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Supporting the Transition to a Sustainable Textile Value Chain: The Role of Environmental Permitting Systems

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Abbreviations and acronyms

APs	Alkylphenols
APEOs	Alkylphenol ethoxylates
BAT	Best Available Technique
BFRs	Brominated Flame Retardants
CBs	Chlorobenzenes
CPs	Chlorophenols
CBDR	Common But Differentiated Responsibilities
CPCB	Central Pollution Control Board
CIA	Cumulative Impact Assessment
CFRs	Chlorinated Flame Retardants
CMRs	Carcinogenic, Mutagenic, or Toxic to Reproduction Properties
CO2	Carbon Dioxide
CS3D or **CSDDD**	Corporate Sustainability Due Diligence Directive
CTE	Consent to Establish
CTO	Consent to Operate
DoE	Department of Environment
EEAA	Egyptian Environmental Affairs Agency
EECCA	Eastern Europe, Caucasus and Central Asia
EIA	Environmental Impact Assessment
ELVs	Emission Limit Values
EMS	Environmental Management Systems
EPA	Environmental Protection Agency
EPR	Extended Producer Responsibility
EPZ	Export Processing Zone
GHG	Greenhouse Gas Emissions
GOTS	Global Organic Textile Standard
IBAMA	Brazilian Institute of Environment and Renewable Natural Resources
ICCM5	Fifth International Conference on Chemicals Management
ICJ	International Court of Justice
IDA	Industrial Development Authority
ILO	International Labour Organization
IPE	Institute of Public and Environmental Affairs
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
MEE	Ministry of Ecology and Environment
MoEU	Ministry of Environment and Urbanisation

MRSL	Manufactured Restricted Substances List
NO2	Nitrogen Dioxide
OECD	Organization for Economic Cooperation and Development
OPM	One Permit Management
OSS	One Single Submission
OTs	Organotin Compounds
PBTs	Persistent, Bioaccumulative and Toxic
PFAS	Per- and Polyfluoroalkyl Substances
PFCs	Perfluorinated Chemicals (which includes PFAS)
POPs	Persistent Organic Pollutants
PS	Product Stewardship
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
SAICM	Strategic Approach to International Chemicals Management
SDG	Sustainable Development Goal
SEA	Strategic Environmental Assessment
Sedex	Supplier Ethical Data Exchange
SIA	Social Impact Assessment
SME	Small and Medium Enterprise
SMETA	Sedex Members Ethical Trade Audit
SO2	Sulphur Dioxide
SPCBs	State Pollution Control Boards
SVHCs	Substances of Very High Concern
ToR	Terms of Reference
TSDFs	Treatment, Storage and Disposal Facilities
UNCTAD	United Nations Conference on Trade and Development
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WRAP	Worldwide Responsible Accredited Production
ZDHC	Zero Discharge of Hazardous Chemicals

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Executive summary

Governments with high levels of textile value chain activities in their country have an important role to play in aiding the transition to a sustainable global textile value chain. Textile value chain activities such as spinning and fabric mills, dye houses and garment manufacturing factories create a range of environmental impacts, including but not limited to, wastewater, chemical pollution and greenhouse gas emissions. This report focuses on environmental permitting as a key legal mechanism which policymakers can use to regulate the environmental impacts of textile value chain activities.

The objective of this report is to examine how, and the extent to which, environmental permitting systems regulate the environmental impacts of textile value chain activities. This report is designed to inform the UNEP Textile Initiative.[1] This initiative provides strategic leadership and encourages sector-wide collaboration to accelerate a just transition towards a sustainable and circular textile value chain. It has outlined the imperative for the fashion sector to become radically and rapidly transformed to become circular.

In this report, the term 'environmental permitting systems' is used to refer to the structured processes defined by national environmental law requiring individuals, businesses, and other entities to obtain permits or licences for activities causing environmental impact. This report analyses the environmental permitting laws of 10 textile-producing countries: Bangladesh, Brazil, China, Egypt, Germany, India, Indonesia, Jordan, Türkiye, and the United States of America.

Chapter 1 provides background context on environmental permitting systems, which emerged in the 1970s. The OECD started issuing guidance on integrated pollution control in 1991 and on environmental permitting in 1999 (with updates in 2005 and 2007). Since then, progress on defining best practice or common elements of environmental permitting at an international or transboundary level has stalled. Despite the lack of global coordination on environmental permitting, the research conducted for this report found that all the countries examined had environmental permitting systems in place and that environmental permits remain the key mechanism for managing the environmental impacts of industry.

Environmental permitting can be classified into two forms: single-media environmental permitting and integrated environmental permitting (UN Economic and Social Council 2007).

- **Single-media environmental permitting systems** require the textile industry to hold a number of environmental permits (e.g. a water permit, a chemical permit, and an air emissions permit) and these permits may be granted and managed by a number of separate authorities and do not necessarily operate in a coordinated or cooperative way.

1 https://www.unep.org/topics/chemicals-and-pollution-action/circularity-sectors/sustainable-and-circular-textiles

- **Integrated environmental permitting** means that emissions to air, water (including discharges to sewer) and land are considered alongside the environmental effects (the use of energy, water and raw materials) under one permit. This requires regulators to set permit conditions which achieve a high level of environmental protection in a comprehensive manner. Integrated permitting is based on the concept of best available techniques (BAT).[2]

Integrated environmental permitting is viewed as best practice for major pollution sources as it can help optimise the design and operation of industrial installations in line with a holistic understanding of environmental harm (OECD 1991; 2005). A more simplified environmental permitting process may be more suitable for smaller scale organizations such as small and medium enterprises (SMEs) (OECD 2007). Environmental permitting systems may be partially or fully integrated and most countries examined in this research have, or are on a journey towards, integrated environmental permitting.

Chapter 1 also provides a detailed explanation of the different tiers of the textile value chain and the environmental impact associated with these tiers. Although there are a variety of methods used to define the value chain, for the purposes of this report, the processes involved in each of these tiers are defined to include:

Tier 4:

Raw material extraction from the earth, plants, or animals, e.g. at farm, forest or oil field.

Tier 3:

Yarn and fabric production, including material preparation for leather at tanneries.

Tier 2:

Material production, production and finishing of fabrics and other inputs that go directly into the finished product.

Tier 1:

Garment/textile finished product assembly.

Tier 0:

Brands and retailers, their retail outlets, offices and distribution centres.

Use phase:

The 'use phase' of a textile product covers the period in which it is used, worn and laundered, by one or many users.

End-of-Life:

The processes of collecting, sorting, recirculating, recycling or landfilling which might give the textile product a new use (and which might re-introduce or 'circulate' the product back into a production tier) or designate it as 'waste'.

2 Best available techniques (BAT) is a: "tool to establish evidence-based environmental permit conditions for industrial installations" which aims to mitigate and manage industrial pollution and uphold a stringent standard of human health and environmental protection. BAT are state-of-the-art approaches designed for application under economically and technically viable conditions (OECD n.d.).

Although environmental harms occur and permits may be used for activities across the textile value chain, this report analysed the national environmental permitting systems that relate to Tiers 1-3, which encompasses raw materials processing to finished product assembly. This chapter explains the methodology for the research in this report, which consisted of desk-based analysis of national environmental legislation on environmental permitting and associated environmental impact legislation or guidelines. The research design and process, along with early research findings, were also presented to an expert panel at two online consultation sessions.

Chapter 2 outlines key international laws related to the textile value chain and explores the role that international voluntary regulation is playing in steering action towards a more sustainable textile value chain. The textile value chain is governed by a complex and layered matrix of regulations and guidelines focused on addressing the environmental and social implications of the sector. These include overarching UN guidance, informed by bodies such as UNEP and UNFCCC, international chemical conventions, principles of international environmental law and the OECD guidelines on integrated pollution control and environmental permitting systems. While this report was able to identify sources of international law applicable to the textile sector, the findings suggest that the existing international framework would benefit from further clarification, enhancement and alignment to support the transition towards sustainability and circularity throughout the value chain.

Complementing these international frameworks are the voluntary textile-specific, industry-led governance mechanisms, and voluntary certifications that currently represent the primary way in which the textile industry is managing polluting practices on-the-ground. Approaches explored include: the bluesign® certification system; the Global Organic Textile Standards (GOTS) certification system; the OEKO-Tex certification and testing body; the Sedex Supplier Ethical Data Exchange; Worldly, which is a suite of tools to assess social and environmental performance of textile value chain; WRAP (Worldwide Responsible Accredited Production); and ZDHC (Zero Discharge of Hazardous Chemicals). The chapter finds that voluntary certifications and standards often lack robust compliance mechanisms and have proven ineffective in radically altering industry behaviour. Despite this, an opportunity may lie in leveraging the nuanced guidance found within these textile-specific standards and certifications to inform and strengthen environmental regulation at a national level, via environmental permitting systems. By integrating and building on the detailed directives from relevant standards and certifications into national legislative frameworks, environmental permitting systems could provide more stringent and specific guidance tailored to the environmental challenges of the textile value chain.

Photo: Adobe Stock

As there is limited recent international guidance on environmental permitting, a framework for analysing environmental permitting was created for the purposes of this report. This framework was based on the research carried out examining the common elements of environmental permitting within the national environmental legislation of the selected countries. This framework was presented for feedback at expert consultation sessions, where participants confirmed that these four phases adequately capture the main elements of an environmental permitting system. The four phases, which are discussed in detail in Chapters 3 and 4, include:

- **Phase 1: Submitting a permit application**
- **Phase 2: Decision outcome**
- **Phase 3: Operations**
- **Phase 4: Renewal of permit or closure/decommission**

Chapter 3 focuses on Phases 1 and 2 of environmental permitting for textile value chain activities. It explores the connection to environmental impact assessments (EIA) and the role that this plays in influencing the legal requirement to hold an environmental permit for certain textile value chain activities. This chapter highlights that there is no common approach among the countries examined to classifying the significance of textile value chain activities, and in turn, whether a comprehensive consideration of environmental impacts associated with a particular textile value chain activity are required before an environmental permit for a textile value chain operation is issued. The chapter finds that an environmental permit can be issued for a textile value chain operation without going through an EIA process, if the environmental impact of the textile value chain activity is not classified as being 'significant' in legislation. As such, the analysis identifies some gaps and loopholes in how national environmental legislation applies to the textile value chain.

Chapter 4 focuses on Phases 3 and 4, looking at reporting and monitoring procedures, enforcement as well as processes to renew permits or decommission and rehabilitate operation sites. With respect to reporting, the key finding is that most of the legislation examined contained limited obligations requiring reporting of factory pollutant discharges (or other environmental impacts). In terms of monitoring, the scan of the national environmental legislation found broad powers to monitor textile value chain operations, but further research is required to see how these powers are used to actually monitor textile value chain operations. The legislation in all jurisdictions included detailed guidance on penalties for non-compliance with environmental permit conditions. Such penalties include daily escalating fines, fines targeting corporate entities and individuals, more severe fines for water pollution, and criminal liability for environmental pollution. Penalties also include options to revoke or cancel permits for serious or reoccurring breaches. Further research is required to determine the barriers to applying these penalties, the logic applied around enforcement mechanism choice, and the frequency of these powers being used to hold those involved in the textile value chain to account.

This research found that the legislation is generally silent as to the renewal process for environmental permits. Renewal periods constitute a good opportunity for environmental agencies to consider the conduct and practice of the permit holder and should be used to prevent non-compliant holders from continuing operations. Finally, the research found that only a limited number of jurisdictions provided specific guidance on the requirements of site rehabilitation once a textile value chain operation ceases. Reforming law to ensure site rehabilitation by requiring an environmental assessment remediation plan for the site – which identifies any contamination, hazardous materials or pollution – should be a priority to ensure that local communities are not exposed to environmental and human health risks once textile value chain operations have discontinued.

Chapter 5 summarizes the key findings from this research and makes 18 main recommendations (outlined below) addressed to lawmakers on how environmental permitting systems can be strengthened to reduce or avoid environmental harm across the textile value chain. This chapter also identifies future research needs to support the transition towards textile sustainability.
Based on the analysis undertaken for this report, policymakers should consider adopting the following recommendations to strengthen existing or develop new environmental permitting frameworks that support the transition towards a sustainable textiles value chain.

Recommendations

1. Review and update **international guidance, such as the OECD guidelines**, on environmental permitting to support countries seeking to develop and/or strengthen environmental permitting legislation. The development of updated international guidance could also be an opportunity to harmonise environmental permitting requirements, taking into account new due diligence obligations being introduced across global value chains. This review should consider incorporating tailored guidance for high-impact sectors, including the textile value chain.

2. Reform environmental permitting legislation to address not only **pollution**, but also **climate and biodiversity concerns (adopting a holistic approach to the environment),** and ensure **alignment** and cross-references between environmental legislation addressing pollution, climate and biodiversity to reduce fragmentation.

3. For regions with high levels of textile production activities, develop **environmental permitting guidance specifically for the textile sector.** To reduce regulatory burden on SMEs, this guidance could be informed by, and aligned with, international voluntary guidelines which textile factories are already complying with.

4. Adopt a **fully integrated environmental permitting approach,** where not already in place, particularly for large textile value chain operations and those deemed to pose a significant environmental risk. For small and medium textile value chain operations, single-media permitting may continue to be more appropriate.

5. Identify opportunities for **better integrating all permit requirements (e.g. building permits, business permits, transportation permits, environmental permits etc.)** to ensure environmental impacts are considered holistically and therefore not addressed separately when issuing any necessary permits to undertake activities or developments that impact the environment.

6. Clearly define the **connection between environmental permit and environmental impact assessment (EIA) processes** in legislation to **reduce uncertainty** around the legal requirements and procedures.

7. Review **EIA categories** of activities captured by legislation to ensure that textile production activities that have a significant impact on the environment are recognised as 'significant' in legislation and are categorised in such a way that requires the submission of a **comprehensive EIA** which should also inform the permit conditions, if granted. These categories should be reviewed and updated on an ongoing basis, and, as required, in line with the latest science. While conducting this review, consider how reforms will impact SMEs and develop **support tools to assist SMEs** in complying with EIA requirements.

8. Ensure that environmental permitting legislation clearly stipulates 1. who should conduct the studies required as part of the EIA; and 2. who is legally responsible for the information provided in the EIA. Best practice involves a process that engages **certified and accredited EIA specialists** with the aim of improving the integrity of EIA reporting.

9. Require **social impact assessments** as part of the environmental permit application and ensure that **intersectional and gender considerations** are integrated throughout, including sex-disaggregated data and analysis of gendered exposure to environmental harms, as well as gender-responsive indicators for monitoring compliance.

10. Require **strategic environmental assessments and/or cumulative impact assessments** in areas with high numbers of textile value chain activities to ensure that the cumulative impact of the textile value chain is being assessed and managed.

11. Ensure legislation provides for **mandatory public participation** throughout the environmental permitting process, including clarity about the right and ability to participate, types and timing of participation, and how the outcomes of public participation will be considered by the competent authority, while also providing **public access to information** about environmental permits and conditions and **broad standing rights** to enable community and civil society groups to initiate litigation in cases of non-compliance.

12. Involve **technical experts** from the textile sector in environmental permitting decision-making processes and take into account **international voluntary guidelines and standards** to ensure best practice considerations for textiles value chain activities are reflected in environmental permit conditions.

13. Require **self-reporting** of environmental permit conditions and implement requirements to **verify** this data for textile value chain operations of a certain scale.

14. Use a **risk-based approach to monitor** compliance with environmental permits of textile value chain activities involving significant environmental risk. Consider designating the textile value chain as a sector to be actively monitored to drive better compliance with environmental permit conditions.

15. Ensure effective **enforcement** of, and **compliance** with, environmental permits by adopting an escalated approach, starting with information and notices, followed by fines, daily escalating fines, prosecution, and ending with the cancellation/revocation of the environmental permit, with the most serious and repeat offences involving grave penalties. The monetary values of environmental fines should also be revised to ensure that they are a deterrent and more expensive than not complying with environmental permit conditions. Additionally, grievance mechanisms should be responsive to gender-based vulnerabilities, ensuring inclusive access and redress.

16. Ensure that **best available techniques** (BAT) conditions be included in the renewal of environmental permits to ensure a level-playing field for industry and ensure that holders of environmental permits have complied with previous environmental permit conditions before renewing the permit.

17. Collect and provide **public access** to environmental permit decisions, as well as instances of non-compliance with environmental permit requirements by sector.

18. Require **site rehabilitation** of textile value chain operations upon closure/decommission, including an EIA to identify contamination, hazardous materials or pollution remaining because of the textile value chain operation. No future redevelopment for the site should be approved until the site has been rehabilitated.

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Chapter 1:

Introduction, objectives and methodology

1.1 Introduction

Textiles are fundamental to human lives, whether as protective barriers and markers of identity in the form of clothing, or as coverings for a range of home, health and industrial purposes.[3] Textile production is also important to the global economy and drives industrialisation, trade, development and social value. Further to this, labour in the current textile industry rapidly develops regional and global value chains by connecting producers, brands and retailers, and consumers from across the world.

However, the textile value chain is struggling to address its wide-reaching impacts, with unsustainable patterns of consumption and production contributing to the three planetary crises of climate change, nature loss and pollution (UNEP 2023a). Research suggests that the textiles industry is estimated to be responsible for between two and eight per cent of global greenhouse gas (GHG) emissions,[4] as well as significant pollution, biodiversity impacts, and water extraction, including 215 trillion litres of water consumed per year (the equivalent of 86 million Olympic-sized swimming pools)[5], and nine per cent of annual microfibre pollution to oceans (UNEP 2021). Environmental pressures on the textile value chain places €110 billion of value at risk (Global Fashion Agenda 2017), while addressing them could ultimately save companies $54.1 trillion (UNEP 2019a). At the same time, the number of times that an item is used before it is discarded (textile utility) decreased by an estimated 36 per cent between 2005 and 2015 (Ellen Macarthur Foundation 2017).[6]

The average consumer in the United States of America, for context, bought 69 garments per year in 2021, compared to 40 in the 1990s.

Every second, the equivalent of a garbage truck full of clothes is thrown away around the world, amounting to an estimated $460 billion in total value (Common Objective n.d.; UNEP 2023b).

It is not surprising that pressure is mounting to transition textile production towards a more sustainable value chain. This transition will require better management of the environmental impacts across the textile value chain including during processes associated with textile value chain production. To date however, there has been a limited consideration of how – and the extent to which – the environmental impacts of the textile value chain are regulated at the national level. While, for example, it is known that the chemicals involved in textile value chain activities are causing environmental impacts, there has been no global study examining how environmental law attempts to regulate textile value chain activities. This report makes inroads in addressing this knowledge gap by carrying out a desk-based review of national environmental legislation exploring environmental permitting systems specifically. Environmental permitting systems are one of the key regulatory mechanisms which operate at the national level to authorise and manage the environmental impact of textile value chain activities. The report focuses specifically on environmental permitting, as this topic has received limited consideration within recent literature (Ulibarri, Cain and Ajami 2017) and has been identified as an area of interest to the UNEP Textile Initiative.

3 A textile is a flexible material made up of a network of natural or artificial fibres. Most textiles are formed by weaving or knitting yarn into fabric, but textiles can also be non-woven, with fibres bonded into fabric by chemical, mechanical or heat treatment. Textile products can be classified into apparel, industrial textiles and household textiles.

4 This range accounts for a variety of studies that use different methodologies and data sources, for instance two per cent according to WRI (2020), four per cent according to McKinsey and GFA (2020), and eight per cent according to Quantis (2018).

5 This figure was derived by dividing the total volume of natural water resources used annually (215 trillion litres as per Quantis, 2018) by the volume of an Olympic swimming pool (estimated at 2.5 million litres) based on the dimensions from the International Swimming Federation, which is recognised by the International Olympic Committee as administering water sport international conditions. The dimensions were accessed at https://resources.fina.org/fina/document/2022/02/08/77c3058d-b549-4543-8524-ad51a857864e/210805-Facilities-Rules_clean.pdf (accessed 22 December 2022). The ESPR Preparatory study of textiles (European Commission) refers to 79 trillion litres of water (according to Niinimäki, K., Peters, G., Dahlbo, H. et al. The environmental price of fast fashion. Nat Rev Earth Environ 1, 189–200 (2020). https://doi.org/10.1038/s43017-020-0039-9

6 The baseline for this number was 2017. EMF (2017) A New Textiles Economy: Redesigning Fashion's Future.

1.2 Objectives and target audience

The objective of this report is to examine how, and the extent to which, environmental permitting systems under national environmental legislation, as defined in Section 1.3 of the report, regulate the environmental impacts of textile value chain activities. In doing so, the report also outlines opportunities to strengthen environmental permitting systems to enhance the sustainability of the textile value chain.

To address this objective, this report specifically analyses the environmental permitting systems in ten (10) textile producing jurisdictions: Bangladesh, Brazil, China, Egypt, Germany, India, Indonesia, Jordan, Türkiye and the United States of America. This analysis involved a desktop review of the national environmental legislation in each jurisdiction (along with other relevant national legislation, as listed in Appendix 1). The report also considered the outcomes of two expert consultation sessions (see Section 1.4.3, which details the research approach of this report).

The target audiences of this report are lawmakers, policymakers, researchers, practitioners and industry members wishing to develop or strengthen legislation to improve environmental management of the textile value chain. By investigating environmental permitting systems via an analysis of national environmental laws, this report highlights how environmental laws and environmental permitting systems could be strengthened to ensure the environmental impacts of the textile value chain are better regulated.

1.3 Overview of environmental permitting systems

While environmental permitting has been recognised as one of the key tools regulators have to reduce environmental impacts of industry (cf. Pasini 2023; OECD 2005; 2007; Ulibarri et *al*. 2017), there is limited literature to date on this topic (specifically Ulibarri et *al*. 2017). Broadly speaking, the overall goal of environmental permitting systems is to protect human health and the environment by defining – in a transparent, accountable manner – legally binding requirements for major sources of environmental impact (UN Economic and Social Council 2007, see also Pasini 2023; OECD 2005; 2007). As Pasini (2023 p. 5) outlines, environmental permitting systems, therefore: "regulate all kinds of planning, development, construction and discharge activities possibly affecting the environment". Given the goal and purpose of environmental permitting systems, they have the potential to play a key role in managing and reducing environmental and social harm across the textile value chain.

Research suggests environmental permitting systems of some description have existed since the late 1960s and early 1970s.[7] Environmental permitting, however, is not clearly defined at the international or national level (Ulibarri et *al*. 2017), which may be in part due to environmental permitting systems being: "characterized by extraordinary diversity and complexity" (Davies et *al*. 2001, p. 8). To elaborate on this point, it has been acknowledged that environmental permitting processes can vary between countries – and may in fact even vary between national and sub-national levels within countries – as well as depending on the nature of the project, its size and location (Davies et *al*. 2021; Rona, 1988). Further to this, while foundational international environmental instruments such as the 1972 Declaration of the United Nations Conference on Human Environment (Stockholm Declaration) and the 1992 Rio Declaration[8] on Environment and Development (Rio Declaration) and associated Agenda 21, hint at the existence of environmental permitting, they do not clearly articulate the definition or requirements of environmental permitting.

For example, the Stockholm Declaration 1972 makes no specific mention of environmental permitting, however the notion that there is a need to consider environmental impacts is broadly referenced in Principle 17, which states that: "[a]ppropriate national institutions must be entrusted with the task of planning, managing or controlling the environmental resources of States with a view to enhancing environmental quality". The Rio Declaration 1992, Principle 11, requires states to "enact effective environmental legislation" and notes that environmental standards, management, and priorities should reflect the environmental and developmental context to which they apply. Principle 17 states that environmental impact assessment as a national instrument shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority. Agenda 21 refers to permits but not to an environmental permitting system. There are references to the need to develop permits for noise (6.41g); water discharge (18.40g); chemicals (19.48); and waste (21.49b) but these references are scattered across the lengthy document. As such, it does not specifically reference an environmental permitting system, nor are the various requirements grouped together as environmental permitting system requirements.

As explained further in Section 2.4 of the report, the OECD started issuing guidance on integrated pollution control in 1991 and on environmental permitting more specifically in 1999 (with subsequent updates provided in 2005 and 2007). Since then, progress on defining best practice or common elements of environmental permitting at an international or transboundary level has stalled. Despite the lack of global coordination on environmental permitting, the research conducted for this report found that all the countries examined had environmental permitting systems in place and that environmental permits remain the key mechanism for managing the environmental impacts of industry. This suggests that environmental permitting reform and development is occurring largely because of national environmental interests and priorities (bottom-up) rather than being informed by international, transnational, or cooperative global processes (top-down).

What 'environmental permit' and 'environmental permitting systems' refer to in this report

Like the term environmental permitting, there is no globally agreed definition of environmental permit. The term 'environmental permit' – which is sometimes referred to as an environmental licence – is often used within legal contracts to refer to any permit, approval, identification number, licence or other authorisation required under environmental law (Law Insider, 2024).

An 'environmental permit' is used to refer to the resulting permit or licence to operate that is granted to an individual, business, or other entity which regulates the environmental impacts according to national environmental law. These permits typically: "describe the conditions under which a facility may operate" (Hadden Jr., 1989, p. 187).

In this report, the term 'environmental permitting systems' is used to refer to the structured processes defined by national environmental law requiring individuals, businesses, and other entities to obtain permits or licences for activities causing or likely to cause environmental impact.

7 For example, integrated permitting was introduced in Sweden in 1969 (cf. OECD, 2007), though other scholars have traced the beginning of modern environmental regulation and permitting to the USA Clean Water Act 1970 (cf. Fiorino, 2006). See also Pasini, 2023, who acknowledges environmental permitting systems have been used since the 1970s.

8 Rio Declaration on Environment and Development, GA Res 47/190, UN Doc A/CONF.151/26 (12 August 1992) ('Rio Declaration').

As outlined above, environmental permitting systems are legally binding systems which authorise and set conditions upon major sources of environmental impacts. These legally binding requirements related to environmental permitting are outlined in environmental legislation at the national and/or subnational levels. Noting that this report focuses only on national environmental legislation, the review of this legislation across the selected countries found varying terminology to refer to environmental permits issued as part of the environmental permitting systems. This includes 'Environmental Clearance Certificate' (Bangladesh), 'Environmental Permit' (Türkiye), and 'Environmental Licence' (Indonesia).

In some countries, such as Germany and the United States of America, relevant environmental permits are labelled according to the specific media to which they apply (e.g. pollution, water, hazardous waste).

The names of the relevant national environmental permits and the validity of these permits are summarized in Table 1. As the table indicates, the period of validity varies substantially between the countries. This is important to consider, as it means, in the context of this report, that a textile value chain operation can operate for many years without the need to apply for a new permit, and thus may be subject to outdated (and arguably more lenient) environmental conditions.

Table 1. Permit names and period of validity

Country	Name of permit	Period of validity as stipulated in legislation
Bangladesh	Environmental Clearance Certificate (ECC)	Valid for 3 years for green category industries and 1 year for all other categories (i.e. higher polluting industries).
Brazil	• Preliminary Licence • Installation Licence • Operational Licence • Online Environmental Licence	• Preliminary Licence – 5 years • Installation Licence – 6 years • Operational Licence – 4 to 10 years • Online Environmental Licence – 4 years
China	Pollutant Discharge Permit	Valid for 5 years
Egypt	Environmental Permit[i]	No validity period prescribed in the legislation.
Germany	• Emission Control Act Permit • Water Extraction Permits	Emission Control Act permits are usually unlimited in time but will become invalid if the operators are not carried out during a three-year period. Water Extraction Permits must be reviewed every four years in line with European Union Industrial Emissions Directive.

Table 1. (cont'd). Permit names and period of validity

Country	Name of permit	Period of validity as stipulated in legislation
India	• Consent to Establish (CTE) • Consent to Operate (CTO)	• Initial CTE valid for five years but may be extended to maximum of seven years (additional two years). • Blue category industries[9] 15 plus two years. • Green category industries generally submit a simplified CTO application, which is valid for 15 years in many states. • CTOs for orange category industries are typically valid for 10 years. • CTOs for red category industries are typically valid for five years. • CTEs and CTOs for white category industries are not required.
Indonesia	Environmental Licence	No validity period prescribed in legislation. Approval is valid as long as the business actor conducts its activities and there is no change in those activities.
Jordan	Environmental Licence or Permit	Approval is valid for three years from the date it is issued and is renewable.
Türkiye	Environmental Permit	Valid for 5 years
United States of America	• National Pollutant Discharge Elimination System (NPDES) Permit – two types, individual or general NPDES Permit • Clean Water Act Section 404 Permit • Clean Air Act Quality Permit • Hazardous Waste Permit	• NPDES Permit – 5 years • Clean Water Act Section 404 Permit – 5 years • Clean Air Act Permit - 5 years • Hazardous Waste Permit – up to 10 years

i It is unclear based on the desktop research what Egypt calls their permit/licence, as various terms including environmental permit, licence and 'project licence' were used in the documents analysed, though this could be due to the unofficial translation.

9 A revised methodology of classification was adopted by the Central Pollution Control Board in February 2025 to address essential environmental services and incentivize industries that opt to adopt and use cleaner technologies and practices, that lead to pollution reduction across various sectors. The incentive scheme includes extended validity for the Consent to Operate and reduced inspection frequencies, designed to encourage continual improvement of environmental performance.

1.3.1 The link between environmental impact assessment and environmental permits

A key part of the environmental permitting process is the environmental impact assessment (EIA). In most of the jurisdictions examined in this report, the environmental permitting process requires an EIA for activities considered to cause significant environmental impact. As acknowledged by the OECD (2005 p. 16): "environmental permitting must take into account other applicable regulatory requirements. Particularly important is the interaction between permitting and environmental impact assessment". EIAs are the: "most commonly known, used, and globally widespread, environmental planning and management tools" (UNEP 2018, p. 2). Like environmental permits and environmental permitting systems, there is no globally agreed definition of EIA, however, the Convention on Environmental Impact Assessment in a Transboundary Context does provide a common understanding of what EIA should refer to (UNECE 1999). Broadly, EIA refers to the: "formal structure for carrying out the assessment of the environmental implications of projects and its integration with the project cycle" (Ebisemiju, as cited in UNEP 2018, p. 2). Also known by the shorter acronym EA for environmental assessment, a review by Morgan (2012) found that: "191 of the 193 member nations of the United Nations either have national legislation or have signed some form of legal instrument that refers to the use of EIA," demonstrating that EIAs are: "firmly embedded in national environmental law" (p.6).

EIAs are a tool designed and used to inform decision-makers about the environmental, social, and economic implications of a proposed development. The EIA report is used to assess the potential impacts of a planned activity prior to its commencement (UNEP 2018) and informs the environmental permit conditions and approvals. However, while EIA approval is often a: "legal pre-condition for the final decision on whether to issue a permit or not, and if so, under which conditions" (UNEP 2018, p. 21), the relationship between permitting and EIA can vary between countries (see UNEP 2018). The extent to which EIA is used to inform permitting decisions – and the conditions associated with an environmental permit – varies.

In some cases, an environmental permit for a textile value chain operation may be issued without an EIA when the national environmental law does not classify the textile value chain activity as causing significant environmental impact. However, in analysing EIA requirements, this research found that there is no common approach across the jurisdictions to classifying the risk or significance of textile value chain activities. Despite each country taking a unique approach to classifying risk, generally high-risk textile value chain activities include operations which are large in scale/size and/or are associated with textile value chain processes using hazardous chemicals and/or a high level of water use and discharge.

It is important to reiterate that EIA as a process is focused on proposed or future operations, rather than evaluating the impacts of existing operations. Thus, the triggering factor for the EIA process is generally the environmental permitting process for a planned activity prior to its commencement (UNEP 2018), but also modifications to existing textile value chain activities (cf. Davies et *al*. 2001). In addition, environmental permits should be renewed once the period of validity has expired. As noted in this report (see Chapters 3 and 4), the legislation and the literature reviewed was generally clear regarding the environmental permitting systems requirements for the establishment of new operations, but it was typically less clear in relation to modifications to existing operations and renewals.

To summarize and explain the link between environmental permitting systems, environmental permits, environment legislation and EIA:

- Environmental permitting systems can be understood as the structured governance systems which establish the legal requirements for environmental permits.
- Environmental permits are the main mechanism under environmental law for managing the environmental impact of activities.
- EIA legislation generally determines whether an environment permit is needed for a textile value chain activity.
- EIA legislation is focused on identifying proposed risks and as such focuses more on establishment and or extension/modification of textile value chain activities.
- An environmental permit can be issued for a textile value chain operation without going through an EIA process, if the national environmental legislation (or other related legislation) does not classify the environmental impact of the textile value chain activity as being significant.

1.3.2 Single-media versus integrated environmental permits

There are two forms of environmental permitting – single-media environmental permitting and integrated environmental permitting (UN Economic and Social Council 2007). These two approaches can be defined as:

1. **Single-media environmental permitting** (the traditional regulatory approach) which derives from the way that environmental regulation developed in response to specific environmental problems (for air, water protection, waste management, etc.) that needed to be addressed. Under this approach, an operator of an industrial installation may be required to hold several environmental permits (for example: a water permit, a chemical permit and an emissions permit) and these permits may come from a number of separate authorities and do not necessarily operate in a coordinated or cooperative way.
2. **Integrated environmental permitting** means that emissions to air, water (including discharges to sewers) and land are considered alongside the environmental effects (the use of energy, water and raw materials) under one permit. This requires regulators to set permit conditions which achieve a high level of protection of the overall environment. Integrated permitting is based on the concept of best available techniques (BAT)[10].

Under single-media environmental permitting systems, polluting substances may be transferred from one environmental media into another. For example, pollution from water can transfer to land and soil, but these impacts would not necessarily be considered by the water permit. There is also the risk of dilution and dispersion of releases to the environment to solve a local environmental quality problem which may lead to environmental harm at greater distances. The narrow nature of the single-media permitting systems typically means that releases of contaminants into the environment are considered in isolation, so the cumulative impact of harms produced further down the value chain are not captured.

Integrated environmental permitting, on the other hand, is viewed as best practice for major pollution sources as it can help optimise the design and operation of industrial installations in line with a holistic understanding of environmental harm (OECD 1991; 2005). A more simplified environmental permitting process may be more suitable to smaller scale organizations such as small and medium enterprises (SMEs) (OECD 2007). Environmental permitting systems may be partially or fully integrated and most countries examined in this research are on a journey towards integrated environmental permitting.

10 Best available techniques (BAT) is a "tool to establish evidence-based environmental permit conditions for industrial installations" which aims to mitigate and manage industrial pollution and uphold a stringent standard of human health and environmental protection. BAT are state-of-the-art techniques designed for application under economically and technically viable conditions (OECD n.d.). *See also* the BAT definition in Directive 2010/75/EU, according to which BATs are: "the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole", whereby 'techniques' includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned; 'available techniques' means those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator; 'best' means most effective in achieving a high general level of protection of the environment as a whole (art.3).

In addition to holding environmental permits, individuals or businesses may also be required by legislation to obtain administrative permits to operate as a business entity. While not the primary focus of this research, the research conducted for this study found that administrative permits were generally separate from national environmental permitting processes (in that the decision for one did not influence the other) and there was no integration of environmental considerations within the administrative permitting legislation examined for the ten countries (See Section 3.2.2 and Appendix 2).

While prior work has been done by UNEP (2018) to broadly assess environmental impacts, via an analysis of national legislation and institutional arrangements of relevance to EIAs and strategic environmental assessment (SEAs) across the globe, this report takes a narrower focus by specifically examining how, and the extent to which, current environmental permitting systems, as per the national environmental legislation (and other related national legislation, as outlined in Appendix 1) in the ten selected jurisdictions, regulate the environmental impacts of textile value chain activities.

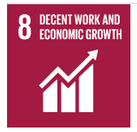
1.3.3 Environmental permitting and the UN SDGs

Environmental permitting systems are an existing mechanism within environmental law that can be used to drive progress towards implementing the Sustainable Development Goals (SDGs). While all 17 SDGs directly or indirectly relate to the textiles industry (Meier 2021), the eight listed goals below are relevant to environmental permitting systems in the textile value chain:

Photo: Adobe Stock

Goal 5 - Gender equality: Given that the majority of workers in the global textile industry are women (ILO 2023), exposure to textile production pollution is gendered, thus requiring the development of safeguards to manage these specific risks. There are also significant gendered social risks associated with the textile sector including labour rights and gender equality regarding fair pay, discrimination, gender-based violence and harassment, and worker safety.

Goal 6 - Clean water and sanitation: The textile industry is responsible for significant water pollution and has adverse effects on surrounding natural environments, including limiting local access to clean water.



Goal 8 - Decent work and economic growth: Employing some 94 million people globally (ILO 2023), the industry creates jobs and contributes to national gross domestic profit. Protecting labour rights, ensuring safe working conditions and decoupling this economic growth from environmental degradation is essential.

Goal 9 - Industry, innovation and infrastructure: The textile industry involves many different industrial processes and requires unique infrastructure and facilities which may require environmental permits and monitoring. Environmental permitting processes may play a role in promoting technological innovation by encouraging the use of best available techniques (BAT).

