



From a biodiversity perspective: risks, trade-offs, and international guidance for Forest Landscape Restoration



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“We can’t choose where we come from, but we can choose where we go from here”

Stephen Chbosky

Client

The German Federal Agency for Nature Conservation (BfN, Bundesamt für Naturschutz)

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LIST OF ABBREVIATIONS

A/R	Afforestation / Reforestation
AFOLU	Agriculture, Forestry and other Land Uses
AFR100	African Forest Landscape Restoration Initiative
BfN	German Federal Agency for Nature Conservation (Bundesamt für Naturschutz)
CBD	Convention on Biological Diversity
COP	Conference of the Parties
CPF	Collaborative Partnership on Forests
EbA	Ecosystem-Based Adaptation
ECOSOC	Economic and Social Council of the United Nations
ELD	Economics of Land Degradation
FAO	Food and Agriculture Organization of the United Nations
FCPF	Forest Carbon Partnership Facility
FLR	Forest Landscape Restoration
FRA	Forest Resource Assessment (FAO)
FSC	Forest Stewardship Council
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas Emissions
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPFLR	Global Partnership on Forest Landscape Restoration
IFC	International Finance Corporation
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
IUFRO	International Union of Forest Research Organizations
IWG	Intergovernmental Working Group
LDD	Land degradation and desertification
LDN	Land Degradation Neutrality
LEDs	Low-Emission Development Strategies

M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MRV	Measurement, Reporting and Validation
NAMAs	Nationally Appropriate Mitigation Actions
NAPAs	National Adaptation Plans of Action
NAPs	National Adaptation Plans
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organization
NTFP	Non-Timber Forest Product
NYDF	New York Declaration on Forests
ODA	Official Development Assistance
RBP	Results-Based Payments
REDD+	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
ROAM	Restoration Opportunities Assessment Methodology
SBSTA	Subsidiary Body of Scientific and Technological Advice
SDG	Sustainable Development Goals
SER	Society for Ecological Restoration
SFM	Sustainable Forest Management
SIDS	Small Island Developing States
SLM	Sustainable Land Management
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
WRI	World Resources Institute

EXECUTIVE SUMMARY

Forest Landscape Restoration (FLR) has become one of the most important international policy topics in the environmental sector; it is a comprehensive concept to implement the objectives of all relevant international forest policy processes. Promoted through an informal high-level policy approach – in particular through the Bonn Challenge and related initiatives – FLR is driven by voluntary country pledges and private sector commitments to restore degraded landscapes at scale. FLR is seen by its proponents as a complementary necessity next to the ongoing international efforts to reduce deforestation and forest degradation. There is a broad consensus that FLR can be a powerful means of simultaneously addressing key environmental and development challenges: addressing climate change mitigation and adaptation, improving local livelihoods through sustainable business models for the land-use sector, and slowing down the global loss of biodiversity.

The Bonn Challenge and related policy initiatives have put a strong emphasis on enhancing ecosystem services and contributing to the well-being of humans – framing FLR as the ‘restoration of ecosystem services’. With such a focus, FLR is fully in line with the international agenda for sustainable development and the objective of many countries to develop ‘green economies’ jointly with the private sector. The aim is to trigger large-scale restoration processes with a step-wise and gradual improvement of the respective degraded ecosystem. However, FLR’s anthropocentric focus on ecosystem services holds potential trade-offs and risks for biodiversity.

While proponents of FLR emphasize the potential synergies between environmental, economic and social objectives, in practice a number of factors will be decisive for the nature and dimension of trade-offs on the ground. The objective of this study is to analyze the need for mitigating biodiversity risks and trade-offs that are associated with implementing FLR at scale, as well as to identify potential options to mitigate such risks and trade-offs while also catalyzing significant private sector support. For this, the authors reviewed scientific and grey literature on the topic, analyzed the outcome (decisions and guidance) of the main relevant international policy processes and carried out an explorative online survey with FLR experts. Furthermore, the study was informed by participation at the International Union of Forest Research Organizations (IUFRO) FLR conference in Puerto Rico, as well as in three high-level policy events related to the Bonn Challenge in 2017.

The expert survey confirmed the findings of the literature review: experts are aware of potential risks and trade-offs between different environmental, economic and social objectives of FLR measures. These risks differ in nature and are highly dependent on the scale of the activity (e.g. stand level, project level, landscape level, etc.), where a number of factors determine which trade-offs may occur. The main concerns regarding negative trade-offs for biodiversity are:

- establishment of monoculture timber plantations
- introduction and use of exotic tree species
- conversion of degraded forests or valuable non-forest habitats into plantations or forests (e.g. grasslands, wetlands).

Realistically, many FLR activities will lead to more sustainably managed production systems – forests as well as agroforestry and silvo-pastoral systems. To date, forest conversion has mainly been driven by agriculture for food and cash crop production (coffee, cocoa, soy, palm oil, etc.). If restoration in the FLR context is understood as reverting deforested and degraded lands into their pre-disturbance state, many areas suitable for mosaic restoration would not be available – due to massive negative economic and social trade-offs for local people whose livelihoods are dependent on that land. Opportunities for large-scale reforestation exist predominantly in moderately degraded areas with low population densities, e.g. in large abandoned degraded pastures suitable for natural regeneration and reforestation. However, the potential area suitable for large-scale restoration in such areas is estimated to be significantly lower than that available for mosaic restoration in other more densely populated areas.

Depending on site conditions, exotic tree species may have to be used as a nurse crop, fostering the initial transformation of degraded soils to support the eventual reintroduction of native species (once sufficient conditions have been established). As such, distinguishing between ‘good’ and ‘bad’ tree species is too simple an approach. The FLR discourse promotes the use of native tree species as these belong to the ecosystem and are well adapted to the pre-disturbance site conditions. While this may generally be true, the level of degradation in some instances may have reached a state where exotic tree species can help overcome the biophysical barriers to reintroducing native tree species (albeit maybe at a much later stage). For example, Acacia has rehabilitated the soils and barren lands in Vietnam; today it is possible in many sites to reintroduce native species. Similar and well-researched examples can be found in Puerto Rico which was almost entirely deforested. A site-species approach should determine an unbiased selection of appropriate tree species – and if local landowners are to benefit economically from the activities, potential markets should also be considered in this decision.

Plantations for timber production are part of many production landscapes. Timber is recognized as a valuable and environmentally favorable resource for a variety of purposes, and the global demand is increasing rapidly. Illegal and unsustainable timber harvesting is one of the key drivers of forest degradation, and more designated areas that are specifically managed for sustainable timber production could help to reduce this pressure on forests. In how far establishing new plantations poses a risks for biodiversity depends very much on where and how they are established. Potential risks and trade-offs can best be mitigated through rigorous certification with credible labels, and through comprehensive land-use planning, which identifies appropriate areas with lower importance for biodiversity.

The concept of the landscape approach tries to balance these trade-offs. However, in the absence of agreed definitions, regulation and comprehensive monitoring¹, the question arises as to whether such an approach is sufficient – and if not, what options exist to develop guidance for the implementation without stalling on-the-ground action. Similar to the discussion on risks in the context of REDD+ safeguards, one general direction is to attempt to fill regulatory gaps, while another is to *‘lead by example’* and promote synergetic approaches and best practices.

¹ FLR monitoring instruments are a work in progress, e.g. by IUCN with the Bonn Challenge Barometer and WRI / FAO

While all Rio conventions negotiate restoration within their mandate, there is still no direct mention of FLR within the framework of these conventions. The Rio conventions as well as the United Nations Forum on Forests (UNFF) recognize the role of forest restoration in biodiversity conservation, climate change mitigation and adaptation, as well as in combatting desertification and land degradation. While the potential benefits of restoration are often mentioned with a view to social and biodiversity aspects, concepts such as the distinction between active and passive restoration, as well as specific restoration approaches remain undefined. The lack of clearly defined concepts, approaches and relevant activities under the conventions disguises the fact that each process has produced relevant decisions and even guidance for FLR – especially within the Convention on Biological Diversity (CBD).

Given the specific mandates of the Rio Conventions and the previous experience made in their negotiations, it appears unlikely that governments can agree on overall guidance and specific definitions in any of them. Albeit negotiated under other terms, the analysis has shown that FLR is relevant for the Rio conventions. However, none of these is currently capable of developing comprehensive guidance for implementation, including concise definitions. Furthermore, effective coordination of international policy processes regarding cross-cutting issues such as FLR has proven difficult in the past. Against this background, a question arises about the added value of attempting to develop such guidance in formal negotiations. Committed countries would be interested in ensuring their national sovereignty. FLR negotiations could result in lengthy discussions and ultimately endanger the momentum for large-scale voluntary and unconditional action by countries. This does not mean, however, that FLR should not be discussed within the context of the three conventions and in other fora.

National standards and the mandatory application of established forest certification schemes could serve as instruments to reduce risks. It is in the countries' self-interest to define appropriate safeguards at the national level and to mandate the application of respected standards and certification schemes. This will reduce environmental and social risks of FLR measures on the ground and enhance legitimacy and acceptance, with potentially positive impacts on the efforts to attract private sector finance. Countries can draw on existing information; for example, in the context of REDD+ the CBD secretariat has produced important informal technical documents that provide recommendations for countries and implementing agencies on how to prevent harm and optimize benefits for biodiversity and ecosystem services other than carbon sequestration.

The Bonn Challenge as a non-technocratic informal network has neither the intention nor the power or mandate to fill the discussed regulatory gaps or provide technical guidance. It can even be argued that a main reason why countries make extremely ambitious and unconditional national FLR pledges is the possibility to associate themselves with a general concept for sustainable development and principles, while also retaining the right to adapt the approach based on their national circumstances and development priorities. In this regard, the approach of the Bonn Challenge has a significant advantage: in contrast to highly regulated and often technocratic policy instruments it is possible to align well with corresponding development agendas.

UNFF as a more comprehensive discussion forum without legally binding character has missed the opportunity to recognize the importance of this continuously evolving topic. Despite the

large thematic overlap of FLR with the new *UN Strategic Plan for Forests 2017–2030*, it remains to be seen if the UNFF will be accepted by the global FLR community as a relevant institution that creates added value. On the one hand, the increasing role of the Collaborative Partnership on Forests (CPF) as the entity responsible for overseeing technical meetings and content is promising; on the other hand, it remains unclear how proponents of the UNFF aim to address the lack of perceived relevance due to the non-binding character of the forum's outputs. Further challenges are the low degree of transparency, unclear options for participation of stakeholders and the forum's lack of innovation: the UNFF has never taken a leading role in developing emerging international approaches such as REDD+ and FLR.

Against this background, one option is to encourage countries with FLR commitments to define their own rules and modalities for implementation. To underline the credibility of their ambitious pledges, countries should define time-bound steps and outline, for example in national FLR strategies, how they intend to

- identify FLR priorities, and define key terms and potential FLR activities
- create suitable enabling environments (i.e. land tenure and land-use rights)
- facilitate inter-sectoral coordination
- align FLR with existing policies, programs and other instruments such as REDD+ and NDCs
- plan to establish a comprehensive land-use plan with priority areas for different FLR measures and purposes (e.g. protection of watersheds, harbors of biodiversity or sustainable production systems for timber and cash crops), or adapt existing land-use planning processes and integrate the described FLR features.

This provides an excellent opportunity to also consider the role of the private sector and to outline approaches addressing how trade-offs might be minimized as well as how progress and impacts can be monitored. Existing guidance and support from NGOs such as the IUCN and WRI, international organizations (e.g. FAO), and development cooperation organizations can be drawn upon to help minimize such trade-offs and risks (Annex C). The regional Bonn Challenge meetings provide a suitable forum to promote successful examples and key lessons learned, in addition to supporting South-South cooperation between countries with similar circumstances.

Bi- and multilateral donor organizations should support and incentivize best practices for FLR, which minimize trade-offs and risks for biodiversity. Given the voluntary commitments and the important role of governments in following up on how FLR in their national context should look, donor organizations should focus on supporting successful landscape concepts that succeed in balancing economic, environmental and social aspects. Bilateral donor organizations and the donors of important multilateral programs – e.g. GCF, Global Environment Facility (GEF), World Bank, etc. – could incentivize committed countries to develop and successfully establish convincing and comprehensive land-use frameworks. This would serve as an incentive to go beyond what is required, e.g. for countries implementing REDD+.

FLR project developers and implementing agencies should promote the use of voluntary certification schemes to ensure the social and environmental integrity of applied measures – particularly concerning private sector investments in newly planted forests and plantations. Even in landscape approaches, FLR will be largely implemented at the project level. Certification schemes with high credibility can ensure that best practices are applied, and ultimately help

mitigate social and environmental risks. Examples include the Forest Stewardship Council (FSC), the International Finance Corporation (IFC) and the High Conservation Value approach, among others. The use of credible certification schemes could be required by the governments as part of their national FLR strategies and supported by development cooperation.

Ultimately, a combination of local circumstances, landowner priorities and available resources will define the range of possible FLR measures, and also the implications for biodiversity. While many FLR activities pose few risks for biodiversity (e.g. enrichment plantings, natural regeneration), others entail trade-offs that can be minimized through careful land-use planning, following the available guidance on FLR and sustainable land-use practices (e.g. the ecosystem approach, certification schemes), and adhering to the principles developed by the Society of Ecological Restoration and the Bonn Challenge.

1 BACKGROUND AND OBJECTIVES

The global Forest Resources Assessments conducted by the Food and Agriculture Organization of the United Nations (FAO) show that during the last three decades a forest area of 13 million hectares (ha) has been lost annually. Though this alarming figure is partly compensated by reforestation and despite the fact that in some countries deforestation rates have decreased recently, the pressure on forests and forested lands remains high. Agriculture and large-scale commodity production are key drivers of deforestation, where the growing global demand for soy, palm oil, meat, coffee, etc., renders it highly profitable to convert forests into other land uses. As a consequence, the emphasis of discussions and negotiations at the international policy level has long been on stopping the unsustainable use and destruction of forests and other ecosystems. These discussions reflect the increasing recognition of detrimental impacts, not only on biodiversity and vital ecosystem services, but also on the economy due to extensive negative externalities (Aronson & Alexander 2013; Jørgensen 2015; Richardson 2016; Prip, in press).

Since 2010, the concept of Forest Landscape Restoration (FLR) has become one of the most important international policy topics in the environmental sector. However, the necessity of restoring ecosystems that have lost their functionality was already discussed much earlier: during the 1980s, scientists, practitioners and non-governmental organizations (NGOs) began advocating for measures to counteract the rapid depletion and degradation of land and to restore destroyed forests and other ecosystems.

The Bonn Challenge successfully brought the topic of FLR onto the international agenda – aiming to support the implementation of measures to achieve the objectives of the aforementioned institutions. When the first Bonn Challenge was initiated in 2011, there was consensus among the organizers that a less formal and open setting would be more appropriate than attempting to formally negotiate FLR (Pistorius & Freiberg 2014). In addition, the inclusion of stakeholders and the private sector was (and still is) considered to be a crucial element for the successful implementation of FLR activities. With the awareness that existing public funding sources would not suffice, the aim from the beginning was to leverage significant private sector investments and proactive engagement. Consequently, the Bonn Challenge, the New York Declaration on Forests, and related regional initiatives (AFR100 in Africa and the 20x20 Initiative in Latin America) encourage voluntary country and private sector commitments for FLR, based on national circumstances and priorities in the land-use sector. The rationale behind this approach is that participating countries demonstrate high-level commitment and political will, which paves the way for private investments and public support through bi- and multilateral official development assistance (ODA).

The institutionalization of FLR has added a new dimension to the international policy realm: In addition to addressing topics related to the overuse and conversion of forest resources, the common goal is to also reverse such unsustainable land-use trends. Driven by various initiatives and international policy processes introduced in this report, FLR is seen by its proponents as a complementary necessity next to the ongoing international efforts to reduce deforestation and forest degradation. There is a broad consensus that – if properly implemented, with sufficient available resources and political will to implement at scale – FLR can be a powerful means of simultaneously addressing major environmental and development challenges: fostering climate change mitigation and adaptation, improving local livelihoods through sustainable business

models for the land-use sector, and slowing down the global loss of biodiversity. With this, FLR is a key approach for developing ‘*green economies*’ jointly with the private sector.

Against this background, FLR is perceived as a comprehensive concept that seeks at national, regional and landscape levels to: i) rehabilitate and restore degraded and deforested areas through different forest-related activities; ii) promote the sustainable production of commodities and develop deforestation-free business models and supply chains, and iii) support efforts to protect remaining forests in their respective landscapes. While past scientific and development cooperation projects have demonstrated the feasibility of FLR under different circumstances, they have remained mostly place-specific measures at project level. This ‘*proof of concept*’ and the continuous promotion through organizations working at the science-policy interface – e.g. the International Union for the Conservation of Nature (IUCN) – have helped to introduce the concept into the negotiations of the three Rio conventions. This is particularly the case with the Aichi targets of the strategic plan covering the period of 2011–2020 for the Convention on Biological Diversity (CBD). FLR has also been identified as an approach which can support countries’ land degradation neutrality targets and other commitments under the United Nations Convention to Combat Desertification (UNCCD). Equally important were the negotiations on REDD+², the forest-related mitigation approach under the United Nations Framework Convention on Climate Change (UNFCCC), in the context of the Paris Agreement.

An aspect related to this informal governance approach is the lack of agreed rules and modalities, including definitions – even for key terms such as ‘*FLR*’ and ‘*landscape*’. So far, the consensus among key actors of the Bonn Challenge has been that FLR activities are based on general principles, with a focus on the ‘*restoration of ecosystem services*’. This emphasis on enhancing benefits for human well-being through FLR stands in contrast to a more ecocentric understanding that frames restoration as measures for reverting degraded areas to their pre-disturbance states, with costs and human needs being subordinate considerations.

The objective of this study conducted in the first half of 2017 was to analyze the necessity of and options for mitigating biodiversity risks resulting from FLR and the trade-offs that potentially accompany the implementation of FLR at scale. For this, the authors reviewed relevant literature, analyzed the outcomes (decisions and guidance) of the main relevant international policy processes and conducted an explorative expert survey online. Furthermore, unstructured interviews with participants at the International Union of Forest Research Organizations (IUFRO) conference on FLR in Puerto Rico, and participant observation at three high-level policy events related to the Bonn Challenge in 2017³ were used to validate the findings.

The report proceeds as follows: Section 2 provides a brief overview on definitions and interpretations of key terms related to FLR. In section 3, the international policy processes are analyzed regarding formally agreed objectives, decisions and guidance of relevance for implementing FLR. In section 4, the results of an empirical FLR expert survey are presented, focusing on views on potential FLR risks and trade-offs for biodiversity. The study concludes with options for addressing risks and dealing with regulatory deficits.

² Reducing Emissions from Deforestation and Forest Degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

³ High-level policy dialogue in Puerto Rico, regional Bonn Challenges in South Sumatra and Honduras.

2 DEFINITIONAL CONFUSION: WHAT IS MEANT BY FLR?

FLR is a concept that was developed by scientists and practitioners long before it gained the critical mass of political support needed to make it onto the agenda of relevant international policy processes (cf. section 3). It is generally the case that different terms evolve for as long as only technical experts and practitioners develop new approaches and concepts); once policy makers discover their relevance for a policy context they tend to use them synonymously, even though their meanings may fundamentally differ – for example the terms ‘*carbon pools*’ and ‘*carbon sinks*’. Furthermore, policy actors tend to reframe and generalize terms in order to adapt them to the mandate and objectives of the respective policy processes.

