is adhered to and that water security is advanced, rather than eroded through global trade.

7.5.5. Fashion sector initiatives and standards

- Takes steps to ensure that initiatives and programmes aimed at improving the social and environmental performance of the sector provide proper handling of water and WASH related issues and are supported by effective accountability and disclosure mechanisms.
- Avoid partial handling of social and environmental issues that fails to address water in a holistic manner, and which lacks credible mechanisms for accountability as these invite greenwash, confusion and inefficiency.
- Seek alignment and coherence within standards. Avoid the fragmentation and 'initiative overload' which triggers stakeholder fatigue and consumer mistrust.

7.5.5. Media and civil society

- Investigate and report on the water footprint of consumer society and its social and environmental impacts.
- Demand and advocate for sustainable and just resource use by companies, financial institutions, and governments.
- Provide compelling and tenacious coverage of water issues, and the constructive steps which can be taken by decision makers and citizens to drive positive change.

7.5.6. Customers and concerned citizens

- Wield power by only purchasing clothes and other goods from certified water stewards.
- Demand disclosure of the water impacts associated with goods and services offered up for consumption, and credible water stewardship and fair taxation in their production.
- Demand that retailers, service providers, banks, pension funds and government demonstrate their water stewardship credentials and provide guarantees that your custom and investment only support those that demonstrate full access to WASH for workers, zero pollution, fair withdrawals, ecosystem protection, full compliance with water law, climate resilience and adherence to principles of responsible taxation.

References

AfDB (2012) *Libya 2012. African Economic Outlook*. Available at: http://www.undp.org/content/dam/rba/docs/Reports/African Economic Outlook 2012 En.pdf

AfDB (2018a) 'Jobs for Youth in Africa: Strategy for Creating 25 Million Jobs and Equipping 50 Million Youth 2016 - 2025', p. 64. Available at: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Boards-Documents/Bank_Group_Strategy_for_Jobs_for_Youth_in_Africa_2016-2025_Rev_2.pdf

AfDB (2018b) 'Report on the Feasibility Study for the Development of the online Fashionomics Platform', pp. 1–78. Available at: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Final_Report_AFDB_Fashionomics_-_Investing_in_the_African_Creative_Industries_for_the_Continent_s_Inclusive_Growth.pdf

AfDB (2020) *African Economic Outlook 2020 Amid COVID-19 SUPPLEMENT*. Available at: https://www.afdb.org/sites/default/files/documents/publications/afdb20-04_aeo_supplement_full_report_for_web_0705.pdf#page=60

AMCOW (2018) *Status Report on the Implementation of Integrated Water Resources Management in Africa: A regional report for SDG indicator 6.5.1 on IWRM implementation*. Available at: https://ceowatermandate.org/wp-content/uploads/2018/11/2018_Status_Report-IWRM-Africa_Web_EN_(1).pdf

AUC/AMCOW (2015) 'The 2015 Africa Water and Sanitation Sector Report: Reviewing Progress and Positioning Africa for 2030 SDGs & Agenda 2063 on Sustainable Water Management and Sanitation', *African Ministers Council on Water*, 1(July 2008). Available at: http://www.au.int/en/happening

AWS and CDP, 2021. Water Security, Water stewardship and the Textiles and Apparel Sector: A briefing note for sector stakeholders.

Badiane, O. *et al.* (2002) 'Cotton Sector Strategies in West and Central Africa', *IMF Working Papers*, 02(173), p. 1. doi: 10.5089/9781451858648.001.

Banerjee, S. *et al.* (2009) 'Access, affordability, and alternatives: Modern infrastructure services in Africa', (February), p. 36.

Barrett, P. M. and Baumann-Pauly, D. (2019) 'Made in Ethiopia: Challenges in the Garment Industry' s New Frontier', *Stern Center for Business and Human Rights*, (May). Available at: https://issuu.com/nyusterncenterforbusinessandhumanri/docs/nyu_ethiopia_final_online?e=31640827/69644612.

Bennett, M. (2008). *Lesotho info pack: Overview of textile and apparel industry*. [online] Fibre2Fashion. Available at: https://www.fibre2fashion.com/industry-article/3009/lesotho-info-pack-overview-of-textile-and-apparel-industry [Accessed 26 April 2021].

Bennett, M. and Greenberg, D. (2011) 'Technical Report: Southern Africa's Cotton, Textile and Apparel Sector: A Value Chain Analysis', *AECOM International Development*, (674).

BHRRC (2020) Major brands refused to pay for $16 billion of goods during COVID 10, leaving overseas suppliers unable to pay garment workers (online) https://www.business-humanrights.org/en/latest-news/major-us-european-fashion-brands-refused-to-pay-for-16bn-of-goods-during-covid-19-leaving-

overseas-suppliers-unable-to-pay-garment-workers/ (Accessed 20 October 2020)

De Coster, J. (2017) *Destination Madagascar. An overview of the textile and apparel industry in Madagascar.* Fiber2Fashion. [Online] https://www.fibre2fashion.com/industry-article/7957/destination-madagascar (Accessed 16 October 2020)

ECOWAS-SWAC/OECD (2006) 'Atlas on Regional Integration in West Africa Cottom', (January).

EMAF (2017) 'A new textiles economy: Redesigning fashion's future', *Ellen MacArthur Foundation*, pp. 1–150. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

Ethical Trading Initiative (2017) 'Base Code Guidance: Modern Slavery'. Available at: https://s3-eu-west-1.amazonaws.com/www.ethicaltrade.org.files/shared_resources/eti_base_code_guidance_modern_slavery_web.pdf?BKIEvhNaToVbo7SiBJk9cJlOKXMm5T_2

Foreman, R. L. (2014) 'Dirty laundry', *Fourth Genre: Explorations in Nonfiction*, 16(1), pp. 59–64. doi: 10.14321/fourthgenre.16.1.0059

Ghaly, A. *et al.* (2013) 'Production, Characterization and Treatment of Textile Effluents: A Critical Review', *Journal of Chemical Engineering & Process Technology*, 05(01). doi: 10.4172/2157-7048.1000182.

Gonsamo, D. D. (2019) 'Challenges and Coping Strategies of Rural Girls to the New Industrial Working Culture: The Case of Female Workers in Hawassa Industrial Park', *IOSR Journal of Humanities and Social Science (IOSR-JHSS*, 24(9), pp. 26–39. doi: 10.9790/0837-2409102639.