Goal 12 - Responsible consumption and production: Billions of new textile products are produced annually, and much of this ends up in landfill after only a short time (Clean Clothes Campaign 2024). A focus on product durability, eco-design, reduced production and consumption overall, and better management of waste and (re)use of resources is needed to increase responsibility for products and their impacts along the value chain (UNEP 2020).

Goal 13 - Climate action: Responsible for two to eight per cent of the world's carbon emissions, the textile industry contributes substantially to climate change (Sadowski et *al.* 2021). Making extreme reductions in the industry's dependence on petroleum-based fibres and non-renewable energy sources is essential.

Goal 14 - Life below water: Water-conscious practices in textile production and laundering, including consideration to the shedding of microfibres into water streams, is essential to improving water quality and marine ecosystems.

Goal 17 - Partnerships for the goals: The textile industry is a global and expansive network which has a responsibility and an opportunity to emphasise collaboration across public, private, and civil action.

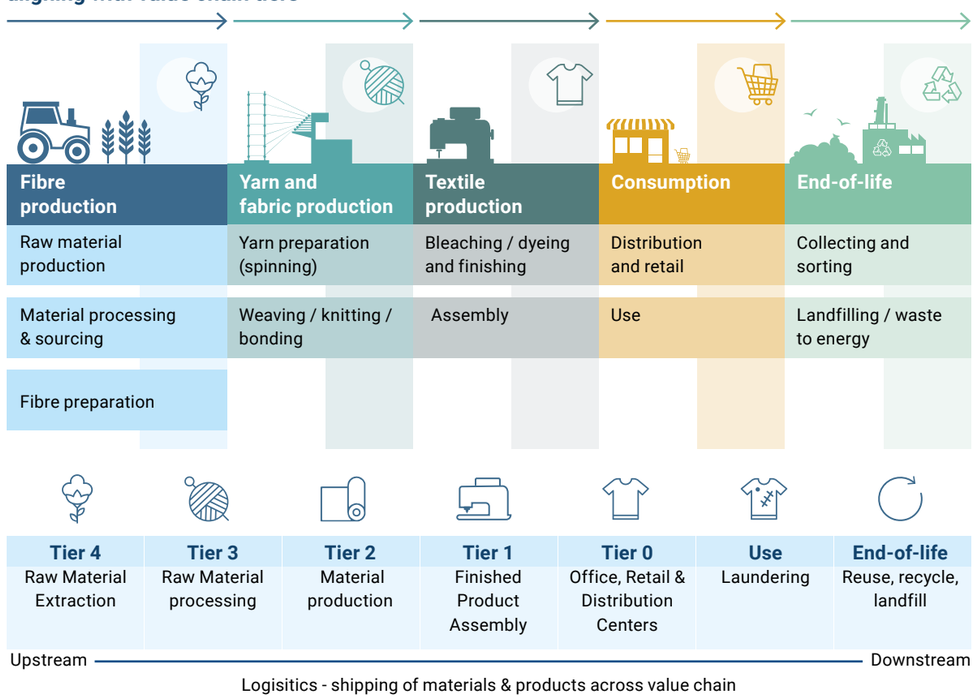
1.4 Methodology

1.4.1 Defining the textile value chain

This report builds on the work undertaken under the umbrella of the UNEP Textile Initiative and follows the textile value chain approach from UNEP's series of Sustainability and Circularity in the Textile Value Chain reports (UNEP 2020; UNEP 2023b). The textile value chain, as illustrated in Figure 1, is defined as a whole-of-system approach which includes the processes used to produce, use and dispose of textiles and textile products. The value chain approach considers the social and economic value generated throughout the chain, as well as the governance of the chain and the influence of governments, non-governmental organizations, and civil society (UNEP 2023b).

This report examines the permit processes necessary for textile value chain operations or activities, which are often referred to as Tiers 1-3, which are known to have environmental impacts during production and are typically staffed by formal textile labour in factory environments. While Tier 4 (fibre production) is illustrated in Figure 1 to depict the entire textile value chain, it falls outside the scope of this report. The focus is specifically on the legislative framework governing textile and garment production, with no consideration of raw material extraction. This focus is justified by the expectation that similar administrative permitting frameworks already cover Tiers 1-3. Additionally, the permitting process for Tier 4 would likely involve a wide range of considerations due to its diverse range of activities and impacts, including supplying industries beyond textiles, such as crude oil extraction or meat production.

Figure 1. Linear representation of activities along the textile value chain (UNEP 2020), aligning with value chain tiers



Source: Sadowski et *al.* 2021; UNEP 2023b

The textile value chain is comprised of all the activities that provide or receive value from designing, making, distributing, retailing, and consuming a product from the textile value chain, including the extraction and supply of raw materials, as well as activities connected with textile end-of-life. The textile value chain is a term used to refer to the different steps in the stages of textile production, commonly described by the industry as tiers. Following Kozlowski, Searcy and Bardecki (2016, p. 157), Tiers 0-4 comprises the phases from "raw-material acquisition to the retail environment". Following Sadowski, Perkins and McGarvey (2021) and UNEP (2023b), the Use Phase Tier and the End-of-Life Tier include the 'life' (or 'lives') of a textile product as it is used, worn, washed then reused, repaired, recycled or landfilled. Although there are a variety of methods used to define the value chain, for the purposes of this report, the processes involved in each of these tiers are defined to include:

Tier 4

Raw material extraction from the earth, plants or animals, e.g. at farm, forest, or oil field.

Tier 3

Yarn and fabric production, including material preparation for leather at tanneries.

Tier 2

Material production, production and finishing of fabrics and other inputs that go directly into the finished product.

Tier 1

Garment/textile finished product assembly.

Tier 0

Brands and retailers, their retail outlets, offices, and distribution centres.

Photo: Adobe Stock

Use phase

The 'use phase' of a textile product covers the period in which it is used, worn, and laundered, by one or many users.

End-of-life

The processes of collecting, sorting, recirculating, recycling, or landfilling which might give the textile product a new use (and which might re-introduce or 'circulate' the product back into a production tier) or designate it as 'waste'.

In sum, the types of textile value chain operations[11] that may need to obtain an environmental permit to cover the environmental impacts of these textile value chain activities include, but are not limited to: fibre processing plants for processes such as wool scouring and carbonising, tanneries, spinning and weaving mills, dye houses, and garment or Cut-Make-Trim (CMT) factories. More information on the textile chain activities and the environmental impacts occurring at each of these Tiers 1-3 can be found in Section 1.5 of this chapter. It is important to note that

11 This term is used to describe business, companies and individuals responsible for the textile chain activities.

this report does not assess the environmental harms that may occur, and the related permits that may be required, in Tier 4 (raw materials), Tier 0 (retail), or regarding use or end-of-life. Future work could examine the implications of permitting processes related to the facilities covering the processes of recycling and remanufacturing, as well as other value retention practices.

1.4.2 Country selection

To build a picture of national environmental permitting systems for textile value chain activities in several regions, this report examined the national environmental laws of ten countries. The countries were selected based on their degree of textile value chain activities in-country, adequate representation across the UN geographical regions, and with consideration of access to expert input from each country. To determine the degree of participation in the value chain, global trade and production data from the databases Euromonitor Passport, Global Data Apparel Intelligence Centre, and IBISWorld were examined (Euromonitor 2023; Global Data 2023; IBISWorld 2023).

The countries selected for this report are spread throughout diverse geographical regions, listed in Table 2 below.

Table 2. Country selection via region

Region	Countries selected	Overview
Asia	• Bangladesh • China • India • Indonesia • Jordan • Türkiye	This region has the highest intensity of global textile production[12] (World Bank 2021). Given the size and significance of the textile value chain in this region, there was evidence of national environmental legislation specifically recognising the environmental impact of textile value chain activities. In Bangladesh and India certain activities within the textile value chain are classified as a 'high-risk' category under their national environmental laws and, depending on the category, a comprehensive EIA is required. An emerging trend within this region is the rise of integrated environmental permitting systems. While integrated systems have already been established in Bangladesh and Indonesia for some time, China has more recently adopted regulation to introduce integrated environmental permitting. Similarly, India issues integrated permits for air and water pollution and hazardous waste through a combined application. As a water-scarce country, Jordan's environmental permitting laws have a strong focus on reducing water use within textile value chain operations, thus Jordan classifies certain textile value chain activities as having a high environmental impact. Türkiye also has an integrated permitting regime, and its EIA legislation references bleaching, yarn and fabric factories with dyeing units, and denim or apparel products with washing facilities as being textile value chain activities likely to cause environmental harm, but the trigger for EIA process is based on the scale of the textile value chain activities.

Table 2. (cont'd). Country selection via region

Region	Countries selected	Overview
Europe	• Germany	Europe is a major importer of textile products, however the region also has textile value chain capabilities across all tiers. Europe is represented in this report through Germany, as a significant producer across Tiers 1, 2, and 3 (UNDP 2017; OEC 2023). Germany employs an integrated permitting regime, and textile value chain activities are explicitly recognised in Germany's EIA legislation, whereby certain textile value chain activities may require a comprehensive EIA and environmental permit, depending on their scope and location.
Africa	• Egypt	Africa is a high producer in Tier 4, raw materials, and Tier 1, finished products, with less production in Tiers 2 and 3. The report examines Egypt as it is a country with major vertical integration[13] of producers across Tiers 1-4 and is one of the largest and most productive textile clusters in Africa (Egypt Business Directory 2023). In Egypt an environmental licence is typically required for establishing and operating a textile value chain operation, however the requirement for conducting a comprehensive EIA prior to a licence being issued depends on the classification of the textile value chain activity. Although it is unclear from the legislation analysed for this research if Egypt's environmental permitting system is integrated, based on information regarding Law No. 15 on the Facilitation of Granting Licences to Industrial Facilities (2017), it appears there is some level of integration.
Americas	• Brazil • United States of America	Brazil and the United States of America have been selected for this report due to the scale of production processes in both countries. Brazil has one of the world's most "complete production chains" (Picoli et *al.* 2023, p. 51), meaning it has the capability and capacity to contribute to the production of textiles across all tiers. Brazil has also embraced an integrated environmental permitting approach. Environmental permits are required for the construction, installation, expansion, or operation of any activity that uses environmental resources or is considered to be actually or potentially polluting to the environment. The United States of America is a major importer of textile products from other regions and maintains textile value chain activities across all tiers of the value chain (NCTO 2022). The United States of America has a single-media environmental permitting at the national level.

12 According to the World Bank, in 2021 the top countries and regions from which textiles and clothing were imported include China, Bangladesh, Viet Nam, Türkiye and India, meaning four of the top five are in the Asia Pacific region.

13 Vertical integration at the country level signifies the country's capability to internally manage all stages of textile production, starting from sourcing raw materials to manufacturing finished products.

1.4.3 Approach to examining environmental permitting systems

Research for this report was desk-based. Content for Chapters 1[14] and 2 was generated from examining academic literature, grey literature, and international agreements and initiatives related to the environmental aspects of the textile value chain. Content from Chapters 3 and 4 was based on a desk review of national environmental permitting legislation and other relevant regulation and policy in the selected countries. The FAOLEX database was used to find and access the relevant national legislation for each country. Where official English versions of the legislation could not be accessed, unofficial English translations were used. The list of legislation considered for this report can be found in Appendix 1. This also highlights which legislation involved an unofficial English translation. The titles of legislation, as listed in Appendix and used throughout this report, are as shown on the FAOLEX database.

While the desk-based research approach provided a structured and resource-efficient means of gathering information, it presents several limitations. Reliance on secondary sources (academic and grey literature or international databases like FAOLEX) may result in gaps or outdated information, particularly where national legislation has recently changed. The use of unofficial English translations for some legal texts introduces the risk of misinterpretation or loss of nuance. An effort was made to address those limitations by reaching out to Government and other experts through the consultations and the peer review, explained below.

A set of criteria was developed to compare and review the environmental permitting associated legislation across the selected countries (this list of criteria can be found in Appendix 3). The criteria were then refined, with some of the initial criteria being removed and others added, during the desk review of legislation. The final criteria spanned three categories: 1. permitting requirements; 2. impact assessment requirements; and 3. caselaw. These criteria were used to ensure that a consistent approach was adopted for analysing the national environmental permitting legislation (and other associated legislation) of the selected countries. These criteria were drawn from a literature review of grey and academic literature on environmental permitting. While the Organization for Economic

Photo: Adobe Stock

14 With the exception of information contained in Table 2, which was also informed by the relevant legislation listed in Appendix 1.

Cooperation and Development (OECD) has published Guidelines of Effective Environmental Permitting Systems (2005; 2007), there is limited academic literature on environmental permitting (Ulibarri et *al.* 2017). Due to the close connection between permitting and EIAs, as outlined in Section 1.3.1 and in Chapter 3, consideration was also given to the grey and academic literature pertaining to EIAs when developing the criteria.[15]

An online expert consultation process was also carried out to refine the research, identify gaps and ensure that the research is tailored to the needs of countries. The consultations brought together National Focal Points of the Fifth Montevideo Programme for the Development and Periodic Review of Environmental Law (Montevideo Programme V), industry experts, academia and other stakeholders. A questionnaire for written feedback was also circulated to participants to gather further input. Additionally, the relevant information per country was shared with the Montevideo Programme V national focal points of the ten countries examined more in detail. The feedback gained from the expert consultations has been incorporated into the report. The final version of the report was peer reviewed by selected experts, who provided valuable feedback.

1.5 Understanding environmental impacts in the textile value chain

The social and environmental impacts of global textile value chains are becoming increasingly studied through a lifecycle lens that considers impacts from raw material inputs through to waste generation at the product's end-of-life. Research and policy have focused on social and environmental concerns such as climate impacts, freshwater use, chemical pollution (including chemicals of concern), biodiversity loss and human rights (including labour rights and gender equality) (UNEP 2020). This report examines the pollutants likely to be referenced in EIA criteria and environmental permitting processes: chemicals, wastewater, air emissions, soil contaminants, solid waste and microfibres.

Table 3 maps these pollutants along the textile value chain focusing on the production of yarn, fabrics, and textile products across Tiers 1-3, and identifies some processes and 'hotspots' which account for significant environmental, social, and/or economic impacts of a product or process (UNEP 2020). The type of pollution, and the point at which it occurs, will have different impacts on the direct surrounding environment and broader social and ecological consequences.

The table below has been informed by Kozlowski, Searcy and Bardecki (2016), Sadowski, Perkins and McGarvey (2021), and UNEP (2023b) and is provided to show examples for policymakers of the types of activities that may be considered under environmental permitting systems. It is important to note that environmental law generally does not refer to tiers but rather to the types of textile value chain activities (e.g. tanning, bleaching or dyeing). This is contrasted against industry approaches which tend to refer to textile value chain activities across tiers. This means, for example, that national environmental law might regulate processes associated with textile dyeing but will not generally refer to textile value chain tier(s) in which this happens. See Section 2.5 for more information on industry practices and Section 3.2.4 for how the national environmental legislation of the selected countries regulates textile value chain activities.

15 With reference, in particular, to Barker and Wood 1999; El-Fadl and El-Fadel 2004; Emerson et al. 2022; Gałaś et al. 2015; Hartley and Wood 2005; Jha-Thakur and Fischer 2016; Jones et al. 2005; Khosravi, Jha-Thakur and Fischer 2019; Morrison-Saunders et al. 2021; Pinto et al. 2019; Sharpe and Retamal 2021; UNEP 2018; Wood 2003.

Table 3. Production facilities in the global textile value chain (most common fibres and processes) and environmental impacts, Tiers 1-3[16]

	Fibre Production		Yarn and Fabric Production		Textile Production	
	Material processing & sourcing	**Fibre preparation**	**Yarn preparation (spinning)**	**Weaving / knitting / bonding**	**Bleaching / dyeing and finishing**	**Assembly**
Examples of facility type	• Raw material processing facility (e.g. wool scouring) • Tannery	• Filament production plant • Viscose production facility	• Spinning mill	• Mill for weaving, knitting or non-woven fabric production	• Dye house	• Garment / Cut Make Trim (CMT) factory • Washhouse / laundry
Examples of processes undertaken	• Polyester polymerisation plant • Cotton gin • Pulp mill • Wool scour	• Colouration of chips for polyester filament • Extrusion • Thermal drawing process	• Spinning and confection of polyester	• Mordant methods	• Bleaching and dyeing of yarns including bathing, rinsing and soaping processes • Bleaching, dyeing and finishing of fabrics	• Stitching garments and other products • Wet and dry finishing of products
Examples of chemical use, storage & discharge	• Polymerisation and poly-condensation • Ginning (cotton) • Scouring (wool) • Pulping (viscose) • Tanning	• Detergents, solvents, enzymes, bleaches, bases and acids applied to fibre, yarn or fabric	• Chemical spinning methods for synthetic and manmade fibres • Spinning oils	• Sizing and coating chemicals for weaving • Lubricants for knitting • Solvents, adhesives and binders for non-wovens	• Dyes, pigments, binders, polymeric resin • Metals and chemicals use in finishing processes including softeners, resins, and water, flame and oil repellents • Wet processing and finishing treatments; chemical and abrasive washing using alkalis, oxidising agents and enzymes • Detergents for commercial wet finishing.	
Examples of wastewater discharge	• Chemical residue in wastewater from poly-condensation including creation of PET pellets which can be spilled • PET pellets • Chemicals used in leather tanning • Solvents used in man-made cellulosic fibres	• Viscose production wastewater from pulp production			• Batch-dyeing water use • Mineral salts and hydrolysed reactive dyes in wastewater • Pollutant by-products from finishing processes • Loss of lubricant or spinning oil from machines through water • Commercial wet finishing uses high water quantity and can carry chemicals and microfibres	

16 Table content drawn from Choudhury 2017; Elsasser 2010; Gullingsrud 2017; Horrocks 2017; Sarkar, Johnson and Phyllis 2021; Young 2018; UNEP Global Roadmap (2023b).

Table 3. (cont'd). Production facilities in the global textile value chain (most common fibres and processes) and environmental impacts, Tiers 1-3

	Fibre Production		Yarn and Fabric Production		Textile Production	
	Material processing & sourcing	**Fibre preparation**	**Yarn preparation (spinning)**	**Weaving / knitting / bonding**	**Bleaching / dyeing and finishing**	**Assembly**
Examples of air emissions	• Greenhouse gas emissions released through powering production processes		• Spinning accounts for 12 per cent of climate impact across value chain (UNEP 2020)	• Weaving/knitting/ bonding accounts for 10 per cent of climate impact across textile value chain (UNEP 2020)	• Bleaching, dyeing, and finishing processes account for 36 per cent of climate impact across the value chain (UNEP 2020) • Thermal assistance during batch-dyeing requires high CO2 emissions	• Release of airborne dyes and petrochemicals through mechanical force • Product assembly accounts for 5 per cent of climate impact across textile value chain (UNEP 2020)
Soil contamination	• Particulate matter of dust, cotton stalk and lint emitted from cotton ginning • Textile mills usually generate nitrogen and sulphur oxides from boilers • Poly-condensation process requires high temperatures and catalysts such as metal oxides or acetates which are carried in wastewater. • Leather tanning: chrome tanning, discharge of chromium compounds, organic compounds and other chemicals and solvents, vegetable tanning, tannins, colourants discharged					• Polluted irrigation water containing microplastics, direct use of sewage sludge as fertiliser or natural deposition of airborne microplastic particles can eventually end up in soil
Solid waste		• Waste short fibre and dust				• Pre-consumer waste in the form of offcuts
Microfibres, including microplastics	• Produced from hides and skins during tanning processes	• Abrasive water-based processes carry microfibres through wastewater streams and waste sludge • PET pellets at this stage are considered a form of microplastic themselves and if spilled can run into water and soil		• Abrasive water-based processes carry microfibres through wastewater streams and waste sludge	• Microfibres released into wastewater streams through laundering	• Release of airborne microfibres through mechanical force

1.5.1 Chemicals in the textile value chain

Regulating chemical use is a priority issue for controlling the environmental impacts of the textile value chain. Chemical use, storage and discharge occurs across all tiers, with work on harmful chemicals and restricted substances starting to inform textile industry practices (Aldalbahi et *al.* 2021). Within textile value chain activities, it is difficult to estimate the number chemicals used. A study in 2018 found that over 8,000 synthetic chemicals are used (Nimkar 2018) but the situation today is unknown. Dispersion of chemicals can occur via water, air and soil. Wastewater is the main source of chemical pollution in the contemporary textiles value chain (Mia et *al.* 2019). Typical characteristics of textile wastewater includes microfibres, including microplastics fibres, as well as a wide range of pH, biochemical oxygen demand, chemical oxygen demand, total dissolved solids, heavy metals and strong colour (Hossain and Khan 2017). Chemical air pollution arises from the gaseous emissions often produced by wet processing industries and occurs by the emissions of different types of gases such as particulate matter, CO2, NO2, and SO2 (Mia et *al.* 2019). Dust pollution refers to air that carries tiny particles of dangerous solids or carcinogenic chemicals which are orally ingested through inhalation or absorbed through the skin (Clarke 2011). Soil contamination occurs when fibres are exposed to, and suffer deterioration from, the effects of air, water or sunlight. An example is the outcome of deteriorated materials like nylon, polyester, or other polymers that have been disposed of in landfills ending up in waterbodies. The use of synthetic chemicals, some of which are harmful to humans and the environment, is not an exception but a deeply embedded norm in the contemporary textiles industry. Thus, responses to address the impact of such chemicals need also to contribute to a broader shift away from production models too reliant on non-renewable resources.

Photo: Adobe Stock

Textbox 1: Chemicals of Concern in Textile Production

Greenpeace is a notable activist organization in, and beyond, the textiles industry, targeting pollution awareness and reduction. The organization's Detox My Fashion campaign (2007-2023), which has informed the work of ZDHC, targeted the following chemicals of concern in the textile value chain:

- **Alkylphenols (APs):** Alkylphenols are used as surfactants in detergents, and as additives in paints and textiles. They are known to be toxic to aquatic life and are classified as endocrine disruptors.
- **Alkylphenol ethoxylates (APEOs):** APEOs are a group of chemicals that are used as surfactants in a wide range of industrial applications and consumer products, including textile production. They degrade into alkylphenols, which are persistent, bioaccumulative and toxic.
- **Phthalates:** Phthalates are commonly used in the textile industry as plasticizers in synthetic materials and are also used in printing inks. They are known for their potential endocrine-disrupting properties.
- **Brominated and chlorinated flame retardants (BFRs and CFRs):** These are used to reduce the flammability of textiles, but they can be toxic, persist in the environment and accumulate in living organisms.
- **Azo dyes:** Certain azo dyes can release aromatic amines, some of which are known to be carcinogenic.
- **Organotin compounds (OTs):** Organotins are used as biocides and as catalysts in the production of polyurethane foams. Some organotins are toxic and have endocrine-disrupting properties.
- **Perfluorinated chemicals (PFCs):** PFCs are used for their water-repellent and stain-resistant properties in a variety of industries, including textiles. They are very persistent in the environment and can have harmful effects on humans and wildlife.
- **Chlorobenzenes (CBs):** Used in the manufacture of other chemicals and in some pesticides, these chemicals can be persistent, bioaccumulative and toxic.
- **Chlorinated solvents:** These are used in a variety of applications, including textile processing, and can be harmful to the environment and human health.
- **Chlorophenols (CPs):** Chlorophenols are used in the textile industry as biocides. They can be toxic and persistent in the environment.
- **Heavy metals:** Heavy metals such as cadmium, lead, mercury and chromium (VI) are used in dyeing processes and can be toxic even at low concentrations. They do not biodegrade and can accumulate in the body over time.

Regulation of chemicals use, storage, and disposal is expanding at national and international levels, with significant knowledge held by bodies creating voluntary textile guidelines at the international level. The national environmental legislation examined of the selected countries showed no consistent approach for regulating harms associated with chemicals in textile industry. This research found that international voluntary textile regulation contains prescriptive guidance on how chemicals should be managed across the textile value chain (see Section 2.5 of this report). Knowledge is still building around what constitutes 'safe' levels of chemical use and exposure with safety being a relative term that must be understood in the context of a product's entire lifecycle, including considerations for dose quantity and exposure overtime (Bergkamp and Abelkop 2019).

There has been increased attention on perfluorinated chemical substances (PFCs) (which includes PFAS) and persistent organic pollutants (POPs). These chemicals can be found in textiles, often as flame-retardancy, water-repellence and stain resistance, or fungicide for preserving cotton seeds or fibres. PFAS have been associated with altered immune and thyroid function, liver disease, lipid and insulin dysregulation, kidney disease, adverse reproductive and development outcomes, and cancer (Fenton et *al*. 2021). PFAS are a highly stable compound that are extremely persistent and accumulate over time in humans, animals, and the environment. There are a number of ongoing studies seeking to determine what constitutes a 'safe' level of PFAS, with environmental agencies increasingly taking a precautionary approach to this chemical. As knowledge increases around other chemicals, they will also likely be subject to more precautionary approaches as evidenced by the emergence of the Strategic Approach to International Chemical Management (SAICM), now the Global Framework on Chemicals (see Section 2.3.4).

1.6 Limitations

Existing literature examining textile value chains from a legal perspective is limited. As such, this research is a first step in understanding the role that environmental permitting systems can play in improving the sustainability of the textile value chain.

The report has five key limitations:

1. The research was limited to the study of national environmental permitting legislation in ten countries. While general insights can be drawn from this analysis, it is not a global analysis of national environmental permitting frameworks as they relate to textile value chain activities.
2. The research was limited to an assessment of environmental legislation at the national level. Consideration of subnational legislation (i.e. legislation below the national level, such as regional or local regulations) was beyond the scope.
3. Information in this report has been gathered largely by desk-based research. The findings of this report do not include an assessment of how national legislation operates in practice.
4. While all efforts were made to ensure the relevant and most up-to-date legislation was considered, it is possible that relevant legislation and subsequent amendments may have been overlooked. Further to this, where official English versions of the legislation were not available, the authors used unofficial English translations. Appendix 1 lists the legislation that was considered for this report and notes which legislation involved an unofficial English translation.
5. This research was only able to identify a limited number of textile pollution litigation instances (see Section 4.2.5), however, this does not mean that other textile-related pollution litigation has not occurred. It is important to remember that not every environmental claim results in a written decision which is published online. As such, it is possible that courts have dealt with textile pollution litigation, but no formal written decision was ever written. It is also possible that a written decision may exists but is written in a language other than English and as such not been picked up by the research team when conducting the research for this report. To address this limitation, during the expert external consultation session associated with this research, the research team requested assistance from the participants from the different regions in identifying textile pollution litigation, however no further cases were uncovered from this process.

It is acknowledged that a focus on national environmental laws is a key limitation as responsibility for environmental permitting is often shared between national and subnational actors. Due to scope, it was not possible to examine all subnational permitting legislation in each of the ten countries. Further research could be conducted to understand how national and subnational legislation operate together to regulate textile production pollution. The table in Appendix 1 lists the legislation and guidelines that were considered for the ten jurisdictions. As the table indicates, this research has focused primarily on the key environmental law in each jurisdiction with some reference to other legislation and policy connected with environmental permitting. The research process has also identified some examples of legislation dealing with associated administrative permitting (i.e. obtaining permits to operate a business) (see Section 3.2.3 and Appendix 2) but this was found to operate independently from environmental permitting in the ten countries examined.

1.7 Structure of this report

Chapter 1 of this report has provided some background context on the concept of environmental permitting and explains the methodology used to inform the research. This chapter also provides a detailed explanation of the different tiers of the textile value chain and the environmental impact associated with tiers and concludes by summarizing the limitations of the study and structure of the report.

Chapter 2 outlines key international laws related to the textile value chain and explores the important role that international voluntary regulation is playing in steering action towards a more sustainable

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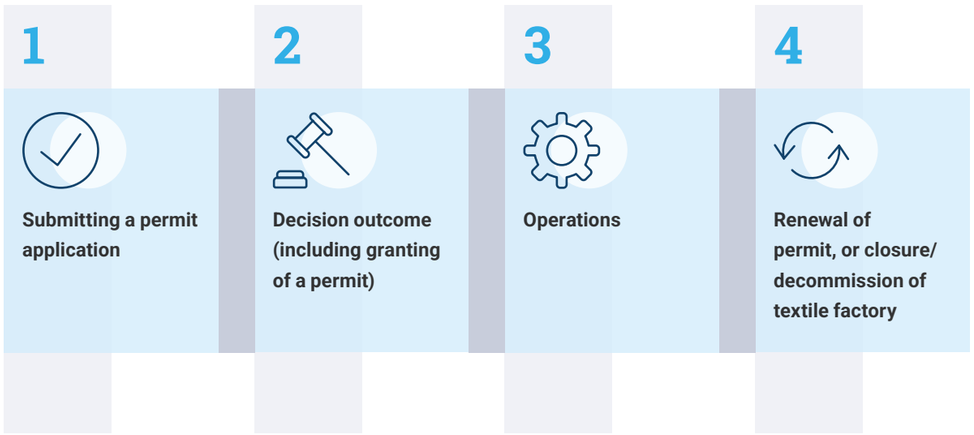
textile value chain. The chapter outlines a range of existing international environmental law instruments related to environmental permitting, but notes that coordinated action and/or guidance at the international level on environmental permitting has stalled since the 2000s. Chapter 2 also explores the gendered implications of environmental harm across the textile value chain and provides some examples of emerging international law initiatives seeking to address inequality within the textile value chain.

As there is limited recent international guidance on environmental permitting, a framework for analysing environmental permitting was created.

This framework was based upon the research carried out examining the common elements of environmental permitting within the national environmental legislation of the selected countries. Appendix 3 lists the criteria that were used to evaluate the national environmental laws of the selected countries. This framework was presented for feedback at expert consultation sessions, where participants confirmed that these four phases adequately capture the main elements of an environmental permitting system. The four phases are represented below (in Figure 2) and are discussed in detail within Chapters 3 and 4 of the report.

Figure 2. Phases relevant to environmental permitting systems



Chapter 3 focuses on Phases 1 and 2 of environmental permitting for the textile value chain and explores the connection between EIA and the role that this plays in influencing the legal requirement to hold an environmental permit for certain textile value chain activities. This chapter highlights that there is no common approach within the national environmental legislation of the countries examined to classifying the significance of textile value chain activities, and, in turn, whether a comprehensive consideration of environmental impacts associated with a textile value chain activity is required before an environmental permit for a textile value chain operation is issued. As such, the analysis identifies some gaps and loopholes in how national environmental legislation applies to the textile value chain.

Chapter 4 focuses on Phases 3 and Phase 4. Phase 3 considers the operations period of a textile value chain activity and involves an examination of the national environmental legislation of the selected countries to assess the adequacy of reporting, monitoring and enforcement provisions related to environmental permitting. Phase 4 involves consideration of the requirements related to renewal or closure of a textile chain operation as per the national environmental legislation. A key finding related to this phase is that national environmental law should be strengthened to ensure that renewal is only granted to those operators who have complied with the conditions of the environmental permit. In addition, national environmental law should be reformed to specifically require site rehabilitation and restoration once textile value chain operations cease. This chapter also considers the role that members of the public play in ensuring compliance with environmental permitting system legislation and discusses some public-interest litigation connected to environmental harm arising from textile value chain activities.

Chapter 5 summarizes the key findings from this research and makes recommendations on how environmental permitting systems can be strengthened to reduce or avoid environmental harm across the textile value chain. This chapter also identifies future research needs to support the transition towards textile circularity and sustainability.

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02

Chapter 2:

International governance regulating environmental impact in the textile value chain

2.1 Introduction

The purpose of this chapter is to provide an overview of international instruments and initiatives which relate to the regulation of environmental impacts in the textile value chain. The chapter begins by examining the work of UNEP and other UN agencies in setting the frameworks and vision for the industry's response to pollution along the textile value chain. The chapter then turns to examine the legally binding conventions and principles from international environmental law, including the relevant environmental principles, chemicals conventions and emissions conventions. This is followed by an examination of international guidance on environmental permitting from the OECD and the voluntary/self-regulation approaches of the textile industry that operate internationally. The chapter finishes by exploring regulation which links the social, gendered and environmental impacts of the textile value chain.

The content in Chapter 2 helps to explain how environmental permitting at the national level operates by providing background on the wider international environmental legal mechanisms which have influenced the development of national environmental permitting systems. The discussion on industry regulation and other global frameworks aiming to regulate the textile value chain are explained to show that future legal developments can and should build upon these voluntary industry initiatives which have been designed to promote corporate social responsibility within global value chains (Partiti 2020).

2.2 UNEP and other UN agencies' work on addressing environmental impact in the textile value chain

The environmental impacts of the textile value chain are substantial, contributing to the three planetary crises of climate change, pollution and biodiversity loss. The energy-intensive textile value chain activities account for the majority of the climate impact, with the wet processing stages of dyeing and finishing being especially energy-intensive (UNEP 2020). The greenhouse gases emitted from burning fossil fuels (particularly coal) to generate the heat and electricity required in these stages of the textile value chain account for their high contribution to climate impact. Hazardous chemicals in the textile value chain are discharged into water, air and soil as pollutants, and affect human and planetary health and environmental biodiversity. Although there is no multilateral environmental agreement concerning textile production and consumption, UNEP is playing a pivotal role in consolidating knowledge and building capacity and momentum to steer the global textile industry towards sustainable, circular practices through the UNEP Textile Initiative, which coordinates all UNEP's work on textiles.

The UNEP Textile Initiative provides strategic leadership and encourages sector-wide collaboration to accelerate a just transition towards a sustainable and circular textile value chain.[17] This study sits alongside and builds upon other publications by UNEP and UN agencies on the textiles industry, including:

- The UNEP report 'Sustainability and Circularity in the Textiles Value Chain – Global Stocktaking' (2020) mapped the global textile value chain, identified and analysed the hotspots for environmental and socio-economic impact along the value chain, and identified wet processing and finishing (Tiers 2-3), synthetic

17 The United Nations Alliance for Sustainable Fashion is an initiative of UN agencies designed to address the SDGs through coordinated action in the clothing, leather, and footwear industries. The Alliance aims to improve collaboration through joint activities, research and guidelines, harmonise and strengthen existing initiatives, foster more effect knowledge sharing and increase outreach and advocacy for sustainable development.

fibre production (Tier 1) and the use phase as key areas of concern for textiles. This report identified sustainable development as connected to a broader structural shift to a circular economy and centres the importance of not only addressing the impacts of 'business-as-usual' but questioning the operations and structure of business itself.

- The Global Stocktaking informed the subsequent UNEP report 'Sustainability and Circularity in the Textiles Value Chain – A Global Roadmap' (2023b) which recommends harmonised priority actions needed to address the identified hotspots to develop a sustainable and circular economy for textiles. The Global Roadmap includes seven stakeholder-specific annexes that provide further guidance into actions that these stakeholder groups, including policymakers, can take to reach the shared goal of a circular textile value chain.
- In 2023, UNEP and United Nations Climate Change co-published guidance for consumer-facing communication of fashion as an important means to creating the behaviour change needed for the shift to sustainability. The Sustainable Fashion Communication Playbook provides guidance on countering misinformation and fostering a language of sustainability and advocacy.

In order to prioritise effective and transformative action for all, UNEP has developed three key priority areas to deliver system change, which are outlined in its Global Roadmap (2023b). These priority areas are interconnected and provide a framework for understanding radical changes in complex systems such as the textiles industry. The three priority areas are: 1. shifting consumption patterns; 2. improved practices; and 3. infrastructure investment. Nine building blocks to deliver on the three priorities are outlined, which seek to address the key drivers of environmental and socioeconomic hotspots. The building blocks are illustrated in Figure 3.

Figure 3. Building blocks to deliver on priorities

1 Sustainable and circular textile business models are adopted globally
2 Textile overconsumption and overproduction are addressed
3 All textile products are designed to minimize impacts and support circular models
4 Better product care reduces impacts and improves product durability
5 The textile value chain drives resource efficiency and eliminates production pollution, production waste, on-site fossil fuel use and chemicals of concern
6 A just transition with skilled, safe, and empowered people takes place and social issues in the textile value chain are addressed
7 Textile raw materials are shifted to sustainable or recycled sources
8 Significant improvements in shared infrastructure are made globally for a sustainable and circular textile value chain
9 All textile waste is diverted from avoidable landfill and incineration

Source: UNEP Circularity Platform n.d.

While environmental permitting systems directly and indirectly contribute to almost all of the building blocks, this research contributes to the priority area of improved practices and Building Blocks 5 and 7 (see Textbox 2) which respectively aim to drive resource efficiency and eliminate textile production pollution, production waste, on-site fossil fuel use and chemicals of concern, and shift raw materials to sustainable or recycled sources. This report is focused on identifying the role that national environmental permitting systems are currently playing to regulate environmental impact in Tiers 1-3 (Building Block 5). The recommendations at the end of the report show how national environmental permitting systems can be strengthened to reduce the environmental impacts of textile production. Building Block 7 is partly captured as improvements in waste management and infrastructure are key components of national environmental permitting systems in reducing environmental impact.

