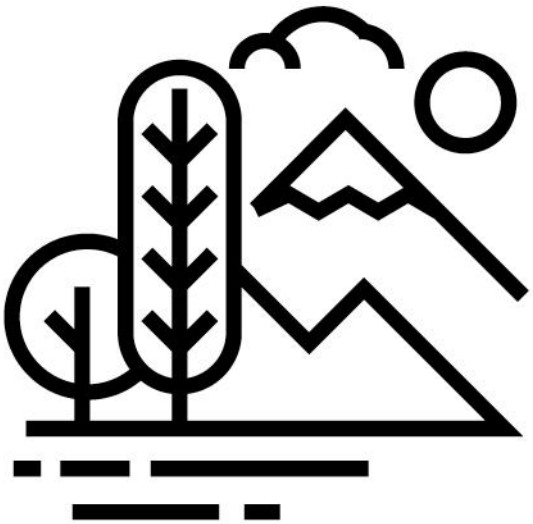

Sectoral Guide Consultation Version 1

Forests & land use

28 February 2022

GREEN CLIMATE FUND | Sectoral Guides

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Acknowledgements
The Forest and Land Use Sectoral Guide is the first draft report for consultation by the Green Climate Fund. This draft is a result of discussion and collaboration between the GCF Secretariat and a range of GCF partners. The development of the guide was coordinated by the GCF Secretariat in collaboration with the Centre for International Forestry Research (CIFOR) and COWI – international consulting group.

How to cite this publication
GCF. (2022). Forest and Land Use Sectoral Guide. Sectoral Guide Series. Yeonsu: Green Climate Fund.

CONTENTS

ABBREVIATIONS

AEs	Accredited Entities
AF	Alternative fuels
AFOLU	Agriculture, forestry, and other land use
AP	Action Plan
CBA	Community-based adaptation
CFA	Chartered Financial Analyst
CIF	Construction Industry Federation
CIFOR	Centre for International Forestry Research
COP	Conference of the Parties
CREMA	Community Resource Management Areas
DAEs	Direct access entities
EBA	Ecosystem-based adaptation
EE	Energy efficient
EES	Ecosystems and Ecosystem Services
ESG	Environmental, social and governance
FAO	Food and Agriculture Organization of the United Nations
FCPF	Forest Carbon Partnership Facility
FLU	Forest and Land Use
FPIC	Free Prior and Informed Consent
GCF	Green Climate Fund
GCFRP	Ghana Cocoa Forest REDD+ programme
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IPAF	Indigenous Peoples' Assistance Facility
IPCC	Intergovernmental Panel on Climate Change
LCIPP	Local Communities and Indigenous Peoples Platform
LDCs	Least Developed Countries
LEAF	The Lowering Emissions by Accelerating Forest finance Coalition
MSMEs	Micro, Small & Medium Enterprises
NAPs	National Adaptation Plans
NCBs	Non-carbon benefits
NDAs	National Designated Authorities
NDCs	Nationally Determined Contributions
NFMS	National forest monitoring system
NTFP	Non-timber forest products
OECD	Organisation for Economic Co-operation and Development
PES	Payment for Environmental Services
PPP	Purchasing power parity
PSB	Programa Socio Bosque
RBP	Result Based Payments
REDD+	Reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks
SDGs	Sustainable Development Goals
SFM	Sustainable forest management
SIDS	Small Island Developing States
SIS	Safeguards Information System
TAFF	Tropical Asia Forest Fund
ToC	Theory of Change
UNCBD	United Nations Convention on Biological Diversity

UNCCD	United Nations Convention to Combat Desertification
UNDC	United Nations Development Corporation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNSPF	United Nations Strategic Plan for Forests
WBG	World Bank Group

EXECUTIVE SUMMARY

The Green Climate Fund (GCF) is dedicated to boosting climate finance for developing countries and has set an ambitious agenda with its Strategic Plan for 2020-2023. In spite of the global pandemic, GCF is providing increased support to developing countries, helping them to build a low emission, climate-resilient recovery. The GCF Sectoral Guide series supports the progressive work programme approved for 2021 providing evidence-based information for impactful projects in priority investment areas and giving further momentum to making GCF operations more efficient and more effective.

There are eight mitigation and adaptation result areas in GCF. Of these, Forest and Land Use (FLU) and Ecosystems and Ecosystem Services (EES) are strongly complementary to each other and in turn are inextricably connected with agriculture, water and energy. Therefore, sectoral guides for both were developed jointly to avoid overlap, while clearly identifying synergistic opportunities for greater impact. While they each constitute stand-alone documents, the GCF strongly encourages projects to be designed based on multiple sectoral guides. Thematically, the FLU Sectoral Guide focuses on forests and land use and covers the cline of land uses ranging from primary forests to secondary and planted forests, primary and secondary non-forest growth, agroforestry and mixed use land with trees outside forests, agricultural land and pastures, and urban expansion. Land use planning is an important component of FLU. In contrast, the EES Sectoral Guide focuses primarily on ecosystem-based management of terrestrial, freshwater, coastal, and marine ecosystems (including non-forest peatlands). Likewise, activities in agriculture, forestry, and other land use (AFOLU) can be addressed through EES, FLU, and/or Agriculture and Food Security. Operationally, the FLU result area is focused mainly on mitigation through avoiding deforestation and enhancing carbon sequestration and storage, while the EES result area emphasises maintaining ecosystem services through adaptation, with strong complementarity between the two result areas.

Climate, ecosystems, biodiversity, and development challenges overlap considerably in terms of drivers and solutions. Therefore, reducing deforestation provides tangible benefits to both climate and biodiversity goals. Loss of ecosystem integrity further amplifies climate change, while healthy and intact forests and ecosystems contribute to climate mitigation and adaption. Disadvantaged and vulnerable populations, particularly Indigenous Peoples, but also women and other local communities are disproportionately affected by climate change, forest loss and land degradation and thus must play an important role in the solutions (Garnett *et al.* 2018). Conversely, forest and land use projects have the potential to significantly improve indigenous livelihoods and well-being – as long as their needs are adequately address in the design of proposals. These and other cross-sectoral issues are addressed through multiple result areas in a complementary manner, as shown in Table ES-1.

Table ES-1: Cross-sectoral issues addressed throughout the series

Sectoral guide name	Cross-sectoral issues addressed
Ecosystem and Ecosystem Services	Ecosystem-based management of terrestrial and freshwater ecosystems (incl. non-forest peatlands; wetlands; forests; grasslands; land restoration, conservation and sustainable management for ecosystem services; watershed management). Ecosystem-based coastal zone and marine management (incl. marine ecosystems, mangroves; seagrass; fisheries and fishery supply chain management).
Agriculture and Food Security	Agroforestry; soils, grassland and water management for food production; livestock and manure management; aquaculture; climate information for farmers; insurance; and staple and cash crops food systems
Forest and land use (this Guide)	Forest protection, restoration and sustainable forest management; natural protected areas systems, REDD-plus, timber and non-timber forest products, deforestation-free supply chains (including timber, beef, palm oil, soy, cocoa and coffee), agroforestry, tenure issues, land use planning, forest-based watershed management

Energy	Biomass fuels from natural ecosystems; Hydro energy
Water	Water management for flood control, hydrological services in PES schemes
Health	Ecosystems resilience for human health and populations relying on healthy ecosystems for their livelihoods.
Urban areas	Integrated urban development planning for green cities; urban forestry, and ecosystem services provision in smart cities to reduce heat island effects.
Resilient infrastructure	Coastal resilient infrastructure; infrastructure for ecotourism activities, performance of built-in and ecosystem-based approaches , ecosystem services valuation methodologies.

GCF Forest and Land Use Sectoral Guide

The Forest and Land Use (FLU) Sectoral Guide aims to support countries and Accredited Entities in their transition towards low emission, climate-resilient development. It identifies high-impact, transformative projects and programmes and provides insights to financial mechanisms in the FLU result area aligned with the GCF Strategic Plan 2020-2023 and GCF Investment Framework. It provides context based on scientific evidence, experiences and lessons learned, shares examples of good practice, and links to country ambitions and needs.

This document provides guidance for forests and land use only. As such, it is complementary to other sectoral guides, including the Sectoral Guide on Ecosystems and Ecosystem Services and the Sectoral Guide on Agriculture. Given the cross-sectoral nature of forests and land use, it is strongly recommended that proposals draw from multiple sectoral guides to design integrated proposals that meet the paradigm shift requirements of GCF projects.

Two global emergencies, one of unprecedented ecosystem degradation and biodiversity loss on one hand, and another of climate change on the other, are recognised as central to the global agenda, (*e.g.*, by IPCC 2018; 2019, IPBES 2019). They are interlinked, and they amplify each other. Undertaking actions and interventions that respond to this crisis and maximise opportunities for impact is urgent. Actions can be prioritised by looking at opportunities offered by various ecosystem types in terms of the degree of mitigation and adaptation potential, balanced with the level of threat and rate of loss of irrecoverable carbon. For the FLU result area, the main priorities are avoiding deforestation and forest degradation. Secondary priorities include introducing and maintaining agroforestry and silvo-pastoral systems, reforestation, and peatland restoration as shown in Figure 2 and Figure 3. Tropical forests play a critical role in ecosystem-based approaches, and are themselves highly vulnerable to climate change.

Forest protection, conservation, and sustainable land management are central components of the Paris Agreement.[1] Limiting global warming levels to 1.5°C above pre-industrial levels is not possible without protecting, restoring and sustainably managing forests and land. Challenges in FLU sector were already seen with the 1.1°C average global warming experienced through 2019 – increased droughts, floods and wildfires, and significant decreases in crop productivity. The Covid-19 pandemic highlights the need to align climate mitigation and resilience with health and development objectives in efficient, effective and equitable "green" circular economic transformation.

Forests cover about one third of the global land area. One third of this is primary forest, about half of which is relatively intact. However, forest cover loss is large and unabated, contributing approximately 13% of annual global net emissions (5.2 ± 2.6 Gt CO_2/year), mostly related to tropical deforestation, unsustainable forest management, and peatland drainage and burning (non-forest peatlands are covered in the EES Sectoral

[1] Paris Agreement, Article 5.

Guide). Achieving the goals of the Paris Agreement relies strongly on ending forest destruction and enhancing forest and land sinks, although there are limitations to land-based mitigation that are discussed in this Guide.

Paradigm shifting pathways

The vision for a paradigm shift in the FLU result area is centered around reducing emissions from forest loss and degradation; addressing the drivers of deforestation, notably in agriculture – and more broadly, implementing a cross-sectoral, landscape approach to reducing deforestation and forest degradation; increasing resilience of local people and forests against climate change through protecting and restoring natural and managed forest ecosystems and landscapes; focusing on the needs of the most vulnerable; and improving the livelihood of communities and forest-dependent people.

The FLU result area presents strong opportunities for climate change mitigation and adaptation by enhancing forest and land sinks, and increasing forest ecosystem resilience, through three paradigm shifting pathways:

- Protection – *maintaining natural forest cover and associated ecosystems,* both in situ *and* ex situ. It is much more efficient and effective to protect standing forest carbon stocks than to rebuild them. Carbon sequestration and storage potential is lost when forests are lost, therefore the earlier emissions from land conversion are phased out, the greater the mitigation benefit over the century. Protecting forests *ex situ* primarily consists in tackling the drivers of deforestation upsteam, including removing deforestation from agricultural supply chains.
- Restoration – *restoring forests and other degraded land to healthy and resilient landscapes*. Remedying past actions that harmed landscapes – restoring degraded lands and reforesting deforested areas – offers significant mitigation potential because of the carbon uptake that increases over the next few decades, while significantly enhancing the resilience of ecosystems and communities.
- Sustainable management – *sustainably managing productive forest landscapes to support people and the environment*. Establishing climate-resilient practices such as improved forest management, including timber production, can help increase carbon sequestration and storage and boost resilience, while maintaining economic productivity. Sustainable management activities provide substantial opportunities for adaptation.

This Guide elaborates mitigation and adaptation potential of different land-use activities such as protection and restoration of forests and ecosystems with a priority on those containing large stocks of "irrecoverable" carbon. These include avoided deforestation, forest landscape restoration, reforestation with native mixed species, sustainable management and use of forests, and agroforestry. The FLU Sectoral Guide identifies the highest potential for a paradigm shift, scalability, use of financial instruments, and impact based on synergies across adaptation and mitigation and across sectoral and result areas. An estimated total of 49 Gt CO_2 cumulative mitigation can be achieved in developing countries' FLU result areas by 2030 (Hoegh-Guldberg *et al.* 2019).

Barriers and enablers to achieving paradigm shifting pathways

Impediments to paradigm shift include a range of barriers from the policy level (political obstacles underlying competing policy objectives and vested interests, national policies and global supply chains) and the scientific level (insufficient evidence to decide which forest-based actions work best in the long-term; integration of scientific information into policy processes) to the community level (gaining buy-in from Indigenous and rural communities; capacity for local co-management of initiatives). For details about barriers, see Section 3.2.

To create an enabling environment in addressing key challenges in the FLU result area, GCF can deploy a range of financial instruments to address barriers in a systemic way. Grants and other non-market measures can, for example, enable Indigenous Peoples and local communities to develop capacity, access funding, and secure

land rights. Innovative instruments such as blending and de-risking realise potential synergies and multiple objectives that enable public and private investment. For details about enablers, see Section 4.1.

Creating an enabling environment through institutional capacity development and coordination, and enhanced enforcement can improve forest and sustainable land management. Other enablers include efforts to establish legitimacy, such as: strengthening land registry systems to allow traceability and recognizing land rights so that Indigenous Peoples and local communities can share economic benefits; increasing participation and transparency; realising potential synergies and multiple objectives; and integrating approaches across mitigation, adaptation, biodiversity and the needs of local communities.

The COVID-19 pandemic has hampered opportunities for public engagement on climate change solutions for forest and land use but provides an opportunity to enhance alignment of planning for climate mitigation and resilience with health and development objectives. The pandemic demonstrates the importance of managing the interface between human societies and natural ecosystems, relying on solutions based on science and evidence, and creates an opportunity for economic stimulus that can restore ecosystem function and generate sustainable jobs, which in turn improve livelihoods and health (Dobson et al. 2020).

Role of GCF in financing paradigm shifting pathways

GCF offers four pillars to drive implementation of the paradigm shifting pathways at scale. While business models, project development systems, financing structures and ability to attract Private, Institutional, and Commercial finance differ significantly across regions, these pillars can support developing countries' efforts in the FLU result area. The four drivers are:

(1) Transformational planning and programming: Priority examples include: (a) Government recognition of the key role of local communities and Indigenous Peoples in managing forests (Garnett et al. 2018), through enabling regulations, institutional structures and financial support, and long-term land and forest user rights is an essential step in transformation. This can be achieved through participatory multi-stakeholder processes for dialogue and decision making, with effective Free Prior and Informed Consent (FPIC) when applicable; (b) Protection of ecosystems containing irrecoverable carbon such as intact forests (peatlands and wetlands are covered in the EES Sectoral Guide); (c) Coordination across relevant institutions to integrate coherent land-use and spatial planning that address multiple drivers and objectives into Nationally Determined Contributions (NDCs) and, when relevant, National Adaptation Plans (NAPs); (d) To enhance traditional planning approaches such as effective detection and enforcement of illegal deforestation, and strengthen systems of protected areas.

(2) Catalysing climate innovation: Innovative and next-generation, collaborative biome-based regional forest protection agreements (such as the proposed Andes-Amazon-Atlantic Corridor) can become powerful tools for climate and biodiversity goals with strong mitigation-adaptation synergies. Methodological innovations that contribute to multiple objectives include coppicing dry forests, replanting tree orchards, wood technology innovations, promoting natural regeneration by increasing protection from fire, grazing animals and fuelwood harvesting, and reforesting degraded slopes and riparian land. Policy and market innovations such as deforestation-free commodity chains are growing and important areas of work towards transforming the sustainability of productive forest landscapes. Examples include expanding current and next-generation certification schemes for sustainable, climate resilient and low emission products, and using wood for new uses as a permanent carbon sink, supported by new technology for traceability such as blockchain. In terms of better enforcement against illegal deforestation, the widespread use of remote sensing, drones, and artificial intelligence algorithms promise to enhance the speed of detection and response. Another important innovation is to develop schemes that value standing carbon stocks absent of threat that tangibly value the avoidance of sink destruction indefinitely; such schemes also provide adaptation and other ecosystem services benefits. Removing deforestation from supply chains of primary commodities such as soy, beef, palm oil, timber, cocoa and coffee – the

primary drivers of tropical deforestation – without significantly affecting the bottom line are a key solution to preventing deforestation. Finally, community-based adaptation (CBA) and ecosystem-based adaptation (EBA) can help countries deliver high-impact transformative projects through community-led processes.

(3) Mobilisation of finance at scale: Improving access to climate finance for vulnerable populations is necessary to achieve transformation in FLU. De-risking projects can include early identification and assessment of risks such as uncertain land tenure rights, currency fluctuations, political instability, and lack of coordination between stakeholders. Such proactive engagement with risk and enhanced platforms for data sharing can increase access to different finance tools. Emphasis on providing effective incentives for private investment at scale is needed, including innovative finance of next-generation Payment for Environmental Services (PES) schemes, de-risking investments in deforestation-free supply chains and REDD-plus, and market development and transformation to unleash market-pull forces for climate and forest friendly products (see EES Sectoral Guide for complementary activities). Consistent with Article 6 of the Paris Agreement, the GCF will also support the development of carbon markets, including through REDD-plus where appropriate, as a means of mobilizing private finance.

(4) Coalitions and knowledge to scale up success: Key communities of practices have emerged around CBA and EBA to promote knowledge exchange, information access and increased social capital and equity. Creating access to knowledge and data for Indigenous Peoples, and remote and vulnerable forest dependent communities, along with bringing Indigenous and traditional knowledge of forest protection and other data (mapping, changes in species, habitat, etc.) to science and policy-makers are powerful actions to scale up successful forest protection and restoration. For better management of productive landscapes, developing forest curricula that address social and economic dimensions will improve long term sustainable outcomes. Continued and participatory monitoring, establishing learning platforms, and sharing evidence related to impacts, potential solutions and progress are crucial for developing new methods to overcome risks and uncertainties, and improve practices. Developing methods to monitor complex dimensions of change (e.g. governance, voice, empowerment) are also necessary to learn from context-based change processes.

By making investments through these drivers across the investment pathways, GCF can support developing countries to catalyse a paradigm shift in the FLU result area. Figure ES-1 GCF shows potential investments along the four pillars of the GCF paradigm shifting pathways in the FLU result area.

Section 5 features several case studies that demonstrate how innovative approaches, the inclusion of local, traditional knowledge, land tenure, and broad participation of women in decision-making processes can make the difference in addressing the central elements of a successful paradigm shift by changing norms and values, increasing legitimacy, providing adequate resources, and improving planning processes.

GCF investment criteria

Proposals to GCF are assessed based on six GCF Board approved investment criteria:

(1) Impact: Potential of the project or programme to contribute to the achievement of GCF objectives and result areas.

(2) Paradigm shift: Degree to which the proposed activity can catalyse impact beyond a one-off project or programme investment.

(3) Sustainable development: How do the actions align with national SDG priorities? What are expected environmental, social, gender, and economic co-benefits? Wider benefits and priorities.

(4) Recipient needs: Vulnerability and financing needs of the beneficiary country and population

(5) Country ownership: Beneficiary country ownership of, and capacity to implement, a funded project or programme,policies, climate strategies and institutions.

(6) **Efficiency and effectiveness**: Economic and, if appropriate, financial soundness of the programme/project.

Section 6 provides examples of how these criteria could pertain to the FLU paradigm shifting pathways.

