REPUBLIC OF LIBERIA

Forestry Development Authority
REDD+ Implementation Unit

NATIONAL STRATEGY FOR REDUCING EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION (REDD+) IN LIBERIA

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FOREWORD

Liberia is blessed with natural forests which sustain communities and contribute to the national economy. But the country faces a great challenge to lift incomes and create jobs for a rapidly growing population, whilst at the same conserving some of this forest for future generations. We know that we are losing our forest at an increasing rate. Those who depend most on the forest will suffer most from its loss.

To prevent the loss of our forest, the country has worked with national and international partners to reform the forestry sector so that it can deliver community, conservation and commercial benefits. Support for reform is coming increasingly from international agreements on climate change and voluntary partnership agreements that provide funds for reducing emissions from the loss of forests. Liberia is party to the United Nations Framework Convention on Climate Change and is committed to Reducing Emissions from Deforestation and Forest Degradation (REDD+). REDD+ aims to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to development.

Communities will first see benefits through the Liberia Forest Sector Project, which is funded by an agreement with the Kingdom of Norway to provide up to £150 million for REDD+ activities. This will provide support for conservation, reforestation, community forestry, sustainable agriculture and land use planning. Already, we have a REDD+ pilot project in Wonegizi that will show how communities can benefit from payments for reducing emissions from forest loss. We hope that more pilot projects will follow. With the pending Land Rights Act, Liberia is taking a further step towards recognizing community ownership of forest land. This puts communities in a prime position to benefit from the increasing value that is placed on the value of the carbon that is captured in standing forest.

REDD+ is also an opportunity to support forest conservation in commercial concessions. A very large area of Liberia's dense forest is to be found in forestry and palm oil concessions, in particular. Already, ambitious public-partnerships with companies such as Arcelor Mittal, Golden Veroleum Liberia and Sime Darby are developing solutions for how both commodity production and forest protection can be achieved.

We must proceed in steps. Over the next five years or so we have to demonstrate to ourselves and to donors that we can change land use practices and reverse the trend towards forest loss. We need to invest in sustainable logging, sustainable agriculture and other means of managing forest resources better. We need to monitor the results so that we can show that it is no longer "business-as-usual" when it comes to deforestation and forest degradation. We also need to show that the "green economy" can produce jobs and prosperity. If we succeed in this, we will be further rewarded with results-based-payments for REDD+. This is income that we can use to invest in communities, companies, NGOs and others who are using land in a way that reduces forest loss.

On behalf of the Government of Liberia the Forestry Development Authority has produced this national Strategy for REDD+. It is a practical guide to where the greatest threats to our forest come from, how these can be avoided, and how this can be done in way that delivers jobs and incomes for the people who live on forest land.

Honorable Harrison Karnwea
Managing Director
Forestry Development Authority

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This REDD+ Strategy is the result of extensive consultation and research conducted during 2015 and 2016. It therefore benefited greatly from the advice and information of many individuals and organizations from government, civil society and the private sector in Liberia, and from international NGOs and donors.

The FDA managed the project to prepare the Strategy and special mention is due to Hon. Harrison Karnwea, Managing Director, Saah A. David Jnr, National REDD+ Project Coordinator, Borwen L. Sayon, REDD+ Policy Coordinator and Zinnah Mulbah of the Environmental Protection Agency.

The national REDD+ Strategy and Roadmap was researched and drafted by a team from LTS International and NIRAS; David Rothe, Benoît Rivard, Grit Techel, Christian Held, Jessica Troell, Rachel Shibalira, Jan Fehse, William Apted, Nick Jewell.

As one of a package of REDD+ preparation activities, the Strategy was enriched by inputs from the teams implementing other projects; the Strategic Environmental and Social Assessment (SESA), the Reference Level, the Forest and Land Cover Assessment, the Communications Strategy and the Feedback and Grievance Redress Mechanism.