In order to assess and discuss potentially emerging risks of FLR for biodiversity, a common understanding of key terms such as ‘*forest*’, ‘*degradation*’ and ‘*restoration*’, ‘*landscape*’ as well as a generally shared understanding of ‘*Forest Landscape Restoration*’ is a prerequisite. As the analysis of relevant formal and informal processes demonstrates (section 3), a multitude of these related yet unspecified terms is currently used in different fora. To date, it has not been possible to harmonize these, despite various expert meetings conducted by FAO with the aim to contribute to the “*harmonization of definitions related to biophysical constitutions of forest resources and human interventions to manage forests for various purposes*” (FAO 2003 & 2005).

At the international policy level, the countries that negotiate in different processes under the roof of the UN – referred to in the following as “Parties” – seldom manage to agree on meaningful and specific definitions that accommodate all differing circumstances and interests. For the operationalization of policies and subsequent implementation, however, specific guidance and clear definitions are considered to be a means of ruling out or at least reducing risks. This puts committed countries in a position where they can define relevant terms themselves, based on their sovereignty and national context. For this purpose, they can draw on definitions developed by NGOs and other international institutions, such as those presented in the following.

2.1 Definitions and concepts

Definition ‘forests’

As is the case with other relevant terms there is no universal definition of what constitutes a forest. Given the differing national circumstances and the fact that countries insist on reflecting their own particular context and priorities, the international community has responded by developing definitions which try to accommodate the global diversity of definitions and range of criteria. The most commonly used definition is the FAO definition used in the Global Forest Resources Assessments:

“land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use” (FAO 2012).

Forest definitions are based on their physical characteristics (incl. size and canopy cover), administrative units and land use /management objectives. For an overview of the diversity of existing definitions, Lund (1999) conducted a survey in 30 countries which found over 130 differing definitions of forest and forest land. The diversity in definitions can be attributed to the role of

these definitions in providing the “*conceptual, institutional, legal and operational basis for the policies and monitoring systems*” that influence forest dynamics such as deforestation, regeneration, degradation and restoration (van Noordwijk & Minang 2009; Chazdon et al. 2016).

Forest definitions seldom distinguish between primary, managed, and planted forests; depending on crown cover thresholds, agroforestry systems may be covered or excluded. The aforementioned FAO definition, for example, includes commercial timber plantations but excludes tree stands in agricultural production systems, such as fruit tree plantations, oil palm and agroforestry systems. However, in many FLR countries agroforestry and silvo-pastoral systems have a long history and culture (Chazdon et al. 2016) and are considered a key element of FLR.

Definitions depend on context, management objectives and core values. The perception of a forest can range from an administrative unit, socio-ecological system, home, ecosystem services, forested ecosystems, agricultural ecosystems, landscapes or a national perspective (Chazdon et al. 2016). Management objectives can focus on maintaining or enhancing ecosystem functions and the provision of ecosystem services – e.g. maximizing timber production, enhancing habitats for biodiversity, supporting local livelihoods (incl. forest-dependent peoples), building resilience to climate change, and promoting sustainable production systems (timber, non-timber forest products (NTFPs), agroforestry, etc.).

FLR focuses on creating ‘*multi-functional landscapes*’ and, as such, ensures that diverse management objectives can be found within a forested landscape based on the country-specific context. For the implementation of FLR, how a forest is defined at the international level is not a crucial element since the FLR concept allows for a broad understanding of forest (and) landscape restoration (section 2.2).

Definition ‘landscape’

A universal understanding of a landscape is that it consists of large, heterogeneous and multi-functional environments beyond the site level that provide diverse services and values to multiple stakeholders (Figure 1). The European Landscape Convention defines a ‘*landscape*’ as a

“socio-ecological system with defined boundaries and marked by characteristics that are the result of the action and interaction of bio-physical and socio-economic factors” (European Landscape Convention 2000).

In such an understanding, a landscape can represent the geographic delineation and boundaries of included ecosystems, watersheds or jurisdictional boundaries – what is appropriate depends on the purpose and should be defined by responsible authorities and stakeholders.

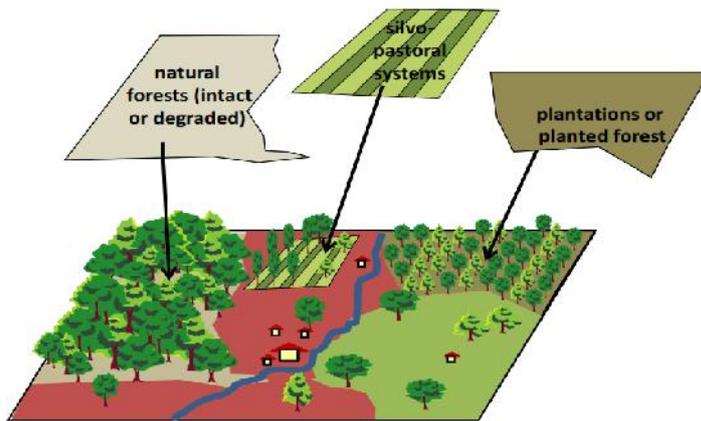


Figure 1. Elements of a multi-functional productive landscape

Source: Grulke et al. (2014)

In the FLR context, the delineation of target landscapes represents a starting point for official land-use planning for the relevant sectors (forests, agriculture, water, fisheries), taking into account the interaction of different land uses and drivers (e.g. when agricultural expansion is an important driver of deforestation). The focus on landscapes provides a new lens to manage the environment in a holistic way to reconcile competing land uses and balance environmental, economic and social benefits. Sayer et al. (2013) emphasize that:

“landscape approaches provide tools and concepts for allocating and managing land to achieve social, economic, and environmental objectives in areas where agriculture, mining, and other productive land uses compete with environmental and biodiversity goals.” (Sayer et al. 2013)

FLR proponents’ emphasis of landscape approaches is an outcome of the long-lasting discussions on how to reconcile conservation and development trade-offs (Sayer 2009), and the recognition of the need to scale project activities to larger geographical areas and jurisdictions in order to achieve meaningful impacts. This requires a comprehensive multi-level approach to land-use planning.

Definition ‘degradation’

Many definitions exist for ‘forest degradation’⁴. Forest degradation results in changed forest structures without being classified as a land-use change; estimates of affected areas exceed those of deforestation which underlines the relevance of this process (Herold et al. 2011). It significantly affects social, cultural, and ecological functions – with negative impacts on sustainable development (Putz 2009). The perspective of those involved determines the focus of the

⁴ For a comprehensive overview refer to Lund (2009): What is a degraded forest? White paper prepared for FAO.

definition: e.g., on biodiversity conservation, carbon sequestration, wood production, soil conservation, or recreation (FAO 2010). The Intergovernmental Panel on Climate Change, for example, defines forest degradation as:

“direct human-induced activity that leads to a long-term reduction in forest carbon stocks.”
(IPCC 2003)

A more comprehensive definition would have to take into account the broad range of different biophysical and social conditions of degraded forests (Putz 2009). An example which covers these aspects is the FAO definition:

“Changes within the forest which negatively affect the structure or function of the stand or site, and thereby lower the capacity to supply products and/or services.” (FAO 2006).

Forest degradation can simply be described as processes which lower the quality of forest land; as a consequence, it impairs ecological functions and its symptoms are a notable decline of ecosystem services.

Definition ‘restoration’

Unsurprisingly, what holds true for the term ‘degradation’ can also be said about ‘restoration’, ‘ecosystem restoration’ or ‘ecological restoration’. CBD Parties requested guidance on the issue, and the following four definitions for the term ‘restoration’ were provided (UNEP/CBD/COP/11/INF/19):

- *“The process of returning an ecosystem to a natural pre-disturbance structure and function”* (Briggs 1995);
- *“The process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed”* (SER 2004);
- *“The process of intentionally altering a site to establish a defined, indigenous ecosystem. The goal of this process is to emulate the structure, function, diversity and dynamics of the specified ecosystem”* (UNEP 2003); and
- *“Human intervention [...] designed to accelerate the recovery of damaged habitats, or to bring ecosystems back to as close as an approximation as possible of their pre-disturbance states”* (Cairns 1993; Yap 2000).

An important aspect is the degree or state of degradation (Table 1), which represents the starting point for restoration measures. Among other factors, it determines not only what is achievable (how close activities may bring the ecosystem to its reference state). Generally, the resources needed for achieving a ‘pre-disturbance state’ can differ greatly and may neither be feasible⁵ nor desirable. While practitioners and scientists distinguish the terms ‘restoration’ and ‘rehabilitation’, policy makers generally use the terms synonymously, referring to a ‘restoration of ecosystem services’.

⁵ Ecosystems are dynamic and subject to external influences which change over time – for example changing climatic conditions could naturally lead to a different ecosystem.

Table 1: Degree of forest degradation (Lund 2009)

light	moderate	strong
<ul style="list-style-type: none"> ▪ slight to moderate disturbances ▪ comparable with common natural disturbances ▪ process in initial stage, easily reversible ▪ forest structure not significantly damaged ▪ regeneration after disturbance similar as in the original forest stand 	<ul style="list-style-type: none"> ▪ severe disturbances ▪ caused by the clearing of at least 90% of the forest cover ▪ full rehabilitation possible but requires significant resources ▪ re-growing forests differ in species composition and physiognomy 	<ul style="list-style-type: none"> ▪ drastic disturbance with continued pressure ▪ complete loss of forest cover and topsoil, change in microclimate ▪ restoration difficult & expensive ▪ slow successional development after disturbance pressure stops ▪ often leads directly to grassland or bushland, or to barren lands with massive erosion
common drivers (examples)		
<ul style="list-style-type: none"> ▪ over exploitation of timber and NTFPs ▪ massive disturbances such as forest fires, storms ▪ overgrazing 	<ul style="list-style-type: none"> ▪ clear-cutting, burning and subsequent abandonment of area ▪ large-scale catastrophic disturbances such as forest fires, storms. 	<ul style="list-style-type: none"> ▪ repeated and large-scale overuse or conversion ▪ repeated disturbances (e.g. fires, grazing, unsustainable management on fragile soils ▪ soil erosion

Source: adapted from Lund 2009, based on modified data from FAO/Liniger et al. 2008.

Figure 2 illustrates the difference between rehabilitation and restoration: the trajectories a and c develop at different paces towards the reference state (i.e. restoration); the scenarios b and d illustrate restoration activities that succeed in reducing the level of degradation (i.e. rehabilitation), but due to barriers and constraints may never come close to the original state of the ecosystem; or the state of the ecosystem may even decline over time, after initially successful developments. Scenario e illustrates that there can also be activities that do not succeed in significantly enhancing biodiversity and ecosystem services.

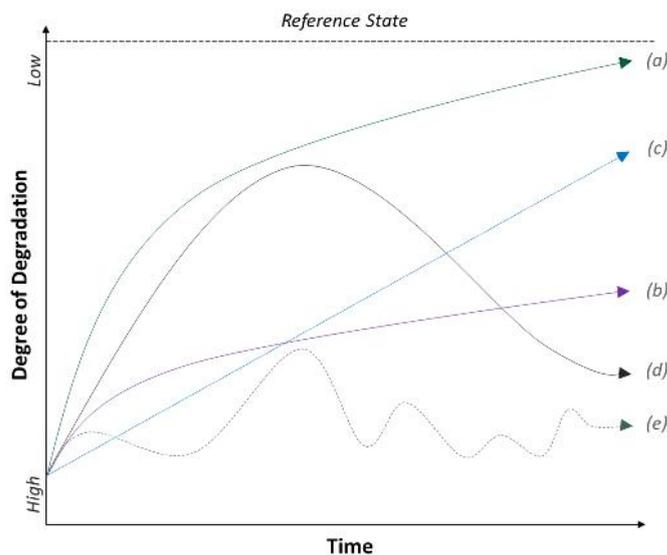


Figure 2: 'Restoration' trajectories – the relationship between the state of degradation, time and the theoretical possibility of returning to close to the reference state

Source: Adapted from Bullock et al. (2011)

2.2 Understanding “Forest (and) Landscape Restoration”

In the following section we analyze how these terms are reconstructed and used for framing the policy understanding of the FLR discourse. The term FLR was coined around the year 2000 and defined as:

“a planned process that aims to regain ecological integrity and enhance human well-being in deforested or degraded landscapes” (Mansourian et al. 2005, p. 3).

This definition underlines that FLR includes both, ‘restoration’ and ‘rehabilitation’; it is in line with the Bonn challenge understanding of FLR; for example, the Global Partnership on FLR (GPFLR 2016) frames FLR as:

“a long-term process of regaining ecological functionality and enhancing human well-being across deforested or degraded forest landscapes, focusing on strengthening the resilience of landscapes and creating future options to adjust and further optimize ecosystem goods and services as societal needs change or new challenges arise”.

Globally, degraded areas vary greatly regarding the extent and degree of degradation, pressures and drivers, their capacity to recover, their importance for livelihoods, the institutional setting and functionality of the governance system, and the motivations for FLR. Accordingly, programs and strategies must adapt to the pre-existing natural, economic and social conditions and respond in a balanced way to local priorities and needs. Thus, FLR is distinguished as **wide-scale restoration**⁶ of large contiguous areas with low population densities. In contrast, densely populated lands used for crop production or grazing are not suitable for wide-scale restoration but may offer restoration opportunities for **mosaic restoration**⁷ (Figure 3).

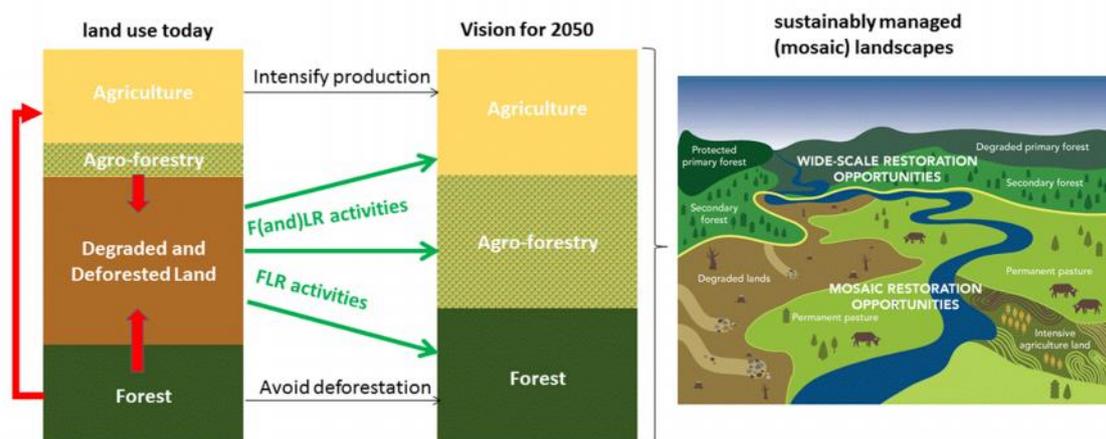


Figure 3: Current land use and vision for sustainably managed (mosaic) landscapes

Source: Adapted and modified from de Dewitt (2015) and IUCN & WRI (2014)

⁶ Wide-scale restoration aims to reestablish areas where forest is the dominant land use, achieved through large-scale afforestation/ reforestation or natural forest regeneration (IUCN & WRI 2014)

⁷ Mosaic restoration restores or creates a landscape of multiple land uses, including agricultural land uses, improved fallow lands as well as agroforestry and silvo-pastoral systems.

This broad understanding of FLR also includes rehabilitation of degraded lands for agriculture (without trees). For this reason, some experts argue that the correct term would be ‘Forest (and) Landscape Restoration’. Laestadius et al. (2015) clarifies this debate as follows:

“[FLR should] bring ecological and economic productivity back without causing any loss or conversion of natural forests, grasslands or other ecosystems. FLR does not call for increasing tree cover beyond what would be ecologically appropriate for a particular location.”

The breadth of the FLR concept as currently discussed allows committed countries and implementing agencies to select context-appropriate measures from a wide range of activities (Chazdon et al. 2017). The Global Partnership on Forest Landscape Restoration (GPFLR) has identified three basic land-use categories and seven sub-categories of land use to help structure potential FLR options (Table 2).

Table 2: Examples of FLR options

Land use	Land sub-type	FLR option	Description
Forest land Land where forest is, or planned to become the dominant land use → Suitable for wide-scale restoration	forest land is <u>without trees</u> (temporarily unstocked)	Planted forests & woodlots	Planting of trees on formerly forested land. Native species or exotics and for various purposes, fuelwood, timber, poles, fruit production, etc.
		Natural regeneration	Natural regeneration of formerly forested land. If the site is heavily degraded and no longer has seed sources, planting will be required
	degraded forests	Silviculture	Enhancement of existing forests and woodlands of diminished quality and stocking, e.g. by managing pressures (fire, grazing) & silvicultural interventions
Agricultural land Land which is being managed to produce food → Suitable for mosaic restoration	land is under permanent management:	Agroforestry	Establishment & management of trees on agricultural land (planting or regeneration), to improve crop productivity, provide dry season fodder, increase soil fertility, enhance water retention, etc.
	land is under intermittent management:	Improved fallow	Establishment and management of trees on fallow agricultural land to improve productivity, e.g. by fire control, extending the fallow period etc.,
Protective land and buffers Land vulnerable or critical in safeguarding → Suitable for mangrove restoration, watershed protection and erosion control	If degraded mangrove:	Mangrove restoration	Establishment or enhancement of mangroves along coastal areas and in estuaries
	If other protective land or buffer:	Watershed protection and erosion control	Establishment and enhancement of forests on very steep sloping land, along water courses, in areas that naturally flood and around critical water bodies

Source: Adapted from IUCN & WRI (2014), page 39

For many of the discussed activities that may be categorized under the concept of FLR, there is not even an intention to revert to a pre-disturbance state (a rich and diverse forest) in the long term – examples include agroforestry, the planting of forests for firewood, enrichment plantings to stabilize soils, and plantations, among others. The expectation is that these activities will lead in most cases to the establishment of mosaic landscapes consisting of different, sustainably managed and effectively protected areas – with better conditions for biodiversity. Such rehabilitation does not aim to reach a pre-disturbance state, but instead aims to enhance the provision of ecosystem services in the degraded ecosystem. The term ‘rehabilitation’ better reflects factual constraints such as limited resources, remaining pressures, and irreversibly lost components of biodiversity as well as dynamic climatic and edaphic conditions.

To guide the implementation of FLR activities, Sayer et al. (2013) have formulated ten general principles for FLR, which represent some consensus on how agricultural production and conservation can best be integrated at a landscape scale (Figure 4).

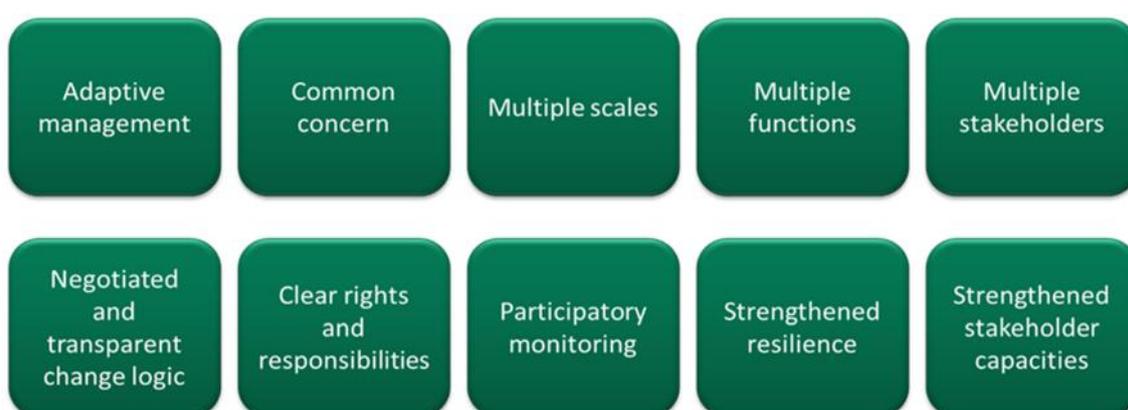


Figure 4. The ten guiding principles of the landscape approach

Source: Adapted from Sayer et al. 2013

Generally, FLR activities should be self-sustaining and rely on the different values and the ecosystem services they provide. As such, a favorable enabling environment is a prerequisite to address environmental, political and social challenges. This includes effective legal frameworks and institutions, including tenure and land-use rights, inter-sectoral coordination and land-use planning, participatory processes and approaches for benefit sharing.