Textbox 2: Description of Building Blocks 5 and 7

- **Building Block 5: The textile value chain drives resource efficiency and eliminates production pollution, production waste, on-site fossil fuel use and chemicals of concern.** Textile production sites – especially wet processing sites – require major support and investment to substitute machinery and apply circular production methods. This is particularly important for sites beyond tiers 1 and 2 of large multinational brands, or production countries without strong policy enforcement on cleaner production.
- **Building Block 7: Textile raw materials are shifted to sustainable or recycled sources.** There is a need to rapidly scale new and more sustainable production and cultivation practices for virgin raw materials, and to mainstream fibre-to-fibre recycling through improved practices as well as investment in waste management systems and infrastructure.

Source: UNEP 2023


Photo: Adobe Stock

In December 2018, the UNFCCC launched the Fashion Industry Charter for Climate Action. Version 5 of the Charter recognises that: "all companies within fashion, retail and textile global value chain[s], regardless of size and geography, have opportunities to take actions that will result in measurable reduction in greenhouse gas (GHG) emissions" (UNFCCC 2021, p.2). Under the Charter, signatory fashion companies voluntarily commit to either setting science-based targets on emissions reduction for Scope 1, 2, and 3 emissions within 24 months, or: "setting at least 50 per cent aggregate GHG emissions reductions in Scope 1, 2 and 3 of the Greenhouse Gas Protocol Corporate Standard by 2030 against a baseline of no earlier than 2019" (paragraphs 1a and 1b of the Charter). The Charter requires the signatories to commit to 13 commitments including to quantify, track and publicly report GHG emissions (commitment 2); pursue energy efficiency measures (commitment

4); and by January 2023 commit to not installing new coal-fired boilers or other sources of coal-fired heat and power generation on sites (commitment 8). By 2023, the Charter had 100 signatories across 23 countries, and all companies have set targets to achieve Net Zero by 2050 (UNFCCC 2023). The Charter reported "some progress" for basic reporting requirements, disclosure and calculating Scope 3 emissions, but noted that climate action must remain a "high priority" if change is to come (UNFCCC 2023).

2.3 International environmental law

International environmental law provides some broad guidance related to environmental permitting and the sustainable sourcing of materials, pollution control during production processes, waste management and the overall carbon footprint of textile value chain activities. While there have been some recent advancements to develop a multilateral environmental agreement on plastics (UNEA Resolution 5/14), international environmental law has not historically focused on regulating individual material streams such as textiles, electronic goods, building and construction materials. As there is no specific multilateral environmental agreement on textile value chain activities, this section identifies several sources of international environmental law of relevance to regulating the environmental impacts of the textile value chain. This section explores existing international environmental law sources with regards to 1. principles of international environmental law; 2. public participation; 3. transboundary environmental impact; and 4. chemical regulation.

2.3.1 Principles of international environmental law relevant to addressing the environmental impact of the textile value chain

This research identified four principles of international environmental law which can be used to enhance the development of national environmental permitting systems laws. While such principles stem from international environmental law, practical implementation of these principles occurs when embedded with obligations within multilateral environmental agreements or national environmental legislation (Maguire 2012). The principles particularly relevant to environmental permitting are 1. the principle of integration; 2. the principle of common but differentiated responsibilities (CBDR); 3. the precautionary principle or approach; and 4. the polluter pays principle.

Principle 4 of the Rio Declaration outlines the principle of integration: "in order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it" (UN General Assembly 1992). This research found (as explained further in Chapter 3) that the level of integration of environmental considerations into environmental permits for textile value chain activities depends on how significant the harm of that particular activity is classified under national environmental law. This means that despite national environmental permitting systems in the selected countries integrating environmental considerations into decision-making, there are loopholes which allow textile value chain operations to operate without undertaking formal approval processes which consider environmental factors.

Principle 7 of the Rio Declaration (UN General Assembly 1992) relates to States having common but differentiated responsibilities, noting that: "developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command." Application of the CBDR principle for textile production pollution would require determining how global responsibility for textile production, consumption and circularity should be developed. Presently, responsibility for environmental harm falls to the nation where the production occurs. Rethinking of CBDR could instead look at sharing responsibility between nations producing the garments and those consuming the garments. Implementation of this common responsibility might involve a fee being applied to each garment to help cover the costs of shifting to more sustainable methods of production

in the producing state. Financial support, technology transfer and capacity building will be required to ensure that SMEs in textile production countries are able to transition to more sustainable textile production (UNEP 2023b).

Principle 15 of the Rio Declaration provides that: "[i]n order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (UN General Assembly 1992). In the context of the textile value chain, the precautionary principle should be the guiding principle when designing laws addressing chemicals of concern which are present across global textile value chains.

The polluter pays principle requires that the costs to remedy damage caused to the environment be the responsibility of those responsible for causing the pollution. The principle aims to overcome issues associated with negative externalities, which sees citizens having to bear the social and environmental costs and risks arising from pollution caused by economic activities (De Sadeleer 2015 p. 97-99). Principle 16 of the Rio Declaration refers to this principle as: "[n]ational authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the costs of pollution with regard to the public interest and without distorting international trade and investments". Full application of the principle across textile value chains would require the 'internalization' of pollution costs associated with the production of textiles (for example the price of garments reflecting the true environmental and social costs associated in producing the garment). Considering the polluters pays principle in the context of the textile value chain, the polluter would be interpreted as the textile value chain operation which is causing unauthorised environmental harm to the environment.

2.3.2 International environmental law guidance on public participation

Ensuring rights of public participation is a fundamental aspect of national environmental permitting as textile value chain activities pose several environmental and social impacts on local communities and textile factory workers (see Section 1.5). There is extensive international guidance on the significance of public participation in addressing environmental issues. One of the key instruments is the Rio Declaration on Environment and Development (UN General Assembly 1992). Principle 10 of the Rio Declaration states:

> *"Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided."*

The Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters (1998) (Aarhus Convention)[18] is the first international, legally binding instrument specifying detailed obligations of Parties aimed at effective implementation of Rio Principle 10. The Aarhus Convention establishes that sustainable development can be achieved only through the involvement of all stakeholders and links government accountability and environmental protection. It grants public rights and imposes

18 Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters, opened for signature 25 June 1998, 2161 UNTS 447 (entered into force 30 October 2001) ('Aarhus Convention').

obligations on Parties and public authorities regarding access to information, public participation and access to justice.

Moreover, the Guidelines for the Development of National Legislation on Access to Information, Public Participation in Decision-making and Access to Justice in Environment Matters (2010) (Bali Guidelines)[19] assists countries with filling gaps in national and sub-national legislation to facilitate broad access to information, public participation and access to justice in environmental matters. The Bali Guidelines offer principles and best practices for public participation to ensure consistency in environmental decision-making processes.

In addition to these key instruments, the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (2018)[20] (the Escazú Agreement) guarantees the right to access environmental information and participate in environmental decision-making. The Escazú Agreement also imposes an obligation on States to prevent and investigate any attacks against individuals who protect and defend environmental rights. The agreement compels States to establish comprehensive guidelines outlining appropriate and effective measures to ensure the safety of these defenders.

2.3.3 International environmental law guidance on environmental impact assessment for transboundary harm

The transboundary nature of textile production and consumption requires greater international cooperation and sharing of responsibility and information. International environmental law provides some limited guidance on how countries can address cross-border impacts under the Convention on Environmental Impact Assessment in a Transboundary Context (1991) (the Espoo Convention).[21] The Espoo Convention provides a framework for ensuring international cooperation in assessing and managing environmental impacts of planned activities. The Convention outlines the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. Furthermore, it establishes a general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact.

The Convention came into force in 1997, but is limited to 45 Parties, all UNECE countries except for the United Kingdom. In 2003, the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context (the SEA Protocol, 2003) was introduced. While the Espoo Convention lays out the procedural steps for EIA addressing transboundary harm, the SEA Protocol sets out domestic procedures on SEA and enhances rights of public participation (Ebbesson 2011; Marsden 2011). The SEA Protocol of 2003 has 32 Parties, all of whom are UNECE countries.

In 2009, the Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention came into force. This is the only legally binding international instrument on pollutant release and transfer registers (Protocol on PRTRs, 2006). The objective of the 2006 Protocol on PRTRs is to enhance public access to information through the establishment of coherent, nationwide pollutant release, and transfer registers. The protocol regulates information on pollution, rather than pollution directly, by exerting pressure on companies to reduce pollution levels. All UN members can join the Protocol, including those that are not Parties to the Aarhus Convention and those who are not members of the United Nations Economic Commission for Europe (UNECE). There are 38 Parties to the 2006 Protocol on PRTRs all from the UNECE.

While the Espoo Convention and the SEA and PRTS Protocols provide some guidance on transboundary harm associated with developments, these agreements do not specifically address the textiles value chain and are not truly global, as Parties are UNECE countries. As such, greater global cooperation should be encouraged to address the transboundary impacts of development.

Addtionally, the jurisprudence of the International Court of Justice (ICJ) has emphasised the critical importance of environmental impact assessment in a transboundary context. In landmark cases, such as the Pulp Mills on River Uruguay dispute (Argentina v Uruguay)[22] and the San Juan River and Nicaragua border area dispute (Costa Rica v Nicaragua v Costa Rica)[23], the ICJ explicitly recognised EIA as a practice that has attained customary international law status. However, the specific application and requirements of this obligation remain subjects of ongoing debate. These rulings have highlighted the obligation of States to conduct comprehensive EIA processes, both procedurally and substantively, when undertaking activities with the potential for significant adverse environmental impacts across international borders.

2.3.4 International chemical-related instruments

Given the importance of responsible chemical management in relation to textile value chain activities, it is important to examine the relevant chemicals conventions. There are several international conventions targeting responsible use across the life cycles of chemicals (Synergies 2023). These include the following conventions:

- The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal (1989) was negotiated to protect people and the environment from the negative effects of the inappropriate management of hazardous wastes worldwide. It is the most comprehensive global treaty dealing with hazardous waste materials throughout their lifecycles, from production and transport to final use and disposal. Significantly, a proposal has been put forward by France, Sweden, and Denmark to include textile waste under the Basel Convention (Council of the European Union 2024). The proposal recommends that textiles be subject to the same requirements as electronic waste which would be: 1. requiring prior informed consent to be obtained for the import and export of textile waste, and 2. banning the export of hazardous textile waste (e.g. stained with chemicals or paint).
- The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998) provides Parties with a first line of defence against hazardous chemicals. It promotes international efforts to protect human health and the environment, as well as enabling countries to decide if they want to import hazardous chemicals and pesticides listed in the Convention. The Convention could potentially encompass textile processes if the textiles in question contain chemicals subject to limitations under the Convention.
- The Minamata Convention on Mercury (2013) controls the anthropogenic release of mercury by banning new mercury mines, phasing out existing mercury mines and phasing out and down the use of mercury in several products, processes and emissions to air, water and land. Mercury is not a primary concern in textile production, but if there are any processes or dyeing techniques that use mercury or its compounds, such activities may be controlled under the Convention.

19 Guidelines for the Development of National Legislation on Access to Information, Public Participation in Decision-Making and Access to Justice in Environment Matters (adopted 26 February 2010) ('Bali Guidelines').

20 Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, GA Res 72/48, UN Doc A/RES/72/48 (27 March 2018) ('Escazú Agreement').

21 Convention on Environmental Impact Assessment in a Transboundary Context, opened for signature on 25 February 1991, 1989 UNTS 309 (entered into force 10 September 1997) ('Espoo Convention'). This convention includes: "plants for the pretreatment or dyeing of fibres or textiles and plants for the tanning or hides and skins", so does cover textile production. The UNECE hosts a database on Transboundary EIA but this is not searchable by industry sector (UNECE 2024).

22 Pulp Mills on the River Uruguay (Argentina v Uruguay) (Judgment) [2010] ICJ Rep 19 ('Pulp Mills').

23 See Certain Activities Carried out by Nicaragua in the Border Area (Costa Rica v Nicaragua) and Construction of a Road in Costa Rica along the San Juan River (Nicaragua v Costa Rica) (Joined Cases 16 December 2015) [2015] ICJ Rep ('Costa Rica v Nicaragua/ Nicaragua v Costa Rica').

The UNITAR Chemicals and Waste Management Programme supports national efforts to implement Pollutant Release and Transfer Registers. Regional efforts at harmonising national registries are also underway using the 2003 Protocol on PRTRs.

In addition, in September 2023, a Global Framework on Chemicals was adopted at the Fifth International Conference on Chemicals Management (ICCM5).[24] This is a comprehensive global framework that establishes concrete targets and guidelines for key sectors including textiles across the entire lifecycle of chemicals. The Global Framework calls for the transition of safer and more sustainable chemical alternatives including the textiles sector and emphasises the need to enhance transparency and access to information regarding chemicals and their associated risks.

2.3.4.1 Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (POPs) (2001) (the Stockholm Convention) is a global treaty to protect human health and the environment from highly dangerous, long-lasting chemicals by restricting and ultimately eliminating their production, use, trade, release and storage. Given its particular relevance to the textile value chain as several POPs are commonly used in textile value chain activities, the Convention will be analysed separately in this chapter. The preamble to the Stockholm Convention recognises: "that persistent organic pollutants possess toxic properties, resist degradation, bioaccumulate and are transported, through air, water and migratory species, across international boundaries and deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems".

Article 1 sets out the objective of the Convention as: "Mindful of the precautionary approach set forth in Principle 15 of the Rio Declaration on Environment and Development, the objective of this Convention is to protect human health and the environment from persistent organic pollutants". The Convention operates by requiring Parties to eliminate chemicals listed in Annex A of the agreement and restrict the production and use of chemicals listed in Annex B (Article 3, Stockholm Convention). Article 4 creates a registry of exemptions, notably for cotton as a crop that has an exemption to use endosulfan to address the following crop-pest complexes: aphids, cotton bollworm, jassids, leaf rollers, pink bollworm, thrips and whiteflies.

Article 5 encourages the use of best available techniques (BATs) and best environmental practices which require obligations to prevent and, where not practicable, to reduce releases of chemicals listed in Annex C to the agreement. Parties to the agreement are required to create national plans for the implementation of their obligations under the Convention, and review and update, as appropriate, the implementation plan on a periodic basis (Article 7).

The Stockholm Convention has also embedded gender considerations throughout the agreement. The preamble notes the health risks to women from exposure to POPs, as well as, through them, future generations. The agreement also recognises the gendered impacts of chemicals by requiring Parties to consult with women's groups to facilitate the development, implementation, and updating of national implementation plans (Article 7(2)), and requiring Parties, within their capabilities, to promote and facilitate the development and implementation, especially for women, of educational and public awareness programmes on POPs (Article 10).

2.4 International guidance on environmental permitting system regulation

As Chapters 3 and 4 will explain, although environmental permitting systems sit within national environmental legislative frameworks, guidance on environmental permitting system design and implementation can be found in several OECD instruments on permitting systems and integrated pollution control (see Table 4). These instruments are not legally binding and are quite dated but are still useful in providing some insight into general principles of environmental permitting. This research has identified a significant gap in both academic literature and international cooperation/guidance on environmental permitting since the 2000s.

Increasing attention on textile value chain activities and other global value chains will increase attention to environmental permitting and it is recommended that the OECD instruments should be revisited and updated to reflect current best practice guidance on environmental permitting practices.

Table 4. OECD guidance on permitting systems and integrated pollution control

Year	Instrument Name	Purpose/Key Features
1991	OECD Recommendation of the Council on Integrated Pollution Prevention and Control OECD/LEGAL/0256	Guidance on integrated pollution prevention and control includes: 1. Basic principles of integrated pollution prevention and control (note 'cradle to grave' concept) 2. Essential policy aspects 3. Focuses for decision making (the substance, the source and the geographic region) 4. Legislation 5. Institutional measures 6. Management instruments (issuing single permits covering all releases and processes) 7. Technical methods
1999	OECD Environmental Requirements for Industrial Permitting: Vol 1 – Approaches and Instruments	In 1993, the OECD Environment Directorate launched a project on environmental requirements for industrial permitting. The project involved three phases: (i) survey of permitting legislation, regulation and practices in OECD countries; (ii) preparation of case studies for four industrial sectors (pulp/paper, metal, oil, and iron/steel) and (iii) international workshop on environmental permitting of industrial facilities. This report is a summary of this work.
2006	OECD Integrated Environmental Permitting Guidelines for EECCA (Eastern Europe, Caucasus, and Central Asia) Countries	Developing and issuing an integrated environmental permit involves the following phases: • Phase 1: Pre-application activities • Phase 2: Preparation and submission of application by operator • Phase 3: Receipt and initial check of application by regulatory authority • Phase 4: Consideration of commercial confidentiality or national security • Phase 5: Consultation on the application with other authorities and the public • Phase 6: Assessment of application and determination of permit conditions • Phase 7: Issue of permit or notification of refusal • Phase 8: Permit variation, surrender or revocation

24 UNEP, 2023c. 'Fifth session of the International Conference on Chemicals Management' Accessed 27 February 2024. https://www.unep.org/events/conference/fifth-session-international-conference-chemicals-management

Table 4. (cont'd). OECD guidance on permitting systems and integrated pollution control

Year	Instrument Name	Purpose/Key Features
2007	OECD Task Force for the Implementation of the Environmental Action Plan - Guiding Principles on Effective Environmental Permitting Systems	This document present key principles based on the 2005 document above. The definitions section includes definitions for best available technology, integrated environmental permit, and integrated pollution prevention and control. Particularly relevant principles include: • Principle 3: appropriate permitting authority (establishing a dedicated department to exchange information between different competent authorities). • Principle 4: public participation and access to information (including the creation and maintenance of a permit register). • Principle 7: close interaction with environmental assessment. • Principle 8: clear and enforceable permit requirements. • Principle 9: comprehensive scope of an integrated permit (an integrated permit should address operational matters, emission limit values and improvement programmes, records, reporting and notification requirements, payment of environmental taxes and charges, and validity and provisions for renewal and variation).

Photo: Adobe Stock

2.5 International voluntary regulation of textile value chain processes

As the textile value chain is global and comprises specialized production processes, industry-led initiatives have emerged to address specific facets of environmental management (Ripley 2023). Industry-led and voluntary regulation of textile value chain activities often categorises the value chain through tiers, as outlined in Chapter 1. In the absence of an international agreement on textiles, environmental issues are addressed through a patchwork of voluntary multi-stakeholder initiatives creating standards and certifications (Payne and Mellick 2022). There are also initiatives that work on the basis of voluntary commitments but not through standards or certifications (such as the UNFCCC). While this specialization of standards provides technical guidance, the fragmented and voluntary nature of this governance often results in weak compliance. The chief enforcement mechanism is market-based, i.e. the risk of losing market share if found to be non-compliant.

First, although not textile-specific, the International Organization for Standardization (ISO) has developed a range of standards that can be applicable to various aspects of textile production, including those related to environmental management and pollution control. These standards can apply to many kinds of production facilities and processes:

- ISO 14001 - Environmental Management Systems: this is the principal standard for environmental management systems (EMS). It provides guidelines for organizations to develop an EMS that can help them reduce their environmental impact.
- ISO 14040 and ISO 14044 - Life Cycle Assessment (LCA): these standards offer a framework for assessing the environmental impacts of products, including textiles, over their entire life cycle, from raw material extraction through processing, use and disposal.
- ISO 50001 - Energy Management: this standard provides a framework for establishing, implementing, maintaining and improving an energy management system.
- ISO 14020 Series - Environmental Labels and Declarations: this series offers guidelines and standards for different types of environmental labels and declarations.
- ISO 14031 - Environmental Performance Evaluation: this provides guidelines on how to evaluate the environmental performance of an organization overall.
- ISO 14064 Series - Greenhouse Gas Emissions: this series is about quantifying, monitoring, reporting and verifying greenhouse gas emissions.
- ISO 26000 - Social Responsibility: while not directly about pollution, this standard provides guidelines on social responsibility, which is increasingly viewed as interconnected with consideration of environmental concerns.
- ISO 59004 – Circular Economy: this standard provides comprehensive guidance for any type of organization to foster a shift toward a circular economy.
- ISO 48148 – Textiles: this standard provides a standardisation of textile industry materials, specifications, microplastics, traceability, ethical and environmental issues.

While ISO standards are voluntary, they are widely recognised globally and aid in setting frameworks for industry. Textile value chain operations which implement and comply with these standards can use them to demonstrate a commitment to sustainable and responsible production, which can assist their market competitiveness. To demonstrate compliance, an operator must seek certification by a third-party (a registrar, or other national or international accreditation body) and then undergo periodic audits. Penalties for non-compliance include loss of certification and associated reputational damage and financial impact through loss of business.

Alongside the ISO standards, several non-governmental organizations (NGOs) and other entities have established a range of initiatives such as standards, certifications and reporting tools, usually in close partnership with industry. These are non-state initiatives which have varying business-structures that may be categorised as not-for-profit, incorporated entities, social enterprises, or multistakeholder initiatives. Table 5 provides an overview of the key initiatives, determined by largest membership, operating in the textile value chain and the expectations they place on textile value chain operations.

Table 5. Voluntary initiatives in the textile value chain (non-exhaustive list)[25]

Initiative	Scope	Requirements for textile manufacturers	Results of non-compliance
Bluesign® Incorporated in 2000 *For-profit*	Certification system. Items carrying a Bluesign product or approved label have been manufactured according to strict safety and environmental requirements. It covers chemical consumption, carbon emissions, water consumption, energy consumption and worker health and safety.	• Complete a comprehensive review of all input streams, from raw materials to chemicals. • Implement Bluesign criteria. • Undergo regular third-party audits.	• Loss of certification and risk of loss of associated business.
GOTS (Global Organic Textile Standard) Incorporated in 2002 *Not-for-profit*	Certification system. Items carrying the GOTS logo provide assurance of the product's organic origin and environmentally and socially responsible processing. GOTS includes requirements for organic textiles. Facilities processing GOTS-certified fibres need to comply with strict criteria on organic farming of the fibres. GOTS includes environmental and social criteria throughout all production stages, including compliance with wastewater treatment, no use of toxic bleach and ensuring fair labour practices.	• Use certified organic fibres, based on defined minimum percentages, and comply with social and environmental criteria along the value chain. • Undergo third party auditing; on-site inspection is performed for the first year and every 3rd year of granted Letter of Approval or Standard Revision, whichever is earlier.	• Loss of certification, restricting the manufacturer's ability to market products as 'organic', which attracts a price premium. • Non-compliance might attract legal penalties in regions where 'organic' labelling is stringently regulated.

25 This table was developed from the ITC Standards Map (ITC 2024).

Table 5. (cont'd). Voluntary initiatives in the textile value chain (non-exhaustive list)

Initiative	Scope	Requirements for textile manufacturers	Results of non-compliance
Worldly, formerly Higg Index Incorporated in 2019 *For-profit*	A suite of tools which assess the social and environmental performance of a value chain and the environmental impacts of its products. Higg is a private company operated by the Sustainable Apparel Coalition and used by over 20,000 organizations.	• Undergo Higg Facility Environmental Module (FEM) and/or the Higg Facility Social and Labour Module (FLSM) to evaluate performance.	• Decreased scores, resulting in reputational damage and reduced opportunities to partner with brands.
OEKO-TEX® Incorporated in 1992 *Not-for-profit*	Certification and testing body made up of 17 independent research and test institutes to assist with sourcing innovative and environmentally responsible products with people and planet in mind. Sourcing of premium sustainable fabrics including those made from eco-friendly, organic, recycles and biodegradable materials. The OEKO-TEX Standard 100 aims to reduce use of harmful chemicals in the value chain.	• Ensure textiles are free of harmful substances, as defined in the OEKO-TEX Standard 100 criteria. • Re-certify product annually.	• Loss of certification and risk of loss of associated business.
Sedex (Supplier Ethical Data Exchange) Incorporated in 2004 *Not-for-profit*	Sedex aims to enhance ethical and responsible business practices in global supply chains, providing the Sedex platform for buyers, suppliers, and auditors to store, share and report on information across labour standards, health and safety, environment and business ethics; provides the Sedex Members Ethical Trade Audit (SMETA) third-party auditing service. Operates across numerous sectors, including clothing and apparel.	• Complete the Self-Assessment Questionnaire across four dimensions of Labour, Health & Safety, Environment, and Business Ethics. • Participate in SMETA, which includes site visits and worker interviews.	• No penalties, as Sedex is not a standard-setting body but rather a data platform and auditor. However, non-compliance is communicated to buyers and may mean loss of business.

Table 5. (cont'd). Voluntary initiatives in the textile value chain (non-exhaustive list)

Initiative	Scope	Requirements for textile manufacturers	Results of non-compliance
WRAP (Worldwide Responsible Accredited Production) Incorporated in 2000 *Not-for-profit*	NGO promoting safe, lawful, humane, and ethical production around the world through certification and education, with services including WRAP certification, training and education, and ensuring compliance with local laws.	• Adhere to 12 principles (encompassing human resources management, health and safety, environmental practices and legal compliance). • Undergo certification and independent third-party audit. • Renew certificate every 1-2 years.	• Corrective action expected, otherwise WRAP will suspend or revoke a facility's certification. • More frequent audits.
ZDHC (Zero Discharge of Hazardous Chemicals) Incorporated in 2011 *Not-for-profit*	Multi-stakeholder organization from across the textile industry including brands, retailers, manufacturers and chemical suppliers. ZDHC's Roadmap to Zero requires the industry to eliminate the use of priority hazardous chemicals. One of their primary tools is the Manufactured Restricted Substances List (MRSL) which lists chemicals that are restricted from intentional use in facilities that process textile materials and finished goods. They provide a unified standard of wastewater testing for the industry to ensure harmful chemicals are not released into the environment.	• Adhere to MRSL. • Test wastewater regularly to ensure it meets guidelines. • Engage in continuous improvement.	• Removal from list of compliant suppliers, limiting business opportunities. • Exposure to reputational damage.

Table 5 above is a non-exhaustive list; other examples include Cradle2Cradle® which certifies that a product is free of chemical substances that would prevent its recycling or biodegradation and "The Blue Angel", "EU Ecolabel", "Nordic Swan Ecolabel", and "Global Recycled Standard (GRS)" which are initiatives which include chemicals in addition to other environmental and social requirements. According to the ITC, there are 345 standards related to the textiles value chain, and of these 71 relate to environmental impacts (ITC 2024). The seven initiatives described above have broad buy-in across brands and retailers who influence their suppliers to take part (Payne and Mellick 2021). As voluntary initiatives, textile value chain operations choose to opt into them to be more competitive in the marketplace and to comply with the expectations of the brands and retailers who buy from them. Importantly, the textile value chain operations who aim to produce for the world's biggest brands and retailers (who are often based in the United States of America and the European Union) will participate in many initiatives to be as attractive as possible as a supply chain partner. Market forces therefore drive compliance, at least for the export-focused manufacturers.

2.5.1 Uptake and impact of these initiatives across regions

To further illustrate the global dynamics, the table below show the breakdown of representation from brands, retailers and manufacturers. There are thousands of brands and retailers operating globally, so it would be difficult to assess full coverage (Payne and Mellick 2022). By way of illustration, Table 6 lists the voluntary initiatives from Section 2.5, mapped by participation across suppliers and brands and retailers. While these schemes have buy-in from brands and retailers based in Europe and North America, active participation and compliance by suppliers is far lower for some initiatives.

Table 6. Voluntary initiatives, mapped by level of participation across suppliers and brands and retailers

Initiative	Supplier/manufacturer participation across the report's 10 countries, by region		Brand and retailer participation, across top 50 global clothing brands and retailers
Bluesign	Asia	49	12/50
	Europe	4	
	Africa	0	
	Americas	4	
GOTS (Global Organic Textile Standard)	Asia	4,528	13/50
	Europe	1,889	
	Africa	36	
	Americas	137	
Higg Index	Asia	18	35/50
	Europe	2	
	Africa	0	
	Americas	18	

Table 6. (cont'd). Voluntary initiatives, mapped by level of participation across suppliers and brands and retailers

Initiative	Supplier/manufacturer participation across the report's 10 countries, by region		Brand and retailer participation, across top 50 global clothing brands and retailers
OEKO-TEX	Asia	10,213	13/50
	Europe	2,738	
	Africa	109	
	Americas (North America)	292	
Sedex (Supplier Ethical Data Exchange)	Across 180 countries & many industries[26]	73,212	10/50
WRAP (Worldwide Responsible Accredited Production)	Asia	1,787	Not available
	Europe	1	
	Africa	78	
	Americas	16	
ZDHC (Zero Discharge of Hazardous Chemicals)	Asia	10	25/50
	Europe	1	
	Africa	0	
	Americas	2	

These industry-led initiatives are a response to regulatory inaction by state actors. While the signatory base of brands and retailers may be high, some initiatives have more robust compliance and auditing than others, resulting in uneven enforcement. Voluntary initiatives in the textile value chain have been critiqued heavily for their lack of accountability and independence (Changing Markets 2023). Some NGOs, such as Greenpeace and Fashion Revolution (2023), produce public reports, acting as secondary watchdogs by assessing the progress of industry in addressing and reporting on key pollutants and environmental damage. However, these organizations have no enforcement ability and rely instead on the potential reputational damage to brands as an incentive for brands to comply, and, in turn, to demand that their suppliers comply. The power imbalances across the textile value chain are important to note here, as most high revenue generating activities are owned by brands, whereas much of the action to improve environmental performance sits in the parts of the value chain that create less value and are highly dependent on brand specifications for products and processes (UNEP 2020). Thus, while manufacturers are often charged with the responsibility to improve environmental performance, they may not directly benefit (Ghosh and Shah 2012). In sum, neither the voluntary standards nor the external assessment of them by third parties have proved strong enough to result in structural change for the industry, likely because not all textile value chain operations participate in them, the penalties for non-compliance are weak and the many overlapping approaches cause confusion.

26 No country breakdown data available.

2.6 European Union regulation of textile value chain processes

At the European Union regional level, there have been significant developments in the textiles regulatory space in the last few years. Particularly relevant to environmental permitting systems are the Integrated Pollution Prevention and Control Directive (1996), replaced by the Industrial Emissions Directive (2010), as amended.[27] The Industrial Emissions Directive provides a framework for regulating around 52,000 larger industrial and livestock installations across the European Union. It requires these installations to hold a permit based on the use of best available techniques (BAT). In addition, the European Union REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulation[28] is also worth mentioning due its impact in the global textile value chain. REACH places the burden of proof on companies to comply with the regulation. Companies must identify and manage the risks linked to the substances they manufacture and market in the European Union. Businesses must demonstrate how substances in their supply chains can be safely used, and they must communicate the risk management measures to users. If the risks cannot be managed, authorities can restrict the use of substance, with the long-term goal of substituting hazardous substances with less dangerous ones.

2.6.1 European Union integrated permitting

In the European Union, integrated environmental permitting was introduced through the 1996 Integrated Pollution Prevention and Control (IPPC) Directive, updated by the European Union Industrial Emissions Directive 2010. This Directive assists the European Commission towards the Zero Pollution ambition to reduce air, water and soil pollution to levels harmless to health and the environment. The Zero Pollution goal is one of the European Union Green Deal's key actions on pollution. In 2022, a European Union Commission Implementing Decision was released which established BAT conditions for the textile industry. These reforms mean that 300 large textile industry plants in the European Union must comply with new legal obligations. Specifically, these reforms require these installations to hold an environmental permit based on the use of BAT. This decision provides 54 BAT recommendations for the textile industry, including the following requirements for a textile environmental management system:

- An inventory of inputs and outputs (BAT 2)
- An other than normal operation conditions management plan (BAT 3)
- A water management plan and water audits (BAT 10)
- An energy efficient plan and energy audits (BAT 11)
- A chemical management system (BAT 14)
- A waste management plan (BAT 29)

Existing installations have four years to adapt, while new facilities must comply immediately. These legislative changes focus on the wet processing of textiles, which include treatments such as bleaching, dyeing or finishing treatments which give specific features to textiles such as water repellence. These reforms feed into the European Union Strategy for Sustainable and Circular Textiles which contributes to the Commission's 2030 vision that all textile products placed on the European Union market are durable, repairable, recyclable, to a great extent made of recycled fibres, free of hazardous substances, and produced in respect of social rights and the environment.

The Ecodesign for Sustainable Production Regulation (ESPR) entered into force in 2024 and provides a framework for setting eco-design requirements on specific product groups. Ecodesign requirements apply to all categories of physical goods including textiles and, among other requirements, aim to make products more energy- and resource-efficient, reduce the presence of substances that inhibit circularity, establish rules on carbon and environmental

27 Directive (EU) 2024/1785 of the European Parliament and of the Council of 24 April 2024 amending Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) and Council Directive 1999/31/EC on the landfill of waste.

28 See regulation (EC) No 1907/2006 establishing a European Chemicals Agency.

footprints, and limits of the generation of waste. A key aspect of the ESPR is the Digital Product Passport (DPP) which is a digital identity card for products' components and materials, and which will store relevant information to support products' sustainability. Information will be accessible electronically, making it easier for consumers, manufacturers and authorities to make informed decisions related to sustainability, circularity and regulatory compliance. Customs authorities will be able to carry out automatic checks on the existence and authenticity of DPPs of imported products. Strengthening environmental permitting laws will enable textile-producing countries to respond to ESPR requirements.

2.6.2 European Union REACH regulation on chemicals

REACH is a comprehensive framework addressing chemical use and safety across numerous industries. The European Union REACH regulations apply to all consumer products in the European Union, including textiles. This means that textile value chain operations in non-European Union countries that wish to export their products to the European Union must comply with these regulations.

Within the scope of REACH:

- Companies are required to secure authorisation for the use of specific substances identified as Substances of Very High Concern (SVHCs). These substances can be detrimental due to their possible impacts on human health or the environment, encompassing carcinogenic, mutagenic or toxic to reproduction properties (CMRs) as well as being persistent, bioaccumulative and toxic (PBTs).
- A supply chain communication duty is set up requiring suppliers of articles containing SVHCs above 0.1 per cent to communicate certain information to the recipients of those articles.
- The authorisation process is designed to ensure that SVHCs are properly controlled and progressively replaced by safer alternatives or technologies where these are economically and technically viable. For a company to receive authorisation, it must demonstrate that the risks associated with the use of the substance are adequately controlled, or that the socio-economic benefits of its use outweigh the risks and there are no suitable alternatives.
- Substances that are subject to authorisation are listed in Annex XIV of the REACH regulation. Once a substance is included in this annex, it cannot be placed on the market or used after a given date unless authorisation is granted for a specific use.
- REACH also imposes restrictions on the manufacture, placing on the market or use of certain dangerous substances, mixtures and articles. These restrictions, which are listed in Annex XVII of REACH, can apply to any substance on its own, in a mixture or in an article, including those that do not require registration. The aim is to protect human health and the environment from unacceptable risks posed by chemicals.

Photo: Adobe Stock

Brands that retail clothing and other textile products in the European Union over a certain scale are bound by REACH[29], and this applies to their suppliers, even if outside the European Union. Therefore, although REACH does not apply directly to countries outside the European Union, it has become an international reference for other countries as well, such as for Türkiye (Cheung 2022). Products that do not comply with the regulations may no longer be placed on the European Union market (Hilgenberg and Vossebein 2021). Given that the European Union is one of the world's largest trading blocs, compliance with REACH can significantly impact a brand's market access, competitiveness and reputation. Non-compliance can lead to trade restrictions, penalties or even an outright ban from the European Union market. Of the top 50 brands mapped above (Table 6) a significant percentage of these have headquarters in the European Union, and nearly all engage in sales within the region. REACH is therefore notable as one of the few mandatory measures that has influence on the way chemical pollution is managed in the textile value chain globally.

2.7 Regulating environmental and social issues in the textile value chain

Environmental pollution cannot be separated from its social impacts. The interconnections and compounding effects of these problems are well documented. As noted by the OECD (2021), understanding the "environment-inequality nexus" is important to furthering progress in both fields.

There are several relevant initiatives working to address environmental and social harm together. Although these extend beyond the scope of the environmental harm associated with the textile value chain, they are useful in understanding the diverse ways in which this harm is being addressed through broader regulatory mechanisms. The relevant initiatives are predominately voluntary in nature, with the European Union Corporate Sustainability Due Diligence Directive being the only regionally binding mechanism.

The initiatives include:

- The European Union Corporate Sustainability Due Diligence Directive (CS3D or CSDDD), which aims to foster responsible corporate behaviour and requires companies to identify and prevent, end, or mitigate adverse social and environmental impacts of their activities (European Commission 2022).
- The International Labour Organization (ILO), which addresses occupational and chemical safety and environmental hazards that raise concern for the use of pollutants in farm and factory work for textiles (ILO 2021). The ILO code of practice on safety and health in textiles, clothing, leather and footwear provides practical guidance for the use of all those, both in the public and private sectors, who have obligations, responsibilities, duties and rights regarding safety and health in the textiles, clothing, leather and footwear industries (ILO 2022).
- The OECD Guidelines for Multinational Enterprises on Responsible Business Conduct, which are recommendations jointly addressed by governments to multinational corporations, aiming to improve the role of business in supporting sustainable development and mitigating the negative effects activities can have on people and the environment.
- Many of the initiatives in Tables 5 and 6 also take this joint approach of looking at the environment and social harm.

