Preferred Fiber and Material Matrix

Draft Methodology Summary for Public Consultation

Version 1.0

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Introduction

About the Consultation Summary

This guide is intended to provide an overview of the Textile Exchange's Preferred Fiber and Material (PFM) Matrix methodology, summarizing the data and assessment sources, and a description of all indicators and sub-indicators driving this assessment. This is intended to inform stakeholders for their feedback and contribution to the final version of the methodology.

What follows is a discussion on the background of this assessment, the scope of the assessment, and an overview of input data and materials which will be included in the assessment.

About Preferred Fibers and Materials

Textile Exchange defines a preferred fiber or material as one which is environmentally and/or socially progressive, the use of which results in positive benefits in comparison to conventional production.

In the assessment of materials as preferred, there are five core principles which guide the analysis:

1. Sustainability criteria developed through a formalized multi-stakeholder process.
2. A recognized industry standard which confirms its status as preferred.
3. A robust chain of custody system to track or trace the material through the supply chain and back to its origin.
4. Objectively and scientifically tested or verified as having greater sustainability attributes, such as through a peer reviewed Life Cycle Assessment (LCA).
5. Employing a holistic approach that spans social, environmental, and animal welfare.

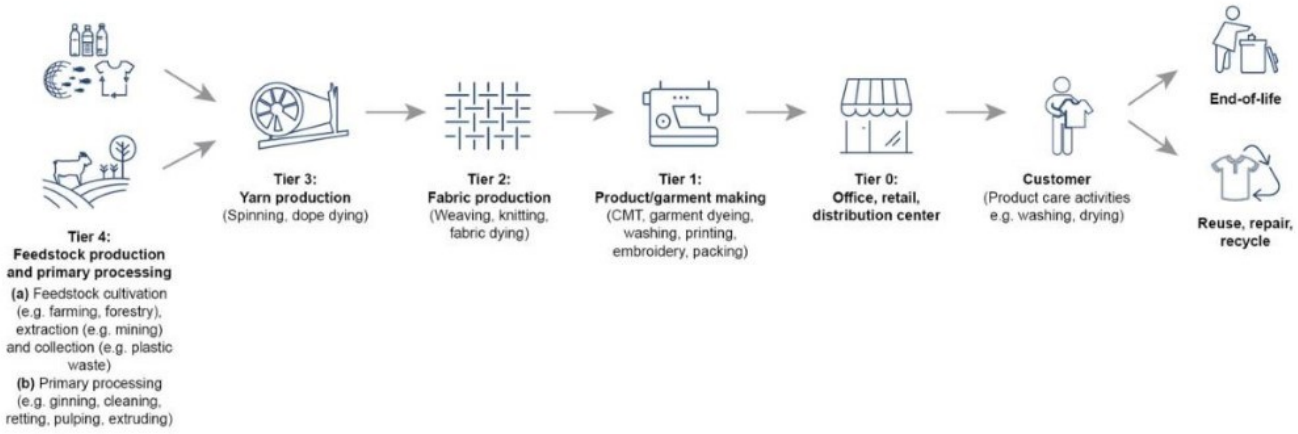
The above core principles were used in the process of identifying input data for the PFM Matrix assessment methodology, as well as which indicators to include in the analysis.

The outcome of the PFM Matrix assessment methodology is identifying "preferred" materials on a spectrum from business as usual to best in class regenerative, restorative, and circular. Baselining with materials which align to business as usual (typically conventional materials), the matrix identifies stages of improvement from minimizing harmful impacts, to maximizing positive effects, and ultimately the pinnacle of regenerative and circular production systems. Sourcing these preferred materials will allow companies to take strides towards meeting the Sustainable Development Goals, as well as on achieving the Textile Exchange 2030 Climate + Goals applicable to the entire textiles industry.

General Information

Scope of the Preferred Fiber & Material Matrix

The scope of the Textile Exchange Preferred Fiber and Material Matrix (PFM Matrix) is primarily focused on raw material extraction and primary processing, commonly referred to “Tier 4” of textile supply chains. For some indicators, some initial steps of yarn production was included in scope as it was not possible to decouple this from other Tier 4 related processing – if this has been included in scope, it will be included for all materials within that material category being compared. This will be explicitly noted. Please see below a supply chain graph indicating the scope of ‘Tier 4’ as outlined in the Biodiversity Benchmark Companion Guide.



Also, the aim of the PFM Matrix is to provide the industry with an easy to understand resource on the relative sustainability of similar materials which they may consider for sourcing (e.g. conventional cotton vs. Better Cotton Initiative ‘Better Cotton’ vs. Organic cotton). As such, not all indicators will apply to all materials, and comparing different material categories is not advisable due to potentially different indicators (e.g. cotton vs. leather). We also do not advise comparison of materials between categories as the scoring method is not normalized for this use and could lead to misleading results.

