Textile Exchange

Fiber and Materials Matrix

Methodology

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Acknowledgments

With special thanks to Gap Inc.

The Fiber and Materials Matrix builds on the work of Gap Inc. to help inform its designers and product teams of the implications of each fiber and material choice they make. While Textile Exchange was involved in the early phases of Gap Inc.'s work, we are grateful to have been given the responsibility of developing the tool further, starting in 2020. Textile Exchange will continue to improve upon the foundational work of Gap Inc. to create a decision-making tool for the industry that combines quantitative and qualitative data. The tool will help achieve positive outcomes for the industry, in line with Textile Exchange's Climate+ Goal.

Textile Exchange would also like to thank Zalando for their generous contribution to the Fiber and Materials Matrix in 2021, as well as those organizations and individuals who provided feedback and contributed to the overall development since then. For details on those involved in the stakeholder engagement process, please see the Annex.

Contents

Introduction

Purpose of this document

This document is a comprehensive technical guide on the underlying methodology of the Fiber and Materials Matrix. It introduces the pillars, impact areas, materials, and programs assessed, and identifies the scope of assessment and methods for scoring.

Please also refer to the Survey Guide, which helps users complete the self-assessment survey.

About the tool

The Fiber and Materials Matrix enables owners of fiber and raw material sustainability programs to assess themselves against a shared framework and identify opportunities for improvement.

Brands and retailers can use the Fiber and Materials Matrix to explore a range of options within a material category, seeing what each covers (and what it doesn't), to help inform their sourcing strategies. Information on a range of raw material and fiber programs is available across cotton, wool, recycled, and manmade cellulosic materials.

The tool provides essential context about raw material sustainability programs within the same fiber category. Its survey criteria are tailored to the material category, and it is **not** designed to compare different types of materials, such as cotton, wool, and polyester.

The Fiber and Materials Matrix was previously known as the Preferred Fiber and Materials Matrix (PFMM). However, the tool was renamed in 2025 to avoid the misinterpretation that all programs within it are deemed to be "preferred" by Textile Exchange, which is not the case. Instead, it provides a framework to assess raw material programs and show users what they cover, guiding them towards best practices.

The Fiber and Materials Matrix now runs as a self-assessment survey for programs. Programs submit via an online survey, and responses are reviewed and validated by a third-party along with supporting evidence. In 2025, Anthesis Group Limited conducted the third-party review process. The survey requires each response to be supported by publicly available information (evidence). Private information about a program will not be assessed in the scope of this tool.

See Textile Exchange's Glossary for definitions of key terms used within this document.

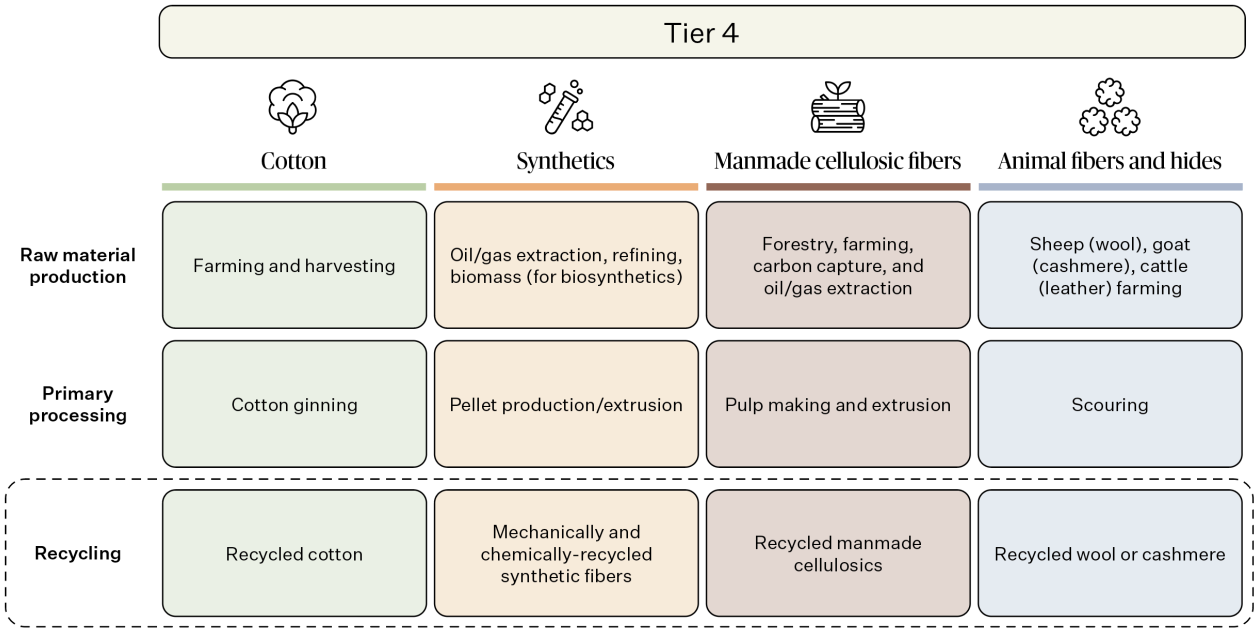
Scope of the tool

The Fiber and Materials Matrix scope covers the extraction, processing, and production of raw materials (commonly referred to as Tier 4 of textile supply chains). Our Supply Chain Taxonomy, published with the Apparel Alliance, provides further details on how supply chain tiers are defined.

The tool also includes chain of custody-focused standards systems, which demonstrate how a feedstock can be tracked throughout the supply chain and often cover the primary processing requirements.

The scope of the Fiber and Materials Matrix does not extend beyond Tier 4. For organizations that operate across Tiers 0-3 of the supply chain tiers, only their Tier 4 programs are eligible for assessment.

Supply chain tiers and processes in scope



Each material type has different raw material feedstocks, varying production processes, and different hotspots and associated risks. The Fiber and Materials Matrix was designed to tailor the assessment to the material type and is not intended to be used for drawing comparisons between them.