Figure ES-1: Possible actions for each FLU pathway following the four pillars of the GCF Strategic Plan

Sector		Actions across the drivers of the GCF Strategic Plan			
Forest and land use		**Transformational planning & programming**	**Catalysing climate Innovation**	**Mobilising finance at scale**	**Coalitions & knowledge to scale up success**
Paradigm shifting pathway	**Protecting natural forests and landscapes**	• Securing land tenure and protecting the rights of indigenous peoples and local communities • Engaging in participatory multi-stakeholder processes for dialogue and decision making, with effective FPIC • Protecting forested ecosystems containing irrecoverable carbon (intact forests, peatlands • Using "Rights of Nature" approaches	• Implementing next-generation regional biome-based, community supported forest protection agreements to protect biodiversity and cultural heritage (e.g. contiguous Andes-Amazon-Atlantic Corridor) • Testing the development of alternative policies and markets to incentivise deforestation-free supply chains	• Increasing non-market finance (e.g. debt swaps, levies, REDD-plus RBP) • Leveraging domestic REDD-plus to mobilise external funds • Exploring blockchain-based systems for transparency and trust building • De-risking private finance (e.g. blended finance, guarantees)	• Supporting evidence-based decision making and traditional knowledge systems • Building capacity about regulations, policies and REDD-plus • Using participatory
	Restoring degraded forests and other landscapes	• Coordinating inter-institutional land use, spatial planning, and NDCs with multiple objectives • Monitoring outcomes and processes with culturally appropriate, level-specific indicators	• Piloting new global incentives or commitments to increase forest restoration • Using next-generation PES focusing on multiple benefits to increase the financial and political viability of projects (e.g. reforestation delivering water regulation and carbon capture in tropical mountains)	• Mobilising international private / public funding to reduce investment risk • Introducing regulation to increase domestic funding sources (e.g. green levies, PES) • Supporting access to climate finance for vulnerable populations	• Developing methods to monitor complex dimensions of change (e.g. governance, voice, empowerment)
	Sustainable management of productive forest landscapes	• Introducing jurisdictional climate programmes • Integrating land use into NDCs through coherent land use and spatial planning that account for multiple objectives and are coordinated across institutions	• Testing and evaluating forest crops that can be grown in agroforestry systems on marginal, degraded land, avoiding conflicts with food production • Keeping up with technological advances through new processing methods to harden, soften, impermeabilise and otherwise treat wood for various industrial purposes.	• Proactively 'de-risking' projects and programmes addressing tenure, currency fluctuations, political instability, access to finance • Increasing private and public finance and capacity building to enhance value chains • De-risking private finance (blended finance, guarantees, etc.)	• Developing forest curricula that address social and economic dimensions

1 INTRODUCTION

1.1 GCF Sectoral Guides

The Green Climate Fund (GCF) is the world's largest dedicated fund helping developing countries respond to climate change. It was set up by the United Nations Framework Convention on Climate Change in 2010 and has a crucial role in upholding the Paris Agreement, supporting the goal of keeping the average global temperature rise well below 2°C. It does this by channelling climate finance to developing countries, which have joined other nations in committing to climate action. It has set an ambitious agenda with its Strategic Plan for 2020-2023. In spite of the global pandemic, GCF is providing increased support to developing countries, helping them to build a low emission, climate-resilient recovery.

The GCF Sectoral Guide series supports the progressive work programme approved for 2021 providing evidence-based information for impactful projects in priority investment areas and giving further momentum to making GCF operations more efficient and more effective. The guides are the result of an analysis to identify where targeted investment would have the most impact. They provide guidance to National Designated Authorities, Accredited Entities and other stakeholders on potential areas for GCF investment in Mitigation and Adaptation result areas. Through its country-driven approach, GCF helps countries design, finance and implement innovative climate initiatives that can be replicated, scaled up and sustained after project completion to achieve transformational change. GCF offers a range of financing instruments and works with diverse groups of partners to share risk and catalyse larger financial flows towards climate investments.

There are eight mitigation and adaptation result areas in GCF. Of these, Forest and Land Use (FLU) and Ecosystems and Ecosystem Services (EES) are strongly complementary. Both seek to support countries, GCF Accredited Entities (AEs) and other stakeholders to identify high-impact, transformative and sustainable projects and programmes aligned with the GCF Investment Framework. Therefore, sectoral guides for both were developed jointly to avoid overlap, while clearly identifying synergistic opportunities for greater impact. Thematically, the FLU Sectoral Guide focuses on forests and related land use, while the EES Sectoral Guide focuses primarily on ecosystem-based management of terrestrial, freshwater, coastal, and marine ecosystems (including peatlands). Likewise, activities in agriculture, forestry, and other land use (AFOLU) can be addressed through three result areas (EES, FLU, and Agriculture and Food Security). Operationally, the FLU result area is focused mainly on mitigation through avoiding deforestation and enhancing carbon sequestration and storage, while the EES result area emphasises maintaining ecosystem services through both adaptation and mitigation approaches. Other cross-sectoral issues are addressed through multiple result areas in a complementary manner, as shown in Table 1.

Table 1: Cross-sectoral issues addressed throughout the series

Sectoral guide name	Cross-sectoral issues addressed
Ecosystem and Ecosystem Services	Ecosystem-based management of terrestrial and freshwater ecosystems (incl. non-forest peatlands; wetlands; forests; grasslands; land restoration, conservation and sustainable management for ecosystem services; watershed management). Ecosystem-based coastal zone and marine management (incl. marine ecosystems, mangroves; seagrass; fisheries and fishery supply chain management).
Agriculture and Food Security	Agroforestry; soils, grassland and water management for food production; livestock and manure management; aquaculture; climate information for farmers; insurance; and staple and cash crops food systems
Forest and land use (this Guide)	Forest protection, restoration and sustainable forest management; natural protected areas systems, REDD-plus, timber and non-timber forest products, deforestation-free supply chains (including timber, beef, palm oil, soy, cocoa and coffee), agroforestry, tenure issues, land use planning, forest-based watershed management.
Energy	Biomass fuels from natural ecosystems; Hydro energy

Water	Water management for flood control, hydrological services in PES schemes
Health	Ecosystems resilience for human health and populations relying on healthy ecosystems for their livelihoods.
Urban areas	Integrated urban development planning for green cities; urban forestry, and ecosystem services provision in smart cities to reduce heat island effects.
Resilient infrastructure	Coastal resilient infrastructure; infrastructure for ecotourism activities, performance of built-in and ecosystem-based approaches, ecosystem services valuation methodologies.

1.2 Forest and land use context

Two global emergencies, one of unprecedented ecosystem degradation and biodiversity loss on one hand, and another of climate change on the other, are recognised as central to the global agenda, (e.g. by IPCC 2018; 2019, IPBES 2019). They are interlinked, and they amplify each other. The Intergovernmental Panel on Climate Change (IPCC) Special Report on Land and Climate Change (IPCC 2019) points to the urgency of such measures in the land sector. Limiting global warming levels to 1.5°C above pre-industrial levels will not be possible without protecting, restoring and sustainably managing forests and land, central efforts set out in the Paris Agreement.[2] The Covid-19 pandemic highlights the need to align climate mitigation and resilience with health and development objectives towards efficient, effective and equitable sustainable economies.

The FLU Sectoral Guide is a component of the GCF Strategic Plan 2020-2023. In addition to being fully aligned with the UNFCCC, particularly the Paris Agreement, it will also contribute to implementing other relevant global goals and agreements, including the UNCBD, the UNCCD, the 2030 Agenda for Sustainable Development (especially SDGs 13 and 15) and the United Nations Strategic Plan for Forests (UNSPF). It focuses on three investment pathways that can best achieve high-impact, transformative projects and programmes. The FLU result area presents strong opportunities for climate change mitigation and adaptation by enhancing forest and land sinks, and increasing forest ecosystem resilience through:

- Protection – *maintaining natural forest cover and associated ecosystems,* both in situ and ex situ. It is much more efficient and effective to protect standing forest carbon stocks than to rebuild them. Carbon sequestration and storage potential is lost when forests are lost, therefore the earlier emissions from land conversion are phased out, the greater the mitigation benefit over the century. Protecting forests *ex situ* primarily involves tackling the drivers of deforestation upsteam, including removing deforestation from agricultural supply chains.
- Restoration – *restoring forests and other degraded land to healthy and resilient landscape*. Remedying past actions that harmed landscapes – restoring degraded lands and reforesting deforested areas – offers significant mitigation potential because of the carbon uptake that increases over the next few decades.
- Sustainable management – *sustainably managing productive forest landscapes to support people and the environment*. Establishing climate-resilient practices such as improved management, including timber production, can help increase carbon sequestration and storage and boost resilience, while maintaining economic productivity. Sustainable management activities provide substantial opportunities for adaptation.

This Guide elaborates mitigation and adaptation potential of different land-use activities such as protection and restoration of forests and ecosystems with a priority on those containing large stocks of “irrecoverable” carbon. These include avoided deforestation, forest landscape restoration, reforestation with native mixed species, sustainable management and use of forests, and agroforestry. The FLU Sectoral Guide identifies the highest potential for paradigm shift, scalability, use of financial instruments, and impact based on synergies

[2] Paris Agreement, Article 5.

across adaptation and mitigation. An estimated total of 49 Gt CO_2 cumulative mitigation can be achieved in developing countries' FLU sector by 2030 (Hoegh-Guldberg et al. 2019).

1.3 Organisation of the document

This Guide has seven sections. After this introduction, Section 2 provides an overview of the global context of emissions from forest and land use and adaptation and mitigation responses; Section 3 highlights the barriers and opportunities to achieving a paradigm shift in the FLU result area; Section 4 provides guidance on how to scale up and catalyse public and private investment; Section 5 provides case studies that demonstrate paradigm shift potential; Section 6 provides specific guidance for the development of impactful projects and programmes based on GCF investment criteria; and Section 7 is the conclusion.

2 GLOBAL CONTEXT

2.1 Scientific basis: why are forest and land use relevant to climate action?

Forests cover 31% of the global ice-free land area, with about one third as primary forest, half of which is relatively intact (FAO and UNEP 2020). Between 2000 and 2017, 337 million hectares of forest cover were lost worldwide; in 2019, 11.9 million hectares were lost in the tropics alone, nearly a third in carbon and biodiversity rich humid primary tropical rainforests (GFW 2020). Land-use change comprises approximately 13% of annual global net emissions (5.2 ± 2.6 Gt CO_2/year), mostly due to tropical deforestation, unsustainable forestry (timber harvest) and other unsustainable land management, and peatland drainage and burning (IPCC 2019; for peatlands see also EES Sector Guide).

Recent major scientific assessments highlight the severity of the climate crisis, and the urgency in reducing global carbon emissions to net-zero by 2050, with a global 2030 emission reduction target of 45% from 2010 levels, with developed countries taking the lead (IPCC 2018). Achieving net-zero emissions relies also on enhancing forest and land sinks. There are limitations to land-based sequestration, however, as net carbon uptake rates are slow and amounts are low when compared to CO_2 released by fossil fuel combustion (Baldocchi and Penuelas 2019). Therefore, avoiding emissions from forest loss and degradation is the most effective strategy from the mitigation perspective.

The climate, ecosystems, biodiversity and development challenges overlap considerably in terms of drivers and solutions (Lade *et al.* 2019; Seddon *et al.* 2019). Therefore, reducing deforestation provides tangible benefits to both climate and biodiversity goals. Loss of ecosystem integrity further amplifies climate change through feedbacks contributing up to an additional 0.4°C warming across all scenarios by 2100, potentially turning the entire terrestrial biosphere into a net carbon source (Lade *et al.* 2019).

2.2 Global baseline: where is FLU today?

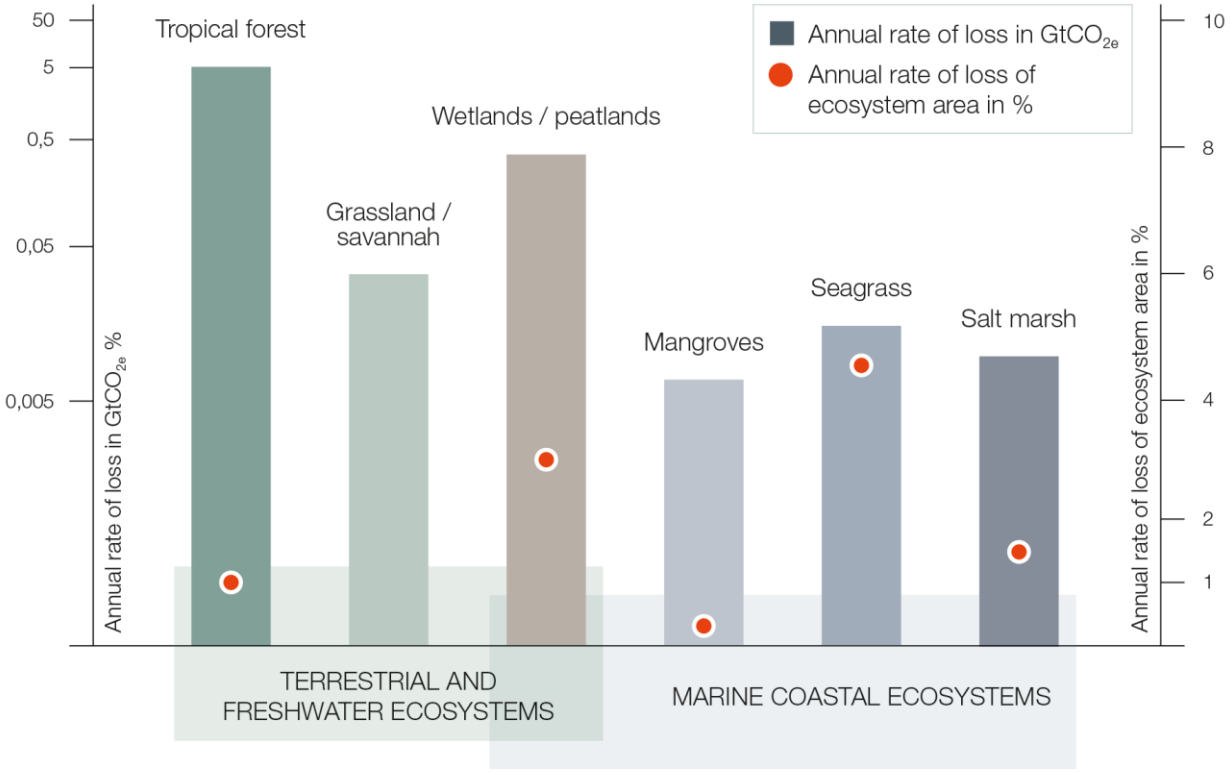
One of the central aims of the Paris Agreement is to limit global temperature rise this century to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further, to 1.5°C. It also provides a global goal for adaptation, of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change. For action in the forest and land use result area, it is important to realise that mitigation and adaptation objectives are linked through synergies but also trade-offs (Locatelli et al. 2016; EES Sectoral Guide). Challenges in FLU sector are already seen at the 1.1°C average global warming experienced through 2019 – increased droughts, floods and wildfires, and significant decreases in crop productivity (WMO 2019).

Disadvantaged and vulnerable populations, Indigenous Peoples, women, and local communities dependent on subsistence livelihoods are at a disproportionately high risk of being negatively affected, even with a 1.5°C warming. Regions that are at higher risk include arctic ecosystems, drylands, Small Island Developing States (SIDS), and Least Developed Countries (LDCs). Exposure to multiple climate risks increases at warming from

1.5°C to 2°C, with higher pressure on poverty-stricken regions in Africa, Asia, and Latin America. Not surprisingly, adaptation needs are higher for global warming of 2°C than for 1.5°C (IPCC 2018).

Avoiding emissions from the loss and degradation of various ecosystem types is addressed through both the FLU and the EES result areas. Figure 1 shows baseline emissions and demonstrates the significant importance of conserving, restoring, and sustainably managing forest ecosystems, in particular tropical forests.

Figure 1: Baseline emissions from current degradation and loss of ecosystems



Source: GCF EES Sectoral Guide, graph based on data from IPCC (2019).

2.3 Global mitigation and adaptation potential: where does FLU need to be?

Adaptation options that reduce the vulnerability of human and natural systems have many synergies with sustainable development (IPCC 2018). Significant emission reductions can be achieved and strong co-benefits can be harnessed by maintaining natural forest cover, restoring degraded forests and sustainably managing productive lands. This in turn improves the ecosystem services that forests provide, and the livelihoods for some of the most vulnerable communities to adapt.

The activities with the highest impact potential, leading to higher carbon and non-carbon benefits are those that show synergies across adaptation and mitigation objectives (Elias et al. 2014); enhance ecosystem resilience; enable paradigm shift and scalability; and enhance livelihoods. Global adaptation and mitigation opportunities in the FLU result area fall under three paradigm shifting pathways:***Protection.*** The greatest mitigation potential in FLU lies in protection (e.g. reducing emissions from land conversion). The earlier these emissions are phased out, the greater the mitigation benefit, because to a large extent carbon sequestration and storage potential is lost when ecosystems are lost. Some carbon-dense ecosystems (forests, wetlands,

peatlands, mangroves) contain "irrecoverable carbon"[3] vulnerable to release upon land conversion, and are not recoverable on human timescales (Goldstein *et al.* 2020), and the most effective opportunities for ecosystem protection and restoration are disappearing (Anderson *et al.* 2019; IPCC 2019). Many of these opportunities are also covered through the EES result area (see EES Sectoral Guide).

In the case of forest ecosystems, the potential to reduce emissions from forest conversion is found mostly in tropical countries, as natural tropical forests are currently under threat of high deforestation rates and therefore an important net source of emissions (IPCC 2019). Half of the global potential stemming from halting ecosystem conversion for agriculture is in developing countries, as is one third to one half of the global restoration potential.

Protection falls into two main categories: *in situ* and *ex situ*. *In situ* protection consists mainly of conservation measures aimed at directly protecting forests through *e.g.*, designation and effective management of protected areas as well as the management of buffer areas to prevent encroachment, in order to protect the ecological integrity of natural forests and the multiple goods and services they provide, including mitigation and adaptation.

Ex situ protection involves addressing the underlying causes and drivers of deforestation. Recent studies unambiguously show the outsize role of large-scale agricultural expansion in driving tropical deforestation, with just six global commodities responsible for land conversion, namely soy, beef, oil palm, timber, cocoa and coffee (*e.g.*, Lawson 2014, FAO 2021). Removing deforestation from agricultural supply chains – particularly these six commodities – can provide a systemic, paradigm-shifting solution to reducing deforestation at national and even regional levels.

Restoration. The second greatest impact potential lies in restoration. Ongoing fragmentation and degradation of primary forests and increasing vulnerability to loss and degradation are a pressing concern for both climate and biodiversity goals (IPCC 2019). Hence, restoring degraded ecosystems and reforesting deforested areas offers significant mitigation potential that increases over the next few decades.[4] The greatest opportunities for mitigating further fragmentation and loss in highly fragmented regions (such as Central America, West Africa, and mainland Southeast Asia), include restoration of natural forest cover to achieve connectivity and the reestablishment of large blocks of natural forest cover (Hansen et al. 2020). In regions with large contiguous forest blocks (the forests of the Amazon Basin, Congo Basin, Indonesian Borneo, and New Guinea), the priority should be on limiting future fragmentation. Conservation within these large blocks should incorporate preservation of high carbon stock and biodiversity corridors (Hansen et al. 2020), while respecting the rights of Indigenous Peoples and local communities dependent on them.

