

# FOREST FUTURES

LETTING HOPE TAKE ROOT

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Unlocking the transformative  
potential of forest stewardship





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CHAPTER 1

# Starting the forest stewardship conversation

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## About this publication

### WHAT DOES FOREST STEWARDSHIP ENTAIL?

What is the value of this approach, not only for the planet's health, but also for the social and economic well-being of society? Throughout this publication, **the Forest Stewardship Council® (FSC®)** addresses these questions by examining the **systemic role of forests**. We present facts about historical events that have shaped our current reality, as well as trajectories created from stakeholder input that outline how the next few decades may unfold.


Looking at the forest timeline through the lens of the past, present, and possible future provides greater clarity. We first establish known facts that ground us in the context of the present. Thereafter, we are transported into “the realm of tomorrow” through three plausible trajectories that we modelled for possible forest futures, in which society makes differing levels of effort towards forest stewardship.

### WITH THE ABOVE IN MIND, THE PURPOSE OF THIS PUBLICATION IS THREEFOLD:

1. To **define a shared understanding of forest stewardship** and what the approach entails.
2. To illustrate FSC's **credible validation of forest stewardship** as an approach that works towards a future where people and the planet are uplifted by healthy, resilient forests.
3. To **begin a dialogue** among all stakeholders around how society might better manage forests in the future.

FSC's aim is to open channels of transparent dialogue that spark new-found purpose or direction for all stakeholders and, ultimately, catalyze impactful, collaborative action.





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***Forests are a beacon of hope: decades of work on the ground have shown us that sustainable forest management brings great opportunity and reward, but there is still much untapped potential for forest stewardship to unlock.***

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# Foreword

## THE WORLD IS AT A DECISIVE CROSSROADS ON MANY FRONTS

**Broadly speaking, society is challenged to find ways of enabling prosperity, dignity, and peace – and to do so within the planet’s natural boundaries. While not the sole solution, forests can certainly help us confront multiple existential obstacles. As the world grapples with the climate crisis, biodiversity loss, and socio-economic disparity, the role of forests becomes even more important considering their decarbonizing, life-supporting, material, regulating, regenerative, and harmonizing qualities. These ecosystems can have great cultural significance and social relevance, contributing to economic security while keeping environmental balances in check.**

**The caveat is that these benefits are only realized in resilient forests.** In ensuring forest health, we are confronted with a very real set of trade-offs and dilemmas as simultaneous pressures mount for production, conservation, and restoration against the backdrop of a growing global population. Meanwhile, the global context forest stewards must navigate – interlinked economic, technological, political, social, and environmental drivers – is continuously and rapidly evolving.

**Forests can be our allies,** delivering incredible positive impact – but degradation and deforestation can strip these ecosystems of that power. Many degraded forests are unable to provide habitats for the fauna and flora so critical to biodiversity. We see some degraded ecosystems unable to support continued economic activity such as timber harvesting; we watch in despair as these forests are transformed from beneficial carbon sinks into destructive carbon emitters.

Clearly, societal well-being is intricately linked to the health of our planet’s forests. **There is wisdom – and reward – in recognizing the true, holistic value of healthy forests.** But recognition alone will not move the needle in favour of a sustainable future. Recognition must be followed by responsible, sustained action, which defines the forest stewardship approach we champion at the Forest Stewardship Council (FSC).

Our work – stewarding the world’s most rigorous forest management standards to nurture resilient forests for all, forever – requires both reflection and strategic planning. What progress have we made thus far to ensure forests remain a positive force? What choices can we still make to strengthen our impact going forward?



**KIM CARSTENSEN**

*Director General of the Forest Stewardship Council*

Such introspection has yielded one overarching conclusion: **forest stewardship is key to a sustainable future.** **FSC defines forest stewardship** as a holistic, multi-stakeholder approach to sustainable forest management that equally upholds social, economic, and environmental interests. It promotes sound efforts towards protection, conservation, and restoration as well as active management for forest products and services.

As curators of forest stewardship, FSC has seen, first-hand, the positive impact sustainable forestry can have on forests and the communities who rely on them. But it requires collective effort across all forest-based value chains to make a lasting change. To realize this systemic overhaul, where forest stewardship is the norm, we must start by clearly articulating the benefits of this approach, which we aim to uncover.

In illuminating the benefits, one thing becomes clear: **forests are a beacon of hope.** Forest stewardship is a pragmatic approach in which this hope can take root. Decades of work on the ground have shown us that sustainable forest management brings great opportunity and reward, but we know that there is so much untapped potential that forest stewardship can still unlock. By collectively nurturing nature with the viable solution presented by forest stewardship, our shared future can indeed be sustainable and prosperous.

A handwritten signature in blue ink that reads "Kim Carstensen". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

*Kim Carstensen, Bonn, April 2024*



CHAPTER 2

# The precarious position of forests today

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## Chapter 2: The precarious position of forests today

*Forest health is intertwined with the well-being of people and the planet. Forests can be an ally for tackling global crises, but this positive impact is not a given: it is dependent on forest stewardship. We are at a crossroads for forest management: what path will we choose?*

### CAN FORESTS POWER DAILY LIVING?

Forests are integral to daily living, and commodities are an overt example of this integration. Timber, cork, and rubber are only some of the tangible outputs that forests supply, providing many commercial products from office desks to rain boots. Many parts of the economy are directly or indirectly dependent on nature. In fact, the three largest nature-dependent sectors – construction, agriculture, and food and beverages – generate close to USD8 trillion of global GDP, relying on either direct resource extraction from the world's forests and oceans, or on ecosystem service provision (such as stable climate or healthy soil) from these natural environments<sup>2</sup>.

Beyond commercial value, **forests<sup>3</sup> support over a third of the world's population by providing livelihoods and by acting as a source of food, water, fuel, and medicine.** Forests also carry special **cultural or spiritual significance** for many Indigenous Peoples and local communities (IPLCs). For example, in central Viet Nam, the **Van Kieu**

**people** see the forest as a sacred final resting place: specific areas within the FSC-certified forest they protect are demarcated for traditional burials.

Additionally, forests have **indisputable social importance**, housing hundreds of millions of IPLCs and contributing to prosperity for these often-marginalized populations. Evidencing this is the case study of **Guatemala's Mayan Biosphere Reserve**. Forty years ago, forests in the area faced existential threats from unsustainable timber harvesting and cattle ranching activity. To preserve the natural heritage, the country's government created the reserve in 1990, granting forest concessions to nine local communities, who were tasked with the sustainable management of 350,000 hectares of land. Following FSC standards for more than 25 years has translated into better lives for the 15,000 community members: child malnutrition levels have decreased, school attendance rates have increased, and fewer people migrate to the cities.

Peel back yet another layer of forests' value, and we gain insight into the deeper, more systemic role

they play in sustaining life on Earth. This speaks to the **life-supporting ecosystem services<sup>4</sup> that forests provide, unlocking the intangible benefits that make our planet habitable.** Such services include soil conservation, watershed services, biodiversity conservation, recreational services, and carbon storage and sequestration. These interlinked ecosystem services encapsulate how the world's forests can tackle the dual global crises of biodiversity loss and climate change.

Understanding these various contributions, it becomes clear **how intertwined forest health is**



**with environmental and societal well-being.** The state of global forests directly or indirectly affects people and the planet. When forests are resilient, they can be our allies for tackling global crises of climate change, biodiversity loss, and social inequality. **But this positive impact is not a given** and we could just as easily see a rise in global warming, extinction of animal species, and loss of livelihoods for local communities as forests are damaged or disappear entirely. **Forest stewardship must become the standard for the care of all forests.**





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## ADDRESSING BIODIVERSITY LOSS

Biodiversity is a crucial metric of forest health. **The more biodiverse the forest, the more resilient it is, which enables these ecosystems to provide a vital sustainable source of materials and services** to people. Nature's species diversity has a direct socio-economic impact – some of the many serious implications of biodiversity loss<sup>5</sup> include failing food systems and disrupted supply chains.

According to the 2022 Living Planet Report<sup>6</sup>, the **major drivers of biodiversity loss today include climate change as well as changes in land and sea use that degrade ecosystems**. Currently, around 1 million species of animals and plants face extinction<sup>7</sup>. By 2018, there was already a 69 per cent<sup>8</sup> decline globally in monitored wildlife populations over half a century, with biodiversity levels falling significantly on every continent during this time. In terms of plants, native-species loss allows invasive species to take over, upsetting the natural, healthy balance of forest ecosystems.

**Efforts to conserve and restore healthy forests can see the repopulation of native species**, as evidenced in the sustainably managed FSC-certified ejido (communally managed forest) of **Nuevo Bécál**. With parts of this Mexican landscape regenerated, animal species are gradually returning, including the rare bicoloured hawk, endangered spider monkey, and protected king vulture. Stories like this are particularly promising as global forests currently provide habitats to a diverse array of species<sup>9</sup>, including an estimated 80 per cent of the world's amphibians, 75 per cent of our birds, and 68 per cent of our mammals, with 60 per cent of all vascular plant species housed in tropical forests.

### Global forests provide habitats to diverse species



80%

AMPHIBIANS



75%

BIRDS



68%

MAMMALS



60%

VASCULAR  
PLANTS



## SCOTTISH FORESTERS STRIKE A BALANCE FOR BIODIVERSITY

**With a commitment to keeping the forest in balance, the stewards of [the Seafield and Strathspey Estates](#) can be sure that their management will keep the forest resilient for many years to come. FSC certification ensures their management efforts remain consistent and documented, while ensuring the continued productivity of their timber farming activities.**

Centuries of human disruption have left Scotland's remaining woodlands vulnerable to change. Conserving what remains of them requires year-round management. The Kinveachy Forest makes up just over a fifth of the Seafield and Strathspey Estates in the north of Scotland. The landscape, dominated by Scots pine, supports species like Scottish crossbills, black grouse, and Capercaillie.

More than 5,700 of the estates' total 23,000 hectares have been designated Sites of Special Scientific Interest. Large areas are also Special Protection Areas and Special Areas of

Conservation. These designations have caused management priorities to shift, and the delivery of specific and measured biodiversity benefits is now high on the agenda.

One of the species most under threat in the area is the Capercaillie, a large woodland grouse. Reintroduced in the 19th century after becoming extinct in Scotland in the 18th century, it is again at serious risk of disappearing from the Scottish woodlands.

Having held FSC Forest Management Certification



for more than 20 years via the Tillhill group scheme, the stewards of this forest view its requirements as just another part of their day-to-day management. The biggest impact has been on record keeping - helping to ensure continuity between different forest managers. The continual review of these records informs future objectives that mean the demand for certified timber continues to be sustainably met. Around 10,800 certified hectares produce a combined 25,000 tons of timber each year.



© FSC UK / Seafield & Strathspey Estates





## TACKLING THE CLIMATE CRISIS

In its 2023 Synthesis Report<sup>10</sup>, the Intergovernmental Panel on Climate Change (IPCC) documents that, **since 1970, global temperatures have increased at a faster rate than “any other 50-year period over at least the last 2,000 years”**. Diminished food security, rising water scarcity, and growing food- and water-borne diseases are some of the effects of accelerated climate change.