LCA + Approach

Qualitative data

Going beyond lifecycle assessment (LCA) data, the Fiber and Materials Matrix includes a range of qualitative indicators (each represented by a question in the survey). Programs are awarded points for having explicit program requirements or by demonstrating positive outcomes. Qualitative indicators comprise 72 out of 76 total indicators.

Quantitative data

The quantitative indicators in the Fiber and Materials Matrix are based on normalized LCA data which is included in the Higg Materials Sustainability Index (MSI). Normalized LCA data ensures that information is comparable. The Fiber and Materials Matrix does not use the quantitative values of any other LCA database or sources for comparison. However, for some fibers and materials, LCAs may be available but not scored in the Higg. Therefore, this

methodology includes qualitative indicators for LCAs which consider the representativeness, completeness, and reliability of the LCA.

Four of the 76 total indicators are quantitative and based on LCA data (sourced from the Higg MSI).

Version history

Version 1.0

Version 1.0 of the Fiber and Materials Matrix focused on developing a framework for multiple data sources, standard systems, and scoring requirements. 40 indicators were introduced into the Fiber and Materials Matrix focusing on climate, water use, water pollution, chemicals and toxicity, land use, soil health, resource use and waste, human rights, and animal welfare. The assessment comprised of six Higg MSI indicators, 18 WWF Certification Assessment Tool (CAT) indicators, and 23 Textile Exchange custom indicators.

Version 2.0

Version 2.0 of the Fiber and Materials Matrix focused on updating the methodology and introducing new impact areas and indicators. The changes included a new biodiversity impact area developed with The Biodiversity Consultancy, and the removal of the WWF Certification Assessment Tool (CAT) environmental indicators, which were replaced with new Textile Exchange indicators. They also included the development of new management and monitoring indicators, a more nuanced way of measuring performance with progressive and multiple-choice scoring structures, the separation of raw material extraction and processing criteria, and the introduction of "level of execution" indicators for partial scoring credit. As a result of these changes, new assessments of standard systems were conducted, and results were presented in the tool in March 2023.

Version 3.0

Version 3.0 of the Fiber and Materials Matrix was launched publicly and marked Textile Exchange's full ownership of the tool. The initiative integrity and human rights indicators were previously sourced from WWF's Certification Assessment Tool. Textile Exchange also separated the assessment of paired standard systems to show individual standard system scores. In addition, the tool interface was updated to remove the overall program scores and provide further transparency on indicator scores.

Version 4.0

Version 4.0 represents a shift from the Fiber and Materials Matrix program assessments being completed by Textile Exchange to a self-assessment model, with third-party review and score validation. In 2025, Anthesis Group Limited conducted the third-party review process. The tool has also been simplified in both structure and content to more closely align with the structure used in Textile Exchange's Preferred Fibers and Materials: Definitions Initial Guidance document. The criteria were reviewed and updated to ensure alignment with emerging frameworks on climate and nature, such as Science-Based Targets for Nature. The scope has expanded to cover a wider range of programs, including additional standards systems, branded fibers, and improvement programs. The updated methodology also allows for the assessment of additional material types.

Material categories

The material categories included in the scope of the Fiber and Materials Matrix assessment framework are as follows:

- Cotton
- Synthetics (including biosynthetics)
- Wool and cashmere
- Man-made cellulosic fibers (MMCF)
- Bovine leather

The programs listed in the online tool will depend on the organizations that took the self-assessment process and agreed to have their results listed publicly. Please note that not all the categories listed above will be included, for example, if no programs within a particular category conduct a self-assessment, that particular category will not appear in the online web tool.

The feedstocks for these material categories fall into four categories:

- **Farm:** Feedstock that is grown on a farm through agricultural practices, such as cotton.
- **Forest:** Feedstock that is derived from forest sources, such as cellulosic fibers.
- **Animal:** Feedstock that is derived from an animal, such as wool, cashmere or leather.
- **Manufactured:** Feedstock that is manufactured, processed or derived in a lab, such as recycled inputs.

The latest version of the Fiber and Materials Matrix methodology includes assessment criteria for leather and biosynthetics.

For **leather**, the raw materials assessment includes the feedstock input only within Tier 4. Tanning and final processing are excluded from the scope.

As a comparatively dynamic material category with many different types of feedstocks, **biosynthetic** feedstocks are assessed in three categories:

- **First generation** usually includes common agricultural crops, often referred to as “food crops.” This could be starch feedstocks (such as corn and wheat), sugar feedstocks (such as sugar cane and sugar beet), or edible oil feedstocks (such as rapeseed and soybean)
- **Second generation** typically refers to non-food crops such as non-edible oil crops (such as castor), lignocellulosic crops (such as wood), and agricultural and industrial residues (such as sugarcane bagasse, wheat straw, orange peels, waste cooking oil).
- The term **third generation** is used to describe feedstock derived from microalgae.

For Version 4 of the Fiber and Materials Matrix, only first and second-generation feedstocks are considered in scope.

Pillars and impact areas

The Fiber and Materials Matrix considers the impact of fibers and materials across five overarching pillars that cover different impact areas.

Climate

Climate

The *Climate* impact area evaluates the management of greenhouse gas (GHG) emissions, climate resilience actions, and the protection of ecosystems to capture and store GHGs. The indicators assess factors such as GHG management plans, GHG monitoring, level of ambition in reducing emissions, decarbonization methods, climate adaptation and mitigation measures, carbon stock protection, and soil carbon sequestration. The aim is to ensure the protection of ecosystems, consider local community and environmental impacts, and promote the reduction of emissions throughout the value chain. The indicators encourage the adoption of sustainable practices and the use of standardized methodologies for measuring and accounting for carbon sequestration.

At the feedstock level, the applicability of the *Climate* indicators depends on the type of fiber. Farm, forest, and animal fibers are assessed against all indicators, while manufactured fibers are not assessed against the soil carbon indicators. At the processing (manufacturing) level, only the *Emissions Monitoring & Targets* indicators apply.

Resource Use and Waste

The *Resource Use and Waste* impact area evaluates waste management and mitigation strategies. These indicators assess the plans and procedures for waste reduction and evaluate the commitment to tracking and separating raw materials to achieve long-term waste reduction. The indicators also assess the efficiency of waste stream utilization, waste management strategies, and the degree of circularity achieved. Furthermore, it measures the proportion of feedstock sourced from waste (such as recycled inputs). These indicators are only applicable to manufactured, processed, or recycled fibers.