Sustainable management of land encompasses a wide range of ecosystem management interventions, from predominantly natural to mostly managed. In predominantly natural ecosystems, this can occur through processes such as recognising the need for widespread community support to maintain or improve conservation management in primary and other natural landscapes. In predominantly managed ecosystems, sustainable management can occur through regeneration of agricultural systems based on agroforestry and silvopastoral systems, and regenerative agriculture (reducing field traffic, maintaining vegetation cover, minimising rotations, etc.) to enhance soil carbon and biodiversity. Improved management of forest plantations (via reduced harvest intensity, thinning) can help increase carbon sequestration and storage while maintaining productivity (EverGreening Alliance 2019). Nevertheless, care should be taken as some tree plantations can be responsible for biodiversity impacts and loss of ecosystem functionality associated with alterations of the hydrological cycles, nutrient loss and soil erosion. Despite research suggesting that certain

[3] Goldstein et al. (2020) define "irrecoverable carbon" as "places we can't afford to lose" – carbon that is vulnerable to release upon land use conversion and, once lost, is not recoverable on timescales relevant to avoiding dangerous climate impacts.

[4] In this context, restoration is broader than reforestation, as it may include land-use practices than enhance ecosystem functioning and carbon storage beyond reforestation.

certification schemes of logging concessions may affect the integrity of primary forests (Hansen et al. 2020), The application of stringent, internationally recognized certification processes based on the highest social, economic and environmental standards can in many cases be considered a proxy for sustainable forest management, especially in light of the multiple co-benefits they provide for sustainable development. Finally, it is important to enhance risk management strategies in the context of prevention and monitoring of hazards, such as increased forest wildfires, pathogen, pests and diseases, which are also drivers of increased forest fragmentation and threaten forest biodiversity and ecosystem functionality, particularly in pristine forests (FAO and UNEP 2020). In other words, innovative approaches to enhancing the carbon storage and sequestration potential of productive forest landscapes should be explored. These innovations should augment expansion and improvement of existing mechanisms to promote and incentivise sustainable forest management, including supply-side measures such as legal verification and demand-side measures such as certification.

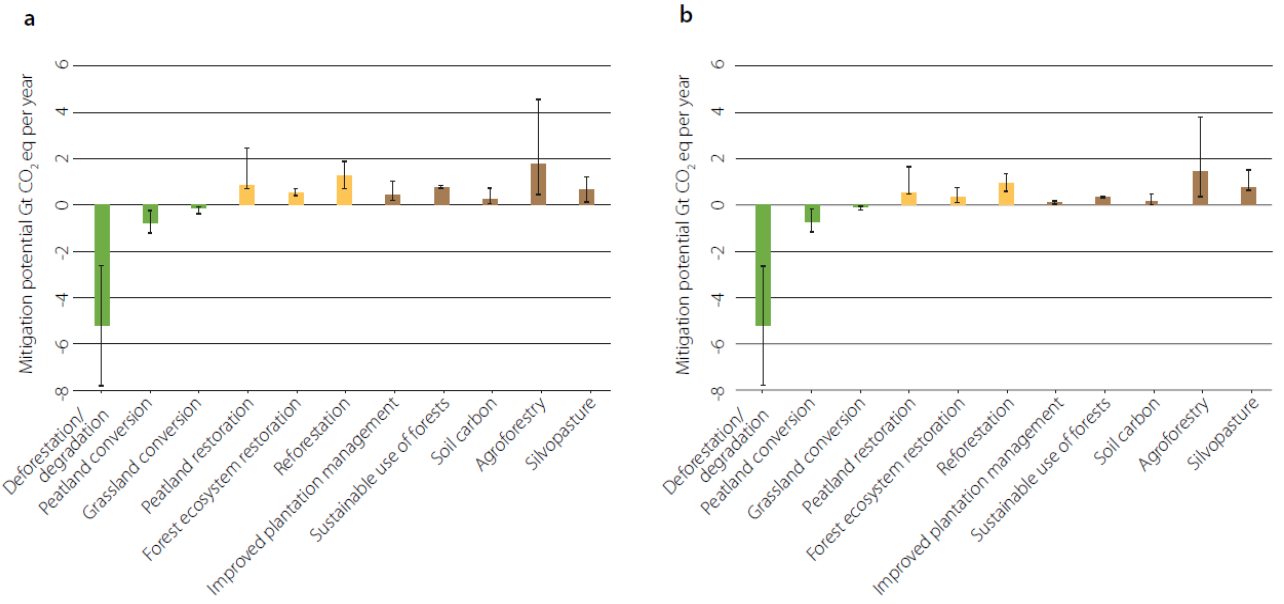
In short, although protection and restoration are essential for low emission climate resilient alternatives, on the scale of regional landscapes, these interventions need to be integrated with sustainable management of forest, agricultural and urban pathways in synergistic ways. This ***continuum*** of appropriate interventions depends on area specific benefits and trade-offs. Understanding this continuum is important in developing cross-sectoral interventions, which are potentially of greatest impact in terms of cost-effectiveness and respect for local communities (see EES Sectoral Guide).

Strategic mitigation targets for global pathways to 1.5°C show that developing countries represent roughly two thirds of the global ambition level in the FLU result area. The total mitigation potential identified globally for forest and land use is 13 Gt CO_2/year (by 2050), of which 10 Gt CO_2/year can be found in developing countries (see Figure 2). These strategic targets must be further translated into spatially and temporally applicable strategies to understand the scale of ambition and need to address a broad range of governance, institutional and economic drivers of land-use change to deliver synergistic benefits for adaptation goals.

The largest potential in terms of emission reductions is in protection, through avoiding both deforestation and degradation. This activity also has high adaptation synergies and high potential for paradigm shift. Finance, and some governance structures are in place due to over a decade of establishing incentives under REDD-plus, but the private sector and markets need to become involved at scale. Other activities that show high mitigation potential and strong adaptation benefits are in restoration, reforestation, sustainable forestry management, and sustainable land use (such as agroforestry and agroecology), where vegetation cover is enhanced to deliver mitigation and adaptation benefits.

Because humanity is experiencing a climate emergency, undertaking actions and interventions that respond to this crisis and achieve maximum impact is urgent. Prioritisation can be achieved by looking at opportunities offered by various ecosystem types regarding the degree of mitigation and adaptation potential, balanced with the level of threat and rate of loss of irrecoverable carbon. For the FLU result area, the main priorities are avoiding deforestation and forest degradation. Secondary priorities include introducing and maintaining agroforestry and silvo-pastoral systems, reforestation, and peatland restoration (see Error! Reference source not found. and Figure 3). Other ecosystems are covered in the EES Sectoral Guide.

Figure 2: Land based mitigation potential by 2050 globally (a) and for developing countries (b)



Legend: Green = protection (avoided conversion); yellow = restoration; brown = sustainable land management. All estimates are constrained by cost effectiveness and sustainability concerns where available. Avoided emissions (negative) and enhanced sequestration (positive).
Source: Dooley et al. 2018, Griscom et al. 2017 and EverGreening Alliance 2019.

2.4 Financing adaptation and mitigation: how much will it cost to meet these targets?

The challenge to delivering maximum climate impact and achieving sustainable development in forests and land use sector is to shift it from being a net source of emissions (with a current magnitude of approximately 5.2 Gt CO_2/year in 2020) to a substantial net sink. Such an ambitious paradigm shift requires public and private commitment and long-term strategy. Governments need to establish and scale up incentives, regulatory frameworks, and their effective enforcement to keep forests standing. Much greater international finance is needed to increase forest protection and shift the paradigm towards sustainable landscapes (Martius et al. 2018). Promising initiatives include domestic fiscal policies (India); peatland restoration (Indonesia); emerging carbon tax and green bonds programmes (Colombia, Indonesia, Mexico); recognition of rights of nature (Ecuador, New Zealand, India and Colombia (Pecharroman 2018)), and many other alternatives that place more value on a standing forest as opposed to a fallen one. Broader partnerships between rich and forest-rich countries that create demand for real and permanent jurisdictional forest-based emission reductions can also incentivise change (Duchelle et al. 2019).

The mitigation potential for developing countries suggests that 19 Gt CO_2 cumulative mitigation would need to be achieved by 2025, and a further 24 Gt CO_2 between 2025 and 2030, resulting in a total of 43 Gt CO_2 cumulative mitigation across the FLU sectors in developing countries by 2030 (Figure 2). The anticipated cost to realise this mitigation potential is as high as USD 151 billion per year between 2020-2025, and USD 192 billion per year between 2026-2030 (Kissinger et al. 2019). In the absence of market transformations to internalise and mainstream these benefits, a total of USD 1.716 trillion is needed in the next decade to achieve this goal.

In countries critical for this result area, land-use change already accounts for up to 80% of national emissions (Grassi *et al.* 2017). Latin American and Caribbean countries are most frequently represented across the FLU result area in GCF projects, followed by countries in Asia-Pacific and in Africa. Cost indications for NDCs vary considerably; implementation costs often exclude FLU, and only 35% of developing country NDCs provide clear cost estimates for FLU actions (Hof *et al.* 2017; Pauw *et al.* 2019). Among developing country NDCs, 80% include conditional NDC targets, which are dependent on international support – typically about 10-12 percentage points higher than their unconditional target. Fulfilling the conditional NDCs could bring additional

emission reductions of 2.4 Gt CO_2 per year in the FLU sector, which could cost between USD 1.4 and 6.7 billion annually over ten years[5]. Public and private climate finance needs for the FLU result area are one order of magnitude larger than currently available (Kissinger et al. 2019). Scaled up climate finance and improved enabling conditions for private sector investments in FLU can help fill this gap.

Due to time lags in the way the land system reacts to the carbon cycle, the early prioritisation of land-sector interventions will be crucial (Brown et al. 2019). In recent years, a number of potentially high-impact initiatives have commenced, which could be supported through goals and programmatic approaches involving GCF co-finance including: the Bonn Challenge; including Initiative 20x20 in Latin America and the Caribbean and Initiative AFR100 in Africa; The Global Deal for Nature; the Glasgow Leaders' Declaration on Forests and Land Use; the UN Decade of Ecosystem Restoration; The Great Green Wall; and the Adaptation Commission. These initiatives and the networks implementing and supporting them are important considerations in the context of building the new coalitions needed to support paradigm shifting pathways in the FLU result area.

3 PARADIGM SHIFTING PATHWAYS: FLU RESULT AREA

3.1 Drivers of change across paradigm shifting pathways

To achieve a paradigm shift and reach the targets outlined in Section 2, developing countries must commit to long-term processes. The REDD-plus experience sheds light on the time and effort it takes to achieve deep policy changes across countries and internationally at the same time. More than a decade of international, national and local investment in, and engagement for REDD-plus readiness was needed to set the stage for results-based finance (Angelsen & McNeill 2012; Seymour & Busch 2016).

The term "paradigm shift" refers to the degree to which the proposed investment can catalyse impact into medium or long-term change, beyond a one-off project investment (GCF, 2020). Through the 2020-2023 Strategic Plan, GCF seeks to help developing countries and implementing partners support paradigm shift to significantly improve the design and quality of projects, and to achieve sustainable results.

Three dimensions commonly define transformational change[6]: depth, scale, and speed. *Depth* is the essence of a transformational shift; without depth there is little transformation. Deep transformations cut across sectors, levels and generations, and are needed to change cultures, power dynamics, and structures (markets, laws, institutions). *Scale* refers to defining what is scalable, and the numbers of people affected, or the geographical extent of change achieved with the scaling. *Speed* indicates how quickly transformations can be achieved; the urgency of the climate crisis puts an emphasis on early outcomes achievable in 5-10 years (the 2030 goal) over those achievable in 30 years (the 2050 goal), because each 'missed year' increases the size and complexity of the task ahead.

To maximise impact and paradigm shift, GCF has adopted a Theory of Change (ToC) based on transformational planning, catalysing innovation, mobilising finance at scale and knowledge replication (GCF 2020). Four elements are identified in the academic literature (Atmadja et al. forthcoming) as important for transformational change: processes, norms and values, resources, and legitimacy. Mapping these onto the GCF ToC (Figure 3) facilitates action towards a paradigm shift across different stakeholders, rights holders, institutions, geographies and processes, as follows:

(1) Transformational planning and programming. Climate compatible ***processes*** for planning and policy frameworks, ensuring transparency, access to information, participation, equity and sustainability, to guide and bring ***legitimacy*** to processes.

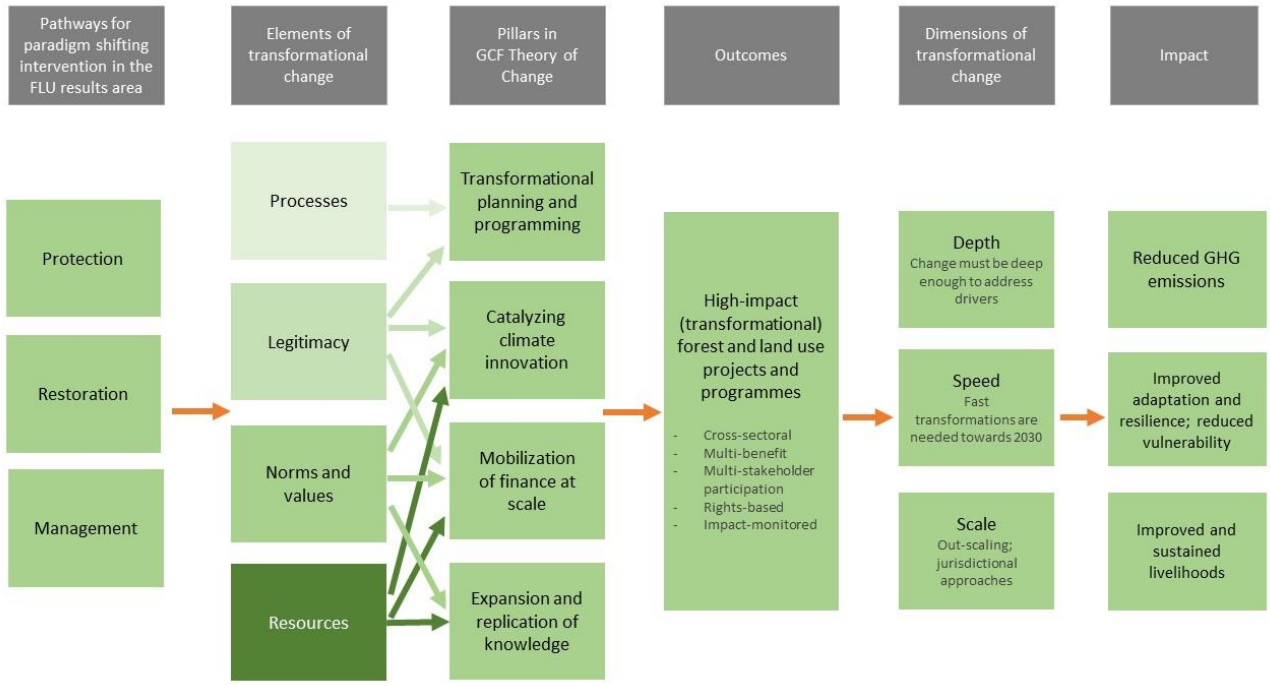
[5] Project budgets in EUR were converted to USD at a rate of EUR 1 = USD 1.13, the average exchange rate between 2015 and 2019.
[6] 'Paradigm shift' is interchangeable with 'transformational change', another term used in the literature, but no definitions exist for either term (Puri 2018, Atmadja et al. forthcoming).

(2) **Catalysing climate innovation.** Enabling policy, institutional, and technological innovations for policies, laws, business models, projects, and practices of land use and forest management to harness multiple benefits.

(3) **Mobilisation of finance at scale.** Using a range of financial instruments to reduce risks and barriers to investment in FLU, countries can unlock local capital (***resources***), and improve access to commercial or "niche" markets relevant to sustainable landscapes.

(4) **Expansion and replication of knowledge.** ***Resources*** needed to shift finance flows include strengthened capacity of institutions and people, and the available and accessible information (data, maps, and best practices). By sharing lessons learned, methodologies (traditional and scientific), and standards, projects and programmes can contribute to global finance flows for transformational pathways towards low emissions and climate-resilient development.

Figure 3: Elements of transformational change linked to pillars of GCF Theory of Change



3.2 Three paradigm shifting pathways in the FLU sector

The following three sub-sections articulate the vision, barriers, and pathways to paradigm shifts in each of the three investment pathways: **protection** of primary forests and other natural landscapes; **restoration** of degraded forests and lands; and **sustainable management** of production lands and forests.

3.2.1 Pathway 1: protecting natural forests and landscapes

Vision. To protect forests and other natural landscapes, the underlying drivers of deforestation and degradation must be addressed (Curtis *et al.* 2018; Brockhaus and Angelsen, 2012). Countries recognising the role of forests for mitigation and adaptation in their NDCs and NAPs can reflect this pathway in strategic planning instruments at local, jurisdictional, national and regional levels. Proposed action should be accompanied with evidence that goes "beyond a country's development imperative and […] is truly an intervention needed as a result of a country's changing climate situation" (GCF 2020b).

Barriers and enablers to paradigm shift in protecting natural landscapes can be found in Table 2 and Table 3.

Table 2: Selected barriers to paradigm shift in protecting natural forests and landscapes

Barrier	Description
Weak forest governance	Weak governance structures, regulation gaps, and lack of institutional collaboration limits mainstreaming protected forest landscapes into development planning and investment. Lack of monitoring and enforcement of forest protection legislation.
Insecure land rights	Unclear land tenure, user rights, and gender inequalities can hinder further development and financial investment.
Conflicting policies	Conflicting policies, strategies and measures that create uncertainties and challenges, and reward forest clearance or discourage stakeholder engagement.
Ineffective land-use planning	Unsustainable land-use planning, boundary demarcations, conflicting regional policies and strategies, and weak monitoring and enforcement result in disconnected strategies and weak monitoring.
Limited private investment and lack of incentives	Lack of incentives for forest conservation (e.g. lack of tax incentives, lack of rewards for conservation, unclear rules for private management of public lands, rudimentary biodiversity offset markets, etc.). Private investment is limited due to uncertain long-term risk profile, lack of enabling conditions, and uncertain future legal frameworks for REDD-plus investments[7], leading to increased risks.
Lack of financial resources	High upfront costs and long-term payback on forest-based investments contrasts with short-term nature of donor funding, and lack of access to credit among rural and Indigenous populations.
Economic incentives for conversion to agricultural land	With growing global demand for key agricultural commodoties and little consideration of environmental externalities, the financial advantages of maintaining forest cover are dwarfed by the prospects of economic gains from conversion of land to produce key commodities in high demand, notably beef, soy, palm oil, timber, coffee and cocoa. In many cases, agricultural subsidies further exacerbate the imbalance in favour of land conversion.
Widespread economic externalities	Long-term economic benefits of forest protection for societies at large are at a disadvantage when compared with short-term gains of forest clearance. Lack of viable of sustainable economic alternatives.
Insufficient knowledge	Insufficient knowledge, data and capacity to understand forests, REDD-plus concepts and other conservation mechanisms restricts implementation and monitoring of forest conservation. Insufficient recognition of indigenous and traditional knowledge.

Table 3: Possible actions to support paradigm shifts for protecting forest ecosystems

Outcome	Possible actions and transformational potential
Transformational planning and programming	Recognising key role of local and Indigenous communities, including women, in managing forests, by establishing enabling regulations, institutional structures, financial support and facilitating widespread community support. Strengthening land tenure, and recognizing, safeguarding, and registering already legitimate tenure rights to enhance incentives for forest conservation. Planning and implementing meaningful Free Prior and Informed Consent (FPIC) processes when applicable. Creating coherent land-use planning between institutions to implement policies to prevent perverse incentives that foster agricultural expansion through forest clearing. Strengthening legal capacity to support local sustainable land management. Strengthening the coverage and effectiveness of protected area systems in FLU management. Linking investments in forest conservation with food, water and energy security targets. Strengthening systems for remote deforestation detection and real-time enforcement.

[7] In the context of the GCF this generally means "REDD+ results-based payments."

