

IUCN Policy Statement on Primary Forests Including Intact Forest Landscapes

1. Introduction

1.1 IUCN policy context

Building upon the 2012 Jeju Resolution 5.060 *Strengthening the role of IUCN in saving the world's primary forests*, at the 2016 Hawai'i IUCN World Conservation Congress, members passed resolution WCC-2016-Res-045-EN on *The protection of primary forests, including intact forest landscapes* (PF-IFL, hereafter). This resolution requested the IUCN Director-General to ensure that the conservation of PF-IFL is an integral component of the implementation of the IUCN Programme 2017-2020 and to have the IUCN Primary Forest Task Team develop a draft policy statement on their conservation to be approved by Council.

This document responds to clause 2.a of the resolution which mandates a draft policy statement on “the importance of the conservation of PF-IFL, taking fully into account conceptual and operational issues with defining these terms so that they are broadly applicable to all forest types, including consideration of how their conservation can contribute to IUCN’s nature-based solutions.” This policy statement will be supported by the IUCN work programme, particularly the Forest Conservation Programme’s business line on primary forests in support of broader Union application.

A second guidance document provides recommendations for implementing this policy by IUCN constituents and other stakeholders, responding to operative clauses 2.b to 2.e of the resolution, namely, to examine mechanisms, opportunities for, and barriers to the protection of PF-IFL. That document also provides detailed additional references to sources of facts, data, and methods referred to here.

1.2 Global context

We are at a critical juncture in Earth’s history, where recognising the scale of the climate and the biodiversity crises confronting life on Earth, and understanding and taking action based on the linkages between them, will be critical to humanity’s survival and that of the greater community of life.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)¹ called for the biodiversity crisis to be treated as seriously for life on Earth as the climate crisis. The 2019 IPBES Global Assessment Report highlighted the likely extinction of one million species, which received unprecedented global attention and reinforced the urgency of protecting and restoring ecosystem integrity.



The Convention on Biological Diversity (CBD) not only expressed deep concern about the impact of climate change on biodiversity, but also that the “escalating destruction, degradation, and fragmentation of ecosystems would reduce their capacity to store carbon and lead to increases in greenhouse gas emissions, reduce the resilience and stability of ecosystems, and make the climate change crisis ever more challenging” (CBD COP 14/5).²

Reflecting the increasingly recognised linkages, the CBD also called for greater integration of the key environmental Conventions – the CBD, United Nations Framework Convention on Climate Change (UNFCCC), United Nations Convention to Combat Desertification (UNCCD) – and other international instruments, and gave new emphasis to the importance of primary forests when it noted the “exceptional importance of primary forest for biodiversity conservation” and “the urgent necessity to avoid major fragmentation, damage to and loss of, primary forests of the planet...” (CBD COP 14/30).³

The 5-year assessment report of the New York Declaration on Forests noted that, “The continued loss of primary forests, at ever-increasing rates, despite their incalculable value and irreplaceability is both shocking and tragic.”⁴

The Intergovernmental Panel on Climate Change (IPCCC) 1.5°C Report (IPCC 2018)⁵ also noted that given the limited available time, substantially increased climate action on land and forests would, if combined with deep cuts in industrial emissions, provide a pathway to limit warming to 1.5 degrees – the guardrail necessary to minimise climate impacts on biodiversity and ecosystem integrity. The IPCC Special Report on Climate Change and Land noted, “while some response options have an immediate impact, others take decades to deliver measurable results. Examples of response options with immediate impacts include the conservation of high-carbon ecosystems such as peatlands, wetlands, rangelands, mangroves, and forests.” Accordingly, UNFCCC COP 25 decision 1/CP.25 “Underlines the essential contribution of nature to addressing climate change and its impacts and the need to address biodiversity loss and climate change in an integrated manner.”