Nature

The *Nature* pillar brings together the indicators that consider the impact of a material on nature. These have been updated and streamlined as part of the updates made for Version 4 to consider the key impact areas of *Biodiversity, Freshwater, Chemicals and Toxicity, Land Use, Soil Health,* and *Forest Management*.

Biodiversity

The *Biodiversity* impact area evaluates the conservation, restoration, and enhancement of biodiversity in relation to fiber and material cultivation. These indicators assess the structure and scope of management plans for addressing biodiversity, measure adaptive monitoring of biodiversity, and examine the level of ambition in prioritizing biodiversity. The indicators also

focus on *Species, Habitat, and Ecosystem Diversity*, *Natural Ecosystem Protection* and *Restoration and Invasive Alien Species*. Biodiversity indicators are only applicable at the feedstock level for farm, forest, and animal fibers.

Freshwater

The *Freshwater* indicators assess the structure of water management plans, adaptive monitoring of water resources (withdrawal and contamination), ambition in prioritizing water quality, and comprehensiveness of water quality strategies. The comprehensiveness of freshwater strategy is assessed in terms of quantity and quality. Freshwater indicators are applicable to all program assessments.

Chemicals & Toxicity

The *Chemicals & Toxicity* impact area evaluates chemical management and monitoring in the context of fiber and material cultivation and processing. In 2023, Textile Exchange worked with ZDHC to review and update these indicators. Chemicals & Toxicity indicators are applicable to all program assessments. For the Version 4.0 update in 2025, *Comprehensiveness of Chemical Inputs Strategy* indicators were adapted to separate farm or feedstock questions from processing questions, to ensure that the indicator (question) is most applicable to the processing stage.

Land Use

The *Land Use* impact area evaluates the management of land in the context of fiber and material cultivation. These indicators assess the structure and scope of land management plans and monitoring, commitments to preventing deforestation and conversion of natural ecosystems for cultivation expansion, as well as the advancement of landscape initiatives. The focus is on minimizing disturbances to ecosystems, promoting ecological and protecting forests. *Land Use Change* indicators are only applicable for farm, forest, and animal fibers feedstock levels.

Soil Health

The *Soil Health* impact area evaluates soil management in the context of fiber and material cultivation. These indicators assess the structure and scope of soil management plans and monitoring, and the practices implemented to improve soil health. For animal fibers it also considers how rangeland is managed to improve biodiversity and the health of the soil. Soil health indicators are only applicable at the feedstock level for farm, forest, and animal fibers, with an additional indicator that applies to animal fibers only.

Forest Management

The *Forest Management* impact area evaluates the structure and scope of forest management plans, monitoring and forest harvesting techniques, ensuring that these activities minimize disturbance to ecosystems and protect forest ecosystems. Forest indicators only apply to the feedstock level for manmade cellulosic fibers (MMCF).

Animals

The *Animals* pillar and impact area evaluate the structure and scope of a management plan for animal welfare against the Five Domains in fiber and material cultivation. Animal fibers must meet a basic level of standards on animal cruelty issues to progress to higher performance levels within each indicator. The indicators assess animal welfare management, nutrition, living environment, health, handling, transport and animal husbandry.

Recognizing species-specific welfare needs, **Animal Health and Animal Husbandry indicators are tailored** for cattle, sheep, and goats to ensure fair assessment. Key distinctions include:

- **Mulesing** prohibition applies **only to sheep**.
- **Slaughterhouse welfare** applies **only to cattle**, as bovine leather is the only hide currently assessed.
- **Disbudding requirements** apply **only to cattle**.

People

The *People* pillar evaluates actions programs take on human rights. The structure aligns with the OECD Due Diligence Guidance. The due diligence process requires that programs identify the highest risks pertaining to their operations. The key actions and outcomes of due diligence are evidence of implementation and progress over time.

The *People* pillar contains the following impact areas: *Policy*, *Identify & Assess*, *Cease, Prevent & Mitigate*, *Track & Communicate*, and *Remediation*. Within each of these impact areas, organizations are guided towards addressing child and forced labor, fair terms of employment, respecting local community and Indigenous Peoples rights, occupational health and safety, discrimination, and freedom of association and collective bargaining – among others.

Policy

This section examines the extent to which Human Rights Due Diligence is prescribed by the program or organization. It focuses on explicit alignment with several key international frameworks, such as the International Bill of Human Rights, the United Nations Guiding Principles on Business and Human Rights, and the ILO Core Conventions.

Identify & Assess

This section examines the extent to which scoping and risk assessments are conducted across the program's scope and operations. The intent of this section is to provide evidence of robust risk assessments designed to identify, prioritize, and address actual and potential human rights risks. The section also examines how stakeholder engagement and the Free, Prior, and Informed Consent of local communities and Indigenous Peoples feeds into assessment processes.

Cease, Prevent & Mitigate

Following the identification and prioritization of risks, this section measures the actions taken to cease activities that contribute or directly cause negative impacts as well as those that contribute to their mitigation and prevention. It measures the extent to which guidance and training for producers, as well as awareness-raising for workers on mitigation processes, are covered by program requirements. This section also highlights additional support and interventions that may be provided at the program level to further cease, prevent & mitigate identified risks, and harm, such as building partnerships to target root causes of risks or enabling financial incentives for shifts to more sustainable production processes.

Track & Communicate

This section focuses on how programs track the results of the actions taken to cease, prevent, and mitigate salient risks identified in the 'Identify & Assess' impact area. This section centers on monitoring protocols and the extent to which the program communicates findings to affected stakeholders. It also highlights where programs can track positive outcomes and how they communicate these results to the public.

Remediation

This section focuses on actions undertaken by the program centered on providing or cooperating to provide meaningful remedy to affected parties, of any identified harms. It measures the comprehensiveness of a program's cooperation towards remediation and outlines criteria on both the producer and program-level grievance mechanisms.