Outcome	Possible actions and transformational potential
Catalysing climate innovation	Piloting and evaluating the value of establishing multi-stakeholder and multi-sector forums and/or building participatory programme monitoring and evaluation systems. Implementing next-generation regional biome-based, community supported forest protection agreements, such as the proposal for a contiguous Andes-Amazon-Atlantic Corridor to protect biodiversity and cultural heritage across 200 million hectares of rainforest.[8] Testing alternative policies and markets to incentivise deforestation-free supply chains. Testing changes in national procurement systems to purchase from deforestation-free commodity chains. Explicitly linking support for Indigenous communities and supply chains can achieve strong synergies in national and global REDD-plus infrastructure (Angelsen *et al.* 2012, Duchelle *et al.* 2019, Sunderlin *et al.* 2018). Using a combination of remote sensing, drones, and artificial intelligence algorithms to enhance the speed of detection of and response to illegal deforestation. Piloting new and strengthened certification systems for deforestation-free commodities, including the new technology for traceability (e.g. blockchain). Piloting new financial incentives and mechanisms for rewarding maintenance of forest carbon stocks even without immediate threats, because of adaptation and other ecosystem services benefits.
Mobilisation of investment at scale	Devising equitable, sustainable and transparent financial mechanisms to invest in forest conservation. Recognising multiple ecosystem benefits from forests to create diverse project revenue streams. Increasing finance from non-market and market sources (e.g. debt swaps, levies), including for REDD-plus results-based payments. Improving documentation to facilitate co-financing of sizeable REDD-plus investments (Luttrell *et al.* 2018). Exploring blockchain-based systems to connect and build transparency, accuracy and trust between forest stewards and remote donors for Results-Based Payments (RBP). Continuing to develop new mechanisms to further de-risk REDD-plus investments. Making better use of small and medium size funding opportunities to reach a larger number of players. Incubation and development of business models for forest-protection
Expansion and replication of knowledge	Building capacity in knowledge of regulations, policies and REDD-plus frameworks to strengthen forest governance. Supporting and bringing Indigenous and traditional knowledge of forest protection and other data (mapping, changes in species, habitat, etc.) to science and policy-makers. Creating access to knowledge and data for Indigenous Peoples, and remote and vulnerable forest dependent communities. Establishing knowledge sharing platforms and networks. Easy access and availability of quality and up-to-date data in forest areas and priority landscapes.

3.2.2 Pathway 2: restoring degraded forests and other landscapes

Vision. Restoring forested landscapes relies on international and national catalysts for reforestation, traditional and Indigenous community buy-in and leadership in land management, and ecosystem-based approaches to avoid trade-offs and promote synergies between mitigation and adaptation.[i]

Barriers and enablers to paradigm shift in forests and land use can be found in Table 4 and Table 5.

[8] This proposal was made by the Coalition of Indigenous Organizations of the Amazon Basin (COICA) in 2018. The interconnected environmental corridor as envisioned has the potential to safeguard an immense swath of the Amazon rainforest by pursuing an Indigenous, holistic perspective.

Table 4: Selected barriers to paradigm shift in restoring degraded forests

Barrier	Description
Ineffective legal and regulatory framework	Institutional barriers contribute to weak coordination between ministries and other relevant institutions. Competing policy objectives and stakeholder interests (e.g. reforestation vs. intense commercial use) can hinder transformational change.
Ineffective land-use planning and weak cross-sectoral linkages	Ineffective land-use planning and weak implementation and monitoring causes conflicts between land-use planning for forest restoration and other land uses. Land-use planning also often fails to draw on cross-sectoral complementarities that would otherwise highlight the benefits of forest restoration for other types of land use, notably agriculture.
Weak land tenure and access rights	Land tenure insecurity, and unclear access rights to both land and forests, expose forests to risks of extraction and impede investment in restoration and local ownership of processes (Ding et al. 2016). Support from Indigenous communities will accrue if registry and traceability are strengthened (Sunderlin et al. 2014).
Mitigation-centric focus and trade-offs	Forestry actions with exclusive mitigation objectives could risk replacing forests of low-carbon density, high biodiversity and livelihood values (e.g. open-access dry forests) with high-carbon, low biodiversity and low livelihood values (e.g. monoculture tree plantations), while evidence suggests that more ecosystem services could be provided by biodiversity hotspots than carbon hotspots (Locatelli et al. 2013). Trade-offs need to be understood and addressed.
Lack of financial incentives	Absence of clear financial incentives and access for communities and the private sector to preserve and expand forested areas, coupled with lack of time to build a sufficient stream of domestic resources from revenues from natural resources (such as non-timber forest products and eco-tourism, as seen in case studies on Bhutan and Ecuador, Section 5).
Lack of finance for commercial reforestation	Sustainable commercial reforestation projects with native species require a long period of time to reach maturity for timber harvesting, while typical financing sources require shorter-term payoffs.
Country needs versus global priorities	International initiatives and priorities may not align clearly to needs and capacities of developing countries.
Knowledge barriers	Compartmentalisation of knowledge and information, such as separation of forestry and ecology. Limited understanding of the potential for EBA to enhance adaptive capacity. Insufficient evidence to decide which forest restoration actions work best.

Table 5: Possible actions to support paradigm shift for restoration of forests and degraded lands.

Outcome	Possible actions and transformational potential
Transformational planning and programming	Establishing multi-stakeholder forums in restoring forested landscapes with explicit attention to multisectoral integration and equity. Involving a diversity of stakeholders in monitoring and recognising the validity of different knowledge systems allows for co-learning and adaptation in landscape approaches (Sayer et al. 2013). Monitoring outcomes and processes (Olsen et al. 2018) using indicators that are culturally appropriate, and thus level specific (e.g. country, site) (Spangenberg 2009). Planning and implementing meaningful FPIC processes when applicable. Coherent land-use and spatial planning that account for multiple objectives and are coordinated across relevant institutions. Integrating reforestation efforts in land-use planning. Adopting a landscape approach to capitalize on cross-sectoral linkages of landscape restoration. Shifting harmful gender social norms.
Catalysing climate innovation	Piloting new methods that catalyse synergies between mitigation and adaptation, such as reforesting degraded slopes and riparian lands, which sequesters carbon but also prevents erosion and protects waterways (see EES Sectoral Guide).

Outcome	Possible actions and transformational potential
	Testing new forms of community-based adaptation (CBA) and ecosystem-based adaptation (EBA) can help countries deliver high-impact transformative projects through community-led processes (Reid et al. 2009). Piloting new global incentives or commitments to increase forest restoration (e.g. Accion Andina) that consider trade-offs and ensure climate and biodiversity objectives (Seddon et al 2019). Next-generation PES focusing on multiple benefits to increase the financial and political viability of projects (e.g. reforestation delivering water regulation and carbon capture, or reforestation in peatland areas reducing emissions and health issues from fires). Developing and testing reforestation schemes that provide multiple benefits, including reducing GHG emissions, improving soil conservation and rainwater harvesting capabilities, provide sustainable local livelihoods, and take pressure off natural forests (e.g. replanting Argan tree orchards in Morocco, GCF project FP022). Designing economically viable and socially acceptable deforestation-free supply chains that produce returns on investments (*e.g.,* SAP015).
Mobilisation of investment at scale	Mobilising international private and public funding, and other financing tools to reduce investment risk for commercial plantations with native species, or other innovative sustainable silvicultural methods to increase wood supply that provide climate and biodiversity benefits. Creating an enabling national regulatory framework to increase domestic funding sources, such as green levies and payment for ecosystem services (see Bhutan case study, Section 5.1). Scaling up deforestation-free, sustainable supply chains to reduce agricultural pressure on forests; creating track records for sustainable products to de-risk and encourage large-scale investment. Enhancing access to climate finance for rural and vulnerable populations, with community-based financing (e.g. small grant funds, revolving concessional loan funds managed by local stakeholders). Enhancing carbon markets for reforestation projects.
Expansion and replication of knowledge	Continued and participatory monitoring, and evidence sharing related to impacts, potential solutions and progress is crucial for developing new methods to overcome risks and uncertainties and improve practices. Developing methods to monitor complex dimensions of change such as governance, voice and empowerment (Hallegatte and Engle 2019). Monitoring transformation means looking for changes in attitudes, beliefs and cultural values, and for the reframing that changes patterns and structures. Innovations might include designing self-monitoring by the different actors of their own change, as this is an effective way to monitor changes in beliefs (Chapman 2002). Supporting and bringing Indigenous and traditional knowledge, as well as their approaches to forest restoration, sustainable management, and data generation (mapping, changes in species, habitat, etc.) to science and policy-makers. Developing forestry curricula that include political, social (e.g. tenure, equity, gender) and economic (e.g. livelihoods, value of forest ecosystem services) dimensions of forestry. CBA and EBA promote knowledge exchange, information access and increased social capital and equity.

3.2.3 Pathway 3: sustainable management of productive forest landscapes

Vision. The vision for a paradigm shift to sustainable management of forest landscapes must be mainstreamed into development planning and investment at country, biome and jurisdictional levels. This requires models for horizontal and vertical coordination between sectors; mechanisms, approaches and instruments to improve knowledge and implementation of sustainable management of forests, sustainable agricultural practices, sustainable production of timber and non-timber forest products, improvement of forest management to benefit forest-dependent communities, and other compatible land uses.

Barriers and enablers to paradigm shift in forests and land use can be found in Table 6 and Table 7.

Table 6: Selected barriers to paradigm shift in sustainable management of productive landscapes

Barrier	Description
Path dependency	Value of status quo compared to uncertain future benefits of the resulting change. High costs of the change process. Infusing flexibility and reflexivity in traditionally inflexible processes is also a barrier, as is inadequate capacity and policy environment for the development of resilient rural business.
Knowledge costs	Costs associated with learning (e.g. cost of education and knowledge management). Cost-effective measures are not automatically adopted as they may be accompanied by high risk or fear of the unknown.
Lack of policy coherence	Climate change considerations are not systematically integrated into policy development and investment decisions. Different land uses (e.g. forestry, mining, agriculture, fishery, energy-generation) are frequently managed independently, with barriers to integration and synergies; Lack of collaboration between ministries preventing long-term regulatory planning for adaptation.
Ineffective legal and regulatory framework; poor law enforcement	Lack of planning, policy and regulation capacity in sustainable forestry including regeneration, agroforestry, silviculture, and reduced intensity land management. Lack of legal structures and systems to encourage markets in agricultural commodities integrated with forest landscapes. When frameworks are in place, effective enforcement is needed. Lack of clear property rights.
Lack of financial viability	Long investment timeframes for sustainable forestry practices. This requirement for patient capital creates a mismatch with traditional financial instruments.
Knowledge and information barriers	Inadequate climate risk information preventing effective adaptive planning and resource mobilisation. Lack of uptake of scientific knowledge into policy, inadequate support for local communities switching to sustainable forestry practices and lack of economic incentive for environmental and ecological stewardship. Lack of knowledge about responsible purchasing policies and certification, and deforestation-free commodities among policy makers and landowners. Poor technical, administrative and financial capacities of local communities and Indigenous Peoples for the development of resilient rural economies.

Table 7: Possible actions to support paradigm shift for sustainable management, according to outcome.

Outcome	Possible actions and transformational potential
Transformational planning and programming	Designing multi-stakeholder forums for managing landscapes that combine top-down and bottom-up approaches has the best chance of resilience and of leading to equitable outcomes (Larson and Sarmiento-Barletti 2020). Enhancing engagement of Indigenous Peoples, local communities, farming communities, and women in planning processes, including through capacity building, training, and support. Planning and implementing meaningful Free Prior and Informed Consent (FPIC) processes when applicable. Integrating sustainable forestry management in land-use planning at the landscape level.
Catalysing climate innovation	Developing, in a broad alliance, innovative jurisdictional climate programmes that are tailored to the local conditions, coupling the recognition of traditional land and resource rights and gender sensitivity with targeted interventions that increase the value of sustainable products Testing and evaluating forest crops that can be grown in agroforestry systems on marginal, degraded land, avoiding conflicts with food production (e.g. oil seed for energy). Multiple benefits include energy production, maintained tree cover and carbon storage, biodiversity, and soil recovery, while providing various income streams including timber production (Jaung *et al.* 2018; Rahman *et al.* 2019).

Outcome	Possible actions and transformational potential
	Deploying methodological innovations such as coppicing aboveground biomass while keeping the belowground biomass intact (dry forests have about 70% biomass in roots underground), benefitting energy, income and carbon stores. Integrating technological advances through new processing methods to harden, soften, impermeabilize and otherwise treat wood for various industrial purposes; new ways to build with wood; new value chains where wood is used for products that store carbon over decades. Piloting improved land use and socio-economic development while addressing policy and legislative reforms on tree tenure and carbon rights (e.g. A GCF proposed project in the cocoa growing areas of the High Forest Zone in Ghana, UNDC, n.d.).
Mobilisation of investment at scale	'De-risking' projects can include early identification and assessment of risks such as uncertain land tenure, currency fluctuations, political instability, and lack of coordination between stakeholders. Such proactive engagement with risk can increase access to different finance tools. Increasing private and public finance and capacity building to enhance value chains related to sustainable managed forests and sustainable agricultural commodities. For example, AMAN (Indigenous Peoples' Alliance in Indonesia) is creating a community-owned company to scale-up sustainable coffee production and building capacity to develop online markets for non-timber forest products and sustainable agricultural commodities. Expanding existing and testing new and innovative certification schemes that use "market full" forces for sustainable timber and associated non-timber forest products that generate climate benefits.
Expansion and replication of knowledge	Setting up "Change coalitions" to overcome the challenge of the status quo (Brockhaus et al. 2017). Using successful multi-stakeholder processes that allow sufficient time and resources to accompany or govern change (Sarmiento Barletti et al. 2020). Encouraging CBA and EBA to promote knowledge exchange, information access and increased social capital and equity. Emphasising knowledge and learning, either as a driver or indicator of change. Examples include establishing learning platforms (e.g. CIF's Transformational Change Learning Platform); governments using methods such as Adaptive Collaborative Management or Participatory Land-use Planning to manage forest resources with local communities. Increasing allocation of funds to facilitate internal and external learning (e.g. research, capacity building, participatory monitoring and evaluation, communication forums, and dissemination of best practice information).

Box I. REDD-plus

Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries, or REDD-plus, is an integral component of forests and land use. As it is part of the Paris Agreement and directly relevant to both climate change mitigation and reducing deforestation and forest degradation, it constitutes an important part of the GCF's FLU portfolio, with the following amounts allocated to different REDD-plus phases at the time of writing:

1. Phase 1 (REDD-plus readiness): USD 12 million
2. Phase 2 (REDD-plus implementation): USD 146 million
3. Phase 4 (REDD-plus results-based payments): USD 497 million out of the USD 500 million envelope of the GCF REDD-plus RBP pilot programme.

The Green Climate Fund was the very first provider of REDD-plus results-based payments (RBPs) in 2017, opening up a new landscape in which other organisations and initiatives have since ventured into, including the World Bank, JNR and the LEAF Coalition. Since the exhaustion of its RBP envelope in 2020, the GCF is

exploring the possibility of a second phase of its RBP programme based on a revised set of terms of reference.

In parallel, the GCF continues to finance REDD-plus phase 1 through its regular and readiness windows, and phase 2 through its regular window. This approach of providing finance spanning all three phases of REDD-plus does not only help reduce emissions from deforestation and forest degradation, but also provides a host of additional benefits including (i) enhancing countries' readiness to implement FLU projects beyond the REDD-plus framework, (ii) addressing the drivers of deforestation as a systemic and long-term means of reducing deforestation and qualifying for RBPs, and (iii) enhancing non-carbon benefits of forests, including adaptation co-benefits.

Today's rapidly shifting RBP landscape is tending towards enhanced standards and fungibility with carbon markets. Recent discussions under the UNFCCC and beyond suggest that many stakeholders envision the longer-term future of RBPs in the form of carbon credits. This was also illustrated at COP26 in Glasgow where parties further defined the terms of Article 6 of the Paris Agreement. This is largely due to increasing demand, notably from the private sector, for high-standard carbon credits. However, current offer is lagging because of challenges among developing countries in achieving the higher standards expected of markets.

Building on its mandate to implement the Paris Agreement and its capacity to leverage private finance, the GCF will continue to support REDD-plus with a focus on:

- Supporting developing countries in meeting growing demand for higher standard emissions reductions;
- Supporting countries in implementing REDD-plus (phase 2), i.e. supporting the reduction of deforestation and forest degradation in countries that have achieved REDD-plus readiness, notably through the mobilization of private finance;
- Providing REDD-plus results-based payments and innovative finance;
- Helping countries develop voluntary carbon markets; and
- Ensuring that REDD-plus initiatives, regardless of the phase, can deliver significant benefits (i) more broadly on forests and land use, (ii) in terms of adaptation and (iii) other forest-related goods and services.

3.3 Role of GCF in financing the paradigm shifting pathways

Key actions for each of the paradigm shifting pathways, across the four pillars of the GCF Strategic Plan are outlined in Figure 4, followed by a detailed description of each driver.

Figure 4: Possible actions for each FLU pathway following the four pillars of the GCF Strategic Plan

Sector		Actions across the drivers of the GCF Strategic Plan			
Forest and land use		**Transformational planning & programming**	**Catalysing climate Innovation**	**Mobilising finance at scale**	**Coalitions & knowledge to scale up success**
Paradigm shifting pathway	**Protecting natural forests and landscapes**	• Securing land tenure and protecting the rights of indigenous peoples and local communities • Engaging in participatory multi-stakeholder processes for dialogue and decision making, with effective FPIC • Protecting forested ecosystems containing irrecoverable carbon (intact forests, peatlands • Using "Rights of Nature" approaches	• Implementing next-generation regional biome-based, community supported forest protection agreements to protect biodiversity and cultural heritage (e.g. contiguous Andes-Amazon-Atlantic Corridor) • Testing the development of alternative policies and markets to incentivise deforestation-free supply chains	• Increasing non-market finance (e.g. debt swaps, levies, REDD-plus RBP) • Leveraging domestic REDD-plus to mobilise external funds • Exploring blockchain-based systems for transparency and trust building • De-risking private finance (e.g. blended finance, guarantees)	• Supporting evidence-based decision making and traditional knowledge systems • Building capacity about regulations, policies and REDD-plus • Using participatory
	Restoring degraded forests and other landscapes	• Coordinating inter-institutional land use, spatial planning, and NDCs with multiple objectives • Monitoring outcomes and processes with culturally appropriate, level-specific indicators	• Piloting new global incentives or commitments to increase forest restoration • Using next-generation PES focusing on multiple benefits to increase the financial and political viability of projects (e.g. reforestation delivering water regulation and carbon capture in tropical mountains)	• Mobilising international private / public funding to reduce investment risk • Introducing regulation to increase domestic funding sources (e.g. green levies, PES) • Supporting access to climate finance for vulnerable populations	• Developing methods to monitor complex dimensions of change (e.g. governance, voice, empowerment)
	Sustainable management of productive forest landscapes	• Introducing jurisdictional climate programmes • Integrating land use into NDCs through coherent land use and spatial planning that account for multiple objectives and are coordinated across institutions	• Testing and evaluating forest crops that can be grown in agroforestry systems on marginal, degraded land, avoiding conflicts with food production • Keeping up with technological advances through new processing methods to harden, soften, impermeabilise and otherwise treat wood for various industrial purposes.	• Proactively 'de-risking' projects and programmes addressing tenure, currency fluctuations, political instability, access to finance • Increasing private and public finance and capacity building to enhance value chains • De-risking private finance (blended finance, guarantees, etc.)	• Developing forest curricula that address social and economic dimensions

Transformational planning and programming. GCF supports developing countries to create integrated climate and sustainable development strategies and policies. This fosters an environment conducive to green, resilient investment, including climate compatible *processes* for planning and policy frameworks, ensuring transparency, access to information, participation, equity and sustainability, which guides and brings *legitimacy* to processes.