Moreover, the 2019 UNEP Emissions Gap Report⁶ warns that even if all current unconditional commitments under the Paris Agreement are implemented, temperatures are expected to rise by 3.2°C, bringing even wider-ranging and more destructive climate impacts. It emphasises that all nations must substantially increase ambition in their Nationally Determined Contributions (NDCs), and the collective ambition must increase more than fivefold over current levels to deliver the cuts needed over the next decade for the 1.5°C goal.

The world community must take strong measures to address the biodiversity and climate crises if we are to avoid catastrophic outcomes. Increased leadership is



needed to drive and shape the ambition required to tackle the climate change and biodiversity crises and underpin sustainable development and each of the sustainable development goals. This policy, therefore, is framed to help meet these unprecedented challenges and to assist IUCN to provide the global leadership and guidance called for on PF-IFL.

Whether looked at it in isolation or together, the importance of tackling both crises by improving the protection, restoration, and management of all-natural ecosystems and, in particular, protecting and restoring high integrity, bio-diverse, carbon-rich ecosystems such as PF-IFL, has never been more urgent.

The severe consequences for humanity of biodiversity loss are a hidden terror already prevalent but rarely understood by society. To secure life on Earth, we need bold, transformative action, underpinned by sound science and effective policy
(IUCN submission to the CBD on the post-2020 framework)

2. Purpose, scope and target audience

2.1 Purpose and scope

PF-IFL play a pivotal role in providing essential, effective, and enduring nature-based solutions to address the biodiversity and climate crises that the world is facing. The purpose of this policy statement is to promote understanding of the importance of the conservation of the PF-IFL and to provide guidance on how their conservation can contribute to nature-based solutions for critical challenges facing the world community including responding to climate change, respecting planetary boundaries, protecting and restoring biodiversity and cultural heritage, and advancing sustainable development. It is relevant to all aspects of the design, implementation, and governance of IUCN forest-related policies, guidelines, programmes, and projects. This policy and the accompanying implementation guidance document highlight the benefits of PF-IFL, mechanisms, barriers to, and opportunities for their protection, and how they can be best identified and monitored in different ecosystem contexts, and socio-ecological circumstances.

2.2 Target audience

The primary audience of this policy is all constituent parts of IUCN, including Members, Commissions, Secretariat, and National and Regional Committees, along with partners in communities, governments, the private sector, and non-government organisations (NGO), academic and research institutions as well as other stakeholders involved in and concerned with forest ecosystems and landscape management. It is

intended to guide the work of the IUCN Secretariat and Commissions and to inform and assist the policies, programmes and activities of Member organisations.

The policy will also contribute to IUCN's engagement with and submissions to the UNFCCC and the implementation of the Paris Agreement, the CBD, the Sustainable Development Goals (SDG), the U.N. Forum on Forests, and the UNCCD, among other relevant high-level international policy processes.

3. Policy statement

3.1 The special value of PF-IFL

PF-IFL should be differentiated from other forests based on forest condition

- PF-IFL represent one end of a gradient or continuum of ecological condition that reflects the impact of human activities – from minimal to severe. Three broad categories of forest condition can be readily distinguished along this gradient: (i) PF-IFL, (ii) degraded, but naturally regenerating forests, and (iii) plantation forests.
- It is important to understand and recognize the differences between these forest conditions to ensure that the benefits and risks of different management decisions are transparently evaluated. Failure to do so can result in adverse outcomes and management decisions, for biodiversity conservation, nature-based climate solutions, and sustainable livelihoods.

PF-IFL should be recognised as providing greater benefits than forests in poorer condition

- There are significant differences between these three major categories of forest condition in terms of biodiversity, carbon stocks, and other ecosystem services, their stability, resilience, and adaptive capacity and the benefits they provide to people. PF-IFL consistently provide benefits and functions that are unique, or of significantly higher quality, than those provided by degraded or plantation forests in the same ecological context across most ecosystem services. For example, PF-IFL play a critical role in providing the following benefits:
 - (i) Terrestrial and freshwater biodiversity conservation;
 - (ii) Contributions to climate change mitigation and adaptation;
 - (iii) Sustainable development pathways (local, national and global);
 - (iv) Health, cultural wellbeing, and livelihoods of Indigenous Peoples and local communities; and
 - (v) Provision of other ecosystem services.