In addition, Textile Exchange has considered many indicator categories which were recommended by stakeholders, however, through stakeholder consultation we have arrived on these indicators in Phase 1 of the PFM Matrix. Certain indicators have been decided to be out of scope of the PFM Matrix as some will depend on the brand’s commercial considerations such as price premium, availability, and quality. Other indicators are impact areas which we would like to include, however the research is not yet available for decision-making between materials based upon that impact area (e.g. microfibers). We will continually review available data, and welcome any industry feedback in relation to potential studies to use as data sources for additional indicators in the future.

Goals of the PFM Matrix

The goal of the PFM Matrix is to advance the industry's level of adoption of Preferred Fibers and Materials. Textile Exchange will offer the results of the PFM Matrix, organized by fiber category as a tool for the industry in informing fiber selection decisions. The PFM Matrix will also provide fiber producers with insights and credibility in how they are progressing on their sustainability, driving a direction of travel towards positive Climate+ action and the Sustainable Development Goals.

Data and Scoring Sources

Textile Exchange has combined multiple data sources and scoring structures to develop Phase 1 of the Preferred Fiber and Material Matrix Methodology. We will continue to evaluate available data, and will look to review and incorporate other potential data sources for future updates of the PFM Matrix.

Below, a summary of each source:

Gap Inc. Preferred Fiber Toolkit

The Gap Inc. Preferred Fiber Toolkit (PFT) includes a rigorous evaluation of raw material choices building upon quantitative data inputs from the Sustainable Apparel Coalition's (SAC) Higg Materials Sustainability Index (Higg MSI). It also incorporates other indicators such as biodiversity and land-use change, and waste-elimination guidance for contributing to the circular economy. Human rights, labor concerns, and animal welfare within raw material sourcing are also considered, to layer in additional nuance beyond environmental data.

"The development of the PFT has been crucial to Gap Inc's ability to set goals and develop internal awareness on how to design better products and set fiber strategies," said Diana Rosenberg, Product Sustainability Manager, Gap Inc. "A rigorous and data-driven approach allows for greater confidence in our sustainable materials sourcing decisions, while creating an incentive to select more planet-friendly raw materials."

Textile Exchange received all PFT files in September 2020, and has reviewed all previous indicators. Certain indicators have been removed (e.g. the commercial indicators as mentioned above) and will not be included in the PFM Matrix assessment methodology, however a detailed breakdown of all remaining indicators is presented in the indicator descriptions below.

Sustainable Apparel Coalition (SAC) – Higg Materials Sustainability Index (Higg MSI)

The Higg Materials Sustainability Index (Higg MSI) is a cradle-to-gate material assessment tool using a life cycle assessment (LCA) approach to evaluate the environmental impacts of materials used in the apparel, footwear, and home textile industries. The Higg MSI quantifies the environmental impacts of material production from the extraction or production of raw materials through manufacture, finishing, and preparation for assembly. Users can adjust material inputs and production processes to analyze factors affecting environmental impact.

The Higg MSI core environmental impact measurement is focused on:

- Global warming

- Eutrophication
- Water scarcity
- Abiotic resource depletion, fossil fuels
- Chemistry

The Higg MSI's latest update includes reporting of impacts on biogenic carbon content and water consumption; however, these data sources will not be incorporated in the PFM Matrix assessment methodology. The focus of the biogenic carbon content values is in relation to the carbon which is stored in the material. As one of the core goals of the PFM Matrix is to differentiate between materials in the same material category (e.g. conventional cotton, Better Cotton Initiative, and organic cotton), adding this indicator would not provide any additional nuance as it will report the same value. In the future, Textile Exchange will seek data more focused on soil-specific measurement. Textile Exchange is supportive of SAC allowing Higg MSI users access to underlying water consumption data, especially in context to global water scarcity; however, this datapoint is only available at finished fabric-level. As such, it is not a suitable fit for the PFM Matrix, and therefore Textile Exchange will rely on Water Scarcity data from MSI for initial assessments.

Assessment of Program Criteria and Goverance

Textile Exchange will partner with an industry organization to include a set of indicators and resulting assessments to compare voluntary standards and certification schemes. This assessment asks questions and has a scoring methodology to assess the strategic, governance, structural, social and environmental strengths and weaknesses of standards and certification schemes. It is a desk-based exercise that is based on criteria and processes defined in a scheme's documentation. As such the assessments do not evaluate how an initiative's requirements are implemented in practice nor does it assure or quantify outcomes or impacts.

More details will be shared about this indicator source in due course.

Fashion Positive – Circular Materials Guideline

Fashion Positive launched their Circular Materials Guidelines in September 2020, evaluating how elements of various industry standards can come together to present a complete picture on how to further and incentivize the circular economy for fashion. Fashion Positive has identified four attributes of circular materials which form the foundation of the guidelines:

1. Material is produced in a safer way, with respect to all living systems.
    a. Material choices should consider how they will fit within a circular economy, including how they will be used, and cycled through either the biological or technical cycle after use, and reduces impacts to energy, water, chemistry and labor rights.
2. Content comes from recycled and reclaimed materials
    a. To be considered "circular," materials must have some content from existing recycled sources, such as pre-consumer or post-consumer textile waste and packaging, and/or reclaimed materials such as industrial byproducts (e.g. food crops waste).
3. Garments can theoretically be recycled back into the system.
    a. Material choices should align with the available options for recycling after use.
4. Material is actually recycled back into the system (Future)

a. Brands and designers can track material throughout the system and prove it is getting back into the system through tools such as digital ID.