2.7.1 Gendered implications in the textile value chain

Women make up the majority of the workforce in many countries that produce textiles, particularly in the region of Asia and the Pacific (Crinis and Vickers 2016). While the statistics differ between countries, the entire textiles value chain has historically been

29 The European REACH legislation applies to all companies that manufacture or import chemical substances into the European Union in quantities exceeding one metric ton per year (International Trade Administration 2024).

dependant on patriarchal economic practices which pay women less and perpetuate the concentration of women in unskilled, high turnover jobs (UNEP 2020). Given the increased proportion they make up in the value chain, women are subject to greater harm, especially in "bottom tier" (UNEP 2020) jobs which have a higher risk of occupational injury and exposure to hazardous chemicals. In addition, women face specific gendered inequalities that compound on their positionality including threats of gender-based violence and discrimination, undervalued political voices, and entrenched gendered stereotypes which increase the burdens of domestic and familial life.

Exposure to cancer-causing chemicals, endocrine-disrupting chemicals, and allergens through textile work can have especially harmful effects for girls, women, and unborn children (ILO 2021). A gender sensitive approach to controlling exposure as well as understanding the precarious position in which women, in particular pregnant women, in the textile value chain labour force are in, is needed. The social, environmental, and feminist agendas are interlinked and are central to responsiveness and mainstreaming new norms and practices in the textile value chain.

Many textile workers experience intersectional vulnerability, with women of colour representing 80 per cent of textile workers worldwide (Atkinson 2021). Intersectionality, a term coined by Kimberlé Crenshaw, refers to: "a way of thinking about identity and its relationship to power" (Crenshaw 2015). It recognises that people's lives are shaped by their identities, relationships and social factors. These combine to create intersecting forms of privilege and oppression depending on a person's context and existing power structures such as patriarchy, ableism, colonialism, imperialism, homophobia and racism (Hankivsky, 2014). Textile workers are often migrant female workers, who are particularly vulnerable to exploitation as they often do the same job as local workers but for lower wages and in more precarious conditions, and have unique barriers in getting labour rights enforced (Stichting Onderzoek Multinationale Ondernemingen, 2016). The United Nations Partnership on the Rights of Persons with Disabilities and UN Women have developed an intersectionality resource guide and toolkit that can be used to help both organizations and individual practitioners to address intersectionality in policies and activities (UNPRDP and United Nations Women 2021).

Research emerging post the COVID-19 pandemic shows the gendered implications of the textile value chain disruption and serious livelihood ramifications for women in the sector. Women workers faced increased job insecurities, which has affected other gender-based harms both in the workplace and at home (ILO 2020). The gendered divisions of labour in the home means that the burden of COVID-19 on families was intensely felt by women. The closing of schools in accordance with lockdown measures placed additional work on mothers to home school and has increased the risk of child labour in some countries where the family might be desperate for additional income (Street et *al*. 2022).

The following international initiatives represent noteworthy examples of established and emerging responses and considerations for women in the textile workforce:

- Relevant ILO conventions include the Convention on Ending Violence and Sexual Harassment in the World of Work (No.190), the Equal Remuneration Convention (No. 100), the Discrimination (Employment and Occupation) Convention (No. 111) and the Maternity Protection Convention (No. 183).
- UN Women: Convention on Elimination of All Forms of Discrimination against Women (CEDAW), Beijing Declaration and Platform for Action (1995), and the UN Women Strategic Plan 2022-2025.
- European Union Opinion of Committee on Women's Rights and Gender Equality for the Committee on the Environment, Public Health and Food Safety on the European Union strategy for sustainable and circular textiles 2022/2171.[30]

30 https://www.europarl.europa.eu/doceo/document/FEMM-AD-737329_EN.pdf

2.8 Key findings from Chapter 2

The textile value chain is governed by a complex, layered and limited matrix of regulations and guidelines focused on addressing the environmental and social implications of the sector. These include overarching UN guidance, informed by bodies such as UNEP, the provisions set out in multilateral environmental agreements and other key sources of international environmental law, including chemicals conventions, as well as OECD guidance on environmental permitting systems. Complementing these international frameworks are the voluntary textile-specific, industry-led governance mechanisms, and voluntary certifications that currently represent the primary way in which the textile industry is managing polluting practices on the ground. Overlaying these are the European Union's REACH approach to chemical management and the European Union Industrial Emissions Directive which provide a notable example for how region-specific regulations may strengthen global approaches, and the ILO and OECD's guidance to acknowledge the socio-environmental and gendered dimensions of work in the textile industry.

This research found that there is a lack of recent global and inter-state cooperation and guidance on environmental permitting systems. A key finding of this chapter is that voluntary standards and certifications, alongside industry-led governance, play a pivotal role in complementing the mandates of international environmental law and guidance. In theory, voluntary initiatives allow textile value chain operations to proactively self-regulate and benchmark their sustainability efforts. Self-regulation is particularly important in the textile value chain due to the cross-border nature of textile production, with one process occurring in one jurisdiction, and the next in another country. Standards and certifications can serve to establish and uphold measures to control environmental harm across different textile production processes and countries. Brands or retailers, driven by the desire to protect their reputation, leverage their economic influence to ensure their suppliers adhere to these standards. If a textile value chain operation's certification is revoked, they risk losing business with their buyers. When both brands and manufacturers throughout all tiers of the textile value chain are involved in setting and overseeing these standards, pollution management becomes a shared responsibility, albeit the cost to act often still lies on the manufacturers (Ghosh and Shah 2012).

However, the efficacy of certifications in practice has been a topic of contention. Voluntary certifications and standards often lack robust compliance mechanisms and have proven ineffective in significantly altering industry behaviour. The transparency of certifications has been called into doubt. This means trust in these initiatives is eroded, and the knock-on effect is that their primary modes of ensuring compliance (i.e. the risk of reputational damage and/or financial loss) fails. Despite this, an opportunity may lie in leveraging the nuanced guidance found within certain standards and certifications, especially those related to chemical pollution, to inform and strengthen environmental regulation at a national level, via the permitting systems. By integrating and building on the detailed directives from relevant standards and certifications into national legislative frameworks, environmental permitting systems could provide more stringent and specific guidance tailored to the environmental challenges of the textile value chain.

Photo: Adobe Stock

03

Chapter 3:

Environmental permitting: application and decision-making process for textile value chain activities

3.1 Introduction

Research for this report focused on national environmental legislation addressing environmental permitting and environmental impact assessments (EIAs) in ten countries: Bangladesh, Brazil, China, Egypt, Germany, India, Indonesia, Jordan, Türkiye and the United States of America. The legislation used to inform the findings of this chapter (and Chapter 4) is provided in Appendix 1. In all countries, permitholders are legally bound by the conditions contained within the permit and the relevant national environmental legislation. However, as outlined in this chapter, the extent to which the textile industry is covered by national environmental legislation varies from country to country. Environmental permitting may also be legislated at subnational levels, but this remains beyond the scope of this report.

When examining the permitting process and the extent to which such process integrates environmental considerations across the selected countries, the analysis revealed four key aspects or phases:

Phases

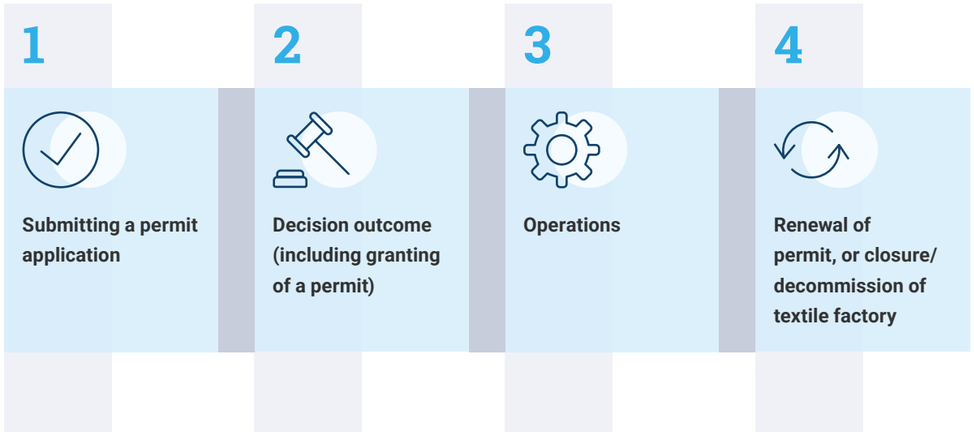

Table 7 illustrates these phases, outlining the corresponding stage of the textile value chain and the key considerations addressed by this research at each step. Chapter 3 focuses on Phase 1 (application) and Phase 2 (decision outcome, including granting of permit), while Chapter 4 focuses on Phase 3 (operations) and Phase 4 (renewal/decommission).

The expert consultation conducted as part of this research confirmed that these four stages effectively encapsulate environmental permitting processes.

Table 7. Phases of permitting in national environmental legislation: key considerations addressed by research

Phase	Phase1: Submitting environmental permitting application	Phase 2: Decision outcome (including granting of permit)	Phase 3: Operations	Phase 4: Renewal or closure/ rehabilitation
Stage of the textile activity lifecycle	Before commencement of textile operations	Permission to build or continue textile operations	Textile installation in operation	Renewal of permit or closure of textile installation
Key considerations	• Is the permit process defined in the legislation? • What type of environmental permit is required (single or integrated)? • Relationship with EIA for permitting application. • How the 'risk' of the textile value chain is classified under legislation	• Who is the competent authority in deciding the outcome of a permit application? • Is the review of the permit application procedural and/or substantive? • What conditions are attached to the environmental permit? • Are the decision outcome and relevant permit conditions made publicly available? • Does the permit integrate considerations of gender and/or social impact?	• Is self-reporting required? • How is monitoring conducted, and who is responsible for it? • How are permit conditions enforced? • What is the extent of public participation in enforcement?	• What does the permit renewal process involve? • What are the requirements around closure/ rehabilitation?

3.2 Phase 1: Submitting an environmental permit application

This section focuses on the application process for an environmental permit. The first stage of obtaining an environmental permit – or in some cases, multiple permits – is for the applicant (i.e. the textile value chain operator) or its delegate to apply for an environmental permit to carry out textile value chain activities. In instances where a new textile value chain operation is being created, this will need to be done prior to construction of the operation. Applications for environmental permits are usually made to the ministry or department responsible for environmental matters at the national level. As this section will explain, this research found that there was no consistent approach of environmental permitting for textile value chain activities across the ten countries examined.

3.2.1 Is the environmental permit application process clearly outlined in the legislation?

Principle 15 of the OECD (2007) Guidelines on Effective Environmental Permitting Systems (hereafter OECD Guidelines (2007)) advocates for transparent permitting procedures with time limits for each stage of the procedure specifically stated. This research found that Bangladesh, Brazil, Germany, Indonesia and Türkiye clearly outlined the step-by-step process for obtaining an environmental permit within the national environmental legislation (or related EIA legislation). Germany's national emission control legislation provides a useful example of the environmental permitting process (see Textbox 3). It is the only country examined that explicitly includes compliance and monitoring, renewal and reporting, and closure and decommissioning in the steps listed (Federal Emission Control Act (1974))[31].

Textbox 3: Permitting process in Germany, as outlined in the Federal Emission Control Act 1974

- **Step 1. Project Identification and Design:** Identify the industrial activities that require permitting, considering potential emissions to land, air and water.
- **Step 2. Application Preparation:** Gather comprehensive data about the project, emissions and intended mitigation measures.
- **Step 3. Submit Permit Application:** Submit an integrated permit application for industrial activities covered by the Emission Control Act permit.
- **Step 4. Regulatory Review and Assessment:** Regulatory authority reviews the integrated permit application, evaluating the potential impact on the environment, including emissions to land, air and water.
- **Step 5. Public Participation:** Depending on the significance of the industrial activities, allow for public participation and feedback.
- **Step 6. Decision-Making and Permit Issuance:** Regulatory authority decides whether to approve the integrated permit application. If approved, the integrated permit is issued, outlining conditions for emissions control and other relevant aspects.
- **Step 7. Compliance and Monitoring:** Regulatory authorities conduct periodic monitoring and inspections to ensure compliance with emissions limits and environmental regulations.
- **Step 8. Renewal and Reporting:** Renew the integrated permit as needed, following the renewal process and submitting required reports.
- **Step 9. Closure and Decommissioning:** Properly close and decommission the industrial facility following regulatory guidelines for pollution prevention and site restoration.

31 See Germany, Federal Emission Control Act 1974, sections 10 and 20; Germany, Environmental Impact Assessment Act 1990, sections 28 and 40.

3.2.2 Types of permit applications: single-media versus integrated environmental permits

As explained in Chapter 1, there are two main types of environmental permits: single-media and integrated permits. Single-media environmental permitting systems refer to the traditional approach of requiring separate permits for different environmental media/issues, such as air emissions, water pollution and waste management. These permits require textile value chain operators to obtain multiple authorisations from often separate, uncoordinated authorities. An integrated environmental permitting approach is considered best practice. It is anchored in the best available techniques (BAT) concept, which weighs environmental benefits against operator costs, with an emphasis on prevention (OECD 2007, p. 13). The objective of integrated permitting is to replace the existing intricate web of environmental permits and licences that pertain to emissions, water resource management, wastewater discharge, waste handling, storage disposal and diverse ecological impacts.

Textbox 4: Integrated environmental permit conditions

This textbox is based on the information set out in the OECD Guidelines (2007), specifically Principle 9, which relates to the comprehensive scope of an integrated permit.

Integrated permit conditions should address the following matters:

- **Operational Matters:** Conditions, grounded in BAT, encompass operational aspects like raw material and water use, pollution control methods, waste management, energy efficiency, emergency preparedness, self-monitoring systems and post-decommissioning site remediation.
- **Emission Limit Values (ELVs):** ELVs should be established using a combined approach for emissions into the atmosphere, surface waters, sewers, wastewater treatment plants and ground (unless prohibited by law). ELVs should be based on the combined assessment of local environmental objectives and state-of-the-art technologies for reducing harmful emissions (OECD, 1999).
- **Improvement Programme:** In cases where immediate adoption of BAT is economically unfeasible, which may be due to the size or scale of the operation, an improvement programme to achieve BAT should be outlined in the permit.
- **Records:** The permit should detail requirements for the operator to maintain records.
- **Reporting and Notifications:** Reporting obligations to a competent authority should be stipulated, including parameters and frequency of reports. Protocols for notifying authorities about exceeding ELV limits, accidents and operational cessation must also be included.
- **Payment of Environmental Taxes and Charges:** If applicable, conditions for payments linked to pollution activities or natural resource usage should be outlined in the permit.
- **Validity and Provisions for Renewal and Variation:** The permit should specify its commencement date, validity duration as per relevant laws, guidelines for renewal or revision application by the operator, and circumstances under which the competent authority can initiate a permit review.

To avoid any doubt, integrated environmental permitting only refers to the integration of environmental considerations into one permit; it does not refer to the integration of all possible permit requirements (for example, permits that may be required to operate a business). Appendix 2 outlines business and/or trade permit requirements that may also apply to the textile value chain operations in the ten countries. The findings show that these permits tend to be dealt with separately to environmental permits and that environmental impact is typically not considered in their issuance. These permits generally require separate application processes involving the review and approval of several different national ministries and departments. Whilst some countries have implemented single submission and/or streamlined processes for business-related permits and licences (including environmental permits), there is an opportunity to better connect the permit application processes and embed environmental considerations across broader administrative permitting arrangements.

Table 8 below provides findings from the research showing the extent to which the selected countries use integrated environmental permits, along with whether the permitting process is overseen by a single competent authority (as per Principle 3 of the OECD Guidelines (2007)). This information provides a high-level summary of responsibility for environmental permitting decisions, the process to be followed for environmental permitting, and the current level of integration for environmental permitting for the ten countries examined in this research.

Photo: Adobe Stock

Table 8. Single-media versus integrated permitting

	Evaluation Criteria			
Country	**One competent authority?**	**One permitting procedure?**	**One permit decision?**	**Single-media or integrated permit?**
Bangladesh	Yes: Bangladesh operates with national-level involvement in permitting. The Department of Environment (DoE) handles permitting decisions, and the issuance of Environmental Clearance Certificates is a central regulatory function.	Yes: Bangladesh has an integrated permitting system which covers all relevant environmental effects. However, there are different permitting procedures depending on how an operation is classified, according to the legislation, as Green, Yellow, Orange or Red. All projects, regardless of the classification, require an Environmental Clearance Certificate, but Red projects all require a Site Clearance Certificate (if it is a new installation). The procedures generally follow a similar structure, with additional steps for higher polluting industries in the Orange and Red categories.	Yes: The environmental permit process involves the issuance of one single permit decision by the competent authority. The decision covers multiple aspects holistically depending on the type of project, such as water pollution, air pollution and noise, as well as permitted discharge/ emission levels of pollutants for projects.	Integrated
Brazil	No: Brazil follows a federative model. The environmental permitting authority is decentralised across states and municipalities. Federal environmental agencies like the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) also play a role in permitting certain projects.	To an extent: Brazil has an integrated permitting system, meaning that environmental licences cover emissions to various environmental media (e.g. air, water, land) as well as other environmental effects (e.g. the use of energy, water, and raw materials). Some activities require separate permits, including water abstraction for manufacturing, hydroelectric power generation and wastewater discharges.	No: In most states, the permitting process involves three stages, accompanied by separate decisions – preliminary licence granted at the initial stage, installation licence to authorise construction or expansion of a facility, and an operating licence to authorise the operation of a facility.	Mostly Integrated
China	No: China's permitting approach includes both central and sub-national cooperation. The Ministry of Ecology and Environment (MEE), as the environmental authority under the State Council, is responsible for the overall national supervision and management of pollutant discharge permits. Meanwhile, municipal and other local environmental authorities at the prefecture-level or above carry out supervision and management of discharge permits within their own administrative jurisdictions.	To an extent: China's One Permit Management (OPM) initiative began in November 2016, introducing integrated environmental permitting through a single Pollutant Discharge Permit, marking the formal start of efforts to implement integrated environmental permitting via a single discharge permit. China is progressing toward a one permitting procedure and aims to fully implement it by 2027. Currently, pollutant discharge units are managed under a three-tier classification – key management, simplified management, and registration management – based on pollutant production levels, emissions and environmental impact.	Yes. In November 2016, the State Council issued the 'Implementation Plan of the Permit System for Controlling Pollutant Discharge', introducing a one permit framework. Since 2017, China has adopted this single permit approach by integrating multiple environmental media (air, water, solid waste etc.) into one consolidated discharge permit. This integrated permit model was later formalized in law by the 2021 Regulations on Administration of Pollutant Discharge Permits, which mandate a comprehensive permit covering all relevant media.	Integrated
Egypt	No: The responsibility for permitting and oversight in Egypt lies with national and sub-national authorities. The Egyptian Environmental Affairs Agency (EEAA) and other national institutions are responsible for formulating and implementing environmental regulations. However, at the subnational level, the Industrial Development Authority (IDA) is the agency responsible for issuing permits. While the IDA operates within the national legal framework, it carries out its functions at a more localised level.	Unclear: Law No. 15 of the year 2017 on the Facilitation of Granting Licences to Industrial Facilities centralises industrial licensing to a single one-stop-shop authority. However, it is not entirely clear based on the legislation analysed whether this included environmental permitting.	Unclear in the legislation and guidelines analysed.	Unclear: However, as per Law No. 15 is likely it is integrated.

Table 8. (cont'd). Single-media versus integrated permitting

	Evaluation Criteria			
Country	**One competent authority?**	**One permitting procedure?**	**One permit decision?**	**Single-media or integrated permit?**
Germany	No: Germany's permitting approach includes both central and sub-national cooperation. While the federal authority oversees certain aspects, states ('Länder') have their own environmental agencies responsible for permitting within their jurisdictions.	To an extent: There is an integrated permitting regime for industrial facilities through an emission control permit. It includes most of the permitting elements necessary to conduct and operate an industrial facility (for example, building permits, nature protection permits and so on). However, some activities (e.g. water) are not included by the permit under the Emission Control Act and must be permitted separately.	To an extent: One decision for an integrated permit, commonly referred to as an Emission Control Act permit. However, a separate permit for water pollution may be required as these activities are not included in the Emission Control Act permit.	Mostly Integrated
India	No: The responsibility for permitting decisions often lies with state and local authorities. The Central Pollution Control Board (CPCB) oversees national-level environmental regulations, but state pollution control boards (SPCBs) play a key role in issuing permits and enforcing environmental laws.	To an extent: India's permitting process is partially integrated, with various environmental clearances required based on project size and impact. While the procedure has a structured approach, it maintains separate pathways for different project categories. However, some integration is observed, such as the option to submit a combined consent application for Consent to Establish (CTE) and Consent to Operate (CTO) permits under the Water Act and Air Act, streamlining the process to some extent.	To an extent: India's permitting process typically involves multiple permit decisions, unless a combined clearance is obtained through the consent process.	Partly Integrated
Indonesia	No: The Ministry of Environment and Forestry is the central government agency which is responsible for issuing permits. Since the late 1990s, EIA implementation and environmental permit approvals have been devolved to local provincial governments.	Yes: Indonesia has taken steps towards implementing an integrated permitting procedure through the introduction of the Online Single Submission (OSS) system in 2018. The OSS system provides a one-stop platform for businesses to apply for multiple permits simultaneously. However, industries involved in activities that entail wastewater disposal, air pollutant emissions, and related aspects have to secure addition technical approvals and operational worthiness letters. Additionally, there are different permitting procedures depending on how an operation is classified (as per the legislation).	Yes: One decision for an integrated permit covering land, air and water.	Integrated
Jordan	Yes: The Ministry of Environment is responsible for issuing permits and overseeing environmental matters.	Unclear: This is not explicitly outlined in the relevant legislation.	Unclear: Whilst this is not made explicitly clear in the legislation, the legislation gives the impression that an integrated permitting approach is utilised.	Unclear - No specific mention of single or integrated permitting within legislation or environmental agency website

Table 8. (cont'd). Single-media versus integrated permitting

	Evaluation Criteria			
Country	**One competent authority?**	**One permitting procedure?**	**One permit decision?**	**Single-media or integrated permit?**
Türkiye	Yes: Türkiye's environmental permitting system involves a central authority for national projects. The Ministry of Environment and Urbanisation (MoEU) sets policies, issues permits and supervises projects at the national level. In the case of smaller-scale installations, the decision-making role shifts to the Provincial Directorates of the Environment and Urban Planning agency.	To an extent: Türkiye's Environmental Permits and Licences Regulation (10 Sept 2014) introduced an integrated permitting regime for emissions of pollutants. To begin operations, companies must obtain an integrated environmental permit that covers air, noise, wastewater and deep-water emissions. However, single permits for other emissions may be needed, depending on their type, capacity and location.	Yes: One decision for an integrated permit.	Mostly Integrated
United States of America	No: Environmental permits are issued by federal, state and local regulators. While the federal level Environmental Protection Agency (EPA) holds a significant role, permitting processes often involve state-level authorities.	No: There are no national integrated permitting regimes in the United States of America. Permitting authorities take a single-media approach, under which separate permits are issued to address potential impacts to or by distinct environmental media (for example, air, water, waste, wetlands and natural resources). Some media-specific permits, however, consolidate requirements under different state and federal regulatory programmes into one permit.	No: Separate decision for distinct environmental media.	Single-media

As can be seen from the table above, many of the countries are on the path of moving towards integrated environmental permitting at the national level. The United States of America is the exception to this, with single-media permitting being the current approach. This desktop-based research has been unable to confirm if environmental permitting in Jordan and Egypt is integrated or single-media as this is not clearly explained in the national environmental legislation, or on environmental ministry websites which have been translated into English. The shift towards integrated environmental permitting aligns with OECD best practice guidance on environmental permitting offering practicality for both government in issuing and industry in applying for such permits (OECD Guidelines (2007)). Textile value chain operators will need to identify whether there is a single or integrated environmental permitting process in their jurisdiction and identify the competent authority which will provide guidance on environmental permitting requirements and process.

3.2.3 Relationship between EIA and environmental permitting

As noted in Chapter 1, the relationship between EIA and environmental permitting is important to consider, because EIA approval is often a: "legal pre-condition for the final decision on whether to issue a permit or not, and if so, under which conditions" (UNEP 2018, p. 21). Further to this, as per Principle 7 of the OECD Guidelines (2007), there should be a close relationship between environmental permitting and environmental assessments. The research revealed that all the selected countries technically adhered to this principle, as EIA was typically part of the environmental permit process. However, as highlighted in Textbox 5, the stage at which the EIA is conducted in relation to the application process differs across the selected countries.

Textbox 5: Relationship between EIA and environmental permitting

Brazil, China, Egypt, Germany, India, Jordan, **Türkiye** and **United States of America**: EIA, where required, typically is conducted in parallel (at the same time) as the environmental permitting process. As explained, it is the environmental permitting which generally triggers the EIA process. If conducted, the EIA informs the environmental permit decision.

Bangladesh: Depending on how operation is classified (via the relevant legislation), a Site Clearance Certificate is first issued as part of the environmental permitting process. Once this is issued, the EIA is conducted, if required. It is only after the EIA is approved that an application for an Environmental Clearance Certificate can be made.

Indonesia: Businesses can apply for an environmental licence after the EIA, if required, has been prepared and after the competent authority has reviewed the EIA and made a decision as to whether to approve the permit application.

This research also found that EIA was very influential in shaping environmental permitting obligations for textile value chain operations, as it was generally EIA legislation (which typically existed as a stand-alone piece of legislation for the countries included in this research) which explained a. whether textile value chain activities were considered to be 'high risk' or 'significant' in causing environmental harm, and in turn, b. whether an EIA was or was not required, and if so, what type of EIA is required, and c. the extent to which environmental impacts were considered before a permit was issued.

Prior research by UNEP (2019) illustrates two paths relating to EIA: 'EIA required' (where there is a significant environmental impact) and 'No (full) EIA' (where there is no significant environmental impact). In a similar vein, the analysis of the selected countries broadly suggests there are three different paths for EIA processes related to textile value chain activities:

1. No EIA is required.
2. Only an initial EIA is required, which does not require technical studies (and thus is not a 'full' EIA). This may simply involve completing a form with descriptive information about the project. As this approach does not collect technical information, there is a risk that environmental considerations may not be fully or adequately considered.
3. A comprehensive EIA is required (i.e. 'full' EIA) and Terms of Reference (ToR) are created to guide the detailed technical studies required.

More detail on this, and what it means in the context of the textile value chain, it is outlined in the next section.

3.2.4 Perceived significance of the environmental impacts of textile value chain activities

Best practice (as per OECD Guidelines (2007)) for environmental permitting requires that national legislation sets out clear, measurable and enforceable definitions of "significant environmental impact" to trigger a comprehensive EIA as part of the environmental permitting process (OECD 2007, p10). Across the selected countries, it was predominately legislation pertaining to EIA which detailed whether a textile value chain activity was considered to have an environmental impact, and the extent to which these are considered as causing significant environmental harm. The extent to which certain types of textile value chain activities are classified as being 'significant' varies between countries and there appears to be no uniform approach. That said, textile value chain activities such as tanneries, and bleaching and/or dyeing facilities (which typically occur at Tiers 2 and 3 of the textile value chain) were commonly listed in the national legislation and/or EIA regulation as being highly polluting (though this did vary depending on the size of the operation). In some cases, the textile value chain activities considered 'significant' are often identified by listing chemicals of concern, rather than the specific activity. The chemicals listed typically aligns with other findings on the use of restricted substances in textiles (Greenpeace 2021 – see Chapter 1).

The definition and categorisation of what is 'significant' is arguably the most influential factor in determining the extent to which the possible environmental impact of a proposed textile value chain operation is assessed, and in turn, what environmental conditions are placed upon it. If the environmental impact of a textile value chain operation is considered to be 'not significant', the research indicates that there is no trigger to undertake an EIA under the national laws before issuing a permit. In other words, if the activity is 'not significant', an EIA, which is the structured and legislated approach for: "obtaining and evaluating environmental information prior to its use in decision-making in the development process" (UNEP 2004, p. 6), is not required to obtaining a permit. In such cases, an environmental permit can be issued without consideration of the potential environmental impacts.

Table 9 provides an overview of the following:
1. whether textile value chain activities are explicitly listed as being 'significant' in national legislation;
2. the types of textile value chain activities or pollutants that are specifically mentioned; 3. whether an EIA is required for textile value chain activities and/or pollutants relevant to the textile value chain; and 4. which tiers of the textile value chain are covered by environmental permits.

Table 9. Significance and scope of activities of the textile industry covered under national environmental legislation

	Evaluation Criteria			
Country	**Are textile value chain activities explicitly listed in either the country's primary environmental legislation and/or EIA specific legislation?**	**What kinds of textile value chain activities or pollutants are listed in national environmental legislation?**	**Is an EIA required for textile value chain activities?**	**Do textile value chain activities require an environmental permit?**
Bangladesh	Yes – explicitly referred to in Schedule 1 of the Environmental Conservation Rules 2023 (SRO NO 53)	Industrial units (such as factories) are classified into four categories from those considered to have the least impact on the environment (green) to those considered to have the greatest impact (red). Textile value chain activities fall within two categories: **Orange category**: textile activities under 15 tonnes. **Red category**: textile activities over 15 tonnes.	Only 'Red' category projects, require a comprehensive EIA for a proposed industrial unit.	An 'Environmental Clearance' is compulsory for all textile activities.
Brazil	Yes – Brazil's National Environmental Policy Act No. 6.938 (1981) categorises the textile industry's polluting potential as "average" (item 11 of Annex VIII table). Also, Annex I of the National Council for the Environment (CONAMA) Resolution 237/97 lists the project categories subject to environmental licensing, which includes the activities falling under the "textile, clothing, footwear and fabric artifacts industry" and the "chemical industry".	The activities listed under item 11 of the table in Annex VIII (No. 6.938), under the classification of "textiles industry, clothing, footwear and fabric artifacts" include: • processing of textiles, vegetable, animal and synthetic fibres • manufacture and finishing of yarns and fabrics • dyeing, printing and other finishing of garments and various articles of fabrics • manufacture of footwear The "textile industry, clothing, footwear and fabric artifacts" category aligns with Tier 1-4 activities (all the tiers in the textile value chain). Further, the "chemical industry" is listed at item 15 of Annex VIII (No. 6.938) and is recognised as having a "high" polluting potential. Activities within this category which are inherent to textile production include: • manufacture of artificial and synthetic fibres • manufacture of synthetic rubber and latex The "chemical industry" category chiefly aligns with Tier 4, and some Tier 3 activities.	Under CONAMA Resolution 237/97, an EIA is only required if relevant authorities determine the project has "significant potential for environmental degradation".	All textile-related projects and activities are subject to environmental licensing per Article 2 and Annex I of CONAMA Resolution 237/97.

Table 9. (cont'd). Significance and scope of activities of the textile industry covered under national environmental legislation

	Evaluation Criteria			
Country	**Are textile value chain activities explicitly listed in either the country's primary environmental legislation and/or EIA specific legislation?**	**What kinds of textile value chain activities or pollutants are listed in national environmental legislation?**	**Is an EIA required for textile value chain activities?**	**Do textile value chain activities require an environmental permit?**
Brazil (cont.)	Further to this, it is important to indicate that the state of Goiás legislated a streamlined online environmental licence in 2014 for activities deemed to be low polluting (Resolution CEMAm (Conselho Estadual do Meio Ambiente) No. 10/2014 establishing procedures for the Environmental Licence Online ("LAO") issued to low pollution potential activities (2014)). This specifically lists a number of textile value chain activities which are deemed to be low polluting.[32]	Resolution CEMAm No. 10/2014 lists a number of textile value chain activities that only need to apply for the online licence. However, the threshold for whether these are deemed low polluting is also determined by the size of the operation (both in m2 or daily production capacity): • Processing, spinning and weaving of vegetable textile fibres, without dyeing • Manufacture of tow, upholstery materials and recovery and textile waste • Manufacture of trimming, ribbons, yarn, lace and embroidery • Manufacture of geotextiles artefacts • Manufacturing of technical fabric articles • Manufacture of canvas and tarpaulin articles • Manufacture of felt articles and horsehair fabrics • Manufacture of various leather and skin artefacts, without tanning and/or other treatments • Manufacture of bedding and upholstery items • Manufacture of textile articles except clothing without dyeing and laundry • Manufacture of clothing, footwear and accessories without dry cleaning or laundry • Weaving and spinning • Footwear manufacturing This list relates to Tiers 1, 2 and 3.	Annex I of the National Council for the Environment (CONAMA) Resolution 237/97 lists the project categories subject to EIA, which includes the activities falling under the "textile, clothing, footwear and fabric artifacts industry" and the "chemical industry" categories under the National Environmental Policy Act No 6.938 (1981). Activities classified as low polluting, as per Resolution CEMAm No. 10/2014 establishing procedures for the Environmental Licence Online (LAO) issued to low pollution potential activities do not require an EIA.	In the state of Goiás, the activities listed in Resolution CEMAm No. 10/2014 establishing procedures for the Environmental Licence Online (LAO) issued to low pollution potential activities are required to obtain an environmental permit; however, this is a streamlined, online permit.
China	No – however, the Ministry of Environmental Protection has published specific technical guidelines for Environmental Protection in Dyeing and Finishing of Textiles (2015). There is also comprehensive EIA and permitting regulations related to "construction projects", which capture most textile facilities during the construction phase.	The 2015 technical guidelines apply to the dyeing, printing and finishing process of textile materials (fibres, yarns, threads and fabrics), including pretreatment (excluding wool washing hemp degumming, cocoon cooking and chemical fibre and other textile raw materials). The activities listed in the technical guidelines chiefly align with Tier 2-3 activities.	The activities listed in the technical guidelines require an EIA.	Any facility that pollutes must obtain a pollutant discharge permit. This includes any textile activities that involve emission-generating processes or chemicals.

32 Further to this, it is important to indicate that the state of Goiás legislated a streamlined online environmental licence in 2014 for activities deemed to be low polluting (Resolution CEMAm (Conselho Estadual do Meio Ambiente) No. 10/2014 establishing procedures for the Environmental Licence Online ("LAO") issued to low pollution potential activities (2014)). This specifically lists a number of textile value chain activities which are deemed to be low polluting. Press Release: Press Information Bureau (https://www.pib.gov.in/PressReleasePage.aspx?PRID=2073234#:~:text=The%20Government%20of%20India%20has,Operate%20(CTO)%20at%20all).

Table 9. (cont'd). Significance and scope of activities of the textile industry covered under national environmental legislation

	Evaluation Criteria			
Country	**Are textile value chain activities explicitly listed in either the country's primary environmental legislation and/or EIA specific legislation?**	**What kinds of textile value chain activities or pollutants are listed in national environmental legislation?**	**Is an EIA required for textile value chain activities?**	**Do textile value chain activities require an environmental permit?**
Egypt	No – however, the Ministry of State for the Environment Egyptian Environmental Affairs Agency (EEAA) published technical guidelines (Guidelines of Principles and Procedures for Environmental Impact Assessment (2009)), which refer to textile activities. These guidelines supplement obligations for EIA contained within Egypt's Law No. 4 of 1994 on Environment (1994), but guidelines are not typically legally binding.	In Egypt, projects are classified into three categories depending on the severity of environmental impacts: Category A, B and C, with Category C covering projects with the most severe environmental impacts. Textile projects are included in all three categories: Category A: Spinning and weaving and knitting factories that do not include dyeing units, cotton ginneries/cotton pressing and cleaning factories, factories producing cords and ropes (not including any plastic processing), ready-made garments, and sponge matrices. Category A projects chiefly align with Tier 1-4 activities. Category B: Plant producing synthetic fibres (such as synthetic and nylon) without dyeing units, factories producing cords and ropes (including plastic processing) and factories for retting natural fibres such as flax and their associated shaking and carding processes. Category B projects chiefly align with Tier 2-4 activities. Category C: Factories producing textile and carpets (including dyeing processes), manufacturing of synthetic fibres such as artificial silk and nylon (including dyeing processes). Category C projects chiefly align with Tier 2-3 activities.	All projects are required to undertake an EIA of some form, regardless of whether they fall under Category, A, B or C. Category A projects are deemed to have minimal environmental impacts and only need to complete a 'Form A' EIA for consideration prior to a permit being issued: this form covers the "basic requirements essential for environmental impact assessment". A permit can then be issued without the requirement for a comprehensive EIA study. Category B projects are recognised to potentially have adverse environmental impacts and need to complete a 'Form B' EIA for consideration prior to a permit being issued: while this form is similar to Form A, it is considered to have "more stringent requirements" than the Form A and requires a great level of detail and analysis (such as more detail about the baseline environment and analysis of project alternatives). A permit can then be issued without the requirement for a comprehensive EIA study. Category C projects are recognised as having highly adverse impacts and must undertake a comprehensive EIA study prior to a permit being issued.	A permit is required for projects and establishments within all three categories.