It is critical to reduce the greenhouse gas (GHG) emissions that contribute to global warming. However, unsustainable changes in the way we use land – such as agricultural expansion – continue to threaten this goal. For example, we see that 70 per cent<sup>11</sup> of tropical land-use GHGs are a result of such unsustainable activities. **We currently overuse our planet by at least 75 per cent<sup>12</sup>**, and our needs are growing rapidly: by 2017, we were already extracting 92 billion metric tons of raw materials from the environment, which is 70 per cent more than we did in 2000<sup>13</sup>. With demand unrelenting, ecosystems are not given the chance to fully regenerate on their own, causing us to reach Earth’s so-called **“Overshoot Day”** earlier each year.

 **70% OF RAW MATERIALS EXTRACTED FROM NATURE**  
**GROWTH IN VOLUME BETWEEN 2000 AND 2017**

Healthy forests have already played a vital role in the fight against climate change. **Between 2001 and 2019, forests around the world removed a significant portion – about 18 per cent – of all human-driven carbon emissions from the atmosphere each year<sup>14</sup>**. In the European Union (EU) alone, forests and the forest sector remove 13 per cent<sup>15</sup> of the region’s total GHG emissions each year. Per the European Forest Institute, this is a result not only of carbon capture and storage in forests and wood products, but also of “material and energy substitution”. This demonstrates how forests have helped society start the necessary shift to a global circular bioeconomy<sup>16</sup>, moving away from non-renewable energy and material use.



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## TRANSFORMING THAI SMALLHOLDER FARMING

Learning techniques like crop rotation and agroforestry have allowed the smallholder farmers of Thailand to create a better balance of economic gain and environmental stability. They are now better able to sustain themselves and the environment around them.

Thailand has been the world's largest exporter of natural rubber for decades. In 2016, 3,610 metric tons of natural rubber were sold to countries like China, the United States, and Japan, with an export value of USD4.9 billion. Around 95 per cent of Thailand's rubber farmland is run by small landowners who rely on this crop alone for their income.

Traditionally, rubber is cultivated as a monoculture, a practice that has frequently been criticized for its environmental effects on soil, fauna population, quality, and productivity. By gaining FSC certification, farmers can move beyond monocultural agriculture and access training

in more sustainable practices that retain soil biodiversity, improve crop diversity, and facilitate the propagation of nature.

Somjit Yunu is one of over 1,600 farmers to gain FSC certification through the Panel Plus group. Through the group, which represents almost 5,000 hectares of smallholder farms in Thailand, Somjit has learned how to plant and rotate multiple crops. The practice has several economic and environmental benefits such as retaining soil diversity, increasing crop yields, and providing insurance if one crop fails. As well as rubber, she now grows mahogany and durian.



These benefits have become immediately apparent to Somjit: "I now use the organic garbage I earlier threw away, as fertilizer for my land. The soil is better and less likely to degrade. The biggest reward for me is that I have started noticing that the soil has more earthworms and the quality of the fruit is better, so enhancing its retail value."



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## A SHARED UNDERSTANDING OF FOREST STEWARDSHIP

**Society needs to reassign value. In the current economic system, a forest's worth is largely tied to the commercial products it can supply over the ecosystem services it can provide. The environmental and social costs of forest-based products and inputs is not adequately reflected in commodity prices either, which leaves demand at unsustainable levels.**

Nearly half of the world's forests and farms are owned or run by smallholders and IPLCs<sup>17</sup> who often rely on forests for their livelihoods. For these forest managers and workers, income can only be derived from the harvesting and selling of tangible products like timber or rubber, which incentivizes the expansion of activity. Expansion to support this economic activity is often synonymous with forest degradation. On the other hand, where forest managers conserve and protect the forests they oversee, these efforts go financially unrewarded. **It is an unsustainable global economic system that incentivizes forest degradation over stewardship.**

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***When looking at ways to scale action to address the climate crisis, many decision-makers have largely undervalued forest stewardship as a plausible solution.***

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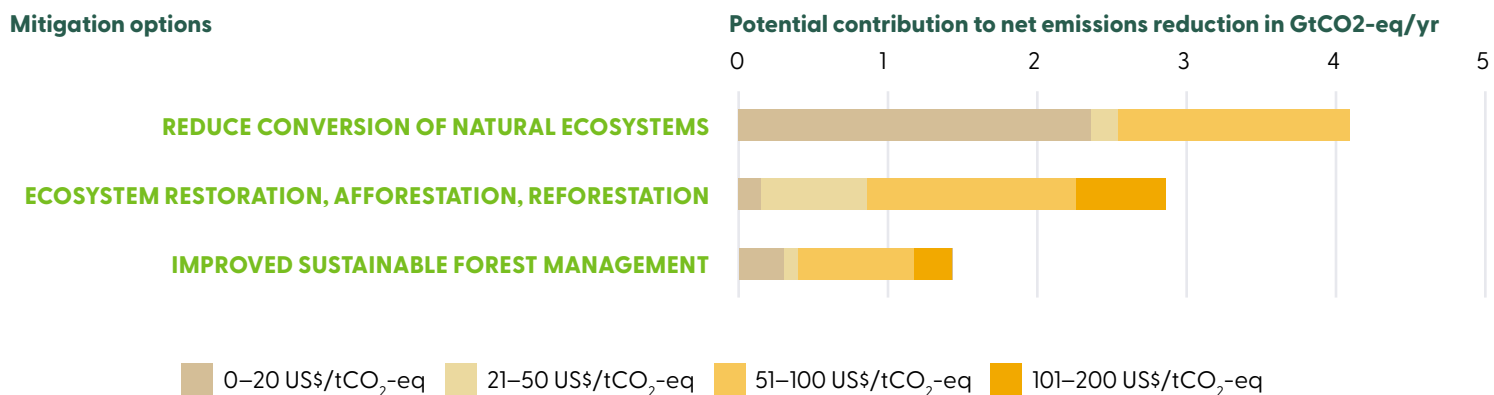
Roughly a quarter of global forest loss is caused by deforestation<sup>18</sup> of land to produce commodities, such as rubber<sup>19</sup>, palm oil, or beef. The destruction of mangroves, peatlands, and tropical forests for this kind of economic activity accounts for 13 per cent<sup>20</sup> of all human-driven carbon emissions. It is important to note that forests that are degraded or converted are at risk of transforming from once-beneficial carbon sinks to carbon emitters themselves. Such transformations currently contribute up to 20 per cent<sup>21</sup> of total carbon emissions each year.

The world, therefore, needs a solution that drives market transformation in conjunction with improved forest management. The solution must promote environmental conservation and build resilience in nature to better support socio-economic health. It should help reverse and halt biodiversity loss and mitigate climate change. FSC firmly believes that such a solution exists in forest stewardship.





## IPCC'S MITIGATION OPPORTUNITIES FOR INCREASING CLIMATE ACTION THROUGH THE LAND, WATER & FOOD SECTOR



Sourced from 'Figure SPM.7: Multiple opportunities for scaling up climate action', IPCC Climate Change 2023 Synthesis Report

The goal of forest stewardship is to protect and strengthen healthy, resilient forests that can sustain life on Earth well into the future. It requires a **holistic, multi-stakeholder approach to sustainable forest management that equally upholds social, economic, and environmental interests.**

Forest stewardship goes beyond the active forest management by stewards. It also encapsulates the connected work of sustainably restoring degraded land, and then conserving and protecting both restored and intact natural landscapes from future unsustainable practices. It aims to tackle biodiversity loss and boost forests' ability to mitigate climate change, thus enabling forests to deliver important social, cultural, and economic benefits.

**When looking at ways to scale action to address the climate crisis, many decision-makers have largely undervalued forest stewardship as a plausible solution.** In the IPCC's 2023 Climate Change Synthesis Report<sup>22</sup>, the potential contribution of net emission reductions was measured across seemingly disconnected solutions (see Figure above). In other words, actions to reduce natural ecosystem conversion, actions to restore forested areas, and actions to improve sustainable forest management are listed as separate solutions. **The individual impact of each solution would be less than the impact of combined solutions in a holistic approach** in which, for example, restored forested areas are also maintained through active forest management. If more forests were managed according to holistic forest stewardship principles, FSC believes these ecosystems would have a far greater contribution to emissions reductions than what is included in the Synthesis Report.



## HOW FSC DEFINES FOREST STEWARDSHIP

As highlighted in our [Global Strategy](#), **forest stewardship champions the true value of forests** – spanning their tangible and intangible benefits – in a world where forests are used but are equally cared for and protected. It is a holistic approach to sustainable forestry that is based on the vast knowledge and experience of collaborating stakeholders across FSC's global network.



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An international community for co-creation, FSC brings together diverse stakeholders – individuals, businesses, governments, and NGOs – from within its membership and from its global network of partners. These stakeholders, who offer different economic, environmental, and social perspectives, have helped FSC develop a **standardized global benchmark for forest stewardship** – what it entails and what success looks like. These benchmarks enable stewards to deliver significant results for the forests and the people who depend on them, and to **measure and monitor these results** to keep us on the right path.

## FSC'S KEY TENETS OF FOREST STEWARDSHIP



### 01 | PRIORITIZING BALANCE

It shuns the idea of trade-offs, for example, where economic viability comes at the cost of the environment. Instead, it promotes environmental, social, and economic interests in a harmonious balance, encouraging the co-creation of stewardship solutions with the understanding that healthy natural ecosystems are better placed to drive sustainable economic activity that benefits local communities and society at large.



### 02 | PROTECTING THE NATURAL WORLD

It calls for the restoration of degraded land, protection of natural landscapes from future unsustainable practices, conservation of resilient environments, and the active management of forests by stewards. In doing so, it helps restore lost biodiversity and shape thriving ecosystems capable of mitigating the climate crisis.



### 03 | CONNECTING FOR INCLUSION

It connects stewards to initiatives that stimulate investments in their forest products and services and improve their market access. These connections are important drivers of inclusion and diversity, as many stewards who rely on the forests for their livelihoods are often-marginalized Indigenous Peoples, local communities, and smallholders. These connections also serve as economic incentives for forest stewardship over degradation.





## UPHOLDING INDIGENOUS RIGHTS IN NORTHERN ONTARIO

**Integrating the view of Indigenous Peoples, both in Canada and elsewhere, has meant organizations can take a more holistic approach to their decision-making. By upholding the rights of Indigenous Peoples, FSC and partners are protecting land, promoting conservation, and revitalizing culture.**

In the **boreal forests of Chapleau, Ontario, Canada**, a group of Indigenous young people are being empowered to retain their cultural-spiritual connection to the landscape. The programme, which teaches the values and techniques of sustainable forestry, is run by Wahkohtowin Development, an Indigenous-led social enterprise aiming to conserve the local ecosystem and support three local First Nations owners: Brunswick House, Chapleau Cree, and Missanabie Cree.