In the FLU result area, government recognition of the key role of local communities and Indigenous Peoples in managing forests, through enabling regulations, institutional structures and financial support, and recognizthe need for long-term and wide-spread community support is an essential step in transformation. This can be achieved through participatory multi-stakeholder processes for dialogue and decision making, with effective FPIC when applicable. Addressing land tenure issues and recognizing customary rights to land and natural resources enhances livelihoods while reducing risk for investments. Protection of ecosystems containing irrecoverable carbon is a top priority for addressing climate change (non-forest peatlands and wetlands are covered in the EES Sectoral Guide). Coherent land-use and spatial planning that account for multiple objectives and are coordinated across relevant institutions is critical for integrating transformational land-use planning into NDCs. Finally, enhancing traditional planning approaches such as effective detection and enforcement of illegal deforestation, and strengthening systems of protected areas remain important pillars for FLU result area.

Catalysing climate innovation: GCF encourages innovation in policy, institutions, business, technology, and finance by supporting enabling environments that harness multiple benefits. Enabling environments rely on *norms and values,* for example shared concerns, economic and political interests, narratives, vision, and cultural acceptance.

Piloting and evaluating CBA and EBA can help countries deliver high-impact transformative projects through community-led processes. Next-generation biome-based regional forest protection agreements (such as the proposed Andes-Amazon-Atlantic Corridor) can become powerful tools for climate and biodiversity goals with strong mitigation-adaptation synergies. Innovations that recognise and value multiple benefits can increase the financial and political viability of projects. Methodological innovations that contribute to multiple objectives include coppicing dry forests, replanting tree orchards, wood technology innovations and reforesting degraded slopes and riparian land. Policy and market innovations such as deforestation-free commodity chains are growing and important areas of work towards transforming the sustainability of productive forest landscapes. Examples include expanding current and next-generation certification schemes for climate-friendly products, and using wood as as a permanent carbon sink, supported by new technologies for traceability (e.g. blockchain). In terms of better enforcement against illegal deforestation, the widespread use of remote sensing, drones, and artificial intelligence algorithms promise to enhance the speed of detection and response. Finally, an important innovation is to develop schemes that value standing carbon stocks, absent of threat that tangibly value the avoidance of sink destruction indefinitely; such schemes also provide adaptation and other ecosystem services benefits (Castro 2017). When innovation requirements challenge local capacities, however, scaling up of established approaches might be more appropriate.

Mobilisation of finance at scale: Key to GCF's role in scaling up finance is mobilising international private and public funding to reduce investment risks (*e.g.*, FP173 – The Amazon Bioeconomy Fund). This can occur through de-risking private finance (blended finance, guarantees, etc.), enabling national regulatory frameworks to increase domestic funding sources (*e.g.* green levies, payment for forest ecosystem services), and increasing non-market and market-based finance (*e.g.* debt swaps, levies, REDD-plus result-based payments). A promising area is blockchain-based systems for transparency and trust building.

Improving access to climate finance for vulnerable populations is necessary for achieving transformation in FLU. De-risking projects can include early identification and assessment of risks such as uncertain land tenure, currency fluctuations, political instability, and lack of meaningful participation and coordination between stakeholders. Such proactive engagement with risk can increase access to different finance tools. Emphasis on

effective incentives for private investment at scale is needed, including innovative finance of next-generation PES schemes, de-risking of REDD-plus investments, and market development and transformation to unleash market-pull forces for climate and forest friendly products.

Coalitions and knowledge to scale up success: GCF creates and shares knowledge to harmonise valuation methodologies and incorporate climate risks into financial decisions to align finance with sustainable development. *Resources* needed to shift financial flows include strengthened institutional and individual capacity, and available and accessible information (data and best practices). By sharing lessons, methodologies (traditional and scientific), and standards, including with other multilateral and bilateral institutions and efforts, global finance flows can contribute to projects and programmes that follow transformational pathways towards low emissions and climate-resilient development.

In the FLU result area, CBA and EBA are key tools for promoting knowledge exchange, information access and increased social capital and equity. Creating culturally appropriate access to knowledge and data for Indigenous Peoples, and remote and vulnerable forest dependent communities, along with supporting and bringing Indigenous and traditional knowledge of forest protection and other data (mapping, changes in species, habitat, etc.) to science and policy makers are powerful actions to scale up success in forest protection and restoration. One such tool is the Local Communities and Indigenous Peoples Platform (LCIPP), which brings together people and diverse knowledge systems to address climate change in a holistic and integrated way.

For better management of productive landscapes, developing forest curricula that address social and economic dimensions will improve long term sustainable outcomes. Continued and participatory monitoring, establishing learning platforms, and sharing of evidence related to impact, potential solutions and progress will be crucial for developing new methods to overcome risks and uncertainties and improve practices. Developing methods to monitor complex dimensions of change (e.g. governance, voice, empowerment) are also necessary to learn from context-based change processes.

4 FINANCING PARADIGM SHIFTING PATHWAYS

4.1 What financing instruments are involved in FLU paradigm shifts?

GCF has a broad mandate to support the protection, restoration and sustainable management of forests and other lands through a mix of market and non-market-based measures.

The GCF 2020-2023 Strategic Plan recognises that GCF is designed to take more risks than other major public and private investors and accept some failures in the interest of demonstrating innovative solutions and delivering climate impact; risk financing is designed to unlock projects that would not otherwise have happened.

At the same time, many of the core barriers to a paradigm shift in the FLU result area require support for processes that do not directly generate financial returns. Grants, readiness support and non-market REDD-plus measures are therefore likely to remain a cornerstone of measures to implement institutional capacity building to strengthen forest and land-use governance, develop monitoring capacity, knowledge sharing, participatory land-use planning and securing tenure rights.

GCF will develop programming in complementarity with other funders to deliver transformative changes, strategically leveraging its competitive advantage (country driven approach, open collaboration, flexibility of financing instruments and higher risk appetite).

This section provides an overview of GCF financing trends, models and opportunities in the forest and land use result area to catalyse and scale up public and private investment in support of the paradigm shifting pathways identified in Section 3.

4.2 Financial barriers

Section 3 discusses barriers related to lack of transparency, participation and accountability in forest governance, weak land-use planning, insecure tenure rights, and lack of technical capacity. Yet financial barriers are the most prominent in GCF projects - almost 80% of projects submitted to the FLU result area identified financial barriers including:

- Lack of access to credit for rural populations - due to low financial literacy, high interest rates, remoteness from credit facilities and cultural barriers for women and Indigenous Peoples (30%).
- Barriers to private finance due to perceived risks of investment in FLU (25%).
- Lack of access to international public and private finance due to perceived political risks and limited exposure of domestic institutions to the rigors of managing international climate finance (22%).
- No domestic budget availability (22%).
- Limited availability of long-term loans due to long maturity cycle of trees and other crops (agroforestry) and reforestation (14%).
- Lack of financial viability - costs outweigh returns because many benefits (climate and biodiversity) are externalities (14%).

To deliver a paradigm shift, GCF will employ its financial resources not just as a source of grant funding, but also with tools to address financial and other barriers in a systemic way. Barriers to private investments in developing countries identified in the broader literature include lack of capacity, knowledge, and risk management (Pitt and Blandford 2017; Kissinger *et al.* 2019; Sato *et al.* 2019). Project proponents should consider how public money (including GCF investments) can be used to improve the risk profile of opportunities, or simply to bring them to the private sector market (*e.g.*, blended finance). Furthermore, it is important to allocate funds that could be directly accessed by indigenous peoples, women and other vulnerable stakeholders for climate action, and in line with the GCF´s Indigenous Peoples Policy.[9]

As commercial money flows into forest and land use projects, private sources and fund managers must recognise the potential negative impacts their investments may have on the environment and local communities (e.g. involuntary resettlement, including restriction in access to resources). Project proponents should therefore commit themselves to the implementation of responsible investment principles following environmental, social and governance (ESG) safeguards, including policies concerning Indigenous Peoples (e.g. FPIC), customary rights, and gender.

4.3 Co-financing

GCF projects seek to incorporate co-financing where possible to maximise the impact of GCF funds, although there is no minimum amount of co-financing required.

Blended finance strategically uses public or philanthropic development capital to mobilise additional private finance for development-related investment. It blends capital which has a development mandate with capital which does not. Blended finance can create opportunities to scale up finance, including for protection, restoration and sustainable management of landscapes, because it can help lift the apprehension that many impact investors still have for investment in forest and land use activities, as well as make financial returns possible. Public or development money may take the form of equity to leverage debt, or a guarantee mechanism to leverage equity and debt. Development funds can share the risk and be used, for example, to cover first losses. GCF, with its mandated risk appetite, can contribute first loss equity or other high concessional instruments in blended finance arrangements. Fund managers typically blend public and private finance and should invest at scale to reduce transaction costs, seeking “aggregators” such as project developers, micro-finance organisations or large companies that work with smallholders; supporting such

[9] https://www.greenclimate.fund/sites/default/files/document/ip-policy.pdf

aggregation is an appropriate role for GCF investment. Having scale helps with improving governance and investment frameworks, bringing further legitimacy to projects, a key feature of paradigm shift.

Responsible investment principles[10] will increasingly shape investment designs in FLU through assessment and integration of environmental, social and governance (ESG) safeguards in the investment analysis and decision-making process. GCF resources can attract and leverage additional financing for sustainable outcomes in FLU using responsible investment principles to promote and support blended finance platforms, or becoming an anchor investor or lender into projects. Practically, this may translate into designing transactions in accordance with, for instance, IFC's Performance Standards (in addition to complying with GCF safeguards[11]), to identify and manage environmental and social risks early on: from calculating baseline numbers to modelling GHG emissions to ensuring adequate risk management procedures and protection of biodiversity and community support throughout and post investment execution. This can help attract commercial finance by de-risking projects, while imposing an ESG framework to the evaluation and execution of the investment opportunity. Project proponents could also ensure that impact investors and fund managers backing their projects have joined the Global Impact Investor Network (GIIN).

While co-financing levels are determined on a case-by-case basis, co-financing by paradigm shifting pathway for the FLU result area may be characterised by:

- Protection – Better alignment of REDD-plus payments with preferential access to markets and finance for (legally and sustainably produced) commodities could create incentives stacked at different jurisdictional scales (Duchelle *et al.* 2019). This approach can also apply to restoration and sustainable management in a complementary manner (see Section 4.4). Private finance mobilized to remove deforestation from supply chains to meet consumer expectations and, increasingly, consumer country legislation, could also be a promising source of co-finance.
- Restoration – GCF supports deploying instruments such as concessional finance, PPPs and carbon finance, with innovation by the capital markets and insurance industries necessary to scale finance in land restoration. One example in Guatemala and Mexico is anchor equity investments to support partners in a scaled-up landscape restoration equity fund, and a regional re-insurance business model focused on catastrophic (droughts, storms, frost and earthquake) risks, increasing the adaptive capacity of smallholder agriculture (GCF 2017a). Voluntary carbon markets also play an important role.
- Sustainable management - Public funds blended with private finance in impact funds are an option, such as the Tropical Asia Forest Fund (TAFF), a private equity fund that invests in large-scale timber production companies to facilitate supply of sustainable timber to Asian markets.[12] Local financial institutions, banks, cooperatives, credit unions that collect and redistribute finance may address local finance needs and act as aggregator between GCF funded programmes and local entities.

Consistent with the Long-Term Vision on complementarity, coherence and collaboration between the GCF and the Global Environment Facility, the GCF will strongly encourage the submission of proposals that build on the complementarity between the two funds, including in terms of co-financing.

4.4 Complementarity and coherence

The forest and land use and climate change agendas do not systematically overlap. Improving complementarity and coherence in implementation requires NDAs, AEs, DAEs, and other stakeholders to identify barriers, norms, processes to be designed and implemented, resources to invest in and legitimacy to be earned (as outlined in Section 3). For instance, major actors in international public finance (*e.g.*, foundations, donor institutions) major donor countries (*e.g.*, based on contributions to REDD-plus) and

[10] The Principles for Responsible Investment (PRI) framework is an example of an investment standard which has gained international acceptance.
[11] https://www.greenclimate.fund/sites/default/files/document/revised-environmental-and-social-policy.pdf
[12] Development funds for this impact fund come from investors such as the Danish Investment Fund for Developing Countries (IFU), the Dutch development Bank (FMO) and FinnFund. Private finance has come from institutional investors such as pension funds.

multilateral agencies (e.g. WBG, FAO, UNDP) can be identified and prioritised using the latest OECD Common Reporting Standard (CRS) data on development assistance.

NDAs and AEs can work with GCF to align objectives with other international climate finance vehicles to support countries in identifying existing domestic financial mechanisms that can be leveraged for climate and aligning them to climate change goals. One of the main issues is the weak alignment between climate change goals (*e.g.*, SDG 13) and many countries' visions for development. As an example, blended finance, by bringing together public and private agendas, local and international development goals, has the potential to bridge that gap. GCF, NDAs and AEs could contribute by strengthening local development institutions, establishing standards and systems, increasing their participation in local forums, and developing guidance rather than microlevel objectives. Many international initiatives are currently underway to support restoration and sustainable land use. Efforts undertaken as a part of one initiative should contribute and benefit efforts undertaken in others.

4.5 GCF portfolio and financing structures

GCF has extended multiple financial instruments to FLU projects, including grants, loans, equity, and guarantees, and results-based payments. Grants are the predominant financing mechanism in the FLU result area, although the number of projects requesting results-based payments is increasing.

A wider variety of financial instruments, as well as the more creative use of existing instruments, can help to catalyse scaled-up public and private, market and non-market finance for project longevity. For example, support for deforestation-free supply chains might involve guarantees and mezzanine lending to de-risk long-term investments, generating dedicated credit lines, enabling the creation of equity funds for impact investors, or grant and short-term loan support to local institutions and private companies seeking the certification of commodity value chains for forest and agricultural products.

Some of the most promising innovations combine a range of financial instruments to overcome government budget constraints and a lack of sufficient incentives and adequate structures for private investment. Grant financing is often required to structure new investment opportunities at their earliest stages, while high concessionality (including through blended finance) and/or risk guarantees needed to advance pilot projects. GCF can potentially harness significant transformative potential at these stages of financing, which tend to be prior to the scaling up, that would attract institutional investors and other sources of market-rate capital.

A paradigm shift in the FLU result area will require the continued use of grant financing in many cases. Grant funds can be used to provide support in project identification, project preparation, bridging the viability gap and improving the bankability of the project via de-risking strategies or subsidies, which is a key role for GCF. Grants should also be used to invest in securing land tenure, securing the rights of Indigenous Peoples and local communities, as well as reducing uncertainties that pose a significant risk to attracting private sector investment. Table 8 shows how financial instruments in the FLU result area may be characterised.

Table 8: Taxonomy of financial instruments in the FLU result area

Instrument	Definition	GCF role[13]	Transformational Potential	Examples
Grants	Non-reimbursable financial award offered in 'major convertible currencies' to support projects and programmes, including sub-grant facilities. Grants with repayment contingency (output-based grants) can also be provided to the private sector (Decision B.09/04).	Grants	Many of the core barriers to a paradigm shift in forest protection and restoration are best addressed via grant financing (and readiness support), including support for institutional capacity building to strengthen forest governance, developing forest monitoring capacity, knowledge sharing, participatory land-use planning and securing tenure rights. GCF difficulty in reaching community organisations, MSMEs and "bottom of the pyramid" organisations (GCF B.23/12/Add.01) can be addressed through dedicated facilities for small grants, plus grant (alongside equity) support for business incubation facilities, which are particularly relevant to the sustainable management and use of forests.	Funbio Tenure Facility GEF Small Grants Program CFA Incubator for Conservation Finance Indigenous Peoples' Assistance Facility (IFAD-IPAF) Dedicated Grant Mechanism for Indigenous Peoples and Local Communities
REDD-plusresults-based payments	REDD-plus results-based payments are awarded when average deforestation levels are reduced over a period of years in comparison to reference levels, which are determined in relation to past deforestation rates.	GCF RBP is largely jurisdictional rather than project-based, an approach that focuses payments via public actors. Technical support can be offered for incorporating private sector REDD-plus schemes within these national or sub-national programmes.	RBP can significantly scale up financial flows for forest protection and stimulate improvements in forest governance. The prospect of RBPs can also stimulate governments to address the underlying drivers of deforestation. A participatory approach should be adopted to ensure the FPIC of Indigenous Peoples and local communities. Uncertainties regarding baseline accounting, including doubts over permanence and the risk of double counting, can undermine impacts.	GCF REDD-plus Results-Based Payments Pilot Programme, LEAF, FCPF, Carbon Fund
Loans	Concessional (below market rate) lending to support projects and programmes, including credit facilities, covering activities for which finance on market terms is unavailable or would not be financially sustainable.	High and low concessionality project and/or (policy-based) loans are already offered with a long tenure. GCF could further emphasise loan facilities over project-based lending. It can also take on subordinated (junior) debt (i.e. the riskiest loan tranches), in order to catalyse private investors	The long tenures available with GCF lending to the public sector are well matched with the long-term maturity of forest-based investments. GCF also has the flexibility to offer significant concessionality on private sector loans, where that would provide access to credit for rural and Indigenous populations. Credit facilities (*e.g.*, raising money through bond issues to provide loans) could unlock significant private capital. At smaller and micro scale, loans providing working capital to MSMEs could	Tropical Landscape Finance Facility, Althelia Climate Fund

[13] The scale of supported projects uses GCF project size categories: Micro: <USD 10m; Small: USD 10-50m; Medium: USD 50-250m; Large: >USD 250m. See Annex I to decision B.08/02

Instrument	Definition	GCF role[13]	Transformational Potential	Examples
		by reducing their risk exposure. Micro to large scale.	enhance supply chain sustainability. As part of enhanced direct access, revolving loan funds can be efficient means to achieve financial inclusion of community enterprises.	
Guarantees	Guarantees are a promise that in the event that assets lose value and/or a borrower defaults on payments, the guarantor would repay some or all of the losses. They are a form of credit enhancement that lowers the risk of investment.	Issue partial (first loss) risk guarantees backing loans and bond issuance, including debt-for-climate swaps. Small to large scale.[14]	Guarantees catalyse finance by reducing the level of risk taken on by public or private investors. MDBs have overwhelmingly targeted guarantees towards 'middle income' economies, since they work to de-risk investments in otherwise fairly well-established capital markets. Can support forest protection and restoration initiatives, as well as land use activities that overlap with sustainable agriculture.	Althelia Climate Fund/USAID Tropical Landscapes Finance Facility/USAID
Equity	Equity investments involve taking a partial ownership stake in projects or companies and are particularly relevant as a means of supporting higher risk investments. Equity can be directly invested in individual companies or via investment funds that take a stake in various companies, helping to pool risks.	Anchor investor in equity funds, often in combination with other instruments (grants for technical assistance/market development, or and first loss guarantees). GCF might also develop mezzanine financing, which is a hybrid of debt and equity that gives lenders the right to convert to an equity interest in case of default. Micro to large scale.	Equity funds can catalyse impact investment to stimulate deforestation-free supply chains, investing in support for social entrepreneurs and incubating early-stage businesses. As investments are typically made after GCF programme approval, criteria for exclusions (related to safeguards) and transparency in sub-project approval processes helps to ensure stakeholder consultation and FPIC for Indigenous Peoples and local communities.	Tropical Landscapes Finance Facility Althelia Climate Fund Conexsus Impact Fund Inter-American Development Bank Multilateral Investment Fund
Payments for Ecosystem Services	Payment for Environmental Services schemes generate payments and fees for the implementation of forest preservation. There is some overlap between this category and REDD-plus, with results-based payments and forest carbon markets sometimes considered a subset of PES. Another sub-category is PES for Indigenous	Technical assistance to governments (and private sector) to implement and scale up PES (micro to large scale).	PES schemes can deliver multiple benefits. Well-implemented payment for watershed services schemes have been shown to improve water quality and contribute to rural development as well as increase climate resilience, but too often a top-down approach has failed to solve problems of erosion and deforestation and failed to adequately channel resources to target communities. Poor governance and a lack of institutional capacity (or local distrust of institutions) are common difficulties. PES schemes focused carbon sequestration face accounting	Cloud Forest Blue Energy Mechanism Ecuador's Socio Bosque Programme Althelia Climate Fund

[14] Guarantees are unlikely to be large-scale in their own right, but are often used in conjunction with debt financing (loans or bonds) for large-scale projects and programmes.