Hepworth N. D., Orr S (2013) Corporate Water Stewardship: Exploring Private Sector Engagement in Water Security. Water Security Principles, Perspectives and Practices, Zeitoun et al. Tylor and Francis Group

Hepworth N D and Sojamo S E. (2014). Water Partnership Landscape Analysis: Scoping opportunities in SADC, GIZ/SADC Water Division/Water Witness International, Edinburgh, UK

Hepworth, N.D and Warren, N. (2011) 'Strengthening the evidence base for DFID engagement on Water within the Southern African Development Community', pp. 1–76.

House of Commons Environmental Audit (2019) 'Fixing Fashion': Fixing fashion: clothing consumption and sustainability, (February).

House, S., Mahon, T. and Cavill, S. (2012) 'Menstrual hygiene matters hygiene around the world', *UK Aid*, 1(1), pp. 2–343.

ILO (2000) *Labour Practices in the Footwear, Leather, Textiles and Clothing Industries*, *ILO Sectoral Activities Programme*.

ILO (2018) *Improving Worker Wellbeing in Ethiopia's Garment Industry Through the Model of Shared Responsibility*.

ILO (2020a) *CoVID-19 and the garment and textile sector in Ethiopia: workers' perspective on CoVID-19 Responses* [Online] https://www.ilo.org/africa/technical-cooperation/inclusive-industrialization/WCMS_751045/lang--en/index.htm (Accessed 20 October 2020)

ILO (2020b) *ILO Monitor: COVID-19 and the world of work: Updated estimates and analysis*. Available at: https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_749399.pdf

IndustriAll (2019) Organizing the garment and textile sector in Ethiopia [online] http://www.industriall-union.org/profile-organizing-in-the-garment-and-textile-sector-in-ethiopia (Accessed 2020/11/06)

IndustriAll Union (2020), Ending migrant workers' rights violations in Mauritius – a Press Release [Online] http://www.industriall-union.org/ending-migrant-workers-rights-violations-in-mauritius (Accessed 16 October 2020)

International Cotton Advisory Committee (ICAC) (2017) 'COTTON: Review of the World Situation', *Cotton. Review of the World Situation*, 70(5).

International Cotton Advisory Committee (ICAC) (2018) *The ICAC Recorder*, *International Organization*. doi: 10.1017/S002081830000953X.

International Plant Biotechnology Outreach (2017) Fact Series - *Cotton in Africa*.

International Trade Centre (2013) 'Improving Africa's cotton value chain for Asian markets'.

IPBES (2018) The regional assessment report on biodiversity and ecosystem services for Africa, Intergovernmental science-policy platform on biodiversity and ecosystem services. Available at https://www.ipbes.net/assessment-reports/africa

Jonstrup, M. (2011) 'Treatment of textile wastewaters using combinations of biological and physico-chemical methods', Doctor, Biotechnology.

Kant, R. (2012) 'Textile dyeing industry an environmental hazard', *Natural Science*, 04(01), pp. 22–26. doi: 10.4236/ns.2012.41004.

Loetscher, S., Starmanns, M. and Petrie, L. (2017) 'Changing Fashion: The Clothing and Textile Industry at The Brink of Radical Transformation', *Environmental Rating and Innovation Report 2017 WWF Switzerland*, p. 44. Available at: https://www.wwf.ch/sites/default/files/doc-2017-09/2017-09-WWF-Report-Changing_fashion_2017_EN.pdf

McClain, M. E. (2013) 'Balancing water resources development and environmental sustainability in Africa: A review of recent research findings and applications', *Ambio*, 42(5), pp. 549–565. Available at: https://link.springer.com/content/pdf/10.1007%2Fs13280-012-0359-1.pdf

McIntyre, N., et al (2018). *It's 34,361 and rising: how the List tallies Europe's migrant bodycount*. [online] the Guardian. Available at: https://www.theguardian.com/world/2018/jun/20/the-list-europe-migrant-bodycount.

McKinsey&Company (2021) 'The State of Fashion 2021: In search of promise in perilous times', *McKinsey & Company*, pp. 8–118. Available at: https://www.mckinsey.com/industries/retail/our-insights/state-of-fashion

McKinsey&Company (2015) 'Sourcing in a volatile world The East Africa opportunity', *McKinsey&Company*, (April). Available at: https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/retail/pdfs/sourcing_in_a_volatile_world_the_east_africa_opportunity.ashx.

McKinsey&Company (2021) 'The State of Fashion 2021: In search of promise in perilous times', *McKinsey & Company*, pp. 8–118. Available at: https://www.mckinsey.com/industries/retail/our-insights/state-of-fashion.

Ministry of Trade and Industry of Lesotho (2017), *Lesotho's textile, apparel, and footwear manufacturing industry synopsis.* [Online] https://www.tralac.org/news/article/11501-lesotho-s-textiles-apparel-and-footwear-manufacturing-industry.html (Accessed 16 October 2020)

Mordor intelligence (2021). Africa Textile Industry | Growth, Trends, and Forecast (2019 - 2024). [online] Available at: https://www.mordorintelligence.com/industry-reports/africa-textile-industry---growth-trends-and-forecast-2019---2024

Morris, M. and Staritz, C. (2017) 'Industrial upgrading and development in Lesotho's apparel industry: global value chains, foreign direct investment, and market diversification', *Oxford Development Studies*, 45(3), pp. 303–320. doi: 10.1080/13600818.2016.1237624.

MVO Netherlands (2019) 'Sourcing Textile and Garments in Ethiopia'. Available at: https://www.dieh.dk/dyn/Normal/3/23/Normal_Content/file/1617/1580811277/report-sourcing-textile-and-garments-in-ethiopa-bottom-up-dec2019.pdf

Narte, R. Kamath, S. (2017). Lessons learned from scaling up a global textile initiative – a presentation to the EU Commission. Brussels, Belgium.

Niinimäki, K. *et al.* (2020) 'The environmental price of fast fashion', *Nature Reviews Earth & Environment*, 1(4), pp. 189–200. doi: 10.1038/s43017-020-0039-9.

OECD *(2013), Water Security for Better Lives, OECD Studies on Water, OECD Publishing. [online]* Http://dx.doi.org/10.1787.978964202405-en (Accessed 11 November 2020)

Panjiva Research (2020) *Tracks not suits, throws not sweaters – Q3, 2020 Apparel Scorecard* [Online] https://panjiva.com/research/tanks-not-suits-throws-not-sweaters-q320-apparel-scorecard/36871 October 2020. (Accessed 20 October 2020).

Pesticide Action Network UK (2017) 'Is cotton conquering its chemical addiction?', (October), pp. 1–76. Available at: http://www.pan-uk.org/cottons-chemical-addiction/

Robeck, J., Rosunee, S. and Pattison, J. (2012) 'The Mauritius Apparel Manufacturing Industry: Explorations of the Past to the Present', 1(2), pp. 163–174.

