

Enhancing Sustainability through Forest-Positive MMCF Sourcing: A Guide for Fashion Brands and Retailers



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Introduction

The fashion industry is undergoing a transformative shift towards sustainable practices, particularly in feedstock sourcing and production.

Man-made cellulosic fibres (MMCFs) are recognised as preferred materials, and play a vital role in the industry's efforts to embrace environmentally responsible and socially accountable approaches. Sustainable production of MMCFs begins in the forest, making it crucial for brands to understand the potential risks associated with forests and take proactive measures to manage and mitigate these risks.

Our whitepaper aims to look into the potential risks that could be impacting forests and explore how sustainable forest management requirements address and mitigate these risks. This whitepaper provides a comprehensive understanding of sustainable forest management, equipping readers with the knowledge and tools to advance the traceability of MMCF materials.

Furthermore, the whitepaper delves into practical, feasible, and scalable actions to address the challenges in MMCF sourcing faced by fashion brands and retailers. To support implementation, downloadable materials with short guides and useful resources are provided at the end of the paper.

By embracing forest-positive sourcing strategies, fashion brands and retailers not only meet their sustainability goals but also establish themselves as leaders in the ongoing industry transformation. We have developed this whitepaper in response to the industry's feedback, recognizing the need for a deeper understanding of these topics. Through this whitepaper, we invite readers to join us in advancing responsible MMCF sourcing practices, contributing to a sustainable future for the fashion industry and beyond.



Deep Dive Into MMCF Feedstock Sourcing Landscape

With sustainability taking centre stage in the fashion industry, MMCFs are considered a sustainable material choice due to their circularity and renewable feedstock derived from trees. Understanding the feedstock sourcing of MMCFs is crucial to managing potential risks. In 2021, MMCFs accounted for 6.4% of the total fibre market (Textile Exchange, 1), produced primarily from wood transformed into dissolving wood pulp (DWP) before being processed into various MMCF types: viscose, modal, lyocell, or acetate.

To gain insights into MMCF feedstock origins, we analysed the production locations of DWP. Our analysis, based on FAO statistics (2), reveals that the five largest DWP producers—China, the USA, South Africa, Canada, and Indonesia—contribute to nearly 60% of global DWP volume. To put into the context of global wood use, DWP production constitutes a small fraction of global wood production, accounting for less than 3% of global industrial roundwood removals in 2019 (2).

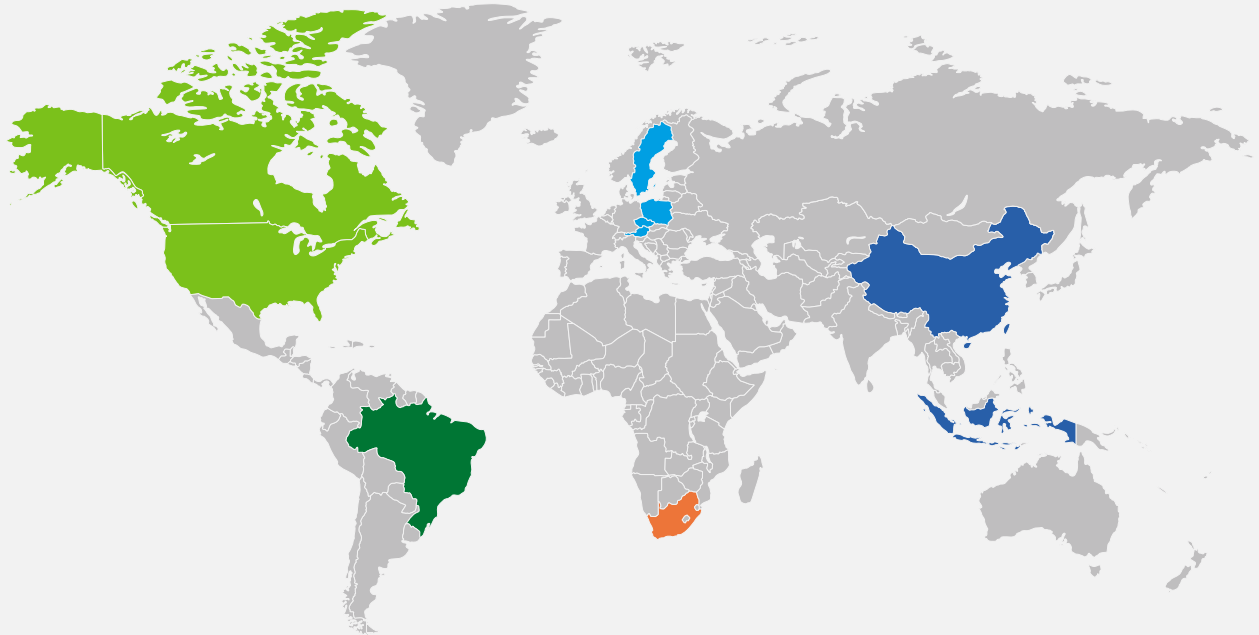
Different forest characteristics are associated with DWP production in various regions. Plantation forests play a significant role in DWP sourcing in South Africa, Indonesia, and Brazil, comprising 7.4%, 4.9%, and 2.3% of the respective countries' forests (FAO, 3). In Europe, where semi-natural forests are prevalent, DWP primarily originates from these forests. In North America, naturally regenerated forests dominate, accounting for 94.8% in Canada and 91.1% in the USA (2). In China, approximately 20% of forests are plantations, while 61% are naturally regenerating forests (2).

The market share of PEFC- and FSC-certified MMCFs has been on the rise, increasing from 55–60% in 2020 to 60–65% in 2021, according to Textile Exchange (1). Figure 1 provides a breakdown of the PEFC share across countries and continents. Understanding the sourcing locations and associated forest types is crucial for ensuring responsible and sustainable MMCF feedstock sourcing.

Each sourcing location presents unique environmental and social contexts, necessitating specific approaches to identify risks related to forest use. In Section 3, we outline the main potential risks that impact forests. It is important to note that not all risk types apply uniformly to all sourcing locations. Risk assessment and management strategies should be tailored to the individual characteristics of the respective areas.