ACRONYMS

AfT	Agenda for Transformation
AML	Arcelor-Mittal Liberia
BSM	Benefit Sharing Mechanism
CDF	County Development Fund
CDSC	County Development Steering Committee
CSDF	County Social Development Fund
CFMA	Community Forest Management Agreements
CFMB	Community Forestry Management Body
CI	Conservation International
CLDMA	Community Land Development and Management Authority
CRL	Community Rights Law
CSO	Civil Society Organization
DFC	Dedicated Funds Committee
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
ESMF	Environmental and Social Management Framework
FAPS	Food and Agriculture Policy and Strategy
FCPF	Forest Carbon Partnership Facility
FDA	Forestry Development Authority
FFI	Fauna and Flora International
FGRM	Feedback and Grievance Redress Mechanism
FIFES	Forest Incomes for Environmental Sustainability
FLEGT	Forest Law Enforcement, Governance and Trade
FMC	Forest Management Contracts
FPIC	Free, prior and informed consent
FREDDI	Fund for REDD+ in Indonesia
GHG	Greenhouse Gas
GoL	Government of Liberia
GRIF	Guyana REDD+ Investment Fund
HCS	High Carbon Stock
HCV	High Conservation Value
IDH	Sustainable Trade Initiative (Dutch)
INDC	Intended Nationally Determined Contributions

IPCC	Inter-governmental Panel on Climate Change
LDA	Liberian Development Alliance
LFSP	Liberia Forest Sector Project
LoI	Letter of Intent (Norway-Liberia)
LISGIS	Liberia Institute of Statistics and Geo-Information Services
LRA	Land Rights Act
LVD	Legality Verification Department
MRV	Measurement, Reporting and Verification
NBSTB	National Benefit Sharing Trust Board
NCCSC	National Climate Change Steering Committee
NFMS	National Forest Monitoring System
NFRL	National Forestry Reform Law
NORAD	Norwegian Development Agency (Norwegian)
NTFP	Non-Timber Forest Products
PROSPER	People, Rules, Organizations Supporting the Protection of Ecosystem Resources
REDD+	Reducing Emission from Deforestation and Forest Degradation (with sustainable management of forests, conservation of forest carbon stocks and enhancement of forest carbon stocks)
REL/RL	Reference Emissions Level / Reference Level
RIL	Reduced Impact Logging
RIU	REDD+ Implementation Unit
R-PIN	Readiness Program Idea Note
R-PP	Readiness Preparation Proposal
RREA	Rural Renewable Energy Agency
RSPB	Royal Society for the Protection of Birds
RSPO	Roundtable on Sustainable Palm Oil
RTWG	REDD+ Technical Working Group
SESA	Strategic Environmental and Social Assessment
SFMP	Strategic Forest Management Plan
SNCL	Society for Nature Conservation in Liberia
TSC	Timber Sale Contracts
UNFCCC	United Nations Framework Convention on Climate Change
VPA	Voluntary Partnership Agreement
WCF	Wild Chimp Foundation

1 INTRODUCTION

1.1 PROGRESS TOWARDS REDD+ IN LIBERIA

Liberia recognizes the importance of forests and their sustainable management in its national development plans, policies and laws. It is also a signatory to international agreements on conserving biodiversity and tackling climate change. Globally, deforestation and forest degradation are recognized as major causes of climate change, responsible for about 15% of global greenhouse gas emissions.[1] Reducing Emissions from Deforestation and forest Degradation (REDD+) is a global initiative to support countries that wish to avoid forest loss and move to a low-carbon economy. The '+' represents forest conservation, sustainable management of forests, and enhancement of forest carbon stocks as additional ways of achieving this goal. International funding for REDD+ provides support for:

- Developing REDD+ plans and actions ('Readiness'); and
- Results-based payments, for avoided emissions and increased carbon stocks.

Liberia first engaged in the REDD+ readiness process in 2007, with funding from the Forest Carbon Partnership Facility (FCPF). A national REDD+ Technical Working Group (RTWG) was established as a platform for government and non-governmental organizations to engage in the preparation of a Readiness Program Idea Note (R-PIN) which was submitted to the FCPF in May 2008.[2] This was followed by the draft Readiness Preparation Proposal (R-PP), finalized in April 2012. Since then, the Forestry Development Authority (FDA) and Environmental Protection Agency (EPA) have led the work to complete the REDD+ readiness phase of the FCPF process.