Textile Exchange is supportive of the Circular Materials Guidelines, and has reviewed all indicators and identified those which align to the scope of the PFM Matrix assessment methodology. Some indicators have not been included, largely because they are in relation to blending of materials, relevant to Tiers 1-3 of the supply chain, as well as more theoretical indicators which would require additional in-depth research (e.g. scale of theoretical technological recyclability for each unique material).

Materials Assessed

The decision on materials to be assessed is a combination of programs identified as part of the Corporate Fiber and Material Benchmark as well as availability of data to assess materials. A draft list of materials to be assessed in Phase 1 is presented below, however the final list will be dependent upon information availability and will be confirmed in due course:

Phase 1

Cotton	Organic Fair Trade Cotton
	Organic Cotton
	Fair Trade
	Cotton made in Africa (CmiA)
	Better Cotton Initiative
	Responsible Brazilian Cotton (ABR)
	myBMP
	e3 Cotton
	Recycled Cotton
Other Plant Fibers	Conventional Flax
	Organic Flax
Synthetic Fibers	Conventional Polyester
	Recycled Polyester
	Partially Bio-based PET
	Partially Bio-based PTT
	Conventional Nylon
	Recycled Nylon
	Bio-based Nylon
Manmade Cellulosics	Conventional Lyocell
	Tencel Lyocell (FSC / PEFC)
	Tencel Lyocell (FSC)
	Conventional Modal
	Tencel Modal (FSC / PEFC)
	Conventional Viscose
	Bamboo Viscose
	Tencel Viscose (FSC / PEFC)
	Lenzing Ecovero
	Conventional Acetate
	Eastman Naia (FSC / PEFC)
	Recycled Cellulose

Wool	Conventional Wool
	Organic Wool
	Recycled Wool
	Responsible Wool Standard

Future Phases

Not all materials which are currently listed in the Preferred Materials list of the Corporate Fibers and Materials Benchmark, as well as other Textile Exchange programs such as the 2025 Sustainable Cotton Challenge, are able to be included in Phase 1 of the PFM Matrix. This is due to either a lack of quantitative data for a material, that these materials were not assessed in the Gap Inc. tool and/or there not being relevant analysis of the strength of the standard or initiative. We will explore adding additional materials and assessments for Phase 2, and welcome stakeholder feedback on desired materials to include in the next phase of the PFM Matrix.

Indicators

Each material will be assessed against a group of sustainability indicators as well as program robustness indicators. The following section provides a description of indicators which will be used as part of the PFM Matrix.

It is important to note that not every material will be assessed against every indicator. Some indicators do not apply to the material, or material category, due to the nature of production (e.g. animal-derived materials will be assessed on animal welfare while other non-animal derived materials will not). Once assessment is complete, the PFM Matrix will be supplemented with a detailed methodology document which will indicate which indicators were used to assess each material.

Indicator Overview – Preferred Definitions Methodology

Theme	**Elements** (if applicable)	**Indicator**	**The Higg MSI**	**Gap - Qualitative**	**Textile Exchange**	**Fashion Positive - Circular Materials Guidelines**	**Program Criteria and Governance (3rd party)**
Climate and GHG		Global warming potential	■				
		Global warming potential impact data availability			■		
		Abiotic resource depletion, fossil fuels	■				
		Abiotic resource depletion, fossil fuels impact data availability			■		
		Climate impact mitigation					■
Water Use		Water scarcity	■				
		Water impact data availability			■		
		Efficient use of surface or groundwater		■			
		Efficient use of rainwater		■			
		Recycled and reuse of water				■	
		Water use risk mitigation					■
Water Pollution		Eutrophication	■				
		Eutrophication impact data availability			■		
		Chemical discharge		■			
		Wastewater quality				■	
		Water pollution risk mitigation					■
Chemicals and Toxicity		Chemistry (MSI)	■				
		Control of chemical use		■			
		Managing input chemistry				■	
		Transparency into formulations				■	