2.3 Potential FLR risks and trade-offs

As previously stated, the concept of ecosystem restoration evolved out of the continuing global trend of over-exploitation of natural resources, and the resulting impacts on ecosystem functions. All of the aforementioned definitions involve ecosystems in some degree of altered state. They differ in regards to the definition of a pre-disturbance state versus indigenous ecosystems and also in terms of a focus on the recovery of an ecosystem versus a stronger focus on ecosys-

tem functions. The second definition by the Society for Ecological Restoration (SER) is often referenced by international organizations working on FLR and ecosystem restoration, however, it is notable that this definition provides little guidance on what state the ecosystem should be restored to, nor does it mention ecosystem functions. Granted, there are numerous challenges with identifying what constitutes the *'pre-disturbance'* state of an ecosystem, given the long history of natural and anthropogenic influence and dynamics in many ecosystems. It is expected that climate change and other factors will have a rapid influence on the theoretically potential state of ecosystems and even prevent any return to such a state. As such, there is substantial potential for conflicting values, interests and ideas regarding how areas should be restored and what activities should be supported.

Restoration activities strive for synergies between ecological, economic and social aspects, taking into account local circumstances and the existence of trade-offs (Lamb et al. 2005; Chazdon 2008; Sarr et al. 2008). For this, the above-described guiding principles for FLR have been derived, with the aim of ensuring legitimacy and ownership of actors at different policy levels, particularly those directly affected. However, key challenges for implementation agencies are existing and future trade-offs and conflicts. Guiding principles cannot prevent trade-offs, but they can provide valuable guidance on how to address them.

Within the context of FLR, one area of continued debate is the role of commercial forest plantations, especially regarding the impact of plantations on biodiversity. Given the increasing consumption of wood products, commercial forest plantations are an important element of productive landscapes⁸. Commercial plantations can be established to reforest degraded and cleared areas, restoring the productivity of degraded or sub-utilized land⁹. Plantations usually consist of monocultures, often using fast-growing exotic species, and prioritizing economic aspects (Parrotta et al. 1997; Bauhus et al. 2017).

The use of exotic species in monocultures, often with clones, is due to their ability to grow in a broad range of environmental conditions as well as the extensive amount of information and knowledge about such fast-growing species – incl. nursery requirements, growing conditions, growth rates, wood properties, silvicultural practices, value chains and markets (Lamb 1998; Bauhus et al. 2017). Given common exotic commercial species' broad range of growing conditions, such species are often able to be established in highly degraded areas with marginal soils where native species may not be capable of regenerating (Lamb 1998; Dong 2014; Dong et al. 2016). Species with special properties (so called *'nurse crops'*), such as leguminous species that can fix nitrogen in soils, can support the eventual establishment of native tree species by helping to rehabilitate degraded areas where natural succession is not possible or greatly limited.

In contrast, native species, while more socially and environmentally acceptable, are often characterized by slower growth rates and there are severe technical challenges associated with their establishment in degraded environments under marginal conditions. This has limited their integration into commercial timber plantations (Bauhus et al. 2017). In the restoration of Puerto

⁸ Commercial forest plantations, in contrast to 'forested land', are often considered to be a productive land use, often akin to industrial agricultural activities.

⁹ Assisted reforestation is often required when natural succession is unlikely to occur, for instance under conditions of frequent disturbances (e.g. fire, grazing) or when the distance to remaining forests is too far to support natural succession and the establishment of secondary forests (Lamb 1998).

Rico, for example, introduced plantation species played a major role in a reintroduction of native species at a later stage (Parrotta et al. 1997). Such technical and silvicultural challenges are further compounded by major information gaps related to native species, e.g. with regards to optimal site conditions, wood properties, appropriate silvicultural regimens, pests, genetic material (incl. the availability of high quality primary material / seeds), value chains and markets (Stimm et al. 2008; Günter et al. 2009; Bauhus et al. 2017).

Diverse efforts over the last two decades have focused increasingly on how to integrate native species into commercial timber plantations and other productive systems (e.g. agroforestry and silvo-pastoral systems), and how to optimize management systems for multiple benefits to promote sustainable development. Nevertheless, there are still many knowledge gaps which need to be filled through research and piloting approaches (Brockerhoff et al. 2008; Stimm et al. 2008; Günter et al. 2009; Manson et al. 2012; Campoe et al. 2014; Abelleira Martínez et al. 2015; Pretzsch & Rais 2016; Bauhus et al. 2017).

Enhancing biodiversity in plantations is complex as “*restoring species composition requires more than just plants*” (Perring et al. 2015, p.7). Not only are plantations dependent on site-species matching based on biophysical conditions and species-specific characteristics of the plants, but also the interactions between selected species, management practices applied, national policy frameworks and the local context (Jacoveli 2014; Felton et al. 2016; Pretzsch & Rais 2016; Bauhus et al. 2017).

While they are often effective at restoring the productivity of degraded and marginal cleared lands, there are plenty of examples of poorly managed plantations. Inappropriate establishment and poor management have demonstrated the potential disadvantages of commercial plantations: potentially reducing biodiversity, clearing native forests, land grabbing, causing forest degradation and reducing forest carbon sinks, among others (Foley et al. 2005; Brockerhoff et al. 2008). However, appropriate plantation management practices combined with land-use planning, capacity development, site-species matching, regular monitoring and evaluation (M&E), and an effective regulatory framework have been found to reduce such risks, and even to generate additional social and environmental benefits from plantations (Brockerhoff et al. 2008; Bohre & Chaubey 2014; Jacovelli 2014; Ingram et al. 2016; Pirard et al. 2016). Furthermore, several studies have shown that plantations can reduce the pressure on native forests and provide other social and environmental benefits. This relationship, however, is not so straight forward as it depends on a range of factors related to the local context such as the regulatory framework, engagement of local communities, livelihood opportunities, and enforcement and control, among others (Brockerhoff et al. 2008; Pirard et al. 2016).

As Figure 5 illustrates, rehabilitation can be an important measure for subsequent restoration – a challenging process which will require time, resources and adaptive management as external influences change. It also shows that the focus (marketable) ecosystem services may present risks and trade-offs to environmental objectives. Exotic species and commercial plantations can play an important role in the medium-term, as they can act as ‘*nurse crops*’ and help restore the necessary environmental conditions to support restoration (Zimmerman et al. 2000; Dong 2014; Dong et al. 2016).

The large-scale afforestation programs in Vietnam are an illustrative example of large-scale rehabilitation: starting in the nineties, approximately 4 million ha of barren lands were reforested with Acacia. As a leguminous species it has successfully rehabilitated massively degraded soils

and now, after 30 years, provides conditions that are promising for the successive reintroduction of those native tree species that are characteristic for the ecosystem (Dong et al. 2016, Pistorius et al. 2016).

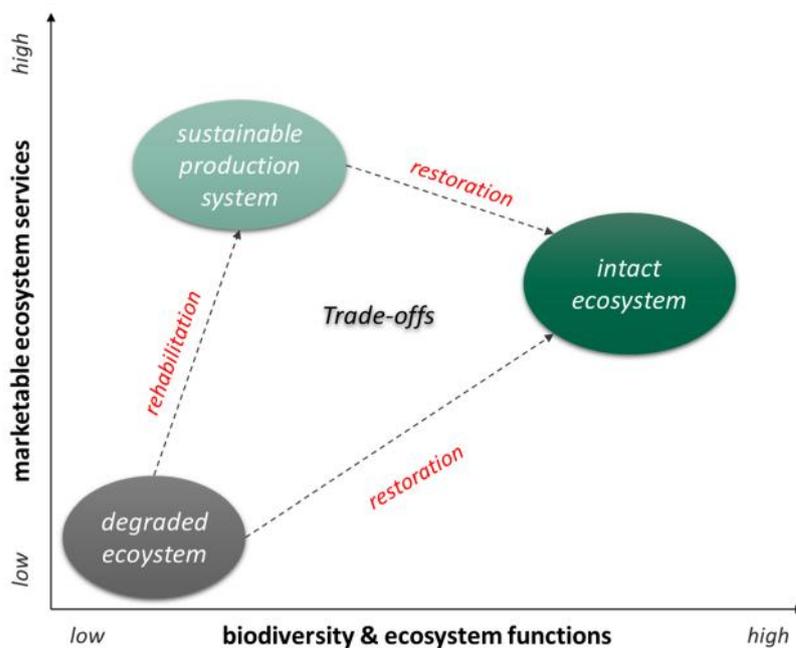


Figure 5. The relationship between rehabilitation and restoration in relation to the provision of marketable ecosystem services, biodiversity and ecosystem functions

Source: Adapted and modified from Caspari et al. (2014)

In general, the landscape approach has substantial potential to encourage forest plantations and other productive land uses that have multiple management objectives. FLR can help facilitate the negotiation of different land uses – balancing trade-offs while promoting a responsibly managed landscape based on a holistic management approach. Since the early 2000s, diverse approaches and efforts have advanced to support commercial timber plantation models which integrate native species into plantations. However, there are still substantial research needs as such trials are dependent on the specific site-species matching and the national context (Bauhus et al. 2017). In addition to enhancing biodiversity within plantations, the accountability and rather poor reputation of forest plantations regarding social and environmental aspects can also be improved through governance, e.g. certification, application of best-practice guidelines / industry standards, and participatory community forest management approaches (Jacovelli 2014; Bauhus et al. 2017).

In conclusion, from a biodiversity perspective commercial plantations have environmental risks and trade-offs – particularly if monocultures use cloned tree species (low genetic biodiversity). However, a variety of tools, principles, better land-use planning and the landscape approach provide means for balancing individual and sectoral interests. Combined with certification, some of the risks associated with profit-driven investments within FLR can be effectively mitigated.

3 FLR IN THE INTERNATIONAL FOREST POLICY ARENA

3.1 Convention on Biological Diversity

Among the Rio conventions, the CBD¹⁰ is the process that most comprehensively deals with the linkages between biodiversity, human interventions and development. FLR is both directly and indirectly reflected in the CBD's objectives as well as in various cross-cutting issues and work programs of the convention. Although the work program of greatest relevance for FLR is the work program on Forest Biodiversity, FLR is still reflected in other work programs such as agricultural biodiversity, among others. Several of the 23 cross-cutting issues related to biodiversity are relevant for FLR, including climate change, the sustainable use of biodiversity, health, trade and protected areas, among others. Of particular relevance for FLR are the following specific cross-cutting issues: the 'ecosystem approach' and 'ecosystem restoration'. The work program on forest biodiversity, as well as the most relevant cross-cutting issues, is further discussed within the context FLR in the following sub-sections.

CBD Work Program: Forest Biodiversity

Through its *forest biodiversity* work program, the CBD recognizes the importance of forest biodiversity in maintaining ecological services and function. Specifically, in regards to the convention's forest biodiversity program, the convention states that

“Forest biological diversity results from evolutionary processes over thousands and even millions of years which, in themselves, are driven by ecological forces such as climate, fire, competition and disturbance. Furthermore, the diversity of forest ecosystems (in both physical and biological features) results in high levels of adaptation, a feature of forest ecosystems which is an integral component of their biological diversity. Within specific forest ecosystems, the maintenance of ecological processes is dependent upon the maintenance of their biological diversity”¹¹.

The program refers to forest biodiversity as

“a broad term that refers to all life forms found within forested areas and the ecological roles they perform. As such, forest biological diversity encompasses not just trees, but the multitude of plants, animals and micro-organisms that inhabit forest areas and their associated genetic diversity”¹²

Since its beginning, the CBD has produced numerous decisions related to forest biodiversity. Already at COP 1 (1994), the Parties highlighted the importance of conservation, management and sustainable use of forests for achieving the objectives of the convention¹³. Within COP 2

¹⁰ For additional information on the CBD refer to the convention's official website: <https://www.cbd.int>

¹¹ UNEP/CBD/COP/2/9 Annex

¹² <https://www.cbd.int/forest/what.shtml>

¹³ UNEP/CBD/COP/1/8 Annex

(1995), the CBD work program on forests and biodiversity was established¹⁴. From the beginning, the convention has acknowledged the importance of forest biological diversity as well as the provision of information on how sustainable forest management (SFM) can adopt an ecosystem approach and aim at improving forest quality, including topics ranging from forest composition and the maintenance or enhancement of ecosystem function, among other characteristics. At COP 3 (1996), the use of landscape models combined with an ecosystem approach was specifically mentioned as a means of supporting the implementation of the convention, together with the continued promotion of sustainable forest management¹⁵.

Momentum for improving the conservation of forest biodiversity was sustained, with the need for restoring cleared or degraded forested landscapes being mentioned explicitly¹⁶ at COP 5 (2000), and the convention's establishment at COP 6 (2002) of the specific goal to apply the 'ecosystem approach' to the management of forests¹⁷. Practical methods, guidelines, indicators and strategies for the implementation of such an approach were to be developed to help achieve this goal, which ultimately provided momentum for the development of the ecosystem approach and related tools. COP 9 (2008) continued to promote the development and implementation of SFM and ecosystem approaches, specifically with the intention to

“maintain forest biodiversity and ecosystem functions, promote forest restoration and minimize deforestation and forest degradation”¹⁸.

FLR was explicitly mentioned for the first time at COP 9 where forest restoration was highlighted and the Global Partnership on Forest Landscape Restoration (GPFLR) as well as the potential for cooperation mechanisms for the restoration of forest landscapes were specifically discussed¹⁹. This sparked a notable shift towards increased visibility of the topic, and increased attention dedicated to the topic of restoration within the convention (see the following discussion on ecosystem restoration for additional information).

Interest in promoting and enhancing linkages with FLR continued to increase, with the provision at COP 10 (2010) of specific guidance on how to improve biodiversity from a (forest) landscape perspective, including best practices for sustainable agriculture and forestry²⁰. At COP 12 (2014), numerous initiatives on forest ecosystem restoration and FLR were welcomed by the Parties – particularly with a view to the large potential for synergies between the objectives of the CBD and those of the UNFCCC. The decisions recognize that restoring forest ecosystems helps to address climate change while significantly contributing to biodiversity conservation and enhancing the provision of ecosystem services. Related to forests and notable advances under the UNFCCC, COP 11 (2012) highlighted the importance of the establishment of the *Warsaw Framework for REDD+* and the REDD+ safeguards, and encouraged Parties to support their implementation²¹.

¹⁴ UNEP/CBD/COP/2/9

¹⁵ UNEP/CBD/COP/3/2, annex f

¹⁶ UNEP/CBD/COP/5/4

¹⁷ UNEP/CBD/COP/6/12

¹⁸ UNEP/CBD/COP/4/5

¹⁹ UNEP/CBD/COP/4/5

²⁰ UNEP/CBD/COP/10/36

²¹ UNEP/CBD/COP/11/19

CBD Cross-cutting Issues: the Ecosystem Approach

The ‘*ecosystem approach*’ is an action framework under the CBD²². It has been defined as

“a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way”²³, and “a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit”²⁴

The ecosystem approach has no pre-defined scale, but can be applied on large areas, including at the landscape level²⁵. This provides a departure from traditional SFM activities which historically were implemented at management unit level. Twelve principles and related operational guidance were established to support the implementation (Figure 6)²⁶.

Principle 1. The objectives of management of land, water and living resources are a matter of societal choice	Principle 2. Management should be decentralized to the lowest appropriate level
Principle 3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent ecosystems	Principle 4. Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context ²⁷
Principle 5. Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target	Principle 6. Ecosystems must be managed within the limits of their functioning
Principle 7. The ecosystem approach should be undertaken at appropriate spatial and temporal scales	Principle 8. Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long-term
Principle 9. Management must recognize that change is inevitable	Principle 10. The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity
Principle 11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices	Principle 12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines

Figure 6. Overview of the twelve ecosystem approach principles

Source: UNEP/CBD/COP/7/11 Annex

²² UNEP/CBD/COP/2/8

²³ UNEP/CBD/COP/5/6

²⁴ <https://www.cbd.int/ecosystem/>

²⁵ UNEP/CBD/COP/7/11

²⁶ Ibid

²⁷ Where any such ecosystem management program should: a) reduce market distortions that adversely affect biodiversity; b) align incentives to promote conservation and sustainable use; and c) internalize costs and benefits.

To apply these principles, the following five points are proposed as general operational guidance²⁸:

- i) focus on the relationships and processes within ecosystems;
- ii) enhance benefit sharing;
- iii) use adaptive management practices;
- iv) carry out management actions at the scale appropriate for the issue being addressed, with decentralization to lowest level, as appropriate; and
- v) ensure inter-sectoral cooperation.

These principles are coherent with the guiding principles for FLR (cf. Section 2). As previously stated, the ecosystem approach and its conceptualization through the CBD has largely helped to shape the development of FLR. Principle 10 for the ecosystem approach, for instance, identifies the need to

“manage areas and landscapes in a way that optimizes delivery of ecosystem goods and services to meet human requirements, conservation management and environmental quality”²⁹.

This wording represents a new and comprehensive approach towards landscape management and towards the provision of ecosystem goods and services for human needs. The verb ‘to optimize’ implicitly acknowledges that there are trade-offs, with the notion that these can be managed at the landscape scale.

CBD Cross-cutting Issues: Ecosystem Restoration

Within the framework of the CBD, the concept of ‘ecosystem restoration’ evolved out of continuing global trends of over-exploitation of natural resources, and the resulting impacts on ecosystem functions. Article 8f of the convention states that

“each contracting Party shall, as far as possible and as appropriate rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies”³⁰.

As with the ecosystem approach, the convention emphasizes that ecosystem restoration needs to be implemented in a manner that balances social, economic and environmental objectives, while also engaging all relevant stakeholders³¹. Parties emphasized the importance of ecosystem restoration at various COPs, and have called for the development of related programs and the implementation of supporting measures – most prominently at COP 5 (2000) where Parties acknowledged the importance of restoring degraded forest ecosystems³². At the same COP, restoration was integrated into the core principles of the ecosystem approach, specifically related to principle 5 on the conservation of ecosystem structure and functioning. As the ecosystem

²⁸ <https://www.cbd.int/ecosystem/operational.shtml>

²⁹ UNEP/CBD/COP/7/11

³⁰ CBD Convention Text, Article 8 <https://www.cbd.int/convention/articles/default.shtml?a=cbd-08>

³¹ UNEP/CBD/COP/8/5

³² UNEP/CBD/COP/5/4

approach is the CBD's primary framework for action, this established restoration as a key cross-cutting element within the convention³³. Ecosystem restoration is also integrated into several work programs, including on dry and sub-humid lands with a focus on soil and water³⁴.

Over time, the role of restoration began to grow in prominence within the decisions of the CBD. This includes the role of restoration for climate change mitigation and adaptation and for the conservation of biological diversity in the context of climate change³⁵. At COP 10 (2010), the CBD's *Strategic Plan for Biodiversity 2011-2020*³⁶ was adopted to support the implementation of the convention. The strategic plan provides a flexible framework for parties to³⁷

"take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication".

Although FLR is not mentioned explicitly, several Aichi targets relate to it – in particular Aichi targets 14 and 15, which are attributed to Strategic Goal D (*"enhance the benefits to all from biodiversity and ecosystem services"*)³⁸:

"By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable." (Target 14)

"By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification." (Target 15)

The strategic plan furthermore supports the restoration of ecosystems, sustainable use of biological resources, fair and equitable benefit sharing, capacity building related to biodiversity, mainstreaming of biodiversity into policy, and improved decision making based on scientifically sound information and a precautionary approach³⁹.