Figure 1:

MMCF Feedstock Sourcing Landscape



NORTH AMERICA

Canada

Share of global DWPP 7.10 %
 PEFC Share in NFA 37%
 PEFC-certified area 127,891,543 ha
 PEFC Share in CFA 83%



USA

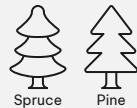
Share of global DWPP 12.80%
 PEFC Share in NFA 11%
 PEFC-certified area 34,049,978 ha
 PEFC Share in CFA 87%



EUROPE

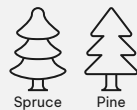
Sweden

Share of global DWPP 5.40%
 PEFC Share in NFA 60%
 PEFC-certified area 16'832'436 ha
 PEFC Share in CFA 70%



Finland

Share of global DWPP 4.60%
 PEFC Share in NFA 48%
 PEFC-certified area 10,828,391 ha
 PEFC Share in CFA 100%



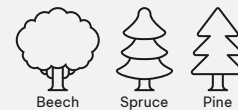
Austria

Share of global DWPP 5.10%
 PEFC Share in NFA 86%
 PEFC-certified area 3,342,977 ha
 PEFC Share in CFA 100%



Czech Republic

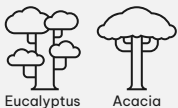
Share of global DWPP 3.00%
 PEFC Share in NFA 66%
 PEFC-certified area 1,780,002 ha
 PEFC Share in CFA 99%



SOUTH AMERICA

Brazil

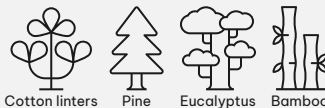
Share of global DWPP 6.90%
 PEFC Share in NFA 1%
 PEFC-certified area 4,706,347 ha
 PEFC Share in CFA 46%



ASIA

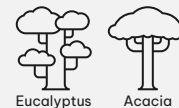
China

Share of global DWPP 20.80%
 PEFC Share in NFA 0.48%
 PEFC-certified area 1,048,64 ha
 PEFC Share in CFA 72%



Indonesia

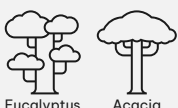
Share of global DWPP 6.50%
 PEFC Share in NFA 4%
 PEFC-certified area 4,051,012 ha
 PEFC Share in CFA 58%



AFRICA

South Africa

Share of global DWPP 11.40%
 PEFC Share in NFA 2%
 PEFC-certified area 394,009 ha
 PEFC Share in CFA 22%



*DWPP: Dissolving Wood Pulp Produced
 **NFA: National Forest Area
 ***CFA: Certified Forest Area

Source: FAO 2020b

DEFINITION

Plantation Forest

Forest predominantly composed of trees established through planting and/or deliberate seeding, and is intensively managed and meet ALL the following criteria at planting and stand maturity: one or two species, even age class, and regular spacing.

Explanatory notes

1. Specifically includes: short rotation plantation for wood, fibre and energy.
2. Specifically excludes: forest planted for protection or ecosystem restoration.
3. Specifically excludes: Forest established through planting or seeding which at stand maturity resembles or will resemble naturally regenerating forest.

Source: FAO

Naturally Regenerating Forest

Forest predominantly composed of trees established through natural regeneration.

Explanatory notes

1. Includes forests for which it is not possible to distinguish whether planted or naturally regenerated.
2. Includes forests with a mix of naturally regenerated native tree species and planted/seeded trees, and where the naturally regenerated trees are expected to constitute the major part of the growing stock at stand maturity.
3. Includes coppice from trees originally established through natural regeneration.
4. Includes naturally regenerated trees of introduced species.

Source: FAO

Semi-natural Forest

A stand which is composed predominantly of native trees and shrub species which have not been planted. Also, a forest which has developed gradually or accidentally, as its location or site quality was not suited for intensive exploitation or production-oriented management (e.g. in mountainous regions). This kind of reconstruction of the natural forest cover can be or has been achieved by using various silvicultural practices, e.g., natural regeneration or selective thinning and in some cases also planting.

SOURCE: The European Environment Agency (EEA)

2

Mitigating Business Risk through Responsible Sourcing

The fashion industry is rapidly shifting towards a green, socially accountable approach, driven by intensified climate change effects, reduced energy supply, rising costs, and the Covid-19 pandemic. Sustainability has become a crucial benchmark for assessing company practices, influencing governance and policy strategies, and even financial decision-making. Companies that adopt a sustainable business model from design to sourcing, production, and communication gain market growth, media attention, and stakeholder trust. On the other hand, unsustainable practices pose financial risks and jeopardize investor confidence and market share.

To achieve sustainability goals, responsible sourcing of feedstock is crucial. This involves framing a responsible MMCF sourcing policy that includes sustainable forest management standards and implementing it effectively. Failure to do so can lead to broader consequences, including negative impacts on the environment, social justice, and business-related aspects of sourcing.

Emerging policies, regulations, and stakeholder preferences are increasingly influencing the use of natural resources, technological innovations, and market dynamics. Companies need to consider these factors to mitigate risks and adapt their sourcing strategies accordingly.

Responsible sourcing strategies play a vital role in addressing and mitigating potential environmental and social risks. Transparency and traceability throughout the value chain are essential, achieved through mapping each part of the process and implementing chain of custody certification. Selecting certified sources of raw materials demonstrates a company's serious commitment to environmental and social sustainability and to mitigate the risks like those described in the next section.

By embracing responsible sourcing strategies, companies safeguard the environment, promote social justice, and enhance their reputation (7). This commitment ensures long-term success by meeting the expectations of consumers, investors, and stakeholders.

3

Forest-level Risks That Should Be Mitigated

Selecting where to source raw materials is one of the challenges companies face when developing their business approach. Cost is a key factor in decision-making, but environmental and social considerations also play a role.

Environmental and social requirements become relevant criteria because environmental risks like climate change and biodiversity loss, and social risks like denial of social rights in production processes, may limit the current and future availability of raw material, reduce the effectiveness of corporate social

responsibility strategies, and jeopardise the success of companies' business and market approaches. It can also affect consumer opinion and the willingness of investors and financing institutes to invest, thereby negatively impacting the company and brand image. As shown in the previous section, the consequences of not considering environmental and social implications across product value chains can be very heavy for the fashion industry, which is particularly dependent on natural resources and specialised labour. Below we list the most relevant environmental and social risks that may affect the sourcing of MMCFs.

3.1

Risks linked with forest biodiversity

Forests are home to more than 80% of all terrestrial species of animals, plants, and insects (8). Forest biodiversity can be defined as all life forms found within forested areas and the ecological roles they perform. MMCF production depends on wood supply, which in turn depends on a healthy balance between all the elements of forest biodiversity. The risk of impacting these elements with forestry operations can be mitigated by sustainable management, for example by choosing the right time of year to conduct the operations or by considering forest growth rates when planning cuttings. In particular, land clearing, deforestation, establishing forestry plantations, harmful wildlife management practices, and human-wildlife conflicts that come with the extraction of MMCFs can have negative consequences like habitat loss and degradation. For this reason, forest management plans need to apply strict measures.