Theme	Elements (if applicable)	Indicator	The Higg MSI	Gap - Qualitative	Textile Exchange	Fashion Positive - Circular Materials Guidelines	Program Criteria and Governance (3rd party)
		Chemicals and toxicity mitigation					
Soil Health		Production practices for planted crop feedstock					
		Production practices for grazing-based materials					
		Evidence of carbon sequestration					
		Soil risk mitigation					
Land Management		Land management & certification					
		Forest risk for virgin feedstock from manmade cellulosics					
		Land use change and deforestation mitigation					
Biodiversity		General biodiversity					
		Species biodiversity					
		Terrestrial biodiversity					
		Freshwater biodiversity					
Human Rights	Health & Safety	Chemical handling health & safety					
		Safe & hygienic working conditions					
	Labor Rights	Forced labor					
		Child labor					
		No discrimination or inhumane treatment					
		Freedom of association and collective bargaining					
		Civil liberties & social protections					
		Gender equality and opportunities					
	Income Potential	Farmer income potential					
		Wages and working hours					
	Development & Community	Legal and land rights of communities and Free Prior and Informed Consent (FPIC)					
		Food security					
		Drinking water and sanitation					
		Development and community impact					
Animal Welfare	Animal Welfare	Nutrition					
		Living environment					
		Animal health					
		Handling and transport					
		Management, plans, and procedures					
	Faming Systems	Intensity of farming system					

Climate and Greenhouse Gases (GHG)

Theme	Indicator	Type
Climate and GHG	Global warming potential	Quantitative
	Abiotic resource depletion, fossil fuels	Quantitative
	Global warming impact data availability	Qualitative
	Abiotic resource depletion fossil fuels impact data availability	Qualitative
	Climate impact mitigation	Qualitative

The Climate and GHG theme is composed of five indicators – two quantitative indicators and three qualitative indicators.

The two quantitative indicators of global warming potential and abiotic resource depletion, fossil fuels are derived from the Sustainable Apparel Coalition The Higg MSI data. For each material category, the "conventional" baseline is established, and scoring is normalized between this baseline and the lowest impact within that material category (e.g. conventional cotton is the baseline for cotton and the lowest impact within that material category is recycled cotton. All other cotton programs will be scored in relation to the range between those two scores). For programs without Higg MSI-specific data, a proxy may be developed if there is sufficient evidence to justify the proxy (e.g. Organic Fairtrade cotton will use Organic cotton quantitative impact data as a proxy). Where there is no justifiable proxy, quantitative impact data will be defaulted to the conventional baseline.

The first two qualitative indicators relate to impact data availability – global warming impact data availability and abiotic resource depletion, fossil fuels impact data availability. These indicators have been developed by Textile Exchange to complement the quantitative impact indicators. Textile Exchange recognizes that new and innovative materials are continuously being developed, and that it may not be practical for these materials to be immediately incorporated into industry decision-making tools, like the Higg MSI or other industry tools such as Quantis World Apparel & Footwear Life Cycle Assessment Database (WALDB). We strongly support the collection of quantitative impact data and that this data is critically reviewed by a third and non-interested party, and therefore hope to encourage new data entries for fibers and materials to pursue this path for quantitative impact data availability. Scoring for these indicators will follow specific tiers of scoring, with an example presented below:

Scoring Range for impact data availability indicators	No measurement of GHG impact
	Anecdotal feedback or qualitative evidence available (e.g. informal case studies or claims)
	Quantitative evidence available
	Quantitative evidence available, third and non-interested party reviewed.
	Quantitative evidence available, third-party reviewed, assessed and accepted into a broader industry tool (e.g. Higg MSI, Quantis WALDB, etc.)

The last qualitative indicator relates to requirements of the program being assessed in relation to climate impact mitigation. This indicator has a number of sub-indicators, with true or false questions on whether there are, for example, requirements to estimate carbon sequestration and/or emissions generated, requirements to reduce any net emissions, etc. This assessment of program requirements has been completed by a third-party organization external to Textile Exchange.

Water Use

Theme	Indicator	Type
Water Use	Water scarcity	Quantitative
	Water impact data availability	Qualitative
	Efficient use of surface or groundwater	Qualitative
	Efficient use of rainwater	Qualitative
	Recycled and reuse of water	Qualitative
	Water use risk mitigation	Qualitative

The Water Use theme is composed of six indicators – one quantitative indicator and five qualitative indicators.

The quantitative indicator water scarcity is derived from the Sustainable Apparel Coalition The Higg MSI data. For each material category, the “conventional” baseline is established, and scoring is normalized between this baseline and the lowest impact within that material category. For more information on this normalization process, please see the detailed description above in “Climate and GHG”.

The first qualitative indicator relates to water impact data availability. This indicator has been developed by Textile Exchange to complement the quantitative impact indicators. Textile Exchange recognizes that new and innovative materials are continuously being developed, and that it may not be practical for these materials to be immediately incorporated into industry decision-making tools, like The Higg MSI or Quantis World Apparel & Footwear Life Cycle Assessment Database (WALDB). Scoring for this indicator will follow specific tiers of scoring ranging from no measurement of impact to quantitative evidence representative of that entire program being available, third and non-interested party reviewed and accepted into industry impact tools (e.g. SAC the Higg MSI, Quantis World Apparel & Footwear Life Cycle Assessment Database, etc.).