SADC (2000) *Revised Protocol on Shared Watercourses*.

Samuel, E., et al (2020) *Water Security Scan: Ethiopian Textile and Apparel Sector*: *A textile and apparel water risk and water stewardship opportunity analysis*. Water Witness Ethiopia. Addis Ababa.

Schreiner, B. (2011) *State of the Water Sector in Mauritius, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe*.

Schwagerl, A., Cill, N. (2020**)** The future of sourcing from Africa – conditions for a successful textile supply chain from Ethiopia (Webinar) Available at: https://www.dieh.dk/arrangementer/181 (Accessed 17 September 2020)

Simonsen Hauge, S. (2010). Economics of Climate Change in East Africa. [online] SEI. Available at: https://www.sei.org/projects-and-tools/projects/economics-climate-change-east-africa/

Source Journal (2017). *Country Profile: Sourcing in Mauritius*. [online] Sourcing Journal. Available at: https://sourcingjournal.com/topics/trade/country-profile-sourcing-mauritius-60916/ (Accessed 16 October 2020)

Staritz, C. and Morris, M. (2013) *Local Embeddedness and Economic and Social Upgrading in Madagascar's Export Apparel Industry*, *SSRN Electronic Journal*. doi: 10.2139/ssrn.2237506.

Staritz C., and Whitfield L., (2019) *The Oxford Handbook of the Ethiopian Economy*, Oxford University Press.

Sourcing Journal (2020) Country Profile: Mauritius. [online] https://sourcingjournal.com/topics/trade/country-profile-sourcing-mauritius-60916/ (accessed 2020-10-16)

Tang, X. (2014) 'The Impact of Asian Investment on Africa's Textile Industries - Carnegie-Tsinghua Center - Carnegie Endowment for International Peace', *Carnegie-Tsinghua Center for Global Policy*. Available at: https://carnegietsinghua.org/2014/08/27/impact-of-asian-investment-on-africa-s-textile-industries-pub-56320

The Joint Monitoring Programme of the World Health Organisation (WHO) and United Nations Children's Fund (UNICEF) (2020) SDG Progress data for households in Sub-Saharan Africa [Online] https://washdata.org/ (accessed 2020/11/11)

UN Global Compact Wash4Work initiative (2020) The business case for WASH. [Online] Available at: https://wash4work.org/business-case/ (Accessed 10 December 2020)

UNCTAD, 2020. (Online) Manufacturing pollution in sub-Saharan Africa and South Asia: Implications for the environment, health and future work. SEI/SMEP, UK Aid/UNCTAD.

UNCTAD, 2019. (Online) Unlocking the hidden value of cotton by-products in African least developed countries. Available at https://unctad.org/news/unlocking-hidden-value-cotton-products-african-least-developed-countries

UNECA (1999) *Global Environmental outlook*. United Nations Economic Commission for Africa (UNECA), Addis Abeba, Earthscan, London

UNICEF (2019) *The State of WASH Financing in Eastern and Southern Africa: Regional Level Assessment*. Available at: https://www.unicef.org/esa/sites/unicef.org.esa/files/2019-10/UNICEF-ESARO-2019-WASH-Financing-Regional-Assessment.pdf

UNICEF Wash Programme for Madagascar, Available at: https://www.unicef.org/madagascar/en/programme/wash [Online} (Accessed August 2020

United Nations (2019a) *International migration 2019 report*, *(St/Esa/Ser.a/438).*

United Nations (2019b) *The United Nations World Water Development Report 2019 Leaving No One Behind*. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000367306

United Nations Development Programme (2015) *Human Development Report Work for Human Development*.

UN Water / World Bank (2017) SDG Progress data for Sub-Saharan Africa [Online] https://www.sdg6data.org/region/Sub-Saharan%20Africa (Accessed 11 November 2020)

Van Biesebroeck, J. and Zaurino, E. (2019) Effects of Trade Liberalization on Textile and Apparel Exports from Sub-Sahara Africa. 8936. Available at: https://openknowledge.worldbank.org/handle/10986/32056

WBCSD (2012). Available at: https://www.wbcsd.org/Programs/Food-and-Nature/Water/Water-stewardship/WASH-access-to-water-sanitation-and-hygiene/The-WASH-Pledge (Accessed 20 April 2021)

World Bank (2011) World Development Report 2011: Conflict, Security, and Development. Available at: https://openknowledge.worldbank.org/handle/10986/4389

World Bank (2015) *Kenya apparel and textile industry*. Available at: www.wbginvestmentclimate.org

World Bank Blogs. (2020). *COVID-19: Solving Africa's water crisis is more urgent than ever*. [online] Available at: https://blogs.worldbank.org/nasikiliza/covid-19-solving-africas-water-crisis-more-urgent-ever

World Bank (2021) The World Integrated Trade Solution (WITS) software provides access to international merchandise trade, tariff and non-tariff measures (NTM) data, Available at: https://wits.worldbank.org/ (Accessed: 15 June 2021)

WRAP (2017) 'Valuing Our Clothes: the cost of UK fashion', *Wrap*, (July), p. 54. Available at: http://www.wrap.org.uk/sites/files/wrap/valuing-our-clothes-the-cost-of-uk-fashion_WRAP.pdf

Appendix 1. Key Informant Interviews

a) List of interviewees/respondents

1	Eswatini	Department of Water Affairs	Government
2	Ethiopia	Ministry of Trade and Industry	Government
3	Ethiopia	Supplier/Producer	Business
4	Ethiopa	Solidaridad	NGO
5	Ethiopia	Industrial Parks Development Corporation	Business
6	Lesotho	Dept of Water Affairs	Government
7	Lesotho	Offices of the Commissioner of Water	Government
8	Madagascar	NGO	Civil Society
9	Madagascar	Consultant	Independent
10	Madagascar	Centre National de Recherches sur l'Environnement	Independent
11	Madagascar	French-owned factory group	Factory Group
12	Mauritius	Mauritius Council for Development, Environmental Studies and Conservation (MAUDESCO)	NGO
13	Mauritius	French-owned factory group	Factory Group
14	Pan Africa	African Development Bank	InterGov
15	Pan Africa	AWS	NGO
16	Pan Africa	SIWI Regional Office - Pretoria	NGO
17	Pan Africa	University of Cambridge Professor / Liberty and Justice Clothing + other positions	NGO
18	Pan Africa	H&M	Business
19	Pan Africa	PVH	Business
20	Pan Africa	Otto Group	Business
21	Pan Africa	GIZ	Donor
22	Pan Africa	WRG2030	IGO
23	Pan Africa	Aid by Trade Foundation / Cotton Made in Africa	NGO
24	Pan Africa	African Civil Society Network for Water and Sanitation	NGO Network
25	Tanzania	Chair, Rukwa Basin Water Board Chair, Shahidi wa Maji	Basin Management Board/NGO
26	Western Africa	Cotton Coalition	NGO