3.2

Risks linked with climate change

Climate change is one of the biggest challenges scientists, governments, and businesses are trying to tackle. Forests are carbon sinks, but they can also become carbon sources if managed unsustainably. As sinks, forests help mitigate climate change effects by removing CO₂ from the atmosphere and sequestering carbon in trees and soil.

Unsustainable forest management practices like forest conversion and afforestation of ecologically important non-forest ecosystems can negatively affect this mitigation function. Overexploiting forests and timber harvesting at levels that exceed forests' capacity to sequester carbon can lead to carbon release processes, as can invasive practices that deplete soil carbon.

Concerning forestry operations, it is important to underline that no forestry practice can occur without the emission of greenhouse gases (GHG) and without altering the atmosphere's composition. However, selecting technologically advanced machinery, as well as organising the timing and periodicity of forestry operations, can reduce emissions.

Climate-related risks have broad consequences connected with extreme weather events, intensified wildfires, and damaging insect and pest outbreaks. These can lead to significant forest damage if left unaddressed. Forests mitigate these risks by regulating water flows, protecting local communities from extreme weather events, and offering resilient habitats to animal species but only if they are managed by considering forests' sustainable limits and forest vitality and health.

Furthermore, timber, as a renewable and biodegradable material, has the potential to be part of the bio-based circular economy and is one of the solutions to help reduce the use of fossil-based materials. As the Intergovernmental Panel on Climate Change (IPCC) stated in its fourth assessment report (9): "In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fibre or energy from the forest, will generate the largest sustained mitigation benefit."

3.3

Risks linked with water security

Besides biodiversity conservation and climate change mitigation, forests offer a whole variety of environmental ecosystem services. Forests help reduce water-related risks such as landslides, floods, and droughts and prevent desertification and salinisation (10). For example, forests support freshwater purification because strong roots anchor soil against erosion.

This environmental service is not guaranteed when forests are managed unsustainably because it depends on genetic, species, and structural diversity and stability, on forest vitality and health, and forest resilience.

When forests are disturbed and degraded, for example, if tree cover is not regenerated after intensive cuttings, and management is not tailored to the species that are present, soil erosion can occur, and sediment might flow into streams and pollute the water. This results in declining water availability and quality and an increased risk of flooding. Moreover, due to runoff from the land, bodies of water can undergo eutrophication, namely a dense growth of algal and plant life and death of animal life from lack of oxygen.

3.4

Risks linked with forest soil

Another important forest function is preserving healthy soil and a soil structure that protects the forest and its surrounding environments. Forest soil is rich in nutrients vital for the survival of many

plant and animal species and its structure of stone, roots, and debris protects against erosion and floods. If tree cover is reduced to the point that soil remains uncovered, rain and water runoff can deplete the soil composition and structure and compromise the protective function of the forest. Deforestation, overgrazing, land conversion (such as expanding cultivation or plantations on peat soils and/or areas of high below-ground carbon stocks), and the uncontrolled use of harmful chemicals are some of the main drivers of change in the environmental parameters that guarantee the soil protection function (11).

3.5

Risks linked with deforestation

Deforestation is defined as the long-term or permanent loss of forest cover caused by continued man-induced activity. To be classified as deforestation, forest cover needs to be reduced to below the 10% threshold of canopy cover. The term does not apply to areas where the trees have been removed because of harvesting and the forest is expected to regenerate – either naturally or with the aid of silvicultural measures (12).

The process of deforestation can include converting forested areas to non-forested areas like agriculture, pasture, water reservoirs, and urban areas. As with other types of land use change, deforestation leads to altered quality and extent of the forest habitat, not only in the spot where the forest is reduced but also around it.

Deforestation is mainly caused by agricultural expansion, unsustainable logging of timber and fuelwood collection, fire, and livestock grazing (13). It has negative effects at a local level, where it can result in flooding, soil erosion, desertification, reduced shadow areas with consequent increasing drought, reduced biodiversity levels (for example due to loss of habitat variety and connectivity), and loss of areas that contribute to the livelihood of local communities.

At the global level, deforestation can result in climate imbalance and climate change, from reduced carbon sequestration function and lack of tree cover with consequent increasing temperatures. It can also result in the destruction of important habitats for migrating species, with possible species reduction and wildlife extinction (13). Hence, to avoid deforestation, forestry operations should put in place sustainable harvesting and replanting plans and have clear measures to prevent forest conversions.

3.6

Risks linked with ecologically important forest areas

All forests are important from a nature conservation perspective, but some have features that make them ecologically critical for biodiversity conservation, soil protection, and water availability and quality. Exploiting forest resources in these areas should not be strictly avoided because science and practice show that forest management can be beneficial to maintaining forest functions. However, it is essential that management is carried out sustainably, respecting the specific limits imposed by forest ecosystems. Whether integrated or segregated forest management approaches are applied to preserve the health and vitality of these delicate ecosystems, it is important to communicate the value of these forests with the stakeholders involved in their use. Communication is key to avoiding the conservation strategies applied in the context of economic exploitation being undermined by other forest uses like tourism and recreation.

3.7

Risks linked with communities, including Indigenous People

There are also social risks related to MMCF sourcing. The United Nations estimates around 25% of the global population – 1.6 billion people – rely on forests for their subsistence needs, livelihoods, employment, and income (14). Forty per cent of the extremely poor live in forest and savannah areas, and approximately 20% of the global population look to forests to meet their food and income needs (14). Forests have also historically provided socio-economic safety nets for people and communities in times of crisis. Forest loss is therefore a clear risk to the communities that depend on them.

Furthermore, unfair, or illegal forestry operations may result in limitations to the social use of forests and to changes in land tenure and access rights. Sustainable forest use should respect the community rights, customs, and cultures of indigenous peoples. Changing access to the forests risks impacting the mutual relations that locals have consolidated. This can result in unwanted outcomes like illegal hunting and poaching, which are harmful to the forest ecosystem as they do not take environmental limits into account.

Minimising and mitigating negative impacts from forestry operations on communities and individuals, for example, by respecting sites of cultural and religious significance, is essential for increasing local acceptance. According to the UN Global Forest Goals (15), enhancing forest-based economic, social, and environmental benefits is strongly linked to improving the livelihoods of forest-dependent people.