The next two qualitative indicators relation to production practices which efficiently use water. One indicator focuses specifically on the efficient use of surface or groundwater, including practices such as alternate irrigation, drip irrigation, and no irrigation. The other indicator focuses specifically on the efficient use of rainwater, including practices such as rainwater harvesting, contour trenching and other techniques to retain rainwater for crops.

The fourth qualitative indicator is derived from Fashion Positive Circular Materials Guidelines in relation to recycled and reuse of water in line with ZDHC guidelines. Steps taken by initiatives to recycle and reuse process water and implementing water free technologies and processes are embedded within this indicator. This ambitious indicator will award initiatives for achieving progressive or aspirational level of the ZDHC guidelines, where aspirational level equates to 90% or more of the facilities

recaptured water is reused or recycled to produce less effluent. It is worth reiterating that indicators will only apply where there are relevant impacts at the supply chain stages and processes in scope of the PFM Matrix.

The last qualitative indicator relates to requirements of the program being assessed in relation to water use risk mitigation. This indicator has a number of sub-indicators, with true or false questions on whether there are, for example, requirements to identify water resources potentially affected by operations, not creating or aggravating situations of water scarcity, assess potential impacts on communities and individuals including impacts on food security and water availability, etc. This assessment of program requirements has been completed by a third-party organization external to Textile Exchange.

Water Pollution

Theme	Indicator	Type
Water Pollution	Eutrophication potential	Quantitative
	Eutrophication impact data availability	Qualitative
	Chemical discharge	Qualitative
	Wastewater quality	Qualitative
	Water pollution risk mitigation	Qualitative

The Water Pollution theme is composed of four indicators – one quantitative indicator and three qualitative indicators.

The quantitative indicator eutrophication potential is derived from the SAC Higg MSI data. For each material category, the “conventional” baseline is established, and scoring is normalized between this baseline and the lowest impact within that material category. For more information on this normalization process, please see the detailed description above in ‘Climate and GHG’.

The first qualitative indicator relates to eutrophication impact data availability. This indicator has been developed by Textile Exchange to complement the quantitative impact indicators. Textile Exchange recognizes that new and innovative materials are continuously being developed, and that it may not be practical for these materials to be immediately incorporated into industry decision-making tools, like The Higg MSI or Quantis World Apparel & Footwear Life Cycle Assessment Database (WALDB). Scoring for this indicator will follow specific tiers of scoring ranging from no measurement of impact to quantitative evidence representative of that entire program being available, third and non-interested party reviewed and accepted into industry impact tools (e.g. SAC the Higg MSI, Quantis World Apparel & Footwear Life Cycle Assessment Database, etc.).

Chemical discharge is a qualitative indicator with multiple tiers of scoring, from no guidance or requirements on reducing chemical discharge into waterways, to incorporating techniques to prevent runof, to no untreated wastewater entering local waterways and no effluent bypassing any treatment.

Wastewater quality is derived from Fashion Positive Circular Materials Guidelines and specifically relates to a facilities implementation of ZDHC Wastewater Guidelines, ensuring that water is returned in the same condition or better than in which it was taken. This is a leading indicator where tiered scoring relates to achieving progressive level or aspirational level in ZDHC’s Wastewater Guidelines (Appendix

A). For manmade cellulosic fibers, further requirements apply in relation to ZDHC's MMCF Interim Wastewater Guidelines (Appendix A)

The last qualitative indicator relates to requirements of the program being assessed in relation to water pollution risk mitigation. This indicator has a number of sub-indicators, with true or false questions on whether there are, for example, requirements to avoid or minimize run-off and siltation, regularly monitor impacts on water and adapt management as necessary for improvement, etc. This assessment of program requirements has been completed by a third-party organization external to Textile Exchange.

Chemicals and Toxicity

Theme	Indicator	Type
Chemicals and Toxicity	Chemistry (SAC)	Quantitative
	Control of chemical use	Qualitative
	Managing input chemistry	Qualitative
	Transparency into formulations	Qualitative
	Chemicals and toxicity mitigation	Qualitative

The Chemicals and Toxicity theme is composed of five indicators – one quantitative indicator and four qualitative indicators.

The quantitative indicator chemistry is derived from the Sustainable Apparel Coalition Higg MSI data. This indicator is described by SAC as "semi-quantiative" as it combines data from Usetox and additional qualitative modifiers (more information: https://howtohigg.org/wp-content/uploads/2020/07/Higg-MSI-Methodology-July-31-2020.pdf). For each material category, the "conventional" baseline score is identified, and scoring is normalized between this baseline and the lowest impact within that material category. For more information on this normalization process, please see the detailed description above in "Climate and GHG".

The control of chemical use indicator focuses on the level of control in manufacturing, and the processes in which chemicals are applied in production. This indicator explores management systems in place during raw material processing aimed at minimizing risk to the process and the volume of chemicals used. This indicator has multiple tiers of scoring, from the non-controlled application of chemicals, more responsibly managed application of chemicals, to the closed-loop application of chemicals in a highly-controlled manufacturing environment.