b) Key Informant Interview Questions

1. About the sector	
According to your area of expertise and geographic perspective, kindly answer the following questions about the characteristics of the sectors (textiles, garments, leather, small furnishings).	
1.1 Where are the major geographies of production?	
1.1. What type of products are produced in these geographies?	
1.2. Which markets is the production bound for?	
1.3. How does the sector in these areas contribute to local employment?	
1.4. How does the sector in these areas contribute to better livelihoods, especially for women and the youth?	
1.5. How does the sector in these areas contribute to national economies?	
1.6. Which institutions are mandated to regulate the sector's environmental impact?	
1.7. What trends can you identify in terms of production and export value, employment, and environmental impact?	
2. **Environmental risks and challenges**	
According to your area of expertise and geographic perspective, kindly answer the following questions about water, climate, and other priority environmental risks.	
2.1. What are the primary water-related risks caused by, or affecting the sector, both in terms of water abstraction and water and wastewater quality?	
2.2. What are the primary water governance challenges that need to be addressed to achieve sustainable allocation of water resources?	
2.3. What are the main WASH-related issues affecting sites and surrounding areas? WASH is short for water, sanitation, and hygiene for households, etc.	
2.4. What is the impact of these risks on communities in the catchment area?	
2.5. What are the root causes for these risks?	
2.6. How do these risks affect women, youth, and small and medium-sized businesses in the area?	
3. **Stakeholders, beneficiaries, and existing initiatives**	
According to your area of expertise and geographic perspective, kindly answer the following questions about key stakeholders, beneficiaries, and initiatives, working on or are affected by environmental risks in the areas identified above.	
3.1. Who are the major stakeholders that could influence or are affected by these risks? (List includes communities, public sector entities, businesses, international brands, civil society organizations, International NGOs, initiatives etc)	
3.2. What are the main concerns of these stakeholders in terms of environmental risks?	
3.3. Who can benefit from sustainable water management in the area and how?	
3.4. Which practices or policies need to change to enable sustainable water management in the area?	
3.5. Which businesses or public sector entities could influence such a change?	
3.6. What existing or historical initiatives have focused on improved social, environmental or water performance in the area?	
3.7. What change did these initiatives achieve and what can be learned from this achievement (or failures?)	

4. ***Opportunities and barriers to Water Stewardship***	
According to your area of expertise and geographic perspective, kindly answer the following questions about opportunities, innovations, and barriers to water stewardship.	
4.1. What opportunities and innovations are available today and can be leveraged to address the issues and risks identified, particularly to improve water stewardship by the industries?	
4.2. What knowledge is needed to improve awareness of environmental risks and to improve water stewardship in these areas?	
4.3. If resources are made available to harness opportunities and innovations, generate learning, and overcome barriers, what priority actions would you suggest improving water stewardship in the area?	
4.4. How could alignment with existing initiatives and collaboration improve water stewardship?	
4.5. What 'new' mechanisms or approaches might be needed?	
5. **Conclusions and recommendations**	
Based on your answers above, please provide recommendations to our programme partners on how we can best address water stewardship, in relation to the following areas?	
5.1. Which catchments, production areas, sectors and sub-sectors should we prioritise in term of environmental impact?	
5.2. Which priority environmental risks and issues should we address?	
5.3. Who should we work with? (Stakeholders, institutions, businesses, civil society organizations, individual experts, beneficiaries, advocates, etc)	
5.4. How should we prioritise opportunities, innovations, learning objectives and barriers to be addressed to bring positive change for water stewardship?	

Disclosure and use of testimony: With your permission we would like to draw on your insights and perspectives to illustrate water stewardship opportunities and challenges and the lessons and value of the initiative. Please let the team know if you do or do not give your permission for your words/responses and identity to be used by the programme.

Appendix 2. Sources of information for brands and companies sourcing from selected African countries.

Parent Company - Main shareholder	Brands	Sourcing country	Reference/information source
Otto Group	3 Suisse	Egypt, Ethiopia, Madagascar, Mauritius, Morocco, Tunisia	Otto-Group_List-of-business-partners-and-factories
Adidas	Adidas, Reebok	Lesotho, Madagascar, Mauritius, South Africa, Tunisia	Adidas global supplier list
Bestseller A/S	Various	Egypt, Mauritius, Morocco, Tunisia	Bestseller factory list 2020
	Asos	Egypt, Mauritius, Madagascar, Tunisia	Asos Factory list
PVH	Calvin Klein, Izod, Tommy Hilfiger	Ethiopia, Egypt, Kenya, Madagascar, Mauritius, Morocco, Tunisia	PVH disclosure list
Group Artemis	Puma	Madagascar, Mauritius, Tunisia	2021-07-puma-global-fty-list
Warner Bros. Entertainment Inc.	Cartoon network	Ethiopia	Mondial Quick Scan Ethiopia (2017)
			Desta PLC (manufacturer) website
Levi's	Levi', Dockers	Egypt, Kenya, Lesotho, Madagascar, Mauritius, Tanzania, South Africa	Levi-Strauss-Co-Factory-List-September-2017
			Open Apparel Registry
			Levi-Strauss-Co-Factory-Mill-List-November-2019
			Tropic Knits Mauritius
Etam	Etam	Madagascar, Mauritius, Morocco, Tunisia	Etam - WeCare2020_Eng
			Open Apparel Registry
ESPRIT	ESPRIT	Tunisia, South Africa	Esprit supplier list 2021
Walmart	George (ASDA)	Madagascar, Egypt, Morocco, Tunisia	Factory List George Asda Tier 1
			Factory List George Asda Tier 2
G-Star Raw	G-Star Raw	Mauritius, Morocco, Tunisia	G-Star Raw Manufacturing list 2020
H&M	H&M	Ethiopia	Mondial Quick Scan Ethiopia (2017), Open Apparel Registry
		Kenya, Morocco	H&M Supplier list 2021
Hanes Inc	Hanes Inc	Egypt, Ethiopia, Lesotho, South Africa	HBI-Strategic-Contractors-062021
Hugo Boss	Hugo Boss	Egypt, Tunisia	Hugo Boss Supplier list 2020
M&S	M&S	Egypt, Madagascar, Morocco, South Africa	M&S Interactive Map
Mango	Mango	Egypt, Ethiopia, Morocco, Tunisia	Mango Factory List
Monsoon	Monsoon	Egypt, Mauritius	Monsoon-Factory-List-2020b
Navigare	Navigare	Ethiopia	Mondial Quick Scan Ethiopia (2017)
			Desta PLC (manufacturer) website