3.8

Risks linked with health, safety, and labour rights

Potential social risks linked with MMCF sourcing also include the conditions of the workers who extract the raw material from the forest. According to the latest International Labour Organization (ILO) estimations (16), the forestry sector employs about 33 million people, which represents 1% of global employment. Fair compensation, information about potential threats when conducting forest cuttings and management operations, mitigating these threats by reducing working hours, and improving staff training are some of the actions companies can undertake.

In an unsustainable working environment, forest workers risk being subject to corporal punishment, abuse, harassment, or intimidation, limited right to associate, and violation of civil rights. A safe, fair, and socially just working environment is needed for workers to feel empowered and positively contribute to reaching the company's sustainable objectives. This not only mitigates the risks but further contributes to the positive development of the green economy and poverty reduction.

Risk assessment and identification is the first step for dealing with the possible negative consequences of economically exploiting forest resources. To implement sustainable approaches to forest use, it is important to put in place actions to minimise and whenever possible avoid the negative outcomes of these risks. Mitigating the environmental and social risks applicable to the specific forest areas that provide the raw material for MMCFs is extremely important for avoiding short-term repercussions on the forest itself, and for limiting broader negative implications like the ones addressed in Section 2. By reading this white paper further, you will learn how PEFC can support risk mitigation thanks to its sustainable forest management requirements.

By reading this white paper further, you will learn how PEFC provides valuable support in mitigating risks through its rigorous requirements for sustainable forest management. These requirements, encompassed within our global and national standards, ensure that forest operators adhere to robust practices that promote environmental and social responsibility. By understanding and implementing these standards, organizations can effectively address potential risks and contribute to the overall sustainability of forest ecosystems.

4

PEFC Forest Management Requirements That Support Mitigating MMCF Sourcing Risks

In this section, we provide practical examples of how PEFC sustainable forest management requirements (18) help mitigate the MMCF sourcing risks identified in the previous section. For a complete overview of the PEFC sustainable forest management requirements, download PEFC standard [ST 1003:2018 here](#).

We took information from literature about sustainable forest management and forest certification as well as from requirements developed by endorsed national PEFC systems (19, 20). We also distributed questionnaires to employees of companies producing MMCFs, which addressed the effects of implementing

PEFC requirements in their forestry operations and how it contributes to risk mitigation.

At the end of the section, we present Table 1, which illustrates the mutual relations between the sets of requirements and the sourcing risks for the MMCFs mentioned in Section 3.

For a general definition of sustainable forest management, see Box 2.

Box 2:**Sustainable Forest Management (SFM): A Definition**

Sustainable forest management (SFM) has been defined by the United Nations General Assembly as a “dynamic and evolving concept, which aims to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations” (FAO., 2007). The aim of SFM is to ensure that forests supply goods and services to meet both present-day and future needs and contribute to the sustainable development of communities. Forests and trees, when sustainably managed, make vital contributions both to people and to the planet, representing a source of livelihoods, providing clean air and water, conserving biodiversity, and contributing to climate change mitigation. (FAO, 17).



4.1

Maintaining or enhancing forest resources and their contribution to the global carbon cycle

The PEFC standard (18) requires forest management to maintain or increase forests and their ecosystem services as well as economic, ecological, cultural, and social forest values. For example, the national standard of SFI (20) – applied in North America – suggests that climate-related risks are identified and prioritised on the likelihood, nature, and severity of their expected impact on forest lands or forest tenures (20).

Climate change and biodiversity loss are closely connected. Climate influences species' habitats and climate change modifies species' habits like migration patterns. Climate-positive practices, like implementing forestry operations that do not affect soil carbon or the balancing of harvesting and forest growth, have a positive effect on both biodiversity and forests' capacity to act as carbon sinks. Due to the broad effects of climate change on forest resilience, applying PEFC requirements can also be particularly useful for limiting the loss of ecologically important forest areas, in terms of biodiversity and positive social externalities. Silvicultural¹ measures that do not reduce forests' capacity to store carbon (for example by leaving deadwood in the forest) can help maintain forests' environmental value by offering a safe habitat for species. They can also support their social value by guaranteeing a natural environment that incentivises tourism.

The far-reaching effects of climate change are also visible in deforestation. Warmer, drier climates are not favourable to forest life and changing precipitation patterns are testing forests. In the long run, contributing to halting climate change with forestry approaches that avoid carbon emissions positively helps stop deforestation processes.

4.2

Maintaining forest ecosystem health and vitality

The PEFC standard (18) requires degraded forest ecosystems to be rehabilitated as far as economically feasible and adequate genetic, species and structural diversity encouraged. This results in enhanced forest stability, vitality, and resilience and strengthens natural regulation mechanisms. Forest health and vitality shall be periodically monitored, especially key biotic and abiotic factors like pests, diseases, overgrazing and overstocking, fire, and damage caused by climatic factors, air pollutants or forest management operations. Forest environmental ecosystem services are essential for forest health and vitality.

Implementing this set of requirements is useful for mitigating risks linked with climate change, biodiversity loss, damage to water and soil systems, deforestation, and loss of ecologically important forest areas. National standards underline the importance of ensuring long-term forest productivity, forest health, and conservation of forest resources through prompt reforestation, afforestation, deploying integrated pest management strategies, minimised chemical use, soil conservation, and protecting forests from damaging agents (19, 20).

The answers to our questionnaires report several local community actions that stem from PEFC certification. For example, PEFC inspired a programme that identifies fire prevention advocates, who contribute to fire monitoring, reporting, and sharing knowledge/training related to using fire as a management tool.

¹ Activities aimed at controlling growth, composition, structure, and quality of forests.

All the requirements mentioned in this section are particularly relevant for safeguarding high-value forests and natural communities – biological, ecological, or physical features which, either by themselves or in a network, contribute significantly to an ecosystem’s productivity, biodiversity, and resilience.

Furthermore, it is required to maintain a balance between tree harvesting and regrowth, which helps to preserve carbon stocks and enhance the capacity of trees to capture and store carbon in the medium and long term, as well as prevent forest degradation and biodiversity loss. The standard also prohibits forest conversions, which mitigates the risk of deforestation and maintains the forest ecosystem.

4.3

Maintaining, conserving, and enhancing biological diversity in forest ecosystems

According to the PEFC standard (18), forest management planning shall aim to respect all socio-economic forest functions. Adequate public access to forests for recreation shall respect ownership rights and safety, integrity of ecosystems, and compatibility with other functions of the forest. Best use shall be made of forest-related experience and traditional knowledge, innovations, and practices of forest owners, NGOs, local communities, and indigenous peoples, with equitable sharing of the benefits arising from this use. Management shall give due regard to the role of forestry in local economies.