Managing input chemistry is derived from Fashion Positive Circular Materials Guidelines and specifically relates to implementation of ZDHC's Manufacturing Restricted Substances Lists (MRSL) at various level of conformance. This is a leading indicator where tiered scoring relates to implementation of the ZDHC MRSL at Level 2 or Level 3 conformance, where Level 3 includes a document review of the chemical formulation, formulation testing and a chemical supplier audit by a third-party.

The last qualitative indicator relates to requirements of the program being assessed in relation to chemicals and toxicity mitigation. This indicator has a number of sub-indicators, with true or false questions on whether there are, for example, requirements to implement integrated pest management practices that minimize the use of pesticides, document all application, handling, storage and disposal

of agrochemicals, not allowed to use hazardous chemicals as defined by WHO 1A and B, etc. This assessment of program requirements has been completed by a third-party organization external to Textile Exchange.

Soil Health

Theme	Indicator	Type
Soil Health	Production practices for planted crop feedstock	Qualitative
	Production practices for grazing-based materials	Qualitative
	Evidence of carbon sequestration	Qualitative
	Soil risk mitigation	Qualitative

The Soil Health theme is composed of four qualitative indicators. It is worth note that indicators are selected which are relevant to a specific material category, therefore all indicators will not apply to all materials.

The first two qualitative indicators relate to specific production practices for two different production systems – planted crop feedstock, and grazing-based materials. Each indicator has multiple tiers of scoring, evaluating various steps taken to improve soil fertility and erosion prevention, and also to increase carbon sequestration within the soil. Production practices includes focuses on: composting and soil nutrients, alternative ploughing techniques, crop rotation & intercropping, rotational grazing, cell grazing, mob grazing, holistic management etc.

Evidence of carbon sequestration is a qualitative indicator which encourages collection of data on carbon sequestration as a result of raw material production practices. We strongly support the collection of quantitative impact data and that this data is critically reviewed by a third and non-interested party, and therefore hope to encourage new fibers and materials to pursue this path for quantitative impact data availability. Scoring for these indicators will follow specific tiers of scoring ranging from no measurement of impact to quantitative evidence representative of that entire program being available, third and non-interested party reviewed and available for industry stakeholder decision-making.

The last qualitative indicator relates to requirements of the program being assessed in relation to soil risk mitigation. This indicator has a number of sub-indicators, with true or false questions on whether there are, for example, requirements to take measures to minimize negative impacts from operations on soil resources, requirements to avoid or minimize soil erosion, requirements to maintain or improve soil quality, and requirements to regularly monitor impacts on soil and adapt management as necessary for improvement, etc. This assessment of program requirements has been completed by a third-party organization external to Textile Exchange.

Land Management

Theme	Indicator	Type
Land Management and Deforestation	Land management & certification	Qualitative
	Forest risk for virgin feedstock from manmade cellulosics	Qualitative
	Land use change and deforestation risk mitigation	Qualitative

The Land Management and Deforestation theme is composed of three qualitative indicators.

The land management and certification indicator evaluates the broader approach to cultivation of fiber input materials and steps taken to improve and conserve the land used. This qualitative indicator has multiple tiers of scoring, from no broader land management systems or conservation steps taken, to some proactive steps taken such as soil assessments, alterative ploughing techniques, livestock management to retain land quality, and to organic and certified forest and land.

The second qualitative indicator is forest risk for virgin feedstock from manmade cellulosics. This indicator is focused on producer completion of CanopyStyle audit and associated ranking in Canopy's Hot Button Report. This indicator only applies to virgin sources of manmade cellulosic fibers.

The last qualitative indicator relates to requirements of the program being assessed in relation to land use change and deforestation risk mitigation. This indicator has a number of sub-indicators, with true or false questions on whether there are, for example, requirements to not convert native forest and/or areas of high above-ground carbon stocks, to not expand cultivation or plantations on peat soils, to make summaries of their HCV assessments publicly available (for large producers on their website, for small / medium producers on request), and a requirement to not expand cultivation or establish plantations at the expense of one or more HCVs, etc. This assessment of program requirements has been completed by a third-party organization external to Textile Exchange.

Biodiversity

Theme	Indicator	Type
Biodiversity	General biodiversity	Qualitative
	Species biodiversity	Qualitative
	Terrestrial biodiversity	Qualitative
	Freshwater biodiversity	Qualitative

The Biodiversity theme is composed of four qualitative indicators. All indicators relate to requirements of the program or initiative being assessed in relation to specific biodiversity risk mitigations. Each indicator has a number of sub-indicators, with true or false questions on whether certain practices are required by the program or initiative. This assessment of program requirements has been completed by a third-party organization external to Textile Exchange.

General biodiversity sub-indicators include requirements to identify and maintain biodiversity values, minimize and mitigate negative impacts from operations on biodiversity values, and regularly monitor impacts on biodiversity and adapt management as necessary for improvement.