Hence, protecting and managing PF-IFL is a higher priority for delivering climate, biodiversity and development goals than action in non PF-IFL.

The ongoing loss and damage of PF-IFL should be recognised as a significant problem

- PF-IFL are facing myriad threats globally, including:
 - (i) Decline in their extent (i.e. deforestation); and
 - (ii) Degradation (including fragmentation).
- There is clear evidence that PF-IFL are difficult, if not impossible, to replace in human time scales and irreplaceable in the time scales needed to tackle the climate and biodiversity crises as well as development challenges.

3.2 Actions recommended to all stakeholders

All stakeholders should act to enhance the conservation and restoration of PF-IFL wherever possible:

- The locations of PF-IFL should be identified urgently in all jurisdictions or ecological regions holding them, using datasets and stakeholder involvement relevant to specific national and regional contexts – to understand the threats they face, to define opportunities, including for connectivity and importance for biodiversity, ecosystem services, and carbon sequestration and storage, and to clarify the range of management options available to protect and improve their condition.
- Actions relating to forests by all stakeholders should prioritise the maintenance and enhancement of PF-IFL by ensuring that deforestation and degradation (including fragmentation) are avoided in these areas, and that restoration is promoted where required. Management options include:
 - Utilising spatial planning and zoning to: (i) regulate land use activities; (ii) enhance, buffer and reconnect areas of PF-IFL and; (iii) incorporate PF-IFL protection into ecosystem-based disaster risk management, including by overlaying customary land areas with disaster planning.
 - Implement strict and effective protection of PF-IFL within existing protected areas in all regions. Effective protection including the allocation of necessary human and financial resources and banning commercial logging, which leads to the degradation of PF-IFL.
 - Expanding PF-IFL Protected Areas networks and ecological corridors by looking at the full range of co-management tools including, Indigenous and

- Community Conserved Areas (ICCAs), Other Effective Area-Based Conservation Measures (OECMs), and indigenous territories.
- Encouraging land conservancies to protect and restore PF-IFLs on private land.
 - Increasing enforcement capacity for protection (e.g., through increased funding for surveillance and equipment).
 - Improving the planning, design, and regulation of roads to: (i) avoid further fragmentation of PF-IFL and Protected Areas, and (ii) differentiate between roads needed for community development and industrial development.
 - Encouraging restoration of degraded natural forests, including, where feasible and appropriate, of commodity production forests to improve carbon sequestration and storage and the outlook for biodiversity, ecosystem integrity, stability and resilience.
 - Encouraging policy and legislative reforms that will ensure the protection of PF-IFL in Protected Areas and private concessions.
- Promote research, studies and awareness raising activities that facilitate understanding of the value for PF-IFL since this will promote their conservation as a means to tackle the climate and biodiversity crises.

3.3 Considerations of how the conservation of PF-IFL can contribute to IUCN's nature-based solutions

- The IUCN Global Programme and Secretariat's Forest Conservation Programme of work already recognise the importance of protecting and conserving PF-IFL in tackling the climate and biodiversity crises and sustainable development. The Global Programme is revised every four years, which provides timely opportunities to update the focus of IUCN's work on the two crises and elevate the importance of protecting PF-IFL. Improving the conservation status of PF-IFL should be a standard component of the Secretariat's forest programme of work.
- The protection and conservation of PF-IFL are at the centre of and the highest priority in, forest based solutions to the climate change and biodiversity crises, and also prioritised in the Global Standard on Nature-Based Solutions being developed by the Ecosystem Management Programme and Commission.
- As per engagement with the private sector, IUCN make clear that: (1) the loss of PF-IFL cannot be compensated for through reforestation or afforestation; (2) industrial extractive activities in PF-IFL are inappropriate; and (3) build on land use planning and other opportunities in the 'natural capital protocol' to ensure that

protection and sustainable use of PF-IFL is encouraged and not compromised in decision making. Further, all programmatic areas of the Secretariat and Commissions should consider how this goal can be integrated and reflected in their work programmes and plans, and how greater collaborative and focussed effort across programmes, commissions, and task-forces could increase the effectiveness of IUCN's efforts to tackle the climate and biodiversity crises.