These requirements relate to local communities and indigenous peoples using the forest for leisure, recreation, subsistence, and spiritual purposes. However, they also relate to broader social interests such as worldwide tourism, cultural studies, and the benefits of forests’ environmental and positive social externalities (climate regulation, biodiversity conservation, and aesthetically beautiful environment).

Carrying out stakeholder analysis and involving the main stakeholders in decision-making processes (for example through direct participation in meetings and events or through survey consultations) is essential for considering all the relevant actors and their needs. Our questionnaire respondents mentioned that leaving stakeholders’ needs unaddressed poses a greater environmental risk – stakeholders might pursue their interests with less conscious behaviour. Addressing these needs during consultation processes – which is a practice required for PEFC standards development and revision – is a mean for limiting risks. In this context, public information is important. Consultation processes are time-consuming and require many resources to be successful, but not all relevant stakeholders can be directly called to participate in decision-making. Secondary stakeholders need information campaigns tailored to their expectations, to avoid creating hostile feelings on their part when deciding about forest management and use.

With respect to the role of forestry in local economies, national standards (19, 20) require companies that deal with forest management to consider the long-term health and well-being of communities and/or provide public facilities where necessary, and develop forestry-based local economies and specifically consider giving communities new training and employment opportunities.

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4.4

Maintaining or enhancing protective functions in forest management (notably soil and water)

The PEFC standard (18) requires forests to maintain or enhance their potential role in erosion control, flood prevention, water purification, climate regulation, carbon sequestration, and other regulating or supporting ecosystem services. Particular care shall be given where forestry operations might lead to excessive erosion of soil into watercourses and in forest areas with water protection functions. Specific measures shall be taken to minimise the pressure on animal populations in these areas.

National standards (19, 20) require operators to implement into the forest management plans the water, wetland, and riparian protection programmes based on climate, soil type, terrain, vegetation, ecological function, harvesting system, state best management practices, provincial guidelines, and other applicable factors.

Leaving wood debris in the forest course is a good solution to protect soil from erosion and water runoff. Avoiding excessively heavy machinery and practices that cause soil erosion, like intensive forest cuttings in slopes, would be useful measures. Other requirements include retaining vigorous trees during partial harvesting consistent with scientific silvicultural standards for the area; implementing practices that address harvesting and site preparation to protect soil productivity and soil health; and designing road construction, skidding layout, and harvest plans to minimise the impact on soil productivity and soil health.

Soil and water systems are intimately connected and normally when actions are beneficial to one system, they are positive for the other. For example, reducing the size of logging roads can reduce the risk of soil erosion and the likelihood of landslides, with consequent reduced risk of obstruction in water courses.

Protecting soil and water is also beneficial to biodiversity conservation. National standards (19, 20) consider the importance of identifying and protecting non-forested wetlands including bogs, peatlands, fens, marshes, and vernal pools that are ecologically important.

4.5

Maintaining or enhancing socio-economic functions and conditions

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4.6

Drafting a detailed management plan that includes all forest uses

The PEFC standard (18) requires forest management plans to be elaborated and periodically updated. They should be adequate to the forest area, based on current legislation and existing land-use plans, and resonate with scientific research. These plans should include at least a description of the forest management unit, the long-term objectives, and the average annual allowable cut along with justification. Plans will consider all forest uses and specify measures to minimise the risk of forest degradation and damage to forest ecosystems.

The national standards we examined require the development of a forest inventory system and a method for calculating growth and yield to determine annual and periodic harvest levels (19, 20). This would account for changes in growth due to increase or decrease in productivity including but not limited to improved data, long-term drought, fertilisation, climate change, changes in forest land ownership and tenure, and forest health (19, 20).

The national standards highlight the importance of applying knowledge gained through research, science, technology, field experience, and the results of monitoring the effectiveness of conservation related programmes in managing wildlife habitats and contributing to biological diversity conservation (19, 20). The PEFC standard (18) requires inventory, mapping, and planning of forest resources to identify, protect, conserve, or set aside ecologically important forest areas. Creating a well-designed management plan that employs operations with low environmental impact respects high-value forests and allows forest managers to balance wood extraction rates with the growth of the forest, thereby avoiding dangerous processes that drive towards deforestation.

Forest management plans are a good basis for developing stakeholder consultation processes since they increase the acceptance of management choices related to forests. To mobilise these benefits, these tools need to be adequately implemented. The answers to our questionnaires underline the importance of investing in the right infrastructure, processes, and human resources to ensure management plans are delivered on the ground. Companies feel management plans are particularly useful internally, to “identify what skillsets are needed to optimise risk detection and mitigation such as getting training on latest land cover change monitoring software or knowledge sharing via learning hubs [...]”

4.7

Respecting legal, customary, and traditional rights related to forest land

The PEFC standard (18) requires property rights, tree ownership, forest operations and land tenure arrangements as well as legal, customary, and traditional rights to be clearly defined, recognised, and respected. National standards highlight that, regardless of forest ownership, it is important to consider traditional forest uses that are typically a form of livelihood for indigenous peoples but are also to do with tourism and recreation (19, 20).

In the PEFC standard (18), social forest use plays an especially key role since forests are considered a common good for their positive environmental externalities and the pleasant environment they create. Setting up stakeholder consultation processes can help mitigate risks linked with community rights, as mentioned in the answers to our questionnaires. One respondent stated that their company’s effort in contributing to local development and including traditional forest uses in their forest planning tools was strongly aided by the stakeholder consultation processes fostered by PEFC. They also mentioned that developing management plans which consider social forest uses and promote stakeholder empowerment in decision-making can be of significant help in acknowledging different sets of rights to use the forest environment and benefit from it.

Certified forest operators are required to conduct operations in recognition of the established framework of legal, customary and traditional rights such as outlined in ILO 169 and the UN Declaration on the Rights of Indigenous Peoples, which shall not be infringed upon without the free, prior and informed consent (FPIC) of the holders of the rights, including the provision of compensation where applicable.

4.8

Implementing proper health, safety, and working conditions

The PEFC standard (18) requires forest operations to identify health and accident risks and apply all reasonable measures to protect workers from work-related risks. Workers shall be informed about risks and preventive measures. Working hours and leave shall comply with national laws or applicable collective agreements.

Workers’ training should occur via courses and meetings that directly involve them in discussions about safety and related risks. National standards require that qualified logging professionals take continuing education training courses at least once every two years to maintain their status and that logging companies participate in or support training programmes (including continuing education) that include logging safety and other aspects linked to health (19, 20).