Next	Next	Egypt, Madagascar, Mauritius, Morocco, Tunisia	NEXT Supplier list Tier 1
			NEXT Supplier list Tier 2
			NEXT Supplier List Tier 3
Pittards	Pittards	Ethiopia	Pittards Website
Associated British Foods	Primark	Morocco, Tunisia	Primark Full Factory List
Superior Group of Companies	Superior Group of Companies	Ethiopia, Egypt, Kenya, Madagascar	SGC Website - 2018
Tesco	Tesco	Egypt, Madagascar, Morocco	Tesco apparel suppliers 2021
Maxingvest AG	Tchibo	in Egypt and Tunisia.	Tchibo
The Children's Place	The Children's Place	Ethiopia	Mondial Quick Scan Ethiopia (2019)
			Annual Report 2020
Inditex	Zara	Morocco	Inditex Website - Traceability

Appendix 3. Export Data sets

Total value of textile Exports per country / annum in US$ (World bank data, 2020)

Reporter Name	2015	2016	2017	2018	2019	TOTAL (Billion US$)
Morocco	3,222,516,256.95	3,491,942,627.00	3,663,703,276.88	3,840,428,971.46	3,642,672,503.32	17,861,263,635.61
Egypt, Arab Rep.	2,941,638,132.56	2,673,563,518.15	2,922,004,343.46	3,201,036,383.72	3,244,130,324.75	14,982,372,702.63
Tunisia	2,544,524,874.00	2,519,187,378.00	2,596,242,330.77	2,816,792,992.30	2,629,345,706.43	13,106,093,281.49
South Africa	1,172,206,369.15	1,112,079,120.64	1,308,646,775.22	1,391,785,859.92	1,250,907,664.28	6,235,625,789.21
Mauritius	868,827,001.00	761,944,741.35	719,820,129.73	729,782,648.85	677,223,562.18	3,757,598,083.11
Madagascar	479,248,057.00	525,951,927.17	580,093,752.45	550,511,173.26	545,010,986.15	2,680,815,896.02
Kenya	397,274,484.40	403,029,537.02	398,716,744.09	427,983,290.83	429,138,832.35	2,056,142,888.69
Burkina Faso	303,205,732.00	429,668,091.00	370,141,741.34	325,813,936.54	357,034,496.38	1,785,863,997.26
Benin	273,679,960.00	187,179,472.00	358,437,824.30	462,225,015.55	468,242,230.38	1,749,764,502.23
Lesotho	295,396,393.77	479,232,106.52	524,825,899.02	0.00	0.00	1,299,454,399.31
Eswatini	179,611,762.51	197,248,815.66	225,337,381.90	231,683,527.94	241,569,401.40	1,075,450,889.41
Tanzania	367,397,012.00	236,605,882.00	270,702,030.61	26,040,014.50	0.00	900,744,939.11
Sudan	39,689,763.00	81,704,665.00	138,919,743.82	158,794,764.00	475,157,424.68	894,266,360.50
Cote d'Ivoire	323,843,868.72	276,818,199.05	279,730,831.03	0.00	0.00	880,392,898.80
Cameroon	167,665,029.00	153,158,896.00	343,593,025.87	0.00	0.00	664,416,950.87
Togo	114,440,120.83	99,315,809.35	125,451,954.61	137,869,757.02	144,690,499.13	621,768,140.93
Mali	0.00	268,382,141.00	139,026,988.84	0.00	0.00	407,409,129.84
Ethiopia	103,406,390.14	80,666,017.85	104,442,909.34	60,174,442.59	0.00	348,689,759.92
Zimbabwe	74,825,703.45	38,586,612.61	48,391,333.43	94,822,842.53	58,147,313.60	314,773,805.62
Niger	22,934,839.00	39,185,772.18	83,365,894.59	83,365,894.59	76,382,080.23	305,234,480.59
Uganda	37,138,682.00	51,763,321.00	73,455,192.89	73,455,192.89	66,648,323.13	302,460,711.91

Zambia	59,885,320.00	68,535,575.00	41,968,970.00	55,733,119.00	60,067,161.00	286,190,145.00
Ghana	41,784,581.77	23,638,537.00	98,495,475.66	39,941,439.97	53,593,922.78	257,453,957.18
Senegal	45,948,418.00	46,798,625.00	52,952,175.45	56,740,106.82	47,599,924.25	250,039,249.52
Botswana	37,057,787.40	25,475,531.00	17,592,901.31	22,882,955.46	14,716,042.87	117,725,218.04
Rwanda	5,339,217.42	8,045,624.41	20,886,111.42	22,582,011.38	26,900,052.81	83,753,017.44
Malawi	35,447,359.00	14,176,885.59	9,198,806.85	11,628,464.52	12,515,352.54	82,966,868.50
Nigeria	21,215,600.77	20,647,340.00	19,129,196.91	12,035,292.57	9,259,214.31	82,286,644.55
Gambia, the	58,366,658.50	981,441.83	1,640,445.78	3,171,177.94	1,237,654.42	65,397,378.47
Mozambique	0.00	26,499,223.88	18,357,462.91	14,647,244.48	0.00	59,503,931.27
Namibia	10,825,602.00	6,196,536.00	5,423,599.95	5,457,192.40	4,873,669.00	32,776,599.35
Cape Verde	5,438,842.40	6,277,022.00	6,495,121.04	6,711,512.57	6,545,012.78	31,467,510.79
Congo, Dem. Rep.	4,948,355.85	3,606,593.57	2,537,271.03	2,069,361.27	4,447,257.14	17,608,838.86
Guinea	3,935,718.00	7,427,676.34	0.00	0.00	0.00	11,363,394.34
Angola	2,704,437.91	3,557,200.95	3,650,124.91	1,409,331.18	0.00	11,321,094.95
Congo, Rep.	3,327,961.34	1,598,097.50	742,679.09	925,212.77	1,951,656.30	8,545,607.01
Algeria	2,007,502.00	1,982,008.00	4,036,616.96	0.00	0.00	8,026,126.96
Libya	0.00	3,821,593.66	0.00	4,062,774.71	0.00	7,884,368.37
Central African Republic	34,139.00	784,979.00	5,594,532.00	1,325,073.00	0.00	7,738,723.00
Sierra Leone	57,078.00	346,677.00	5,666,337.45	339,103.18	0.00	6,409,195.63
Burundi	152,564.00	186,549.00	267,324.27	348,093.58	591,654.74	1,546,185.60
Seychelles	71,404.00	715,319.00	93,242.30	326,736.05	190,957.86	1,397,659.21
Comoros	32,380.74	14,082.64	63,650.96	58,112.41	487,474.22	655,700.97
Mauritania	0.00	168,727.00	24,138.71	36,946.65	142,956.23	372,768.59
Sao Tome and Principe	25,615.00	19,795.00	113,857.63	11,195.17	22,478.31	192,941.11
Fm Sudan	0.00	0.00	0.00	0.00	0.00	0.00
Gabon	0.00	0.00	0.00	0.00	0.00	0.00
Reunion	0.00	0.00	0.00	0.00	0.00	0.00
Djibouti	0.00	0.00	0.00	0.00	0.00	0.00
Eritrea	0.00	0.00	0.00	0.00	0.00	0.00