Wahkohtowin pursues its mission with the respect and collaboration of GreenFirst, a local forest

products company. Their strong relationship is built on trust, in part because GreenFirst has held FSC certification for nearly 20 years – thus committing to upholding the rights of Indigenous Peoples.

FSC requires all certified forest managers to uphold the principle of Free, Prior, and Informed Consent (FPIC) of Indigenous Peoples as stated in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Through this, each Indigenous community grants, withholds, or withdraws its consent on projects and activities that impact their rights.

“Together with Wahkohtowin, we’ve modified practices outside of the norms, working to reconcile modern forestry practices with the interests of the communities,” says Chris McDonell, chief forester-Ontario at GreenFirst. “Their partnership has resulted in the conservation of land for cultural purposes, including birch syrup production and moose habitat protection.”

Nearly 1.7 million Canadians identify as First Nations, Metis, and Inuit. The vast majority depend on forests for food sovereignty and security, medicines, clean water, and spirituality. As demand for forest resources continues to rise, the support of First Nation communities to understand the bigger picture has become ever more valuable.







## SOLUTIONS SUPPORTING STEWARDSHIP

There are various solutions that uphold the principles of forest stewardship. For example, FSC offers **certification solutions** that verify FSC-certified products support responsible forestry. FSC certifications are valuable across the forestry supply chain for multiple stakeholders, including forest managers, manufacturers, retailers, project managers, and businesses. Certificate holders can demonstrate that they are **sourcing from sustainably managed forests, recycled or reclaimed materials, and other controlled sources**. The benefits to them include improved market access and being able to secure investments for continued management. For managers of small, low-intensity, and community forests who need additional support, FSC also offers various avenues of guidance, for example through a Continuous Improvement Procedure that gives them a step-by-step path towards full implementation of FSC standards and certification.

Our **Verified Impact** solution is another way FSC supports stewardship. Here, FSC connects businesses with forest managers through **a successful sponsorship model** that delivers benefits to both project stakeholders. The forest manager has the necessary financial backing to continue making an impact, while the business can use credible data-driven claims about sustainable forestry when communicating about ESG efforts or for regulatory compliance. This is just one of the ways FSC makes **climate finance** work for forests and their stewards, by building a scalable, long-term solution to the climate and biodiversity crises.

Another part of forest stewardship's power lies in the **co-creation of solutions**, which is pivotal for developing and enforcing global sustainability regulations that are to be adopted by multiple

stakeholders. In December 2022, parties of the United Nations Biodiversity Conference (**COP15**) did just this, adopting a newly established agreement for addressing biodiversity loss, restoring ecosystems, and protecting the rights of Indigenous Peoples. Called the Kunming-Montreal Global Biodiversity Framework (GBF)<sup>23</sup>, the agreement includes targets to restore 30 per cent of all terrestrial and marine ecosystems, and to phase out subsidies that harm biodiversity, simultaneously scaling up incentives for biodiversity conservation.

Much has already been achieved in the realm of forest stewardship, with solutions like the above already in place to encourage uptake of sustainable forest management.

## *But are the efforts of today enough to safeguard our future?*

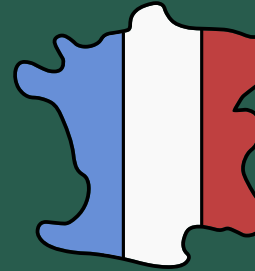
FSC believes that forest stewardship is, indeed, likely to yield the best outcomes for our future. However, for this to happen, we believe that **adoption at scale is a defining factor**.

To test this hypothesis, FSC modelled three trajectories for the future of forest management – each path looks at what might happen if forest stewardship is embraced or neglected to varying degrees. **These trajectories offer a glimpse into what could transpire. They aren't predictions about what will take place, nor are they proposals about what should happen. Rather, they are conversation-starters** that can offer fresh perspectives, helping us see today's challenges in a different light to spark new solutions we might not have otherwise pursued. Throughout the rest of this publication, we turn our focus to a trio of plausible, possible futures.



© FSC / Emilio White





## REWARD & RECOGNITION: INCENTIVIZING SUSTAINABLE FOREST MANAGEMENT

**A sponsorship deal is supporting local forest managers in a crucial biodiversity restoration project in the forest of Saint-Sylvestre, France. The funding, provided by a major business, has helped maintain good forest practices that have been verified through FSC's Verified Impact.**

The forest of Saint-Sylvestre, located in the Haute-Vienne region of France, is a vital habitat for several rare and endangered species. It is owned by a group of FSC certificate holders and is represented by IP Forêt Services, a subsidiary of International Paper (IP).

Over the past decade, the forest managers of Saint-Sylvestre have worked tirelessly to restore and conserve the biodiversity of the landscape. Their efforts were recently recognized when Sylvamo Forêt Services became entitled to an FSC

biodiversity claim, certifying the positive impact of its sustainable forest management practices. This was largely due to the organization's work with FSC France and WWF to create a toolbox that identified indicators of biodiversity, and a monitoring protocol that measured the impact of their efforts.

The successful biodiversity claim, verified under FSC's Verified Impact, was a significant achievement. It helped Sylvamo Forêt Services demonstrate the positive impact of its forest management efforts to external stakeholders.

Association with FSC's widely recognized trademark drew the attention of Française des Jeux (FDJ), the French lottery company, who signed a sponsorship deal with Sylvamo Forêt Services to support the conservation and restoration of the region's biodiversity.

For close to a decade, FSC has been part of FDJ's Corporate Social Responsibility approach. Since 2012, 100 per cent of the company's paper game cards have been printed on FSC-certified paper. By sponsoring the restoration project, FDJ can further strengthen its corporate social responsibility strategy, generate valuable marketing advantages, and increase public awareness of the need to protect biodiversity.



© FSC France



CHAPTER 3

# A glimpse of forests in the future





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*We are sharing trajectories to explore three possible forest futures. These trajectories offer a glimpse into what could transpire. They aren't predictions about what will take place, nor are they proposals about what should happen. Rather, they are conversation-starters offering a new perspective.*

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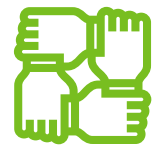


visualization © WE & Adobe Firefly

## Chapter 3: A glimpse of forests in the future

### METHODOLOGY BEHIND THE TRAJECTORIES

To explore plausible futures for forest stewardship, FSC joined forces with [Reos Partners](#) for the organization's expertise in systems-change studies and experience in transformative scenarios mapping. With Reos Partners' support, the process that followed is mapped below.



**6 FSC STAFF MEMBERS**  
+3 REOS PARTNERS ADVISORS

... **formed the core trajectories task force.** The team – comprising staff with expertise in climate, ecosystem services, forestry, and research – modelled potential futures by balancing scientific facts from publicized research with expert perceptions gathered from actors within the FSC system.



**3 MONTHS' FRAMING PHASE**

... **included in-depth interviews with a sample of FSC members during FSC's General Assembly in October 2022.** These interviews unpacked different visions of the world's forests and their future, and they built upon the two-year, co-creative process to develop FSC's Global Strategy 2021-2026.



**OVER 100 STAKEHOLDERS**  
IN THE FSC SYSTEM

... **provided input about the future of forest stewardship and shared their strategic concerns.**

This diverse group – who collectively contribute extensive knowledge and experience across economic, environmental, and social perspectives – included FSC staff from the International Secretariat and local and regional teams across the globe, FSC senior management, the Board of Directors, and FSC members from all three chambers (Environmental, Economic, and Social).



**8 MONTHS' DEVELOPMENT TIME**

... **went towards input gathering from in-person meetings, virtual workshops, and digital surveys.**

This **trajectory modelling** process, which ran from April to November 2023, also included analyzing inputs to detect common themes and patterns, grouping and categorizing input, and then validating the analysis with the core group and with select stakeholders.



The goal of trajectory modelling was to outline **what forest stewardship's impact might be by 2050 depending on the level of effort made towards it**. In this way, the trajectories would give a sense of potential risks and opportunities associated with varying levels of effort. Collected input helped the task force identify eight primary factors that could influence the management, conservation, and sustainable use of forest resources. These factors were then summarized into **four key drivers of influence, against which the task force mapped out three distinct trajectories**.

## 4 KEY DRIVERS OF INFLUENCE



### 01 | FOREST & PLANET

- Uptake of Forest Stewardship
- Response to Climate Change
- Health of Biodiversity



### 02 | PEOPLE

- Worldview Being Adopted



### 03 | ECONOMY & MARKETS

- Attitude Towards Forests
- Technological Advancement



### 04 | GOVERNANCE

- Governance Dynamics
- Collaboration Dynamics





# Overview: Three trajectories

***FSC's innovative modelling exercise identified three potential futures. These trajectories illuminate the benefits and pitfalls we will most likely experience depending on the efforts made towards forest stewardship.***





### TRAJECTORY 1: SHRINKING CANOPY

This trajectory describes a future of limited effort towards forest stewardship, with forests continuing to decline in health and size. Despite a growing awareness of the importance of forests, many regions struggle to implement effective stewardship due to a lack of resources, political will, and public engagement. Forests continue to face threats including climate change-induced stressors, a rise in illegal logging, fossil fuel exploration, and urbanization, as well as unabated land degradation for agriculture. Poorly enforced regulations make it challenging to combat deforestation, and there is limited investment in sustainable forest management. Biodiversity loss and habitat destruction are prevalent, with **negative consequences for both ecosystems and local communities.**

### TRAJECTORY 2: FRAGMENTED ROOTS

There are increased efforts towards forest stewardship in 2050 in this trajectory, but they remain insufficient. There is a simultaneous recognition of forests' value and procrastination on progress amid polarized debates, combative governance, and fragmented collaboration dynamics. Countries making progress are doing so by implementing policies and incentives that promote sustainable forest management practices. Certification systems and one-off partnerships between governments, NGOs, and local communities further incentivize responsible forest practices in these areas. Meanwhile, broader global progress stagnates due to the





complex interplay of competing interests, misaligned approaches, climate change challenges, and a failure to harness the power of new technologies. **Although forests in this future remain relatively stable in size, biodiversity teeters on the brink of collapse, and the fate of vital ecosystems hangs in the balance.**