Besides training for risk prevention and managing safety problems, working conditions are an important part of PEFC sustainable forest management requirements. Working hours, leave, wages, and other matters regarding workers' rights should be discussed at the management level, and decision-making processes should include forest worker representatives to increase acceptance. National standards especially focus on workers' rights extracted from texts from the ILO Convention, like freedom of association and the effective recognition of the right to collective bargaining; the elimination of all forms of forced or compulsory labour; the effective abolition of child labour; and the elimination of discrimination in respect of employment and occupation (14, 15).

4.9

Summary table: how PEFC sustainable forest management requirements help mitigate potential risks in the forest

After reviewing Section 3 and Section 4 of this white paper, we expect you have gained a clear understanding of how PEFC's comprehensive approach to sustainable forest management effectively mitigates forest-level risks. The table below (Table 1) summarises which of the PEFC forest management requirements (18) contribute to a specific potential risk.

The main detail to note is that some of the requirements are relevant for mitigating a wide variety of risks and some are for implementing more than one set of requirements. By implementing these requirements, organisations can effectively limit the negative consequences and far-reaching implications of potential risks. Furthermore, these requirements enable organisations to actively adopt forest-positive approaches that promote the preservation and well-being of forest ecosystems.

How Sustainable Forest Management (SFM)¹ supports a forest-positive future?

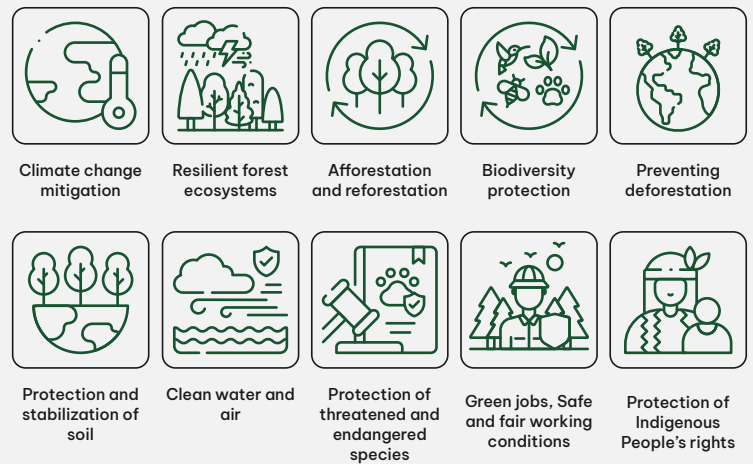
¹ The SFM examples in this document are based on the PEFC Sustainable Forest Management – Requirements, PEFC ST 1003:2018

SFM is essential for creating a forest-positive future. By sourcing materials from sustainably managed forests, we play a vital role in maintaining the health and vitality of these ecosystems. SFM practices focus on restoring forests and safeguarding biodiversity, ensuring that our actions contribute to the overall well-being of the forest ecosystem. Additionally, promoting SFM leads to the creation of green jobs and supports sustainable socio-economic development in forested regions. This approach allows us to meet our sourcing needs while simultaneously building a bioeconomy and actively contributing to the preservation and sustainable utilization of our valuable forest resources.

Sustainable forest management contributes to achieving the UN Sustainable Development Goals (SDGs):



Sustainable Forest Management is a forest-positive approach that provides long-term environmental, social, and economic benefits for:



Examples of Sustainable Forest Management, based on the PEFC benchmark standard¹:

Respect for Indigenous People's Rights

Respecting legal, customary, and traditional rights related to forest land, in line with the UN Declaration on the Rights of Indigenous Peoples and FPIC.

Deforestation prevention

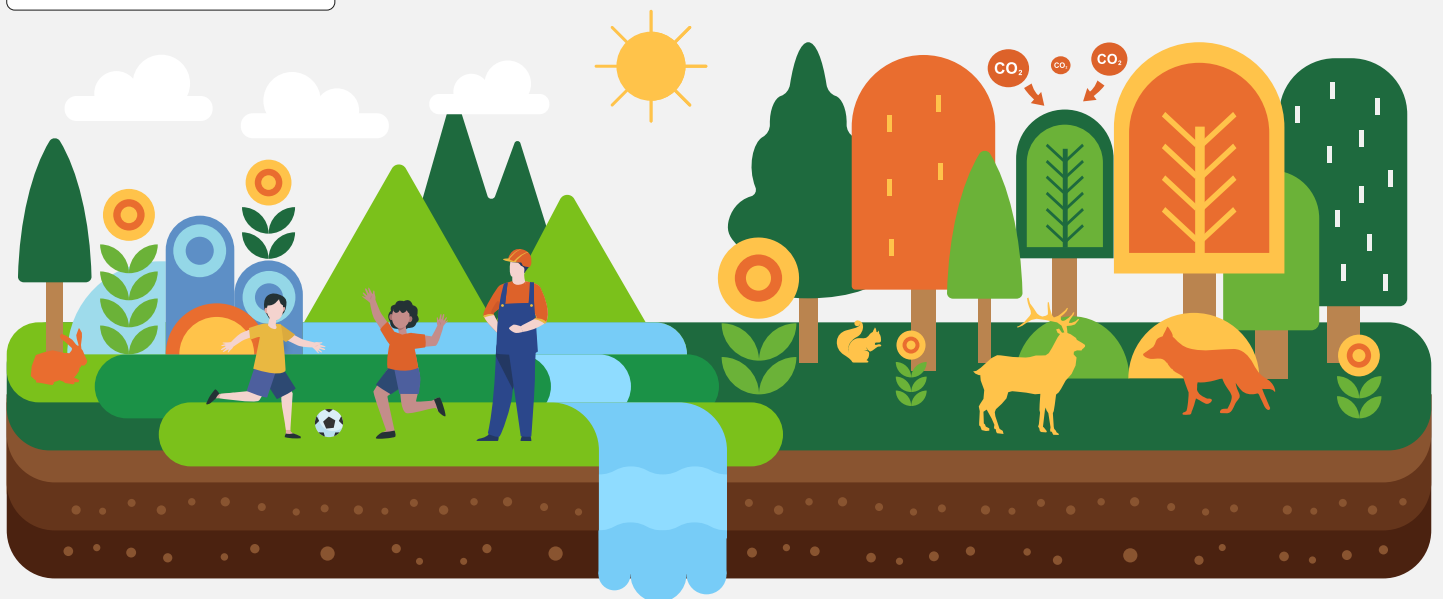
Requiring that forests are maintained as forests. Implementing responsible harvesting, replanting, and conservation measures.