COP 11 (2012) produced the first CBD decision specifically dedicated to ecosystem restoration⁴⁰, continuing to build on momentum for strengthening the profile of ecosystem restoration within the convention. Decision 16 specifically invited further cooperation, including the dedication of additional resources and support, to implement ecosystem restoration and to support the strategic plan for biodiversity and the Aichi biodiversity targets⁴¹. The link with FLR became increasingly strengthened through an acknowledgement of the cooperation between the CBD and the

³³ UNDP/CBD/COP/5/6

³⁴ UNEP/CBD/COP/5/23

³⁵ E.g. UNEP/CBD/COP/8/30; UNEP/CBD/COP/9/16; UNEP/CBD/COP/10/4; UNEP/CBD/COP/11/16; UNEP/CBD/COP/12/20; and UNEP/CBD/COP/13/4

³⁶ UNEP/CBD/COP/10/2

³⁷ Ibid

³⁸ Ibid, refer to the following website for additional information on the specific targets <https://www.cbd.int/sp/targets/>

³⁹ Ibid

⁴⁰ UNEP/CBD/COP/11/16

⁴¹ UNEP/CBD/COP/11/16

Global Partnership on Forest Landscape Restoration (GPFLR)⁴². This decision promotes the development of tools, compilation of information, dissemination of case studies, lessons learned and best practices for ecosystem restoration, as well as capacity building among other tasks to support restoration.

It was also at COP 11 where parties were urged to develop clear terms and definitions of ecosystem rehabilitation and restoration, and to clarify the desired outcomes of implementation of restoration targets. Although the term '*restoration*' has regularly featured in CBD decisions since COP 2, the convention has not adopted a standard definition. The lack of a definition has not gone unnoticed (Jørgensen 2013; Richardson 2016), and parties to the convention already requested the Executive Secretary to compile the most used definitions and key terms related to ecosystem restoration at the Subsidiary Body on Scientific and Technical Advice (SBSTTA) XV in 2011. As a result, the CBD commissioned a study, the results of which were disseminated to the convention's parties. However, multiple definitions are often provided to show the range of available and recognized options. Despite this progress, as of 2017, the convention still had not adopted its own definition for ecosystem restoration.

Ecosystem restoration remained a topic at COP 13 (2016) with substantial political momentum and resulted in the adoption of a flexible framework and short-term action plan on ecosystem restoration⁴³. The plan includes key activities, based on the CBD's ecosystem approach, such as

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- i) assessment of opportunities for ecosystem restoration,
- ii) improvement of the institutional enabling environment for ecosystem restoration,
- iii) planning and implementation of ecosystem restoration activities, and
- iv) monitoring, evaluation, feedback and dissemination of results.

In addition to the action plan, the role of restoration for climate change was discussed at the same meeting. Specifically, the need for the Executive Secretary to further enhance synergies between ecosystem restoration and other key approaches to support climate change adaptation and mitigation, e.g. ecosystem-based adaptation (EbA) and sustainable land management (SLM), was discussed⁴⁵. This underlines the intention to use the potential of ecosystem restoration to strengthen the synergies between the UNFCCC, UNCCD and CBD. At COP 13 (2016), additional information and informal guidance documents related to the restoration of forest ecosystems and landscapes were circulated. Of particular relevance is an IUCN report which introduces the concept of FLR, highlighting its potential to support the CBD's targets and national efforts to conserve biodiversity⁴⁶. As in the case of ecosystem restoration, the convention has not established an official definition for FLR. It does however present the aforementioned IUCN report as important information to support countries in developing and aligning FLR initiatives with their national biodiversity strategies.

⁴² The GPFLR is a network of practitioners dedicated to supporting the development and implementation of FLR. Additional information can be found at: <http://www.forestlandscaperestoration.org/>

⁴³ UNEP/CBD/COP/13/5

⁴⁴ Ibid

⁴⁵ UNEP/CBD/COP/13/4

⁴⁶ UNEP/CBD/COP/13/INF/11

In a nutshell: Restoration under the CBD

The strongest links between the Rio Conventions and FLR are found within the various work programs and cross-cutting activities of the CBD, which had significant impact on the design and evolution of FLR. Since the initiation of the convention, the conservation, sustainable use and restoration of forested landscapes have been key for addressing the global decline of biodiversity. The cross-cutting issues related to the '*ecosystem approach*' and '*ecosystem restoration*', together with the expanded program of work on forest biological diversity, are closely aligned with FLR. However, a multitude of related terms are used without being defined or specified.

The expanded program of work on forest biological diversity has advanced the concept of SFM to the ecosystem approach, and the ecosystem approach is a key stepping stone for the development of FLR. They promote the apparent synergies between the Rio Conventions, understanding the key role that forests can play in conserving biological diversity, reducing land degradation and desertification and in supporting climate change mitigation and adaptation. The principles, tools and approaches can support practitioners in applying the *ecosystem approach* at various levels (i.e. project, landscape, national, etc.).

Having recognized the urgency and importance of ecosystem restoration early on, the Parties to the CBD have helped by placing the topic high on the political agenda. The Aichi Targets 14 and 15 have encouraged governments to develop their own strategies for ecosystem restoration, based on national circumstances, priorities and needs. Aichi target 15, with its focus on ecosystem services and human needs, represents a starting point for the Bonn Challenge and thus for the entire international FLR discourse.

Although the term FLR has not yet featured in CBD decisions, there is substantial momentum for further discussing the topic –particularly with a focus on balancing trade-offs. Unlike all other conventions, the CBD promotes cross-cutting measures with synergies between international environmental processes and provides technical guidance (e.g. as informal or technical documents).

3.2 United Nations Framework Convention on Climate Change

The objective of the United Nations Framework Convention on Climate Change (UNFCCC) is to prevent dangerous human interference with the climate system, including through the stabilization of greenhouse gas (GHG) concentrations in the atmosphere. It aims to reach a stabilized level of GHG within a timeframe which would allow the natural adaptation of ecosystems to climate change, thereby safeguarding food production systems and supporting the transition to sustainable low-carbon and climate-resilient development (UNFCCC 2014a).

Forests play a key role in the global efforts to mitigate and adapt to climate change. Forest ecosystems store carbon dioxide and deforestation and forest degradation result in the release of carbon emissions. Deforestation remains a main source of GHG emissions, especially in many developing countries where forest loss and forest degradation often lead to other negative impacts and an increased vulnerability to climate change and other environmental impacts. The land-use sector (agriculture, forestry and other land uses – AFOLU) accounts for approximately a quarter of net anthropogenic GHG emissions (IPCC 2014). From 2001 to 2010, deforestation contributed to 38% of all emissions from the AFOLU sector, the largest source after agriculture

(~50%). During the same period, reforestation and sustainable forest management were able to mitigate ~20% of the AFOLU emissions or 4% of total net GHG emissions (Tubiello et al. 2014).

At COP21 (2015), the Parties to the UNFCCC successfully negotiated the Paris Agreement, which represents the global framework for cooperative action of all Parties on climate change beyond 2020. The Paris Agreement entered into force in October 2016 and replaced the Kyoto Protocol which expires in 2020. The main objective of the Paris Agreement is to hold global temperatures

“well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C” (Paris Agreement⁴⁷, article 2).

To reach this ambitious objective, each party shall prepare, communicate and maintain successive nationally determined contributions (NDCs), highlighting each country’s actions / initiatives to support climate change adaptation and mitigation – including activities in the land-use sector that either reduce emissions or, as is the case with FLR, help to sequester significant amounts of CO₂. NDCs are to be communicated (at a minimum) every five years. With respect to climate finance, developed countries have committed to mobilizing \$100 billion a year in climate finance by 2020 from a variety of public and private sources. This finance will be channeled in significant parts through the Green Climate Fund whose operational procedures are continually being refined.

In terms of climate change mitigation and forested landscapes, the main approaches for the land-use sector are REDD+ and Nationally Appropriate Mitigation Actions (NAMAs). They are to be developed within the context of countries’ national targets, NDCs and long-term low emission development strategies.

Adaptation to climate change has not yet received the same attention as mitigation under the convention, but the Paris Agreement demonstrates that this is currently changing. The second *Synopsis Series*⁴⁸ of the Nairobi Work Programme generally promotes the potential of ecosystem-based adaptation and highlights the role of forests and biodiversity (UNFCCC 2016a). National adaptation plans (NAPs) seek to reduce vulnerability to climate change by building adaptive capacity and resilience, as well as to facilitate the mainstreaming of climate change adaptation into relevant new and existing policies, programs and activities (UNFCCC 2016b). Many NAPs recognize and prioritize the use of forest-related measures for adaptation. Improving forest quality and quantity through FLR can help improve ecosystem function and the provision of ecosystem services (e.g. coastal protection, the safeguarding of communities from extreme weather events through regulation of water flows and minimization of erosion, and the provision of diverse livelihood opportunities, among other benefits).

⁴⁷ The original text from the Paris Agreement and up-to-date information can be found at the following website: http://unfccc.int/paris_agreement/items/9485.php

⁴⁸ Related publications can be found at: http://unfccc.int/adaptation/knowledge_resources/publications/items/6997.php#NWP

REDD+

REDD+ is a policy approach that has been negotiated for 10 years and which is part of the Paris Agreement; the acronym stands for

"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".

Developing countries can receive results-based payments (RBPs) for measured, reported and verified emission reductions against a pre-defined reference (emission) level. For this they have to develop national REDD+ strategies and action plans, based on the country's context and national priorities. Although mitigation is only considered to be one of many benefits, large-scale FLR measures are eligible REDD+ activities (with a focus on the "sustainable management of forests" and "enhancement of forest carbon stocks"). With this, FLR is part of REDD+ and, if countries voluntarily account for such emission reductions, FLR becomes subject to the agreed rules and modalities.

REDD+ has mobilized substantial public finance – more than US\$8.7 billion between 2006 and 2014 (Norman & Nakhooda 2014). Most finance is dedicated to support countries in progressing their readiness efforts towards a full implementation at the national level. This includes pilot programs at jurisdictional / sub-national level under the Carbon Fund of the Forest Carbon Partnership Facility (FCPF) managed by the World Bank and bilateral agreements. This level of finance could be considered as landscape finance. In fact, several emission reduction programs currently under development have FLR components.

While the Carbon Fund is seen as an interim finance instrument, the Green Climate Fund (GCF) is expected to become the main vehicle for channeling REDD+ finance in the future. As such, REDD+ may provide significant public and private funding sources for the implementation and upscaling of FLR. In contrast to reducing emissions from further conversion of forests, FLR requires significant up-front investments and generates emission reductions much slower due to the asymmetry of carbon sequestration (*'fast out – slow in'*). Despite these differences, reducing deforestation as well as reversing it through reforestation are very challenging activities, which in some contexts can complement each other well.

The rules and modalities for REDD+ have been negotiated under the UNFCCC for nearly 10 years, starting in 2005 and concluding with the reference in the Paris Agreement. Table 3 presents key UNFCCC decisions on REDD+ of relevance for FLR.

Table 3: UNFCCC decisions on REDD+ with relevance for FLR

Document & Decision	FLR relevant content
FCCC/CP/2007/6/Add.1 (Decision 2/CP.13)	<ul style="list-style-type: none"> Decision & indicative guidance on approaches to stimulate actions that reduce emissions from forests, recognition of degradation which also leads to emission
FCCC/CP/2009/11/Add.1 (Decision 4/CP.15)	<ul style="list-style-type: none"> Guidance for Parties that seek to implement REDD+ (cf. decision 2/CP. 13)
FCCC/CP/2010/7/Add.1 (Decision 1/CP.16)	<ul style="list-style-type: none"> identification of five REDD+ activities (para 70) eligible for results-based payments, and with direct or indirect relevance for FLR Appendix I (2): guidance and safeguards for REDD+ that should be “promoted and supported”
FCCC/CP/2011/9/Add.2 (Decision 12/CP.17)	<ul style="list-style-type: none"> Guidance on systems for providing information on how the social and environmental safeguards lined out in decision 1/CP.16 are addressed and respected.
FCCC/CP/2013/10/Add.1 (Decision 12/CP.19)	<ul style="list-style-type: none"> timing and frequency of presentations of the summary of information on how safeguards are being addressed action on addressing the drivers of deforestation and forest degradation recognition of the importance to incentivize non-carbon benefits to ensure the long-term sustainability of implemented actions
FCCC/CP/2015/10/Add.1 (Decision 1/CP.21)	<ul style="list-style-type: none"> Adoption of the Paris Agreement which encourages parties to take action to implement and support activities related to REDD+ as a key mitigation option Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of GHGs, including forests
FCCC/CP/2015/10/Add.3 (Decision 16/CP.21)	<ul style="list-style-type: none"> Recognition of alternative policy approaches for the integral and sustainable management of forests as an alternative to results-based payments Development of national strategies or action plans for the implementation of the activities referred to in decision 1/CP.16, paragraph 70, in order to support the integral and sustainable management of forests
FCCC/CP/2015/10/Add.3 (Decision 17/CP.21)	<ul style="list-style-type: none"> Further guidance on ensuring transparency, consistency, comprehensiveness and effectiveness when informing on how all the safeguards referred to in decision 1/CP.16, appendix I, are being addressed and respected
FCCC/CP/2015/10/Add.3 (Decision 18/CP.21)	<ul style="list-style-type: none"> Methodological issues related to non-carbon benefits

For the purpose of this study, in particular the REDD+ safeguards are of importance. In order to ensure that REDD+ would be implemented by countries in a socially and environmentally responsible manner the Parties to the UNFCCC agreed at COP 10 on the Cancun safeguards⁴⁹ (Table 4). Their purpose is to ensure that REDD+ actions are in accordance with a set of principles that attempt to set minimum requirements, and lead to social and environmental benefits⁵⁰.

⁴⁹ FCCC/CP/2010/7/Add.1 (Decision 1/CP.16 appendix 1, paragraph 2)

⁵⁰ <https://www.clientearth.org/reports/a-guide-to-understanding-and-implementing-unfccc-redd+-safeguards.pdf>

Table 4: The REDD+ Cancun Safeguards

a	That actions complement or are consistent with the objectives of national forest programs and relevant international conventions and agreements.
b	Transparent and effective national forest governance structures, taking into account national legislation and sovereignty.
c	Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples.
d	The full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities, in the actions referred to in paragraphs 70 and 72 of this decision.
e	That actions are consistent with the conservation of natural forests and biological diversity, ensuring that the actions referred to in paragraph 70 of this decision are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits.
f	Actions to address the risks of reversals.
g	Actions to reduce displacement of emissions.

Source: FCCC/CP/2010/7/Add.1

The Green Climate Fund

The Green Climate Fund (GCF) was established at COP16 (2010) as the financing mechanism within the framework of the UNFCCC to support climate change mitigation⁵¹ and adaptation⁵² objectives. COP 16 also recognized the goal of developed countries to jointly mobilize USD 100 billion per year to meet the needs of developing countries, which is to be channeled through the GCF (UNEP Risø Centre 2013). As of July 2017, the GCF has committed \$2.2 billion to 43 projects, thereby increasing the resilience of up to 125 million people and avoiding emissions of 981 million tCO₂eq (GCF 2017a). Of the currently approved projects, 41% are related to climate change mitigation, 27% to adaptation and 32% are considered cross-cutting (i.e. with significant adaptation and mitigation outcomes; GCF 2017a). The GCF is governed by a Board and is accountable to, and functions under the guidance of, the UNFCCC.

The fund has two paradigm shift objectives which guide its investments, and an additional four main results areas have been identified for each adaptation and mitigation (Table 5). Of specific relevance for FLR are the results areas of reducing emissions from forests and land use (mitiga-

⁵¹ Specifically, the transition to low-carbon development pathways

⁵² Specifically, the transition to climate-resilient development pathways

tion), and increasing resilience of ecosystems and ecosystem services (adaptation), though substantial synergies also exist with the other adaptation results areas (e.g. local livelihoods). In addition to the paradigm shift objectives and associated results areas, the Fund has identified five cross-cutting investment priorities which will deliver major mitigation and adaptation benefits across various result areas (GCF 2017a):

- Transforming energy generation and access
- Creating climate-compatible cities
- Encouraging low-emission and climate-resilient agriculture
- Scaling up finance for forests and climate change
- Enhancing resilience in Small Island Developing States (SIDS)

Table 5: Overview of the GCF paradigm shift objectives and main result areas for climate change mitigation and adaptation investments

	Mitigation	Adaptation
Paradigm Shift Objective	<i>Shift to low-emission development pathways</i>	<i>Increased climate-resilient sustainable development</i>
Fund-level Impacts	<i>Reduced emissions from...</i>	<i>Increased resilience of...</i>
	▪ Forests and land use	▪ Ecosystems and ecosystem services
	▪ Energy generation and access	▪ Health, food and water security
	▪ Transport	▪ Livelihoods of people and communities
	▪ Buildings, cities, industries and appliances	▪ Infrastructure and built environment

Source: GCF/B.07/11

In terms of REDD+, the Decision GCF/B14/03 provides the general framework to support the operationalization of results-based payments for REDD+, based on the Warsaw Framework for REDD+. At the 17th GCF Board Meeting in July 2017, further guidance⁵³ was provided by the GCF on modalities to access finance for REDD+ within the fund, explicitly describing the extent of GCF support for projects/programs within the three phases of REDD+⁵⁴. This demonstrates the fund’s intention to cooperate and coordinate with diverse financial institutions (Figure 1Figure 7), and to provide complementary finance for all three phases of REDD+. Results-based payments also received attention at the 17th Board Meeting, where guidance was provided to support the piloting of programs involving results-based payments for REDD+⁵⁵. The initial GCF financing framework was more oriented towards up-front payments, and the aforementioned document works towards clarifying the fund’s mechanism for providing results-based payments. Related to social and environmental safeguards, the decision goes on to provide the framework for compliance with GCF’s interim IFC safeguards as well as the Cancun Safeguards, and again describes the GCF’s information disclosure policy for reporting on safeguards⁵⁶.

⁵³ GCF/B.17/16

⁵⁴ The three phases of REDD+ include: i) preparation phase, ii) implementation phase, and iii) results-based payments.