- Commissions with climate change specialist working groups include the World Commission on Environmental Law, World Commission on Protected Areas, and the Species Survival Commission. Focus and integration would be facilitated if all Commissions contributed to a cross commission working group or some other collaborative mechanism to help ensure that the role of PF-IFL in addressing climate and biodiversity issues is being adequately integrated in their work plans and priorities.
- Council Task Forces also provide another avenue for whole-of-union engagement with climate and biodiversity, including PF-IFL issues.
- IUCN work on post-2020 CBD targets, Nature-Based Solutions to Climate Change, and the SDG framework and goals should focus on integrated solutions that prioritise protection and restoration of ecosystem integrity and improve the long term conservation outlook for PF-IFL and all other primary including intact ecosystems.

4.0 Definitions, Values & Benefits

4.1. Differentiation of forests based on their ecological condition

Formal internationally recognised definitions of a 'forest' are inadequate for conservation purposes as they are based on minimal criteria (typically, land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds) and ignore differences in ecological condition.

Principle 7 of the Rio Declaration reads, "States shall co-operate in a spirit of global partnership to protect and restore the health and integrity of Earth's ecosystem." Ecosystem integrity can be eroded by many forms of human use – in particular activities of industrial-scale or intensity such as commercial logging, building infrastructure, fragmentation by large scale agriculture and roads, trade-driven hunting, and major changes in hydrological or fire regimes.

Forests that have been least affected by these pressures and where structure, composition, and function are predominantly the result of ecological and evolutionary processes, generally support the highest levels of many desirable environmental values and deliver the highest level of ecosystem services.

Primary forests are naturally regenerated forests of native tree species, including mangroves and peat forests, whose structure and dynamics are dominated by ecological and evolutionary processes, including natural disturbance regimes, and where if there has been significant prior human intervention it was long enough ago to have enabled an ecologically mature forest ecosystem to be naturally re-established. Many primary forests are also home to Indigenous Peoples and local communities and are the basis of their identity, culture, belief system, traditional knowledge, and livelihoods; a forest that meets the definition above would not be excluded due to the presence of these communities.

As used here, primary forest is a broad term which encompasses related terms including: stable forest,⁷ intact forest,⁸ old-growth, frontier, long-untouched and virgin forest⁹ and is consistent with the ways 'primary forests' are defined by other authorities such as the CBD and the United Nations Food and Agriculture Organization (FAO).

While primary forests of all extents have conservation value, areas of greater extent warrant particular attention where they persist, as they support more biodiversity, contain larger carbon stocks, provide more ecosystem services, encompass larger-scaled natural processes, and are more resilient to external stresses. The significance of large areas of primary forests has been highlighted by the global mapping of Intact Forest Landscapes (IFL) greater than 500 km² in extent.¹⁰ While suitable for many purposes, other thresholds may be more suitable at regional and national levels that reflect local ecological factors.

Further down the forest condition gradient are largely naturally regenerating forests which have experienced significant degradation, for example, due to forest management for commodity production.¹¹ A range of conditions is evident within this broad category depending on the intensity of silvicultural management regimes and/or other human uses.

The most intensive forms of silviculture result in forests in a third broad category – plantation forests (including timber plantations, agroforests, shelterbelts and so on) that are predominantly composed of trees established through planting and/or deliberate seeding.