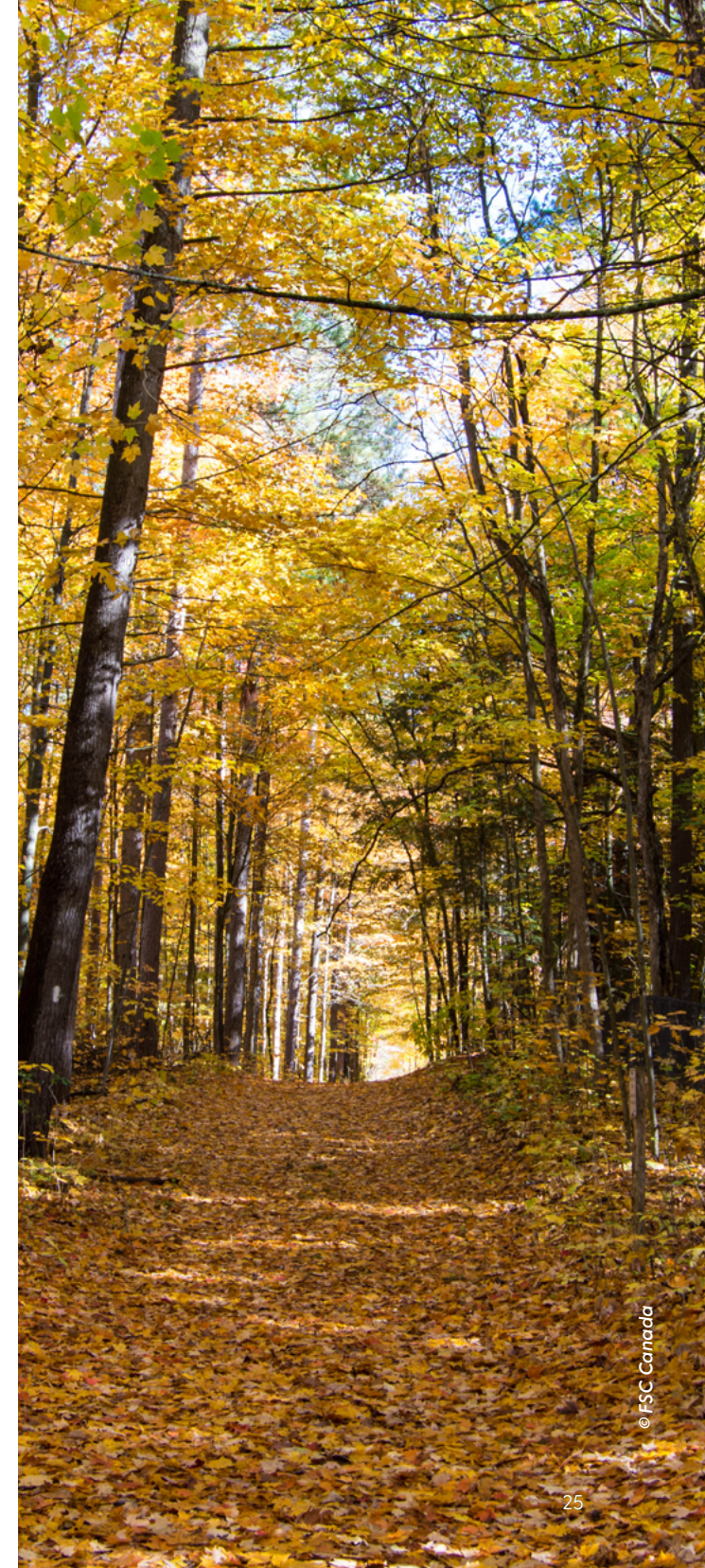
### TRAJECTORY 3: FOREST HARMONY

This is a scenario demonstrating significant effort towards forest stewardship. It presents a future where forests are resilient and healthy because they are protected and cared for in a society that co-exists in balance with the natural world. There is a global consensus on forests' true value. Building on summits and treaties such as the Paris Agreement, governments and people have dedicated more resources and investments toward halting biodiversity loss, switching to clean energy, reaching net-zero emissions, and embracing a circular economy. States have committed to ambitious reforestation targets, and advanced technologies are widely employed for monitoring and managing forests. **Sustainable forest management is the norm**, robust forest certification has gained widespread acceptance, and consumers prioritize products from responsibly managed forests. Indigenous Peoples and local communities have strong rights over their forest lands, and traditional knowledge is integrated into stewardship approaches.





DRIVERS THAT INFLUENCE		TRAJECTORY 1: SHRINKING CANOPY	TRAJECTORY 2: FRAGMENTED ROOTS	TRAJECTORY 3: FOREST HARMONY
 <b>FOREST &amp; PLANET</b>	Level of effort made towards forest stewardship	Low	Medium	High
	Response to climate change	Lack of responsive focus	Focus on adaptation	Focus on mitigation and adaptation
	Health of biodiversity	Collapsing	Surviving	Thriving
 <b>PEOPLE</b>	Implicit worldview	Me-centred	Group-centred	We-centred
 <b>ECONOMY &amp; MARKETS</b>	Technological advancement	Disruptive	Reinforcing	Catalyzing
	Attitude towards forests	Commoditization	Polarization	Cohabitation
 <b>GOVERNANCE</b>	Governance dynamics	Assertive	Combative	Collaborative
	Collaboration dynamics	Fragile: Working separately or alone, efforts to create change fall short	Fragmented: Working together in silos, efforts to create change are unsynchronized	Cohesive: Working in partnership to create change within circles of impact







In-depth  
exploration of the  
three trajectories

visualization © WE & MitajourneyBot



# Trajectory 1: Shrinking Canopy

## HOW KEY DRIVERS SHAPE THE SHRINKING CANOPY

**In a world with shrinking levels of forest stewardship, the true value of forests is not recognized. These are the consequences.**

**Unsustainable logging has persisted** despite calls for responsible management. **Extractive economic interests prevail** over stewardship, leading to rapid deforestation, particularly in the Global South<sup>24</sup>. **Forests have largely been depleted** due to threats such as unsustainable land conversion for agriculture and cattle ranching, mining, fossil fuel exploration, and urbanization.

Once-thriving forests are reduced to fragmented and degraded areas, and undisturbed forests no longer exist in large, tropical, humid regions<sup>25</sup>. Increased contact between people and forests – due to factors **including population growth and migration**, coupled with **increasing numbers of extreme weather events** – has accelerated deforestation in favour of increased development and larger agricultural areas. As natural forest habitats decrease, there is greater contact between humans and animals, increasing the risk of new zoonotic diseases and pandemics.

Flooding has increased due to deforestation, but droughts are also more frequent without forest canopies' water regulation, creating wide-ranging effects on precipitation<sup>26</sup>. Water and soil quality have deteriorated, local biodiversity has declined, and, because forests are less able to protect soil from erosion and landslides, coastal and inland landscapes are suffering the consequences.

Certification organizations and forestry NGOs maintain high stewardship standards and spend time, money, and resources to ensure the integrity of their systems. However, their impact is negligible as **fewer forest managers opt for certification** due to reduced market demand for such services.

A me-centred worldview, assertive set of governance dynamics, and fragile global collaboration between stakeholders make it challenging for innovative technological advancements to be harnessed for the greater good. This filters down into a poor attitude towards forests and **inaction around climate change**.



### 01 | FOREST & PLANET

Severe deforestation, increased greenhouse gas emissions, soil erosion, water cycle disruption, increased risk of forest fires, and loss of natural flood control.



### 02 | PEOPLE

Population displacement, loss of Indigenous Peoples' lands and traditional knowledge, reduced public health, loss of recreational areas, and increased vulnerability to environmental hazards.



### 03 | ECONOMY & MARKETS

Short-term-profit focus, over-exploitation of resources, unfair price advantage for products and services produced unsustainably or from illegal logging and conversion, loss of ecotourism revenue, dependence on non-renewable resources, fluctuating commodity prices, and increased remediation costs.



### 04 | GOVERNANCE

Weak environmental regulations, legal challenges, corruption, lack of stakeholder collaboration, difficulty enforcing forest regulations, and reduced public trust.





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## FOREST & PLANET

Forests are not protected because an **attitude of commoditization prevails**. These ecosystems are exploited for their resources at an unsustainable rate, creating **rampant deforestation and forest degradation**. As 75 per cent of the world's accessible water comes from forests, deforestation and forest degradation cause a decline in water quality<sup>27</sup>.

**Climate change is devastating** for forests in 2050. Despite certain adaptation measures, many forest ecosystems are undermined by extreme climatic events that are occurring with greater frequency and severity as the global temperature has risen approximately 2.5°C above the pre-industrial level<sup>28</sup>. Heatwaves are more frequent and boil the chlorophyll in leaves, breaking down protein complexes necessary for photosynthesis. As a result, tree growth stagnates, and forest mortality occurs in vulnerable areas<sup>29</sup>. Fires and floods due to increased precipitation<sup>30</sup> have equally devastating impacts on forests, not to mention the livelihoods of the people who depend on them.

Continued forest degradation and deforestation worsen climate change, creating a vicious circle, with **forests unable to act as carbon sinks**. As one example, consider the boreal biome, which we know stored approximately one third of terrestrial carbon stock in 2007<sup>31</sup>. By 2050, this biome's role as a carbon sink is at risk, particularly as boreal regions warm faster than the rest of Earth<sup>32,33</sup>.

**Soil and water quality have deteriorated, pollution has increased, and forests' biodiversity is negatively impacted**. The number of species in forest areas declines, with vulnerable flora and fauna vanishing as the nutrients and shelter from forests on which they depend collapse. By 2050, biodiversity is likely to have declined by another 10 per cent globally, with the decline even steeper in parts of Asia, Europe, and southern Africa<sup>34</sup>. Even in regions that see an increase in forested area, much of that area consists of monoculture plantations, so biodiversity levels do not see a similar increase. **Biodiversity loss is exacerbated by invasive species, forest fires, and pollution**. This has repercussions for the health of the entire ecosystem, as well as for medicine, food, and livelihoods.

<sup>28</sup> Keywan, R., et al (2017) *The Shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview*. *Global Environmental Change*, Volume 42, 153-168 pp [This temperature range has been partially extrapolated from the mid-term temperature (2041-2060) range of the IPCC's Shared Socio-economic Pathway (SSP) "Fossil-fueled Development – Taking the Highway" (SSP-5), as well as "Inequality – A Road Divided" (SSP-4). SSP-5 shows a world with a push for rapid development using significant resources and energy generated through fossil fuels, while SSP-4 has economic disparity, inequality in political power and investment, and stratification between high-come and low-income societies. As this publication focuses on the impact of forest stewardship, this trajectory is not an exact match for the IPCC's SSP5, but it shares several characteristics.]





## PEOPLE

The loss of forest cover and consequent soil degradation lead to **devastating floods impacting coastal communities in particular. Indigenous Peoples are hit especially hard** as extreme climate events, deforestation, and degradation **displace them from their ancestral land** and make **holding onto their traditions and culture more difficult. In Sweden, the Sami community** struggles to pay for increasingly expensive fodder or must face reducing their reindeer herds, which cannot find lichen (a critical food source) in milder winters. For the Indigenous Peoples in Africa's Kalahari Desert, traditional farming practices are impacted by increasingly extreme weather<sup>35</sup>, while native Pacific Islanders must contend with saltwater contamination as the rise in sea level affects the supply of clean water<sup>36</sup>.

Biodiversity loss – coupled with the loss of useful and marketable non-timber products such medicinal plants, fruits, spices, nuts, and seeds – severely impacts quality of life for Indigenous Peoples and local forest communities. The forest products they used to harvest have declined, making cooking traditional dishes, creating crafts, and earning an income challenging.