Governance

The *Governance* pillar contains two impact areas, assesses topics including *Theory of Change / Sustainability Strategy*, *Governance*, *Risk Management*, *Stakeholder Engagement*, *Standard Setting Procedures*, *Assurance Oversight*, and *Enforcement Mechanisms*. The indicators and survey questions in this section are designed to be answered at the organization level. Meeting the criteria at this level will qualify as sufficient evidence.

Additionally, this section measures program-level governance through the *Chain of Custody model* question and LCA representativeness and completeness questions. Since different programs within organizations may have distinct chain of custody models and LCAs, this section is scoped at the program level. The LCA questions are also included in this pillar to credit programs that may not yet have LCAs listed in the Higg MSI. The LCA indicator within the *Governance* pillar examines the representativeness of the LCA study presented by the program, focusing on factors such as their chronological, geographical, and technological representativeness. *Governance* indicators apply to all programs.

Use of LCA data

LCA data is incorporated in two ways in the Fiber and Materials Matrix assessment:

- Quantitative environmental impact: These indicators fall within the relevant impact areas including *Climate*, *Freshwater*, and *Chemicals and Toxicity*.
- Quality and completeness

Quantitative environmental impact

As outlined above, LCA impact data is sourced from the Higg MSI across four indicators: *Global Warming Potential*, *Abiotic Resource Depletion*, *Eutrophication Potential*, and *Water Scarcity*. Textile Exchange has mapped programs to datasets included in the Higg MSI.

Going forward, programs without direct material mapping in the MSI will not receive scores for quantitative indicators, given there is no comparable evidence within the Higg MSI. Programs with their own LCA values in the Higg MSI or those with a direct mapping (e.g., an organic cotton program mapped to the organic cotton MSI value) will be eligible to score for the quantitative environmental impact indicators outlined above.

Textile Exchange maps programs in the Fiber and Materials Matrix to values in the Higg MSI based on material and production processes. Textile Exchange recognizes that there is not always LCA data available for various standard systems. In instances where the exact raw material program is not captured in the Higg MSI, the input of organizations in the Fiber and Materials Matrix is welcomed to ensure this mapping is accurate.

The Higg MSI's quantitative environmental impact data points, included in the Fiber and Materials Matrix, are as follows:

Pillar	**Impact Area**	**Higg MSI Environmental Impact Measurements Utilized in the Fiber and Materials Matrix**
Climate	Climate	Global warming potential Abiotic resource depletion, fossil fuels
Nature	Freshwater	Water scarcity
Nature	Chemicals and toxicity	Eutrophication potential

LCA impact values contribute to score calculations in the *Climate*, *Freshwater*, *Chemicals & Toxicity* impact areas. To make them comparable, we've normalized these values and inverted them to fit the tool's scoring structure. This means that the highest LCA value within a material category corresponds to a normalized and inverted score of 0 while lower values, such as a low Abiotic Resource Depletion score, are adjusted to reflect a higher Fiber and Materials Matrix score.

The scores arising from the quantitative Higg MSI indicators are weighted within each impact area. For example, "global warming potential" and "abiotic resource depletion" make up 20% of the total score for *Climate* (10% each).

LCA quality and completeness

The Fiber and Materials Matrix considers both the data itself (e.g., the actual performance of the program or quantitative environmental impact) as well as its quality, completeness and

representativeness. This allows programs to demonstrate their efforts to measure impacts, even if this is not listed in the Higg MSI at this stage. These indicators sit within the *Governance* pillar of the Fiber and Materials Matrix and cover the representativeness (temporal, geographical, technological), completeness, and reliability of the LCA (whether or not the LCA is included in the Higg MSI).

<table>
<tr><th>Category</th><th>Indicators</th></tr>
<tr><td colspan="2">Quantitative environmental impact:

Normalized LCA Score
(Higg MSI scores only)</td></tr>
<tr><td rowspan="3">Representativeness of Dataset
(This applies to all LCAs. They do not need to be in the Higg MSI to be assessed for these aspects.)</td><td>Temporal Representativeness</td></tr>
<tr><td>Geographical Representativeness</td></tr>
<tr><td>Technological Representativeness</td></tr>
<tr><td colspan="2">Completeness of LCA & Reliability
This applies to all LCAs. They do not need to be in the Higg MSI to be assessed for these aspects.</td></tr>
</table>

Temporal Representativeness

This is defined as the extent to which the dataset captures the temporal aspects relevant to the study.

It involves assessing whether the data accurately reflects the time period during which the assessed processes or activities take place, considering factors like technological advancements, changes in production methods, regulatory changes, and market dynamics. An LCA study must consider how quickly these processes evolve to accurately capture their environmental impact.

For instance, the manufacturing of innovative materials is sensitive to the period during which the data was collected, as the manufacturing process is still evolving. An LCA conducted a few years ago on such fiber may no longer reflect current technology, necessitating a new assessment. In contrast, processes like traditional cotton farming might be considered less time-sensitive, especially if the equipment has not been upgraded

recently. The fundamental practices, such as planting, irrigation, and harvesting, have remained relatively stable over the years, allowing an LCA conducted five years ago to still be relevant today.

Geographical Representativeness

This covers how well the data collected, or datasets used, reflect the specific geographical context of the study. Geographically sensitive processes or technologies are those whose environmental impacts vary significantly based on their location. An LCA must account for regional differences to ensure accurate assessment.

For instance, agriculture is a prime example of a geographically sensitive industry. The environmental impact of growing cotton in India, for example, will differ from that in the United States due to climate, water availability, soil conditions, and local farming practices. On the other hand, recycling processes might be less geographically sensitive. For instance, the energy consumption of recycling plastic bottles can be similar in both India and the United States, reflecting standardized technology and processes that minimize regional variation.

Technological Representativeness

This looks at whether a dataset inclusively reflects the range of current technologies and practices, considering the relevance and adaptability of secondary and proxy data to the study's geographical and process-specific context. It ensures data accuracy for the technology under review and the applicability of any adjustments made.

Completeness & Reliability of the LCA

This covers the type of LCA and accuracy of data. For example, partial primary data refers to an LCA study that incorporates both primary data collected directly from sources and secondary data sourced from literature or databases.