Unless key international policy regimes recognise the differences between the three broad categories of forest condition, the loss and degradation of PF-IFL can go unreported or under-reported. While geographically, there will always be 'fuzzy

boundaries' between categories along a gradient, approaches and data sets are now available to map, at a global scale, the three main condition categories: (1) PF-IFL; (2) naturally regenerated but degraded; and (3) plantation forests. For example, a number of approaches and sets of indices have been proposed and applied to measure and map ecosystem condition which can be applied to forests (for example primary forest mapping,¹² IFL mapping,¹⁰ Ecosystem Red List criteria,¹³ forest intactness indices,¹⁴ Human Footprint index,¹⁵ Wilderness Quality Index,¹⁶ and mapping of planted forests¹⁷). However, lack of data at the national and subnational jurisdictional levels in some geographies can limit the ability of some countries to report reliably on forest condition. Where feasible, knowledge gaps can be filled by incorporating local and traditional knowledge and combining citizen science approaches.

4.2. Distinct importance and benefits

IUCN has recognised that PF-IFL play a critical role in maintaining biodiversity, providing ecosystem goods and services on which human society depends, and contributing to national development and advancement of the goals of the CBD, the Paris Agreement, and the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs).

Effective policy formulation and programme delivery requires an understanding of: (1) the linkages between the ecosystem, climate, cultural, spiritual and livelihood dimensions of PF-IFL; (2) the relationship between biodiversity, ecosystem integrity, and ecosystem services; and (3) how PF-IFL contribute to addressing both the climate and biodiversity crises.

Feedback loops between climate change and biodiversity flow both ways. The higher the level of ecosystem integrity, the less prone forests are to damage and loss from pests, disease, drought, fire, and the impacts of climate change. Biodiversity underpins ecosystem integrity and the stability, resilience, and adaptive capacity of forests.¹⁸

(i) Terrestrial and freshwater biodiversity

Forest biodiversity generally declines along a coarse gradient from old-growth forest to secondary forest, agroforestry, plantations, arable crops and pasture – and studies of regenerating forests demonstrate that biotic recovery occurs over considerably longer time scales than structural recovery, and that reestablishment of certain species and functional group composition can take centuries or millennia.¹⁹

Tropical forests alone may hold up to 2/3 of all terrestrial species,²⁰ providing unique habitat characteristics critical for large numbers and a wide variety of plants and wildlife, including the 'hidden' biodiversity – invertebrate and fungal diversity, including the soil biota, that underpin the productivity and stability of ecosystems. Many unique, specialised features are only found in old forests and within forest interior

microclimates, and we are still discovering new species in them. Examples of wildlife dependence on features only found in PF-IFL are evident in all forest ecosystems, for example: (1) ~300 species of hollow-dependent arboreal vertebrate animals in temperate Australian forests;²¹ (2) Canadian boreal bird species that are dependent on older forest – such as golden-crowned kinglets, bay-breasted warblers – show a strongly skewed distribution to older stands²² or are forest interior specialists;²³ and (3) boreal forest management has been found to have caused woodland caribou (*Rangifer tarandus*) and grizzly bear (*Ursus arctos*) to undergo long-term range contractions.²⁴

The scale of the biodiversity crisis shows every sign of escalating. Habitat loss, fragmentation, and degradation increase as development pressures increase and as ecosystems suffer additional shocks associated with climate change. Reversing the rapid declines in biodiversity will require strong policy and practical action at every level. Conserving the remaining PF-IFL and preventing fragmentation and industrial development is an essential and urgent component of a comprehensive approach to addressing the biodiversity crisis.

Furthermore, in a time of unprecedented ecological change, PF-IFL provide important reference areas for biodiversity and ecosystem integrity against which to assess the condition of degraded natural forests and the effectiveness of restoration action. Even small areas of primary forest are needed to conserve biodiversity, serving as refugia for threatened species, core patches for landscape restoration and connectivity conservation initiatives, and functioning as source habitats for ecological restoration.

The role of PF-IFL in supporting freshwater biodiversity and ecosystem integrity is often forgotten or underestimated. The quality and regular supply of fresh water is an increasingly critical ecosystem service in the face of increasing development and climate pressure.