Total US$ value of textile exports from Sub-Saharan Africa (as a region) by importing region, 2018. World Bank Data (2020)

Reporter Name	Partner Name	Year	Export USD	% Of total Export
Sub-Saharan Africa	World	2019	4,853,514,950.00	N/A
Sub-Saharan Africa	Sub-Saharan Africa	2019	1,620,753,870.00	33.39
Sub-Saharan Africa	Europe & Central Asia	2019	1,029,846,810.00	21.22
Sub-Saharan Africa	East Asia & Pacific	2019	767,577,790.00	15.81
Sub-Saharan Africa	North America	2019	698,231,590.00	14.39
Sub-Saharan Africa	South Asia	2019	587,897,220.00	12.11

Sub-Saharan Africa	Middle East & North Africa	2019	83,894,080.00	1.73
Sub-Saharan Africa	Latin America & Caribbean	2019	14,432,050.00	0.30

Total US$ value of textile imports from Sub-Saharan Africa (as a region) by single importing countries for 2019 (Top 10). World Bank Data (2020)

Sub-Saharan Africa textile and apparel importer	Year	Total value of textile import from Sub-Saharan Africa (US$)
United States	2019	685,302,240.00
South Africa	2019	558,556,210.00
Bangladesh	2019	387,064,870.00
China	2019	288,056,430.00
France	2019	263,049,150.00
Singapore	2019	204,681,930.00
United Kingdom	2019	191,355,250.00
Namibia	2019	167,192,870.00
India	2019	161,793,500.00
Botswana	2019	135,602,270.00

Total value of textile Exports by Ethiopia per importing country (2018) in US$ (World bank data, 2021)

Reporter Name	**Partner Name**	**Year**	**Total USD**
Ethiopia	United States	2018	32,848,780.00
Ethiopia	Italy	2018	6,566,560.00
Ethiopia	Germany	2018	4,845,570.00
Ethiopia	China	2018	2,757,410.00
Ethiopia	France	2018	1,404,770.00
Ethiopia	United Kingdom	2018	1,298,870.00
Ethiopia	Turkey	2018	1,254,410.00
Ethiopia	Kenya	2018	954,920.00
Ethiopia	Bangladesh	2018	912,240.00
Ethiopia	Netherlands	2018	843,700.00
Ethiopia	South Africa	2018	552,160.00
Ethiopia	Canada	2018	413,590.00
Ethiopia	Pakistan	2018	389,160.00
Ethiopia	Spain	2018	380,370.00
Ethiopia	Madagascar	2018	376,830.00
Ethiopia	Sri Lanka	2018	346,120.00
Ethiopia	United Arab Emirates	2018	343,220.00
Ethiopia	Afghanistan	2018	308,650.00
Ethiopia	Egypt, Arab Rep.	2018	304,710.00
Ethiopia	Eswatini	2018	293,150.00

Ethiopia	Vietnam	2018	282,030.00
Ethiopia	Iran, Islamic Rep.	2018	227,770.00
Ethiopia	Sudan	2018	200,480.00
Ethiopia	Australia	2018	147,810.00
Ethiopia	Korea, Rep.	2018	145,880.00
Ethiopia	Tunisia	2018	145,800.00
Ethiopia	Israel	2018	145,460.00
Ethiopia	Austria	2018	136,010.00
Ethiopia	Switzerland	2018	133,220.00
Ethiopia	Portugal	2018	130,480.00
Ethiopia	Djibouti	2018	128,290.00
Ethiopia	Cambodia	2018	119,800.00
Ethiopia	Malaysia	2018	113,110.00
Ethiopia	Sweden	2018	112,530.00
Ethiopia	Syrian Arab Republic	2018	90,300.00
Ethiopia	Belgium	2018	66,680.00
Ethiopia	Peru	2018	52,070.00
Ethiopia	Ghana	2018	49,650.00
Ethiopia	Finland	2018	46,760.00
Ethiopia	Niger	2018	44,960.00
Ethiopia	Norway	2018	44,920.00
Ethiopia	Zimbabwe	2018	29,750.00
Ethiopia	Thailand	2018	16,800.00
Ethiopia	India	2018	16,490.00
Ethiopia	Rwanda	2018	11,910.00
Ethiopia	Mexico	2018	10,830.00
Ethiopia	Congo, Dem. Rep.	2018	10,400.00
Ethiopia	Senegal	2018	9,470.00
Ethiopia	Uganda	2018	8,950.00
Ethiopia	Singapore	2018	8,750.00
Ethiopia	Nigeria	2018	8,640.00
Ethiopia	Cameroon	2018	7,270.00
Ethiopia	Hong Kong, China	2018	6,530.00
Ethiopia	Poland	2018	5,940.00
Ethiopia	Philippines	2018	5,180.00
Ethiopia	Botswana	2018	4,990.00
Ethiopia	Bulgaria	2018	4,790.00
Ethiopia	New Zealand	2018	4,220.00
Ethiopia	Japan	2018	3,910.00
Ethiopia	Guatemala	2018	3,300.00
Ethiopia	Denmark	2018	3,220.00

Ethiopia	Mozambique	2018	2,910.00
Ethiopia	Kazakhstan	2018	2,780.00
Ethiopia	Qatar	2018	2,640.00
Ethiopia	Morocco	2018	2,570.00
Ethiopia	Kyrgyz Republic	2018	2,380.00
Ethiopia	Belarus	2018	2,030.00
Ethiopia	Ukraine	2018	1,730.00
Ethiopia	Congo, Rep.	2018	1,500.00
Ethiopia	Malawi	2018	1,500.00
Ethiopia	Bosnia and Herzegovina	2018	1,170.00
Ethiopia	Togo	2018	1,120.00
Ethiopia	Argentina	2018	1,010.00
Ethiopia	Lebanon	2018	940.00
Ethiopia	Guinea	2018	930.00
Ethiopia	Hungary	2018	890.00
Ethiopia	Greece	2018	870.00
Ethiopia	Fiji	2018	780.00
Ethiopia	Zambia	2018	750.00
Ethiopia	Brazil	2018	690.00
Ethiopia	Burkina Faso	2018	660.00
Ethiopia	Colombia	2018	570.00
Ethiopia	Cote d'Ivoire	2018	550.00
Ethiopia	Benin	2018	530.00
Ethiopia	Russian Federation	2018	530.00
Ethiopia	Angola	2018	480.00
Ethiopia	Sierra Leone	2018	310.00
Ethiopia	Tanzania	2018	280.00
Ethiopia	Equatorial Guinea	2018	220.00
Ethiopia	Gambia, the	2018	200.00
Ethiopia	Saudi Arabia	2018	190.00
Ethiopia	Namibia	2018	110.00
Ethiopia	Andorra	2018	70.00
Ethiopia	Yemen	2018	10.00