Table 9. (cont'd). Significance and scope of activities of the textile industry covered under national environmental legislation

	Evaluation Criteria			
Country	**Are textile value chain activities explicitly listed in either the country's primary environmental legislation and/or EIA specific legislation?**	**What kinds of textile value chain activities or pollutants are listed in national environmental legislation?**	**Is an EIA required for textile value chain activities?**	**Do textile value chain activities require an environmental permit?**
Germany	Yes – textile projects are listed under Annex 1 of Germany's Environmental Impact Assessment Act, 2010. The European Union REACH chemical framework is regulated by the German Chemical Act (ChemG) 1980. As a member of the European Union, the European Union Industrial Emissions Directive 2024/1785 EU is also applicable. This Directive seeks to reduce emissions into air, water and land, and to prevent waste generation from large industrial installations and intensive livestock farms.	Annex 1, Item 10 of the EIA Act specifically refers to textile specific activities including the construction and operation of a pre-treatment plant (washing, bleaching, mercerizing) and for dyeing fibres or textiles.	Of the textile specific activities listed in Annex 1 of the EIA Act, none of them automatically require an EIA. However, if a facility has a processing capacity of 10t or more of fibres or textiles per day, then a general preliminary examination of the proposed project is required to determine whether a comprehensive (full) EIA study is required (see s 7(1) of the EIA Act). Textile projects that require a general preliminary examination chiefly align with Tier 1-4 activities. Moreover, a site-related preliminary examination of the proposed project site is required to determine whether the EIA is mandatory, if the facility has: • Either a dyeing capacity of 2t to less than 10t fibres or textiles per day in dyeing plants of fibres or textiles using dye accelerators including stenter systems, with the exception of systems that are operated under increasing pressure. • Or a bleaching capacity of less than 10t fibres or textiles per day in installations for bleaching fibres or textiles using chlorine or chlorine compounds (see s 7(2) of the EIA Act). Textile projects that require a site-related preliminary examination chiefly align with Tier 2-3 activities. In relation to other associated categories: • Wood/pulp: construction and operation of a plant for obtaining pulp from wood, straw, or similar fibres requires a full EIA study (see Item 6 of Annex 1). • Animal products: construction and operation of a plant for tanning, including re-tanning of animal skins or animal skins with a processing capacity of 12t of finished products or more per day are required to undertake a general preliminary examination. If the production capacity is less than 12t per day, the facility only requires a site-related preliminary examination (see Item 7 of Annex 1). Textile projects that require a full EIA study (e.g. a pulp mill) chiefly align with Tier 4 activities.	An Emission Control Act permit is required for the construction and operation of installations that have 'harmful' environmental impacts, defined as: "emissions that are suitable in terms of type, extent or duration to cause hazards, significant disadvantages or significant nuisance for the general public or the neighbourhood" (Federal Emission Control Act, 1974, Section 3).

Table 9. (cont'd). Significance and scope of activities of the textile industry covered under national environmental legislation

	Evaluation Criteria			
Country	**Are textile value chain activities explicitly listed in either the country's primary environmental legislation and/or EIA specific legislation?**	**What kinds of textile value chain activities or pollutants are listed in national environmental legislation?**	**Is an EIA required for textile value chain activities?**	**Do textile value chain activities require an environmental permit?**
India	Yes – see Environment (Protection) Rules, 1986, issued under the Environment (Protection) Act, which describes the parameters and standards for the discharge of effluents from the textile industry; and in particular, Environmental Impact Assessment Notification 2006 and Revised Classification of Industrial Sectors under Red, Orange, Green and White Categories (dated 29 February 2016) issued by the Central Pollution Control Board.	Textile value chain activities are organized into four different colour-coded categories. White: cotton and woollen hosiers (dry process only without any dyeing or washing), handloom/carpet weaving (without dyeing and bleaching) and leather cutting and stitching. White category industries chiefly align with Tiers 2-3 activities. Green: apparel making, handloom weaving, shoelace manufacturing, tailoring and garment making, leather footwear and leather products (excluding tanning and hide processing). Green category industries chiefly align with Tiers 1-2 activities. Orange: cotton spinning and weaving. Orange category industries chiefly align with Tiers 2-3 activities. Red: Synthetic fibres (including rayon, tyre cord, polyester filament yarn), tanneries, dyes and dye-intermediates, yarn/textile processing involving any effluent/emission-generating process, bleaching, dyeing, printing and scouring are all considered to fall within a 'red category' industry. This category also includes the isolate storage of hazardous chemicals (as per schedule of Manufacturing, Storage & Import of Hazardous Chemicals Rule 1989). Red category industries chiefly align with Tiers 2-4 activities.	An EIA is not required for white category activities. These projects only need to notify the relevant State Pollution Control Board. An EIA may be required for green, orange, and red category projects, depending on factors such as size of the facility, location and production capacity. Generally, an EIA study must be prepared for industries proposing to engage in activities within a red category.	Two types of environmental permits are relevant in India: Consent to Establish (CTEs) and Consent to Operate (CTOs). Activities falling under the red, orange, green, and blue categories require both CTEs and CTOs. Since November 2024, CTOs and CTEs are not required for the white category industries.[33]
Indonesia	No – not specified in primary environmental law or EIA legislation, although these laws are broad enough to capture textile activities.	The types of development and/or activities that must have an AMDAL (which is the Indonesian language acronym for a comprehensive EIA) include the activities listed below. Although textiles are not specifically referred to, the categories are broad enough to include textile value chain activities. • Reclamation activities for coastal areas • Taking clean water from lakes, rivers, springs, or other surface water sources • Underground water extraction. • Construction of buildings • Defence sector activities • Agricultural sector activities • Fisheries and maritime affairs • Industrial areas/estates • Upstream petrochemical industry • Public works sector	The AMDAL (EIA) process applies to most industrial developments, including those that change the land and landscape, extract natural resources, potentially cause environmental pollution or degrade natural resources that they use, and use any technology that has the potential to significantly impact the environment. While not explicitly referred to in EIA legislation, textile and garment industrial processes have the potential to pollute and therefore may be required to undertake the AMDAL process.	The Law No. 32/2009 on Environmental Management and Protection and its main implementing regulation, Government Regulation no. 22 of 2021 on Environmental Protection, Organization and Management (2021) require any legal entity or person that conducts business activities and is under an obligation to have an AMDAL (full EIA) or a UKL-UPL (no EIA) to obtain an environmental permit from the relevant authority.

33 Press Release: Press Information Bureau (https://www.pib.gov.in/PressReleasePage.aspx?PRID=2073234#:~:text=The%20Government%20of%20India%20has,Operate%20(CTO)%20at%20all)

Table 9. (cont'd). Significance and scope of activities of the textile industry covered under national environmental legislation

	Evaluation Criteria			
Country	**Are textile value chain activities explicitly listed in either the country's primary environmental legislation and/or EIA specific legislation?**	**What kinds of textile value chain activities or pollutants are listed in national environmental legislation?**	**Is an EIA required for textile value chain activities?**	**Do textile value chain activities require an environmental permit?**
Jordan	Yes - textile activities are listed in Annex 2 and 3 of the Environmental Impact Assessment Regulation No. 37 of 2005.	Tanning/leather factories are recognised as having a significant environmental impact and are classified as a 'Category 1' industry. Integrated chemical industries, hazardous waste treatment plants and disposal sites, establishing industrial estates and natural resource extraction also fall under 'Category 1'. Category 1 activities chiefly align with Tiers 2-4. The textile, leather, wood and rubber industries are classified as a 'Category 2' industry. Category 2 activities chiefly align with Tiers 1-4.	Category 1 activities require a comprehensive EIA study. Category 2 activities only require an initial EIA study, after which a determination is made as to whether a comprehensive EIA is needed. If a comprehensive EIA is not required, the full environmental impacts of the development are not technically assessed.	An environmental permit is required for an entity to establish and operate.
Türkiye	Yes - textile value chain activities are explicitly referred to in Annex 1 and Annex 2 of Türkiye's Regulation on Environment Impact Assessment 2022.	Activities deemed to have the greatest environmental pollution impacts are listed under Annex 1. These project will have EIA applied. Section 24 lists the textile activities subject to EIA: • Yarn, fabric, fibre (natural, synthetic) or carpet factories with an annual capacity of 3,000 tons or more, including bleaching or dyeing units with an annual capacity of 3,000 tonnes or more. Projects subject to preliminary study and evaluation of environmental impacts are found in Annex 2. Textile activities under Annex 2 include: • Yarn, fabric, fibre (natural, synthetic) or carpet factories that perform dyeing (using chemical or root dye) or bleaching processes. • Industrial-type facilities where wool or mohair is scoured, degreased or bleached. • Denim or garment products washing facilities (excluding normal washing with softeners providing softness or shrinkage resistance). • Raw leather processing facilities. • Facilities performing printing processes (facilities where the fabric is subjected to the washing process after printing).	Activities listed under Annex 1 must undertake an EIA study and obtain a 'positive EIA decision' (i.e. approval) before starting construction. Activities listed under Annex 2 do not explicitly require an EIA.	Annex 1 activities must obtain an environmental permit from the Ministry of Environment and Urbanisation. These activities chiefly align with Tiers 3-4. Annex 2 activities must obtain an environmental permit from the Provincial Directorates of the Environment and Urban Planning Agency. These activities chiefly align with Tiers 1-3.

Table 9. (cont'd). Significance and scope of activities of the textile industry covered under national environmental legislation

	Evaluation Criteria			
Country	**Are textile value chain activities explicitly listed in either the country's primary environmental legislation and/or EIA specific legislation?**	**What kinds of textile value chain activities or pollutants are listed in national environmental legislation?**	**Is an EIA required for textile value chain activities?**	**Do textile value chain activities require an environmental permit?**
United States of America	No – textiles are not explicitly referred to in the National Environmental Policy Act (NEPA) or any other national environmental legislation. However, associated pollutants are listed in the below regulations. The National Pollutant Discharge Elimination System (NPDES) permit (see Federal Water Pollution Control Act (Clean Water Act) (1972) (CWA) captures water pollutants resulting from textile activities. Moreover, the federal Environmental Protection Agency (**EPA**) released textile mills effluent guidelines[34] and an Effluent Guidelines Program[35] plan with a key commitment to address wastewater pollutants from textile mills (a focus for 2021-2024). The hazardous waste permit programme created by the Resource Conservation and Recovery Act 1976 (RCRA) explicitly refers to chemicals that may be associated with textile activities under section 6921(e)(2). Further, permits issued under the Clean Air Act (CAA) (1970) capture principal hazardous air pollutants that may be emitted by textile facilities under section 112.	**NPDES Permits**: The CWA does not explicitly refer to textiles. However, the NPDES permitting programme establishes discharge limits and conditions for industrial and commercial sources, including textile facilities, with specific limitations based on the type of facility/activity generating the discharge. The federal EPA launched an "Effluent Guidelines Program Plan 15" under the NPDES permitting program to focus on assessing opportunities to limit per- and polyfluoroalkyl substances (PFAS) discharges from multiple industrial categories. A 2022 memorandum published by the EPA[36] states that the Effluent Guidelines Program Plan 15 applies to the following industry categories: organic chemicals (which could be used across any Tier), plastics & synthetic fibres (derived in Tier 4), leather tanning & finishing (Tier 3), landfills(end-of-life) and textile mills (Tier 2). The textile mills effluent guidelines are also incorporated into NPDES permits and apply to facilities organized into 9 subcategories: • A. Wool Scouring • B. Wool Finishing • C. Low Water Use Processing • D. Woven Fabric Finishing • E. Knit Fabric Finishing • F. Carpet Finishing • G. Stock and Yarn Finishing • H. Nonwoven Manufacturing • I. Felted Fabric Processing **Hazardous Waste or RCRA Permits:** The RCRA captures the treatment, storage or disposal of hazardous waste. This legislation specifically refers to "dyes and pigments, solvents and chlorinated aromatics" as "specified waste" under section 6921(e)(2). **CAA Permits:** CAA permits capture principal hazardous air pollutants emitted by textile facilities in the printing, coating and dyeing of fabrics and other textiles source category. The following hazardous air pollutants are listed under section 112: toluene, methyl ethyl ketone (MEK), methanol, xylenes, methyl isobutyl ketone (MIBK), methylene chloride, trichloroethylene, n-hexane, glycol ethers (ethylene glycol) and formaldehyde.	NEPA must undertake an assessment before an agency makes a final decision on a proposed action, however, this is limited to government projects only. With respect to NPDES permits, section 511 of the CWA establishes that only EPA-issued permits to "new sources" are subject to NEPA's environmental review procedures prior to permit issuance.	As the US adopts a single media environmental permitting process, multiple environmental permits are required. NPDES permits aims to help address water pollution by regulating point sources that discharge pollutants to waters of the United States. The subcategories and industry categories that are listed in technical guidelines related to NPDES permits chiefly align with Tiers 2-4. All facilities that currently treat, store or dispose of hazardous wastes or plan to do so must obtain a RCRA permit. The hazardous waste listed under section 6921(e)(2) of the RCRA chiefly align with Tiers 2-3 All facilities that build or add to major stationary sources of air pollution require a CAA permit. The listed hazardous air pollutants under section 112 of the CAA chiefly align with Tiers 1-3.

34 https://www.epa.gov/eg/textile-mills-effluent-guidelines.
35 https://www.epa.gov/eg/final-effluent-guidelines-program-plan.
36 https://www.epa.gov/system/files/documents/2022-12/NPDES_PFAS_State%20Memo_December_2022.pdf.

The analysis indicates that most countries studied explicitly list certain types of textile value chain activities or pollutants within the national legislation as being 'significant'. However, the extent to which existing national legislation considers textile production as having a 'significant' environmental impact varies across the ten countries, according predominately to the type of textile activity, the location of the operation and/or the capacity of the operation. This indicates there is a lack of harmonisation regarding how legislation regulates environmental impacts of the textile value chain.

The analysis reveals that legislation which considered textile activities to be 'highly polluting' – and therefore categorised as being significant and requiring a comprehensive EIA – generally include tanneries, bleaching, fabric dyeing or yarn/textile processing involving effluent or emission-generating processes. These activities chiefly align with Tier 2-3 activities. Furthermore, the analysis indicates that the legislation predominately focuses on chemical use by textile value chain operators to determine whether the environmental impact is 'significant'. It should also be noted that while international instruments on textiles (from, for example, UNEP and the industry and voluntary instruments, as outlined in Section 2.5) refer to the tiers of the textile value chain specifically, national environmental legislation does not classify risk or significance according to the textile value chain. Instead, national environmental legislation classifies risk based on the type of textile value chain activity.

The analysis found some textile value chain activities may fall into categories which do not require them to conduct a comprehensive EIA study or obtain an environmental permit. Without the need to conduct a comprehensive EIA, certain textile value chain operations may be granted permits without having to thoroughly assess the potential or actual environmental impacts of their activities, and/or having environmental conditions imposed on them. For example, in India, some Tier 1 textile value chain activities such as garment assembly do not require environmental clearance at the national level and state level consents are instead necessary for them to establish and operate. While Tier 1 activities may not be considered as environmentally significant as activities in Tiers 2 and 3 (in that there is less reliance on chemical use, storage and discharge in Tier 1 activities), Tier 1 activities typically generate significant amounts of fabric waste. Given such activities do not require a permit – or the need for an EIA – it means that the environmental impact associated with fabric waste may not be regulated by national environmental legislation in India.

Brazil could be highlighted as an example in terms of having a legal requirement for low, medium, and high potential polluting textile value chain activities to hold an environmental permit. Some states have implemented streamlined processes for activities with low pollution potential or environmental impact (e.g. the state of Goiás, by Resolution CEMAm No. 10/2014 establishing procedures for the Environmental Licence Online (LAO), the state of São Paulo, by State Decree nº 60.329/2014 and Normative Resolution CONSEMA nº 2/2014, establishing procedures for a simplified Licence – "Silis", and the state of Espírito Santo, by Annex I Regulatory Guidance IEMA nº 12/2008, establishing a simplified licence), a process that involves an online application.[37]

3.2.5 Other considerations relating to EIA

This section outlines three additional considerations related to EIA, including assessment of social impact, integrity of who can conduct an EIA, and strategic environmental assessment (SEA).

3.2.5.1 Social impact

While the focus of this report is on environmental permitting, and thus focuses predominately on environmental impact, it is important to note that the EIA legislation of most of the countries examined was silent as to the social impacts of the proposed activity at the application phase. While information relating to the socio-economic environment is required in Brazil, Egypt, India, Indonesia, Jordan and the United States of America as part of the EIA/application process, this predominately relates to demographic information, such as population, levels of education and employment. This means that social impacts of the textile value chain activities such as labour conditions and exposure of the local community to the textile value chain activities are not specifically considered.

3.2.5.2 Integrity of who can conduct an EIA

An important consideration in relation to integrity of the environmental permitting application process concerns rules around who can conduct an EIA. There was considerable variation across the countries with some of the jurisdictions being silent as to who is authorised to conduct an EIA. Others required EIA professionals to hold a certificate and be qualified but were silent on the nature of the accreditation (e.g. Brazil). Still others clearly stipulated formal accreditation (typically by Government) was required (e.g. Indonesia). Best practice should, ideally, require a formal accreditation process set, or established, by government. Indonesia provides a good example of a country that does this.

3.2.5.3 Strategic environmental assessment

An emerging area of practice which may have implications for the timing of public participation – and the potential for consideration of cumulative environmental impacts – is the strategic environmental assessment (SEA) process. At present, SEA is generally not imposed on individual developers, but rather is a process undertaken by government to assess the cumulative environmental impact of an industry or sector in a particular region (Chaker et *al*. 2006). While an EIA is typically carried out once a project enters the approvals process, an SEA is carried out at the *planning stage*, and thus *before* the approvals process (BMUV 2023).

SEA is not only about outlining the anticipated environmental impacts of a particular project, but also about outlining possible alternatives. Furthermore, as outlined by Germany's Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection and in line with the European Union Directive 2001/42/EC on SEA,[38] once the SEA report has been prepared: "the competent authority must describe how it took account of the environmental report and the comments and opinions submitted when taking its decision, and why a specific plan has been chosen after weighing it up against the other assessed alternatives" (BMUV 2023). This highlights a clear requirement for public participation as part of the SEA process.

Several of the countries examined, including Brazil, Indonesia, Germany and Türkiye, included references to SEA within the national environmental legislation. However, SEA is largely framed as a voluntary obligation and/or tends to be framed as only applicable to government-led activities in the context of regional planning. Given that textile value chain operations occur via many SMEs which may not need to obtain environmental permits, the use of SEA can be viewed as an important tool for drawing together the cumulative impacts of the textile value chain operations in a particular area. Such tools would provide some higher-level government insight into the cumulative impacts of the textile value chain in regions with high numbers of individual textile value chain operations.

37 *Ministério do Meio Ambiente e Mudança do Clima* - Portal Nacional para o Licenciamento Ambiental (PNLA), Procedimentos para o Licenciamento.

38 *Directive 2001/4/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment* [2001] OJ L 191/30

3.3 Phase 2: Environmental permit decision-making

Once a textile value chain operator (or their delegate) submits an environmental permitting application, the next stage is for the competent authority to consider the application (including any accompanying information such as the EIA) and determine whether to grant the permit, and, if granted, what conditions to attach to the permit.

3.3.1 Competent authority

The OECD Guidelines (2007) emphasise the importance of clearly defining in law the administrative entity responsible for permitting various categories of facilities. The Guidelines also encourage the adoption of 'one-stop shopping' systems, where applicants interact with one designated competent authority. This system streamlines the process, enhances consistency and reduces the administrative burden on both the government and industry. In addition, it is considered best practice for the designated competent authority to establish a dedicated environmental permitting department (OECD 2007). This department would manage information exchange, coordination among internal units, communication with stakeholders and collaboration with other competent authorities. However, it is crucial that the permitting responsibility remains separate from inspection and enforcement authorities to ensure the credibility of these processes.

A desktop analysis cannot determine how information exchange, coordination and collaboration between relevant government institutions occur in practice, nor can it determine whether countries have established dedicated environmental permitting departments. However, the analysis indicates that implementation of national environmental legislation is typically overseen by environmental departments at the national level (see Table 8: Single-Media versus Integrated Permitting). Further to this, an example of collaboration between competent authorities can be found in Egypt's legislation. There, Law No.15 of 2017 on the Facilitation of Granting Licences to Industrial Facilities (2017) gives the Industrial Development Authority (IDA) authority to receive and review EIAs and examine licensed industries to ensure compliance with licensing requirements. Under this law, the IDA and Egyptian Environmental Affairs Agency are required to coordinate, collaborate and share information to identify the necessary requirements for the establishment and operation of an industrial entity, including any environmental requirements.

The extent of national and subnational involvement can vary widely depending on the country's legal framework and administrative structure. The expert consultation carried out for this research revealed that for many of the countries examined, responsibility for permitting decisions – and/or parts of the application process, typically the EIA – is often shared between national and subnational levels of government. Where this occurs, national governments typically set overarching policies, standards and regulations, while subnational authorities (state, provincial or local) may have the responsibility for permitting decisions, implementation and monitoring, within their jurisdictions. In most of the countries analysed for this report, the competent authority making permitting decisions sits at subnational levels. The analysis found, for example, that Brazil, the United States of America and Egypt adopted decentralised or federative models, involving multiple levels of government, while countries like Jordan, Türkiye and Bangladesh adopted more centralised approaches. Overall, the analysis suggests that the extent of central versus regional involvement depends on factors such as governance structures and degree of decentralisation, not just the size of the country.

3.3.2 Application review

The process of reviewing environmental permit applications typically involves several key roles and responsibilities to ensure that applications meet the required standards and are valid for further processing (OECD 2005, pp. 54-58). The review process is a key opportunity for regulators to ensure that the environmental impacts of a textile value chain activity have been adequately considered and assessed. It is the role of the competent authority within each jurisdiction to review permit applications. In the selected countries, the review process typically involves multiple stages, including administrative checks, technical assessments and, in some cases, consultations with stakeholders. This may involve a procedural review, a substantiative review or both.

Procedural reviews are essentially administrative checks, in that they ensure that applicants have fulfilled all necessary formal requirements, including, where relevant, submitting the required documentation, completing forms accurately and meeting procedural guidelines such as EIAs aligned with the terms of reference (ToR). Brazil's online environmental licence for low pollution activities in the state of Goiás (as per Resolution CEMAm No. 10 establishing procedures for the Environmental Licence Online (LAO) issued to low pollution potential activities (2014)) would be an example of an environmental permit where a very basic procedural review occurs. As per the resolution, the review would involve a check to see if personal identification data and an email address have been provided and that there are no existing environmental debts associated with the operator applying for the permit.

Substantive reviews, on the other hand, delve into the technical and environmental details of the application, assessing potential impacts on various aspects such as air quality, water resources, biodiversity and public health. The analysis suggests that where a comprehensive EIA is required as part of the permitting process, the review generally involves a combination of both procedural and substantive review aspects. For example, in Indonesia, the permitting process generally involves a combination of both procedural and substantive review aspects. This comprehensive approach is carried out by the AMDAL[39] Appraisal Commission. During the procedural review phase, the commission evaluates whether EIA documents align with the designated terms of reference and project-specific guidelines. The substantive review phase delves into an analysis of the EIA content, with a specific emphasis on assessing the potential environmental impacts and associated risks of the proposed project. It is important to note here, however, that the extent to which a substantiative review is undertaken appears to be influenced by what type of EIA is required (for example, technical studies are typically not required where there is no requirement for a 'full' EIA – this included the no EIA and initial EIA pathways described in Section 3.2.2. In such cases, a substantiative review is typically not conducted).

Textbox 6 outlines the best practice review process, according to the OECD (2005) Integrated Environmental Permitting Guidelines for EECCA Countries (herein referred to as OECD Integrated Permit Guidelines (2005)). The review process described by the OECD is typical for integrated permitting for large-size installations. Simplified requirements may be applied to small and medium-sized installations.


Photo: Adobe Stock

39 AMDAL is the name given to the full EIA process in Indonesia.

Textbox 6: OECD guidelines pertaining to the review process

According to OECD Integrated Permit Guidelines (2005), the best practice review process for determining a valid integrated environmental permit application should involve a structured sequence of steps:

- **Appointing the Permit Determination Team:** The Responsible Official (RO) assembles a diverse 'Permit Team' comprising experts from various departments such as air quality, water management, waste management and environmental assessment. This team collaborates to assess different aspects of the permit application.
- **Assessment of Need for Further Information:** The Permit Team, within a designated timeframe, evaluates whether additional information is required from the applicant to make an informed assessment. If necessary, the Designated Administrator (DA) sends a notice to the applicant requesting the required information. The team may proceed with certain aspects of the assessment while awaiting additional information.
- **Assessment of Stakeholder Consultation Responses:** The Permit Team reviews comments or responses from stakeholder agencies, determining whether they necessitate refusal, further information or significant changes to the assessment. If required, the team drafts appropriate replies to stakeholders' contributions.
- **Assessment of Public Responses:** Similarly, the Permit Team evaluates public responses, deciding whether they indicate refusal, need for additional information or substantial alterations to the assessment. Written replies to public representatives are prepared if deemed necessary.
- **Assessing Additional Information:** After receiving additional information from the applicant, the DA and RO verify claims of confidentiality and ensure compliance with confidentiality procedures. The Permit Team assesses the received information and takes specific actions based on its sufficiency.
- **Preparing Draft Permit or Addressing Insufficient Information:** If the information is sufficient, the Permit Team proceeds to prepare a draft permit that outlines conditions and specifics. If the information remains insufficient, discussions are held between the Permit Team and the RO to decide on issuing further notices or refusing the application.
- **Decision and Record:** The RO makes the final decision on whether to issue further notices or refuse the application due to insufficient information. The rationale behind the decision is recorded in the Working File.

While not all the information relating to the OECD Integrated Permit Guidelines (2005) was available for the analysis pertaining to this report, the desktop analysis of legislation suggests that in the ten countries analysed, it is predominately government agencies alone that make decisions about whether the information supplied in the application meets legislative requirement and if the permit will be granted. The extent to which the government includes technical experts in the decision-making process specifically appears to vary, ranging from no technical experts as part of a decision committee or panel, to technical experts being invited at the discretion of the government, to technical experts being part of an official committee or panel. Indonesia provides a good example of the last option. Pursuant to Article 30 of Law No. 32/2009 on Environmental Management and Protection (2009), members of the AMDAL Appraisal Commission consist of representatives of environmental institutions, related technical institutions, experts in the field of knowledge related to the assessed business and/or activity; communities potentially affected; and environmental organizations. The AMDAL Appraisal Commission is also assisted by a technical team consisting of independent experts undertaking technical assessments (Law No. 32/2009 on Environmental Management and Protection (2009), art 30(2)).

The extent to which public responses are considered in the decision-making phase also largely depends on the timing and extent to which public participation occurs during the application process (see Section 3.3.4). The legislation examined in the selected countries was also vague on whether the competent authority and/or proponent needs to publicly disclose and/or respond to public comments.

The information used to inform the permit decision may come from various sources, including the permit application, EIAs, public comments, technical studies and expert evaluations. Overall, the goal should be to ensure that the decision is based on a thorough understanding of the potential and actual effects and implications of granting the permit. The analysis suggests that the inclusion of review checklists or criteria in national legislation – that is, information detailing how the application will be reviewed and how a decision is made – in environmental permitting legislation can vary widely from one jurisdiction to another. Some countries may explicitly outline review checklists or criteria within their environmental permitting legislation, specifying the environmental impacts of the textile value chain activities that must be considered during the review process. However, in many cases, the environmental permitting legislation does not provide detailed checklists or criteria but instead establishes general principles, procedures, and requirements for the environmental permitting process. In such cases, environmental permitting processes are often accompanied by guidelines, regulations or procedural documents developed by regulatory agencies. These documents often include more specific review checklists, criteria and requirements for permit applications.

In the context of environment permitting for textile value chain activities, the research suggests that in some of the selected countries, textile specific technical guidelines may also inform permit decisions. These guidelines can help in ensuring consistency and accuracy in assessing factors such as emissions, water quality, waste management and more. China, for instance, has developed technical guidelines specifically for environmental protection in the dyeing and finishing sector of the textile value chain activity (China, Discharge Standards of Water Pollutants for Dyeing and Finishing of Textile Industry (2013)). These guidelines specify the procedures and general requirements for environmental checks and acceptance of completion of construction of textile value chain operations (China, Discharge Standards of Water Pollutants for Dyeing and Finishing of Textile Industry (2013), section 1).

3.3.3 Environmental permit conditions, including permit decision

Environmental permits usually contain permit conditions which the textile value chain operator must comply with throughout the duration of the permit. These conditions, and their compliance, are of paramount importance as they often prescribe the maximum allowable level of pollutants that the textile operator is allowed to emit during its activities. Conditions may specify limits for air emissions, water use and wastewater management, and waste management. In addition, permit conditions often require compliance with relevant regulations and guidelines. Subsidiary regulations, for example, often establish technical standards that are relevant to permits, as these regulations can be updated more easily to reflect emerging best practice and risk management. The national environmental legislation examined did not specifically list or refer to conditions that should be included within permits and could be considered as a key area for law reform to ensure that binding legislation specifically references what environmental conditions must be complied with.

Information in the OECD Guidelines (2007) highlights that in OECD countries, environmental permits exist for five to ten years (OECD 2007), though it is not clear whether this is offered as best practice. The analysis for this report revealed considerable variation to this timeframe (Table 1 in Section 1.3). In most cases, the national environmental legislation specified a permit duration period. Notable exceptions were Brazil, Bangladesh and India. In Brazil, different durations were given for different stages of the project (Preliminary Licence – 5 years; Installation Licence – 6 years; and Operational Licence – 4 to 10 years) and depending on the type of licence (e.g. activities deemed low pollution potential which only need to apply for an online environmental licence which lasts 4 years). In Bangladesh and India, however, the duration of the permit was contingent on the category of permit being applied for (which in turn relates to the level of potential for 'significant' environmental harm as per the national environmental legislation). For example, Consent to Operate permits for red category textile value chain operations in India (i.e. those projects deemed as causing significant environmental harm) are typically valid for one to five years, as opposed to 10 years for the orange category (i.e. those projects causing some levels of environmental harm) and 15 years

Photo: Adobe Stock

for the green category (i.e. those projects deemed to cause minimal or less environmental harm). By contrast, as of 2022, permits for the equivalent of red category projects in Bangladesh are only valid for one year.

While the maximum validity period was typically included in the legislation, in some countries, the legislation did not clearly specify the maximum validity and/or the permit did not have a limit. In the latter case, the relevant legislation does suggest that the permit conditions remain in force until other factors trigger a revision. For example, in Germany, Emission Control Act permits are usually valid for an unlimited period. However, these permits become invalid if the operations are not carried out during a three-year period and they have allowances to be changed based on monitoring requirements (see Section 4.2.2). Similarly, in Indonesia, an environmental licence is valid as long as the operator conducts its activities as approved under the environmental permit and there is no change in those activities.

While having longer validity periods for permits is typically viewed positively due to the reduced administrative burden on governments and industry (OECD 2005), it may also mean that permit conditions may not reflect changes to acceptable levels of environmental impact over time or take into account BAT. Thus, in instances where permits are unlimited the legislation should include allowance to update permit conditions considering best available techniques (BAT).

3.3.4 Public participation rights in environmental permitting

Public participation in environmental decision-making is recognised in foundational multilateral environmental agreements and in the particular within the Aarhus Convention[40]. The OECD Guidelines (2007) also specifically note that public participation should be part of the permitting process (see Principle 5). The need for public participation is also heavily endorsed in the EIA literature (see, for example, Glucker et *al.* 2013; Hartley and Wood, 2005) and encouraged by international environmental agreements (see Section 2.3). Public participation is a critical mechanism for enabling those who are likely to be, or will be, impacted by the activity to have some agency in the approvals process (Glucker et *al.* 2013). Local knowledge regarding past practices is also important in determining how improvements can be made for future approvals. An effort should be made to consult with those who will be impacted by the textile value chain operation and should aim to ensure that women participate in these processes.

The scope and timing of public participation throughout the environmental permitting process varies between the selected countries and is largely contingent on whether an EIA is required. Approaches to public participation ranged from no legal requirement for public participation, to an obligation to provide information to the public as part of the application process, to high levels of public consultation throughout the application process. Opportunities for public participation were subject to the term 'where applicable' in legislation in some countries. In some instances, the legislation gave the government discretion to dismiss certain types of public participation, indicating that it is not mandatory for all projects. Overall, the legislation of selected countries lacked detail regarding public participation. Germany, however, provides an example of good practice provisions around public participation, including clear provisions regarding who is responsible for public engagement (see Textbox 7).

40 Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters, opened for signature 25 June 1998, 2161 UNTS 447 (entered into force 30 October 2001) ('Aarhus Convention').

Textbox 7: Public participation in Germany

Germany's EIA legislation includes substantial detail about public participation (see s19 of the Environmental Impact Assessment Act (1990)), though this predominately relates to the EIA process specifically, rather than environmental permitting more broadly:

1. In the announcement at the beginning of the participation process, the competent authority informs the public about the following:
    - i. The application for an approval decision or about any other action by the project developer to initiate a procedure in which the environmental compatibility is examined.
    - ii. The determination of the EIA obligation of the project according to Article 5 and, if necessary, about the implementation of cross-border participation according to Articles 54 to 56.
    - iii. The authorities responsible for the procedure and for the approval decision, from which further relevant information can be obtained and to which comments or questions can be submitted, as well as about the deadlines set for the transmission of these comments or questions.
    - iv. The nature of a possible admission decision.
    - v. That an EIA report has been submitted.
    - vi. The designation of the relevant reports and recommendations relating to the project that are available to the competent authority at the time the participation procedure begins.
    - vii. Where and in what period of time the documents according to numbers 5 and 6 will be made available for inspection.
    - viii. Further details of the public participation process.
2. As part of the participation process, the competent authority shall make at least the following documents available to the public for inspection:
    - i. The EIA report.
    - ii. The reports and recommendations relevant to the project that are relevant to the decision and that were available to the competent authority at the time the participation process began.
3. Further information that may be of importance for the approval decision and that is only available to the competent authority after the start of the participation process must be made accessible to the public in accordance with federal and state regulations on access to environmental information.

The degree to which the public is involved during environmental permit decision-making processes varied across the countries, and, in most instances, legislation lacked detail in outlining the required scope of involvement. Various terms were used in the legislation to refer to the public participation process, including 'public hearings', 'public notification' and 'public meetings' which shows there is no consistent terminology[41] or approach to public participation. This has been echoed in the academic literature (see, for example, Glucker et al. 2013; Hartley and Wood, 2005). Furthermore, the national environmental legislation did not generally specify the consultation period length and/or the process for consultation. Finally, it was not always clear from the legislation as to who has the right or opportunity to participate. In some cases, the legislation limited public consultation to 'potentially affected public' or 'individuals and groups affected by a proposed project' but did not clarify how the composition of these groups would be determined or, perhaps more importantly, who this would exclude.

41 We do acknowledge that variation in terminology could be due to the use of unofficial English translations, however the variation was also noted in official English translations of the relevant legislation.

The timing of when the public should be notified and/or have input during the environmental permitting decision-making process varied between the countries. Legislation reviewed included provisions for public participation in the early stages of the environmental permitting application or EIA process, including when the operation and/or requirement for EIA is first announced (i.e. prior to construction or significant modification), as well as when the draft terms of reference are being prepared; to during the EIA process itself as to inform the draft EIA report; to when the final EIA report is released; and then to the final stages whereby the final EIA and any submissions received may need to be made available to the public and/or the public notified of the outcome of the application. For some countries, the level of public participation and/or notification was limited to a specific point in the application process, such as the preliminary draft terms of reference for the EIA only and not after the outcome of the EIA.

Some good practice on public participation rights throughout the environmental permitting process can be seen in China, Indonesia and the United States of America (summarized in Textbox 8), whereby opportunities for public involvement are required throughout the environmental permitting process. The inclusive approach taken by China, Indonesia and the United States of America is highly recommended, though it is acknowledged that these legislated approaches may not necessarily translate to practice. It should also be noted that in all countries, the legislation examined did not explicitly require or mention the importance of ensuring women's representation and engagement in public participation processes.

Textbox 8: Public participation in China, Indonesia and the United States of America

Regulations in **China** provide for comprehensive public participation throughout the application process. There is dedicated regulation around public participation via the Measures for Public Participation in Environmental Impact Assessment (2018), which set out the rights and responsibilities of various parties with an interest in EIA. The measures also clarify the forms of public participation, including surveys, consultations, seminars, debates and hearings. These measures apply to construction projects captured by national regulations.

The public is given multiple opportunities for participation during the permitting and licensing process in **Indonesia**, including when the EIA/project is first announced, during a formal consultation phase while the EIA terms of reference are being prepared, and providing submissions or feedback when the terms of reference are being reviewed. 10 days are allocated for public consultation when the final EIA report is being reviewed.

Public participation is required in the **United States of America**, but the extent may vary depending on which federal agency is implementing the NEPA (National Environmental Policy Act (42 U.S.C. 4321-4370m-12) (1970)). As per the legislation, public involvement may include involving the public in preparing and implementing NEPA procedures, providing public notice of NEPA-related hearings, meetings and opportunities for public involvement, holding such events to allow for public participation, soliciting appropriate information from the public, and making EIAs and comments received available to the public. The public should also be informed regarding the decision to issue a permit.