Species biodiversity sub-indicators include requirements to protect rare and threatened species and their habitats, access and maintain HCVs category 1-4, take measures against any illegal or inappropriate hunting, fishing, or collecting, and not allowing the introduction or use of invasive alien species.

Terrestrial biodiversity sub-indicators include not allowing conversion of native forest and/or areas of high above-ground carbon stocks to expand cultivation or plantations, and requiring native vegetation is maintained or restored along streams and water courses.

Freshwater biodiversity sub-indicators include requirements to maintain and restore important water related areas including wetlands, and requiring native vegetation is maintained or restored along streams and water courses.

Human Rights

Theme	Elements	Indicator	Type
Human Rights	Health & Safety	Chemical handling health & safety	Qualitative
		Safe & hygienic working conditions	Qualitative
	Labor Rights	Forced labor	Qualitative
		Child labor	Qualitative
		No discrimination or inhumane treatment	Qualitative
		Freedom of association and collective bargaining	Qualitative
		Civil liberties & social protections	Qualitative
		Gender equality and opportunities	Qualitative
	Income Potential	Farmer income potential	Qualitative
		Wages and working hours	Qualitative
	Development & Community	Legal and land rights of communities and Free, Prior and Informed Consent (FPIC)	Qualitative
		Food security	Qualitative
		Drinking water and sanitation	Qualitative
		Development & community impact	Qualitative

The Human Rights theme is composed of 14 qualitative indicators which are grouped in four categories or elements – health & safety, labor rights, income potential, and development & community.

The first qualitative indicator is chemical handling health & safety. This indicator assesses the level of control in chemicals application, and chemicals management systems. This indicator has multiple tiers of scoring, from non-controlled application of chemicals to the closed-loop application of chemicals in a highly-controlled manufacturing environment.

The gender equality and opportunities indicator includes has multiple tiers of scoring, from no guidance or requirements on gender equality, requirements on policies around gender equality, pay and

conditions, and discrimination, investment in programs and/or opportunities such as inbuilt capacity building programs, documented access to healthcare, education or other facilities, etc.

The farmer income potential indicator includes has multiple tiers of scoring, from no guidance or requirements on increasing income and no support provided to farmers, demonstrated improvements from the baseline including supporting farmers to reduce raw material inputs and associated costs to best-in-class initiatives providing extension services and training, and hands-on support at a farm or facility.

All other eleven indicators relate to requirements of the program or initiative being assessed in relation to specific human rights risk mitigations. Each indicator has a number of sub-indicators, with true or false questions on whether certain practices are required by the program or initiative. This assessment of program requirements has been completed by a third-party organization external to Textile Exchange.

The safe and hygienic working conditions indicator includes requirements to identify potential health and safety risks at work and take measures to avoid them, ensure that workers are adequately equipped, instructed and trained for their tasks including safe use and handling of chemicals, and requirements to address grievances in relation to working conditions.

The forced labor indicator includes requirements on not allowing the use of forced or otherwise involuntary labor.

The child labor indicator includes requirements on ensuring that children under the age of 15 (or higher if stipulated in national law) do not carry out productive work.

The no discrimination or inhumane treatment indicator includes requirements on ensuring that there is no discrimination at work and that workers are not subject to any form of corporal punishment, abuse, harassment or intimidation.

The freedom of association and collective bargaining indicator includes requirements on requiring that producers respect workers' freedom of association and right to collective bargaining.

The civil liberties and social protections indicator includes requirements to respect the core ILO rights of workers as defined in the Declaration on Fundamental Principles and Rights at Work (1998), required to address grievances related to working conditions and workers' rights, requirements to provide compensation for occupational injuries, and requirements that materials are not derived from areas where traditional or civil rights are violated.

The gender equality and opportunities indicator includes requirements on policies around gender equality, pay and conditions, and discrimination, investment in programs and/or opportunities such as inbuilt capacity building programs, documented access to healthcare, education or other facilities, etc.

The wages and working hours indicator includes requirements to ensure that wages, working hours and leave comply with or exceed applicable legislation and sector minimum standards.

The "legal and land rights of communities and Free, Prior and Informed Consent (FPIC)" indicator includes requirements on identifying legal and customary rights of tenure, access and use of other parties; requirements to uphold legal and customary rights of tenure access and use of other parties unless these rights are delegated through documented Free, Prior and Informed Consent, requirements

to respect the rights, customs and culture of indigenous peoples, and requirements to engage with affected stakeholders and document measures taken to resolve disputes related to land tenure, access and use.

The food security indicator includes requirements on assessing potential impacts on communities and individuals on food security, assessing and maintaining HCVs category 5 (basic necessities for local communities), farmer income potential, and if applicable, requirements to cultivate a mix of genotypes of each main crop.

The drinking water and sanitation indicator includes requirements to ensure access to safe drinking water, adequate and equitable sanitation and hygiene.

The development & community impact indicator includes requirements to engage in dialogue with neighboring communities and individuals, identify negative impacts from operations, and take measures to minimize and mitigate negative impacts. Also, further requirements focus on identifying and respecting sites of cultural and religious significance, support economic development by providing opportunities for local employment, and actively engage in welfare programs where relevant to the social context.