For instance, an LCA study for a textile manufacturing process might collect primary data on the energy consumption and waste output directly from a factory in Bangladesh. At the same time, it might use secondary data from previous studies to fill in information on emissions or water consumption.

Structure

The table below provides an overview of the pillars, impact areas, weightings and split of qualitative and quantitative indicators.

Pillar	No. indicators	Impact Area	Impact area weighting	Qualitative indicators	Quantitative Indicators (MSI)	Total indicators
Climate	**10**	Climate	60%	5	2	7
		Resource Use & Waste	40%	3	0	3
Nature	**22**	Biodiversity	17% forest 20% non-forest	4	0	4
		Soil Health	17% forest 20% non-forest	4	0	4
		Forest Management	17%	2	0	2
		Land Use Change	17% forest 20% non-forest	3	0	3
		Chemicals & Toxicity	17% forest 20% non-forest	4	1	5
		Freshwater	17% forest 20% non-forest	3	1	4
People	**25**	Policy	20%	5	0	5
		Identify & Assess	20%	6	0	6
		Cease, Prevent & Mitigate	20%	7	0	7
		Track & Communicate	20%	3	0	3
		Remediation	20%	4	0	4
Animals	**6**	Animals	100%	6	0	6
Governance	**13**	Organizational Governance	50%	8	0	8
		Program Governance – LCA Representativeness and Completeness, Chain of Custody model	50%	5		5

Indicators

Indicator applicability

The detailed indicator file which includes the indicators (represented for each impact area, forming the basis of the Fiber and Materials Matrix assessment, can be found here.

Indicator structure

Each indicator follows a framework, developed with a group of expert stakeholders, aimed at defining a continuum towards best practice. The indicator structure comprises of the following methodological elements to assess performance.

- **Indicator type**: Either multiple choice, partial progressive, or single-select.
- **Level:** Partial progressive indicators are typically arranged in a level structure of 0, 25, 50, 75 and 100pt increments.
- **Score progression:** Details the number of points achieved at each criteria level. The maximum score at each banding level is 25. If there are multiple criteria within an indicator, the maximum number of points is divided equally by the number of criteria.
- **Criteria:** The action and/or practices set out within the indicator that must be met in order to obtain the score.
- **Supporting details:** The survey platform includes additional details that help support the criteria. These can include examples of ways a program can fulfill the criteria when responding to the question.

Indicator type

There are three types of indicators: partial-progressive, multiple-choice, and single select. These were developed for a systematic approach and to allow for greater nuance to be demonstrated in performance.

Partial progressive indicators

The progressive indicators form a set of criteria that build upon each other to attain progressively higher scores. These indicators are designed specifically for criteria with a relationship to one another. The first set of criteria at 25 points is generally noted as a "Foundational" set of requirements that demonstrate responsible actions. Each action thereafter builds toward best-in-class performance for a given environmental or social concept. Users must select and provide evidence for all Level 1 criteria (those that make up the first 25 points for the indicator) in order to freely select and provide evidence for any additional criteria.

Multiple choice indicators

The multiple-choice indicators offer a range of criteria that combine to determine the score. This allows flexibility and includes important criteria without being prescriptive about which

criteria must be met. The multiple-choice indicator structure is designed for indicators that have individual practices, procedures or outcomes that, when combined, reflect best-in-class performance for a given environmental or social concept.

Single-select indicators

Where only one selection is necessary or possible, indicators will be denoted as "single-select."

Scoring

The Fiber and Materials Matrix comprises of pillars, impact areas, and indicators, all of which can have a score assigned. Each indicator has its own scoring criteria, with the potential of 100 points per indicator (question).

Each indicator is then weighted within its impact area, with one or more impact areas building to make the pillar score. Pillars are not weighed against each other—each pillar has its own score. There is no overall Fiber and Materials Matrix score, because some indicators, impact areas, and pillars are not relevant or scored for some materials.

Weighting

Impact area and pillar scores are calculated based on set weightings. See the 'Overall Structure' tab in the 2025 criteria document for more information on indicator and impact area weightings.

Higher weighting has been given to "management" indicators within each impact area. These indicators assess the management plan, strategy, and monitoring around a given impact area. This methodological decision was made as the quality of the management plan can influence the practices and procedures it outlines, which is an important factor in achieving positive outcomes. As a general principle, management indicators count for three times as much as the other indicators in an impact area.

Score calculation

There are three levels of scoring to be calculated: *indicator*, *impact area*, and *pillar* scores.

- Indicator scores are determined by program performance.
- Indicator scores are multiplied by a weighting factor before being added together to produce impact area scores (see example below).
- Pillar scores are calculated by weighting the impact area scores. See impact area weightings in the 'Structure' table here.

This example table shows how scores are calculated for the *Climate* and *Resource Use* impact areas, as well as the broader *Climate* pillar.

Indicators	**Cotton and fiber crops**	**Animal fibers (wool and leather)**	**Forest production**	**Manufacturing**	**Primary processing**	**Recycled**
Climate						
Emissions Monitoring and Targets	0.30	0.30	0.30	0.40	0.40	0.40
Climate Mitigation	0.10	0.10	0.10	0.15	0.15	0.15
Climate Adaptation	0.10	0.10	0.10	0.15	0.15	0.15
Protection of High Carbon Stocks	0.20	0.20	0.20	N/A	N/A	N/A
Evidence of Soil Carbon Sequestration	0.10	0.10	0.10	N/A	N/A	N/A
(MSI) Abiotic Resource Depletion	0.10	0.10	0.10	0.15	0.15	0.15
(MSI) Global Warming Potential	0.10	0.10	0.10	0.15	0.15	0.15
Climate (Impact area) Score:	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Resource Use and Waste						
Resource Use and Waste Management	1.00	1.00	1.00	1.00	1.00	0.50
Type of waste used as a feedstock	N/A	N/A	N/A	N/A	N/A	0.25
Amount of waste used as a feedstock	N/A	N/A	N/A	N/A	N/A	0.25
Resource Use and Waste Score:	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Climate Pillar Score:	(Climate score*60%) + (Resource Use and Waste score*40%)					

Assessment

Here you can find the detailed indicator file which forms the basis of the Fiber and Materials Matrix assessment. Each tab comprises an impact area and details the indicators and criteria assessed. For more information on in-survey instructions, please refer to the Fiber and Materials Matrix Survey Guide.