(ii) Climate change action for mitigation and adaptation

(a) Mitigation

PF-IFLs offer higher value, more stable, and resilient climate mitigation benefits compared to naturally regenerating production forests and plantations. Their superior resilience and stability minimise risks of their carbon stocks prematurely entering the atmosphere.

In tropical forest ecosystems, PF-IFL store around 35% more carbon than production forests, but the difference can be much more or less depending on the intensity and frequency of logging.²⁵ Temperate PF-IFL in Australia have been found to store 50-60% more carbon than production native forests.^{26,27,28} It has been emphatically established that in tropical, subtropical and temperate forests on all continents, large

old trees do not act simply as senescent carbon reservoirs but actively fix large amounts of carbon compared to smaller trees. At the extreme, a single big tree can add the same amount of carbon to the forest within a year as is contained in an entire mid-sized tree.²⁹

Boreal forests are of special concern given that they account for approximately 25% of the planet's forest area and contain more than 35% of all terrestrial carbon. Their carbon dynamics differ from tropical, subtropical and temperate forests in terms of the proportion of ecosystem carbon stocks found in living biomass. The total stock of boreal forest ecosystem carbon is globally significant with estimates in the range of: biomass 40.7 Pg C; dead biomass 7.2 Pg C; soil to 3m 1,307 Pg C; and peat 547 Pg C.³⁰ Also significant in boreal forests is buried deadwood (up to 935 m³ ha⁻¹), which failing to account for can lead to misinterpretations of ecosystem dynamics.³¹ Half (0.6310⁹ ha) of the PF-IFL are located in the boreal and temperate regions of the Northern Hemisphere.³² Old-growth forests are usually carbon sinks that steadily accumulate carbon for centuries with boreal and temperate forests alone sequestering at least 1.360.5GtC annually. Old-growth forests contain vast quantities of carbon and will lose much of this carbon to the atmosphere if disturbed.³² Furthermore, it has been evident for some time that salvage logging of boreal forests does not replicate forest structure and biomass loss resulting from natural fires.³³

Protecting PF-IFL through conservation management is an important mitigation strategy because it avoids emission from deforestation and degradation as well as enabling ongoing sequestration into the growing ecosystem carbon stock. Moreover, their higher levels of ecosystem integrity, compared to production and plantation forests, means they have greater resistance, resilience, and adaptive capacity in the face of increasing external perturbations, including climate change impacts, and therefore support more stable and long-term carbon stocks.^{34,35}

Land-based mitigation actions, including forest protection, improved conservation management, and restoration, could provide as much as 37% of cost-effective mitigation needed by 2030 to keep global warming well below 2°C.³⁶ Avoiding emissions from deforestation and forest degradation by prioritising the protection of PF-IFL, and improving sequestration through the restoration of previously cleared or degraded natural forests, will be essential if we are to limit global warming to 1.5 °C above pre-industrial levels as recommended by the IPCC Special Report⁵ on land.

Primary forests in all biomes protect rich, relatively stable carbon stocks either above or below ground, or both. Tropical primary forests protect the largest living biomass carbon stocks, most of which is stored in big old trees. The cool wet temperate forests are home to some of the most carbon-dense forests on Earth, storing large amounts of carbon in big old trees, soil and the coarse woody debris on the forest floor. Boreal

forests accumulate vast stocks of below-ground carbon. It is particularly important to avoid draining peat soils or other damage directly or indirectly arising from industrial activities to these carbon-rich soils, and particularly to those encompassing areas of permafrost.

The climate crisis dictates that we dramatically reduce emissions from all sources by 2030 and achieve net-zero by 2050. Climate action in land and forests must be scaled up, not as a substitute for reducing emissions from fossil fuels but to help achieve the level of ambition necessary to limit warming to as close as possible to 1.5 degrees – the guardrail needed to minimise the loss of biodiversity, ecosystem integrity, and the ecosystem services on which all life depends.

(b) Adaptation

While ecosystem-based adaptation (EbA) is a well-known adaptation strategy, the importance of PF-IFL for their role in facilitating natural adaptation by species in addition to providing benefits for people is currently under-recognised.