In 2014, the prospects for REDD+ and sustainable forest management in Liberia were greatly improved by the signing of an agreement between Liberia and Norway to cooperate on REDD+ and develop Liberia's agricultural sector.[3] Under this agreement, Norway intends to contribute funds to Liberia's REDD+ efforts up to an amount of 150 million USD[4], if verifiable deliverables for REDD+ are achieved. The first phases of this funding are for preparation and demonstration of REDD+ interventions ($37.5 million USD). The final phase, from 2020 onwards, is for payments for verified emission reductions. The payments will reward actions that result in a reduction of emissions from deforestation and/or forest degradation, and support Liberia's green economic growth.

In total, Liberia has already benefitted from over US$46 million of committed investment for REDD+ preparations and implementation. This is a significant source of inward investment; commercial logging, for example, contributed US$159 million to the economy in 2011, approximately 15% of national GDP.[5] The REDD+ readiness activities are intended to pave the way for results-based finance related to measurable and verifiable emissions reductions from deforestation and forest degradation. This results-based finance may come from bilateral agreements, such as that with Norway, through voluntary carbon trading or through global funds such as the Forest Carbon Partnership Facility Carbon Fund.

To complete preparations for REDD+, Liberia needs to prepare a package of measures for reducing emissions from forest loss and measuring the results, as follows:

- A national REDD+ Strategy and Roadmap that lay out which policies and actions the country intends to implement to achieve its emission reductions;

[1] FCPF, 2016
[2] Details and documents on Liberia´s engagement in the REDD+ process may be found on the FCPF website, which also provides materials, guides, publications and other resources: www.forestcarbonpartnership.org/liberia
[3] Letter of Intent between the Government of the Republic of Liberia and the Government of the Kingdom of Norway on "Cooperation or reducing greenhouse gas emissions from deforestation and forest degradation (REDD+) and developing Liberia's agricultural sector." New York, 23 September 2014.
[4] At 2014 exchange rate.
[5] Cited in LFSP Project Appraisal Document, April 2016.

- A national measurement, reporting and verification (MRV) system;
- A national registry of emission reductions that records who achieved and who 'owns' the emission reductions;
- A financial mechanism that can receive, manage and invest REDD+ finance;
- A clear institutional structure for managing the implementation of the national REDD+ program, including a mechanism for feedback and addressing grievances arising from REDD+; and
- Supportive policy and legal frameworks to enable implementation and enforcement of REDD+ related activities and processes.

1.2 National REDD+ Strategy

A national REDD+ Strategy is a key output from the readiness phase. The purpose of this document is to guide Liberia in its efforts to reduce emissions from deforestation and forest degradation. The Strategy proceeds as follows:

- In section 2, the main causes of deforestation are identified through analysis of forest cover and land use trends;
- Section 3 describes the priorities and Strategy Options to address these drivers of deforestation;
- In Section 4 there is an explanation of how the REDD+ Strategy contributes to national development goals and local communities;
- In section 5, the approach to implementation of the Strategy is described.

The national REDD+ Strategy is accompanied by a Roadmap for implementation. It is also supported by a package of detailed studies included as 'technical annexes':

- Technical Annex A – Draft REDD+ Strategy
- Technical Annex B – REDD+ Roadmap
- Technical Annex C – Forest cover and land use analysis
- Technical Annex D – REDD+ Strategy Options
- Technical Annex E – Cost-benefit analysis
- Technical Annex F – Policy, Legal and Institutional Framework
- Technical Annex G – Consultation Report

2 Deforestation and forest degradation in Liberia

2.1 Deforestation and land use trends

The lack of historical data on forest cover in Liberia makes it impossible to measure national forest loss accurately, but a recent study by Winrock of the Reference Level for REDD+ in Liberia estimates that over 350,000 hectares have been deforested from 2000 to 2014[6]; more than the total area of forest in Liberia's three establish Protected Areas (approximately 263,000 ha). The definition of deforestation is

[6] Winrock International (2016) Assistance for Development of Reference Scenario for REDD+ Readiness. Report to FDA (forthcoming)

when the density of the forest canopy cover is reduced to below 30%. Forest degradation is the thinning out of forest to the point where only 30% forest canopy cover remains. Degradation typically leads to deforestation and is often caused by the same land uses.