Mandatory v Additional criteria assessments

To accurately reflect real-world practices, procedures, and outcomes of a standards system, improvement program or branded fiber, when completing the self-assessment, organizations must complete the survey with the only the **mandatory practices** from official program documentation. This documentation, as detailed in the 'Evidence Requirements' section, must be **publicly available** to be eligible.

Once an assessment based on mandatory compliance is complete, programs have the option to **expand the evaluation** by incorporating **recommended or continuous improvement criteria**.

While these criteria may not always be fully implemented in practice, they represent aspirational goals outlined in program documentation. This approach enables both **baseline compliance** and the **potential impact** of more ambitious, yet non-mandatory, program elements.

Survey responses can be saved for use in subsequent assessments (for another program or material type). You can use a previous assessment to prefill the responses for another program, for example, if you are completing the FMM survey based on the mandatory criteria **(baseline assessment – mandatory practices),** you can then create another assessment (by using the prefill function) to show the additional aspects of a program that are not mandatory **(baseline assessment of a program + recommended practices)**. The intention of this approach is to be able to show users of the tool what can be guaranteed when a program is in place, and the difference in scores if all recommended practices are in place.

Additional, recommended or continuous improvement surveys are denoted on the website with the 'ADD' tag shown below:

Paired program assessments

Certain programs require or build upon other certifications or programs. This can occur within the same Tier 4 level or across feedstock and primary processing stages. As part of the survey, programs and organizations indicated how these relationships apply to them. For example:

Program 1	Program 2	Applicability of impact areas and survey questions
Farm: Organic Cotton Accelerator	Farm: India NPOP (Organic)	The tool assigns the relevant impact areas to the feedstock or processing, in some cases the impact areas and questions will be applicable to both supply chain tiers.

Where this is the case, feedstock and processing practices are assessed in isolation against the applicable indicators. The scores are then combined to give an overall score for the combination of programs displayed in the Fiber and Materials Matrix.

The Fiber and Materials Matrix is intended to be used to understand the essential context related to programs within the same fiber category, using indicators organized by impact area. While many programs have unique strengths, better results can be achieved when programs (or pairings of programs, for example, the consideration of the feedstock and manufacturing of a fiber) aim to excel across all impact areas.

Paired results are displayed in rows marked by the "View Individual Programs" button (see screenshot below for reference). The top or overall row is calculated by taking the higher score between the combination of programs to show how impacts are improved and mitigated through the pairing. The individual rows, on the other hand, show the details contained within the documentation of each specific program and how that program contributes to the overall score.

Data source validity for scoring justification

For the qualitative indicators, programs must provide publicly available documentation (evidence) to support the response to each question in the self-assessment survey. If no publicly available evidence is provided, a program will not earn points for the question (indicator). This methodological decision has been made to promote transparency and to encourage programs to publish comparable information about their program to drive the industry towards a shared positive goal.

Evidence requirements

Evidence must be provided for each question and will be reviewed by a third-party to ensure the criteria are met. Evidence can be uploaded to the platform and must meet the following requirements.

- **Be public:** Evidence must be publicly available on the program or organization's website or elsewhere in the public domain. Only web links will be accepted as evidence.
- **Be relevant:** Evidence must clearly come from the assessed organization or program. Unlabeled evidence (e.g. no name or logo) will not be accepted.
- **Be credible:** Evidence must be a formal, complete document. Evidence such as screenshots where there is no indication of how it fits into the wider program documents will not be accepted.
- **Be current:** The Fiber and Materials Matrix assesses current practices. Future commitments to revising practices are not acceptable. Higher points will not be awarded if a program intends to change its criteria to meet a higher performance level.

Some examples of commonly used documents that could be uploaded as evidence include but are not limited to:

- Principles and criteria documents
- Policies and standard operating procedures (SOPs)
- Program manuals
- Theory of change documentation
- Annual reports
- Impact reports
- Assurance and verification procedures

This is a non-exhaustive list that may be relevant as a starting point. Other types of evidence can be submitted provided that they meet the requirements outlined above.

We recommend linking the correct document to specific indicators (answers) and specifying details such as page number or paragraph. This will ensure evidence is provided correctly and ease the review process.

Annex: Stakeholder engagement

Version 1.0

Following the Textile Exchange conference in Vancouver, Canada in 2019, a steering committee was formed to guide the initial development of the Fiber and Materials Matrix. This steering committee provided input on the identification of suitable datasets for the Fiber and Materials Matrix, identifying appropriate indicators and their groupings as well as providing guidance on the launch of the tool. The steering committee was composed of members of the below organizations and was active throughout 2021:

- Gap Inc.
- Marks & Spencer
- Outerknown
- Cascale
- Williams-Sonoma Inc.
- WWF (Worldwide Fund for Nature)

A public consultation was also held in December 2020 to receive feedback from interested parties. User interface design feedback was provided by both the steering committee and brand and retailers such as G-Star RAW and Zalando. Additional feedback was collected from fiber standard systems in June 2021 and October 2021.

Version 1.0 public consultation feedback

The summary below has been prepared to provide an overview of the comments received during the Public Consultation on the Preferred Fiber and Material Matrix.

Open feedback period

December 17, 2020, to January 20, 2021

Participation

We received comments from 15 organizations during the Public Stakeholder feedback period. Stakeholders from North America, Europe, and Asia participated.

- Material producers: 6 responses
- Civil society: 5 responses
- Brands/retailers: 4 responses
- Supply chain: 3 responses

Feedback received during the public consultation

The comments received during the Public Stakeholder Consultation are summarized below in the following topics: *scoring and methodology*, *indicators*, *materials and material categories*, *governance and stakeholder representation*, and *communication guidelines*.

Scoring and methodology

- Add clarity to which indicators have been included or not.
- Avoid duplication of indicator areas. Comment on the limitation of LCAs: not always independently reviewed, not representative of production methods or regions, out-of-date research.
- Land management and biodiversity should be integrated.
- Should layer in standard system robustness with the indicators where applicable.
- Should aim to be transparent in the data sources for each indicator.
- Will independent reviews be included? How transparent will scoring results be made?