⁵⁵ GCF/B.17/13

⁵⁶ See GCF/B.12/35 for more information on the fund’s disclosure policy for environmental and social safeguard reporting

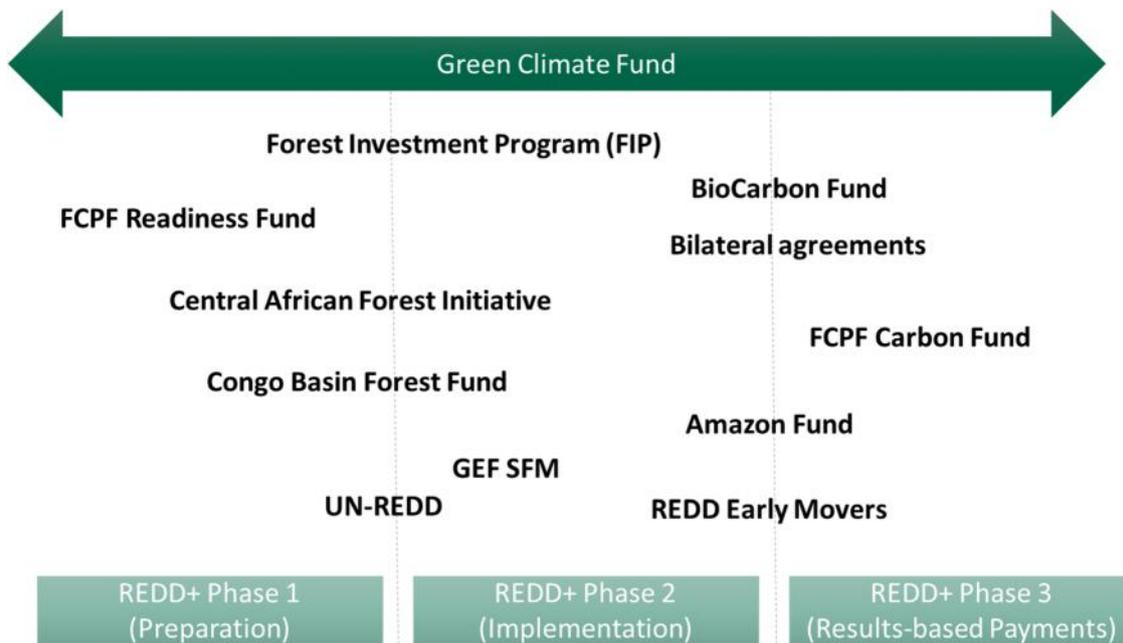


Figure 7. Overview of finance for REDD+, including GCF support for the 3 phases of REDD+

Source: GCF/B.17/16

Currently, additional guidance and inputs are being developed for the board to address potential gaps or uncertainties relevant within the context of the GCF, including topics related to the scale of intervention, access modalities, forest reference emission levels, and the risk of double financing etc.⁵⁷ In the meantime, the GCF approved its first REDD+ project in 2016, committing \$41.2 million to supporting the implementation of Ecuador’s REDD+ action plan (GCF 2017b). Restoration plays an important role in this proposal, demonstrating the strong synergies between REDD+ and FLR activities and financing. The aforementioned advances in the GCF’s financing architecture related to REDD+ demonstrate the importance of the GCF’s support for all three phases of REDD+, and the potential to use GCF finance to further leverage other funding sources and to scale up REDD+ activities, including FLR.

⁵⁷ See Decision GCF/B14/03 for additional information

In a nutshell: FLR under the UNFCCC

FLR is a relevant approach for both climate change mitigation and adaptation. If countries effectively implemented their FLR pledges made under the Bonn Challenge, related initiatives or the New York Declaration on Forests (NYDF), this could meaningfully contribute to the objectives of the Paris Agreement while also enhancing the resilience of local populations against the impacts of climate change. According to the Bonn Challenge homepage, FLR could sequester more than 15 GtCO₂ if the 151 million ha pledged so far were to be successfully implemented.

FLR has strong links to REDD+ as well as to other mitigation and adaptation approaches; and the Green Climate Fund (GCF) will be a key source of finance for REDD+ and FLR programs. Although the term has not yet been explicitly mentioned, FLR activities are described with mitigation-focused UNFCCC terminology (e.g. ‘enhancing carbon stocks’, ‘sustainable management of forests’, ‘afforestation / reforestation’). Through these links, different climate finance sources can be used to support the implementation of FLR activities, e.g. as part of REDD+ pilot programs under the FCPF Carbon Fund or the GCF. Given the very ambitious objective of the Paris Agreement *“to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century”* (article 4.1), these links are expected to be further strengthened in the course of the post-Paris negotiations.

The agreed rules and modalities for REDD+ illustrate how specific an internationally negotiated framework can become. It took nearly a decade of negotiations for Parties to agree on the Warsaw Framework for REDD+, including social and environmental safeguards and safeguard information systems. Countries applying for results-based payments must adhere to the rules, but the agreed modalities are not sufficient to rule out all environmental and social risks. Guidance remains broad and definitions have not been agreed; attempts by some Parties to provide voluntary implementation guidance on biodiversity-relevant aspects of REDD+ under the CBD (safeguards and non-carbon benefits) have not been successful. The universally valid rules for REDD+ fully respect the sovereignty of implementing countries; it is not only up to the countries to decide on the extent to which they want to include FLR activities but also in the realm of their power to further specify definitions and mechanisms to reduce risks.

Countries increasingly include FLR in their NDCs, which after COP 21 in Paris are subject to revision and gradually raising ambition. At the international policy level, FLR has become one of the key topics with substantial political momentum. With an increasing number of countries associating themselves with relevant voluntary initiatives it can be expected that further countries with FLR commitments will explicitly mention FLR in their NDCs and link it to domestic mitigation and adaptation targets.

3.3 United Nations Convention on Combatting Desertification

The United Nations Convention to Combat Desertification (UNCCD) was established to reverse global land degradation and desertification trends. Land degradation is defined by the UNCCD as the:

“reduction or loss of the biological or economic productivity and complexity of rain-fed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes arising from human activities”⁵⁸.

The convention focuses primarily on drylands, including arid, semi-arid and dry sub-humid areas, which are susceptible to land degradation and desertification. Within the UNCCD’s 10-year strategy (2008–2018), the parties to the convention identified their shared objective to:

“forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability” (UNCCD Secretariat 2013).

Six thematic priorities have been established by the UNCCD, with apparent synergies and overlaps with FLR, including biodiversity, climate change, food security, forests, gender and water scarcity and drought. Concerning climate change, the Parties recognize the interrelated nature of drought and land degradation and desertification (LDD), and support the adoption of measures for climate change mitigation and adaptation which contribute to the UNCCD’s objectives. Deforestation and forest degradation are major causes of land degradation, desertification and biodiversity loss; therefore, the UNCCD decisions mention REDD+ and stress the need for policies and investments in SLM and practices to restore degraded land.

Forests and trees are considered as crucial for preventing LDD, and therefore vital for rural livelihoods and food security. The UNCCD supports approaches to maintain or restore healthy forests and tree cover to prevent LDD and to enhance other ecosystem services. It also promotes SLM practices and agroforestry as means of strengthening food security. The term ‘*forest and landscape restoration*’ is used within the convention’s decisions, but without a definition, thereby allowing for flexible interpretations of forest in the context of national circumstances and for the design and implementation of approaches which safeguard and enhance biodiversity based on the national context. The UNCCD often stresses the role of SLM practices in supporting the implementation of the convention and preventing LDD. SLM practices

“reduce soil and land degradation, whether it is caused by physical (winds, runoffs, soil sealing, etc.) or chemical (nutrient leaching, loss of organic matter, etc.) factors” (UNCCD 2012a).

SLM focuses on the restoration of degraded or cleared lands, and can be used to restore or enhance ecosystem functions and increase the resilience of ecosystems to physical erosion. The term ‘sustainable land-use management’ was first introduced at COP 4⁵⁹, where references to forested lands also became more explicitly addressed within the convention. It was at this COP

⁵⁸ United Nations General Assembly A/AC.241/27

⁵⁹ ICCD/COP(4)/11/Add.1

where strategic areas for action at all levels, in accordance with national plans and priorities, were declared to include various measures including SLM, sustainable use and management of rangelands, development of sustainable agriculture and ranching production systems, implementation of A/R programs and intensification of soil conservation programs, among others⁶⁰. The UNCCD explicitly urged donors to support reforestation and forest conservation and sustainable agriculture to combat desertification caused by drought as well as deforestation.

At COP 7 (2005), the term SLM was frequently referenced within the context of the conventions. Specifically, the UNCCD further invited parties to integrate SLM and sustainable actions within development strategies, and to continue to promote the implementation of such measures⁶¹. It further called on the secretariat to continue to build on synergies between the three Rio Conventions as well as other complementary initiatives such as the UNFF / Collaborative Partnership on Forests. By COP 8 (2007), a ten-year strategic plan was developed to support the implementation of the UNCCD, where SLM was mainstreamed into various targets and plans to reduce deforestation, land degradation and desertification⁶².

In 2013, the Rio+20 outcome on desertification, land degradation and drought (*paragraphs 205–209*) was formulated as an objective that was later also included in the Sustainable Development Goals (SDGs) (target 15.3, cf. section 3.1.5)⁶³:

“By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation-neutral world”.

Through this decision, parties agreed to: i) strive for a land degradation neutral (LDN) world; ii) reaffirm taking coordinated actions (international, regional and national); and iii) monitor land degradation (globally) and restore degraded arid, semi-arid and dry sub-humid lands. Supporting this objective, at UNCCD COP 11 (2013), an Intergovernmental Working Group (IWG) was established to support the LDN target, defined as

“a state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems”⁶⁴.

In addition to defining LDN, the IWG was further tasked with: a) developing options and identifying activities relating to arid, semi-arid and dry, sub-humid areas that Parties might consider should they strive to achieve land degradation neutrality; and b) advising the convention on the implications of its current and future strategy, programs and the resource requirements (UNCCD 2015). Since 2016, the UNCCD has established the LDN Target Setting Programme, which sup-

⁶⁰ ICCD/COP(4)/11/Add.1

⁶¹ ICCD/COP(7)/16/Add.1

⁶² ICCD/COP(8)/16/Add.1

⁶³ United Nations General Assembly A/CONF.216/L.1

⁶⁴ ICCD/COP(12)/20/Add.1

ports interested countries in the LDN target-setting process to define national baselines, voluntary targets and associated measures as well as to strengthen the implementation of the UNCCD National Action Program and achieve LDN by 2030⁶⁵.

At the same time, SLM continues to be promoted as an

“effective vehicle for mobilizing additional sustainable financing and responsible and sustainable investments that address DLDD issues.”⁶⁶

Parties are encouraged to develop and implement rehabilitation, restoration and reclamation measures in degraded lands. With this, SLM remains a core element of the convention and also represents an important approach to contributing to the achievement of LDN targets.

In a nutshell: FLR under the UNCCD

As with the other conventions, FLR is highly relevant for the prime objectives of the UNCCD but so far referenced using different terminology – in particular SLM which is a core element of the convention. Guidance is provided on relevant topics related to SLM, as well on topics related to the convention’s thematic priorities. With this, the UNCCD provides a flexible framework with substantial thematic overlap with FLR. Country targets can be supported through the implementation of FLR activities, as these are generally well-aligned with UNCCD thematic priorities and initiatives, such as countries’ LDN targets.

While LDD has developed substantial political momentum in recent years, major challenges remain the mobilization of financial resources and supporting countries in pursuing their national LDN targets. To date, the UNCCD cannot garner the same level of attention or access equivalent underlying resources as the UNFCCC, despite the apparent links between desertification and climate change. Accessing finance is a major issue in all environmental processes and is usually driven by initiatives such as the ‘Economics of Land Degradation (ELD) network’. There remains substantial potential to build on the aforementioned synergies with FLR, which is mobilizing commitments and leveraging both public and private finance for the restoration of forested landscapes.

3.4 United Nations Forum on Forests

The United Nations Forum on Forests (UNFF) emerged as a discussion forum out of the United Nations Conference on Environment and Development (Rio de Janeiro 1992), because it was not possible to agree on a global forest convention – despite the recognized importance of this for addressing environmental problems and fostering economic development. Instead, the governments decided to treat forests under the processes introduced above alongside their respective mandates.

⁶⁵ Refer to the following link for additional information: <http://www2.unccd.int/actions/supporting-countries-set-land-degradation-neutrality-targets>

⁶⁶ ICCD/COP(12)/20/Add.1

The purpose of the UNFF is to promote sustainable development objectives within forested areas of the world, aligned with the relevant objectives from the Rio Conventions, Forest Principles, Agenda 21 and other international processes. It was established in October 2000 by the Economic and Social Council (ECOSOC) of the United Nations, and has four global objectives⁶⁷:

1. Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation.
2. Enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest dependent people.
3. Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests.
4. Reverse the decline in official development assistance for sustainable forest management and mobilize significantly increased new and additional financial resources from all sources for the implementation of sustainable forest management.

The UNFF has developed various partnerships, plans and programs to support the implementation of actions to promote their objectives and goals, including through the Collaborative Partnership on Forests (CPF)⁶⁸. After a thorough evaluation, the UNFF agreed in 2016 on its '*UN Strategic Plan for Forests 2017 – 2030*' which aims to be a global framework for actions at different levels for the sustainable management of forests and trees, and to halt forest degradation and deforestation (UNFF 2017a). The plan elaborates six voluntary and universal '*Global Forest Goals*' and associated targets. The landmark target set is the "*increase of forests worldwide by 120 million hectares by 2030*"⁶⁹. The Global Forest Goals and several specific targets are of direct relevance for FLR; they are summarized in Figure 8.

⁶⁷ ECOSOC Resolution 2006/49

⁶⁸ The Collaborative Partnership on Forests is a voluntary and informal arrangement among 14 international organizations (UNFF, CBD, UNFCCC, UNCCD, CIFOR, FAO, GEF, ITTO, IUCN, IUFRO, UNDP, UNEP, ICRAF and the World Bank).

⁶⁹ http://www.un.org/esa/forests/wp-content/uploads/2016/12/UNSPF_AdvUnedited.pdf

1. Reverse the loss of forest cover worldwide through SFM, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation and contribute to the global effort of addressing climate change
2. Enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest dependent people.
3. Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests.
4. Mobilize significantly increased, new and additional financial resources from all sources for the implementation of sustainable forest management and strengthen scientific and technical cooperation and partnerships.
5. Promote governance frameworks to implement sustainable forest management, including through the UN Forest Instrument, and enhance the contribution of forests to the 2030 Agenda.
6. Enhance cooperation, coordination, coherence and synergies on forest-related issues at all levels, including within the UN System and across Collaborative Partnership on Forests member organizations, as well as across sectors and relevant stakeholders.

Figure 8: Global Forest Goals of the UN Strategic Plan for Forests 2017 – 2030

Sources: United Nations Strategic Plan for Forests 2017-2030 (UNFF 2017b)

In order to support the aforementioned UN Strategic Plan for Forests, the forum developed a quadrennial program for the period from 2017 to 2020. It was designed to support the thematic and operational priorities of the strategic plan by identifying the specific actions to be implemented in this period, as well as the necessary resources.

In a nutshell: FLR under the UNFF

The UNFF has neither the same legal status as the afore-described conventions nor has it received similar attention. Attempts to develop legally-binding instruments for forests at the international level have not been successful. With the increasing success of the UNFCCC and the CBD in deciding on relevant instruments and forest-related objectives (e.g. REDD+, CBD Aichi targets), and in light of the increasing number of meetings for such conventions, the added value of UNFF has been increasingly questioned. The decreasing importance of UNFF is also reflected in the number of people participating in its official meetings, which is also declining.

After a review process in 2015, the proponents of the forum agreed on a strategic plan including Global Forest Goals, and a work program to support implementation. The objectives summarize and confirm in a comprehensive manner what has been agreed upon in other processes and initiatives. The goals include many aspects related to FLR as conceptualized by the Bonn Challenge. Given its status, the lack of financial resources – the secretariat has only a small budget and no access to financing mechanisms such as the Global Environment Facility or the green Climate Fund – and the dwindling attention paid to UNFF processes, it remains to be seen in how far UNFF will be able to reinvent itself in between international legal processes and successful voluntary initiatives.

3.5 United Nations Sustainable Development Goals

The United Nations Agenda for Sustainable Development until the year 2030 – known as “*Transforming our world: the 2030 Agenda for sustainable development*” – was adopted in September 2015 and provides a comprehensive set of universal goals (Table 6) that aim at balancing social, environmental and economic development⁷⁰. At the core of the approach are the concepts of people, the planet, prosperity, peace and partnership. The agenda includes 17 Sustainable Development Goals (SDGs) and 169 targets which promote sustainable development around the world as part of the post-2015 development agenda. The SDGs are closely aligned with the different objectives of the three Rio Conventions and represent a follow up to the millennium development goals (MDGs) to continue to support worldwide progress towards sustainable development.

Though only a few of the goals and targets are directly linked to FLR, successful implementation of FLR can significantly contribute to facilitating progress on others. In terms of FLR, the SDGs of most direct relevance are SDG 2 ‘Zero Hunger’, SDG 13 ‘Climate Action’ and SDG 15 ‘Life on Land’. In terms of other SDGs, FLR contributes in particular to the following: Given the focus on rural investments, sustainable business models for FLR and the inclusion of the private sector, successful implementation at scale will also contribute to the overarching goal of SDG 1 – poverty alleviation. The focus on rural areas will help to reduce the inequalities within countries (SDG 10) and help to build green economies, i.e. by promoting sustainable economic growth and developing employment (SDG 8). Sustainably produced commodities, e.g. those produced

⁷⁰ United Nations General Assembly A/RES/70/1; Refer to the following website for additional information: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

through developing deforestation-free supply chains and different FLR activities, are a prerequisite to transition towards sustainable consumption (SDG 12).

Table 6. Overview of the seventeen sustainable development goals (SDGs)

#	Goal	Description
1	No poverty	▪ End poverty in all of its forms everywhere
2	Zero hunger	▪ End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3	Good health and well-being	▪ Ensure healthy lives and promote well-being for all at all ages
4	Quality education	▪ Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5	Gender equality	▪ Achieve gender equality and empower all women and girls
6	Clean water and sanitation	▪ Ensure availability and sustainable management of water and sanitation for all
7	Affordable and clean energy	▪ Ensure access to affordable, reliable, sustainable and modern energy for all
8	Decent work and economic growth	▪ Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9	Industry innovation and infrastructure	▪ Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10	Reduced inequalities	▪ Reduce inequality within and among countries
11	Sustainable cities and communities	▪ Make cities and human settlements inclusive, safe, resilient and sustainable
12	Responsible consumption and production	▪ Ensure sustainable consumption and production patterns
13	Climate action	▪ Take urgent action to combat climate change and its impacts
14	Life below water	▪ Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15	Life on land	▪ Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16	Peace, justice and strong institutions	▪ Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17	Partnerships for the goal	▪ Strengthen the means of implementation and revitalize the global partnership for sustainable development

Source: United Nations General Assembly A/RES/70/1

SDG 2 aims to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture” – a broad understanding of FLR includes agroforestry and silvo-pastoral systems which can help to promote sustainable agriculture, improved food security and nutrition⁷¹.

⁷¹ Ibid

Specifically, FLR can support the target related to doubling the agricultural productivity and incomes of small-scale food producers (target 2.3), and the target to ensure sustainable food production systems and implement resilient agricultural practices that: increase productivity and production; help maintain ecosystems and strengthen capacities for adaptation to climate change, extreme weather, drought, flooding and other disasters; and progressively improve land and soil quality (target 2.4).

Regarding agricultural lands, mosaic restoration can improve productivity and provide numerous co-benefits. For instance, agroforestry systems can lead to improved crop productivity, improved water retention, and reduced erosion and soil degradation when appropriately designed and implemented. FLR activities on fallow and/or degraded agricultural lands can restore the productivity of soils for future agricultural purposes. The concept of the landscape approach helps ensure that diverse land uses are considered in a larger context and helps to address trade-offs. An important common practice for implementing FLR measures is an initial analysis of FLR opportunities to ensure that they are appropriate for the specific context, and that they do not negatively impact food security by competing for productive agricultural land.

SDG 13 on Climate Action has the overarching objective to “*take urgent action to combat climate change and its impacts*”, including mitigating greenhouse gases and building resilience and improving adaptive capacities⁷². In particular, relevant targets include: strengthening resilience to, and adaptive capacity for responding to, climate-related hazards and natural disasters in all countries (target 13.1); integrating climate change measures into national policies, strategies and planning, and improving education (target 13.2); and awareness-raising and human and institutional capacity relating to climate change mitigation, adaptation, impact reduction and early warning (target 13.3).

Given that FLR will enhance carbon stocks, thus reducing GHG emissions in the atmosphere and supporting climate change mitigation, it has strong links to SDG 13. Furthermore, FLR activities on degraded lands may help to increase the resilience of ecosystems and the rural populations through the provision of alternative income opportunities, reducing the risk of erosion or soil degradation, and providing other social, environmental and economic benefits which can strengthen the adaptive capacities of communities. FLR can be implemented to address climate change and abide by commitments made under the UNFCCC.