3.3.5 Consideration of gender and social impacts in environmental permitting decisions

Generally, the focus of environmental permit decisions centres on assessing the environmental impacts of a proposed development or activity. While many countries emphasise environmental considerations, there is often limited attention within the environmental permitting process to the activity's potential effects on human health, as well as other gender and social impacts. For example, this research found that environmental permitting legislation did not consider the gendered implications of textile production. As such, this legislation can be characterised as 'gender blind'. The UN Women Gender Equality Glossary (2020) defines gender blindness as:

> *"The failure to recognize that the roles and responsibilities of men/boys and women/girls are assigned to them in specific social, cultural, economic and political contexts and backgrounds. Projects, programs, policies and attitudes which are gender blind do not take into account these different roles and diverse needs. They maintain the status quo and will not help transform the unequal structure of gender relations".*

Most environmental law at the national level is gender blind (Maguire 2021). This is not unique to environmental permitting legislation. However, given the gendered nature of workers within textile value chains, textile production should be a priority area for gender interventions. Importantly, any initiative seeking to embed a gender perspective into permitting legislation must recognise that disadvantage is intersectional in nature. That is, disadvantage and vulnerability should be construed based on considerations of not only gender but also considerations of ethnicity and race, class, and socio-economic status, disability, geographic location, health, age, and social networks of the local community and those who may be employed in the textile value-chain site (Chaplin, Twigg and Lovell 2019). It is paramount to acknowledge that many of the women employed in textile processing may be migrants, may have limited formal education, may come from a social class with limited power in society, and/or will likely have gendered care responsibilities to fulfill in their family and cultural relations (Clean Clothes Campaign 2022; Coneybeer and Maguire 2022).[42]

3.4 Key findings from Chapter 3

Overall, the analysis revealed considerable variation between the ten countries examined regarding both Phase 1 (application) and Phase 2 (decision-making) approaches to environmental permitting. The analysis of the national environmental legislation for the ten selected countries (and other related legislation) relevant to environmental permitting revealed that all countries use environmental permitting as a legal mechanism to control the environmental impact of development. This means that environmental permitting is an existing legal tool that can be used to regulate (or, perhaps, better regulate) the impacts of the textile value chain activities. The analysis showed that countries were generally moving towards integrated environmental permitting, except for the United States of America, which was positive to see. The level of integration was different for each country, however; there was no standard approach, which seems to suggest that environmental permitting law is developing bottom-up, as opposed to top-down (Mariam 2001). The limitation of this is that there is no consistency in how environmental impacts are addressed across jurisdictions. Overall, the research revealed significant variance between the ten countries examined, as well as a lack of guidance within the national environmental legislation on, in particular: 1. the process of environmental permitting; 2. how environmental permitting and EIA connect; 3. details on environmental permit conditions; and 4. broad and clear rights for public participation. These findings lend themselves to suggest that updated best practice guidance should be developed at the international level on environmental permitting, which could help strengthen and inform national environmental permitting processes.

42 For additional insights on embedding gender-responsive approaches see UN Women (2021), Gender Impact Assessment Methodology; Nora Götzmann & Nicholas Bainton (2021) Embedding gender-responsive approaches in impact assessment and management, Impact Assessment and Project Appraisal, 39:3; International Climate Initiative (2023), IKI Gender Guidelines; and International Center for Research on Women (n.d.), Textile, Clothing, and Footwear Manufacturing Case Studies.

In respect of textile value chain activities and environmental permitting, most of the countries specifically recognised that textile value chain activities result in environmental impact, but, once again, there was no consistent approach to classifying the risk or significance of textile value chain activities within the national environmental legislation (or related EIA legislation). This research found that the definition and categorisation of what is 'significant' is arguably the most influential factor in determining the extent to which the environmental impacts of a textile value chain proposed operation or activity are assessed, and, in turn, what environmental conditions are placed upon it. In relation to the textile value chain specifically, the extent to which textile value chain activities are considered as having a 'significant' environmental impact varies across the selected countries, according predominately to the type of activity, the location of the operation, and/or the capacity of the operation. Overall, the findings suggest that while an environmental permit may be needed for certain textile value chain activities, for the majority of countries analysed, the majority of textile activities do not need to conduct a comprehensive EIA, which means: 1. no consideration of environmental impacts is done before a permit is issued and; 2. no specific environmental conditions are attached to the permit. There is scope for much greater clarity in the legislation around what environmental conditions might be placed on an environmental permit where full EIA processes do not occur.

The findings suggest that countries which have higher levels of textile production such as Bangladesh, China and India, specifically recognised the risk of the textile value chain activities, which was positive to see. In terms of environmental impact, countries tended to flag any textile value chain activity associated with chemical risk and/or high water use and discharge as activities (which predominately occur in Tiers 2 and 3) with the potential to cause significant environmental harm. However, the cumulative impacts of SMEs are likely to be overlooked as per the current legislation.

This research found a few loopholes in Phase 1 and Phase 2 for textile value chain operations:

- Lack of clarity within the national environmental legislation on the environmental permitting process and the extent to which these permits apply to textile value chain operations.
- There are a number of textile value chain activities that fall into categories which preclude them from having to conduct a comprehensive EIA study. Failure to conduct a comprehensive EIA means environmental impacts relating to the textile value chain activities may be overlooked or are not regulated for.
- SEA is generally not required as per national environmental legislation, nor is it required for industry. This means that the cumulative impact of textile value chain operations in specific jurisdictions is not considered when issuing new environmental permits.
- Duration of environmental permit in some jurisdictions was ongoing, which means there is no opportunity to ensure best available techniques (BAT) to minimize environmental impacts.
- The focus on environmental permitting is limited to specific types of environmental impact. As a result, environmental permitting does not consider broader concerns related to climate or biodiversity and no consideration is giving to social/gender impacts.
- Public participation rights need to be strengthened in environmental permitting processes, as many countries examined had provisions making public participation discretionary (and only part of the EIA process, which, as this chapter has noted, many textile value chain operations would not be required to undertake).

Figure 4 serves as a summary of Chapter 3 and provides a flowchart that illustrates the connection between permitting legislation, EIA (and the impact on permitting decisions) and the type of environmental permit.

Figure 4. Diagram to illustrate connection between permitting legislation, EIA, type of permit and outcomes

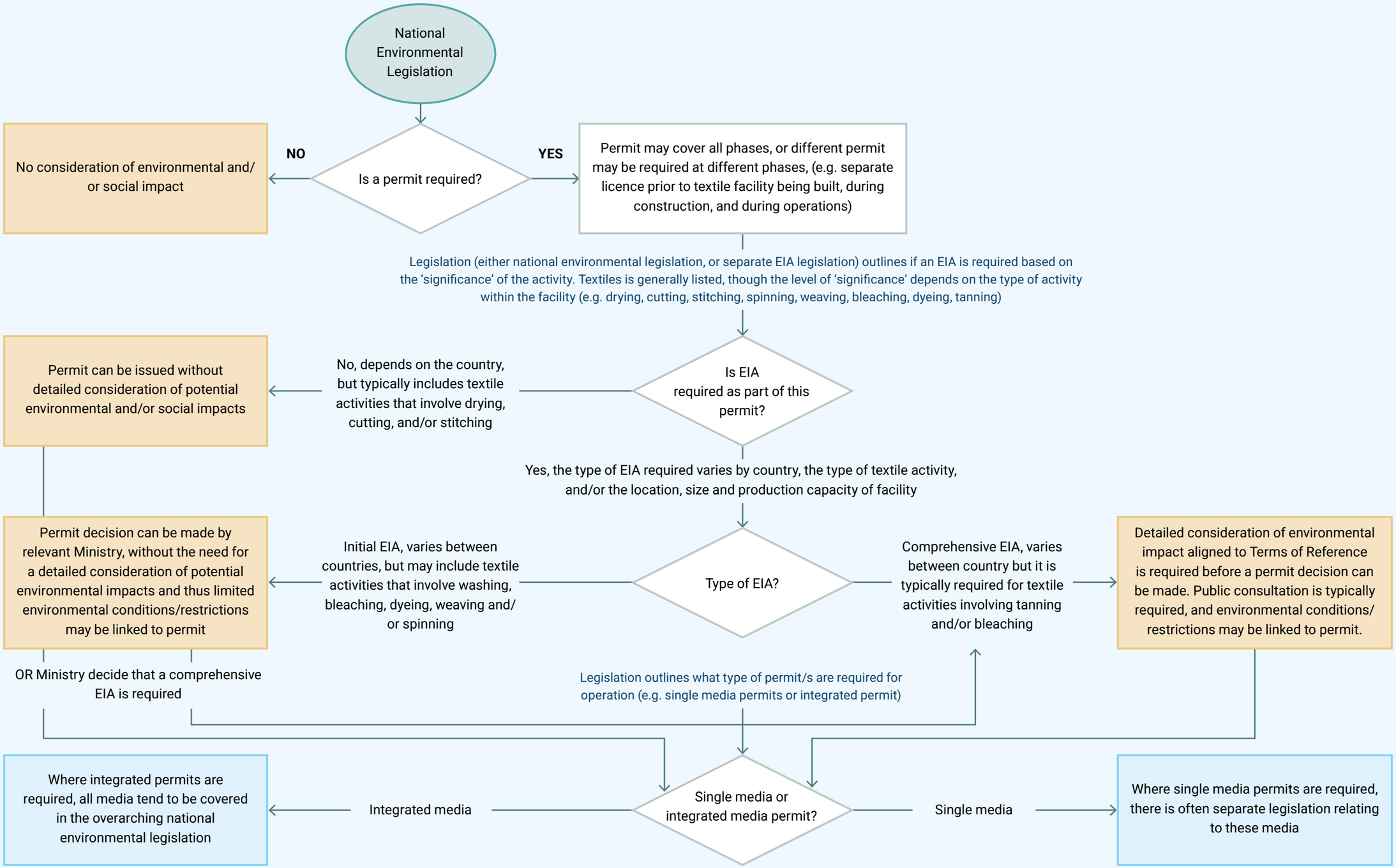

Photo: Adobe Stock

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Chapter 4:

Reporting, enforcement, renewal and rehabilitation during textile value chain operations

4.1 Introduction

During the operational period of the textile value chain operations there are several relevant processes that should take place. Environmental permit holders will need to comply with relevant obligations found within the relevant national environmental legislation, associated environmental regulations (such as EIA legislation) and permit conditions. Throughout this phase, good practices in environmental permitting systems include:

1. regular reporting by the textile value chain operator;
2. regular monitoring of textile value chain operations by government agencies;
3. the implementation of enforcement activities in instances of non-compliance identified by government officials or reported by members of the public; and
4. a process for either renewal of the permit or decommission and rehabilitation of the textile value chain operation's site.

This chapter therefore focuses on Phase 3: reporting and monitoring of the textile value chain operation's environmental management, as well as enforcement and compliance in instances of breaches of permit conditions. Collecting pollutant discharge information and making such information available to the public is key to enhancing compliance with environmental permitting regimes. This chapter identifies some examples of textile value chain pollution litigation from Asia and the Pacific region. These cases show that communities have concerns related to both the environmental damage and human health implications associated with textile value chain operations.

This chapter also explores how recent regulatory developments, such as the European Union Corporate Sustainability Due Diligence Directive (European Commission 2022; European Parliament 2024), could play a key role in enhancing compliance.

The discussion concludes by examining the requirements surrounding the renewal of environmental permits, or the rehabilitation of the textile value chain operation.

4.2 Phase 3: Operations

4.2.1 Reporting

During the operational period of a permit, the holder of an environmental permit may be required by the permit conditions or legislation to report on pollutant discharge and emission levels and other requirements. This requires accurate data and self-reporting of all forms of pollutant discharge and information on best available techniques (BAT) practices at the textile value chain operation. Self-reporting of data, including sex-disaggregated data,[43] is an important step in understanding levels of pollutant discharge, their impacts and the interventions required at the individual textile value chain operation level. Best practice requires periodic submission reporting of these records to a competent agency for assessment of the adequacy of the data and feedback on practices. Across the countries examined, there were examples of national environmental legislation specifying obligations for self-reporting and record keeping, but this was not detailed or present within all jurisdictions. The legislation assessed across the selected countries did not generally require reporting to be independently verified. Independent verification of the reported data would enhance the integrity of the data, but it would increase operation costs for textile value chain operations. Reflexive law theory is critical of self-reporting obligations, viewing them as ineffective and not legitimate in governing complex societal challenges such as sustainability (Teubner 1983). More recent scholarship has questioned this critique by exploring if duties such as self-reporting enhance practitioner reflection and compliance with environmental law (Ross and de Almeida 2024).

43 For additional insights see Silveyra, P., Al Housseiny, H., Rebuli, M.E. (2021). Sex and Gender Differences in the Susceptibility to Environmental Exposures. In: Silveyra, P., Tigno, X.T. (eds) Sex-Based Differences in Lung Physiology. Physiology in Health and Disease. Springer, Cham; UN Women. (2023). Why we need gender and environment data on the agenda at COP28; Data2X. (2023). Mapping Gender Data Gaps in the Environment and Climate Change.

Ross and de Almeida (2024, p. 4) define reflexivity as the process where a regulated actor self-critically reflects on its performance and then self-organizes to make (non-)improvements to that performance based on the reflection. Literature has started to emerge exploring self-regulation and reflexive capacity within the context of modern slavery in textile value chains, finding that companies were not reflexive about their own behaviours and practices (Coneybeer et *al*. 2023). This raises questions about the efficacy of self-reporting practices and lends itself to the need for competent authorities to play a key role in reporting.

China's legislation provides good examples for maintaining records for pollutant discharge. Article 42 of China's Environmental Protection Law (2015) requires the environmental permit holder: "to establish an environmental protection accountability system to identify the responsibilities of persons in-charge of reporting and relevant staff involved in the reporting process. Key pollutant-discharging entities shall install and use monitoring equipment in accordance with relevant national provisions and monitoring guidelines, guarantee their normal operations and shall properly keep the original monitoring records". In addition, firms are required to demonstrate compliance by giving evidence to show that pollutant discharges meet the requirements of their permits (Regulation on the Administration of Pollutant Discharge Permits (2021)) and publish their emission data on information platforms set up by provincial and municipal environmental protection agencies (Measures for the Administration of the Law-Based Disclosure of Environmental Information by Enterprises (2021)). Failure to comply with these measures can lead to the suspension of a pollution discharge permit.

In contrast, Jordan's legislation only imposes an obligation to keep environmental records by requiring: "any establishment or body that are subject to the supervision by the Ministry of Environment… [to] cooperate with the environmental inspector, provide him/her with the necessary papers and documents" (Article 15B of Environmental Protection Law No. 6 of 2017 (2017)). Since the majority of countries examined have adopted integrated environmental permitting, there may be instances where reporting obligations apply to specific pollutant discharges, but not all. For example, Türkiye's legislation includes self-reporting obligations for air emissions,[44] but it appears there are no obligations regarding other pollutants.

4.2.2 Monitoring

Monitoring compliance with permit conditions is important to ensure that environmental impact beyond what is authorised by the environmental permit does not occur. Environmental monitoring may involve a range of techniques, including collection of data and on-site inspections of textile value chain activities. Despite the importance of implementing effective monitoring practices, environmental agencies worldwide are experiencing growing responsibilities but declining public funding (OECD 2009). This has an impact on the ability of entities to undertake effective monitoring due to a lack of budget and staff. It is not surprising, therefore, that international best practice principles relating to impact assessment highlight the need for any monitoring to be cost effective (e.g. Morrison-Saunders, Marshall and Arts 2007). One method for calculating the appropriate budget needs of an environmental agency involves identifying the number of regulated operations as a way of estimating government monitoring costs (OECD 2009). Increasingly, machine learning and artificial intelligence will play a role in enhancing environmental monitoring, though significant investment is required for these technologies to be rolled out effectively across the globe (UNEP 2022).

Presently, inspections conducted by government authorities, or third parties contracted by the government, remain an important component of environmental permitting compliance frameworks.

44 Permit holders that carry out the activities listed in Annex 1 of the Regulation on the Monitoring of Greenhouse Gas Emissions (2014) must report their emissions monitored during the previous year to the Ministry of Environment by April 30 of each year. Decarbonisation agendas are likely to drive increased collection and reporting of emission data, which could be used as lever for enhancing the collection of other forms of pollutant discharge data within integrated environmental permitting regimes.

A benefit of on-site inspections is that they can reveal operational and compliance problems that monitoring of data alone will not reveal (OECD 2009). Site visits may be unannounced, or they may be pre-arranged if there is a need for certain staff to be on site or for the activity to be observed during a certain process or day (OECD 2009).

Risk-based regulation involves: "the development of decision-making frameworks and procedures to prioritise regulatory activities and deploy resources, principally relating to inspection and enforcement, based on an assessment of the risks that regulated organizations pose to the regulator's objectives" (Gunningham 2011). The level of risk is determined by several factors, including size, existence of hazardous materials, location and proximity to human settlements and past compliance history of permit holder (OECD 2009). In the context of the textile value chain, human health and environmental risks are present across all tiers of the value chain. In particular, and as discussed in Chapter 1, textile value chain operations storing or using high levels of chemicals should be recognised as posing a high risk for pollution. A precautionary approach is recommended while global understanding of the long-term risks of chemicals in the textile value chain grows.

Literature suggests that inspections conducted for single-media permits are more likely to involve specialized inspectors (for example an inspector with a chemical background). In the case of integrated environmental permits, site inspections may involve an assessor who may be more of a generalist but should be able to call upon assistance of technical specialists (OECD 2009). Building the capacity and enhancing resourcing for environmental permitting agencies to monitor textile value chain operations is an important step in ensuring enhanced compliance of textile operators with environmental permits.

4.2.2.1 Monitoring approaches in the selected countries

Textile value chain operations are usually subject to monitoring approaches specified by legislation or environmental permit conditions. The legislation examined for this report did not always detail the monitoring process. Generally, the websites of the relevant environmental department/agency provided some introductory background on the environmental monitoring process.

Outlining the monitoring process within legislation is the preferred approach. This gives the environmental agency responsible for monitoring statutory power and an established monitoring process. In the selected countries, there are examples of legislation detailing the monitoring process and designating the responsibility for monitoring to environmental agencies, as outlined below.

For example, in China, Article 17 of the Environmental Protection Law (2015) specifically provides that the State shall establish and improve the environmental monitoring system. Article 24 clarifies that: "monitoring shall be carried out by way of an on-site inspection of the enterprises. Units inspected shall truthfully report relevant situations". Further, the Regulation on the Administration of Pollutant Discharge Permits (2021) provides that: "the approval department shall review the application materials submitted by the pollutant-discharging unit and may conduct on-site inspections of the production and business premises of the pollutant discharging unit" (Article 10).

Jordan provides another example where the environmental legislation specifically details the monitoring process. Section 15A of the Environmental Protection Law (2017) stipulates that: "the Ministry shall be in charge of monitoring and inspection of facilities affiliated with official institutions, public institutions, private institutions and [the] private sector classified as having high environmental hazard or low environmental hazard to ensure adherence to environmental requirements in accordance to technical rules adopted, conditions of environmental licensing, [and] environmental settlement agreements as appropriate".

Some of the legislation examined gives explicit authority to engage independent/external technical expertise for monitoring. This can be considered good practice given the degree of specialization that is required to assess various pollutants across multiple sectors. As outlined in Chapter 2, there are

several industry bodies that have specific expertise with respect to textile value chain activities. These bodies can help fill capacity gaps existing within environmental agencies to monitor textile value chain operations comprehensively and consistently.

Countries that explicitly authorise drawing upon external monitoring expertise include China and Jordan. In China, Article 18 of the Environmental Protection Law (2015) provides that the relevant ministry may entrust professional institutions to investigate and assess environmental situations. Regulations also stipulate that the: "approval department can organize technical institutions to conduct technical evaluation of the pollution discharge licence application materials and bear the corresponding costs" (Regulation on the Administration of Pollutant Discharge Permits (2021), Article 10). In addition, Jordan's national legislation enables the Ministry of Environment to call upon the services of any other official body and commissioning it with the procedures of environmental inspection if necessary (Article 15, Environmental Protection Law No. 6 of 2017 (2017)).

Another good example of monitoring practices is Germany. The country's Federal Emissions Act contains a requirement for monitoring to ensure uptake of BAT. Competent authorities must check at regular intervals whether permits require modification due to changes of BAT requirements (Federal Emissions Act (1974), Article 7). Large-scale operations are subject to environmental inspections (Umweltinspektionen) which must take place at intervals of between one and three years, depending on the risk class of the relevant operation. After each inspection, the competent authority must issue a report in relation to compliance with legal requirements and potential required measures. The report must be accessible to the public after four months (Federal Emission Control Act (1974), Article 52a).

Photo: Adobe Stock

4.2.3 Enforcement

For environmental permitting obligations to be effective in reducing human health and environmental risk from textile value chain activities, appropriate enforcement must be taken in cases of non-compliance. Responsive regulation theory uses a pyramid of sanctions model to explain that enforcement options start with education or persuasion about a problem, moving to shaming for inaction, sanctions to deter, escalated sanctions, criminal/civil prosecution and loss of licence/permit to operate (Braithwaite 2014, Dukes, Braithwaite and Moloney, 2014). In environmental enforcement, responsive regulation starts with written notice, which may move to fines, and then steps up to daily reoccurring fines, before ending in the matter being brought to court on civil and/or criminal grounds (see, for example, Department of Environment, Science and Innovation, 2019).

All the national environmental legislation (or related legislation) examined across the selected countries outline enforcement processes and powers, which is an important first step in ensuring enforcement. Enforcement of environmental law begins with the legal instrument itself. It is crucial to ensure that institutional mandates are clear to all involved parties. Clarity regarding the actions to be taken in cases of non-compliance and well-defined sanctions are also essential. However, this research has not explored if these powers are adequately applied to control textile production pollution in practice. Best practice guidance regarding how to drive compliance with environmental law can be drawn from the 'Netherlands Table of Eleven' (see Textbox 9). This 'Table of Eleven' summarizes key aspects which contribute to enhancing environmental compliance. Further research could explore these key factors of compliance by interviewing stakeholders along the textile value chain.

Textbox 9: Definition of key factors of compliance: The Netherlands Table of Eleven

1. Knowledge of rules – familiarity of regulated entities with the regulation and the clarity of requirements.
2. Cost benefit considerations – advantages and disadvantages of compliance in terms of time, money and effort.
3. Level of acceptance – the extent to which policy and regulations are (generally) accepted by regulated entities.
4. Loyalty and obedience – innate willingness of regulated entities to comply with laws and regulations.
5. Informal monitoring – possibility of detection and disapproval of non-compliance by non-government actors.
6. Informal report probability – possibility that an offence is reported by non-government actors (whistleblowing).
7. Monitoring probability – likelihood of being subject to inspection by competent authorities.
8. Detection probability – possibility of detection by an offence by competent authorities.
9. Selectivity – chance of inspection as a result of risk-based targeting of firms, persons or areas.
10. Sanction probability – a possibility of a sanction being imposed if an offence has been detected.
11. Sanction severity – stringency and type of sanction and adverse effects associated with it (Van der Schraff 2005, as cited in OECD 2009, p. 26).

4.2.3.1 Types of violations of environmental permit obligations as prescribed by law

Common types of violations stipulated in legislation were identified across the selected countries, applying not only to the textile industry but more broadly to all activities and sectors covered by legislation. These include:

- **Failure to conduct/comply with the EIA process:** For example, Article 63 of China's Environmental Protection Law (2015) states that an operator will be in breach if they fail to respond to EIA requirements.
- **Failure to comply with directions or written warnings:** For example, Article 16 of Bangladesh's Environment Conservation Act (1995) states that where a company fails to comply with an order or direction, the owner, director, manager, secretary or other officer or agent of the company, shall be deemed to have violated such provision or have failed to perform the duties in accordance with the notice. A direction may relate to closure, prohibition or regulation of any industry, undertakings or processes.
- **Failure to keep and submit records:** For example, tampering or forgery of monitoring data is considered a breach under Article 42 of China's Environmental Protection Law (2015).
- **Breach of permit conditions including discharge of wastewater, chemicals, emissions, waste disposal:** For example, Article 7 of India's Environmental Protection Act (1986) provides that no person carrying on any industry, operation or process shall discharge or emit any pollutants in excess of standards prescribed by legislation. Another example is Article 98 of Indonesia's Law No. 32/2009 on Environmental Management and Protection (2009), which states that if a party conducts a business activity without an environmental approval and its business activity causes death, injury or damage to the environment, that party faces criminal penalties.

4.2.3.2 Enforcement authority for environmental permit conditions

The authority responsible for ensuring the enforcement of permit conditions varies among countries examined. In some jurisdictions, such as Bangladesh, Jordan and Türkiye, the national government is responsible for environmental enforcement. In other jurisdictions, national and subnational governments share the responsibility for enforcement. In cases of shared responsibility, legislation must clearly specify the power and roles of each level of government to ensure effective enforcement and avoid uncertainty as to which institution is ultimately responsible for enforcement. The benefit of sharing responsibility across government levels is that subnational agencies may often be in a better position to investigate an operation's site. However, to be effective it is important to ensure subnational agencies receive adequate resourcing to carry out such investigations and enforcement tasks.

China's legislation provides an example of how legislation may outline shared responsibility among different government levels. Article 25 of China's Environmental Protection Law (2015) provides that: "if a business operator discharges pollutants in violation of laws and regulation, which may cause severe pollution, competent environmental protection administrations of the people's government at or above the country level and other departments that are responsible for environmental supervision and administration may seal up and detain the facilities and equipment that discharge pollutants".

An example of shared responsibility for carrying out inspections can be seen in India, where there are Pollution Control Boards at the State and central levels. These regulatory authorities have powers to conduct inspections, collect samples, issue notices and directions, and impose penalties on individuals or entities found to be in violation of the provisions of the Water (Prevention and Control of Pollution) Act (1974), Air (Prevention and Control of Pollution) Act (1981) or Environmental Protection Act (1986) and associated regulations.

Indonesia provides another example of shared responsibility between national and subnational government for environmental enforcement. Under Article 63(3)(p) of Law No. 32/2009 Environmental Management and Protection (2009), the Ministry of Environment and Forestry and the regional governments (through the regional environmental institutions) can enforce the requirements of the national environmental law and its implementing regulations by instituting protection policies, supervising businesses' compliance with those requirements and imposing administrative and/or criminal sanctions for breach of those requirements.

4.2.3.3 Penalties for non-compliance

Holders of environmental permits for textile value chain operations are subject to the general penalties prescribed by national environmental legislation. All the selected countries contained detailed provisions on the types of penalties/sanctions that can apply for cases of non-compliance. The existence of 'sticks' or punitive measures such as economic fines are common tools used within environmental legislation to drive environmental compliance (Pacheco-Vega 2020). However, the existence of these penalties alone is not sufficient. Effective implementation is crucial to ensure compliance. Common types of penalties across the selected countries include fines, imprisonment and loss of environmental permits. A more comprehensive summary of the various penalties applicable in the selected countries is provided in Table 10.

Table 10. Penalties for breach of environmental legislation

Country	Penalties for breach of environmental legislation
Bangladesh	• Closure, prohibition or regulation of non-compliant industries. • Criminal and civil penalties including imprisonment, fines and damages for violation of a provision or for non-compliance of a direction (Environmental Conservation (Amendment) Act (2010) section 7, which amends section 15 under Environmental Conservation Act (1995)). • Imprisonment and fines vary depending on the description of the offence, and whether it is a first offence or subsequent offence (Environmental Conservation (Amendment) Act (2010) section 7, which amends section 15 under Environmental Conservation Act (1995)). • Public hearings for affected individuals or groups.
Brazil	• Fine for illegal discharge of pollutants; daily fines for non-compliance. • Companies are civilly, administratively, and criminally responsible for violation (Act No. 9.605 regulating Criminal and Administrative Penalties relating to behaviour and activities harmful to the environment, and sets forth other provisions (2014), article 3). • Fines, imprisonment and penalties for pollution and environmental crimes (Act No. 9.605 regulating Criminal and Administrative Penalties relating to behaviour and activities harmful to the environment, and sets forth other provisions (2014), articles 15 and 54). • Suspension of activities, interdiction of establishments and prohibition from contracts for not taking actions to prevent or correct environmental damage (National Environmental Policy Act No. 6938 (1981), article 14).

Table 10. (cont'd). Penalties for breach of environmental legislation

Country	Penalties for breach of environmental legislation
China	• 2025 Environmental Protection Law • Fine for illegal discharge of pollutants; daily fines for non-compliance (article 59). • Production suspension or permanent closure may be imposed if an operator exceeds emission standards or total pollutant discharge limits. If rectification is not carried out, authorities may suspend operations; in severe cases, closure may be ordered with the approval of the competent government authority (article 60). • Administrative detention of 10 to 15 days for serious offences, or 5 to 10 days for minor offences, may be imposed if an entity: (i) discharges pollutants without obtaining a pollutant discharge permit, is ordered to stop and refuses to comply; or (ii) illegally discharges pollutants in a manner that evades regulatory oversight (article 63(2) and (3)). • Tort liability for environmental damage (article 64). Also - Regulation on Administration of Permitting of Pollutant Discharges: • Fraudulent acquisition or obtaining a discharge permit through improper means may result in revocation of the permit, fines of up to RMB 500,000, and a three-year ban on reapplication (article 40). • Forgery, alteration or illegal transfer of a discharge permit may result in confiscation of the relevant documents or revocation of the permit, fines of up to RMB 300,000 and a three-year ban on reapplication (article 41). • Fraudulent acquisition or obtaining a discharge permit through improper means may result in revocation of the permit, fines of up to RMB 500,000, and a three-year ban on reapplication (article 40). • Forgery, alteration or illegal transfer of a discharge permit may result in confiscation of the relevant documents or revocation of the permit, fines of up to RMB 300,000 and a three-year ban on reapplication (article 41).
Egypt	• Fines and imprisonment for polluting the water environment or open burning of garbage and solid waste (Law No. 4 of 1994 on Environment (2014), articles 37(a), 69 and 84). • Personal liability for managing facilities causing water pollution – maximum of 1 year imprisonment plus fines and more stringent penalties for repeat offences (Law No. 4 of 1994 on Environment (2014), article 72). • Fines and penalties for hazardous material violations – fines and imprisonment for a term of no less than 5 years (Law No. 4 of 1994 on Environment (2014), article 88). • In addition to these penalties, there may be a sentence of closing down the establishment, licence cancellation, or suspension (Law No. 4 of 1994 on Environment (2014), article 84).
Germany	• A fine of up to EUR 50,000 (USD $52,731) for intentionally or negligently carrying out a project without approval, or for violating an enforceable condition of a plan approval (Environmental Impact Assessment Act (2010), section 69; Federal Emission Control Act (1974), section 62).

Table 10. (cont'd). Penalties for breach of environmental legislation

Country	Penalties for breach of environmental legislation
India	• Imprisonment and fines for breaching consent application processes (maximum imprisonment sentence of six years, seven years if it's a repeat offence.). • Any company operating without consent will immediately receive a closure notice. • Court imposed penalties for environmental damage. • Imprisonment, fines, and compensation to victims under the National Green Tribunal Act 2010 (National Green Tribunal Act (Act No. 19 of 2010), section 15(1)). The National Green Tribunal has jurisdiction over all civil cases where a substantial question relating to the environment is involved, arising out of any of the national environmental laws.
Indonesia	• Imprisonment and fines for intentionally committing an action exceeding pollutant standard (Law No. 32/2009 on Environmental Management and Protection (2009) article 98) include 3-10 years' imprisonment and IDR3 billion to IDR10 billion fines (USD $188,667 to $629,360). • Administrative sanctions in cases where the environmental permit is being violated, include written warnings, freezing of environmental permit, government coerciveness, or revocation of environmental permit (Law No. 32/2009 on Environmental Management and Protection (2009), article 76).
Jordan	• Facility closure or suspension of activities (no longer than two weeks) in response to urgent or hazardous contamination (Environmental Protection Law No. 6 of 2017 (2017) article 16). • Fines for violating conditions of environmental licences ranging from JOD 3,000 to 5,000 (USD $4,230 to $7,049) (Environmental Protection Law No. 6 of 2017 (2017) article 18C). • Imprisonment and fines for offences resulting in water contamination (Environmental Protection Law No. 6 of 2017 (2017), article 20) include imprisonment for a period that is not less than 6 months and no more than 2 years, and fines ranging between JOD 1,000 and 5,000 (USD $1,410 to $7,049). • More severe penalties for intentional and severe water contamination (Environmental Protection Law No. 6 of 2017 (2017), article 20C) include hard labour for a period that is not less than 5 years and not more than 15 years, and fines ranging from JOD 100,000 to 1,000,000 (USD $140,985 to 1,409,858).
Türkiye	• Fines, operational sanctions and cleanup costs imposed on polluters. • Imprisonment and fines for intentional and negligent pollution. • Additional measures like licence invalidation and cancellation of incentives.
United States of America	• Civil and criminal penalties, often calculated per breach. • Administrative enforcement actions.

In China, Brazil, and the United States of America, the national environmental legislation enables agencies to issue daily fines for breaches of environmental permit conditions. For example, Article 14 of Brazil's National Environmental Policy Act No. 6.938 (1981) allows for the imposition of a simple or daily fine for failure to comply with the necessary measures aimed at prevention or correction of environmental damage. The risk of receiving an escalating daily fine for breach of a permit condition may provide a stronger incentive to ensure compliance with the environmental permit discharge pollutant obligations. The cumulative dollar amount of these fines acts as more of a deterrent compared with systems where a single fine applies, regardless of the number of days in which the breach occurred.

Enforcement mechanisms generally involve a graduated approach, which escalates depending on both the seriousness of the breach and the remedial action taken by those in breach of the environmental permit conditions. A written notice outlining the nature of the breach and the action required to address the breach was a common mechanism contained in the selected countries' legislation. If the breach is significant and of risk to the environment and human health, the written warning may temporarily suspend operations, require payment of a fine or require rehabilitation to address the breach where possible. An example of an escalating approach to enforcement, enabling the environmental agency to suspend and revoke both the environmental and business permit of an operator, can be seen in Indonesia (see Textbox 10).

Textbox 10: Example from Indonesia of administrative sanctions from Law No. 32/2009 on Environmental Management and Protection (2009) Article 76

The Minister, governors or regents/mayor shall impose administrative sanctions on personnel in charge of businesses and/or activities in the case of an environmental permit being violated. The administrative sanction shall consist of:

a. Written warning.
b. Government coerciveness (suspension or removal of production facilities, closure of wastewater or emission disposal tunnel, confiscation of goods or equipment with potential to cause violation, or suspension of the whole activity).
c. Freezing of environmental permit.
d. Renovation of environmental permit.

Germany provides an example where public prosecution (*Staatsanwälte*) can prosecute individuals for any environmental criminal offence committed because of non-compliance. This approach may be an effective deterrent for potential violators. Brazil has standalone environmental legislation creating criminal liability for environmental crimes (see Textbox 11). Breaches of an environmental permit conditions fall within the scope of the legislation. In addition to the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA), the federal police also carry out inspection and investigation activities.[45] Further to this, Brazil's state of Goiás Resolution CEMAm No. 10 establishing procedures for the Environmental Licence Online (LAO) issued to low pollution potential activities (2014) suggests that avenues of criminal liability also apply to the online environmental licence issues to low pollution potential activities (of which a number of textile value chain activities are classified). It was also positive to note that online environmental licences would not be granted to operators who had existing environmental debts until such time that the debt was resolved (see Article 1(5)).

Textbox 11: Example from Brazil – Criminal Liability

Brazil has a Brazilian Environmental Crimes Law (Act No. 9.605 regulating Criminal and Administrative Penalties relating to behaviour and activities harmful to the environment, and sets forth other provisions (2014)). Some of the relevant provisions from this legislation relating to breaches of environmental permit obligations include:

- Article 6 - in determining penalties, the competent authority shall observe:
  i. The seriousness of the fact, considering the reasons for the violation and its consequence to public health and to the environment.
  ii. The transgressor's past history with respect to compliance with environmental legislation.
  iii. The transgressor's financial situation in the case of a fine.
- Article 15 provides a list of acts which aggravate the crime by abusing the right of the environmental licence, permission or authorisation.
- Article 22 - penalties can include: i) partial or total suspension of activities, ii) temporary interdiction of its establishment work or activity, iii) prohibition from undertaking contracts with the government as well as to receive subsidies, subventions or donations from it.
- Article 54 - imprisonment from one to four years and a fine for causing pollution of any nature at levels that result or may result in damage to human health, or that cause the death of animals or significant destruction of flora.
- Article 60 - detention, from one to six months, or a fine, or both penalties cumulatively for building, renovating, expanding, installing or operating, in any part of the national territory, potentially polluting establishments, works or services, without a licence or authorisation from the competent environmental agencies, or contrary to the relevant legal and regulatory standards.