Non-Indigenous Peoples are also adversely affected by fires, droughts, storms, contaminated water, and biodiversity loss, all of which are exacerbated by climate change. Forest workers face increased accidents due to **unsafe working environments**. Women and minorities must contend with discriminatory practices and low pay as **regulations are insufficient or unenforced** in the forestry industry. Fewer forest managers opt to use the services of third-party certification companies, preventing these issues from being corrected through certification standards and regular audits.

As tensions rise due to the consequences of climate change and biodiversity loss, with livelihoods and lives destroyed, **society is more polarized, and desperation impedes productive dialogue**. More radical political leaders are elected or otherwise gain power as people are convinced there is no room for compromise with time running short and the economic situation becoming more dire.







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## ECONOMY & MARKETS

Forest stewards are undervalued because **market incentives favour timber consumers over producers**. Consequently, a significant proportion of forest managers prioritize production, leading to the ongoing exploitation of resources beyond sustainable levels. This trend frequently stems from the inadequate **distribution of profits from forest products** and the **lack of sufficient compensation for forest stewardship**. Forest resources are often undervalued by governments, resulting in unpaid taxes or misallocation of funds away from forest owners and managers.

The cost of sustainable forestry certification outweighs the benefits a company gets from selling certified products. This is partly due to companies struggling to communicate the

value of these products to customers who **are increasingly buying the cheapest products available** rather than opting for sustainably produced options that more realistically reflect the true costs. Producers therefore question the value of certification. Even where costs are not a concern, a substantial percentage of people are unaware of how certification helps set sustainability standards.

Forests are threatened by both the public and private sectors seeking more than can be sustainably produced at the lowest possible cost. Added to this, the **irresponsible use of new technology** like Artificial Intelligence (AI) leads to the growth of biased or inaccurate information.





## GOVERNANCE

A “me-centric” worldview prevails. There are some efforts made to tackle deforestation, climate change, and biodiversity loss at a national, regional, and global level. However, too many governments, companies, and societies in the Global North are focused on their own challenges at the expense of collaboration and mutual progress. Meanwhile, developing countries prioritize meeting peoples’ basic needs and creating conditions for economic growth, leaving few to no resources to address sustainability. **Regional sustainability policies are not aligned, environmental and societal issues worsen, and gaps between the Global North and Global South widen.**

**Global policies remain fragmented**, with some countries passing and implementing laws and regulations that mandate sustainable practices. However, in other countries, too many politicians and **policymakers do not prioritize sustainability, climate change, and biodiversity**, resulting in policies that cannot adequately address the crises the world faces. At times, even when responsible practices are legally mandated, **governments lack enforcement ability**, creating a large market for informal producers engaged in illegal practices. The expansion of unsustainable agriculture, mining, and the steady supply and reliability of fossil fuels are viewed by many governments as too lucrative to undercut with responsible environmental policies.

Policymakers have the power to deprioritize environmental policies and incentivize non-sustainable practices, thanks in part to voters’ similar views and priorities. In lower-income countries, voters remain focused on pressing issues such as poverty, economic growth, and security and therefore do not place pressure on politicians to develop, implement, and enforce regulations and incentives to ensure responsible forest management. Even in areas that feel the effects of climate change and biodiversity loss most strongly, the focus remains on short-term solutions rather than long-term changes in policy and practice. **Political instability similarly hampers forest stewardship** through policy reversals and lack of consistent leadership.

An exception to this global trend is countries dependent on exporting forest products. Here, forest managers who wish to export timber and non-timber forest products (NTFPs) must still prove they have not engaged in deforestation before trading with importing countries. As



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such, the drive towards sustainable forest management practices is primarily influenced by environmental NGOs and market demands, rather than by governments. This is due to the need for a consistent supply of specific timber species and pressure from importers.

Governments’ non-prioritization of environmental issues is reflected in their own purchasing habits. Sustainable public procurement does not make up a significant portion of public spending, with government agencies prioritizing low-cost bids instead. Fiscal policies do not adequately incentivize sustainable forest management practices, providing responsible forest managers with even fewer opportunities to earn an income. This drives many from the market or pressures them to adopt unsustainable practices to cut costs.

International organizations continue to facilitate cooperation and set climate- and forest-related targets. However, **efforts to meet these targets generally fall short**, creating a situation in which the goalposts are constantly moved with each missed deadline.



## Trajectory 2: Fragmented Roots

### HOW KEY DRIVERS SHAPE THE FRAGMENTED ROOTS

Gradually increasing efforts towards forest stewardship are gaining traction, **with limited success in getting governments and people to strike a balance between the conservation and use of forests.**

In this future, there are some successful reforestation and restoration initiatives, and some threatened and vulnerable species are recovering, creating more balance in ecosystems. However, **efforts made towards forest stewardship practices are insufficient**, resulting in tensions between forest-dependent communities and external actors seeking to exploit resources.

Forest management responsibilities are gradually being transferred to local communities and families, and these smallholders are better placed to obtain certification to demonstrate their sustainable practices to the wider market. Despite their expert management, knowledge of local communities and Indigenous Peoples is not widely embraced or respected. These groups often find themselves pitted against powerful interests, resulting in disputes over land rights and access to resources.

**Restoration, reforestation, and conservation efforts vary widely by country and region, creating gaps in forest stewardship efforts and creating market conditions that continue to incentivize the exploitation of forests.** Certification is in demand as regulations and government policies fall short of the concept of forest stewardship. Enforcement of the laws and regulations around sustainable forestry varies widely depending on the local authorities. While progress is being made, it is fragmented. For every species that has recovered, there are others that continue to be threatened.



#### 01 | FOREST & PLANET

Some reforestation, partial conservation of biodiversity and stabilization of ecosystems, limited habitat restoration, and improvement in wildlife corridors. Varying levels of resilience in forests, and continued stress on forests is particularly felt in tropical forest regions.



#### 02 | PEOPLE

Inconsistent prioritization of forests in the global sustainability agenda. Partial protection of Indigenous Peoples' cultures, improved air and water quality, increased awareness, enhanced community green spaces, and better health in urban areas.



#### 03 | ECONOMY & MARKETS

Increased but inconsistent sustainable use of forest resources, gradual growth in sustainable industries, shift towards mixed-use management, and responsible investment growth. Prices for forest products from well-managed forests are distributed more fairly, leading to sustained yields. Fragmented patchwork of forests for different purposes with leakages into surrounding areas.



#### 04 | GOVERNANCE

At the state level, there is moderate policy enforcement, improvement in legal frameworks, community involvement, and public-private partnerships. There is also greater cooperation within regions, but at the international level, governance is more combative and marked by division and gridlock.





## FOREST & PLANET

Parts of the planet are steadily progressing towards international sustainability goals. **Deforestation rates have slowed down due to better regulations**, and there is more widespread public awareness around the importance of forest stewardship. Nevertheless, increases in global temperatures continue to place stress on forests, with tropical forest regions experiencing steeper declines in forest cover<sup>37</sup>.

There are renewed efforts to recognize and value the ecosystem services that forests provide to soil, water, biodiversity, and societal well-being. However, **action is not well coordinated or drastic enough**, and striking a balance in the relationship between commercial forest products and the wide range of other benefits forests deliver remains delicate. **The repercussions of years of previous inaction are still felt**: even with an end to deforestation by 2030, 51 per cent of forests are likely already degraded<sup>38</sup>.

**Global temperatures have increased** around 2°C above pre-industrial levels, resulting in a **growing number of climate change events** such as increased extreme weather events, droughts, wildfires, and shrinking ice<sup>39</sup>. **While the severity and frequency are less pronounced** than in the first trajectory, efforts to balance nature's exploitation and restoration are insufficient to prevent reaching several tipping points, or abrupt and irreversible changes to the Earth system with potential cascading effects. Regional differences are starker, with the hardest-hit regions including Africa, South and Central America, and southern Asia. These areas lose more biodiversity and food production capabilities due to poorer soil quality, decreased numbers of fish, and extreme rainfall and heat<sup>40</sup>.

Forests vary in their overall health and resilience. Small regions excel in forest management and have experienced regeneration and expansion of forest cover, where advanced monitoring and data analysis is employed to maintain forest health. Others have achieved a level of stability in terms of forest size, ensuring sustainable resource utilization and preserving critical habitats.

Though relatively stable in size and even expanding in some regions, forests face a constant battle for survival. They are unable to fully recover or regenerate due to ongoing human pressures and the consequences of rising temperatures, making it difficult for these ecosystems to reach a state of robust health. The continuation of illicit human activity exacerbates an already tenuous state of biodiversity, bringing forest survival into question.



<sup>39</sup> Keywan, R., et al (2017) *The Shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview*. *Global Environmental Change*, Volume 42, 153-168 pp [This temperature range has been extrapolated from the mid-term temperature (2041-2060) range of the IPCC's Shared Socio-economic Pathway (SSP) "Middle of the Road," (SSP2) which shows a world with medium challenges to mitigation and adaptation. As this publication focuses on the impact of forest stewardship, this trajectory is not an exact match for the IPCC's SSPs but shares several characteristics such as continued gradual progress marked by regional and national differences.]





## PEOPLE

**Society remains polarized in its attitudes toward forests.** Education and awareness campaigns have heightened people's environmental consciousness and awareness of the importance of forests in mitigating climate change and preserving biodiversity. Yet there are still people and governments who prioritize resource extraction and unsustainable land development, advocating for increased timber harvesting and land conversion. Conservationists and environmentalists vehemently oppose such practices, emphasizing the irreplaceable value of forests for ecosystem services, climate stability, and biodiversity conservation.

**In some areas, women and marginalized groups experience an increase in opportunities to participate in decision-making processes, and benefit from forest-related activities.** Local communities living near forests have a stronger voice in forest management decisions, but collaboration has, by and large, remained siloed, slowing progress and resulting in unsynchronized efforts to create change. Tensions persist between forest-dependent communities and external actors seeking to exploit resources. Despite efforts made to ensure that forest stewardship practices are more inclusive and equitable, Indigenous Peoples' knowledge and local communities' interests are sometimes disregarded, leading to conflicts over land rights and resource access.





## ECONOMY & MARKETS

The debate over balancing economic development with conservation efforts remains contentious and unresolved.

**The pressing and sometimes short-sighted economic interests of countries and their governments often outweigh the long-term benefits of sustainable forest management, although those benefits are increasingly recognized and prioritized.**

Market demand has created competing forest values, with some forests valued for carbon, others for their biodiversity, and others still for timber and various forest products. A holistic forest stewardship approach is more common in 2050; however, many forests are still not managed according to high forest stewardship standards, creating a fragmented patchwork of forests for different purposes accompanied by leakages of exploitative practices into adjacent areas.

Community forest enterprises, which have gained traction due to their involvement in sustainable forest management, contribute to local economies. These enterprises provide employment opportunities and generate **income for communities living near forests**, fostering economic resilience in these regions and among marginalized groups.