Scope of impact areas

- Consider water consumption.
- Include energy use.
- Suggestion to include the use of carbon credits or offsets.
- Suggestion to include the relationship between animal welfare and biodiversity.
- Include results of Canopy audits.
- Include ZDHC MMCF tools.
- Microplastic leakage should be included.
- Should include biogenic carbon.
- Need more in-depth biodiversity indicators.
- Missing a slaughter component?
- Reference to using the Delta framework.

Scope of materials and material categories

- Include pre-and post-consumer feedstocks (differentiate between bottle-to-fiber and fiber-to-fiber recycling).
- Suggestion to add branded materials to provide more specificity.
- Suggestion to include elastane.
- Suggestion to include down.
- Consider adding hemp.
- Should include leather.
- Need a way to include materials that may not fall into a known category, such as Cupro.
- Include materials with tracer technologies.

Governance and stakeholder representation

- Should be transparent who is included in decision-making groups.
- The decision by consensus is ambitious.
- Need more information about how to participate.

Communication guidelines

- Disappointed to not be able to communicate on the product.
- Need clear guidance on how to communicate usage of the FMM Version 2.0 Expert Consultation for members-only launch.

Version 2.0

Expert stakeholder feedback period

In September 2022, we received feedback from several organizations and experts which informed the development of the methodology. Organizations and individuals included:

- Apparel Impact, Tamara Wulf
- Common Threads Consulting, Sarah Kelley
- Conservation International, Franklin Holley and Margot Wood
- Hohenstein, Ben Mead
- Independent Consultant, Pavithra Ramani
- Cascale, Joël Mertens
- The Organic Center, Amber Sciligo
- The Biodiversity Consultancy, Peter Burston
- World Resources Institute, Matt Ramlow
- WWF-Germany, Rebekah Church
- 2050, Stefanie Maurice

The below feedback, listed by impact area, details what has been considered and incorporated.

Scoring and methodology

- Introduce the indicator templates/structure earlier in the methodology and expand upon the details with specific examples.
- Reconsider heading in indicator structures/templates.
- Consider demonstrated values under 75% to account for a wider range.
- Clarification on the measurements of units.
- Consider five "banding" levels rather than four.
- Increase weight of *Climate* impact area.

Scope of impact areas

Climate

- Ordering of climate indicators.
- Restructure *Climate Resilience* and reframe to *Climate Adaptation* and *Climate Mitigation* and associated criteria.
- Increase level of progression across *Climate Resilience*.
- Include quantitative metrics for *Evidence of Carbon Sequestration*
- Additional validation on *Protection Peat Soils*
- Adjust language on *Protection of Below-Ground Carbon Stocks and Peat Soils*

Water

- Reduced overlap across water and chemistry.
- Review progression of level in impacts of oil and gas extraction.
- Inclusion of Indigenous groups.

- Separate water monitoring into contamination and withdrawal.
- Include point source pollution from fertilizer into criteria.
- Removal of monitoring mention from management.
- Level of execution reviewed.
- Inclusion of monitoring effluents.

Chemistry

- Review of chemical restrictions list.
- Inclusion of additional chemical management practices and procedures.
- Inclusion of sludge and air pollution.
- Split of chemical management procedures and practices.

Soil

- Specific criteria to distinguish against the crop practices.
- Inclusion of crop residues.
- Alignment across monitoring and management criteria.
- Language use across the of six dimensions.
- Additional details on Indigenous knowledge.
- PSR framework across banding levels.

Land & Forestry

- Removal of conversion from *Land Management*.
- Inclusion of positive impacts into *Ambitiousness of Forest Strategy*.
- Increase general ambition in *Forest Management*
- Cut-off dates reviewed for *Deforestation*
- Inclusion of Indigenous people across not only deforestation but all indicators.
- Inclusion of smallholders throughout *Land Management*
- Refinement on language across *Deforestation*, promote restoration rather than gross deforestation and alignment to Accountability Framework.
- Revisions to *Forest Harvesting* description.
- Revisions to *Land Management Planning* criteria
- Clarification and additional criteria added *Land Management Planning* and *Forest Management*.
- More precise and clearer criteria across *Land & Forestry*.
- Disbursement of requirements across bandings in *Ambitiousness of Forest Strategy*.
- Inclusion of a combined HCV-HCSA approach

Biodiversity

- Indicator name changes
- Restructure of *Biodiversity Management*
- Review of progression of levels for *Biodiversity Management*
- *Mitigation* indicator removed and reallocated criteria.
- Restructure of *Biodiversity Monitoring*.
- Inclusion of both plant and animal invasive species
- Inclusion of enhancing and restoration of habitats

- Additional focus on local native species
- Consideration to the surrounding areas of production sites.
- Inclusion of hunting, fishing, or gathering of threatened and endangered plant and animal species is prohibited.

Animal Welfare

- Language use in relation to the Five Domains.

Version 3.0

Human rights criteria stakeholder engagement

Expert stakeholder interviews were held with the following organizations and individuals:

- Fairtrade
- Better Cotton
- Forest Stewardship Council
- ISEAL Alliance
- World Benchmarking Alliance
- Transformers Foundation
- H&M
- Jessica Grilo

Human rights public consultation

A public consultation was held in March 2023 to gather feedback on the draft human rights criteria for the Fiber and Materials Matrix. The following organizations and individuals responded to the open consultation:

- Fairtrade USA
- Cotton Connect
- H&M
- BSR
- Jessica Grillo
- Inditex
- Chanel
- Lululemon
- Adidas
- Fairtrade
- Better Cotton
- Transformers Foundation

Feedback was collated and grouped according to the relevant human rights indicator, criterion or theme. The feedback received supported Textile Exchange to:

- Refine and improve the focus of each set of indicator criteria.
- Create a new indicator specifically focused on non-discrimination.

- Strengthen connections and references to international human rights instruments.
- Improve the diagnostic value of the tool and improve the tool's relevance to the factors that matter most for a company's human rights due diligence strategy.