45 National Environmental Policy Act No. 6.938 (1981), article 17B; OECD, 'Evaluating Brazil's progress in implementing Environmental Performance Review recommendations and promoting its alignment with OECD core acquis on the environment' (2021) https://one.oecd.org/document/ENV/EPOC/WPEP(2021)6/FINAL/en/pdf

The UNEP Environmental Rule of Law: First Global Report (2019) found that environmental agencies generally prefer to encourage compliance by starting with education and persuasion, and escalate to sanctions through warning letters, administrative penalties, civil penalties, criminal penalties, licence suspension and, as a last resort, licence revocation (UNEP 2019b). Enforcement policies are often based on a risk-based approach, targeting those facilities that pose the highest risk to public health and the environment and choosing to focus resources on a few high-priority sectors each year (UNEP 2019b). Environmental ministries may also prioritise taking action against persistent violators for more frequent inspection and higher penalties (UNEP, 2019b). More severe penalties for textile value chain activities should be reserved for the gravest offences with the purpose of such penalties acting as both a deterrent and being punitive in nature.

4.2.3.4 Liability for non-compliance

A variety of actors are involved in the effective implementation and enforcement of environmental permits. These include the corporate entity and/or the individual/s holding the environmental permit, and/or the individuals working at the operation. Some of the jurisdictions place the liability on the corporation/business holding the environmental permit, as well as imposing personal liability on directors of the corporation/business. This type of liability is a way of ensuring that in the event of a textile value chain operation closing, for example, some form of personal responsibility exists providing an alternative avenue for enforcing financial or rehabilitation penalties. For example, in Brazil, Act No. 9.605 regulates criminal and administrative penalties relating to behaviour and activities harmful to the environment, and sets forth other provisions (2014) provided in Article 3 that legal entities will be administratively, civilly and criminally responsible in instances where violation is committed by legal or contractual representatives.

In China, Article 64 of the Environmental Protection Law (2015) states that those who cause damage due to environmental pollution and ecological destruction shall bear tort liability in accordance with the provisions of the Tort Liability Law of the People's Republic of China (2006). By extension, under Article 68 government environmental staff may be held liable and the primary person in charge of the department may be required to assume responsibility and resign from the office for failure to comply with obligations within the legislation.

In Türkiye, the civil law approach is followed which means that entities themselves are responsible for their actions, and the Environment Law No. 2872 (1983) holds both persons and entities liable. Under its legislation, the 'polluter' includes individuals and legal entities causing direct or indirect environmental pollution because of their activities and states that persons or entities that are indirect polluters therefore also have environmental liability (Mavioglu et *al*. 2021).

The different approaches taken by countries highlight the lack of standard approach of liability with some jurisdictions creating both corporate and personal liability and some jurisdictions creating only corporate liability. Best practice on liability for non-compliance involves a system creating both corporate and personal liability, so if a corporation closes or becomes insolvent, personal liability will continue for any breaches of a textile value chain operator's environmental permit conditions.

4.2.4 Reporting for non-compliance by the public and redress mechanisms

The public and civil society perform important roles during the operational period of textile value chain operations. Communities living in the area of textile value chain activities are those most connected to the ground and those with the most interest in ensuring that environmental impact is minimized, and responsibly managed. Thus, communities play a key role in the monitoring of textile value chain activities and alerting environmental agencies about pollution concerns. In addition, some communities may also initiate litigation to address pollution concerns from textile operations.

Most workers in textile value chain operations face intersectional vulnerability based on gender, race, citizenship status and income, underscoring the importance for grievance mechanisms to be accessible to all. The textiles workforce may encounter obstacles when expressing their concerns and will often need to be assisted by civil society organizations focused on labour and/or environmental issues to report breaches of environmental permit conditions, among other concerns.

Across the countries examined, three broad categories of standing rights were identified within the national environmental legislation:

1. Broad standing rights, whereby it is not essential to suffer personal harm to bring a claim: China and India.
2. More restricted standing rights to bring claims usually dependent upon personal harm: Bangladesh, Indonesia, Germany and the United States of America.
3. National environmental legislation that did not mention public participation or standing rights: Brazil[46], Egypt, Jordan and Türkiye.

Broad standing rights enables for collective harm resulting from damage to the environment to be litigated (Samuel Review 2020). Good practice entails broad standing rights, as this enables a wider range of applicants to bring litigation, which may include local communities, but also civil society groups focused on environmental and social governance issues (Hilson and Cram, 2018).

4.2.4.1 Access to information: environmental permit data and compliance

Providing public access to information on environmental permit conditions, pollutant discharge levels and audit information is an important step in enhancing compliance with environmental permitting systems. Making this information accessible to the public allows government, civil society, industry and the public to track environmental harm throughout the textile value chain, take action in cases of non-compliance, and seek redress for any damage. This is particularly important for people living near textile value chain activities. However, it can be challenging for communities living close to textile value chain operations to access details on the conditions of environmental permits and/or audit data.

Recognising that such information is particularly important to people whose health and livelihoods may be affected by polluting facilities, environmental agencies in some countries are working to create online databases detailing environmental pollution enforcement. As an example, the United States of America's Enforcement and Compliance History Online database provides pollution-control compliance and enforcement information for approximately 800,000 registered operations (not limited to the textile value chain) holding permits from the United States of America Environmental Protection Agency. This tool provides helpful information to the public as well as others conducting due diligence of a company seeking permission to operate in another community (whether in the United States of America or abroad) to see if it has a record of compliance or a record of serious environmental violations. Another example is China's Institute of Public and Environmental Affairs, which has created an interactive database to hold and share information regarding non-compliance and monitoring data. This tool may be considered an example of best practice, and further information is detailed in Textbox 12.

46 Brazil's environmental legislation appears to be silent on standing but Milaré et al. (2011) notes Federal Law 7.347/1985 gives NGOs and other institutions legal standing for filing environmental class actions, which they have often done. This includes suits questioning the legality of some of the most significant infrastructure projects of the last few years.

Textbox 12: Best practice example: Institute of Public and Environmental Affairs (IPE) in China

IPE is a leading NGO in China founded in 2006 which uses information transparency to direct the spotlight of public exposure to drive reductions in industrial pollution and greenhouse gas reductions across the country. IPE is organized around the principles that information drives action, the power of the people, the power of law and the power of the purse.

Information Drives Action: IPE has created an interactive Blue Map Database which contains over 1.9 million environmental non-compliance records for more than 1.2 million factories in China. In addition, the site provides hourly air and water pollution monitoring data required by the government at 30,000 sites. Factories have also started voluntarily reporting GHG emissions on the IPE database, which is being driven by brand customers, rather than the government. Corporations use the IPE GHG calculation tool to quantify and report upon their baseline emissions and reduction measures.

The Power of the People: grassroots concern for pollution is the driving force behind IPE's success, and works in collaboration with 40 other environmental NGOs across China. Over three million people have downloaded the IPE Blue Map app which enables them to access information about daily environmental conditions and surrounding polluters. App users are also able to upload pictures to the app. Geo-located information is then used to identify the local environmental agency responsible for the area of concern, which increases pressure to strengthen environmental compliance.

The Power of the Law: The Pollution Information Transparency Index monitors, evaluates and scores the environmental departments of more than 120 major cities in China annually. These scores are based on the extent to which environmental information has been transparently provided to the public.

The Power of the Purse: IPE works to ensure that multinational corporations take responsibility for the environmental impacts of their factories in China. IPE sets explicit professional-level expectation for environmental responsibility in the Green Supply Chain CITI Evaluation. This is an annual corporate ranking of more than 580 companies on their pollution oversight. IPE has also recently launched the Supply Chain Climate Action Evaluation which ranks corporations' activities to reduce GHG emissions in their supply chain. In addition, the Dynamic Environmental Credit Risk Assessment tool allows financial institutions to efficiently identify the risk level of Chinese factories in their investment portfolios to enable responsible investment and support the national agenda of pollution reduction.

4.2.5 Textile value chain litigation in the Asia and Pacific region

Litigation plays an important role in holding industry and government to account to ensure compliance with environmental permit conditions. The research undertaken for this report identified limited examples of caselaw addressing environmental and human harm arising from textile production in the Asia and the Pacific region, but not from the other UN regions. As highlighted in Chapter 1, the Asia and the Pacific region is the dominant textile production region which explains why caselaw could be more readily identifiable in this region. The research also identified cases dealing with breaches of environmental permit conditions, but these examples were not focused on textiles.

The identified cases involving textile production activities were brought on two main grounds:

1. **Environmental law-based claims concerning breach of EIA requirements and/or environmental conditions.**
2. **Human rights-based claims related to textile pollution.**

4.2.5.1 Example of Category 1 litigation – breach of EIA/environmental regulation or environmental permit conditions

Two cases concerning pollution from textile production and breaches of EIA/permitting obligations were identified in China and Indonesia. Both cases highlight examples where textile value chain operations have operated for lengthy periods of time despite breaching environmental legislation requirements. The litigation examined found that litigation based on breaches of environmental law tends to involve remedies encompassing the removal of permits and monetary fines but falls short of requiring full rehabilitation of the site. In addition, the claims examined were based purely on environmental grounds, and tend to exclude considerations of health harms and the risks faced by local communities residing close to, and working at, the textile value chain operations.

In *Huayuan Costume (Shanghai) Co., Ltd. v. Urban Management Administrative Enforcement Bureau of Pudong New Area, Shanghai Municipality* and People's Government of Pudong New Area, Shanghai Municipality (2017) the central issue was whether the penalty imposed by the Urban Management Bureau of Pudong New Area on the Huayuan Company for illegal garment processing was valid, given the company's claims that its construction project had passed EIA approval and its subsequent efforts to rectify the violation. The decision of the court emphasised the importance of adhering to environmental regulations and obtaining necessary approvals before engaging in construction projects and activities that may have environmental impacts. The case highlights the significance of compliance with environmental protection requirements and the potential repercussions for failing to meet these standards, even if the situation is subsequently rectified.

In *WALHI vs. PT Kahatex, PT Insan Sandan Internusa and PT Five Star Textile (2015*) two local community groups in Indonesia filed a lawsuit against a regional government and three textile factories for illegally discharging waste into a tributary of the Citarum River in Indonesia. The community groups claimed that the wastewater from these factories led to the contamination of rice fields with heavy metals after irrigation with river water. The lawsuit also accused the regional government of failing to monitor factory discharges and issuing discharge permits without conducting adequate environmental impact assessments. The Court ruled in favour of the community groups and ordered the regional government to revoke the discharge permits of the three textile manufacturers.

4.2.5.2 Examples of Category 2 litigation – human rights-based claims related to textile value chain pollution

Another avenue for litigation to address textile production pollution lies in claims based on human rights grounds. This type of case allows for consideration of the impact of pollution upon the communities living and working in the vicinity of where the textile value chain operation is operating. The two examples discussed below originate from India, a country that enshrines the right to a clean and healthy environment in its constitution. A growing number of countries are recognising the constitutional right to a clean and healthy environment, which may enable similar litigation in other jurisdictions.

In *Tirupur Dyeing Factory Owners Association v. Noyyal River Ayacutdars Protection Association*, (2009) 9 SCC 737, the Supreme Court considered a dispute whereby wastewater from a dyeing factory was damaging the water source relied upon by many in the local community. The Supreme Court held that the textile value chain operations must comply with environmental regulations, such as obtaining necessary clearances and implementing pollution control measures, to protect the Noyyal River and the interests of local farmers who depend on its waters for irrigation.

The case of *Vellore Citizens' Welfare Forum v. Union of India and Ors*, (1996) 5 SCC 647 concerned pollution caused by the discharge of untreated effluent by tanneries and chemical factories into the river and land, contaminating both surface and groundwater supplies of local residents. The petitioner contended that such pollution was in violation of Article 21 (Right to Life) of the Constitution of India. The Supreme Court emphasised that the right to life includes the right to live in a pollution-free environment and directed the industries to adopt pollution control measures and ensure that their effluents are treated before being discharged into water bodies. The Court appointed a committee to monitor the implementation of its directions and ordered the state government to provide compensation to the affected individuals.

4.2.5.3 General insights from textile value chain pollution litigation in the Asia and Pacific region

These case studies show that litigation has been used in Asia and the Pacific region to hold textile factories to account for environmental harm. Future litigation could arise based on both environmental and human rights grounds in countries where there is right to a healthy environment. Lessons from these cases show that concern over contamination of water supplies was a common driver for litigation in the region. This is because the ramifications of water contamination arising because of breaches of national environmental permitting standards can produce serious environmental and human health consequences for local communities.

The ability of communities to bring these sorts of claims raises access to justice considerations (Li and Song 2024). As discussed above, broad standing rights to bring public interest environmental cases was not present in all jurisdictions examined. This means that civil society groups in some of the jurisdictions are not able to bring claims for pollution stemming from textile value chain activities on behalf of local communities. Public interest environmental and social justice litigation is often driven by civil society, which plays an important role in gathering expert evidence and providing legal representation for communities (Keller and Gurash, 2023).

While this research was only able to identify a limited number of textile pollution litigation cases, this does not mean that other textile-related pollution litigation has not occurred. It is important to remember that not every environmental claim results in a written decision which is published online. As such, it is possible that courts have dealt with textile pollution litigation, but no formal written decision was ever written. It is also possible that a written decision may exist but is written in a language other than English and as such not picked up by the research team when conducting the research for this report. To address this limitation, during the expert external consultation session associated with this research, the research team requested assistance in identifying textile pollution litigation, however no further cases were uncovered from this process.

Public interest environmental litigation plays an important role in holding government and industry to account for environmental pollution, however litigation is not always the silver bullet to fix environmental harm (Preston 2013). Outcomes from the caselaw reviewed suggest that even after favourable rulings for claimants in court, communities may encounter additional challenges in implementing and enforcing these decisions. For example, in the case from Indonesia noted above (*WALHI vs. PT Kahatex, PT Insan Sandan Internusa and PT Five Star Textile* (2015)), while the court ordered the removal of the environmental permit, the environmental agencies failed to adhere to the court's decision, allowing the textile value chain operations to persist in violating their permit conditions (Greenpeace 2021). There may also be provisions in relation to cost orders for public-interest litigation which act as disincentives for bringing these types of claims. Finally, it is worth noting that scholarship on strategic climate litigation highlights the important role that litigation plays in increasing media and community scrutiny, regardless of whether the desired legal outcome is achieved (Peel and Markley-Towler 2022).

4.2.5.4 Emerging regulation that may influence environmental permit compliance

Growing concerns and increasing efforts to address environmental issues related, but not limited, to chemicals, water contamination, and decarbonisation can serve as policy drivers for improving environmental compliance within the textile value chain activities' permitting obligations. The growth of circular economy regulation for textiles (such as textile product stewardship schemes or textile Extended Producer Responsibility schemes), often involves design of garment considerations which include considerations of resources, chemicals, emissions and the ability to re-purpose products. These considerations could act as a driver for compliance with environmental permitting obligations.

In addition, extra-territorial supply chain reforms may also play a role in enhancing environmental and social practices across the textile value chain. For example, the European Union's Corporate Sustainability Due Diligence Directive (CSDDD or CS3D) (European Parliament 2024) aims to ensure that companies play a role in building sustainable economies and societies by requiring companies of a certain size to avoid adverse impacts of their operations on human rights and the environment. Under the Directive, companies have a corporate due diligence duty to identify, end, prevent, mitigate and account for negative human rights and environmental impacts in their own operations, subsidiaries and value chains. In addition, directors have a duty to set up and oversee the implementation of due diligence, as well as to integrate due diligence into the corporate strategy. Directors must make decisions not only in the best interest of the company but also take into account the human rights, climate change and environmental consequences of their decisions, including in the long term.

Enforcement of the Directive will occur through administrative and civil mechanisms. Administrative mechanisms require Member States to designate an authority to supervise and impose effective, proportionate and dissuasive sanctions, including fines and compliance orders. At the European Union level, the Commission would set up a European Network of Supervisory Authorities to ensure a coordinated approach. Member States would also be required to ensure civil liability; victims would be eligible for compensation for damages resulting from the failure to comply with the obligations of the new proposal.

Implications from the Directive could be significant in driving enhanced compliance with national environmental permitting obligations in the textile value chain, given that environmental pollution is covered by the Directive as it includes a broad obligation to ensure compliance with multilateral environmental agreements. However, the extent to which textile value chain operators will be required to report under the Directive remains unclear, as many may not reach the thresholds outlined in Article 2 of the Directive (e.g. employ more than

1,000 people and have a net worldwide turnover of more than EUR 450,000,000). As the Directive is rolled out, further research could explore the extent to which textile value chain operations are required to comply with the Directive and could explore the type of evidence that textile value chain operators are needing to produce to show compliance with this due diligence obligation.

4.3 Phase 4: Environmental permit renewal or closure

At the end of the environmental permitting operational period, textile value chain operators may face two options: either 1. to renew the permit or 2. to close or decommission the site. Both options present opportunities for enhancing environmental outcomes by either requiring that future environmental permits comply with BAT and/or that the site is rehabilitated to not leave any residual pollution risk for human or environmental health. As discussed in Chapter 3, this research found that national environmental permitting legislation may classify the establishment (i.e. construction) of a textile value chain operation as a 'significant activity', which, in turn, triggers an EIA process. However, some textile value chain operations may have been operating for many decades prior to the legislation being established. As such it is possible that the continuation of an existing textile value chain operation may not trigger an environmental permit and/or renewal process which enables textile value chain operations already in operation to continue without environmental permit conditions.

4.3.1 Renewal

Permit renewal refers to the process by which an existing permit is extended or reissued after the expiry of the original permit. This process may involve submitting a new application to the relevant competent authority, followed by the review of the application, or it may be an automatic renewable process. Best practice requires that decisions around renewal of environmental permits for textile value chain activities should be based on the prior conduct and compliance of the textile value chain operation with the conditions of the permit. Those operations which have failed to comply with permit conditions should not be granted a renewal.

Best practice should also require that BAT is incorporated within the renewal of the permit and require the renewal of environmental permits to comply with current environmental legislation and regulations. This ensures that all factories are operating on a level playing field and all are being held to the same environmental conditions, regardless of when operations commenced.

In general, the legalisation examined did not contain specific details around renewal of environmental permits. Although this may be detailed within the permit conditions, it is advisable to include clear provisions in legislation outlining the process to renew permits and the applicable criteria. Including the environmental permit renewal process within the environmental legislation enhances transparency and accountability by clearly outlining renewal criteria, timelines and procedures, ensures the public have access to this information, and can hold government and industry to account when environmental permitting renewal decisions are made.

4.3.2 Closure and rehabilitation

Site rehabilitation of textile value chain operations is an important final step in reducing environmental and human health risks once the operating period of environmental permit finishes. Good practice for site rehabilitation of textile value chain operations is not detailed in an authoritative source, but in theory, it should entail an environmental assessment and remediation plan for the operation's site which identifies any contamination, hazardous materials or pollution remaining as a result of the textile value chain activity. This should be supplemented with communication processes such as engagement with local communities, workers, and broader stakeholders to inform them about the closure and its implications for jobs and the environment. Future site redevelopment should only be carried out once contamination issues have been addressed.

Although the legislation examined across the selected countries was largely silent on the process regarding the closure/decommission of sites and site rehabilitation requirements, some countries provide some guidance:

- In Bangladesh, 'Red' category projects permit holders are required to provide a relocation and rehabilitation plan during the EIA phase (i.e. prior to the construction of a textile value chain operation).
- In Indonesia, Law No. 32/2009 on Environmental Management and Protection (2009) creates an environmental bond scheme, whereby permit holders may be required to pay a bond to cover any environmental rehabilitation.
- In Türkiye, Article 24 of the Environment Law No. 2872 (1983) states that money collected from fines will be used for environmental rehabilitation activities suggested by the Ministry of Health.

4.4 Key findings from Chapter 4

This chapter has explored environmental permitting obligations during Phase 3: the operation period of textile value chain operations, and Phase 4: renewal/closure and rehabilitation. A key finding from this chapter is that the legislation relating to Phases 3 and 4 is not specific to textile value chain activities, however it would apply to textile value chain operators should they be required to hold an environmental permit. Key findings from this chapter with regard to reporting is that most of the national environmental legislation examined contained limited obligations requiring reporting of factory pollutant discharges. An important step in enhancing compliance would be amending the legislation to require textile value chain operators who hold an environmental permit to create and submit reports on a regular basis. In terms of monitoring, the scan of the national environmental legislation found that the legislation generally provided broad powers to monitor textile value chain operations, but further research is required to see how these powers are used to monitor textile value chain activities in practice.

The national environmental legislation (or related legislation) in all jurisdictions included detailed guidance on penalties for non-compliance with environmental permit conditions. Such penalties include daily escalating fines, fines targeting corporate entities and individuals, more severe fines for water pollution, and criminal liability for environmental pollution. Penalties also include options to revoke or cancel permits for serious or reoccurring breaches. Further research is required to determine the barriers to applying these penalties, the logic applied around enforcement mechanism choice, and the frequency of these powers being used to hold those involved in textile value chain operations to account.

This research found that the national environmental legislation (or related legislation) is generally silent as to the renewal process for environmental permits. Renewal periods constitute a good opportunity for environmental agencies to consider the conduct and practice of the permit holder and should be used to prevent non-compliant holders from continuing operations. Reforming renewal processes for environmental permits will also help to ensure that continuing textile value chain operation practices are held to the same BAT standards as newer textile value chain operations.

Finally, the research found that only a limited number of jurisdictions provided specific guidance within the national environmental legislation (or related legislation) on the requirements of site rehabilitation once a textile value chain operation ceases. Reforming the law to ensure site rehabilitation by requiring an environmental assessment remediation plan for the site – which identifies any contamination, hazardous materials, or pollution – should be a priority to ensure that local communities are not exposed to environmental and human health risks once textile value chain operations have been discontinued.

Photo: Adobe Stock

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Chapter 5:

Key findings and recommendations

5.1 Introduction

This chapter provides a summary of the key findings of the report, alongside recommendations policymakers should consider adopting to strengthen existing, or develop new, environmental permitting legislation that supports the transition towards a sustainable textiles value chain.

Specifically, this chapter highlights key observations noted in Chapter 2 relating to global regulation on sustainable textile value chains, and the intersection with environmental permitting regulation. Drawing on information presented from Chapter 3, key insights relating to the analysis of the national environmental legislation related to environmental permitting and EIA – particularly in relation to Phases 1 and 2 of the permitting process – are highlighted. Key observations related to Phases 3 and 4 are also summarized. This chapter concludes by outlining a list of **18 recommendations** for policymakers, drawing on the analysis and observations presented throughout this report.

5.2 Global regulation on sustainable textile value chains and its intersection with environmental permitting regulation

At the global level, although there is no specific multilateral environmental agreement specifically focused on the textile value chain, there are a range of international instruments and initiatives which are relevant to the management and regulation of environmental harm associated with the textile value chain. However, although these instruments and initiatives are helpful in addressing the environmental implications of the industry, many gaps remain (Peleg Mizrachi and Tal, 2022). It is imperative to consider these gaps and ensure countries adopt a global and coordinated response to addressing the contribution of the textile value chains to the three planetary crises. In this respect, UNEP is coordinating a range of initiatives on sustainable textile practices, bringing together diverse groups of actors from across the textile value chains including international organizations, industry bodies, environmental experts and labour/social experts, to ensure a smooth and effective transition towards a sustainable textile value chain.

Under the existing international framework, textile value chain activities are regulated by a layered matrix of mostly non-binding agreements, guidance, voluntary standards and certifications. There are several multilateral environmental agreements which touch upon aspects of environmental permitting. These include the principles of environmental law from the Rio Declaration, UNFCCC, and chemical-related treaties, as outlined in Chapter 2 of this report. Further to this, action to improve the integration of environmental considerations in textile value chain activities is being influenced by the development of international initiatives targeting chemicals. For example, in 2023 the ICCM5 introduced a comprehensive global framework that establishes concrete targets and guidelines for key sectors, including textiles, across the entire lifecycle of chemicals. While this instrument is not specific to the textile value chain, the textile industry uses several chemicals of concern, and it is feasible that a tightening of laws and standards will occur regarding chemicals in environmental permitting systems in the future. Whilst there is an emerging trend of adopting a precautionary approach to chemicals – given the present incomplete knowledge around the long-term environmental and human health implications of many chemicals (Resnik 2021) – the science/policy interface around chemicals and textiles needs improvement with the law generally lagging on this topic.

In regard to environmental permitting more specifically, the OECD has developed a range of instruments on integrated environmental permitting which are helpful to inform permitting legislation at national and subnational levels more broadly. However, these instruments were created in the 2000s and have not been revisited since this time. This can be considered a major gap within international environmental law. It is recommended that a process to review these guidelines be initiated at the intergovernmental level as there is a severe

lack of recent international guidance on this topic for countries wishing to improve their current processes. In addition, many of the countries examined in this report are not members of the OECD and, as such, were not consulted in the drafting of these guidelines. Despite these limitations, the OECD instruments on environmental permitting were used in this research as they are the only international guidance document that define and prescribe the key terms and processes associated with environmental permitting. As these guidelines were created in the 2000s, the focus is on pollution, as compared with the current focus of the three planetary crises of climate, nature and pollution. It is possible that reforms like the European Union Corporate Sustainability Due Diligence Directive may result in increased attention on environmental permitting (as this is the key mechanism for regulating environmental pollution) and, in turn, drive the much-needed development of more recent international guidance on environmental permitting.

In addition, international organizations and industry bodies have created specialized, technical guidance on managing pollution associated with textile value chain activities, as well as the integration of social and environmental issues along the textile value supply chain. While useful – in that they do provide technical examples of what best practice looks like for the textile value chain in respect of chemical, emissions and water management – these instruments are voluntary in nature, meaning that there has not been wide uptake of these guidelines. These instruments, however, are the only textile-specific policy tools that exist and reflect a strong understanding of the environmental impacts across the textile value chain (though of note is China's Discharge Standards of Water Pollutants for Dyeing and Finishing of Textile Industry (2013)). As many national and subnational environmental agencies are unlikely to have technical expertise on the environmental impacts of the textile value chain, it is recommended that the industry guidelines discussed in Chapter 2 can be examined when considering reforms at the country level to address the environmental impact of the textile value chain. During the expert consultation, it was discovered that some countries such as Viet Nam (a country not examined in this research) have referenced the ZDHC guidelines within their national environmental legislation as the standard required. This is not to suggest that countries cannot create their own national standards but, given the interconnectedness of the global textile value chain, it seems logical to ensure that any future reform processes attempt to harmonise with existing international and/or industry standards on the topic.

Within international institutions, there tends to be better recognition of the interconnectedness of environmental and social issues arising from environmental pollution. This is different from national environmental laws which tend to be silent on social ramifications of pollution and poor environmental management. The work by UNEP on the textile value chain shows that these issues are interconnected and reforms to address the impacts of the textile value chain should be targeting both environmental and social issues. Regarding gender, this report has highlighted that there are a range of international instruments which demonstrate why gender is a relevant consideration for environmental law, but work on gender and environmental law has been extremely slow to date and more needs to be done (United Nations Women 2021). Given that most of the workforce in the textile value chain comprise women, it is paramount that gender is at the forefront of considerations when developing and strengthening regulatory controls to ensure a sustainable textile value chain.

5.3 National environmental permitting regulation and environmental impact relating to the textile value chain

The following section details the key findings from Phases 1 and 2 of how the studied legislation considers likely environmental impacts and the role of environmental permitting. Overall, national environmental law on environmental permitting addressed pollution broadly, as compared with assessing pollution, biodiversity, and climate

considerations. It is possible that a broad interpretation of pollution would encompass considerations of emissions and/or impact of industry upon biodiversity, but there is scope to review national environmental law to ensure that the three planetary crises goals are explicitly recognised as priorities. Fragmentation of law is an issue not only for international environmental law but also for national and subnational environmental law which has resulted in separate legislation (and/or agreements) on pollution, climate and biodiversity. There is need for environmental law to play a central role in promoting elements of the science/policy interface to ensure that regulatory interventions to the three planetary crises are addressed in an integrated approach (Kameri-Mbote et *al*. 2023). Most attention to date on the environmental impact of the textile value chain has focused on the impacts of pollution and climate (emissions) with more limited considerations of how the sector impacts biodiversity.

5.3.1 National environmental permitting regulation

All selected countries have environmental permitting procedures in place, which is a good entry point to strengthening these procedures. Most of the countries, except for the United States of America, have adopted to various degrees, integrated permitting systems (rather than single-media permits), although some countries are further along the integration path. That said, application processes across countries were not consistent, and there is scope for some jurisdictions to outline the environmental permit application process more clearly in the environmental legislation. An important point to note is that the national environmental permitting processes examined apply to wide ranges of industries, not just the textile value chain activities.

There is very limited scholarship on environmental permitting specifically, with much more emphasis on the connected concept of EIA. There is a need for more focused analysis and research on environmental permitting as these processes are the key instrument for regulating the conduct of industry with respect to environmental impacts. Given this gap, there is no existing research which explicitly examines how environmental permitting relates, or should relate, to the textile value chain activities.

This research found that an environmental permit application is the trigger for determining if an EIA will be required for a textile value chain activity to take place. A key finding of the countries studied in this report is that provisions in national environmental law classifying what activities may or may not be 'significant' (i.e. perceived to have a significant environmental impact) are a key determining factor as to whether the textile value chain operation is required, and to what extent, to obtain an environmental permit and/or undertake an EIA as part of the permit process. Overall, however, there is scope for much greater clarity in the legislation around what environmental conditions might be placed on an environmental permit where full EIA processes do not occur.

In addition to environmental permits (where required), textile value chain operators generally need to apply for an administrative permit, which is, in essence, a business licence. While these permits might be part of a 'one stop shop' application process alongside other permits (including environmental permits), these administrative permits appear to be disconnected from the environmental permitting process, in that they can be issued without any consideration of the environmental permit. There is, therefore, space for further coordination and integration to ease the burden placed on industry and government and to ensure the integration of environmental considerations into broader permitting processes.

5.3.2 Environmental permitting application process

The application process for environmental permits represents a key opportunity to ensure the applicant (i.e. operator) gathers all the relevant information about the actual and potential environmental implications of a proposed operation or activity. For the textile value chain, these factors include consideration of impacts such as chemical use, storage and discharge, wastewater discharge, air

emissions, soil contamination, solid waste and microfibre shedding (see Table 1, Section 1.5). Importantly, when considering the value chain in the context of circularity, textile recycling facilities will also need to consider these impacts. There are concerns specific to textile recycling that include contamination of the feedstock with chemicals such as PFAS (Sharkey and Coggins 2022).

Countries that have larger levels of textile value chain activities were more likely to provide a more comprehensive list of these activities (China, and India). The extent to which textile value chain activities are considered as having a 'significant' environmental impact varied across the countries and is generally determined by EIA legislation. This research did not uncover specific standards/guidelines for the textile industry, apart from in China (Discharge Standards of Water Pollutants for Dyeing and Finishing of Textile Industry (2013)). Regions with high levels of textile value chain activities could examine the China example if seeking to introduce specific guidance on environmental permitting for textile value chain activities.

Generally, textile value chain activities related to hazardous chemical and high water use were considered to pose a significant environmental risk. While chemicals and water use are very important considerations, factors such as GHG emissions, air pollution, land use, microfibre shedding and textile waste could all be considered significant environmental impacts for textile value chain operations that operate at a large scale. In addition, the scale or size of a textile value chain activity was also considered in determining the significance of the environmental impact and the need (or not) for an EIA. This means that different textile value chain activities are subject to different categories, which may preclude them from having to conduct a comprehensive EIA study, or, in some cases, from requiring an environmental permit. If a textile operation is deemed as being 'not significant', there is generally no trigger to enable environmental considerations related to the proposed operations. The research found that it is the EIA process, which typically occurs before construction of an operation as part of the broader permitting process, which considers environmental impacts of the textile value chain operation. Whilst EIA processes can be triggered by major modifications to an operation, the environmental legislation (and relating EIA legislation) was not always clear in explaining if environmental considerations could be brought in during other stages of the environmental permitting process.

The findings from this research suggest that Tier 1 textile value chain operations are typically excluded from requiring a national environmental permit and/or from having to conduct an EIA. The operation of some textile value chain operations may also not trigger EIA processes if operations are too small, and thus are not covered by the relevant legislation. As such, it is crucial for countries to reconsider the classification of potentially harmful textile value chain activities and ensure that all the activities that are likely to pose an environmental risk are required to carry an EIA to assess the environmental impact of the activity before initial permits are issued. In addition, the national environmental legislation on permitting tends to focus on the establishment/construction of a new textile value chain operation, but often does not provide clear guidance on the permitting requirements for existing or continuing textile value chain operations. This is something that should be clarified within the environmental legislation.

Regarding the documentation required to submit a permit application, there is considerable variation between the selected countries as to who is authorised to conduct an EIA and who has responsibility for the accuracy of the EIA report. In some countries, it was not clearly stipulated who is authorised to conduct an EIA, whilst in others, it was clearly stipulated that it must be conducted by an EIA professional who holds a certificate, is qualified, and/or is accredited. However, in the last case, it was not always clear who was responsible for this accreditation (i.e. government or separate professional association). Further, it was not always clear in the legislation whether the proponent and/or the professional conducting the EIA was legally responsible for the accuracy of the information provided in the EIA. Ideally, the EIA should be carried

out by an accredited professional, and both the professional conducting the study and the proponent should be legally responsible for the information provided in the EIA. This ensures that the potential for environmental impacts is adequately represented.

Of note, while national environmental legislation provides the overarching framework for environmental permits, the implementation of these laws, particularly relating to EIAs, typically occurs at subnational levels. This means that there may be different approaches at the subnational level, in that some provinces/local governments may have more lenient standards than other regions. This is an important consideration when looking at strengthening permitting laws.

Strategic environmental assessment (SEA) was noted as a largely emerging area of practice in the countries studied. Given that textile value chain activities tend to occur via many SMEs that are typically exempt from requiring an EIA, the use of SEA may be an important tool for drawing together the cumulative impacts of the textile value chain operations in a particular area. Considerable scope exists to embed SEAs more formally as part of or prior to the application process, and for government to move to cumulative impact assessments, rather than to assess textile value chain operators in isolation of the broader industry, as per current legislation.

Public participation during the application process is another key area where there is considerable variation across the selected countries. This variation ranged from no legal requirement to an obligation to provide information, to high levels of public consultation throughout the application process. Opportunities for public participation were often limited by the inclusion of the terms 'where applicable' in legislation, or by providing governments with the discretion to decide whether to undertake consultation. Overall, there is scope for the legislation to be amended to ensure meaningful public participation is a legal requirement, and to clearly specify: 1. how the competent authority is to provide opportunities for public participation; 2. at what points during the application process such participation opportunities should exist; and 3. who should have the opportunity/right to participate (see, for example, Glucker et *al.* 2013).

5.3.3 Decision/granting of the environmental permit

Where an EIA was required, legislation in the selected countries typically require a substantive as well as procedural review of the application to issue a decision. However, legislation is typically silent on what the decision-maker should consider when making a decision. Furthermore, while the role of the competent authority in reviewing and considering the application was generally provided in the legislation (and typically is a government agency), the extent to which technical experts were included varies across the examined legislation. Legislative provisions ranged from having no technical experts as part of a decision committee or panel, to technical experts being invited at the discretion of the government, to technical experts being part of an official committee or panel. To ensure environmental impacts are carefully considered, it is imperative that those assessing applications are not only 'competent' but have the required skillset to assess and understand the technical aspects of a range of environmental impacts. A recommended approach is for the competent authority to involve technical experts and civil society when making decisions. In addition, the competent authority could seek to integrate best practice voluntary guidelines and standards around particular impact areas (e.g. chemical) to ensure assessment by the competent authority aligns with international standards.

In all countries examined, environmental legislation on permitting is generally silent on issues related to social impacts of pollution. This is at odds with best practice initiatives targeting labour risks in textile value chains which are increasingly focused on issues such as worker health and safety, and sustainability more broadly. Related to this, permitting regulation is gender-blind in that there is no recognition within environmental permitting regulation that decisions on the significance of an environmental impact will have differential implications for those living and working in the

surrounding area. Women are the predominant workers in the textile value chain globally, with many of these women being migrant workers. While there is considerable intersectional gendered risk for many in the textile value chain, such risks are not recognised in current permitting legislation. The opportunity exists to better integrate social impact assessments into permitting decisions.

5.4 Compliance, enforcement, renewal and rehabilitation for textile value chain operations

The following section details the key findings from Phases 3 and 4 of environmental permitting considerations. One key factor to remember in reading these findings is that many of the compliance, enforcement, renewal and rehabilitation requirements mentioned below may not apply to textile value chain activities if they are exempted from the need to obtain an environmental permit. As such, this means that while countries may have compliance and enforcement powers, these powers will not apply if the textile value chain operation is not required to operate under an environmental permit. This is why it is particularly important to ensure that those activities that may pose an environmental risk are required to obtain an environmental permit and undergo an EIA where this risk is likely to be significant.

5.4.1 Reporting

The national environmental legislation of the selected countries is largely silent on requirements around the reporting needed to ensure compliance with environmental permit conditions, such as pollutant discharges. Reporting of data is important in ensuring that environmental agencies can collate data on environmental impacts over the life of the textile value chain operation, including, as per the legislation, pollutant discharges. This is important as it is not possible to manage and improve discharge rates without some baseline data around existing discharge levels. Lack of clear reporting obligations within the legislation also hinders public access to information, preventing civil society and the public from assessing relevant data, particularly following concerns about pollution discharges. Best practice requires periodic submission of discharge rates, which are then made publicly available.