## GOVERNANCE

**The governance landscape surrounding forests is marked by division and power struggles.** Not all authorities will commit to protecting and conserving the biodiversity of forests, largely due to divergent economic interests.

Some countries and regions acknowledge that forests play a crucial role in mitigating climate change, conserving biodiversity, and supporting human well-being. Adaptive management strategies and fragmented collaborations have emerged between certain stakeholder groups, leading to more effective responses to these issues. They have implemented a range of policies and incentives to promote sustainable forest management practices, including restrictions on deforestation, subsidies for afforestation and reforestation projects, and financial incentives for responsible timber harvesting.

In some places, however, there is greater anthropogenic pressure on forests, and socio-environmental problems have increased due to invasion, deforestation, trafficking of forest lands, burning of forests, illegal logging, and poaching, among others. **Competing political ideologies and vested interests have led to deadlock and gridlock in decision-making processes.** Governments exert their power over forest resources, sometimes at the expense of ecological conservation and local communities.

While **substantial progress has been made in certain pockets of the world,** governance dynamics globally are characterized as combative and fall short of the global need for coordinated efforts to fill collaboration gaps and create swift, systemic change.



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### 01 | FOREST & PLANET

Widespread reforestation, rich biodiversity, increased carbon sequestration, restoration of ecosystems, robust wildlife conservation, and improved quality of air and water.



### 02 | PEOPLE

Protection of Indigenous Peoples' rights, enhanced quality of life, strong cultural engagement, widespread environmental education, renewed connection between humans and nature, and improved overall well-being.



### 03 | ECONOMY & MARKETS

Thriving circular green economy, long-term sustainability, high investment in renewable resources, innovation in green technology, and strong market for ecosystem services, dominated by mass timber for construction and housing.



### 04 | GOVERNANCE

Strong environmental policies, effective international cooperation on forests and transboundary ecosystems, high stakeholder engagement, comprehensive policies, high levels of transparency and accountability, as well as community representation in governance.

## Trajectory 3: Forest Harmony

### HOW KEY DRIVERS SHAPE THE FOREST HARMONY

**By 2050, the world's forests experience a renaissance. These are the projected benefits when forest stewardship is a global priority.**

**Widespread adoption of ecosystem services, conservation, and restoration creates more resilient forests.** Early adopters actively support and fund reforestation, and there is renewed passion to protect existing forests and harvest forest products responsibly. Restoration goes beyond cultivating large plantations to offset carbon emissions. Rather, it encompasses a **holistic approach to restoring biodiverse forests.**

**Forest biodiversity is flourishing** thanks to concerted efforts in conservation and responsible management, based on reduced-impact logging for climate-change mitigation and sustainable single-species yield calculations. Forest ecosystems are home to a wealth of species, some of which have been brought back from the brink of extinction.

**Advanced technologies enable precise monitoring of biodiversity,** allowing forest managers to monitor forest conditions in real-time, manage resources sustainably, and communicate the positive impacts of forest stewardship on biodiversity. AI is used fairly and responsibly, which streamlines access to decentralized information, allowing forest managers to better understand and implement standards.







## FOREST & PLANET

There is a positive transformation in the world's forests, which are successfully adapting to the challenges posed by climate change. Resilient species are emerging, and **management strategies focusing on climate resilience are bearing fruit.** Forests remain important carbon sinks, helping to mitigate the effects of global heating. As outlined in the objective of the Paris Agreement, a variety of climate-focused measures, including those targeted at ensuring resilient forests, have kept the global temperature increase to approximately 1.5°C above pre-industrial levels, preventing more severe consequences of climate change<sup>41,42</sup>. Limited areas like the European Union are climate-neutral, with forests a major contributing solution for mitigating global heating<sup>43</sup>.

Large-scale and widespread **reforestation projects are successful**, with new forests thriving. These forests are not only important for production and conservation but are also valued for their carbon sequestration capabilities, supporting a global effort to mitigate climate change. **Extensive restoration efforts have revitalized formerly degraded forests**, and innovative methods have been implemented to rehabilitate soils and replant native species. These restored forests now support abundant life and serve as inspiring examples for other parts of the world.

A range of mitigation and adaptation measures have been developed and are being implemented in response to climate change. Some regions are implementing “closer-to-nature” forestry practices to enhance forest resilience. They focus on promoting robust tree species, while wood-processing industries are better equipped to handle wood from calamities.

**Reforestation initiatives are underway** in various parts of the world. Zero-deforestation goals are upheld as the industry standard, with a positive impact on biodiversity. In fact, fauna and flora are thriving – while this supports forest resilience-building and climate-change mitigation, **nurturing biodiversity is also pursued as a goal in and of itself.**

42 Keywan, R., et al (2017) *The Shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview*. Global Environmental Change, Volume 42, 153-168 pp [This temperature range has been taken from the goal set out in the Paris Agreement and has also been extrapolated from the mid-term temperature (2041-2060) range of the IPCC's Shared Socio-economic Pathway (SSP) "Sustainability – Taking the Green Road," (SSP1) which shows a world with low challenges to mitigation and adaptation. As this publication focuses on the impact of forest stewardship, this trajectory is not an exact match for the IPCC's SSPs but shares several characteristics such as a shift toward greater sustainability, reduced inequality, and greater emphasis on human wellbeing.]







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## PEOPLE

An understanding of the **sympiotic relationship between people and nature is engrained in societies. Cohesive collaboration across sectors and regions** allows for greater impact, placing pressure on policymakers to make meaningful changes. Leaders in the climate and sustainability space are acting boldly, trying new approaches and implementing new solutions to address the urgent problems that the world faces.

Local communities play a vital role in protecting forests. People in cities and urban regions embrace city trees with urban forestry, and its importance for human health and well-being is widely recognized. With wooden construction and urban planning, cities have become carbon sinks, and are now better equipped to manage droughts and floods. Green corridors and urban networks have been established to provide animals with thriving and connected habitats as well, creating greater harmony between people and nature.

Communities and families manage a significant portion of forests and, in adhering to strict global principles for responsible forestry, have the opportunity to gain certification for their forests, which will help them reach important markets without a large financial burden. **Smallholders have a vested interest** in seeing their forests continuing to thrive. They obtain benefits from their efforts, being **rewarded for the sustainable practices** they have traditionally implemented.

Indigenous Peoples are vital in the fight against biodiversity loss. These **communities are empowered, and their rights are protected** – this includes their rights of land ownership, use of land, and access to resources by requiring businesses to obtain Free, Prior, and Informed Consent (FPIC) from Indigenous Peoples' communities. FPIC has become the norm as businesses and Indigenous Peoples strive to achieve mutual benefits while ensuring the long-term health of forests. These safeguards allow Indigenous Peoples to continue to act as stewards for the forests they have lived in and cared for over generations.

**The forest certification model has been carefully thought out, designed, and implemented by all** the actors involved, representing an effective mechanism for the conservation, use, development, management, and transformation of forests.





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## ECONOMY & MARKETS

As the true **value of forests is recognized, it is incorporated into markets with forest stewards rewarded for their efforts.** Demand from the private sector incentivizes sustainable practices, creating a world where forests are seen as invaluable. In addition to shaping more resilient forests, this **demand has generated economic growth:** each U.S. dollar invested in restoration creates up to USD30 in economic benefits<sup>44</sup>. 'Natural capital', which includes energy, minerals, agricultural lands, and forests, is being increasingly included alongside economic capital to create more holistic measures of wealth, which incorporate the 'non-market' benefits and key functions of nature, such as fertile soil and clean water and air.<sup>45</sup>

**The private sector supports and prioritizes responsibly sourced materials, and more consumers seek to buy environmentally friendly products.** Forest materials are traceable back to the sustainably managed source, ensuring credibility in the supply chain. Consumers are aware of certifications like FSC, and these certifications inform their purchases. As a result, **companies have increased their sustainable offerings and advertise their climate-friendly supply chains.** A low-carbon, circular economy is now prevalent, and sustainably sourced wood is used in place of unsustainable materials on a large scale when recycled materials are not feasible. **Bio-based material** such as wood increasingly replaces fossil-based materials for products including furniture, textiles, and packaging. There is also a decrease in the use of virgin forest-based fibres and an increase in the use of certified fibres, particularly recycled fibres. The energy sector has equally transitioned from fossil fuels to renewables, sustainably powering industries such as construction.





## GOVERNANCE

Zero-deforestation has become the norm through **international cooperation and the implementation of stringent policies that prioritize forest health over exploitation.**

Enhanced mechanisms of multilateral collaboration support most countries' governments in their commitment to reaching international climate and forest targets.

Forest, agricultural, and mining policies are harmonized, meaning unsustainable land conversion for agriculture or mining is not incentivized. Instead, **fiscal policies incentivize sustainable forest management**, encouraging forest managers to enter into and remain in the formal market and use responsible practices.

Beyond governments, civil society is making progress by working not only with like-minded partners but by advancing selective collaboration with partners who do not share similar views. In this way, they expand their scope of influence and foster change. These collective actions have an outsized impact through amplification and further adoption of solutions. **Civil society organizations have also partnered with the private sector to achieve real impact**, unleashing the resources of the private sector through sustainable finance and investments at the local, national, and regional levels.

**Diverse voices are given the opportunity to advocate for change**, creating richer knowledge, increased adoption of solutions, and broader impact on the health of forests and the world.





CHAPTER 4

# Moving forward as forest advocates

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*A key learning from the trajectories is that society must interrogate the structures, capabilities, worldviews, and attitudes with which we are approaching forests, forestry, and forest stewardship.*

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## ACTIVATING THE FULL POTENTIAL OF FOREST STEWARDSHIP

**There is much to consider in the possible futures the trajectories present. These possibilities are informed by multiple factors, not all of which may evolve in the way or timeline we posit. It is crucial to read the trajectories not as set-in-stone futures, but as conversation-starters, prompting readers to scrutinize widely held assumptions, entertain possibilities, and engage with diverse interests and points of view.**

FSC sees these potential pathways as a **catalytic framing for further dialogue and collaboration**. Our intention is to use these explorations as a jumping off point that allows stakeholders to engage more rigorously and widely in a collective exploration of the best way forward for the world's forests. Such exploration, of course, must be grounded in evidence and incorporate existing solutions and practices, while also engaging creative imagination and relevant technologies, spotting emerging trends, and bridging silos.



This publication highlights that the positive role of forests should not be taken for granted in the future. For forests to truly become our allies, they need to be resilient, and this can only be achieved through stewardship. To activate the potential of forest stewardship – shown to be **pivotal in the best-case scenario, supporting FSC's assertion that it is the preferred approach** – we must accelerate collaborative learning, monitoring, innovation, and action across sectors, interests, cultures, and knowledge systems. Our future is created by the choices and actions – or inactions – of today. We are at crossroads and the time for action is now.