Total value of textile Exports by Lesotho per importing country (2017) in US$ (World bank data, 2021)

Exporting Country	Partner Name	Year	TOTAL (USD)
Lesotho	United States	2017	305,421,130.00
Lesotho	South Africa	2017	190,378,130.00
Lesotho	Eswatini	2017	10,679,170.00
Lesotho	Canada	2017	5,406,100.00

Lesotho	Germany	2017	3,401,240.00
Lesotho	Botswana	2017	1,658,070.00
Lesotho	Mauritius	2017	1,579,630.00
Lesotho	Zimbabwe	2017	1,115,720.00
Lesotho	Australia	2017	680,170.00
Lesotho	Other Asia	2017	655,370.00
Lesotho	Netherlands	2017	631,950.00
Lesotho	Madagascar	2017	430,230.00
Lesotho	Malaysia	2017	398,300.00
Lesotho	Hong Kong, China	2017	378,150.00
Lesotho	United Kingdom	2017	327,300.00
Lesotho	Mexico	2017	216,000.00
Lesotho	Zambia	2017	176,250.00
Lesotho	United Arab Emirates	2017	165,690.00
Lesotho	Tanzania	2017	135,360.00
Lesotho	Chile	2017	129,070.00
Lesotho	Kenya	2017	122,510.00
Lesotho	Indonesia	2017	122,280.00
Lesotho	Vietnam	2017	106,610.00
Lesotho	Bangladesh	2017	102,650.00
Lesotho	Ethiopia	2017	84,060.00
Lesotho	Brazil	2017	72,780.00
Lesotho	New Zealand	2017	38,590.00
Lesotho	Japan	2017	37,650.00
Lesotho	Kazakhstan	2017	37,650.00
Lesotho	Peru	2017	29,790.00
Lesotho	Ukraine	2017	25,200.00
Lesotho	Namibia	2017	21,810.00
Lesotho	Uruguay	2017	15,380.00
Lesotho	Costa Rica	2017	8,350.00
Lesotho	Eritrea	2017	7,280.00
Lesotho	Guatemala	2017	5,570.00
Lesotho	Turkey	2017	5,540.00
Lesotho	Argentina	2017	5,410.00
Lesotho	Dominican Republic	2017	4,180.00
Lesotho	China	2017	3,570.00
Lesotho	Singapore	2017	2,950.00
Lesotho	El Salvador	2017	2,230.00
Lesotho	India	2017	300.00
Lesotho	Pakistan	2017	170.00
Lesotho	Egypt, Arab Rep.	2017	150.00

Lesotho	Spain	2017	120.00
Lesotho	Malawi	2017	40.00
Lesotho	Poland	2017	40.00
Lesotho	Rwanda	2017	30.00
Lesotho	Italy	2017	20.00

Total value of textile Exports by Mauritius per importing country (2019) in US$ (World bank data, 2021)

Exporting Country	Partner Name	Year	TOTAL USD
Mauritius	United States	2019	126,087,850.00
Mauritius	United Kingdom	2019	103,993,300.00
Mauritius	Madagascar	2019	60,578,450.00
Mauritius	France	2019	53,201,920.00
Mauritius	Netherlands	2019	30,295,550.00
Mauritius	Italy	2019	28,874,090.00
Mauritius	Bangladesh	2019	24,017,750.00
Mauritius	Germany	2019	23,881,870.00
Mauritius	Eswatini	2019	7,008,970.00
Mauritius	Belgium	2019	6,370,760.00
Mauritius	Czech Republic	2019	6,036,160.00
Mauritius	Canada	2019	5,138,360.00
Mauritius	Singapore	2019	4,636,100.00
Mauritius	Australia	2019	3,701,520.00
Mauritius	Spain	2019	3,436,520.00
Mauritius	China	2019	3,145,340.00
Mauritius	India	2019	2,307,380.00
Mauritius	Seychelles	2019	2,067,800.00
Mauritius	Hong Kong, China	2019	1,925,140.00
Mauritius	Panama	2019	1,912,300.00
Mauritius	Turkey	2019	1,633,360.00
Mauritius	Belarus	2019	1,577,740.00
Mauritius	Mexico	2019	1,245,170.00
Mauritius	Poland	2019	740,940.00
Mauritius	Japan	2019	709,040.00
Mauritius	Kenya	2019	695,340.00
Mauritius	Austria	2019	657,550.00
Mauritius	Ireland	2019	656,200.00
Mauritius	Korea, Rep.	2019	655,980.00
Mauritius	Portugal	2019	538,430.00
Mauritius	Thailand	2019	417,320.00

Mauritius	Sweden	2019	361,680.00
Mauritius	Denmark	2019	327,600.00
Mauritius	Comoros	2019	323,080.00
Mauritius	Malaysia	2019	288,220.00
Mauritius	United Arab Emirates	2019	279,050.00
Mauritius	New Zealand	2019	255,000.00
Mauritius	Lesotho	2019	245,670.00
Mauritius	Zimbabwe	2019	238,220.00
Mauritius	Israel	2019	230,150.00
Mauritius	Brazil	2019	224,190.00
Mauritius	Maldives	2019	206,530.00
Mauritius	Cote d'Ivoire	2019	185,420.00
Mauritius	Chile	2019	157,210.00
Mauritius	Vietnam	2019	145,450.00
Mauritius	Norway	2019	128,080.00
Mauritius	Senegal	2019	117,780.00
Mauritius	Cameroon	2019	101,600.00
Mauritius	Switzerland	2019	84,400.00
Mauritius	Gabon	2019	79,280.00
Mauritius	Indonesia	2019	75,500.00
Mauritius	Zambia	2019	70,510.00
Mauritius	Greece	2019	68,830.00
Mauritius	Venezuela	2019	62,750.00
Mauritius	Saudi Arabia	2019	59,690.00
Mauritius	Morocco	2019	54,910.00
Mauritius	Philippines	2019	53,780.00
Mauritius	Pakistan	2019	52,630.00
Mauritius	Dominican Republic	2019	48,940.00
Mauritius	Congo, Rep.	2019	48,100.00
Mauritius	Ethiopia (excludes Eritrea)	2019	37,260.00
Mauritius	Cambodia	2019	26,350.00
Mauritius	Sri Lanka	2019	21,890.00
Mauritius	Tunisia	2019	19,760.00
Mauritius	St. Lucia	2019	17,570.00
Mauritius	Peru	2019	16,460.00
Mauritius	Argentina	2019	15,290.00
Mauritius	Finland	2019	14,720.00
Mauritius	Paraguay	2019	14,630.00
Mauritius	Tanzania	2019	11,060.00
Mauritius	Fr. So. Ant. Tr	2019	10,280.00
Mauritius	Nepal	2019	6,680.00