Climate change mitigation

Balancing harvesting and replanting and maintaining carbon stock levels at medium and long term.

Ecosystem Rehabilitation

Rehabilitating degraded forest ecosystems and promoting species and structural diversity, implementing afforestation and reforestation.



Health and Safety for Forest Workers

Implementing workers' health and safety measures, providing training and respecting workers' rights in compliance with the ILO Convention No. 160.

Protection of Soil and Water

Implementing measures such as targeted soil and water conservation, erosion control, and water purification.

Biodiversity Conservation

Maintaining, conserving, and enhancing biodiversity, and protecting against the exploitation of endangered and threatened tree and animal species.

Promote biodiversity

Prohibit the use of genetically modified trees and promote the diversity of species such as mixed stands.

5

Making Sustainable Sourcing A Reality: Traceability And Chain Of Custody As Powerful Tool

Sustainable sourcing poses a significant challenge for companies due to the complex nature of global value chains and market dispersion. Companies towards the end of the supply chains often struggle to trace the origin of their raw materials. Stakeholders now expect companies to provide updated information on feedstock origin and demonstrate their efforts to mitigate environmental and social risks associated with sourcing.

Certification plays a vital role in ensuring credibility and transparency. Accredited third-party auditors examine suppliers' documentation and practices on an annual basis, issuing certificates to verify the sustainable origin of materials or processes. This ongoing verification provides assurance to stakeholders.

To meet stakeholders' expectations, PEFC chain of custody certification (22) can be integrated into a brand's supply traceability system. It is a valuable solution that provides evidence of sustainable sourcing from certified forests. Generic labels like "eco-friendly" and "environmentally responsible" are insufficient because they lack concrete information on specific production stages. PEFC certification (22) enables companies to substantiate claims regarding the use of forest-based materials from certified sustainably managed forests.

Box 3:**Definition of the PEFC chain of custody mechanism (21)**

PEFC chain of custody certification is a mechanism for tracking certified material from the forest to the final product. It is essential for companies to implement and demonstrate responsible sourcing and for consumers to make responsible purchasing decisions. For a product to qualify for certification, all entities along the supply chain must be PEFC chain of custody certified. Only then are companies eligible to use the PEFC label on their products and in their product marketing to highlight the responsible sourcing of raw materials. PEFC chain of custody certification offers several important benefits: access to markets for environmentally responsible products, risk management including protection of workers' fundamental rights, and traceability.

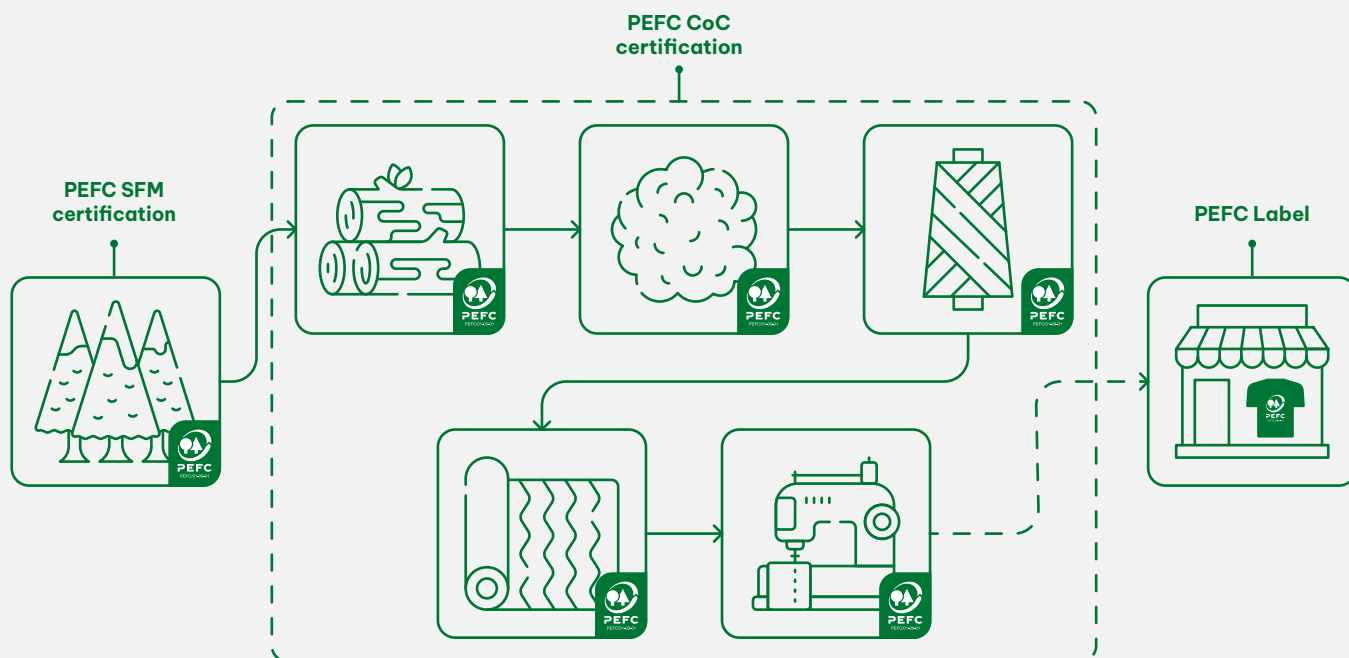


Chain of custody certification means companies throughout the supply chain can trace and verify the origin of feedstock. Brand owners and retailers purchasing finished products with certification claims are assured that controversial forest materials are excluded and align with deforestation, biodiversity, and climate commitments. Third-party audits at each step of the supply chain ensure transparency and the certified material claims that are passed on from suppliers up to the brands allow companies to calculate the share of responsibly sourced materials and measure progress towards their sustainability goals.

For a clearer idea of what happens across the meshes of MMCF value chains, have a look at Figure 2.

Figure 2:

MMCF’s value chain



PEFC chain of custody certification plays a crucial role in facilitating responsible sourcing of forest-based materials. It complements PEFC forest management certification (18) by establishing traceability between products and PEFC-certified sustainably managed forests. This certification covers the entire supply chain, including logging, fibre production, spinning, dyeing, weaving, garment manufacturing, and the final product, and helps to eliminate the materials that come from controversial sources, such as those linked to illegal logging, deforestation, or human rights violations.