Instrument	Definition	GCF role[13]	Transformational Potential	Examples
	Peoples and Local Communities, where collective payments can be seen less as a short-term compensation for the opportunity costs of not converting, with funding used to strengthen the communities' capacity to consolidate the protection and management of the forest over the long-term.		challenges posed by the potential for leakage (displacement of harmful activities to adjacent areas) and permanence. Defined broadly, PES might be considered to include future purchase agreements of non-timber products, which can de-risk the development of enterprises engaged in the sustainable management and use of forests.	
Forest bonds	Bonds are debt issued by public authorities or private companies. They typically seek to raise funds from capital markets (although they can also be placed privately with a limited number of investors). Forest bonds are a subset of 'green' bonds, which seek to certify that investment proceeds are used for environmentally beneficial purposes. Several voluntary standards of varying stringency exist to certify that this is the case.	Provide partial credit guarantees to de-risk bond issuance, or support capacity building for the creation of green bond facilities and forest bonds. Most forest bond issues so far have been micro or small scale, although forest protection, reforestation and afforestation have formed part of larger green bond issues.	Green bonds can help overcome financial barriers to both public and private investment. Accredited multilateral development banks and private banks are well placed to issue green bonds at scale, with the added value of GCF support likely focused on partial credit guarantees to de-risk issuance in new markets and sectors, including EES. GCF should adopt best practice bond certification standards (currently Climate Bonds Initiative) to ensure environmental integrity and transformative potential. Certification exists for land conservation and restoration, with further criteria for land use under development. Additional policy guidance may be required to ensure consistency with environmental and social standards, including setting clearer eligibility and reporting standards at the point of programme approval.	IFC Forest Bonds Central Arkansas Water
Insurance and climate risk finance	Insurance products such as parametric insurance and risk pools can help to reduce the risk of financial losses resulting from climate-related disasters and losses. "Parametric" insurance pays out a guaranteed amount against qualifying events (e.g. wildfires) rather than indemnifying actual losses sustained.	Provide initial grant finance (with repayment contingency) for an endowment fund, to fund EBA or restoration activities, as well as insurance products. GCF could also play a role in market development, including financing technical assistance for the creation of disaster risk facilities. Existing multilateral insurance mechanisms and EBA are micro to small scale.	Directly protecting and restoring forests through community-based adaptation (CBA) and ecosystem-based adaptation (EBA) is often the best way to enhance climate resilience and reduce risk. Insurance products can play a supplementary role, de-risking private investment as well as protecting livelihoods in the face of climate-related disasters such as wildfires.	Forest Resilience Bond

Instrument	Definition	GCF role[13]	Transformational Potential	Examples
	The direct role played by ecosystem-based adaptation (EBA) in disaster risk reduction should also be considered a form of climate risk management.			
Public-private partnerships	PPPs entail various types of contractual arrangements between public and private sector actors. Strictly speaking, it refers to private sector involvement in public infrastructure investment (such as build-own-operate contracts) or long-term concessions for the management of public services. The term PPP is also used more broadly to describe any kinds of private and public sector collaboration, including PES, sustainable forest management and supply chain initiatives.	Technical assistance and institutional strengthening to ensure PPP infrastructure investment or long-term concessions deliver value for money.	PPPs are used to leverage private investment for the provision of public goods. Public-private collaboration as part of multi-stakeholder dialogue is an important component in planning for transformational impacts. Promoting innovative FLU investments often involves civil society and non-governmental organisations, philanthropic foundations and research institutions alongside public and private sectors. PPPs are often used to circumvent budget constraints but keeping project costs and contingent liabilities "off balance sheet" can expose public finances to significant fiscal risks. PPPs can be expensive, in particular when delivering infrastructure with "natural monopoly" characteristics in situations where public bodies or regulators have limited expertise or governance capacity. Best practice is to ensure "no institutional, procedural or accounting bias either in favour of or against PPPs", with value for money evaluated against conventional procurement routes (OECD 2012, 12).	Forest Resilience Bond

5 CASE STUDIES

The following selected case studies illustrate how barriers to climate solutions can be addressed for successful transformations in the forest and land use result area.

5.1 Bhutan for Life

Theme:	Securing Bhutan's protected areas, comprising 51% of its territory, thus preventing deforestation and preserving resources[15]		
Country:	Bhutan	Project size:	USD 118.3 million (Medium)
Emission reduction:	35.1 million tCO2e (June 2020)	GCF financing:	USD 26.6 million (Grant)
EES category:	Category B	Co-finance:	USD 91.7 million (Grants)
Accredited entity:	World Wildlife Fund (WWF)	Co-finance ratio:	77.5%
Approved:	October 2017	Completion:	October 2032 (estimated)
Information:	www.greenclimate.fund/project/fp050		

Impact potential. More than 70% of Bhutan's land area is covered with forest, and 51% is under protection. Natural resources are under increasing pressure from economic development, illegal extraction of resources, and events such as landslides, floods, and forest fires. Bhutan is committed to sustainable development and carbon neutrality and maintaining forested areas is critical for Bhutan's socio-economic development, climate resilience and carbon neutrality.

Country ambition. At COP15 (2009), Bhutan committed to forever remaining carbon neutral, as well as maintaining no less than 60% of its land area under forests. Its NDC and NAP identify ambitious adaptation and mitigation strategies with a strong focus on forest conservation and climate-smart natural resources management, including continuous development of REDD-plus programmes.

Barriers addressed. Limited domestic financial resources are addressed by combining immediate international support with a longer-term plan to develop sustainable domestic resources for economic development, natural resource protection and adaptation.

Approach to paradigm shift. The Finance for Permanence model combines immediate sustained flow of finance through large-scale public-private commitment to maintain Bhutan's protected areas and biological corridors, allowing time to secure long-term domestic revenues to maintain improvements. Bhutan will grow domestic finance while the international funding will slowly reduce over a 14 year period. The paradigm shift is supported by an enabling national regulatory framework and domestic funding. Sources of domestic funding include green levies on imported vehicles, payments for ecosystem services from hydropower, and revenues from ecotourism. The approach removes barriers and reduces risks for investment in FLU and has paradigm shift potential for replication beyond Bhutan.

Expected impacts. The project is designed to deliver mitigation and adaptation impacts through improved forest conservation, reforestation and management, as well as improvement of ecosystem services, and

[15] Based on GCF (2017b), GoB (2011), WWF (2017)

increased resilience of Bhutan's most vulnerable inhabitants. The sequestration capacity of existing forests is ca. 6.3 million tons of CO_2eq/year, while total GHG emissions are ca. 2.2. million tons of CO_2eq/year. Bhutan for Life expects to increase the carbon sequestration in forests by 35.1 million tons of CO_2eq over the years and develop effective management of protected areas. Other impacts include reduced vulnerability of ecosystems and people, financial independence related to protecting forest areas, and creation of jobs for women jobs in natural resources management.

5.2 Ecuador REDD-plus results-based payments

Theme:	Acknowledging Ecuador's REDD-plus 2014 results - a total volume of 4,831,679 tonnes of carbon dioxide equivalent (tCO2eq) in emissions reductions - for GCF results-based payments (RBP)		
Country:	Ecuador	Project size:	National programme
Emission reduction:	4.8 million tCO2e	GCF financing:	USD 18.6 million (REDD-plus)
EES category:	REDD-plus, protection, restoration and sustainable forest management	Co-finance:	NA
Accredited entity:	UNDP	Co-finance ratio:	NA
Approved:	July 2019	Completion:	ongoing
Information:	www.greenclimate.fund/project/fp110		

Impact potential. Ecuador estimates that a further reduction of 15,7 million tCO_2e has been achieved between 2014-2018 and GCF payment for results will contribute to a National REDD-plus Action Plan (AP)[16] that addresses the drivers of deforestation and forest degradation and barriers to sustainable management of forests, conservation and enhancement of carbon stocks in line with UNFCCC decisions. It seeks to strengthen implementation of REDD-plus in Indigenous territories, implement land-use and management plans at a local level, and provide support to the Proyecto Socio Bosque (PSB) initiative, which has been attributed to achieving reductions in deforestation from 2009 to 2014 through incentives to Indigenous and campesino communities to conserve forests and paramos.

Country ambition. Ecuador's NDC supports a model based on good living (Buen Vivir or "Sumak Kawsay"), which commits to defending the population's right to live in a healthy environment. The NDC submitted by the Government of Ecuador in March 2019 targets 500,000 ha forestry restoration by 2017, and an additional 100,000 ha by 2025. Ecuador's National REDD-plus AP aims to reduce at least 20% of gross emissions from forests and land use by 2025. It will be partly financed through GCF REDD-plus RBPs. The ultimate objective of the REDD-plus AP of Ecuador is to support the national objective of achieving net zero deforestation.

Barriers addressed. Through its REDD-plus readiness process, the Government has identified as barriers: the lack of capacity, which may limit participation and access of marginalised groups to benefits; power imbalances that result in minimising the views of marginalised communities and vulnerable populations in land-use planning discussions and decisions; contextual considerations in land-use planning and conservation to consider cultural heritage, maintain access to ancestral lands and resources; recognition of the need for land registry systems; and extractive industry remaining a threat to conservation efforts.

[16] Namely: the ProAmazonia Programme 8 funded by the GEF (USD 12.5M) and GCF (USD 41.2M) and implemented with support from UNDP, the KfW REM Programme funded by Norway and Germany (approximately USD 50M), and the Forest Investment Programme (FIP) to be implemented with support from the World Bank in the future (approximately USD 24M although this finance is not secured).

Pathway to paradigm shift. The emissions reduction results achieved through REDD-plus in Ecuador have been achieved largely through the Programa Socio Bosque (PSB) initiative, and the results-based payments made by GCF will support this into the future. The PSB initiative has been achieving conservation and restoration of native forests through agreements between Indigenous Peoples and Afro-Ecuadorians. This example provides evidence of successful implementation of transformative planning and programming through strengthening land registry systems for Indigenous lands and resources into conservation areas. Expansion and replication of knowledge (often traditional) has and will continue to be achieved through community participation in monitoring and design of conservation management plans and Indigenous governance structures. This enables local Indigenous Peoples to take decisions per their own mechanisms (e.g. assemblies, councils of elders) for conservation and restoration, linked with ancestral knowledge. The priorities are to maintain and enhance carbon stocks and environmental co-benefits, recognising the important adaptation-mitigation synergies between carbon services, biodiversity and water regulation. The PSB supports the deforestation-free production techniques of Amazon peoples, which include non-timber forest products (NTFP). Through a blended-finance, public-private partnership approach, it will support different (national and international) value chains and the development of a management model to increase returns for small to medium enterprises, eliminate "middlemen" and benefit local producers directly.

On a more global policy scale, the results-based payments proposal to GCF shows that Ecuador's early achievement of measurable and reportable results represents a paradigm shift through a non-carbon-market-based approach. Emission reductions achieved from REDD-plus in Ecuador cannot be negotiated in carbon markets because they are part of the climate regulation environmental service, which, according to the constitution cannot be appropriated. Ecuador is one of the first countries to complete all three phases of REDD-plus successfully. This builds confidence in UNFCCC processes by demonstrating the link between completing the Warsaw Framework requirements, non-market based, joint mitigation adaptation approaches, and REDD-plus results-based payments from GCF.

5.3 Ghana Shea Landscape Emission Reductions Project

Theme:	This project will restore degraded savannah forests and strengthen livelihoods in Ghana's northern savanna through enhanced ecosystem services.		
Country:	Ghana	Project size:	USD 54.5 million
Emission reduction:	25.2 million tCO2e	GCF financing:	USD 30.1 million (Grant)
EES category:	Category B	Co-finance:	USD 24.4 million (In-kind)
Accredited entity:	UNDP	Co-finance ratio:	44.8%
Approved:	August 2020	Completion:	May 2028 (estimated)
Information:	www.greenclimate.fund/project/fp137		

Impact potential. Forest ecosystems in Ghana's northern savanna zone are characterized by nearly 400 million shea and other trees growing naturally as part of traditional farming. Climate change, transitioning to more modern agricultural production and a heavy reliance on wood for charcoal production are now placing a severe strain on this ecosystem.

This project will restore degraded savannah forests and strengthen livelihoods in this area through enhanced ecosystem services. It will do this, among a number of measures, by supporting self-financing community management to restore savannah forests and by using public-private partnerships to restore degraded shea

parklands. It will also strengthen REDD-plus systems. Shea landscapes are important sources of carbon storage, and they can improve adaptive capacities by making ecosystems more resilient. The harvesting of nuts from shea trees which are used in cosmetics is a key source of livelihoods in the region and provides critical economic support to women in particular.

Country ambition. In the past few years, Ghana has made significant progress in mainstreaming climate change into national and local development plans, as well as in establishing a solid policy framework and institutional structure to tackle climate change. Agriculture, forestry and other land use (AFOLU) is the largest source of carbon emissions in the country - 45.1% in 2012 according to the Third National Communication. Ghana's third national communication to the UNFCCC provides a comprehensive picture of financial, technical, capacity and institutional needs and gaps. These include all aspects of data processing and management, training and conducting monitoring, review and verification of GHG emissions. The project enables Ghana to contribute to the advancement of national SIS and a NFMS by providing data for the NSZ. Forest Carbon Partnership Facility funding for readiness and the GCFRP have funded the design and infrastructure of the SIS and the NFMS but would now require deployment and data to populate the system.

Barriers addressed. The drivers of land use change include conversion to agriculture (at just under 40,000 ha per annum), in particular a transition from traditional bush fallow agricultural systems to more expansive machine ploughed and continuous cropping agricultural practices; logging; wood fuel harvesting and charcoal production; and mid to late dry season fires. These have resulted in extensive forest degradation, much of it severe. 100,000 ha per annum have fallen below 15% crown cover and have been reclassified as grassland areas. The loss of forest cover results in a more abundant growth of grasses, which, in turn, result in more intense fires in the dry season, frequently causing further degradation and deforestation and preventing regeneration of forest areas already impacted by other drivers. It is estimated that, 1,058,492 hectares have been deforested resulting in emissions of 3,568,400 tCO2e per year from the NSZ.

Pathway to paradigm shift. Urgent measures need to be taken now to restore the landscape and shea trees which will in parallel improve social and environmental resilience and provide real economic benefits for inhabitants. This project seeks to enhance forest carbon stocks across the landscape by 1) restoring 200,000 hectares of off-reserve savannah forests/woodlands and place them under self-financing community management in Community Resource Management Areas (CREMA); 2) restoring 100,000 hectares of degraded shea parklands; 3) creating 25,500 hectares of modified taungya system/forest plantation in severely degraded forest reserves, and; 4) implementing an integrated monitoring system and completing the national REDD-plus architecture for safeguards, forest monitoring and reporting systems. The project catalyses transformative change across this landscape, attracting significant private sector investment, through the focus on the shea value chain and shea restoration. It is the first time that the shea parklands are considered in a climate change cross cutting initiative, at scale. Shea trees have a lifetime of hundreds of years and bear abundant crops during much of their lifetime. 400,000 other high value trees within CREMA and agroforestry systems will also be planted and nurtured providing a wide range of ecosystem services, timber and non-timber products. Protection of core forest areas within the CREMA and refreshed management of forest reserves coalesce to create conditions for emission reductions from the NSZ.

5.4 Enabling Implementation of Forest Sector Reform in Georgia to Reduce GHG Emissions from Forest Degradation

Theme:	This project is designed to reduce greenhouse gas emissions by enhancing carbon sequestration through the introduction of sustainable forest management in three Georgian regions.		
Country:	Georgia	Project size:	USD 202.2 million

Emission reduction:	16.1 million tCO2e	GCF financing:	USD 38.1 million (Grant)
EES category:	Category B	Co-finance:	USD 164.1 million (Grants and Loan)
Accredited entity:	GIZ	Co-finance ratio:	81.1%
Approved:	August 2020	Completion:	September 2028 (estimated)
Information:	www.greenclimate.fund/project/fp132		

Impact potential. Up to 90 percent of rural households in Georgia rely on fuelwood for their energy needs, most importantly heating during the country's cold winters. This leads to forest degradation and a reduction of carbon absorption capacity, which is projected to decrease by five times between 1990 and 2030. The project will enable the Government of Georgia to implement its transformational forest sector reform agenda to put the entire nation's forests under the SFM framework. It will do so by supporting establishment of a nation-wide SFM system under Component 1 and in parallel, under Component 2, promoting market development for energy efficient (EE) and alternative fuels (AF) to address main driver of Georgia's forest degradation, the unsustainable fuelwood consumption by rural population. Component 3, addressing potential adverse effects of the forest sector reform, safeguards the reform implementation by diversifying livelihood opportunities and strengthening local selfgovernance in forest adjoining rural communities.

Country ambition. The Government of Georgia has prioritized the forest sector in its Nationally Determined Contribution (NDC) aiming at reducing GHG emissions by 6 million tCO2eq by introducing the sustainable forest management (SFM) on 250,000 ha of state-managed forest lands over a period of 2020-2030.

Barriers addressed. After years of forest degradation. Georgia is actively seeking to implement an ambitious forest sector reform to preserve the ecological value (including carbon stocks), enhance the economic value and increase the social value of its forests. In the past, Georgia has put a lot of efforts and has closely worked with bilateral and multilateral donors to design the new SFM concept, which is now ready for implementation. The degree and complexity of the necessary change in both sectors, forestry and rural energy, is high, as is the need for technical support and investments for the implementation of the reform. Much needed forest maintenance and restoration activities comprise only 9% of NFA´s budget (of which only 6% is from state budget). Forest inventory activities comprise less than 1% of the budget (entirely financed from NFA revenues).

Pathway to paradigm shift. Tackling both, the underlying driver of the degradation by making fuelwood use more efficient and by improving the management of the undervalued forest resource, has the potential for a paradigm shift if social, ecological and economic criteria are integrated in the new management regime. This will translate in a direct climate impact: the amount of CO2eq remaining sequestered in standing forest will increase, thereby reducing GHG emissions from forest degradation and enhancing carbon stock by at least 5.30 million tCO2eq by the project end and 16.14 million tCO2eq over a 20-year project lifetime. The project will adopt a "push and pull" approach to stimulate development of EE-AF market. It will push the supply chain to prepare the sector for expedited growth by providing EE-AF producers with access to finance and advisory support for business development and product certification. It will also pull the demand to jumpstart the market via consumer awareness raising, provision of financial incentive and dedicated financing products in partnership with financial institutions.