Animal Welfare

Theme	Elements	Indicator	Type
Animal Welfare	Animal Welfare	Nutrition	Qualitative
		Living environment	Qualitative
		Animal health	Qualitative
		Handling and transport	Qualitative
		Management, plans, and procedures	Qualitative
	Faming Systems	Intensity of farming system	Qualitative

The Animal Welfare theme is composed of six qualitative indicators. The first five indicators are derived from the Animal Welfare Framework with a cross reference to the Five Domains and the associated aims included. Each indicator has a desired outcome with specific sub-indicators mapped which are scored on a true or false basis.

The nutrition indicator has a desired outcome of access to sufficient feed and water suited to the animals' age and needs, to maintain normal health, and to prevent prolonged hunger, thirst, malnutrition or dehydration. The indicator maps to animal welfare provision good nutrition (provision 1). Sub-indicators include the quality and nutritional quality of food appropriate to animals' age and needs, adequate supply of clean, safe drinking water each day, and maximum time when deprivations are permitted.

The living environment indicator has a desired outcome of animals kept in an environment that provides the conditions and facilities needed for health, safety, comfort, and normal behavior. The aim is to minimize discomfort and exposure, and promote thermal, physical and other comforts. This indicator maps to Animal Welfare Provisions good environment (provision 2), appropriate behavior (provision 4) and positive mental experiences (provision 5). Sub-indicators include access to pasture being required at all times when welfare would not be affected, no routine close confinement (e.g. tethering), sufficient

space per animal outdoors to allow freedom of movement and expression of natural behavior, and animals are protected from the threat of predation.

The animal health indicator has a desired outcome of animals being managed in a way that promotes good health and prevents disease. Sick or injured animals are treated, and husbandry operations are carried in a way that minimizes pain and distress. This includes minimizing threats and unpleasant restrictions on behavior and promote engagement in rewarding activities. The indicator maps to Animal Welfare Provisions good health (provision 3) and appropriate behavior (provision 4). Sub-indicators include animals are checked with a frequency that ensures their welfare is protected, animals only have painful procedures carried out when this is necessary for their or herd/flock welfare (and if they are necessary, they are only carried out by competent operators and in a way that minimizes pain and distress), and fiber removal is conducted in a manner which minimize animal stress and injury and protects animals from thermal stress. Further, there are indicators which prohibit species specific practices such as mulesing for wool or forcefeeding and liveplucking for down and feather.

The handling and transport indicator has a desired outcome of good human-animal relationships and animals are handled and transported around the farm and off the farm in a way that protects welfare. This indicator aims to minimize threats and unpleasant restrictions on behaviour and promote engagement in rewarding activities, including various forms of comfort, pleasure, interest, confidence and sense of control. This indicator maps to Animal Welfare Provisions appropriate behavior (provision 4) and positive mental experiences (provision 5). The sub-indicator for this indicator focuses on animals being handled humanely, mistreatment of animals is unacceptable.

The management, plans and procedures indicator has the desired outcome of farmers having a clear strategy and set of protocols to safeguard the welfare of their animal. Sub-indicators include the farm shall comply with all applicable legislation on animal welfare and land management, and that parallel production is prohibited.

The last animal welfare indicator is the intensity of farming system. There are two major factors that affect farm animal welfare – the farming system and the quality of the stockmanship. Animal welfare can be poor in any farming system if the stockmanship is poor; however different farming systems have different potential for animal welfare. For example, a system where the five provisions and animal welfare aims cannot be met, has a low animal welfare potential; whereas a farming system that meets the animals' behavioral and physical needs has a high animal welfare potential. Assurance schemes play an important role in ensuring that high welfare potential is delivered. This qualitative indicator has multiple tiers of scoring, beginning at industrial systems (factory farming) to land-based extensive systems.

Program Robustness

Theme	Indicator	Type
Program Robustness	Governance	Qualitative
	Trust and transparency	Qualitative
	Regulatory effectiveness	Qualitative

The Program Robustness theme is composed of three groups of indicators – governance, trust and transparency, and regulatory effectiveness. Assessment has been completed in relation to requirements of the program or initiative in relation to the indicator topics. This assessment has been completed by a third-party organization external to Textile Exchange.

Each of the three indicators has a number of sub-indicators, with true or false questions on whether there are specific requirements forming part of a program or initiative. For governance, this will include sub-indicators on membership of ISEAL, having a resourced secretariat, having a code of conduct (or similar), dispute and complaint resolution procedures, etc. For trust and transparency, this will include sub-indicators on standards being publicly available, searchable databases with names of certified units, summary reports of audits are publicly available, chain of custody systems, third-party certification, multi-stakeholder decision-making, etc. For regulatory effectiveness, sub-indicators include compliance with all applicable laws and regulations, having legal land tenure, and taking measures against unauthorized or illegal activities.