Figure 1 – Thresholds for forest degradation, deforestation and forest enhancement
Source: Figures and concept from Reference Level Inception Report 2016 and FDA Forest Definition 2016.

Compared to neighboring countries, deforestation rates in Liberia have been low. Between 1960 and 2010, forest cover in Côte d'Ivoire fell from 16 million hectares to less than 3 million hectares as agriculture – and cocoa production, in particular – expanded. Sierra Leone estimate that 85 percent of the country's natural rainforest has been lost as a result of various drivers of deforestation including illegal logging, legal logging for export, expansion for settlements, agriculture and wildfires.[7]

But Liberia's historic trends in deforestation are a poor guide to the future, because the conflict and unrest that prevailed for several decades hindered land use and development generally, up to the cease-fire in 2003. In the post-conflict period, the pressure on Liberia's forest has been growing. People have returned to farming and other livelihoods. The economy was growing by 6% of GDP per annum up to 2014 when the outbreak of Ebola and depressed commodity prices caused a slow-down from which the country is still recovering.[8] The population is growing rapidly and is expected to double by 2042.[9] Approximately half of the land in Liberia has been allocated for concessions for logging, agriculture, mining and conservation (see Figure 2). Most of the industrial concessions have not yet been developed, nor the Protected Areas established, so future deforestation and forest degradation depends heavily upon how these allocated areas are developed in the context of rising population and consumption in the post-conflict era.

2.2 DRIVERS OF DEFORESTATION AND FOREST DEGRADATION

An understanding of the main causes of deforestation and degradation is key to the REDD+ Strategy because these drivers determine the type of actions that are required to reduce forest loss and greenhouse gas emissions.

The national REDD+ Strategy uses the best available data to establish national priorities, based on an understanding of the main causes of forest loss. Using both previous studies and new analyses of national data on land uses and forest cover, conducted as part of Liberia's REDD+ preparations[10], it is possible to build up an understanding of which land uses are most significant in terms of forest area, which are most significant in terms of forest loss and which have most impact on forest cover and emission levels in the short-term. However, there are very limited data for quantifying at national level the impact on forests of activities such as commercial logging, shifting agriculture or charcoal production. Furthermore, it needs to be recognized that the relative importance of different drivers of deforestation and forest degradation

[7] Sierra Leone Government (2010) Strategy for the development of a climate change abatement economy. Concept Note July 2010.
[8] The World Bank Group. The economic impact of the 2014 Ebola epidemic. October 7 2014.
[9] Government of the Republic of Liberia. 2008 National population and housing census. LISGIS, Monrovia 2008.
[10] *See in particular* LTS-NIRAS (2016) Land use and forest cover analysis and World Bank (2016) Targeted landscape Study and Metria-GeoVille (2015) Land cover assessment.

vary from place to place, depending on local environmental conditions, proximity to markets and other factors. Further research and monitoring to improve the evidence and, in time, refine the strategy, is therefore important.

Table 1 – Land cover statistics for Liberia

Land cover class	Hectares	% of mapped area
Forest >80% canopy cover	4,389,270	45.5%
Forest 30-80 % canopy cover	2,186,495	22.6%
Scattered trees <30% canopy cover	1,529,949	15.8%
Mangrove & Swamps	37,158	0.4%
Settlements	44,595	0.5%
Surface Water Bodies	60,374	0.6%
Grassland	625,332	6.5%
Shrub	606,928	6.3%
Bare Soil	173,690	1.8%
Ecosystem complex (rocks & sand)	2,271	<1%
Cloud covered (unmapped)	14,336	<1%
Total mapped area (land and inland water)	**9,656,062**	**100%**