5.5 Promoting zero-deforestation cocoa production for reducing emissions in Côte d'Ivoire (PROMIRE)

Theme:	This project aims to implement zero-deforestation agroforestry models in three southern regions of Cote d'Ivoire to reduce greenhouse gas (GHG) emissions by decoupling deforestation from cocoa production.		
Country:	Côte d'Ivoire	Project size:	USD 11.8 million
Emission reduction:	5.5 million tCO2e	GCF financing:	USD 10 million (Grant)
EES category:	Category C	Co-finance:	USD 1.8 million (Grants and Other)
Accredited entity:	FAO	Co-finance ratio:	14.9%
Approved:	August 2020	Completion:	February 2026 (estimated)
Information:	www.greenclimate.fund/project/sap015		

Impact potential. Côte d'Ivoire is home to one of the world's highest deforestation rates, with estimates indicating that 250,000 hectares of forest were lost every year between 1990 and 2015. Agriculture contributes to 62% of deforestation in Côte d'Ivoire, of which 38% is driven by cocoa production. The country is one of the world's leading cocoa producers, but global campaigns in the past few years to increase awareness of the deforestation impact of cocoa production have failed to solve the problem. The primary aim of the project is to support a new agricultural model for cocoa production that would remove deforestation entirely from the commodity's supply chain, notably through the development of agroforestry. The project is also a catalyst for the REDD-plus implementation phase (phase 2). In addition to an expected 5.5 mtCO2eq in reduced or avoided emissions over its lifetime, the project also bears significant adaptation co-benefits with 7,550 direct and 600,000 indirect beneficiaries.

Country ambition. The Government of Côte d'Ivoire has included a 28% reduction in GHG emissions in its NDC (low-carbon scenario) from 2012 to 2030, including through the implementation of REDD-plus. This project thus aims to contribute to achieving this ambitious target.

Barriers addressed. The switch from traditional subsistence agroforestry to single crop commercial cocoa production spread across many farming communities since the 1980s thanks to the high returns generated by the sale and export of cocoa beans. This transition in farming practices, however, resulted in farmers encroaching ever more into natural forests. While global demand for cocoa has continued to grow, today's generation of farmers lack the experience or expertise in designing production models that would enable smallholders to continue receiving income from cocoa while taking the pressure off forests. The GCF is financing the design of these models that would reconcile livelihoods and economic priorities with environmental integrity.

Pathway to paradigm shift. Known nationally as the "brown gold", cocoa has long been perceived Ivorians as an engine for national economic development. The country successfully placed itself among the world's top producers of this agricultural commodity which is under ever-increasing global demand. However, the impact of this development strategy on forests and CO2 emissions has largely been treated as an externality. The paradigm shift of this project consists in supporting Côte d'Ivoire achieve its NDC and reduce emissions by internalizing the environmental impact of cocoa production and thus reconciling economic, social and environmental prioriities. This groundbreaking approach takes a unique cross-sectoral approach to develop a pathway to deforestation-free cocoa, bringing together the forest and agricultural sectors and tackling the drivers of deforestation in a systemic fashion. In so doing, it proposes a long-term solution to Côte d'Ivoire's deforestation problem without affecting the country's aspirations to remain a major exporter of cocoa.

5.6 The Amazon BioEconomy Fund

Theme:	The programme supports the regionalization of bioeconomy value chains and integration initiatives across six countries of the Amazon Basin. This holistic and systematic approach will not only increase productivity and green employment in the Amazon region, but also promote inclusion and sustainable business models that increase climate resilience and reduce GHG emissions.		
Country:	Brazil, Colombia, Ecuador, Guyana, Peru and Suriname	Project size:	Large
Emission reduction:	123 million TCO_2 over 20 years	GCF financing:	279 million
EES category:	I2	Co-finance:	319.1 million
Accredited entity:	Inter-American Development Bank	Co-finance ratio:	1.12
Approved:	October 2021	Completion:	December 2029 (estimated)
Information:	www.greenclimate.fund/project/fp173		

Impact potential. This is a cross-cutting programme with 50 per cent of the impact potential allocated for the forest and land use results area (mitigation), 25 per cent for ecosystems and ecosystem services (adaptation) and 25 per cent for the most vulnerable people, communities and regions (adaptation).

The overall climate change contribution over the 20 years of the programme is estimated at 123 million tonnes of carbon dioxide equivalent ($MtCO_2eq$) mitigated through improved forest and land use that avoids deforestation and enhances forest carbon stocks.

In addition, climate resilience will create some 191,952 direct and 485,375 indirect beneficiaries (of which around 50 per cent are women) through improved adaptation capacities from the adoption of diversified, climate-resilient livelihood options. The programme will generate socioeconomic benefits through its support of 57,299 bio-businesses. The programme aims to deliver direct environmental benefits amounting to 3.9 million hectares of Amazon ecosystems protected and under strengthened management.

Country ambition. The Amazon region is highly vulnerable to climate change because of its direct exposure, high sensitivity and low adaptive capacity to climate risks. Research has shown robust signals of drought across large portions of the Amazon. Observed and projected increased regional temperatures may induce a higher frequency of extreme climate events, directly impacting forests and agricultural productivity leading to increased incidence of floods, droughts and wildfires.

Barriers addressed. The Bioeconomy Fund, a regional, multi-stakeholder programme, seek to catalyse the flow of private funds to bio-businesses to reduce the impacts of climate change in the Amazon biome while addressing critical barriers for private investment in bio-businesses that have a high-risk profile. The programme aims to shift current development and financial models through investing in nature-based businesses to conserve the Amazon to significantly contribute to reducing greenhouse gas emissions and increasing the region's climate resilience. Programme activities aims to address the main barriers specifically faced by bio-businesses. These include lending risk, underdeveloped capital and financial markets, weak governance to support business development, and lack of standardized frameworks and capacity to monitor ecosystem related impacts.

Pathway to paradigm shift. This programme offers a groundbreaking pathway of supporting biobusinesses across an entire region an biome as a means of both mitigating and adapting to climate change. As such, it has a significant potential for replication as it could act as a model for similarly ambitious programmes in other regions. an initial six key bioeconomy value chain interventions that prioritize natural capital and deliver climate benefits were selected: sustainable agroforestry, native palm cultivation, natural non-timber forest products, growing native species timber, aquaculture, and community-led nature tourism.

The programme uses a mix of instruments: sovereign investment loans, green bonds, reimbursable investments grants, risk capital investments (equity), guarantees, and technical assistance. The programme aims to stimulate two key shifts: (1) moving away from an economy based on forest and natural resource-exploitation, cattle raising and annual agriculture, to a nature-based economy consisting of diverse and sustainable bio-businesses, and (2) changing values that see the Amazon region as an infinite source of natural resources and agriculture land for capitalist consumption, to a diverse environment, of global importance, made from standing forests and related ecosystems and its local communities. It builds an inclusive wealth paradigm based on the Amazon biome natural capital.

6 GCF INVESTMENT CRITERIA FOR IMPACTFUL FLU PROPOSALS

Proposals to GCF need to align with GCF result areas and are assessed based on six GCF investment criteria, summarised in this section, followed by examples of how these criteria have been met by projects in the FLU result area.

6.1 Impact potential

One of the characteristics of forests and land use is the high potential for cross-cutting projects that include both mitigation and adaptation objectives.

The greatest mitigation potential in forests and land use lies in protection, followed by restoration of degraded forests and deforested areas, and many core barriers to paradigm shift in forest protection and restoration are best addressed via grant financing (e.g. capacity to strengthen forest governance, forest monitoring and securing tenure rights). REDD-plus RBPs can also stimulate improvements in forest governance and addressing the drivers of deforestation, as well as provide incentives to achieve non-carbon benefits. Priority approaches are also all those that reduce land use change towards models of sustainably managed land use. Priority areas for high mitigation gains are all carbon dense forest ecosystems which contain “irrecoverable carbon”. When considering investments in forest and land use, project developers must avoid replacing forests of high carbon density (such as primary forests and peat forests), high biodiversity (such as rainforests and dry forests) and livelihood values (where Indigenous Peoples and forest dependent communities, often poor, depend on ecosystem services for their livelihoods) with high carbon, low biodiversity and low livelihood values (e.g. privatised tree plantations). Fostering the recovery of forests where they provide buffers and ecological connections between primary forest areas has high potential to restore ecosystem integrity and function at larger scales across biomes. Priority interventions can be identified based on indicators such as biodiversity hotspots, unprotected areas, unresolved tenure, abandoned degraded land, transparency and participation.

Forests and land use projects also hold a high impact potential in terms of adaptation. Often compared to a poverty safety net in developing countries, natural forests act as an exceptional repository of goods and services which rural populations – often among the world’s economically and politically most marginalized – can rely on for survival. Indigenous peoples in particular have long sought refuge in forests for these very reasons. This includes providing construction materials for shelter, as well as medicine, food and water, and maintaining microclimates propicious for small-scale agriculture. However, increased needs of nearby human populations faced with the threats of climate change often lead to resource depletion. As a result, the goods and services that people rely on are exhausted, with entire supply chains threatened. FLU projects with

adaptation components must focus on maintaining or enhancing the goods and services forests provide that contribute to poverty alleviation, as a means of strengthening the social and economic resilience of local communities, including indigenous peoples. This includes designing, piloting and upscaling climate-resilient production models that benefit both livelihoods and forest ecosystems.

6.2 Paradigm shift potential

A new development paradigm is needed, based on viewing natural forests and other ecosystems as the providers of global public goods and life support systems. Proposals made to GCF should include outcomes that focus on deep, as opposed to fast or wide-scale changes by addressing underlying causes (drivers) of deforestation and degradation, notably in agriculture. A major barrier to paradigm shift in forest protection and restoration relates to the low potential for financial returns. Grants and readiness support will therefore remain central to success.

GCF projects and programmes should expand and replicate knowledge by ensuring collective learning and reflection, with space for innovation, trial and error, and flexibility in programme design. Recognition of different knowledge systems is important to expand and replicate knowledge and allow for co-learning and adaptation.

Embracing the full range of goods and services that forests have to offer, including the adoption of cross-cutting (mitigation and adaptation) and cross-sectoral approaches, is a key dimension of the paradigm shift potential of the GCF's forest and land use portfolio. Researchers have long identified the interconnectedness of forests with other sectors, including agriculture and food security, non-forest ecosystems, water, energy and health. Despite this, the siloed approach persistent in many public administrations and beyond continues to hamper the implementation of effective solutions against deforestation. An integrated approach, including a landscape perspective, that brings together relevant sectors in innovative ways is therefore a crucial component of the paradigm shift potential.

Transformative adaptation impact is achieved by projects and programmes that ensure sustained livelihoods and cultural practices, maintain or build ecosystem integrity, and address inequities, including gender. Local context approaches are advantageously embedded in GCF projects and programmes. Vulnerable actors, including traditionally disconnected groups, women and Indigenous Peoples, need to be considered in terms of access and decision-making over resources. This also applies where the private sector is involved (e.g. in adoption and implementation of zero deforestation and creation of new and inclusive business models).

6.3 Sustainable development potential

One of the greatest comparative advantages of forests is their exceptional ability to deliver a wealth of economic, social and ecological co-benefits. Halting deforestation provides important environmental co-benefits by preserving existing forests and biodiversity (ecosystems and ecosystem services) while also avoiding carbon emissions. GCF proposals can establish large sustainable development potential through positive and innovative environmental, social and economic co-benefits as well as gender sensitive development impact, which are aligned with national priorities and are measurable and quantifiable. Any negative impacts should be identified, and projects need to show that a plan is in place to manage such impacts.

In some places, the co-benefits of ecosystem protection and restoration may be more valuable than the carbon mitigation benefit. Widespread transformative adaptive change may begin as relatively small-scale self-interested actions, financed through provision of small-scale community loans or grants or emerge through larger-scale efforts, financed by green bonds, including collective actions; however, in any case, explicit trade-offs and co-benefits need to be understood and negative impacts on vulnerable people avoided. Increasing the resilience of local people dependent on forests will be key to a paradigm shift towards the ability to

confront future global shocks (e.g. health (Covid-19) or climate related loss and damage). Non-carbon benefits (NCBs) remain consistently important in all biomes and provide strong adaptation synergies. Where possible, synergies between adaptation and mitigation need to be prioritised because sustained, long-term mitigation gains are critically dependent on the delivery of environmental and social NCBs, and also because a synergy-based approach might be economically more efficient, for example where grant finance leads to private sector investment and access to credit.

Economic co-benefits should be equitable, gender sensitive, and ensure the most vulnerable people on the ground receive economic benefits, including through income and increased productivity. Local benefits, especially for Indigenous communities, will only be accrued if land tenure and rights are respected and legally protected. The costs associated with supporting the rights and livelihoods of Indigenous communities compare favourably with the costs of establishing new protected areas and can achieve conservation outcomes equivalent to those of government-funded protected areas, with minimal resources (Tauli-Corpuz et al. 2018).

6.4 Needs of the recipient

The GCF Strategic Plan 2020 – 2023 seeks to strengthen country ownership of programming. GCF projects and programmes can support this by providing grants to strengthen the capacity of institutions and stakeholders at the national and sub-national level. Barriers to transformation have been identified in Section 3 and Section 4. It is important for high-impact projects to focus on creating multiple benefits. Regulations, institutional structures and financial measures can support granting long-term tenure and rights to Indigenous Peoples and local communities where land tenure is insecure, and forests are under pressure. Technical capacities related to financial instruments should be supported, for example related to the creation of green bond facilities and implementing public-private partnerships.

Aligned with this are actions such as the elimination of incentives for agricultural expansion into forests, enforceable legal frameworks for zero deforestation, and legal support to investigate and resolve attacks on environmental defenders acting within the law, and to support their work. Public procurement can be transformed to ensure purchased forest products are sustainably sourced.

As an ecosystem usually located in remote areas, forests have acted as refuges for vulnerable and marginalized indigenous peoples across the world, which partly explains why indigenous peoples are among the categories of population most impacted by forest and land use projects. As such, FLU projects have the unique potential to significantly improve indigenous peoples' livelihoods and well-being – as long as they fully take into account their needs.

The mitigation and adaptation impact of projects and programmes should be quantifiable. Capacity on monitoring and evaluation is globally improving but more short and long-term training and capacity development are needed in this area. Impact assessment needs to be built into all projects and programmes regardless of the type of financial instrument deployed, and have solid baselines, ideally established in the early stages of design or during a readiness programme preceding the actual intervention. Monitoring systems, including National Forest Monitoring systems and participatory monitoring should include systems to identify drivers of deforestation and forest degradation: ability to issue alerts /early warnings; and utilise publicly available, spatial information systems on land cover, land emissions, land use and associated trends. They should recognise different knowledge systems, involve a diversity of stakeholders, be accessible, be compatible with other approaches, and be designed from the demand side, based on context and need. The differences in the capacities, resources and powers (decision-making or political) of various actors all can be improved through capacity development, greater participation, transparency and accountability. Monitoring transformation, in particular related to depth of change, means looking for changes in attitudes, beliefs and cultural values, and for the reframing that changes patterns and structures.

6.5 Country ownership

Sustainable long-term mitigation gains are critically dependent on enhanced governance. High impact potential enables policies and institutions to strengthen land registry systems to allow traceability, land rights, and economic benefits to Indigenous Peoples and local communities in areas where forests are under pressure or may be in the future. Efforts are more effective if aligned with existing national climate strategies and existing policies; associated with the capacity to deliver; and their engagement with civil society organisations and other stakeholders. Transformational planning and programming are required to realise NDCs, NAPs and prioritise climate actions. Already existing sustainability policies should be supported and enhanced as sustainable long-term mitigation and adaptation gains are critically dependent on enhanced governance, for example, where NCBs are concerned, and prioritised according to national objectives and circumstances. Addressing land use change requires working across several sectors of government to effectively achieve outcomes through aligned action.

Project and programmes should support full and effective participation in processes related to policies and measures, including REDD-plus, which needs to better address drivers of deforestation and degradation. Extra efforts are also required to bring together ministries and constituents from different government areas, such as environment, agriculture, economics, and development, and from different levels of governance (national, sub-national, and local). Integrated approaches to protection, restoration and sustainable management of forests can bridge sectoral divides, enhance synergies, reduce costs and maximise benefits. Engagement with civil society organisations and other relevant stakeholders is critical. Full and continuous participation of relevant underrepresented stakeholders at the national level (e.g. Indigenous Peoples as rights holders, local communities, women) throughout the project or programme process (planning, design, implementation, monitoring) and not only in its planning or design, must become commonplace. Efforts to undertake proper free, prior and informed consent processes from the conception stage throughout implementation are needed to ensure meaningful participation of all stakeholders. This also includes mechanisms for grievance and redress.

6.6 Efficiency and effectiveness

Investing in FLU in developing countries has potential for growth and cost efficiencies, but due to structural problems, it often has high risk-return profiles and requires more time to develop than typical manufacturing or financial services projects. Project and programme proponents should proceed with an early identification and assessment of risks such as land registry issues, unclear, overlapping or contradictory legislation, poor law enforcement, as well as non-sector specific risks including currency fluctuations and volatile political situations as well as lack of coordination between stakeholders.

GCF funding can contribute to de-risking and addressing barriers to mobilising private sector resources. This may be done through higher risk concessional loans, credit facilities, partial (first loss) risk guarantees and equity investments, as well as through technical assistance and concessional support or guarantees to develop green bond facilities. New blended finance solutions can also de-risk infrastructure investments. Deploy these financial instruments, while attracting private actors, including impact investors demonstrates efficiency. Projects and programmes should be co-financed by strategically channelling and blending resources from international donors, investors and funds, including bundling projects to reduce project-specific risks and share first losses. Improved technical production practices and systems can be scaled up if supported by enabling laws, regulations and standards, and aligned legal and regulatory frameworks across the various sectoral divides that govern land use, forests, environment and social law. Industry best practices can be scaled up across the private sector to set and implement strong commitments per commodity and region. Private sector projects support this by committing to responsible investment principles following environmental, social and governance (ESG) safeguards established by international lending agencies. Best practices to adopt include alignment with the Equator Principles, Applying the ISO Sustainability and Social Responsibility

Standards and the High Conservation Value (HCV) approach, the Forest Stewardship Council (as one of the most ambitious forest certification schemes) and using guidance from the Ceres Investor Guide on deforestation and climate change.

Innovative, high-potential business models and technologies can reduce pressure on primary and other high conservation value natural ecosystems and prioritise protection of carbon-rich ecosystems. To increase adoption of sustainable supply-chain initiatives, producers need to be incentivised to fully participate (including demand side efforts). Technology for enhancing traceability and transparency are also needed to support the interoperability of national systems and reduce governance and harvesting risks, conflict risks and illegal forest product export risks.

6.7 Investment criteria examples for FLU paradigm shifting pathways

GCF investment criteria apply to the three FLU Pathways in ways that involve many overlapping elements and GCF projects and programmes are likely to include two or all three of the pathways. Each of the pathways involve a range of stakeholders from Indigenous Peoples and regional leaders to multinational companies and government ministries. Table 9 provides examples and potential issues for consideration for inclusion in projects and programmes for each of the six investment criteria.

Table 9: Investment criteria examples for the three FLU paradigm pathways.