One of the key roles for PF-IFL in protecting biodiversity in the face of climate change will be to act as refugia and source habitats. To keep pace with climate change, tree and animal species will need to migrate at paces that may far exceed those observed in the historical-paleo record. Human barriers and fragmentation make the situation far worse.

Biodiversity and Indigenous Peoples play a critical, functional role in key ecological and evolutionary processes, including adaptation to climate change, which depends on natural selection having sufficient diversity at every level to yield optimum stability and integrity to changed environmental conditions. Natural selection operates on the pool of available ecosystems, species, and genes to yield the characteristic biodiversity best suited to environmental conditions, which in turn generates ecosystem-level outcomes that contribute to ecosystem integrity. At a time of rapid climate and other change, maximising available genetic, species, habitat and ecosystem diversity is a key strategy to support natural adaptation responses. Maintaining PF-IFL is thus a critically important adaptation strategy.

The role of PF-IFL in EbA for people is considered further in the sections on other ecosystem services.

(iii) Sustainable development pathways

The Millennium Ecosystem Report (2005) went to great lengths to explain the interconnections amongst all elements and all scales of biodiversity. “Breathable air, potable water, fertile soils, productive lands, bountiful seas, the equitable climate of Earth’s recent history, and other ecosystem services are manifestations of the

workings of life. It follows that large-scale human influences over this biota have tremendous impacts on human well-being. It also follows that the nature of these impacts, good or bad, is within the power of humans to influence.”

The importance of ecosystem integrity and the benefits to people from the ecosystem services from PF-IFL have been under-valued and under-recognised in both the framing and implementation of the UN Sustainable Development Goals. Some progress, however, is evident in the High-Level Political Forum on Sustainable Development (2018) review of Goal 15 ‘Life on Land’ which noted that, “The monitoring framework of SDG 15 does not capture essential elements related to *quality* that are crucial for more meaningful results, pointing to the need for additional indicators in areas such as forest intactness, management effectiveness of protected areas, and meaningful integration of biodiversity into other processes. No indicator exists yet to measure the integration of ecosystem and biodiversity values into national planning; it is likely that a future indicator will be based on national self-assessments of progress towards national targets, possibly with a rating system to provide a degree of standardization.”

Achieving the SDGs, therefore, depends on maintaining and enhancing ecosystem conditions. This means that the protection and conservation management of PF-IFL need to be integrated into climate-resilient development pathways.

(iv) Other ecosystem services and functions

In addition to the benefits they provide for climate change responses and biodiversity conservation, PF-IFL contribute to all the major categories of ecosystem services including supporting, provisioning, regulating services and reciprocal relationships that underpin cultural services and support human health and well-being. Key examples include:

- Maximising regional precipitation through water recycling;
- Delivery of the cleanest water supply;
- Air quality;
- Enhanced resistance to drought, fire, disease, invasive species and pests;
- Spiritual, recreational and human mental and physical health services; and
- The knowledge and belief systems of Indigenous Peoples and local communities.

In a world facing an escalating likelihood of extreme weather events including drought and catastrophic fire, forest resistance and resilience will be increasingly important. Forests with high ecosystem integrity, such as closed-canopy tropical and temperate primary forests, are far less susceptible and vulnerable to drought and fire than degraded and plantation forests. The presence of species in their natural patterns of

distribution and abundance ensures that ecosystems have the maximum possible checks and balances to prevent any one species from increasing to the point where other ecosystem components are threatened.