Considering the trajectories outlined here, **FSC invites stakeholders to engage further with us in mapping the path ahead**, illuminating both potential risks and new avenues of opportunity. The challenges we face are formidable and multi-faceted, and **solutions will only be found when we leverage the perspectives and contributions of the full spectrum of stakeholders**. How should forest stewardship be shaped in the forthcoming years? While there are different approaches to finding and implementing solutions to the crises, what may connect us all is a recognition of the importance of forest stewardship and a commitment to creating a future with resilient forests. This is true for the FSC membership, staff, and certificate holders, but also for stakeholders outside the FSC system who have rich insights to share.

The challenges we face cannot be solved in silos. Rather, we need to create opportunities for discussion among different groups in spaces where participants can freely co-create solutions. Together, we can develop strategic, balanced plans to ensure the world's forests continue to thrive, support life, and find **bold joint responses to the challenges ahead**.

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*Will you join us on this  
transformative journey?*

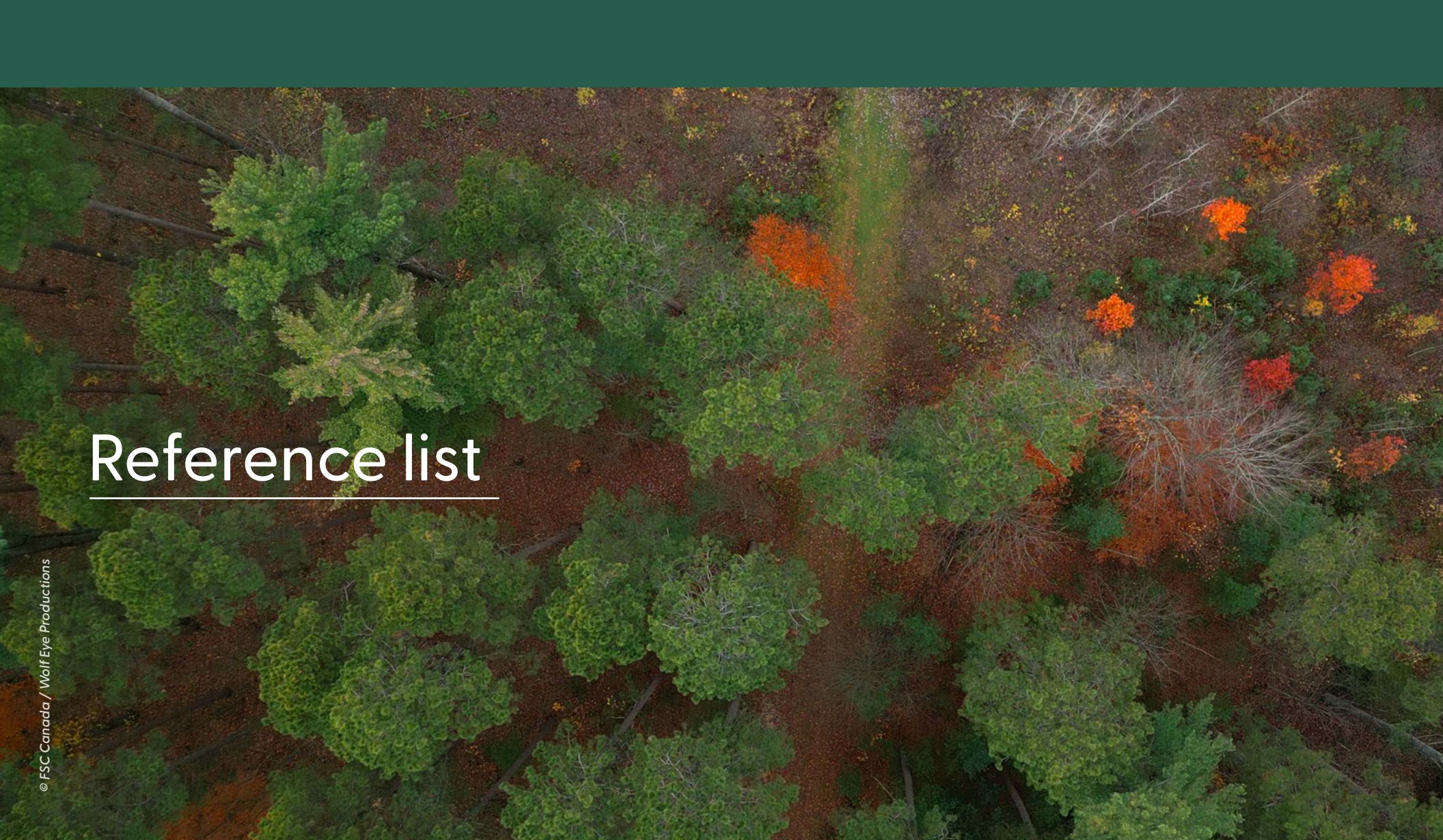
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An aerial photograph of a forest. The left side shows a dense stand of green coniferous trees. The right side shows a mix of green and orange trees, possibly deciduous, with some bare branches. The ground is covered in brown leaves and twigs.

# Reference list

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- 1 Copernicus Climate Change Service (2023) *Global Climate Highlights 2023*. Copernicus European Centre for Medium-Range Weather Forecasts (ECMWF), Reading. <https://climate.copernicus.eu/global-climate-highlights-2023> (accessed 19 January 2024).
- 2 World Economic Forum (2020) *Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy*. New Nature Economy Report 2020. World Economic Forum in collaboration with PwC, Cologny/Geneva, 8 pp. (Also available at [https://www3.weforum.org/docs/WEF\\_New\\_Nature\\_Economy\\_Report\\_2020.pdf](https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf), accessed 2 October 2023).
- 3 WWF (nd) *WWF Initiatives: Forests*. World Wildlife Fund, Washington. <https://www.worldwildlife.org/initiatives/forests> (accessed 2 October 2023).
- 4 Westerlaan, P., Henschel, C., and Brotto, L. (2021) *Guidance for Demonstrating Ecosystem Services Impacts*. FSC International, Bonn. (Also available at <https://connect.fsc.org/document-centre/documents/resource/336>, accessed 2 October 2023).
- 5 World Economic Forum (2020) *The Global Risks Report 2020 15th Edition Insight Report*. World Economic Forum in partnership with Marsh & McLennan and Zurich Insurance Group, Cologny/Geneva. (Also available at <https://www.weforum.org/reports/the-global-risks-report-2020/>, accessed 2 October 2023)
- 6 Almond, R.E.A., Grooten, M., Juffe Bignoli, D., and Petersen, T. (eds) (2022) *Living Planet Report 2022 – Building a nature-positive society*. WWF in partnership with Zoological Society of London ZSL, Gland. (Also available at [https://wwflpr.awsassets.panda.org/downloads/lpr\\_2022\\_full\\_report.pdf](https://wwflpr.awsassets.panda.org/downloads/lpr_2022_full_report.pdf), accessed 2 October 2023)
- 7 Brondizio, E. S., Settele, J., Diaz, S., and Ngo, H. T. (eds) (2019) *IPBES The Global Assessment Report on Biodiversity and Ecosystem Services*. Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services, Bonn. (Also available at <https://www.ipbes.net/global-assessment>, accessed 2 October 2023).
- 8 Almond, R.E.A., Grooten, M., Juffe Bignoli, D., and Petersen, T. (eds) (2022) *Living Planet Report 2022 – Building a nature-positive society*. WWF in partnership with Zoological Society of London ZSL, Gland. (Also available at [https://wwflpr.awsassets.panda.org/downloads/lpr\\_2022\\_full\\_report.pdf](https://wwflpr.awsassets.panda.org/downloads/lpr_2022_full_report.pdf), accessed 2 October 2023).
- 9 Food and Agriculture Organization of the United Nations (2022) *The State of the World's Forests 2022. Forest pathways for green recovery and building inclusive, resilient and sustainable economies*. FAO, Rome. (Also available at <https://www.fao.org/documents/card/en/c/cb9360en>, accessed 31 July 2023).
- 10 IPCC (2023) *Summary for Policymakers*. In: *Climate Change 2023 Synthesis Report*. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Lee, H., and Romero, J. (eds)]. IPCC, Geneva, 1-34 pp. (Also available at [https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_SPM.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf), accessed 17 October 2023).
- 11 Center for International Forestry Research (CIFOR) (nd) *Climate change, energy and low-carbon development*. CIFOR, Bogor. <https://www.cifor.org/team/climate-change-energy-and-low-carbon-development/> (accessed 17 October 2023).
- 12 Almond, R.E.A., Grooten, M., Juffe Bignoli, D., and Petersen, T. (eds) (2022) *Living Planet Report 2022 – Building a nature-positive society*. WWF in partnership with Zoological Society of London ZSL, Gland. (Also available at [https://wwflpr.awsassets.panda.org/downloads/lpr\\_2022\\_full\\_report.pdf](https://wwflpr.awsassets.panda.org/downloads/lpr_2022_full_report.pdf), accessed 2 October 2023).
- 13 United Nations (nd) *Ensure sustainable consumption and production patterns*. United Nations Statistics Division, New York. <https://unstats.un.org/sdgs/report/2019/goal-12/> (accessed 2 October 2023).
- 14 Almond, R.E.A., Grooten, M., Juffe Bignoli, D., and Petersen, T. (eds) (2022) *Living Planet Report 2022 – Building a nature-positive society*. WWF in partnership with Zoological Society of London ZSL, Gland. (Also available at [https://wwflpr.awsassets.panda.org/downloads/lpr\\_2022\\_full\\_report.pdf](https://wwflpr.awsassets.panda.org/downloads/lpr_2022_full_report.pdf), accessed 2 October 2023).
- 15 Nabuurs, G.J., Verkerk, P.J., Schelhaas, M.J., González Olabarria, J.R., Trasobares, A., and Cienciala, E. (2018) *Climate-Smart Forestry: mitigation impacts in three European regions*. From Science to Policy 6. European Forest Institute, Joensuu. (Also available at [https://efi.int/sites/default/files/files/publication-bank/2018/efi\\_fstp\\_6\\_2018.pdf](https://efi.int/sites/default/files/files/publication-bank/2018/efi_fstp_6_2018.pdf) accessed 2 October 2023).
- 16 Graham-Brown, A. (2021) *Reconnecting with nature through the circular bioeconomy – and forests*. World Business Council for Sustainable Development, Geneva <https://www.wbcsd.org/Overview/News-Insights/WBCSD-insights/Reconnecting-with-nature-through-the-circular-bioeconomy-and-forests> (accessed 16 October 2023).
- 17 Food and Agriculture Organization of the United Nations (2022) *The State of the World's Forests 2022. Forest pathways for green recovery and building inclusive, resilient and sustainable economies*. FAO, Rome. (Also available at <https://www.fao.org/documents/card/en/c/cb9360en>, accessed 31 July 2023).
- 18 Curtis, P.G., Slay, C.M., Harris, N.L., Tyukavina, A., Hansen, M.C. (2018) *Classifying drivers of global forest loss*. *Science* Volume 361, pp 1108-1111. <https://doi.org/10.1126/science.aau3445>
- 19 Chandrasekhar, A. (2023) *Rubber drives 'at least twice' as much deforestation as previously thought*. Carbon Brief, London. <https://www.carbonbrief.org/rubber-drives-at-least-twice-as-much-deforestation-as-previously-thought/> (accessed 19 January 2024).
- 20 World Economic Forum (2020) *Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy*. New Nature Economy Report 2020. World Economic Forum in collaboration with PwC, Cologny/Geneva. (Also available at [https://www3.weforum.org/docs/WEF\\_New\\_Nature\\_Economy\\_Report\\_2020.pdf](https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf), accessed 2 October 2023).
- 21 Center for International Forestry Research (CIFOR) (nd) *Climate change mitigation and REDD+*. CIFOR, Bogor. <https://www.cifor.org/topic/climate-change-mitigation-redd/> (accessed 2 October 2023).
- 22 IPCC (2023) *Summary for Policymakers*. In: *Climate Change 2023 Synthesis Report*. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Lee, H., and Romero, J. (eds)]. IPCC, Geneva, 1-34 pp. (Also available at [https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_SPM.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf), accessed 17 October 2023).
- 23 Anon. (2022) *COP15 ends with landmark biodiversity agreement*. United Nations Environment Programme, Nairobi. <https://www.unep.org/news-and-stories/story/cop15-ends-landmark-biodiversity-agreement> (accessed 2 October 2023).
- 24 World Population Review [2024] *Deforestation Rates by Country 2024*. World Population Review, Pennsylvania. <https://worldpopulationreview.com/country-rankings/deforestation-rates-by-country> (accessed 19 January 2024).
- 25 Mollins, J. (2021) *Undisturbed forests could cease to exist in large tropical humid regions by 2050, study says*. *Forests News*, Nairobi. <https://forestsnews.cifor.org/71810/undisturbed-forests-could-cease-to-exist-in-large-tropical-humid-regions-by-2050-study-says?fnl=en> (accessed 19 January 2024).
- 26 Global Commission on the Economics of Water (2023) *Turning the Tide: A Call to Collective Action*. OECD Environment Directorate Climate, Biodiversity and Water Division, Paris. <https://watercommission.org/wp-content/uploads/2023/03/Turning-the-Tide-Report-Web.pdf> (accessed 7 February 2024).
- 27 IUFRO (2024) *Forests and society towards 2050*. Secretariat for IUFRO World Congress, Uppsala. <https://iufro2024.com/iufro-world-congress-2024/forests-and-society-towards-2050/> (accessed 19 January 2024).