Impact	Mitigation: Tons of carbon dioxide equivalent (tCO2 eq) reduced or avoided; avoided emissions from deforestation and forest degradation and increased carbon sequestration measured through carbon sinks in natural forests; area of forest under sustainable management, with FSC certification as a possible proxy; improvements in the management of land or forest areas. Adaptation: Increase in the resilience of forest-dependent communities to climate change effects, such as fires, drought and heavy rainfalls. This includes: (1) Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions, applying a gender-responsive approach; (2) Improved health, well-being and food security; and (3) enhanced resilience of threatened ecosystems and ecosystem services, including coastal and riverine ecosystems.
Paradigm Shift	New practices, conservation models, restoration approaches, innovations that are ready for horizontal or vertical expansion (scalability). Cross-cutting, cross-sectoral and/or landscape approaches that provide integrated solutions to addressing the drivers of deforestation. Strong potential for replicability of approach (e.g. protected areas) or export of key structural elements of the proposed programme to other regions or countries. Access to new technology and science-based data that could inform monitoring of climate change impacts on forests, biodiversity and ecosystems health and dynamics (potential for knowledge and learning). Contribution to market development and transformation (e.g. zero deforestation supply chains); contribution to strengthened regulatory frameworks, policies and participatory planning processes. Recognizing the paramount role of formal education in preparing the new generations of experts.
Sustainable Development	Environmental benefits: improvements in soil quality, biodiversity, watershed resilience and other ecosystem services, which in turn provide improved livelihoods (e.g. rivers provide water for consumption and fishing, water catchments prevent flooding) Social benefits: Healthy and well-restored forests safeguard against transmissibility of human disease; the inclusion and recognition of local, traditional knowledge in decision-making, as well as recognition of customary land tenure and rights of Indigenous Peoples and local communities, can contribute to cultural preservation. Economic benefits: Expected positive economic impacts, including job creation and poverty alleviation, especially among indigenous peoples; improvements in income-generating capacity (e.g. market development for non-timber forest products); improvements in energy security, water supply, security of land tenure and support for micro, small to medium enterprise access to sustainable value chains. Gender-sensitive development impact: Potential for reduced gender inequalities in climate change impacts and/or equal participation by gender groups in contributing to expected outcomes

Recipient Needs	Vulnerability of the country: Scale and intensity of exposure of forests and related ecosystems to climate change, including exposure to slow onset events; comparison with BAU trends in deforestation Size of population of forest-dependent peoples and communities facing loss of livelihoods and non-economic losses (cultural heritage, Indigenous knowledge, societal/cultural identity) due to deforestation and/or degradation of forests resulting from climate change Vulnerable groups and gender aspects: Comparably high vulnerability of the beneficiary groups, particularly indigenous peoples, as shown by: degree of dependence on natural resources and targeted forests that are heavily affected due to external pressures; low income (defined by the relevant governmental agency); high level of exposure of key livelihoods to climate change impacts; vulnerability to the threats and impacts of deforestation and forest degradation due to lack of legal protection and tenure uncertainty; membership of groups that are identified as particularly vulnerable in national climate or development strategies, with relevant sex disaggregation; Absence of or very limited access to alternative sources of financing; lack of affordable financing Economic and social development level of the country and the affected population Need for strengthening institutions and implementing capacity
Country Ownership	Consistency with national climate strategy or plan, including priorities identified in nationally determined contributions (NDCs) or national adaptation plans (NAPs) to protection of high biodiversity, key forests and biomes; coherence with other national and sub-national actions boosting protection, restoration and sustainable management of forests; implementation of new institutional, governance, or coordinating mechanisms that are needed to ensuring country's commitment; stakeholder engagement, including showing that project/programme has been developed in consultation with civil society organisations and other relevant stakeholders, with particular attention to gender equality; has sought the free, prior and informed consent of potentially affected forest communities and Indigenous Peoples; and includes mechanisms for the ongoing stakeholder engagement.
Efficiency and Effectiveness	Cost-effectiveness and efficiency regarding financial and non-financial aspects? Appropriateness of concessionality: does the project identify a market failure that justifies the need for public financing, or do the outputs have characteristics of public goods? Who else is financing similar interventions in the same geographies? Will promoting protection, restoration and sustainable management of forests s create demand? What value would this have for efficiently managing a natural protected areas system? At what financial cost? Does the activity have the potential to catalyse and/or leverage other investment (co-financing)? Is there long run financial viability (beyond GCF intervention)? Does the project/programme apply industry best practices and a degree of innovation, including those of Indigenous Peoples and local communities, and best available technologies?

6.8 Programmes, initiatives, and coalitions supporting investment pathways

Challenging the status quo to achieve change, can be approached by forming "change coalitions", although the effectiveness of such coalitions depends on pre-existing conditions and how the platforms are implemented (Brockhaus et al. 2017). Multi-stakeholder processes are part of a wider interest in participatory spaces also known as multi-stakeholder initiatives, forums, coalitions, networks and platforms. They can bring all stakeholders together for joint problem-solving and management of forested landscapes with explicit attention to multisectoral integration and equity. Coalitions are purposely organised networks for functional interaction that bring together, physically or virtually, a range of stakeholders to participate in dialogue and coordination, knowledge sharing, and implementation. Such processes can expand and replicate knowledge, disseminate good practices and methodologies and support systemic change.

These collaborative spaces are becoming widespread and include such initiatives as the Local Communities and Indigenous Peoples Platform of the UNFCCC, and the Dedicated Grants Mechanism. Such platforms can also involve community level associations, knowledge hubs and co-management bodies, and support local organisations to build legitimacy and share lessons (traditional and scientific) to contribute to understanding of applicable methodologies and standards. Successful Multi-stakeholder processes have participants that are deeply engaged and the time and resources to accompany or govern change (Sarmiento Barletti et al. 2020).

When enhancing complementarity and coherence, it remains important to avoid top heavy coalitions that may not represent Indigenous Peoples, traditional communities and women, and reflect their experiences, knowledge and priorities. Knowledge sharing is key, and usually done through central meetings or through online resources. Creating alliances and synergies amongst participants, for example through working groups and with other already existing platforms is an effective way to strengthen coalitions. Consultation with Indigenous Peoples and local communities can serve to resolve conflicts, remove blockages and contribute to transformative changes. Under-represented groups should be more than mere 'observers' and participate in management and decision making.

7 CONCLUSION

The protection, restoration and sustainable management of forests and other lands is a critical component of meeting both the Paris Agreement and the Sustainable Development Goals. The Forest and Land Use Sectoral Guide presents these critical objectives as three paradigm shifting investment pathways. For paradigm shift to be achieved, barriers need to be removed relating to capacities, risks, accountability and transparency. Transformative pathways require climate compatible policy frameworks and strengthening of institutional capacity across different levels (local, subnational and national) and actors (different sectoral ministries, such as forests, agriculture and environment, the private sector, and civil society). When applicable, processes of free, prior and informed consent need to be implemented and local communities, women, and Indigenous Peoples need to be considered as key stakeholder for sustainability (rather than project beneficiaries). Increasing transparency holds actors accountable and informs demand-side policies and divestment strategies. Cross-cutting, cross-sectoral and landscape approaches that break down sectoral siloes to effectively address the drivers of deforestation are particularly encouraged.

This Guide supports stakeholders in developing robust funding proposals based on the three strategic investment pathways in connection to the four key drivers of transformational change. The case studies highlight approaches that replace former economic models based on destructive, unsustainable industries with more adequate models based on context-specific community partnership, local needs, governance, knowledge, and structures and that harness multiple environmental and social benefits. They demonstrate how innovative approaches, reflection of local, traditional knowledge, and broad participation in decision-making processes can make the difference in changing norms and values, increasing legitimacy, providing adequate resources, and improving planning processes, together successfully addressing the four drivers of a successful paradigm shift.

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GLOSSARY[17]

Additionality - Additionality is the requirement that a project must generate impacts, such as reduced emissions or increased removals, that would not have happened without the activity in the business-as-usual (BAU) scenario. In practice, this translates into + setting a realistic counterfactual or reference level, against which future emissions can be measured.

Benefit sharing - Direct and indirect gains (monetary and non-monetary) from the implementation of REDD-plus or other ecosystem-based activities is known as benefit sharing. Some use the term to also include the costs of REDD-plus, focusing on the net benefits. Cf. also co-benefit. Non-carbon (non-C) benefits are sometimes set apart from carbon benefits and refer to biodiversity, ecosystem services and social/spiritual benefits. Multiple benefits can be 'stacked' because ecosystem services overlap and the same natural solution can provide environmental, climate, biodiversity, hydrology, income and spiritual services. Cf. also co-benefit

Benefit-sharing mechanisms - the needed financial and regulatory provisions and decisions on how benefits (proceeds from ecosystem-based interventions such as REDD-plus) will be shared among beneficiaries, based on mutual understanding of what is fair and equitable.

Carbon dioxide equivalents - see Greenhouse Gases

Carbon markets - A market in which carbon emission reductions are traded, usually in the form of carbon credits. This can be: (i) a voluntary market, where emissions reduction targets are not regulated by a public authority; or (ii) a compliance market, where carbon credits are traded to meet emission caps (regulated emissions reduction targets).

Carbon stock - The quantity of carbon contained in a so-called carbon pool, such as in tree biomass or in soil.

CO_2e or CO_2eq - see Greenhouse Gases

Co-benefit - These are the positive effects that a policy or measure aimed at one objective might have on other objectives. Co-benefits, also called ancillary benefits, are often subject to uncertainty and depend on, among others, local circumstances and implementation practices. In REDD-plus, these may be social and environmental co-benefits, which result in better well-being outcomes. Environmental co-benefits might include the provision of ecosystem/environmental services.

Deforestation and degradation - deforestation and degradation are part of man-made land use change and represent the second-largest sources of global greenhouse gas emissions after those from fossil fuels. Emissions from land use change have so far mostly remained stable in absolute terms (at around 5-6 Gt CO_2 per year), while falling in relative terms compared to emissions from fossil fuels, from a 39% contribution to global emissions in 1960, down to 14% averaged over 2009–2018. In contrast, protecting and restoring global forest landscapes, along with other solutions in Agriculture, Forestry and Land Use (AFOLU) could deliver 37% of the greenhouse gas (GHG) emissions reduction required to reach the well-below-2°C goal. Degradation is particularly problematic because it is hard to detect and quantify and leads to impoverishment of forest ecosystems and ecosystem function that can go undetected for a long time. Reducing emissions from deforestation and forest degradation, sustainable management and building carbon stocks, while considering social and other environmental benefits, is the multiple objective of REDD-plus (see REDD-plus below). Ecosystem services that can be stacked in forests are carbon, timber and non-timber forest products, non-C benefits such as livelihoods, and a wide range of water regulation services.

Ecosystem/environmental services - Services provided by the environment or ecosystems, which provide benefits to humans (e.g. water provisioning or carbon storage). Payments can be made for the provision of these services (see PES).

17 Several definitions here are adaptations from Angelsen et al., 2018.

Ecosystem-based adaptation (EbA) - Ecosystem-based Adaptation (EbA) is formally defined by the CBD as the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change (CBD 2009). Also referred to as "ecosystem-based approaches." EbA also helps account for uncertainties in future scenarios under climate change.

Ecosystem-based approaches – Used interchangeably with "ecosystem-based adaptation."

Ecosystem-based management – an approach that recognizes the full array of interactions within an ecosystem, including humans, rather than considering single issues, species, or ecosystem services in isolation. (Christensen et al. 1996). Often it is understood as a synonymous of the landscape approach.

Emissions reduction - Emissions reduction (ER) is the difference between the actual emissions (AE) over a given time period, and the comparator (counterfactual) or reference level (RL): ER = AE – RL.

Enabling policies and measures - Enabling measures are policies and measures (sometimes abbreviated PAM) that create the appropriate conditions (enabling policy environment) for climate mitigation and adaptation initiatives to operate, but that in themselves do not necessarily lead to reduced emissions or other goals. Such measures include capacity building, and activities and policies aimed at clarifying ownership and access rights over forests, trees and carbon.

Environmental, social and governance (ESG) risks and safeguards - Consideration of nonfinancial risks arising from the environment and sustainability, reputation or brand, legal, technological, product or service quality, labor, ethical conduct, compliance, and strategic considerations.

Forest ecosystem restoration - Forest ecosystem restoration refers to actions to restore the ecosystem functions of forested or previously forested land. It includes withdrawing production from degraded forests, combating desertification, halting and reversing land degradation, and restoring degraded lands. These actions relate to the 'plus' in REDD-plus, which calls for the enhancement of forest carbon stocks along with actions to support conservation and the sustainable management of forests (for the latter see 'sustainable land use')

Forest degradation - Degradation refers to changes within a forest that negatively affect the structure or function of the forest stand or site, and thereby lower its capacity to supply products and (ecosystem/environmental) services. In the context of REDD-plus, degradation can be measured in terms of reduced carbon stocks in forests that remain as forests. No formal definition of degradation has yet been adopted, because many forest carbon stocks fluctuate due to natural cyclical causes or management practices.

Free, prior, and informed consent (FPIC) - FPIC refers to peoples' right to give or withhold consent to developments that may affect them. It is a specific right of Indigenous Peoples recognised by the United Nations Declaration on the Rights of Indigenous Peoples (UN 2007), but is also a fundamental principle in international law, embedded in the universal right to self-determination. It is widely considered a minimum ethical requirement for REDD-plus or other development, protection and restoration activities in Indigenous Peoples lands. 'Free' refers to consent given voluntarily; 'prior' means consent given in advance of any activities beginning; and 'informed' refers to the quality of information available for the decision. Consent may also be withdrawn.

Greenhouse gases (GHGs) - The atmospheric gases responsible for causing global warming and climate change. The major greenhouse gases are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Their global warming potential (GWP) varies, for CO_2 is set as 1; the potential of methane is 28-36 times higher, and for nitrous oxide it is 265-298 times higher). Less prevalent, but very powerful (GWP above 1500) greenhouse gases are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6). In order to easily assess GHGs, the contribution of all gases is combined into so-called carbon dioxide equivalents (written as CO_2e or CO_2eq) by multiplying the GWP with the amount of each gases' emissions.

Incentive-based instruments - Policies or interventions that use positive economic incentives (monetary rewards) for actions that promote societal objectives. The intention is to stimulate desired action and to

compensate stakeholders for any losses associated with the change in behaviour. Traditionally, the term 'incentive' has been used for conditional rewards, such as PES. Currently, incentives can be referred to as being both conditional and non-conditional, the latter referring to, for example, monetary transfers to forest users with 'no strings attached'.

Jurisdictional approaches - Government-led, comprehensive approaches to forest and land use across one or more legally defined territories (e.g. municipalities, states). Jurisdictional sustainability approaches seek to protect forests, reduce emissions and improve livelihoods across entire political-administrative territories.

Land degradation - Negative trend in land condition, caused by direct or indirect human induced processes, including anthropogenic climate change, expressed as long-term reduction and as loss of at least one of the following: biological productivity; ecological integrity; or value to humans (IPCC 2019).

Land tenure - The social relations and institutions regulating access to and use of land. It includes who owns the land and who uses, manages and makes decisions about it. The concept refers to both formal (legal) and informal (customary) rules.

Mangroves – mangroves are evergreen woody formations in the tidal range of the subtropics and tropics (water temperature above 20°C). They are tree and shrub species showing tolerance to salinity in soil and water. There is at least 5 times more carbon in mangrove soil and roots as in aboveground biomass parts of the mangrove vegetation. Carbon stored in mangrove biomass, particularly belowground, is about 3x higher than the carbon in other forested ecosystems in temperate and tropical environments. Indonesia is the country with the largest mangrove areas globally (20% of the global 14-15 M ha are in this country), but 123 countries globally have mangroves. Mangroves are important marine areas where fish and shellfish develop; hence they are utterly important for marine biodiversity. They are important coastal protector belts against storm surges and hurricanes, and they can adapt to rising sea levels. The total annual value of ecosystem services provided by mangroves is estimated at 1.6 billion US dollars. . Mangroves are considered forests in most countries and thus can be the subject of REDD-plus activities.

Mitigation - Action to prevent further accumulation of GHGs in the atmosphere by reducing the amounts emitted or by storing carbon in sinks.

Multi-stakeholder forums or platforms - These are purposely organised interactive processes that bring together a range of stakeholders to participate in dialogue, decision-making and/or implementation regarding actions that seek to address a common problem or to achieve a goal for their common benefit. These are organised at different levels: global (e.g. Round Table on Responsible Soy), national (e.g. Brazil's Action Plan for the Prevention and Control of Deforestation in the Legal Amazon, PPCDAm), and local (e.g. District Forest Coordination Committees in the Terai Forest, Nepal).

Natural Capital Accounting - Natural Capital Accounting provides a method to integrate non-monetised benefits and costs of investments in actions related to ecosystems and ecosystem services. Several NCA and EA frameworks are in use, such as the System of Environmental-Economic Accounts (SEEA) adopted by the UN Statistical Commission, which is closely related to UK's Environmental Accounts. In 2017, 69 countries had SEEA programmes, including 32 developing countries. European countries have applied environmental accounting at varying degrees, using a variety of approaches.

Nationally Determined Contribution (NDC) - Post-2020 climate change mitigation and adaptation actions that, by ratifying the Paris Agreement, each party to the UNFCCC binds itself to pursuing. The Paris Agreement requires countries to prepare, communicate and maintain increasingly ambitious NDCs. By April 2018, 197 countries had submitted their NDCs or Intended NDCs (INDCs).

Net-zero - The objective of the 2015 Paris Agreement is to "balance anthropogenic emissions by sources and removals by sinks on greenhouse gasses in the half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty." (UNFCC 2015, Art 4.1). This language has been

widely interpreted to refer to 'net-zero' targets for GHGs or CO_2 only, with many countries having set net-zero targets for 2050.

Payments for ecosystem/environmental services (PES) - a conditional (results-based), incentive-based instrument in which payments are made for ecosystem or environmental services. In the case of REDD-plus, these services are reduced emissions or increased removals relative to an agreed reference level.

Peatlands – are areas with or without vegetation, with a natural layer of peat on the surface. Peat is accumulated material containing at least 30% (dry matter) dead plant matter. Peatlands globally occupy about 3% of the land surface yet store the equivalent to ca. 30% of all global soil carbon, ca.70% of all atmospheric C, and 100% of all other terrestrial biomass. Peatlands are created when plant growth is faster than decomposition; they can be formed by mosses, sedges, grass, trees, shrubs and reeds. They grow slowly, accumulating at a rate of 0.5 - 1 mm per year in temperate regions. They are under threat from interests for land, fuel, garden supplements, and other uses. Their carbon is by all practical means 'irrecoverable', as it is destroyed quickly and built slowly. Many peatland areas have been lost globally, and peatland preservation has high priority.

REDD-plus (or REDD-PLUS) - "Reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks" (decision 1/CP.16, para. 70). In the current debate, REDD-plus may refer to different things, at time causing confusion: (i) an umbrella term for local, subnational, national and global actions whose primary aim is to reduce emissions from deforestation and forest degradation and enhance forest carbon stocks (increase removals) in developing countries; (ii) those activities within the definition that rely on results-based or conditional payments (PES), which was a core idea when REDD-PLUS was first launched; (iii) the mechanisms created under the UNFCCC framework. Non-carbon benefits have been recognized in decision 18/CP.21.[18]. For further info see GCF document developed on REDD-plus https://www.greenclimate.fund/document/accelerating-redd-implementation.

Regenerative agriculture - An inclusive agroecosystems approach for conserving land and soil, biodiversity, and improving ecosystem services within farming systems.

Results-based payment - A transfer of money conditional upon achieving a predetermined performance target, thus a type of conditional incentive-based instrument. This is related to the last of three REDD-plus phases recognised by the UNFCCC.

Well-being outcomes - Well-being impacts of REDD-plus and other land- and ecosystem-based interventions can be measured in terms of income, perceived well-being, distributive equity and social capital. Other dimensions related to well-being, such as land tenure security, local capacities, institutions, and social networks, can also be impacted by REDD-plus. Well-being outcomes, when positive, can be viewed as social co-benefits.

Wetlands – wetlands are areas flooded or saturated by water for sufficient periods of time to support vegetation adapted to saturated soil moisture. They can be freshwater (including rivers) or marine (including coastal ecosystems). Wetlands, peatlands, mangroves and other tidal areas are sometimes referred to interchangeably; however, wetlands are the overarching category. Ecosystem services that can be stacked in wetlands are biodiversity, water filtration and retention.

Zero deforestation commitments - voluntary commitments by companies to eliminate deforestation from their supply chains. These can include individual company or group- level adoption of voluntary standards; supply chain-based initiatives; and mixed supply chain and territorial initiatives at jurisdictional levels.

[18] https://unfccc.int/documents/9099

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