SDG 15 (Life on Land) aims to “*protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss*”⁷³. Several targets have direct relevance for FLR⁷⁴:

- By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements (target 15.1)

⁷² Ibid

⁷³ Ibid

⁷⁴ Ibid

- By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally (target 15.2)
- By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world (target 15.3)
- Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species (target 15.5)

Regarding finance, another target is to⁷⁵

“mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation” (target 15.b).

The implementation of FLR is among the most important and concrete approaches for making progress towards several SDGs. Initiatives such as the Bonn Challenge and the related regional AFR100 and 20x20 Initiative are important fora for supporting the development of national and FLR commitments, and for mobilizing financial support for their implementation.

3.6 FLR in global initiatives

FLR as a comprehensive approach for sustainable land-use management has gained international recognition and political momentum with the emergence of voluntary initiatives such as the Bonn Challenge, the 20x20 initiative for Latin America and the Caribbean and the AFR100 initiative for Africa. These initiatives, along with the New York Declaration on Forests (NYDF) from 2014, have become an important complementary governance approach to the formal international negotiations.

3.6.1 The Bonn Challenge

The Bonn Challenge⁷⁶ is not a new formal negotiation process. It can be characterized as an informal, decentralized high-level policy forum for like-minded countries that see FLR as a key opportunity for sustainable development (Pistorius & Freiberg 2014). It promotes the translation of the internationally agreed policy objectives into practice, in particular the CBD Aichi target 15, the LDN target, REDD+ and the SDGs. The target agreed upon by participants at the first minister roundtable in 2011 is to restore 150 million ha by 2020. As of June 2017, 44 commitments had been made pledging to restore more than 151 million ha by 2020, corresponding to a mitigation potential of more than 15 GtCO₂ (Bonn Challenge 2017). Aware of the vast investment needs, and in line with decisions of the described negotiation processes, the Bonn Challenge explicitly encourages private sector participation and contributions.

⁷⁵ Ibid

⁷⁶ <http://www.bonnchallenge.org/>

In 2016, a shared understanding of FLR and its principles was formulated by the organizers of the Bonn Challenge (www.bonnchallenge.org):

“Forest landscape restoration (FLR) is an approach to regaining ecological integrity and improving human wellbeing by facilitating the transition from degraded lands towards restored multi-functional landscapes. FLR enriches more narrowly defined approaches to ecological restoration, afforestation and reforestation by focusing on a mosaic of potential land uses and restoration interventions, with an aim of bringing multiple benefits to people and nature.

A forest landscape is any area that once grew or could benefit from growing trees and woody plants (such as bamboos). Such landscapes include agricultural areas where on-farm trees could improve productivity, for example, or coastal areas where mangroves play a role in natural defense and service production.”

Bonn Challenge principles for FLR

Successful FLR is forward-looking and dynamic, focusing on strengthening the resilience of landscapes and creating future options to adjust and further optimize ecosystem goods and services as societal needs change or new challenges arise. It integrates a number of guiding principles, including:

- Focus on landscapes – [...] this typically entails balancing a mosaic of inter-dependent land uses across the landscape, such as protected areas, ecological corridors, regenerating forests, agroforestry systems, agriculture, well-managed plantations and riparian strips to protect waterways.
- Restore the functionality of the landscape, making it better able to provide a rich habitat, prevent erosion and flooding and withstand the impacts of climate change and other disturbances. This can be done in many ways, one of which is to restore the landscape to the original vegetation, but other strategies may also be used.
- Allow for multiple benefits – Aim to generate a suite of ecosystem goods and services by intelligently and appropriately increasing tree cover across the landscape [...]
- Leverage suite of strategies – Consider a wide range of eligible technical strategies for restoring trees on the landscape, ranging from natural regeneration to tree planting.
- Involve stakeholders – Actively engage local stakeholders in decisions regarding restoration goals, implementation methods and trade-offs [...]
- Tailor to local conditions – Adapt restoration strategies to fit local social, economic and ecological contexts; there is no “one size fits all”.
- Avoid further reduction of natural forest cover – Address ongoing loss and conversion of primary and secondary natural forest.
- Adaptively manage – Be prepared to adjust the restoration strategy over time as environmental conditions, human knowledge and societal values change. Leverage continuous monitoring and learning and make adjustments as the restoration process progresses.

The purpose of this action-oriented initiative is to visibly promote leadership and unconditional implementation of large-scale activities at the landscape level. It seeks to achieve this by connecting existing networks at international and regional levels that are composed of public and private sector actors dedicated to contributing to the objectives agreed in different UN contexts. Since the second minister round table in 2015, a number of regional Bonn Challenge meetings has been facilitated (by El Salvador, Ruanda, Panama, Indonesia, Honduras and Malawi). Further Bonn Challenge meetings have been announced by Guatemala and Brazil. Furthermore, it has

sparked regional cooperation, e.g. the Initiative 20x20 which aims to restore 20 million ha of forest in Latin America and the Caribbean by 2020, and the AFR100 which aims to restore 100 million ha of deforested and degraded land in Africa by 2030. The Bonn Challenge receives additional support from a number of international organizations such as the FAO FLR Mechanism and CBD Forest Ecosystem Restoration Initiative.

The voluntary pledges and the underlying commitments are based on strong political interest in the issue and the will to counteract unsustainable land-use practices. They are driven by recognition of the multiple economic, environmental and social benefits of restoration, including contributions to mitigating and adapting to climate change, enhancing biodiversity conservation and promoting sustainable development. Equally important to the ambitious pledges by the countries themselves is the achievement of the Bonn Challenge in bringing the topic of FLR onto the political agenda of various processes. It has since been mentioned at various high-level political meetings such as the CBD COP 11 in India, as well as the Rio Summit in 2012 where the government of Brazil provided the opportunity for civil society to “*vote for the future we want*”.

3.6.2 The New York Declaration on Forests

The NYDF is a voluntary and legally non-binding declaration that emerged from the United Nations Secretary-General’s Climate Summit in New York in 2014. The NYDF calls for action to effectively curb global deforestation, to foster the restoration of degraded forest landscapes and to develop deforestation-free supply chains. It is complementary to the objectives of the three Rio Conventions, as well as the UNFF, the SDGs, and Bonn Challenge. Extending the Bonn Challenge, its target is to restore 350 million ha by the year 2030. The NYDF is broader in scope as over 190 actors have signed the declaration, including 37 governments, 20 sub-national governments, 53 private sector companies, 63 civil society organizations and 16 groups representing indigenous communities (NYDF 2017).

To support the NYDF and other UN forest-related objectives, ten main forest-related goals have been identified by NYDF (Table 7). These goals and their associated targets provide a voluntary framework to support the design, implementation, and improved cooperation of actions to help achieve the goals of the various UN conventions related to forests. Goals range from halving the rate of natural forest loss, eliminating deforestation from agricultural supply chains, supporting forest restoration, strengthening forest governance and helping to mobilize finance for FLR and REDD+, among others. If these goals are achieved, it could lead to emission reductions within the range of 4.5–8.8 billion tCO₂eq per year (NYDF 2017).

Table 7. Goals of the New York Declaration on Forests

#	Goal	Description
1	Stop forest loss	At least halve the rate of loss of natural forests globally by 2020 and strive to end natural forest loss by 2030
2	Eliminate deforestation from agricultural commodities	Support and help meet the private sector goal of eliminating deforestation from the production of agricultural commodities such as palm oil, soy, paper and beef products by no later than 2020, recognizing that many companies have even more ambitious targets
3	Reduce non-agricultural deforestation	Significantly reduce deforestation driven by other economic sectors by 2020
4	Support alternatives for basic needs	Support alternatives to deforestation driven by basic needs (such as subsistence farming and reliance on fuel wood for energy) in ways that alleviate poverty and promote sustainable and equitable development
5	Restore forests	Restore 150 hectares of degraded landscapes and forest lands by 2020 and significantly increase the rate of global restoration thereafter, which would restore at least an additional 200 million ha by 2030
6	Anchor forests in the SDGs	Include ambitious, quantitative forest conservation and restoration targets for 2030 in the post-2015 global development framework as part of new international sustainable development goals
7	Reduce emissions in accordance with global climate agreement	Agree in 2015 to reduce emissions from deforestation and forest degradation as part of a post-2020 global climate agreement, in accordance with internationally agreed rules and consistent with the goal of not exceeding 2°C warming
8	Provide finance for forest action	Provide support for the development and implementation of strategies to reduce forest emissions
9	Reward results achieved by countries and jurisdictions	Reward countries and jurisdictions that, by taking action, reduce forest emissions – particularly through public policies to scale up payments for verified emissions reductions and private-sector sourcing of commodities
10	Strengthen governance and empower communities	Strengthen forest governance, transparency, and the rule of law, while also empowering communities and recognizing the rights of indigenous peoples, especially those pertaining to their lands and resources

Source: NYDF 2017

4 EXPERT VIEWS ON FLR, PRIORITIES AND TRADE-OFFS

4.1 Methodology

Although during recent years relevant approaches and guidance have been developed that can be used for FLR, there are still largely differing views on what qualifies or should qualify as FLR, where and how priorities should be set (and how), and how potential trade-offs can be balanced in practice. To illustrate these different opinions a short online survey was developed and administered to more than 50 key FLR experts from diverse institutions. They work in different contexts and institutions: governments, development cooperation, international organizations, partnerships and networks, foundations, NGOs, universities, and research institutions, as well as private practitioners. Approached as independent experts, they were granted anonymity to ensure open and critical responses. Furthermore, they were encouraged to distinguish their expert opinion from the official position of the institution that they represent. To allow for the inclusion of existing official positions, the opportunity was provided to send links and additional information.

The structured explorative questionnaire was administered online to allow the survey to reach a broad group of participants from various countries. In total, 19 experts responded to the survey. Questionnaire responses were transferred into an excel spreadsheet where they were further analyzed. Based on the responses, key messages were summarized and broken down into key themes, demonstrating the common and differing views on FLR. The main findings are presented in the following sub-sections.

4.2 Results of the expert survey

Do you see risks for biodiversity emerging from the country initiatives for implementing FLR?

When asked about potential risks for biodiversity, many respondents gave differentiated responses. They considered that there are varying degrees of risks that could emerge from country initiatives for FLR. Major risks identified were related to mistaking restoration as classical A/R activities in areas which are not degraded. In this regard, concern was voiced that monoculture plantations will be established which can have negative impacts on biodiversity. One respondent noted that in some countries:

“there are issues related to the species used for restoration activities, with interest in using commercially marketable species rather than native species”.

However, the application of such approaches, as pointed out by several other respondents, is strongly linked to governments’ understanding of restoration, the condition of the degraded sites to be restored and available resources. Furthermore, it is dependent on the types of restoration activities promoted and approved by governments.

The important role of diverse yet sustainably implemented land-use activities within the framework of FLR – including conservation, silviculture, forest plantations and agroforestry – was mentioned by various survey respondents. The landscape approach is considered useful for harmonizing the different land uses and balancing these, provided it is based on effective land-use

planning for FLR. Land-use planning was identified by numerous respondents as a key factor for successful implementation. The same experts further emphasized that if FLR is not “*carefully planned*”, risks for biodiversity increase. One respondent in particular stated:

“The fact that countries choose to expand their forest area through FLR does not guarantee that a proper process of area identification is conducted. In many countries, FLR activities are in principle afforestation measures which in fact constitute a land-use change from one land category to forest land, which generally would require a proper impact assessment prior to planting. If not executed correctly this could compromise existing biodiversity in a given area”.

Another respondent noted that in practice this has not yet been a problem in countries where they are working, as much emphasis is placed on the implementation of appropriate planning processes. Moreover, they suggested that tools such as the process-oriented ROAM would provide:

“a relatively effective vehicle to overcome these challenges”.

While some respondents were extremely critical of and concerned about plantations, others highlighted their role within the land-use sector and the landscape approach. In particular, it was argued that plantations:

“may be very appropriate on areas that actually are degraded, and have potential to improve soils, biodiversity and of course livelihoods under such conditions.”

The respondents generally agreed with other experts that a landscape approach requires detailed and holistic planning, including local consultations, and negotiated trade-offs and sustained cooperation among different land-use activities and sectors.

Concerning the relationship between FLR and biodiversity risks, some respondents acknowledged that there are risks but emphasized the shared global understanding forged by new global initiatives, particularly the Bonn Challenge. One respondent mentioned that:

“all governments participating in and supporting the Bonn Challenge agree on its combination [of objectives] between ‘biodiversity’ and ‘climate’”.

Several experts emphasized that within these initiatives the participants have a shared understanding of the core objectives and goals of the Bonn Challenge, reducing the risks for biodiversity.

Some respondents stated that they do not see any risk for biodiversity – albeit for various reasons. The initial state of degradation was mentioned as an important characteristic of FLR activities which prevents biodiversity risks, with one respondent specifically stating that there are:

“no natural or semi-natural habitats at high risk of conversion to plantations or agroforestry [systems]”, and that “most of the targeted areas in countries which have pledged restoration action are highly degraded”.

Another respondent further expanded on this idea and stated that they:

“actually see biodiversity benefiting from the implementation of FLR” as “...FLR allows the restoration of ecological services which contributes to biodiversity”.

In summary, these respondents argued that since activities within FLR pledges are focused on degraded lands it actually represents an opportunity to enhance biodiversity, and that risks for biodiversity are minimal due to the focus on degraded lands.

Finally, one expert highlighted the importance of fully understanding the concept of FLR, noting that biodiversity is a concept which is fully integrated into FLR but assumes a mutual understanding of what is or is not considered FLR:

“If biodiversity is undermined by a restoration intervention, then it is not FLR”.

The same expert also stressed the importance of fully understanding the concept of FLR by further stating:

“If country initiatives are implementing restoration interventions that do not qualify as FLR then there could be negative impacts on biodiversity.”

At which policy level (international – national – sub-national) should key terms for FLR be specified?

The majority of respondents highlighted the importance of FLR to be *“understood and acted on at all levels”*, however, there was substantial variation in their views about the extent to which and by whom related FLR terms should be established. A small group of respondents highlighted the need for further clarification of key terms, especially at the international level. One respondent noted:

“Key terms for FLR should be specified at the international level as this would be a point of reference for many countries and allow for a broader understanding to which countries could align. This feeds down to the sub-national level.”

Another expert stated that FLR should be defined at all policy levels, with the international level framing the FLR concept in such a way that it does not create risks for FLR implementation (including environmental and social safeguards). The respondent called for further clarification on key terms at the international level, to help guide the implementation of FLR at national and sub-national levels. Another respondent argued that definitions should be specified at the national level, but that general principles for FLR should be developed and agreed upon at the international level, specifically stating that:

“these principles will allow countries to know whether their restoration meets international initiatives’ standards, clarifying what counts and what does not.”

However, most respondents questioned the need to further define the concept beyond defining the key terms used in the global policy context (i.e. international level). Many respondents highlighted that FLR has received *“ample attention”* at the international level, whereas there is a greater necessity to shift the focus of discussions and efforts to the national and sub-national levels. For instance, one respondent stated that

“attempts to define FLR beyond the existing description and principles would not be helpful as it is extremely context specific.”

While there was a general consensus that FLR should be understood and acknowledged at all levels, the majority of respondents stated the importance of allowing national and sub-national

interpretations of FLR to be developed, which are able to take into account the specific context of each region and landscape.

The perceived importance of maintaining national sovereignty and providing the flexibility to develop increasingly specific terms and understandings at national and sub-national levels was reflected in many responses. Landscape-level approaches were identified as key approaches where FLR terms can be clearly defined at the sub-national level. In regards to this, one respondent argued that while FLR

“should remain broad and shallow at the international level in order to not interfere with national sovereignty”, the sub-national approach could represent a core element of FLR, including through the clarification of terms and approaches, as it “will rather embrace all relevant stakeholders with justified knowledge claims and understandings of what is a good restoration in their specific context”.

Another expert questioned the relevance of further specifying key terms stating that they *“...doubt if we need a ‘one and only’ definition of what restoration means”,* while further mentioning the importance of a flexible international framework, with a focus on improving ecosystem services, to allow the concept to be further refined, as appropriate, at national and sub-national levels. They further highlighted the importance of national and sub-national interpretation processes:

“Restoration can and will mean different things in different regions and cultures. People have the right to ‘define’ their views on how they would like to start restoration.”

Focusing on the implementation of FLR, numerous respondents mentioned that they were not concerned about the lack of a definition for FLR, highlighting that it has not limited the implementation of FLR to date. One respondent specifically stated that

“we are not really concerned about a lack of definition or agreement on the terms in context of FLR. There are a multitude of terms being used in the context of FLR, however, this doesn’t necessarily hamper FLR in progress.”

Various respondents discussed the importance of transitioning from the clarification of definitions and concepts to the actual implementation of FLR. With regards to supporting further implementation of FLR, especially at the national and sub-national levels, some respondents highlighted the potential to develop sub-national conceptual frameworks and apply methodological approaches and planning tools. In particular, FLR planning tools, such as the ROAM, were mentioned as key approaches to supporting the specification of key FLR terms, with one expert putting it as follows:

“An interpretation of what FLR is in each context could be reasonably specified at the national or sub-national level, and this is happening through the application of ROAM.”

Such tools are able to help countries operationalize their FLR commitments under the Rio Conventions, while supporting countries to develop their own measures based on a flexible framework, which provides them with guidance yet allows countries to develop approaches based on their own context and circumstances.

What additional guidance, if any, should be provided by United Nation (UN) processes for FLR, and which processes do you consider to be most capable of providing this?

There was a broad response related to the need for additional guidance, and in general most participants did not see the need for additional ‘binding’ guidance. Instead, nearly half of the respondents promoted ‘soft’ guidance, with mentioned topics including guidance for implementation, capacity building, monitoring of success, knowledge networks and participatory spatial decision making. In particular, ten respondents discussed varying types of soft guidance which could be provided to support FLR, albeit without mentioning the role of the UN processes in strengthening such guidance. Four experts stated that additional guidance, such as guiding principles, could be provided to support FLR. One respondent even mentioned the potential for similar principles and guidance as that developed for the principles of the ecosystem approach.

Another respondent noted that substantial work has already been done, e.g. the work of Mansourian (2017) who identified various guiding principles for FLR (see Section 2.2). A further respondent discussed the importance of enhancing operational approaches for FLR, specifically mentioning the importance of the ROAM methodology to support the adequate implementation of FLR. Tools for monitoring FLR were further highlighted by another respondent, who noted the potential for UN processes to help develop more effective tools for tracking biodiversity goals and the impact of FLR. Finally, financing for FLR was discussed as a gap by another respondent, who stated that additional support from UN processes would be useful to support upscaling.

Several respondents called for improved monitoring of FLR impacts and safeguards, although they varied in terms of whether or not this should be limited to “soft guidance” or official legally binding safeguards. Four respondents highlighted the importance of building on the REDD+ safeguards and developing binding safeguards. Specifically, it was noted that the UNFCCC safeguard discussions:

“While ultimately watered down, at various times included advice on how to address key environmental and social concerns that are also applicable to FLR initiatives.”

However, one of these respondents went further and argued that such FLR safeguards should be “more detailed than the safeguards for REDD+”. In general, the CBD was identified as a promising institution to support such a process. On the other hand, other respondents who mentioned safeguards and monitoring frameworks took more flexible positions, noting the potential to strengthen frameworks, tools and guidelines for monitoring the success of FLR interventions:

“It is crucial that FLR doesn’t focus on one aspect, e.g. carbon, but rather aims at also restoring native biodiversity and other ecosystem services at the same time. This requires comprehensive monitoring of restoration success.”