Source: Metria-GeoVille (2015) Liberia Land Cover Assessment

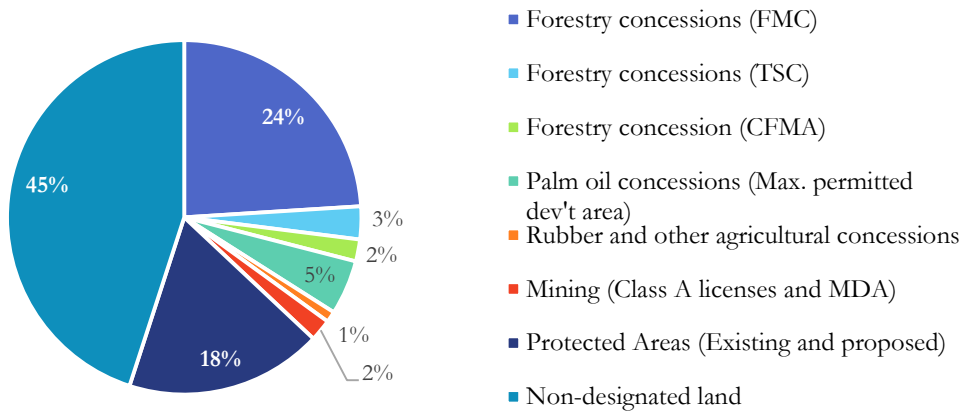


Figure 2 – Percentage of the total forest area in Liberia associated with designated land uses
Source: LTS-NIRAS (2016) Land use and forest cover analysis and World Bank (2015) Targeted landscape study. Based on national data sets provided by FDA and forest cover data by Metria-GeoVille (2015) land cover assessment.

Small-scale commercial and subsistence land uses affect the largest area of forest land. They are the principal land uses in the 45% of the total forest land that is not formally designated by the Government of Liberia for specific commercial or conservation purposes. Small-scale land uses, of which there are many types, also extend over the concession areas (most of which are yet to be developed) and encroach on Protected Areas (most of which are yet to be established).

These land uses, which include shifting agriculture, chainsaw milling (pit sawing), charcoal production, small-scale and artisanal mining, firewood gathering and the extraction of other non-timber forest

products, are almost wholly informal – i.e., un-taxed and un-regulated. There is therefore limited data with which to quantify their scale and impact on forests. However, studies and analysis of national datasets indicate that shifting agriculture, pit sawing and charcoal production are key drivers of deforestation and forest degradation that threaten the largest areas of forest:

- Based on the area of land that is easily accessible to settlements, an estimate of the area of forest land affected by shifting cultivation is 34% of the dense forest (>80% canopy cover) and 67% of the less dense forest (30-80% canopy cover).
- Based on the estimated volume of timber consumed by the pit sawing industry, it can be judged that this affects an area at least as large as the total area that is subject to commercial logging concessions logging concessions – Forest Management Contracts (FMCs), which extends to 24% of total forest.
- The volume of timber consumed for charcoal production is estimated at around double that by pit sawing, but a significant (if unknown) proportion of this comes from by-product timber cleared from rubber plantations that are being replanted, or new agriculture plantations that are being cleared. A rough and possibly conservative estimate of the area of forest affected by charcoal production is therefore the same as that for pit sawing; in other words, it is greater than the area affected by all existing and proposed logging concessions.

Forestry concessions are the second largest category of land use by area. If all existing and proposed FMCs were exploited this would affect 24% of the total forest area. Because logging concessions are in heavily forested areas, FMCs contain a large proportion (29%) of the most dense forest (>80 canopy cover). Furthermore, the scale and positioning of FMCs, often between Protected Areas or proposed Protected Areas and covering large blocks of dense forest, make them an important part of the REDD+ Strategy.

Palm oil is the third largest land use that is a cause of deforestation, based on the maximum area that is permitted for development by concession agreements. It accounts for 5% of the total forest area. The remaining land uses, in order of potential forest area affected, are Timber Sales Contracts (3% of total forest), Community forestry agreements (2%), Mining (2%) and then rubber and other plantations (1%).