Mauritius	Mongolia	2019	5,690.00
Mauritius	Oman	2019	5,450.00
Mauritius	Liberia	2019	5,290.00
Mauritius	Myanmar	2019	5,110.00
Mauritius	Uganda	2019	4,700.00
Mauritius	Grenada	2019	4,530.00
Mauritius	Egypt, Arab Rep.	2019	4,500.00
Mauritius	Bulgaria	2019	3,840.00
Mauritius	French Polynesia	2019	3,800.00
Mauritius	Marshall Islands	2019	3,750.00
Mauritius	Nicaragua	2019	3,650.00
Mauritius	Mozambique	2019	3,000.00
Mauritius	Moldova	2019	2,820.00
Mauritius	Namibia	2019	2,750.00
Mauritius	Lao PDR	2019	1,940.00
Mauritius	Luxembourg	2019	1,570.00
Mauritius	Guatemala	2019	880.00
Mauritius	Sierra Leone	2019	730.00
Mauritius	Albania	2019	700.00
Mauritius	Botswana	2019	240.00
Mauritius	Angola	2019	230.00
Mauritius	Romania	2019	190.00
Mauritius	Djibouti	2019	120.00

Total value of textile Exports by Madagascar per importing country (2019) in US$ (World bank data, 2021)

Reporter Name	Partner Name	Year	Total USD
Madagascar	United States	2019	169,767,400.00
Madagascar	France	2019	129,563,670.00
Madagascar	South Africa	2019	65,807,220.00
Madagascar	Germany	2019	52,010,350.00
Madagascar	United Kingdom	2019	39,025,140.00
Madagascar	Unspecified	2019	23,477,560.00
Madagascar	Spain	2019	11,651,450.00
Madagascar	Netherlands	2019	6,287,680.00
Madagascar	Italy	2019	6,193,970.00
Madagascar	Belgium	2019	5,980,970.00
Madagascar	Sweden	2019	5,880,200.00
Madagascar	Mauritius	2019	4,866,250.00
Madagascar	Finland	2019	4,750,520.00

Madagascar	China	2019	2,998,940.00
Madagascar	Canada	2019	2,943,440.00
Madagascar	Portugal	2019	2,744,290.00
Madagascar	Morocco	2019	2,409,980.00
Madagascar	Australia	2019	1,801,610.00
Madagascar	Switzerland	2019	1,146,990.00
Madagascar	India	2019	776,520.00
Madagascar	United Arab Emirates	2019	651,320.00
Madagascar	Indonesia	2019	371,310.00
Madagascar	Lesotho	2019	369,790.00
Madagascar	Hong Kong, China	2019	314,830.00
Madagascar	Israel	2019	283,000.00
Madagascar	Bangladesh	2019	261,720.00
Madagascar	Japan	2019	218,720.00
Madagascar	Zimbabwe	2019	192,100.00
Madagascar	Singapore	2019	185,170.00
Madagascar	Malaysia	2019	178,800.00
Madagascar	Comoros	2019	161,400.00
Madagascar	Czech Republic	2019	155,520.00
Madagascar	Mexico	2019	148,240.00
Madagascar	Mozambique	2019	137,900.00
Madagascar	Poland	2019	114,100.00
Madagascar	Norway	2019	108,310.00
Madagascar	Pakistan	2019	106,880.00
Madagascar	Vietnam	2019	94,500.00
Madagascar	Romania	2019	74,420.00
Madagascar	Denmark	2019	71,800.00
Madagascar	Tunisia	2019	63,490.00
Madagascar	Cote d'Ivoire	2019	63,220.00
Madagascar	Libya	2019	60,290.00
Madagascar	Bulgaria	2019	59,670.00
Madagascar	New Zealand	2019	50,320.00
Madagascar	Turkey	2019	46,800.00
Madagascar	Ghana	2019	37,570.00
Madagascar	Seychelles	2019	35,420.00
Madagascar	Kenya	2019	33,810.00
Madagascar	Argentina	2019	32,840.00
Madagascar	Saudi Arabia	2019	30,990.00
Madagascar	Guatemala	2019	27,360.00
Madagascar	Serbia, FR(Serbia/Montenegro)	2019	25,810.00
Madagascar	Occ.Pal.Terr	2019	19,060.00

Madagascar	Eswatini	2019	16,770.00
Madagascar	Philippines	2019	14,970.00
Madagascar	Brazil	2019	13,710.00
Madagascar	Greece	2019	12,880.00
Madagascar	Korea, Rep.	2019	12,630.00
Madagascar	Chile	2019	11,340.00
Madagascar	Maldives	2019	8,060.00
Madagascar	Guyana	2019	7,860.00
Madagascar	Other Asia, nes	2019	7,400.00
Madagascar	Hungary	2019	6,810.00
Madagascar	Uruguay	2019	6,280.00
Madagascar	Slovak Republic	2019	4,350.00
Madagascar	Panama	2019	4,030.00
Madagascar	Peru	2019	3,620.00
Madagascar	Congo, Dem. Rep.	2019	3,130.00
Madagascar	Tanzania	2019	1,140.00
Madagascar	Kuwait	2019	1,040.00
Madagascar	Ethiopia(excludes Eritrea)	2019	820.00
Madagascar	New Caledonia	2019	740.00
Madagascar	Guam	2019	620.00
Madagascar	Ireland	2019	600.00
Madagascar	Colombia	2019	340.00
Madagascar	Djibouti	2019	300.00
Madagascar	Russian Federation	2019	280.00
Madagascar	Rwanda	2019	280.00
Madagascar	Latvia	2019	260.00
Madagascar	Senegal	2019	80.00
Madagascar	Benin	2019	20.00
Madagascar	Gabon	2019	20.00
Madagascar	Mali	2019	10.00