Another respondent who mentioned opportunities to enhance FLR monitoring promoted the use of a knowledge network that was “ideally less politicized” – noting that international negotiations are slow, complex and highly politicized processes. In general, various respondents mentioned the important role of institutions, especially the CBD and the UNFF, in continuing to promote FLR. Related to such institutions, one expert noted:

“CBD and UNFF are probably the most suitable UN bodies to be supportive... CBD COP13 addresses ecosystem restoration issues [...]; as for UNFF, it is still to be seen how this process

will develop in the future, but FLR is definitely within the scope of the UN Strategic Plan on Forests.”

Initiatives such as the Bonn Challenge and CBD-related activities, for instance the CBD short-term restoration action plan, restoration goals and targets, among others, were identified by respondents as important to sustain the momentum and implementation of FLR. In particular, one respondent stated that instead of additional guidance on FLR there is a need for

“all of the [Rio Conventions and other international] processes to agree that restoration is a global topic which could, in 20–40 years, fill the emission gap while building livelihoods”,

in addition to continuing to support the establishment of international restoration goals, such as those of the Bonn Challenge and NYDF. Two respondents highlighted the potential for establishing new institutions and/or agencies to promote FLR. In promoting additional methodological guidance, especially related to monitoring the success of FLR interventions, one expert discussed the potential to develop a knowledge-network with both scientific and applied experience and an international mandate (comparable to IPCC or SBSTA), although they argued that ideally the institution should be less politicized.

In contrast to these expert views, a few respondents stated that no additional guidance should be provided by UN processes for FLR. In particular, one respondent stated that

“We should be very reluctant to give restoration into the hands of negotiators. Technocrats are not really helpful for this and are not the right audience.”

Others highlighted the progress that has been made so far, and emphasized the need to focus on implementation. Another respondent further promoted the role of other qualified institutions to support FLR through the development of guidance, stating that *“there cannot be just one [source of] guidance”*.

In how far can landscape approaches provide an effective means of mitigating trade-offs and minimizing risks for biodiversity?

Nearly all of the interviewed experts noted the potential benefits of applying a landscape approach:

“Landscape approaches provide a very holistic and effective means of mitigating trade-offs and minimizing risks”

“only at the landscape level can trade-offs be effectively understood and managed”.

It was further mentioned that the appropriate implementation of FLR can lead to the sustainable and integrated management of diverse ecosystems (incl. forests, grasslands, croplands, etc.) along with other sustainable development targets (SDGs, climate change, biodiversity etc.) in mind. One respondent further identified the importance of such an approach in supporting AFR 100, which further contributes to both the Bonn Challenge and the NYDF, stating that it not only supports FLR but also increases resilience to climate change, supports climate change mitigation enhances food security and combats rural poverty.

While the importance of the landscape approach was identified by majority of respondents, some noted the challenges involved in designing and implementing such an approach. One respondent stated that a landscape approach could theoretically be an effective means, but that *“there are many ways of interpreting what a landscape approach is”*. They went on to further highlight that for some actors it is a *“purely ecological term”* while for others it is more related to *“planning and stakeholder engagement”*. Another respondent stated that *“it all depends how landscape approaches are defined”*, alluding to the challenges associated with differing understandings and interpretation of such an approach.

The notion of understanding such an approach was discussed by various participants, with some stating that it is a *“valuable component if used with the correct principles and approaches”*, while others noted the importance of an enabling environment to provide the right conditions for the implementation of a landscape approach. In terms of biodiversity conservation, one respondent expressed that

“FLR approaches can play a key role in mitigating trade-offs, but do not provide any guarantees that risks for biodiversity will be minimized. Ultimately, the diminution of biodiversity remains a key problem which will not be resolved without broader values shift”.

In terms of the core principles and approaches to support the implementation of FLR, some respondents noted the importance of conducting specific assessments to mitigate trade-offs and minimize risks, for instance in biodiversity hotspots, buffer zones, and ecological corridors. Others noted the need to effectively engage and consult with local communities, to ensure that planned activities are in their interest and that they benefit from these. One respondent noted that landscape approaches are only effective for FLR when *“they provide for the social and economic wellbeing of their ‘stewards’”*, further arguing for the consideration of ownership, tenure, balanced benefits, and the appropriate-scale for FLR interventions. This view was also voiced by another respondent:

“It is of the greatest importance to take into consideration the communities living in the area and to design restoration activities together with them on a participatory basis.”

This would be a fair approach considering the members of local communities are well aware of what drives degradation and can propose practical solutions, and ultimately it is of utmost importance that local communities benefit from the restoration activities and the restored landscape. Thus, as another respondent noted, it is critical to *“consider both human-wellbeing and ecological functionality”* when implementing such an approach at the landscape level.

In terms of creating an enabling environment, one respondent noted that while FLR, when properly implemented, can have a significant impact in minimizing risks for biodiversity, it is necessary to have

“a sound national strategy, comprehensive identification of potential areas and a focus on the overall objective [of such an approach]”.

Political commitment was mentioned by another respondent:

“Landscape approaches are not feasible as long as the commitments at different policy levels (international, sub-national and regional) are not harmonized.”

This reflects not only the importance of national restoration strategies and targets, but also of ensuring strong linkages to international processes and of supporting the interpretation, design and implementation of FLR at the sub-national level. Political commitment across sectors was further mentioned by another respondent, highlighting the need for an agreement to be reached across sectors, including all land uses (incl. mining, infrastructure, environment, agriculture, etc.)

Strategic planning, involving a comprehensive assessment of proposed landscapes and restoration opportunities, was identified by various respondents as being of relevance to effectively mitigate trade-offs and minimize risks for biodiversity posed by FLR interventions. Respondents noted the importance of these activities for understanding the status of degradation in the landscape and current land-use dynamics, while being able to identify realistic and suitable restoration opportunities based on a robust analysis. ROAM was again mentioned by a respondent, stating the applicability of this methodology to supporting countries to operationalize FLR while designing interventions which are capable of understanding and managing trade-offs at the landscape level.

Does your institution have an agreed position on FLR and, if so, is it publically available? If it is available, please provide the link or relevant documents.

Most respondents noted that their institution does not have an agreed position on FLR and the topics of this study, or that it is currently being developed. Many respondents noted that while their institution does not have an agreed position on FLR, they continue to work on FLR and are guided by the various principles and other guidance developed for FLR by other institutions, such as the GPFLR or the Bonn challenge. Information provided by respondents and other important links on institutional FLR positions can be found in Annex C.

5 SYNTHESIS: OPTIONS TO REDUCE ADVERSE EFFECTS AND MINIMIZE TRADE-OFFS FOR BIODIVERSITY

Given the specific mandates of the Rio Conventions and the previous experience made in their negotiations, it appears unlikely that governments can agree on overall guidance and specific definitions for FLR in any of them. The analysis has shown that although it is negotiated under other terms, FLR is relevant for the Rio conventions but that none of these is currently capable of developing comprehensive guidance for FLR implementation, including concise definitions. Furthermore, effective coordination of international policy processes regarding cross-cutting issues such as FLR has proven difficult in the past. Against this background, the question arises about the added value of attempting to develop such guidance in formal negotiations. Committed countries would be interested in ensuring their national sovereignty. FLR negotiations could result in lengthy discussions and ultimately endanger the momentum for large-scale voluntary and unconditional action by countries. This does not mean, however, that FLR should not be discussed within the context of the three conventions and in other fora.

National standards and the mandatory application of established forest certification schemes could serve as instruments to reduce risks. It is in the self-interest of countries to define appropriate safeguards at the national level and to mandate the application of respected standards and certification schemes. This would reduce environmental and social risks of FLR measures on the ground and enhance legitimacy and acceptance, with potentially positive impacts on the efforts to attract private sector finance. Countries can draw on existing information; for example, in the context of REDD+, the CBD secretariat has produced important informal technical documents that provide recommendations for countries and implementing agencies on how to prevent harm and optimize benefits for biodiversity and ecosystem services other than carbon sequestration.

The Bonn Challenge as a non-technocratic informal network has neither the intention nor the power or mandate to fill the discussed regulatory gaps or provide technical guidance. It can even be argued that a main reason why countries make extremely ambitious and unconditional national FLR pledges is the possibility to associate themselves with a general concept for sustainable development and principles, while also retaining the right to adapt the approach based on their national circumstances and development priorities. In this regard, the approach of the Bonn Challenge has a significant advantage: in contrast to highly regulated and consequently often technocratic policy instruments, it is possible to align well with the corresponding national development agenda.

The UNFF as a more comprehensive discussion forum without legally binding character has missed the opportunity to recognize the importance of this continuously evolving topic. Despite the significant thematic overlap between FLR and the new *UN Strategic Plan for Forests 2017–2030*, it remains to be seen if the UNFF will be accepted by the global FLR community as a relevant institution that creates added value. On the one hand, the increasing role of the CPF as the entity responsible for overseeing technical meetings and content is promising; on the other hand, it remains unclear how proponents of the UNFF aim to address the lack of perceived

relevance due to the non-binding character of the forum's outputs. Moreover, the UNFF is associated with a low degree of transparency, unclear options for participation of stakeholders and a lack of innovation: it has never taken a leading role in developing emerging international approaches such as REDD+ and FLR.

Against this background, one option is to encourage countries with FLR commitments to define their own rules and modalities for implementation. To underline the credibility of their ambitious pledges, countries should define time-bound steps and outline, for example in national FLR strategies, how they intend to

- identify FLR priorities, and define key terms and potential FLR activities
- create suitable enabling environments (i.e. land tenure and land-use rights)
- facilitate inter-sectoral coordination
- align FLR with existing policies, programs and other instruments such as REDD+ and NDCs
- establish a comprehensive land-use plan with priority areas for different FLR measures and purposes (e.g. protection of watersheds, harbors of biodiversity or sustainable production systems for timber and cash crops), or adapt existing land-use planning processes and integrate the described FLR features.

This provides an excellent opportunity to also consider the role of the private sector as well as to outline approaches that consider how trade-offs should be minimized and how progress and impacts can be monitored. Existing guidance and support from NGOs such as the IUCN and WRI, international organizations (e.g. FAO), and development cooperation organizations can be drawn upon to help minimize such trade-offs and risks (Annex C). The regional Bonn Challenge meetings provide a suitable forum to promote successful examples and key lessons learned, in addition to supporting South-South cooperation between countries with similar circumstances.

Bi- and multilateral donor organizations should support and incentivize best practices for FLR, which minimize trade-offs and risks for biodiversity. Given the voluntary commitments and the important role of governments in following up on how FLR in their national context should look, donor organizations should focus on supporting successful landscape concepts that succeed in balancing economic, environmental and social aspects. Bilateral donor organizations and the donors of important multilateral programs – e.g. GCF, Global Environment Facility (GEF), World Bank, etc. – could incentivize committed countries to develop and successfully establish convincing and comprehensive land-use frameworks. This would serve as an incentive to go beyond what is required, e.g. for countries implementing REDD+.

FLR project developers and implementing agencies should promote the use of voluntary certification schemes to ensure the social and environmental integrity of applied measures – particularly concerning private sector investments in newly planted forests and plantations. Even in landscape approaches, FLR will be largely implemented at the project level. Certification schemes with high credibility can ensure that best practices will be applied, and ultimately help mitigate social and environmental risks. Examples include the Forest Stewardship Council (FSC), IFC and the High Conservation Value approach, among others. The use of credible certification schemes could be required by the governments as part of their national FLR strategies and supported by development cooperation.

Ultimately, a combination of local circumstances, land owner priorities and available resources will define the range of possible FLR measures, and also the implications for biodiversity. While many FLR activities pose few risks for biodiversity (e.g. enrichment plantings, natural regeneration), others are associated with trade-offs that can be minimized through careful land-use planning, following the available guidance on FLR and sustainable land-use practices (e.g. the ecosystem approach, certification schemes), and adhering to the principles developed by the Society of Ecological Restoration and the Bonn Challenge.

REFERENCES

- Abelleira Martínez, O.J., Meléndez Ackerman, E.J., García Montiel, D., Parrotta, J.A. 2015. Seed dispersal turns an experimental plantation on degraded land into a novel forest in urban northern Puerto Rico. *Forest Ecology and Management*, 357: 68-75.
- Aronson, J., Alexander, S. 2013. Ecosystem restoration is now a global priority: time to roll up our sleeves. *Restoration ecology*, 21(3): 293-296.
- Bauhus, J., Forrester, D.I., Pretzsch, H. 2017. Mixed-Species Forests: The Development of a Forest Management Paradigm. In: Pretzsch, H., Forrester, D.I., Bauhus, J [eds]. *Mixed-Species Forests*. Springer, Berlin and Heidelberg, Germany. Pp. 337-382
- Bohre, P., Chaubey, O.P. 2014. Restoration of Degraded Lands through Plantation Forests. *Global Journal of Science Frontier Research: Biological Science*, 14(1): Online ISSN: 2249-4626
- Bonn Challenge. 2017. Bonn Challenge. Available online: < <http://www.bonnchallenge.org/> >[2017.07.19].
- Briggs, M.K. 1995. Evaluating degraded riparian ecosystems to determine the potential effectiveness of revegetation. In: *Proceedings: Wildland shrub and land restoration symposium*. In: Roundy, B.A., McArthur, D.E., Haley, J.S., Mann, D.K. [eds.]. 1995. *Proceedings wildland shrub and arid land restoration symposium, 1993 October 19-21. Las Vegas, USA*.
- Brockhoff, E.G., Jactel, H., Parrotta, J.A., Quine, C.P., Sayer, J. 2008. Plantation forests and biodiversity: oxymoron or opportunity. *Biodiversity Conservation*, 17: 925-951.
- Bullock, J.M., Aronson, J., Newton, A.C., Pywell, R.F., Rey-Benayas, J.M. 2011. Restoration of ecosystem services and biodiversity: conflicts and opportunities. *Trends in Ecology and Evolution*, 26(10): 541-549.
- Cairns, Jr. J. 1993. Ecological restoration: replenishing our national and global ecological capital. In: Saunders, D.A., Hobbs, R.J., Ehrlich, P.R. [eds]. *Nature conservation 3: reconstruction of fragmented ecosystems*. Surrey Beatty & Sons. Pp. 193-208.
- Campoe, O.C., Iannelli, C., Stape, J.L., Cook, R.L., Mendes, J.C. Vivian, R. 2014. Atlantic forest tree species responses to silvicultural practices in a degraded pasture restoration plantation: From leaf physiology to survival and initial growth.
- Caspari, T., Alexander, S., ten Brink, B., Laestadius, L. 2014. Review of Global Assessments of Land and Ecosystem Degradation and their Relevance in Achieving the Land-based Aichi Biodiversity Targets. INF Document presented at CBD COP12. Available online: <<https://www.cbd.int/doc/meetings/cop/cop-12/.../cop-12-inf-18-en.pdf> > [Accessed 2017.07.18]
- CBD, Convention of Biological Diversity. No Date. Article 2: Use of Terms. Available online: <<https://www.cbd.int/convention/articles/default.shtml?a=cbd-02>>[Accessed 2017.07.18]
- CBD. No Date. What is forest biological diversity? Available online: <<https://www.cbd.int/forest/what.shtml> >[Accessed 2017.07.18]
- Chazdon, R. L., Brancalion, P. H., Lamb, D., Laestadius, L., Calmon, M., Kumar, C. 2017. A Policy-Driven Knowledge Agenda for Global Forest and Landscape Restoration. *Conservation Letters*, 10(1), 125-132.

- Chazdon, R.L. 2008. Beyond deforestation: restoring forests and ecosystem services on degraded lands. *Science*, 320(5882): 1458–1460.
- Chazdon, R.L., Brancalion, P.H.S., Laestadius, L., Bennett-Curry, A., Buckingham, K., Kumar, C., Moll-Rocek, J., Guimaraes Vieira, I.C., Wilson, S.J. 2016. When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration. *Ambio*, 45: 538-550.
- Dewitt, S. 2015. Global Restoration Initiative, World Resources Institute, Internal Presentation, Washington DC.
- Dong, T.L. 2014. Using acacia as a nurse crop for re-establishing native-tree species plantation on degraded lands in Vietnam. PhD Thesis, University of Tasmania, Australia.
- Dong, T.L., Forrester, D.I., Beadle, C., Doyle, R., Hoang, N.H., Giap, N.X., Worledge, D. 2016. Effects of light availability on crown structure, biomass production, light absorption and light-use efficiency of *Hopea odorata* planted within gaps in Acacia hybrid plantations. *Plant Ecology & Diversity*, 9(5-6): 1-14.
- European Landscape Convention. 2000. Treaty No. 176. Available online: < <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm> >[Accessed 2017.07.20]
- FAO, Food and Agriculture Organization of the United Nations. 2003. Second expert meeting on harmonizing forest-related definitions for use by various stakeholders. Rome. Food and Agriculture Organization of the United Nations. Forestry Division. <http://www.fao.org/docrep/005/Y4171E/Y4171E17.htm>
- FAO. 2005. Proceedings, Third Expert Meeting on Harmonizing Forest-related Definitions for Use by Various Stakeholders. Rome, Italy.
- FAO. 2006. Global Forest Resources Assessment. FAO Forestry Paper 147. Rome, Italy.
- FAO. 2010. Global Forest Resources Assessment 2010 – Main Report. FAO Forestry Paper 163. Rome, Italy. Available online: www.fao.org/docrep/013/i1757e/i1757e.pdf [Accessed 2017.06.29]
- FAO. 2012. FRA 2015 Terms and Definitions. Rome, Italy.
- Felton, A., Nilsson, U., Sonesson, J., Felton, A.M., Roberge, J.M., Ranius, T., Ahlström, M., Bergh, J., Björkman, C., Boberg, J., Drössler, L., Fahlvik, N., Gong, P., Holmström, E., Keskitalo, C.H., Klapwijk, M.J., Laudon, H., Lundmark, T., Niklasson, M., Nordin, A., Pettersson, M., Stenlid, J., Sténs, A., Wallertz, K. 2016. Replacing monocultures with mixed-species stands; Ecosystem service implications of two production forest alternatives in Sweden. *Ambio*, 45: 124-139.
- Foley, J.A., DeFries, R., Asner, G.P., Barford, C., Bonan, G., Carpenter, S.R., Chapin, S.F., Coe, M.T., Daily, G.C., Gibbs, H.K., Helkowski, J.H., Holloway, T., Howard, E.A., Kucharik, C.J., Monfreda, C., Patz, J.A., Prentice, C.I., Ramankutty, N., Snyder, P.K. 2005. Global Consequences of Land Use. *science* 309 (5734): 570-574.
- GCF, Green Climate Fund. 2017a. Green Climate Fund. Available online: < <http://www.greenclimate.fund/home> >[Accessed 2017.07.20]
- GCF. 2017b. Priming Financial and Land-Use Planning Instruments to Reduce Emissions from Deforestation. Available online: < <http://www.greenclimate.fund/-/priming-financial-and-land-use-planning-instruments-to-reduce-emissions-from-deforestation?inheritRedirect=true&redirect=%2Fwhat-we-do%2Fprojects-programmes> >[Accessed 2017.07.19]

- GPFLR, Global Partnership on Forest Landscape Restoration. 2016. What is FLR? Available online: <http://www.forestlandscaperestoration.org/what-forest-and-landscape-restoration> [Accessed 2017.04.26]
- Grulke, M., Pistorius, T., del Valle Pérez, P., Merger, E., Calo Vidal, I. 2014. Certified timber production and landscape governance. In: Chavez-Tafur, J., Zagt, R.J. (eds.): Towards Productive Landscapes. Tropenbos international, Wageningen, Netherlands.: 190-196. online: <http://www.tropenbos.org/publications/etfrn+news+56:+towards+productive+landscapes>
- Günter, S., Gonzalez, P., Álvarez, Aguirre, N., Palomeque, X., Haubrich, F., Weber, M. 2009. Determinants for successful reforestation of abandoned pastures in the Andes: Soil conditions and vegetation cover. *Forest Ecology and Management* 258: 81-91
- Herold, M., Román-Cuesta, R.M., Mollicone, D., Hirata, Y., Van Laake, P., Asner, G.P., Souza, C., Skutsch, M., Avitabile, V., MacDicken, K. 2011. Options for monitoring and estimating historical carbon emissions from forest degradation in the context of REDD+. *Carbon Balance Management*, 6: 6-13.
- Ingram, V., Van der Werf, E., Kikulwe, E., Wesseler, J.H.H. 2016. Evaluating the impacts of plantations and associated forestry operations in Africa – methods and indicators. *International Forestry Review*, 18(1): 44- 55.
- IPCC, Intergovernmental Panel on Climate Change. 2014. Summary for policymakers, in: *Climate Change 2014, Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., Pichs-Madruga, R., Sokona, Y., Farahani, E., Kadner, S., Seyboth, K., Adler, A., Baum, I., Brunner, S., Eickmeier, P., Kriemann, B., Savolainen, J., Schlömer, S., von Stechow, C., Zwickel, T., Minx, J.C. (eds)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- IPCC. 2003. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. Available online: < <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html>>[Accessed 2017.06.17]
- IUCN & WRI, International Union for Conservation of Nature and World Resources Institute. 2014. *A guide to the Restoration Opportunities Assessment Methodology (ROAM): Assessing forest landscape restoration opportunities at the national or sub-national level. Working paper (road-test edition)*. Gland, Switzerland: IUCN. 125pp.
- Jacovelli, P.A. 2014. The future of plantations in Africa. *International Forestry Review*, 16(2): 144-159.
- Jørgensen, D. 2013. Ecological restoration in the Convention on Biological Diversity Targets. *Biodiversity and Conservation*, 22(1): 2977-2982.
- Jørgensen, D. 2015. Ecological restoration as objective, target and tool in international biodiversity policy. *Ecology and Society*, 20(4): 43.
- Laestadius, L., Reynter, K., Maginnis, S., Saint-Laurent, C. 2015. *Demystifying the World's Forest Landscape Restoration Opportunities*. Available online : <<http://www.wri.org/blog/2015/03/demystifying-worlds-forest-landscape-restoration-opportunities>>[Accessed 2017.07.18]
- Lamb, D. 1998. Large-scale ecological restoration of degraded tropical forest lands: the potential role of timber plantations. *Restoration Ecology*, 6(3): 271-279.