- 28 Keywan, R., van Vuuren, D.P., Kriegler, E., Edmonds, J., O'Neill, B.C., Fujimori, S., Bauer, N., Calvin, K., Dellink, R., Fricko, O., Lutz, W., Popp, A., Cuaresma, J.C., KC, S., Leimbach, M., Jiang, L., Kram, T., Rao, S., Emmerling, J., Ebi, K., Hasegawa, T., Havlik, P., Humpenöder, F., Da Silva, L.A., Smith, S., Stehfest, E., Bosetti, V., Eom, J., Gernaat, D., Masui, T., Rogelj, J., Strefler, J., Drouet, L., Krey, V., Luderer, G., Harmsen, M., Takahashi, K., Baumstark, L., Doelman, J.C., Kainuma, M., Klimont, Z., Marangoni, G., Lotze-Campen, H., Obersteiner, M., Tabeau, A., Tavoni, M. (2017) The Shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview. *Global Environmental Change*, Volume 42, 153-168 pp (Also available at <https://www.sciencedirect.com/science/article/pii/S0959378016300681#bibl0005>, accessed 7 February 2024).
- 29 Rao, M.P., Davi, N.K., Magney, T.S., Andreu-Hayles, L., Nachin, B., Suran, B., Varuolo-Clarke, A.M., Cook, B. I., D'Arrigo, R.D., Pederson, N., Odrentsen, L., Rodriguez-Catón, M., Leland, C., Burentogtokh, J., Gardner, W. R. M., and Griffin, K. L. (2023) Approaching a thermal tipping point in the Eurasian boreal forest at its southern margin. *Communications Earth & Environment* Volume 4: 247 <https://doi.org/10.1038/s43247-023-00910-6>
- 30 IPCC (2023) *Summary for Policymakers*. In: *Climate Change 2023 Synthesis Report*. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Lee, H., and Romero, J. (eds)]. IPCC, Geneva, 1-34 pp. (Also available at [https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_SPM.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf), accessed 17 October 2023).
- 31 Pan, Y., Birdsey, R.A., Fang, J., Houghton, R., Kauppi, P.E., Kurz, W.A., Phillips, O.L., Shvidenko, A., Lewis, S.L., Canadell, J.G., Ciais, P., Jackson, R.B., Pacala, S.W., McGuire, A.D., Piao, S., Rautiainen, A., Sitch, S., and Hayes, D. (2011) A Large and Persistent Carbon Sink in the World's Forests. *Science* Volume 333, pp. 988-993. DOI: 10.1126/science.1201609
- 32 Rao, M.P. (2023) *Behind the Paper: The Eurasian boreal forest may not be ready for future heat waves*. Springer Nature Research Communities. (Also available at <https://communities.springernature.com/posts/the-eurasian-boreal-forest-may-not-be-ready-for-future-heat-waves>, accessed 19 January 2024).
- 33 Davi, N. K., Rao, M. P., Wilson, R., Andreu-Hayles, L., Oelkers, R., D'Arrigo, R., Nachin, B., Buckley, B., Pederson, N., Leland, C., Suran, B. (2021) Accelerated Recent Warming and Temperature Variability over the Past Eight Centuries in the Central Asian Altai from Blue Intensity in Tree Rings. *Geophysical Research Letters* Volume 48. <https://doi.org/10.1029/2021GL092933>
- 34 OECD (2012) *OECD Environmental Outlook to 2050: The Consequences of Inaction*. OECD, Paris. (Also available at <https://web.archive.oecd.org/2012-06-14/87119-49897175.pdf>, accessed 19 January 2024).
- 35 United Nations Department of Economic and Social Affairs: Indigenous Peoples and Development Branch (nd) *The effects of climate change on indigenous peoples*. UN DESA, Indigenous Peoples and Development Branch/Secretariat of the Permanent Forum on Indigenous Issues (IPDB/SPFII), New York. (Also available at <https://www.un.org/development/desa/indigenouspeoples/climate-change.html>, accessed 19 January 2024).
- 36 United States Environmental Protection Agency (nd) *Climate Change and the Health of Indigenous Populations*. EPA, Washington, D.C. (Also available at <https://www.epa.gov/climateimpacts/climate-change-and-health-indigenous-populations>, accessed 19 January 2024).
- 37 Bastin, J.F., Finegold, Y., Garcia, C., Mollicone, D., Rezende, M., Routh, D., Zohner, C.M., Crowther, T.W. (2019) The Global Tree Restoration Potential. *Science* Volume 365, pp 76-79 (Also available at <https://www.science.org/doi/10.1126/science.aax0848>, accessed 7 February 2024).
- 38 Zanon, S., (2023) *70% of the Amazon forest could be degraded by 2050*. InfoAmazonia, São Paulo. (Also available at <https://infoamazonia.org/en/2023/03/30/70-of-forests-could-be-degraded-by-2050/>, accessed 19 January 2024).
- 39 Keywan, R., van Vuuren, D.P., Kriegler, E., Edmonds, J., O'Neill, B.C., Fujimori, S., Bauer, N., Calvin, K., Dellink, R., Fricko, O., Lutz, W., Popp, A., Cuaresma, J.C., KC, S., Leimbach, M., Jiang, L., Kram, T., Rao, S., Emmerling, J., Ebi, K., Hasegawa, T., Havlik, P., Humpenöder, F., Da Silva, L.A., Smith, S., Stehfest, E., Bosetti, V., Eom, J., Gernaat, D., Masui, T., Rogelj, J., Strefler, J., Drouet, L., Krey, V., Luderer, G., Harmsen, M., Takahashi, K., Baumstark, L., Doelman, J.C., Kainuma, M., Klimont, Z., Marangoni, G., Lotze-Campen, H., Obersteiner, M., Tabeau, A., Tavoni, M. (2017) The Shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview. *Global Environmental Change*, Volume 42, 153-168 pp (Also available at <https://www.sciencedirect.com/science/article/pii/S0959378016300681#bibl0005>, accessed 7 February 2024).
- 40 IPCC (2023) *Summary for Policymakers*. In: *Climate Change 2023 Synthesis Report*. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Lee, H., and Romero, J. (eds)]. IPCC, Geneva, 1-34 pp. (Also available at [https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_SPM.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf), accessed 17 October 2023).
- 41 United Nations Framework Convention on Climate Change (nd) *The Paris Agreement*. UNFCCC, Bonn. (Also available at <https://unfccc.int/process-and-meetings/the-paris-agreement>, accessed 19 January 2024).
- 42 Keywan, R., van Vuuren, D.P., Kriegler, E., Edmonds, J., O'Neill, B.C., Fujimori, S., Bauer, N., Calvin, K., Dellink, R., Fricko, O., Lutz, W., Popp, A., Cuaresma, J.C., KC, S., Leimbach, M., Jiang, L., Kram, T., Rao, S., Emmerling, J., Ebi, K., Hasegawa, T., Havlik, P., Humpenöder, F., Da Silva, L.A., Smith, S., Stehfest, E., Bosetti, V., Eom, J., Gernaat, D., Masui, T., Rogelj, J., Strefler, J., Drouet, L., Krey, V., Luderer, G., Harmsen, M., Takahashi, K., Baumstark, L., Doelman, J.C., Kainuma, M., Klimont, Z., Marangoni, G., Lotze-Campen, H., Obersteiner, M., Tabeau, A., Tavoni, M. (2017) The Shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview. *Global Environmental Change*, Volume 42, 153-168 pp (Also available at <https://www.sciencedirect.com/science/article/pii/S0959378016300681#bibl0005>, accessed 7 February 2024).
- 43 Directorate-General for Climate Action, European Commission (2019) *Going Climate-Neutral by 2050: A Strategic Long-term Vision for a Prosperous, Modern, Competitive and Climate-neutral EU Economy*. Publications Office, Luxembourg. (Also available at <https://op.europa.eu/en/publication-detail/-/publication/92f6d5bc-76bc-11e9-9f05-01aa75ed71a1>, accessed 30 January 2024)
- 44 United Nations Environment Programme (2022). *Beyond GDP: making nature count in the shift to sustainability*. United Nations Environment Programme, Nairobi. (Also available at <https://www.unep.org/news-and-stories/story/beyond-gdp-making-nature-count-shift-sustainability>, accessed 19 January 2024).
- 45 Lange, G. M., Wodon, Q., Carey, K. (eds) (2018) *The Changing Wealth of Nations 2018: Building a Sustainable Future*. The World Bank, Washington, D.C. (Also available at <https://openknowledge.worldbank.org/server/api/core/bitstreams/8ffebac9-de82-52fd-a362-a2ef1446598f/content>, accessed 19 January 2024).









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