Accredited certification bodies issue PEFC chain of custody certificates, ensuring a reliable certification

process. To obtain certification, companies must develop procedures for purchasing, tracking, manufacturing, selling, and recordkeeping of certified materials. Combining PEFC chain of custody certification (22) with other forestry certifications gives supply chain companies access to the increased amount of certified materials and more flexibility in sourcing from verified and sustainably managed sources.



To learn more about obtaining PEFC chain of custody certification, download our step-by-step guide.



What's Next? Essential Steps For Successful Sustainable Sourcing Strategies

Fashion companies, positioned towards the end of their supply chains, often have limited visibility and engagement with the various actors involved in forest-level operations. Mapping and monitoring the sourcing choices of these actors can be a complex and resource-intensive task. However, fashion companies aim for MMCF raw materials from operations that have robust risk mitigation practices in place. In addition to environmental concerns, these companies also prioritise addressing social aspects such as fair and safe working conditions for forest workers and the protection of the rights of local communities. These aspects are fundamental to sustainable forest management.

Moreover, sustainable forest management extends beyond risk mitigation. It encompasses forest-positive actions that enhance forest resources, biodiversity, soil health, and the provision of forest ecosystem services.

So, how can you ensure your raw materials originate from sustainable and regenerative forestry practices?

We encourage companies to responsibly source from sustainably managed forests using the PEFC chain of custody mechanism and to eliminate controversial source materials from their MMCF supply chains.

Brands and retailers, in particular, can purchase certified materials, while manufacturers can both purchase certified materials and obtain certification.

In practice, the immediate and most important step that brands and retailers can take is to request their Tier 1 suppliers of products with MMCF fabrics become PEFC chain of custody certified suppliers and deliver products with a certification claim. This ensures that the raw materials used in their products come from certified sustainably managed forests.

When embarking on sustainability certification, you don't have to choose exclusively between PEFC and other certifications. PEFC is widely accepted in public and private procurement policies worldwide and can be combined with other certification systems. Inclusive procurement policies offer more supply flexibility and increase the likelihood of you meeting your certified sourcing goals.

To streamline the flow of supplier certification documentation, brand owners can use an API to connect their supplier database with the PEFC certificate holder database. This gives direct access to information about companies' certification status and facilitates the verification of supplier claims. This approach reduces the need for individual checks and paperwork collection from suppliers and considers the complexity of fashion supply chains. It also boosts data integrity regarding MMCF sourcing and supports your sustainability objectives.

Figure 3:

Steps to ensure your MMCF raw materials come from sustainably managed forests

In practical terms, here are the steps you can take to ensure your MMCF raw materials come from sustainably managed forests:

01

Incorporate responsible MMCF sourcing certification requirements into your policy

This demonstrates your commitment to sustainability and encourages suppliers to meet the necessary certification standards.

[↓ SEE TEMPLATE](#)



02

Request PEFC-certified MMCF materials from your Tier 1 suppliers

This will provide you with evidence that the raw materials used in your products come from certified sustainably managed forests and allow you to make substantiated claims.



03

Encourage suppliers to obtain PEFC chain of custody certification

This certification demonstrates their materials are sourced from PEFC-certified forests and enables traceability throughout the supply chain.



04

Clearly communicate your sustainability targets and timeline

This clarity will help your suppliers align their efforts with your sustainability goals and ensure a shared understanding of expectations.



05

Distribute the guide on how to obtain a certification with your supplier network

[This resource](#) will provide them with valuable information and guidance on the certification process.



06

Use the API for seamless certification updates and to connect your company's database with the PEFC certificate database

This integration gives real-time updates on your suppliers' certification data and streamlines the verification process



Additionally, to enhance stakeholder visibility and raise awareness of your forest-positive contributions, consider taking this extra step:

07

Share your approach to MMCF feedstock material sourcing on your company website. This will give your customers and wider stakeholders a better understanding of your commitment to sustainable forest management and forest-positive actions.

↓

GET THE KEY MESSAGES HERE

The fashion industry can support the health and vitality of the world's forests. Implementing these steps promotes more forests being managed sustainably, helps combat climate change, preserves biodiversity, and supports rural livelihoods. By taking leadership of sustainable actions and bringing peers along, companies can together make a future for our forests.

↓

You can find helpful resources and materials to support your messaging on sustainable forest management from PEFC.



Get involved

Experience the forest: field trips

You have gained insight on how PEFC proactively approaches risk mitigation in the forests, and you have read some examples of sustainable forest management requirements and how they are being applied. Now it's your turn to get into the forest and experience it for yourself, ask questions, and make sure you are exposed to forests and sustainable management.

We invite you to sign up for the forest field trips we are organising in 2023 and 2024. And because the forests are so diverse, we plan to offer forest experiences in Europe and Asia. Don't miss out on this incredible opportunity to connect with nature and witness sustainable forest management in action.

 [SIGN UP FOR THE FIELD TRIPS HERE](#)

MMCF traceability workshop

Tackling MMCF traceability might feel like a challenge you would like to take on in collaboration with your peers. Join the industry leaders paving the way in solving the traceability gap in the MMCF supply chain and become part of the solution group.

We would like to invite you to a workshop with a small group of brands to discuss the challenges and map out the solution pathways we could collaborate on. PEFC would like to be the facilitator and one of the solution and expertise providers in this journey. If you are interested in participating, please submit your application to join the MMCF traceability workshop.

 [SIGN UP FOR THE WORKSHOP HERE](#)

Please note that capacity for both events is limited, and participation will be granted on a first-come, first-served basis. Don't miss your chance to be at the forefront of positive change in the fashion industry.

By embracing sustainable forest management, participating in our traceability workshop to fast-track responsible sourcing across the supply chain, and joining us on forest field trips, you have the power to drive positive change. Together, let's champion a future that prioritizes forests and ensures a sustainable and forest-positive world.

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About us

PEFC (Programme for the Endorsement of Forest Certification) is an internationally recognized non-profit organization that promotes sustainable forest management worldwide. Created by small- and family forest owners in 1999, PEFC has grown to become the world's largest forest certification system.

PEFC forest certification ensures that forests are managed in accordance with rigorous international requirements, allowing for the regeneration of trees and the preservation of biodiversity and ecosystem balance.

In addition, PEFC offers the Chain of Custody certification for companies using wood-based products, which enables responsible sourcing by tracing feedstock from its origin to the final product and monitoring each stage of the supply chain through third-party audits. Brands can source PEFC-certified products to be able to make verifiable claims and avoid controversial sources in the supply chain