- Lamb, D., Erskine, P.D., Parrotta, J.A. 2005. Restoration of Degraded Tropical Forest Landscapes. *Science*, 310: 1628-1632
- Lee, D., Pistorius, T. 2015. The impacts of international REDD+ Finance. Climate and Land Use Alliance, San Francisco, USA.
- Liniger, H.P., van Lynden, G., nachtergaele, F., Schwilch, G., Biancalani, R. 2008. Land Degradation Assessment in Dry Lands: Questionnaire for mapping land degradation and sustainable land management. Available online: <http://www.fao.org/nr/lada/index.php?option=com_docman&task=doc_download&gid=53&Itemid=157>[Accessed 2017.07.20]
- Lund, G.H. 1999. A 'forest' by any other name... *Environmental Science & Policy*, 2:125-133.
- Lund, G.H. 2009. What is a degraded forest? White paper prepared for FAO. Forest Information Services, Gainesville, Virginia, USA. 39p.
- Manson, D.G., Schmidt, S., Bristow, M. Erskine, P.D., Vanclay, J.K. (2013). Species-site matching in mixed species plantations of native trees in tropical Australia. *Agroforest Systems*, 87: 233-250
- Mansourian, S., Stanturf, J.A., Adutwumwaa Derkyi, M.A., Engel, V.L. 2017. Forest Landscape Restoration: increasing the positive impacts of forest restoration or simply the area under tree cover? *Restoration Ecology*, 25(2): 178-183.
- Mansourian, S., Vallauri, D., Dudley, N. [eds] (in cooperation with WWF International). 2005. *Forest Restoration in Landscapes: Beyond Planting Trees*, Springer, New York, USA.
- Norman, M., Nakhooda, S. 2014. The state of REDD+ Finance. CGD Working Paper 378. Center for Global Development, Washington DC, USA.
- NYDF, New York Declaration on Forests. 2017. Progress Assessment. Available online: <<http://forestdeclaration.org/goals/>>[Accessed 2017.07.20]
- Parrotta, J.A., Turnbull, J.W., Jones, N. 1997. Catalyzing native forest regeneration on degraded tropical lands. *Forestry Ecology and Management*, 99: 1-7.
- Pirard, R., Dal Secco, L., Warman, R. 2016. Do timber plantations contribute to forest conservation? *Environmental Science & Policy*, 57: 122-130.
- Pistorius, T., Freiberg, H. 2014. From Target to Implementation: Perspectives for the International Governance of Forest Landscape Restoration. *Forests*, 5(3): 482-497.
- Pistorius, T., Jacovelli, P., Wittmann, N., Ho Dac Thai Hoang. 2016. Progressing towards the implementation of sustainable forestry business models in the context of REDD+ in Viet Nam, online: <http://www.unique-landuse.de/en/publications>
- Pretzsch, H., Forrester, D.I. 2017. Stand Dynamics of Mixed-Species Stands Compared with Monocultures. In: Pretzsch, H., Forrester, D.I., Bauhus, J. [eds]. *Mixed-Species Forests*. Springer, Berlin and Heidelberg, Germany. Pp. 117-209.
- Pretzsch, H., Rais, A. 2016. Wood quality in complex forests versus even-aged monocultures: reviews and perspectives. *Wood Science Technology*, 50: 845-880.
- Pripp, C. (in press). The Convention on Biological Diversity as a legal framework for safeguarding ecosystem services. *Ecosystem Services*.
- Putz, F.E., Sasaki, N. 2009. What is "forest?" Response to Guariguata et al. *Conservation Letters*, 2(6): 288-289.

- Richardson, B.J. 2016. The Emerging Age of Ecological Restoration Law. Review of European Community & International Environmental Law, 25(3): 277- 290.
- Sarr, D. A., Puettmann, K. J. 2008. Forest management, restoration, and designer ecosystems: Integrating strategies for a crowded planet. *Ecoscience*, 15(1): 17-26.
- Sayer, J., Sunderland, T., Ghazoul, J., Pfund, J. L., Sheil, D., Meijaard, E., Venter, M., Klintuni Boedhihartono, A., Fay, M., Garcia, C., van Oosten, C., Buck, L. E. 2013. Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses. *Proceedings of the national academy of sciences*, 110(21): 8349-8356.
- SER, Society for Ecological Restoration. 2004. The SER primer on ecological restoration. Available online: <www.ser.org> [Accessed 2017.06.01]
- Stimm, B., Beck, E., Günter, S., Aguirre, N., Cueva, E., Mosandl, R., Weber, M. 2008. Reforestation of Abandoned Pastures: seed ecology of native species and production of indigenous plant material. In: Beck, E., Bendix, J., Kottke, I., Makeschin, F., Mosandl, R. (Eds.), *Gradients in a Tropical Mountain Ecosystem of Ecuador—Ecological Studies*, vol. 198. Springer, Berlin, pp. 433–446.
- Tubiello, F.N., Salvatore, M., Córdor Golec, R.D., Ferrara, A., Rossi, S., Biancalani, R., Federici, S., Jacobs, H., Flammini, A. 2014. Agriculture, Forestry and Other Land Use Emissions by Sources and Removals by Sinks: 1990-2011 Analysis. FAO Statistics Division Working Paper Series ESS/14-02. Food and Agriculture Organization of the United Nations, Rome, Italy.
- UNCCD Secretariat. 2013. A Stronger UNCCD for a Land-Degradation Neutral World. Issue brief. Bonn, Germany.
- UNCCD, United Nations Convention to Combat Desertification. 2012a. Sustainable Land Management for Food Security. Available online: <<http://www.unccd.int/en/programmes/Thematic-Priorities/Food-Sec/Pages/FS-SLM.aspx>>[Accessed 2017.06.01]
- UNCCD. 2012b. Thematic Priorities. Available online: < <http://www.unccd.int/en/programmes/Thematic-Priorities/Pages/default.aspx>> [Accessed 2017.04.07]
- UNCCD. 2015. Report of the Intergovernmental Working Group on the follow-up to the outcomes of the United Nations Conference on Sustainable Development (Rio+20). Available online: <http://www.unccd.int/Lists/SiteDocumentLibrary/Rio+20/IWG%20on%20rio%2020/ADVANCE%20DRAFT%20IWG%20Report_01_June_2015.pdf>[Accessed 2017.07.19]
- UNEP, United Nations Environment Programme. 2003. Freshwater Management Series 7: Glossary. Available online: <<http://www.unep.or.jp/ietc/Publications/Freshwater/FMS7/glossary.asp>>[Accessed 2017.06.15]
- UNEP Risø Centre. 2013. *Understanding the Concept of Nationally Appropriate Mitigation Action*. Available online: < <https://www.transparency-partnership.net/unep-risoe-centre-2013-understanding-concept-nationally-appropriate-mitigation-action>>[Accessed 2017.07.20]
- UNFCCC. 2014a. First steps to a safer future: Introducing the United Nations Framework Convention on Climate Change. Available online: <http://unfccc.int/essential_background/convention/items/6036.php>[Accessed 2017.07.20]
- UNFCCC. 2014b. REDD+. Available online: <http://unfccc.int/land_use_and_climate_change/redd/items/7377.php>[Accessed 2017.07.19]

- UNFCCC. 2016a. Ecosystem-based adaptation and adaptation planning processes addressing ecosystems: overview, good practices and lessons learned. Available online: <http://unfccc.int/files/adaptation/application/pdf/2_synopsis_ecosystem.pdf>[Accessed 2017.07.19]
- UNFCCC. 2016b. Overview – National adaptation plans (NAPs). Available online: <http://unfccc.int/adaptation/workstreams/national_adaptation_plans/items/7594.php>[Accessed 2017.07.19]
- UNFF, United Nations Forum on Forests. 2017a. Global Objectives on Forests. Available online: <<http://www.un.org/esa/forests/documents/global-objectives/index.html>>[Accessed 2017.07.19]
- UNFF. 2017b. United Nations Strategic Plan for Forests 2017-2030. Advance Unedited Version. Available online: <http://www.un.org/esa/forests/wp-content/uploads/2016/12/UN-SPF_AdvUnedited.pdf>[Accessed 2017.07.01]
- van Noordwijk, M., Minang, P.A. 2009. If we cannot define it, we cannot save it: forest definitions and REDD. Policy Brief – ASB Partnership for the Tropical Forest Margins, 15: 4.
- World Bank and the World Resources Institute. 2016. Risk reduction measures for private sector investment in landscape restoration. White Paper, Global Landscapes Forum. London, UK.
- Yap, H.T. 2000. The case for restoration of tropical coastal ecosystems. *Ocean & Coastal Management*, 43: 841-851.
- Zimmerman, J.K., Pascarella, J.B., Aide, T.M. 2000. Barriers to Forest Regeneration in an Abandoned Pasture in Puerto Rico. *Restoration Ecology*, 8(4): 350-360.

ANNEXES

Annex A. Guidance and questionnaire for the expert survey

Annex B. List of contacted institutions for the expert survey

Annex C. Useful literature and guidance on FLR

ANNEX A: GUIDANCE AND QUESTIONNAIRE FOR THE EXPERT SURVEY

Introduction

Since 2010, the long-lasting forest-related negotiations in various processes and fora under the United Nations (UN) have also translated into voluntary initiatives for Forest Landscape Restoration (FLR), with a focus on implementation and leadership. Among those initiatives are the Bonn Challenge and the New York Declaration on Forests, as well as the regional AFR100 and the 20x20 Initiative. With these advancements, FLR has emerged as one of the most relevant topics for simultaneously addressing different urgent environmental problems and aligning action at scale with national agendas for sustainable development. The ambitious targets and commitments as contributions made by governments have been welcomed, but key terms such as restoration, landscape and degradation lack agreed definitions and rely on guidance and principles provided by experts and leading institutions. Against this background, concerns are increasingly voiced regarding risks and potential trade-offs.

UNIQUE forestry and land use GmbH has been commissioned by the German Federal Agency for Nature Conservation of Germany (Bundesamt für Naturschutz, BfN) to analyze the provisions and guidance for FLR provided by relevant processes under the UN. In addition to participatory observation at key events and desk-based studies, we also seek to capture the views of key experts in the land-use sector. The purpose of this short explorative expert survey is to build on the understanding and perception of experts regarding potential risks associated with FLR— in particular for biodiversity. Your views will help us to a) analyze potentially existing gaps and b) discuss means of addressing potential gaps and minimizing negative trade-offs. Please note: you are approached as an expert, meaning that your views may deviate from the position of the institution you represent. Anonymity is guaranteed. We will only use illustrative statements in the report and neither state your name nor link your statements with your institution. The annex of the report will only contain a list of institutions of which members have been approached and responded.

Questions

1. Do you see risks for biodiversity emerging from the country initiatives for implementing FLR? Please explain your response.
2. At which policy level (international – national – sub-national) should key terms for FLR be specified? Please explain your response.
3. What additional guidance, if any, should be provided by United Nation (UN) processes for FLR, and which processes do you consider to be most capable of, and appropriate for, providing this?
4. In how far can landscape approaches provide an effective means of mitigating trade-offs and minimizing risks for biodiversity?
5. Does your institution have an agreed position on FLR and, if so, is it publically available? If it is available, please provide the link below or send to laura.kiff@unique-landuse.de.

ANNEX B. LIST OF CONTACTED INSTITUTIONS

Affiliation of experts invited to participate in the expert survey:

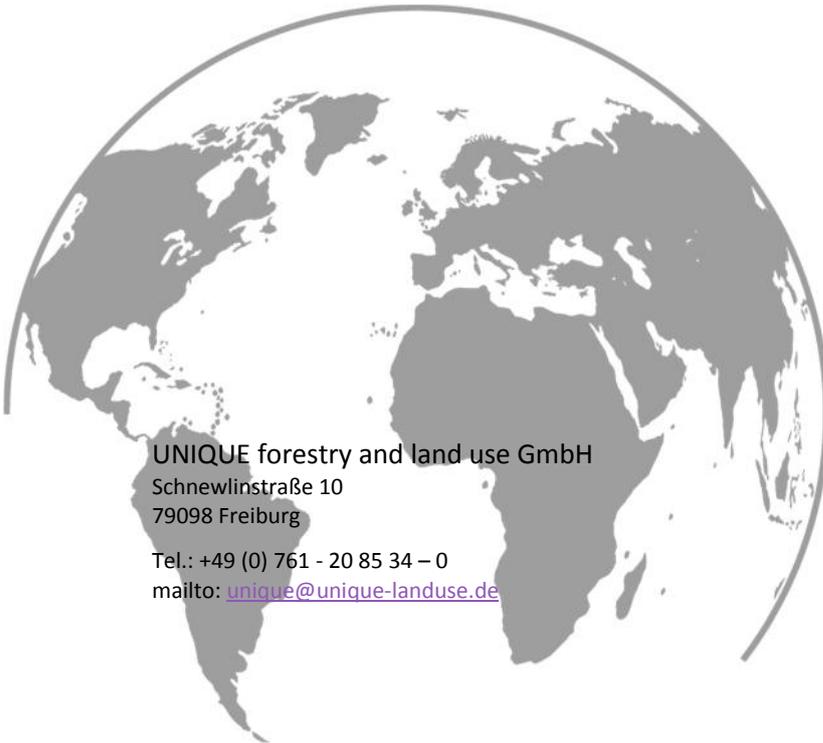
- Biodiversity International
- Center for International Forestry Research (CIFOR)
- Climate, Community and Biodiversity Alliance (CCBA)
- Clinton Foundation
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- FERN - Forests and the European Union Resource Network
- Food and Agriculture Organization of the United Nations (FAO)
- Forest Stewardship Council (FSC)
- German Federal Ministry for Economic Cooperation and Development (BMZ, *Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung*)
- German Federal Ministry for Nature Conservation (BfN, *Bundesamt für Naturschutz*)
- German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB, *Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit*)
- German Federal Ministry of Food and Agriculture (BMEL, *Bundesministerium für Ernährung und Landwirtschaft*)
- Global Canopy Programme
- Global Environment Facility (GEF)
- Global Forest Coalition
- Government of Austria
- Government of China
- Government of Ethiopia
- Greenpeace Germany
- Integrated Sustainability Solutions
- International Union for Conservation of Nature (IUCN)
- International Union of Forest Research Organizations (IUFRO)
- Korea Forest Service
- *Kreditanstalt für Wiederaufbau (KfW)*
- Lexeme Consulting
- Nature And Biodiversity Conservation Union (NABU)
- New Partnership for Africa's Development (NEPAD)
- OroVerde
- Society for Ecological Restoration (SER)

- The Nature Conservancy (TNC)
- The Prince's Charities' International Sustainability Unit
- The Tropical Agricultural Research and Higher Education Center (CATIE, *Centro Agronómico de Investigación y Enseñanza*)
- United Nations Environment Programme (UNEP)
- University of Connecticut
- University of Freiburg
- University of Helsinki
- Verified Carbon Standard (VCS)
- Wageningen University
- World Resources Institute (WRI)
- World Wildlife Fund for Nature (WWF) Austria
- WWF Germany

ANNEX C: USEFUL LITERATURE AND GUIDANCE ON FLR

Websites and E-materials

- African Forest Landscape Restoration Initiative: <http://www.wri.org/our-work/project/AFR100/about-afr100>
- Biodiversity International: <https://www.biodiversityinternational.org/news/detail/forest-landscape-restoration-a-solution-to-global-challenges/>
- Bonn Challenge: <http://www.bonnchallenge.org/content/challenge>
- Center for International Forestry Research: <http://www.cifor.org/peatlands/forest-landscape-restoration/>
- Convention on Biological Diversity (CBD): <https://www.cbd.int/>
- Economics of Land Degradation: <http://www.eld-initiative.org/>
- Forest Stewardship Council (FSC): <https://ic.fsc.org/en>
- Forest and Landscape Restoration Mechanism (FLRM) of the Food and Agriculture Organization of the United Nations: <http://www.fao.org/in-action/forest-landscape-restoration-mechanism/en/>
- Global Environment Facility: <https://www.thegef.org/topics/forest-and-landscape-restoration>
- Global Partnership on Forest and Landscape Restoration: <http://www.forestlandscaperestoration.org/>
- Greenpeace: http://www.greenpeace.org/international/en/publications/reports/IntactForestLandscapes_TechNote/
- Initiative 20x20: <http://www.wri.org/our-work/project/initiative-20x20>
- International Union of Forest Research Organizations: <http://www.iufro.org/science/special/spdc/flr/flrconf/> or <https://infoflr.org>
- IUCN: <https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration>
- Restoration Opportunities Assessment Methodology (ROAM): <https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration/restoration-opportunities-assessment-methodology-roam>
- Society for Ecological Restoration: <http://www.ser.org/>
- United Nations Convention to Combat Desertification: <http://www2.unccd.int/>
- United Nations Framework Convention on Climate Change: <http://newsroom.unfccc.int/> or <http://unfccc.int/>
- United States Department of Agriculture Forest Service Collaborative Forest Landscape Restoration Program: <https://www.fs.fed.us/restoration/CFLRP/>
- World Wildlife Fund for Nature: http://wwf.panda.org/what_we_do/how_we_work/our_global_goals/forests/
- World Resources Institute (WRI): <http://www.wri.org/resources/maps/atlas-forest-and-landscape-restoration-opportunities>



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