The team discussed with Ergon, a consultancy in business and human rights, and agreed how to balance instances where feedback on common areas reflected multiple or divergent perspectives. Implemented recommendations were those which:

- Improved or refined the understanding of human rights implementation quality at each stage of maturity.
- Did not give rise to internal consistency issues within the tool.
- Aligned most closely with the international normative framework on human rights.
- Were measurable across different fiber production contexts, in a way that delivers reliable results.
- Clarified the level of ambition the tool should set (in light of our understanding of the capabilities of standards systems).

Initiative Integrity criteria stakeholder engagement

The following organizations were interviewed to inform the development of the initiative integrity criteria.

- Textile Exchange
- WWF
- World Benchmarking Alliance

Chemistry criteria stakeholder engagement

Zero Discharge of Hazardous Chemicals (ZDHC) were engaged to review and help update the indicators relating to chemical management.

Version 4.0

From April to June of 2024, Textile Exchange held an open consultation on the updated Fiber and Materials Matrix survey framework. 33 organizations provided feedback in at least one area:

Brands

- Williams Sonoma
- Citizens of Humanity
- H&M
- Bestseller
- Artistic Milliners
- Vuori
- Lululemon
- Ralph Lauren
- StanleyStella

- Aritzia

Cotton/Crops

- US Cotton Trust Protocol
- Organic Cotton Accelerator
- Materra
- Leading Harvest
- Chetna Organic
- Sheffer
- Bergman Rivera
- Good Earth Cotton
- Cotton Connect
- BASF
- EU Flax Alliance

MMCF

- Lenzing
- Eastman

Synthetics

- Lycra
- Aquafil
- BASF

Animal Fibers

- Four Paws
- Cape Wools
- Sustainable Fibre Alliance
- Responsible Nomads

Specialists

- ZDHC
- Ergon Associates
- Science Based Targets Network: Science-based targets for nature team.

There was a trend in the feedback provided, across all organization types, toward five key themes:

- Highlighting indicators or criteria that would not be applicable for an organization's program/fiber.
- Simplifying the criteria and scoring.
- Ensuring alignment with key frameworks and perspectives across impact areas.
- Outlining specific changes to make to indicators and impact areas.
- Identifying areas in the survey that need more clarity.

Actions taken based on feedback provided

Impact area changes

- Included mass balance as a starting point to verifying recycled content (*Resource Use and Waste*).
- Updated progression of *Forest Harvesting* to align with *No Gross Deforestation/Conversion*.
- Identified baseline *Animal Welfare* practices.
- Added *Animal Husbandry* indicator.
- Updated *Soil Health Practices* to *Beneficial Soil Principles* to reflect a more outcomes-based approach.

Applicability

Revised how impact areas and indicators were applied to better suit the activities and processes of facilities and farms and vice-versa due to technology or land-based production.

Simplification

The main areas of simplification included the management indicators, the *People* pillar, and the *Resource Use and Waste* indicator.

Alignment

Confirmation of alignment with key perspectives/frameworks such as the science-based targets for nature land targets, ZDHC Manmade Cellulosic Guidelines, International Labor Organization Conventions, and Due Diligence processes.

Clarity

Provided extra details, guidance, and examples of the survey indicators to assist the self-assessment process. Increased transparency around the scoring. Developed additional supporting documents designed to aid the transition to a self-assessment including a Survey Guide and further definitions in the Textile Exchange Glossary.

During November 2024- January 2025, a pilot was undertaken to test the methodology and the functionality of the survey platform.

Trends highlighted in pilot feedback

Stakeholder feedback from the pilot identified key areas for improvement, including:

- **Increased guidance and definitions:** Need for clearer definitions and additional guidance to improve assessment clarity and efficiency.
- **Overlap in methodology:** Identified redundant aspects within the methodology.
- Progressive indicator logic: Instances where progressive indicators may not follow a consistent logic.
- **Program recognition challenges:** Certain programs may not be fully recognized due to applicability and framing (e.g., organic and smallholder farm-centered programs).

- **Allowing non-publicly available information:** Requests for more flexibility in accepted documentation.
- **System functionality improvements:** Suggestions for technical enhancements to simplify the survey process.

Actions taken

To address this feedback, the following updates have been made:

1. Enhanced guidance and definitions

- Additional definitions and guidance have been incorporated throughout the tool to improve ease of use and assessment efficiency.

Examples: Definitions of "Theory of Change" and increased guidance for farm and processing stage programs.

2. Adapted progressive indicator logic

- Response types for progressive questions have been updated to allow users to select applicable criteria outside of rigid progressive structures.
- Users can now move more freely through “progressive” indicators after confirming Level 1 (25 point) criteria.

3. Organic baseline assessment

- An organic baseline assessment has been introduced to allow programs that require organic content as part of their program, to build upon when they conduct the assessment of their own program.
- Programs can add their program’s own requirements to this organic baseline assessment.

4. Improved Chemicals & Toxicity criteria

Adjustments have been made to enhance farm-level and organic program applicability:

- Terminology for chemicals, fertilizers, and pesticides has been reframed as **"inputs"** to better align with farm-level considerations.
- *Comprehensiveness of Chemical Strategy* has been split into two indicators: one for processing and one for farm-level production.
- New criteria on synthetic chemical and input restrictions have been introduced, providing a clearer pathway for organic programs to demonstrate strengths.
- Weighting adjustments reflect the ambition of synthetic input restrictions.

5. Refined *Freshwater* Indicators

Updates ensure better recognition of farm-level water management:

- Rainfed production systems are now explicitly recognized and will not be assessed under *Comprehensiveness of Water Consumption*.

- Language in *Comprehensiveness of Water Quality* has been refined to better capture how different water sources may be affected by fiber and material production.

6. Transparency in accepted information

- The Fiber and Materials Matrix will continue to accept only publicly available information to uphold transparency.
- No proprietary or confidential information will be requested or displayed. However, anonymous and aggregated data may be accepted.

7. System functionality enhancements

- Survey responses can now be downloaded and saved as PDFs for internal sharing, discussion, and reference.
- A live summary of scores at the impact area will be provided for user reference.