(v) Health, cultural wellbeing and livelihoods of Indigenous Peoples and local communities (IP&LC)

Indigenous Peoples have rights to or manage at least 37.9 million km² of land, accounting for 37% of all remaining natural lands, of which 7.8 million km² (20.7%) are within protected areas – 40% of the global protected area.³⁷ Indigenous lands and other protected areas created to safeguard land rights, indigenous livelihoods, biodiversity, and other values contain globally significant stocks of carbon, mainly in forests. Amazonian indigenous land contains some 28 Gt C,³⁸ which is around 25% of the remaining carbon budget of ~114 Pg C for a 66% probability of limiting global warming to 1.5 °C above pre-industrial levels³⁹ (IPCC 2019). In Brazil, Indigenous lands are the most important barrier to Amazon deforestation and degradation.⁴⁰ However, of the world's tropical and subtropical forests in territories that are collectively managed by Indigenous Peoples, 1/3 is in areas where Indigenous Peoples and local communities (IP&LC) lack formal recognition of their tenure rights or where enforcement is inadequate.

Cultural values and biodiversity conservation are intimately linked in areas managed by IP&LC. Relationships between IP&LC and with their homelands, including plants and wildlife, have co-shaped many forest ecosystems. Sophisticated governance systems help protect key plants and wildlife and areas of important spiritual value.

Increasingly, the design and management of protected areas recognises the relationship between IP&LC and their Homelands and the resulting underpinning provided by IP&LC for biodiversity protection and ecosystem integrity.

“Funding indigenous to implement these strategies, need to show respectful relationship with indigenous communities is possible and nurture that – we are resilient like the primary forests, not much of us left, but we are still here despite centuries of attack, genocide that continues to this day— but I think we also need protection like the primary forests because like the forests we have teachings and values that the world could benefit from, our elders and spiritual teachers speak to the trees, our blood has been here since time immemorial – that relationship is sacred and a gift that we need to nurture to survive.” –Jennifer Simard

4.3. The decline in the extent and on-going fragmentation, damage, and loss

Around 30% of pre-industrial PF-IFL forest cover has been lost and globally net deforestation was estimated to be 70,000 km² per year in the tropics alone.⁴¹ Declines in deforestation over the last decade have ceased in some areas and are again on the rise in critically important areas such as the Amazon. These statistics are worrying,

but global area-based data on forest cover provide little indication of ongoing changes in forest ecosystem integrity and are inadequate for assessing vulnerability of PF-IFL to further loss and damage.

Despite extensive global conservation programmes and initiatives, the available data show that rates of loss and damage to PF-IFL have not slowed. Studies suggest that, in aggregate, forest degradation may be as significant for carbon emissions as deforestation.⁴²

Fragmentation, particularly by new roads is projected to increase very significantly. The scale of the potential threat is illustrated by scientific research and analysis which reveals that: (1) by 2050, 25 million kilometres of planned new roads (the equivalent of circling the Earth 625 times) will vastly increase the human footprint on the planet; (2) 50,000 km of new logging roads are proposed for the Congo Basin alone and 7,500 additional km in the Brazilian Amazon; and (3) new roads are opening up the last intact forest landscapes in Sumatra, Kalimantan and New Guinea, and bisecting many forested protected areas. There is ongoing primary and old-growth forest lost recorded even in the wealthiest regions such as Europe, where inappropriate and illegal logging threatens the last remaining primary forests in the Carpathian Mountains.⁴³ Core forests are collapsing with 70% of all forests now less than 1km from an edge: habitat fragmentation reduces biodiversity by 13 to 75% and impairs key ecosystem functions by decreasing biomass and altering nutrient cycles. Effects are greatest in the smallest and most isolated fragments, and magnify with the passage of time. Fragmentation of tropical forests has reached critical thresholds.^{44,45,46}

Large-scale production of timber and other commodities reduces the carbon stock, biodiversity value, and stability and resilience of PF-IFL, even in well-managed forests. Forest conservation initiatives based on introducing sustainable forest management into PF-IFL as a well-intentioned strategy aimed at preventing deforestation, nevertheless cause significant damage and increase the vulnerability of forests to further loss and degradation.

¹ Díaz, S., Settele, J., Brondízio, E., Ngo, H., & Guèze, M. (2019) Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

² CBD/COP/DEC/14/5 30 November 2018 ; <https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-05-en.pdf>

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