5.4.2 Monitoring

Generally, the national environmental legislation examined did not clearly define the monitoring process for environmental permits. This does not necessarily mean that government monitoring does not occur, but the national environmental legislation does not lay out a framework creating obligations around monitoring. It is important to note that any changes to monitoring processes within the national environment law will require considerations as to how to resource and fund monitoring processes.

Some of the national environmental legislation provided explicit authority to engage external technical expertise for monitoring. This can be considered good practice given the degree of specialization that is required to assess various environmental impacts across multiple sectors, including the textile value chain activities. As outlined in Chapter 2, there are several industry bodies that have specific expertise in textile value chain activities. These bodies can help build capacity and guidelines of national environmental agencies in monitoring textile value chain operations.

5.4.3 Breaches and enforcement

The national environmental legislation of the selected countries contained detailed and explicit powers for government to enforce on breaches and apply penalties. However, such provisions may have limited application for the textile value chain activities if the operator is not required to hold an environmental permit. The legislation contained several different types of penalties including fines, which in some jurisdictions included daily escalating fines, powers to cancel and revoke the permit, and powers to require some form of rehabilitation. While penalties may be detailed in the legislation, ultimately it is/should be the responsibility of the competent authority to ensure that penalties are enforced.

Given that environmental agencies have limited resources and capacity, enforcement policies are often based on a risk-based approach, targeting those facilities that pose the highest risk to public health and the environment, and choosing to focus resources on a few high-priority sectors each year (UNEP 2019b). It is recommended that environmental agencies target persistent violators for more frequent inspection and higher penalties and, where necessary, revoke the environmental permit to ensure compliance with obligations under environmental law (UNEP 2019b). Further research is required to determine whether the penalties outlined in the legislation studied are a sufficient deterrent to ensure compliance with environmental permitting obligations for textile value chain operations.

In some of the jurisdictions examined, national and subnational governments share responsibility for enforcement. In such cases, for environmental enforcement to be effective, legislation must clearly explain the powers and duties of each level of government. If the responsibilities are not specifically and clearly set out, this can create uncertainty as to which level of government is ultimately responsible for enforcement. That said, there are good reasons for sharing responsibility across government levels, as subnational agencies will often be in a better position to investigate sites of textile value chain operations, but appropriate resourcing must be transferred to these agencies to carry out such investigations.

The limited caselaw identified by this study suggests that textile value chain operations in the Asia and the Pacific region may entail environmental and social risks for local communities. Litigation brought against industry and the government tended to be grounded in both concerns for environmental harm (claims based on breaches of environmental law) and concerns for human health (human rights-based litigation).

This research identified only a limited number of caselaw examples. There are several reasons that could explain the lack of easily identifiable litigation driven by textile value chain pollution. Firstly, limited access to justice may constitute a significant barrier to potential litigants. Civil society groups play a large role in bringing public interest environmental litigation, but these groups lack the resources to bring litigation on all possible environmental breaches (McGrath 2008). Secondly, affected communities may face challenges in obtaining and accessing the necessary data and resources to file claims regarding environmental and human health concerns associated with textile value chain operations (Chiashi 2017). Thirdly, even if litigation occurs, the judgement may not be documented or made publicly available online. This research only identified textile value chain pollution cases in Asia and the Pacific region but for the reasons explained above, it is possible that textile value chain pollution litigation exists in other regions but was not identified during this research project. As explained in Chapter 1, the Asia Pacific region is the largest producer of textiles of all UN regions, which likely explains the ability to locate caselaw in this region.

5.4.4 Renewal or rehabilitation

The national environmental legislation examined for this report is largely silent on the renewal process for environmental permits. In the absence of clear guidance on the renewal process, unregulated continuing textile value chain activities may pose potential risks to both the environment and human health. If renewal processes are not specifically regulated there is a risk that automatic renewal may occur and textile value chain operators that have been operating in breach of their environmental permit may be able to continue operations despite substandard compliance with environmental obligations. There is also a risk that if national EIA legislation focuses predominantly on the construction/establishment of a textile value chain operation, that the ongoing and/or changing nature of the textile value chain activity may not be appropriately captured within the environmental permit.

Environmental legislation should also consider the duration of the permit. While having longer validity periods for environmental permits is typically viewed positively due to the reduced administrative burden on governments and industry (OECD 2005), it may also mean that the permit conditions may not reflect

changes to acceptable levels of environmental impact over time or consider technological advancements. Long permitting periods and automatic renewals mean that adaptative management and changing practices considering new knowledge and technological developments may not apply evenly across the textile value chain. Thus, in instances where permits are unlimited or for long durations, legislation should include a requirement to update permit conditions based on BAT.

Generally, the national environmental legislation reviewed contained limited obligations regarding rehabilitation when a textile value chain operation closed or was decommissioned. Good practice would involve the legislation requiring an environmental assessment and remediation plan for the site which identifies any contamination, hazardous materials or pollution remaining because of the textile value chain activity. This should be supplemented with communication processes (such as community engagement) with engagement with local communities, workers and broader stakeholders to inform them about the closure and its implications for jobs and the environment. Future site redevelopment should only be carried out once contamination issues have been addressed.

Given that many small, medium and large enterprises are involved in textile value chain activities, there could be sites which have not been rehabilitated to prevent risks to environmental and human health.

5.5 Recommendations

Based on the analysis undertaken for this report, policymakers should consider adopting the following recommendations to strengthen existing or develop new environmental permitting legislation that supports the transition towards a sustainable textiles value chain.

1. Review and update **international guidance, such as the OECD guidelines**, on environmental permitting to support countries seeking to develop and/or strengthen environmental permitting legislation. The development of updated international guidance could also be an opportunity to harmonise environmental permitting requirements, taking into account new due diligence obligations being introduced across global value chains. This review should consider incorporating tailored guidance for high-impact sectors, including the textile value chain.
2. Reform environmental permitting legislation to address not only **pollution**, but also **climate and biodiversity concerns (adopting a holistic approach to the environment)**, and ensure **alignment** and cross-references between environmental legislation addressing pollution, climate and biodiversity to reduce fragmentation.
3. For regions with high levels of textile production activities, develop **environmental permitting guidance specifically for the textile sector.** To reduce regulatory burden on SMEs, this guidance could be informed by, and aligned with, international voluntary guidelines which textile factories are already complying with (see Chapter 2).

4. Adopt a **fully integrated environmental permitting approach,** where not already in place, particularly for large textile value chain operations and those deemed to pose a significant environmental risk. For small and medium textile value chain operations, single-media permitting may continue to be more appropriate.
5. Identify opportunities for **better integrating all permit requirements (e.g. building permits, business permits, transportation permits, environmental permits etc.)** to ensure environmental impacts are considered holistically and therefore not addressed separately when issuing any necessary permits to undertake activities or developments that impact the environment.
6. Clearly define the **connection between environmental permit and environmental impact assessment (EIA) processes** in legislation to reduce uncertainty around the legal requirements and procedures.
7. Review **EIA categories** of activities captured by legislation to ensure that textile production activities that have a significant impact on the environment are recognised as 'significant' in legislation and are categorised in such a way that requires the submission of a **comprehensive EIA** which should also inform the permit conditions, if granted. These categories should be reviewed and updated on an ongoing basis, and, as required, in line with the latest science. While conducting this review, consider how reforms will impact SMEs and develop **support tools to assist SMEs** in complying with EIA requirements.
8. Ensure that environmental permitting legislation clearly stipulates 1. who should conduct the studies required as part of the EIA; and 2. who is legally responsible for the information provided in the EIA. Best practice involves a process that engages **certified and accredited EIA specialists** with the aim of improving the integrity of EIA reporting.
9. Require **social impact assessments** as part of the environmental permit application and ensure that **intersectional and gender considerations** are integrated throughout, including sex-disaggregated data and analysis of gendered exposure to environmental harms, as well as gender-responsive indicators for monitoring compliance.
10. Require **strategic environmental assessments and/or cumulative impact assessments** in areas with high numbers of textile value chain activities to ensure that the cumulative impact of the textile value chain is being assessed and managed.
11. Ensure legislation provides for **mandatory public participation** throughout the environmental permitting process, including clarity about the right and ability to participate, types and timing of participation, and how the outcomes of public participation will be considered by the competent authority, while also providing **public access to information** about environmental permits and conditions and **broad standing rights** to enable community and civil society groups to initiate litigation in cases of non-compliance.
12. Involve **technical experts** from the textile sector in environmental permitting decision-making processes and take into account **international voluntary guidelines and standards** to ensure best practice considerations for textiles value chain activities are reflected in environmental permit conditions.
13. Require **self-reporting** of environmental permit conditions and implement requirements to **verify** this data for textile value chain operations of a certain scale.

14. Use a **risk-based approach to monitor** compliance with environmental permits of textile value chain activities involving significant environmental risk. Consider designating the textile value chain as a sector to be actively monitored to drive better compliance with environmental permit conditions.

15. Ensure effective **enforcement** of, and **compliance** with, environmental permits by adopting an escalated approach, starting with information and notices, followed by fines, daily escalating fines, prosecution, and ending with the cancellation/revocation of the environmental permit, with the most serious and repeat offences involving grave penalties. The monetary values of environmental fines should also be revised to ensure that they are a deterrent and more expensive than not complying with environmental permit conditions. Additionally, grievance mechanisms should be responsive to gender-based vulnerabilities, ensuring inclusive access and redress.

16. Ensure that **best available techniques** (BAT) conditions be included in the renewal of environmental permits to ensure a level-playing field for industry and ensure that holders of environmental permits have complied with previous environmental permit conditions before renewing the permit.

17. Collect and provide **public access** to environmental permit decisions, as well as instances of non-compliance with environmental permit requirements by sector.

18. Require **site rehabilitation** of textile value chain operations upon closure/decommission, including an EIA to identify contamination, hazardous materials or pollution remaining because of the textile value chain operation. No future redevelopment for the site should be approved until the site has been rehabilitated.

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5.6 Future research

This report is a first step in understanding how national environmental legislation can play a role in improving the environmental impact of textile value chain activities through environmental permitting. Increasing understanding around the environmental and social harms of the textile value chain is likely to result in a tightening of legislation to ensure that textiles are produced in a more sustainable, circular and ethical manner. During this research, the following topics were identified as key issues requiring further examination:

- **Subnational levels of analysis** of environmental permitting regulation as it relates to the textile value chain. Research for this report has identified that environmental permitting occurs at both the national and subnational levels, however the scope of this report was limited to national levels. As such, there is a need to carry out further research to understand how subnational regulation applies to the textile value chain. It is recommended that any future research on this topic is targeted to regions with high levels of textile production, namely the Asia/Pacific region.
- **Level of public participation in environmental regulation with high levels of textile production.** This research principally focused on how public participation is provided for within the national environmental legislation. Further insights into the barriers to public participation could be gained from more directed study on this topic to identify how textile value chain operations engage with local communities. Future research should examine public participation rights for Indigenous groups, with New Zealand providing an example of good practice in requiring Indigenous engagement in environmental permitting processes.
- **Interviews for enforcement and compliance data.** There is a need to identify the current challenges associated with enforcing environmental permitting in the textile value chain and determining if such challenges are technical, resource-driven or connected with institutional arrangements. It is important to generate solutions on how to address this from the ground-up, with actors that understand the institutional and political challenges in reforming environmental law in the relevant jurisdiction.
- **How will the European Union Corporate Sustainability Due Diligence Directive, the European Union Ecodesign for Sustainable Products Regulation and similar legislation affect the environmental sustainability of the sector?** These laws are recent and still developing but they are potential catalysts for changing practices across supply chains. For the textile value chain, it would be useful to map what these changes mean in practice for various operations across the textile value chain and who is covered, who is left unregulated and what support is being made available to small and medium enterprises to shift towards this due diligence obligation.
- **Reviewing how environmental permitting requirements can be reformed to ensure circularity.** Circularity tends to be dealt with under waste-related laws, which tend to sit separately to environmental permitting legislation. There is a need to further explore the role that environmental permitting can play in promoting sustainable and circular textile strategies, taking a whole-of-value-chain approach. Management of the environmental impacts of textile value chain activities has implications not only for the health of workers and the environment in production processes, but also for the later stages of the value chain, including consumer use and then end-of-life/recycling of textile products. Circularity requires that materials can be safely recirculated, and so consistency in chemical management in the earlier stages of production are crucial. Further work could examine the intersection of this study with the circular and eco-design recommendations that are increasingly forming part of both mandatory and voluntary Extended Producer Responsibility schemes.
- **Examine current levels of corporate social responsibility obligations at a country level.** Explore opportunities for enhancing environmental permitting through enhanced corporate social responsibility provisions.

- **Mapping of existing use and integration of international voluntary textile value chain guidelines being used by factories.** Further study could explore best practice approaches for incorporation and formation of partnerships and collaboration between international voluntary standards and environmental lawmakers. There is an increasing need to harmonise regulation across the textile value chain, as this will ease reporting burdens on textile value chain operations but also ensure consistent approach to regulating the environmental impact of the textile value chain. However, further research is needed to explore how this would work in practice. Findings from this report show that robust international voluntary guidelines exist on environmental and social issues for the textile value chain, and it would be useful to explore how these can be incorporated into the assessment of environmental permit applications and into the monitoring and compliances associated with environmental permits.
- **Integration of gender and social consideration in environmental law.** Environmental law is largely gender-blind. Textile value chain activities produce gendered environmental and social risks for those working across the textile value chain. Future research can explore how gender can be more meaningfully included within national and subnational environmental law.

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All links correct as of 14 November 2025.

Photo: Adobe Stock

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Appendices

Appendix 1: Key environmental legislation considered for the purposes of this report

The legislation listed in this table was accessed via the FAOLEX Database. Names listed in the table are as shown on the FAOLEX database and have been used throughout the report. The legislation is current as at June 2024. This report deals with a fast-moving field, and the subject matter may become dated quickly. While effort was put to ensure that the information is accurate until publication of the report, readers are advised to check the main sources cited for updates and new materials. However, the fundamentals of national environmental permitting as discussed in this report are considered to remain relevant in the immediate future.

Country	Primary legislation	EIA related legislation	Additional legislation
Bangladesh	• Bangladesh Environment Conservation Act, 1995. (Act No. 1 of 1995) (amended 2002)	• Environment Conservation Rules, 2023 (SRO No. 53)* • EIA Guidelines for Industries	• Bangladesh Environment Conservation (Amendment) Act No. 50 of 2010 • One Stop Service Act, 2018 (No. 10 of 2018 Law)*
Brazil	• National Environmental Policy Act No. 6.938 (1981, amended 2013)	• Conama Resolution No. 1 concerning Environmental Impact Assessment requirements (1986, amended 1997)*	• Resolution CONAMA No. 237 regulating the licensing for environmental activities (1997)* • Regulation No. 1 establishing licence fees for performing environmental activity (1990) • Decree No. 22/2014 approving the Industrial Activity Licensing Regulation (2014, amended 2017)* • Act No. 9.605 regulating Criminal and Administrative Penalties relating to behaviour and activities harmful to the environment, and sets forth other provisions (2014) • Resolution CEMAm – state of Goiás - No. 10 establishing procedures for the Environmental Licence Online (LAO) issued to low pollution potential activities (2014)*.

Country	Primary legislation	EIA related legislation	Additional legislation
China	• Environmental Protection Law (2015)	• Law of the People's Republic of China on Environmental Impact Assessments (2003) • Measures for Public Participation in Environmental Impact Assessment (2018)*	• Decree No.33/2015 of the Ministry of Environmental Protection Laying down the Catalogue for the Classified Administration of Environmental Impact Assessments for Construction Projects (2015)* • Regulation on the Administration of Permitting of Pollutant Discharges (2021)* • Measures for Pollutant Discharge Permitting Administration (2024)* • Regulations on Environmental Protection Management of Construction Project (2017). • Discharge Standards of Water Pollutants for Dyeing and Finishing of Textile Industry (2013)* • Measures for the Administration of the Law-based Disclosure of Environmental Information by Enterprises (2021)*
Egypt	• Law No. 4 of 1994 on Environment (1994)	• EIA processes are outlined in the primary legislation, however technical guidelines have also been published with greater information pertaining to EIA (Guidelines for Principles and Procedures for Impact Assessment (2009). • See also Decree No. 338 of 1995 issuing the Implementing Regulation of Environment Law No. 4 of 1994 (1995).	• Environmental Law No.9 of 2009 amending some provisions of Law No.4 of 1994 on Environment (2009)* • Prime Minister's Decision No. 618 of 2017 amending some provisions of the executive regulations of the Environmental Law issued by Prime Minister's Decision No. 338 of 1995 (2017)* • Presidential Decree Law No.105 of 2015 amending some provisions of the Environmental Law No.4 of 1994 (2015)* • Resolution No. 1095 of 2011 amending some provisions of Decree No. 338 of 1995 issuing the Implementing Regulation of Environment Law No. 4 of 1994 (2011)* • Resolution No. 1741 of 2005 amending Resolution No. 338 of 1995 issuing the Implementing Regulation of Environment Law (2005)* • Law No.15 of 2017 on the Facilitation of Granting Licences to Industrial Facilities (2017)
Germany	• Federal Emission Control Act (1974, amended 2021)*	• Environmental Impact Assessment Act (1990, amended 2021)*	• Act amending the Federal Emission Protection Act (2017)* • Act amending the Environmental Impact Assessment Act (2017)* • Chemicals Act (1980, amended 2021)* • Waste Disposal Act (2007, amended 2016)* • Environment Damage Act (2007, amended 2021)*

Country	Primary legislation	EIA related legislation	Additional legislation
India	• Environment (Protection) Act, 1986 (No. 29 of 1986) (1986)	• Environment (Protection) Rules, 1986 (1986, amended 2020) • Environmental Impact Assessment Notification, 2006 (several subsequent amendments followed).	• Water (Prevention and Control of Pollution) Act 1974 (Water Act) (1974, amended 1988) • Air (Prevention and Control of Pollution) Act 1981 (1981) • Solid Waste Management Rules, 2016 (2016) • Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 (2016) • Noise Pollution (Regulation and Control) Rules, 2000 (2000) • National Green Tribunal Act, 2010 (Act No. 19 of 2010) (2010) • 2025 Control of Water Pollution (Grant, Refusal or Cancellation of Consent) Guidelines and the 2025 Control of Air Pollution (Grant, Refusal or Cancellation of Consent) Guidelines, provide the form for application for consent and the associated fees.
Indonesia	• Law No. 32/2009 on Environmental Management and Protection (2009)	• Government Regulation No.27/1999 RE Analysis of Environmental Impacts (1999) • Regulation of State Minister of Environment No. 11/2006 on type of business plan and/or activity that require analysis of environment impact (2006).	• Government Regulation no. 22 of 2021 on Environmental Protection, Organization and Management (2021)* • Regulation of the State Minister for Environmental Affairs No. 08/2006 on guidance for the preparation of Environmental Impact Analysis (2006)*
Jordan	• Environmental Protection Law No. 6 of 2017	• Environmental Impact Assessment Regulation No. 37 of 2005*	• Regulation No. 69 of 2020 Environmental Classification and Licensing made by virtue of Clause A of Article 5 of the Environment Protection Law No. 6 of 2017
Türkiye	• Environment Law No. 2872 (1983, amended 2023)*	• Regulation on Environmental Impact Assessment (2022)*	• Regulation on Environmental Permit and License (2014)* • Regulation amending the Regulation on Environmental Permit and License (2023)* • Notification on monitoring and reporting of greenhouse gas emissions (2014)* • Notification amending the Notification on monitoring and reporting of greenhouse gas emissions (2021)*
United States of America	• National Environmental Policy Act (42 U.S.C. 4321-4370m-12) (1970, amended 2011).	• EIA is covered by the primary environmental protection legislation.	• National Environmental Policy Act (7 CFR 1b.1-1b.4) • Clean Air Act (1970, amended 2004) • Federal Water Pollution Control Act (Clean Water Act) (1972, amended 2002) • Safe Drinking Water Act (U.S.C. 1400-1465) (1974, amended 2002) • Resource Conservation and Recovery Act (RCRA) (42 U.S.C.) (2011) • Toxic Substances Control Act (15 U.S.C. 2601-2697) (1976, amended 2002)

*An unofficial English translation was used.

Appendix 2: Additional licences/permits

This table highlights additional licences/permits that installations may be required to obtain which may not directly relate to or connect with environmental permitting processes as noted in the comments and observations column.

Country	Ministries/departments involved in overseeing or regulating business activities	Additional licences/permits required to operate within the textile industry	Comments/observations
Bangladesh	• Office districts of the Department of Inspection for Factory and Establishments (**DIFE**) are responsible for licensing, constructing, and expanding factories. DIFE is a government body tasked with evaluating the safety and welfare of factories and businesses in Bangladesh. • The National Board of Revenue (**NBR**) responsible for collecting tax revenues (primarily Value Added Tax (**VAT**), Customs Duty, Excise Duty and Income Tax). • The Bangladesh Tariff Commission is primarily responsible for placing tariffs on imports, protection of domestic industry, and the prevention of dumping of foreign goods in Bangladesh. • The Ministry of Commerce is responsible for Bangladesh's overall trade and commerce-related activities by implementing policies and regulations as they impact global and local trade. • The Fire Service and Civil Defence (**FSCD**) is responsible for enforcing fire safety regulations and ensuring that buildings and facilities comply with fire safety standards. • The Bangladesh Processing Zones Authority (**BEPZA**) is a government body responsible for the creation, development, operation and management of industrial zones, such as Export Processing Zones (**EPZs**) as well as promoting investment in Bangladesh	• **Factory Establishment Licence:** All factories and businesses in Bangladesh must be registered with the government in accordance with the Factories Act 1965 and The Factories Rules 1979. The Factory Establishment Licence is a statutory authorisation that all factories in Bangladesh must possess. The Licence is issued by DIFE. • **Trade Licence:** To get a Trade Licence, an application needs to be made to the city corporation or city council where the business exists. The requirement to obtain a Trade Licence to conduct business is established by the City Corporation Taxation Rules 1983 and Municipal Taxation Rules 1986. • **VAT Registration Certificate:** The NBR is responsible for collecting VAT from businesses operating in the country. It is mandatory for businesses with an annual turnover exceeding a certain threshold to obtain VAT Registration Certificate. This certificate serves as proof of VAT registration and enables businesses to comply with legal requirements and conduct transactions with other registered businesses. • **Import/export Licence:** Depending on the types of products the business is importing or exporting, they may need to obtain an export registration certificate (ERC) or import registration certificate (IRC) from the appropriate government bodies, such as the Bangladesh Bank, Bangladesh Tariff Commission or the Ministry of Commerce. • **Fire Licence:** A Fire Licence is a mandatory licence required for all factories in Bangladesh. The Fire Licence in Bangladesh is issued by FSCD. • **BEPZA permit:** Foreign companies intending to conduct businesses in an EPZ will need to obtain a BEPZA permit. The BEPZA permit is issued by the Bangladesh Export Processing Zones Authority.	• No explicit connection between the additional licences/ permits required for the textile operator to operate and the environmental permitting or EIA laws.

Country	Ministries/departments involved in overseeing or regulating business activities	Additional licences/permits required to operate within the textile industry	Comments/observations
Brazil	• The Brazilian Revenue Service (Receita Federal) has the role of administering tax collection, and manages import and export customs regimes. • The Ministry of Economy is responsible for formulating and implementing the country's economic, fiscal and financial policy under the President's supervision. • The Fire Department is responsible for enforcing fire safety regulations and ensuring that buildings and facilities comply with fire safety standards.	• **RADAR licences (Registro e Rastreamento da Atuação dos Intervenientes Aduaneiros):** Every company that imports or exports products must first obtain a licence to use the government's "SISCOMEX" electronic system for recording information related to companies engaged in foreign trade. The RADAR licence, issued by the Brazilian Revenue Service, primarily addresses customs and trade-related activities, and there is no explicit connection to environmental permitting associated with obtaining the RADAR licence. • **Operating Permit (Alvará de Funcionamento):** If a business operates from a physical location, such as an office, store or manufacturing facility, they will likely need to obtain an Operating Permit. This document certifies compliance with safety and zoning regulations and is issued by the local municipality. For companies in some sectors of activity and under certain size and location restrictions, as determined by Decree No. 57,298 of 2016, a simplified operations licence can be applied for and obtained online, through the integrated business registration system. • **Fire Department Inspection Certificate (Auto de Vistoria do Corpo de Bombeiros - AVCB):** Businesses must obtain a Fire Department Inspection Certificate from the Fire Department to operate. This certificate includes all the fire security measures that need to be implemented. While the certificate is key for operational safety, it pertains to fire prevention and response and does not relate to environmental permitting.	• This Operating Permit is different to the "operating licence" or "Licença de Operação" (LO). The business Operating Permit is issued by local municipalities and is required for businesses to operate legally within their jurisdiction. Whereas the LO is specific to businesses that may have an impact on the environment, such as industrial facilities, factories or businesses involved in activities that produce emissions or waste.
China	• The State Administration for Market Regulation (SAMR) is responsible for the comprehensive supervision and regulation of market activities in China, including market entity registration, supervision of industrial products quality, standardization, certification and accreditation. • The Ministry of Commerce (MOFCOM) is responsible for formulating and implementing policies on domestic and foreign trade, export and import regulations, foreign investment and international economic cooperation. • The Fire and Rescue Department is responsible for enforcing fire safety regulations and ensuring that buildings and facilities comply with national fire protection standards throughout their construction and operation phases.	• **Business Licence:** The Business Licence, issued by the local Administration for Market Regulation under the oversight of the SAMR, serves as proof of a company's identity and legitimacy to operate in China. • **Fire Safety Inspection and Approval:** Construction projects involving with significant fire risk must undergo fire protection design review and acceptance inspection by the competent fire and rescue department, before being put into use. • **Import/export Licence:** Depending on the types of products being imported or exported, businesses may be required to obtain an import/export licence from the relevant authorities. If the products are listed in the official *Catalogue of Goods Subject to Export Licensing*, the business is subject to licensing control and must obtain the licence from the Ministry of Commerce (MOFCOM) or the local commerce authority authorised by the MOFCOM.	• Since 2017, to streamline administrative approvals and reduce institutional costs, China has a "three-in-one" licensing system, which has evolved to "**five-in-one**" merging company certificates into a unified business licence – the firm's business licence, tax certificate, the organization code, the social insurance registration certificate and the statistical registration certificate. • The "Five-in-One" reform does not extend to environmental permits or approvals. Environmental licensing, such as EIA approvals or pollutant discharge permits, involve substantive environmental assessments and remain under the jurisdiction of specialized environmental authorities, outside the scope of business registration reforms.

Country	Ministries/departments involved in overseeing or regulating business activities	Additional licences/permits required to operate within the textile industry	Comments/observations
Egypt	• The Ministry of Trade and Industry is responsible for promoting exports in different sectors, creating export opportunities for exporters in foreign markets and raising local production in order to meet global competition. • The Industrial Development Authority (IDA) is responsible for setting regulatory conditions and rules for servicing, development and pricing of the lands in industrial zones. The IDA is also authorised to receive and review he environmental impact assessment studies of industrial establishments and examine the licensed industries to ensure compliance with licensing requirements. • The General Organization of Export and Import Control (**GOEIC**) is responsible for testing imported and exported products to ensure they meet Egyptian Organization for Standardisation and Quality standards.	• **Licence of the Industrial Development Authority (IDA):** Under the Facilitation of Procedures for the Granting of Licences to Industrial Establishments Law No. 15 of 2017, the licence of the IDA is the sole licence required for establishing and operating an industrial facility. The law requires the IDA and Environmental Affairs Agency to coordinate, collaborate and share information to identify their requirements for the establishment and operation of an industrial entity, including any environmental requirements. • **Site Validity Certificate:** In line with the Building Law's Implementing Regulation, Egypt Regulation No. 144/2009, the company should first submit a request to the Municipal Authority for obtaining the Site Validity Certificate, which proves the site conforms to the planning and building requirements. The request will have to identify the site, its address, the land borders, the roads leading into the site and a sketch of the location of the side and its routes. The Municipal Authority is responsible for issuing the certificate. • **Construction Permit:** After obtaining the Validity Certificate, the engineer or the engineering office of the relevant company will submit a request to obtain the Construction Permit. • **Certificate of Inspection (CoI):** Textile manufacturers must register with GOEIC to export to Egypt prior to applying for a CoI with one of the Certification Bodies approved by GOEIC. CoIs are mandatory for Customs clearance at Egyptian Ports and Borders for all shipments of regulated products.	• The IDA and the Egyptian Environmental Affairs Agency work together to identify the necessary licensing requirements for establishing an industrial facility, and this includes a consideration of environmental requirements (e.g. for an EIA study).
Germany	• The Local Building Authority or Building Supervisory Authority (Bauamt) is responsible for authorising plans and issuing building permits. • The Federal Office of Economics and Export Control is responsible for export control.	• **Building Permit (Baugenehmigung):** A building permit must be obtained before the start of a construction project. Such permits contain a declaration by the competent authority that the building project complies with public law. The execution of construction works must comply with the relevant permits. Therefore, if variations and changes are implemented during construction, the initial permit may have to be amended. Besides the construction permit, further administrative permits may be required for the operation of, for example, process plants. An application for a building permit must be submitted to the local building authority or the building supervisory authority (Bauamt). • **Export Licence:** export licensing requirements apply to certain animals and plants, and cultural goods. The Federal Office of Economics and Export Control is responsible for issuing Export Licences.	• A building permit is granted if the project complies with the planning and building regulation law, as well as with all other applicable laws, including environmental laws (such as, the Federal Emission Control Act and the Environmental Impact Assessment Act).

Country	Ministries/departments involved in overseeing or regulating business activities	Additional licences/permits required to operate within the textile industry	Comments/observations
India	• The Ministry of Commerce and Industry is responsible for the formulation and implementation of policies and programmes to promote economic growth, international trade and investment. • The Ministry of Labour and Employment enacts and implements various labour laws, in collaboration with state governments.	• **Import Export Code Licence:** Companies are required to obtain an Import Export Code licence to import and export products in India. The licence is issued by the Directorate General of Foreign Trade under the Ministry of Commerce. • **Retail Operating Licence:** Under the *Shop and Establishments Act 1954*, a licence is required to operate a retail store in India. Since state governments are in charge of issuing registrations, the rules in India vary from one state to the next. The Act governs all local stores and businesses and regulates against child labour, excessive working hours, unhealthy working environments and unfair wage practices. • **Trade Licence**: Under the *Shop and Establishments Act 1954*, a sole proprietorship can apply for a trade licence to conduct online business. The State Government of India is responsible for issuing trade licences. • **Factory Licence**: Under the *Factories Act of 1948*, registration is required to operate a factory in India, which is granted by the respective state department of labour.	• Generally, businesses in India will need to comply with environmental legislation (such as the Environmental Protection Act) to obtain additional licences, such as retail operating, trade and factory licences.
Indonesia	• The Ministry of Investment (BKPM) is the regulatory body responsible for processing licences for several sectors, including the textiles sector, in Indonesia. • The Ministry of Trade is responsible for formulating and implementing policies related to trade, both domestic and international.	• **Business Licence:** A business licence is a legal document that grants permission for a company or individual to operate a specific type of business activity within the country. Business licences are issued by various government agencies and authorities at different levels, including central, provincial and municipal governments. The specific type of licence required can vary depending on the nature of the business. • **Commercial and Operational Licence**: Commercial and operational licences in Indonesia are essential permits related to specific sectors (electricity, mineral and coal, oil and gas, public housing and work, customs and taxation, capital investment). They pertain to the items that will be traded or acquired and involve processes such as standardisation, certification and licensing of business operations. The Ministry of Investment (BKPM) is the regulatory body responsible for issuing the commercial and operational licence. • **Export and Import Licence:** Businesses must apply to the Directorate General of Foreign Trade under the Ministry of Trade in Indonesia to obtain an export and import licence. These licences are industry-specific and do not permit the importation of goods unrelated to the licensed sector.	• Indonesia has an 'Online Single Submission System' (OSS) which is a 'one-stop shop' for business licences. Through this system businesses can apply for a business identification number (Nomor Induk Berusaha, or NIB), business licence and other commercial and operational permits. However, industries involved in activities that entail wastewater disposal, air pollutant emissions and related aspects are mandated to secure technical approvals and operational worthiness letters.

Country	Ministries/departments involved in overseeing or regulating business activities	Additional licences/permits required to operate within the textile industry	Comments/observations
Jordan	• Relevant municipalities are involved in the issuing of construction and occupancy permits and vocational licences. • The Ministry of Industry, Trade and Supply oversees various aspects of industrial development, trade policies and commercial activities in the country.	• **Construction and Occupancy Permit:** Companies must obtain a construction permit from the relevant municipality before commencing any construction work. Once construction is completed, an occupancy permit is necessary to occupy the buildings. • **Vocational Licence:** Companies must obtain a vocational licence from the relevant municipality depending on where the company is located; this licence is required to ensure that the place of business is suitable for conducting its activities. • **Import/Export Licence:** businesses engaging in import and export activities are required to obtain an import/export licence to operate legally. The Ministry of Industry, Trade and Supply is the body responsible for issuing an import/export licence.	• It is notable that while the environmental permitting process is centralised, the issuance of additional permits required for a textile operator to operate tends to occur at the municipal level.
Türkiye	• The Ministry of Labour and Social Security is responsible for overseeing various aspects related to labour, employment and social security within the country. • The Ministry of Trade is responsible for customs and trade-related matters.	• **Business and Operation Licence:** A business and operation licence must be obtained from the relevant municipality pursuant to the *Regulation on Workplace Opening and Operating Licence 2005*. • **Import/Export Licence:** If textile operators intend to import or export goods, they will need a licence from the Ministry of Trade.	• Generally, businesses in Türkiye must adhere to environmental legislation and regulation (including the Environmental Law No. 2872 and the Regulation on Environmental Impact Assessment) to maintain a business and operation licence.
United States of America	• Most permits/licences are issued at the state level – for example, the Department of Industrial Relations in California issues business licences or permits for the garment manufacturing industry. • The U.S. Customs and Border Protection (**CBP**) and the Partner Government Agencies (**PGAs**) are responsible for issuing licences for the majority of imports (when required).	• **Pre-construction and operating permits:** The Clean Air Act requires pre-construction and operating permits (known as New Source Review (**NSR**) and Title V permits). Both NSR permits and Title V operating permits are administered by state and local air quality management agencies, although the U.S. Environmental Protection Agency (EPA) oversees state implementation plans and ensures compliance with federal regulations. • **Import/export licence:** a shipping document issued by government agencies to authorise the trade of certain goods across US borders. The agency responsible for issuing import and export licences depends on the nature of the goods involved.	• Pre-construction and operating permits, mandated by the Clean Air Act, are integral components of environmental permitting for businesses, with a specific focus on air quality regulation and pollution control. Compliance with these permits contributes to the broader goal of environmental protection and sustainability.

Appendix 3: Criteria used to compare and review legislation

Permitting / Licensing

What is the legislation dealing with permitting and licencing?

- When was this created?
- When was it last updated?
- At what level? (National/subnational)

What are the steps/phases involved in the permitting/licencing?

Is there any additional regulation sitting under this relating to:

- water usage
- wastewater management
- chemicals
- noise/dust
- emissions
- National environmental protection plan

Is the legislation clear?: 1) provisions clear as to obligations and procedures to follow and 2) provisions clear as to mandate of different authorities

Divisions of power

- What agencies are involved in the permitting process?
- Does the government rely on external expertise in making decisions?

Initial approval

- Name of permit/permit type (single-media v integrated) for activities in the textile industry
- Period of validity/renewal process
- Are review checklists/criteria included in law?
- Is there a statutory timeline on the review process?
- Are there any obligations around closure and rehabilitation?

Ongoing

- Are there adaptive management requirements?
- Who monitors compliance of permits?
- What is the monitoring process for permits?
- Are they legally required to stick to environmental/social impact forecasts?
- Fee/tax for pollution?
- Who enforces penalties?
- What are the penalties for a permit breach?
- Are there remediation requirements for a breach? (Is this compulsory/voluntary/temporary/ permanent?)

Public participation

- Are decisions on permit applications publicly available?
- Is information/data on permit processes made publicly available?
- Where does public participation occur during the permitting/licencing process?
- Rights to courts/access to justice? (Who has standing in the environment?)

Impact assessment requirements

Environmental Impact Assessment (EIA)

- Is there EIA legislation/requirement?
- Is EIA process/legislation national/subnational?
- Where does EIA feed in/connect to permitting?
- What triggers the EIA? Are textiles considered 'significant'/harmful?
- How can EIA be avoided?

Public participation

- Is the public consulted/involved in decision-making process?
- Legitimacy of EIA/consultants?

Social Impact Assessment (SIA)

- Is this connected to permitting/EIA?
- Does SIA include impacts on gender and social inclusion?
- Is gender/social inclusions considered elsewhere in permitting/EIA?

Strategic Environmental Assessment (SEA)

- Is there a requirement for SEA?
- Does this apply to textiles?

Case law

- Is there any case law relating to permitting/EIA for textiles?

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