2.2.1 Land uses resulting in greatest forest loss and emissions

Of the drivers identified above, two are particularly obvious drivers of deforestation. The first is oil palm because the concessions are large, heavily forested, and the area to be planted needs to be completely cleared. The main companies in Liberia are committed to avoiding loss of High Carbon Stock (HCS) and High Conservation Value forest (HCV). They will therefore develop the less forested parts of their concession but nonetheless the development of palm oil concessions will likely result in the clearance of between a minimum of 160,000 ha of forest, and a possible maximum of 352,000 ha of forest.[11] The upper limit is equivalent to the total amount of deforestation that occurred between 2000 and 2014.

The second is potentially Timber Sales Contracts (TSC) because they involve the complete clearance of forest. Existing and designated TSC cover 190,000 ha or 3% of the total forest area in Liberia. The majority of this is dense forest (>80% canopy cover). **Together, conversion for palm oil plantations and Timber Sales Contracts could amount to approximately 500,000 ha of deforestation.**

The other extensive land uses – shifting agriculture, charcoal, pit sawing and logging concessions – are different because they do not necessarily result in deforestation. They mainly cause forest degradation via selective extraction from the forest. For example, selectively logged forest is estimated to retain around

[11] The lower estimate is based on the area already developed plus sites subject to agreements/short-term plans for plantation development. The upper estimate is the plantable area permitted by the concessions contracts for the four main palm oil companies, Sime Darby, GVL, EPO and Maryland Oil Palm Plantations.

75% of the carbon content after the first harvest, although this depends greatly on the quality of forestry practices.[12] The long-term carbon value depends upon the frequency of subsequent harvests and secondary impacts, such as greater illegal felling encouraged by new forest roads. Shifting agriculture has historically had a low impact on forest cover (hence much of Liberia remains densely forested) but it becomes a cause of forest degradation and eventual deforestation when the level of use exceeds the level of natural regeneration. These types of land use will therefore degrade forest, but deforestation can be avoided and a level of carbon and biodiversity maintained, if they are managed sustainably.

Drivers that result in deforestation or degradation of dense forest (>80% canopy cover) are the most important in terms of causing emissions. Dense forest has greater biomass, and hence higher carbon stocks, than lower canopy cover forest.[13] Historically, dense forest in Liberia has been degraded and deforested largely by small-scale uses; notably shifting agriculture, pit sawing and charcoal production. In the future, concessions will also be of increasing importance. Forestry concessions cover an estimated 29% of the dense forest. Agriculture concessions, the gross concession areas, include 10% of the total dense forest. The area of dense forest in Liberia is large; double that of the less dense (30-80% canopy cover) forest, so inevitably agriculture and mining concessions will encroach on dense forest. The significance of forestry and oil palm as drivers of deforestation therefore depends greatly upon how much of the dense forest within the gross concessions is cleared or degraded.

For drivers that result directly in deforestation (e.g., palm oil and TSCs) the key factor is where they are located. To achieve REDD+, the imperative is to avoid large areas of dense forest. For drivers that result in the first instance in forest degradation, the key issue is the quality of the practices and the imperative is to raise these to a level that reduces forest loss.

2.2.2 Drivers of greatest short term significance

The various direct drivers of deforestation and forest degradation can be divided into those that will produce a large increase of emissions in the short term and those that have an impact over the longer term. This is illustrated in Figure 3, which depicts the expected rate of forest loss over time associated with each of the main drivers. All are shown as starting from the same point, their current baseline. In reality some drivers cause more forest loss and emissions than others but there is insufficient data at national level to show the quantity of forest loss and emissions associated with each. Also, this will vary from place-to-place. Planned forest conversion for oil palm and Timber Sales Contracts is likely to result in a significant increase in emissions from forest in the next 5-15 years. Unplanned activities such as pit sawing, charcoal and shifting agriculture are likely to increase emissions more gradually but exponentially. The aim of REDD+ interventions is to alter this business-as-usual scenario so that the level of deforestation and forest degradation is reduced.

[12] LTS-NIRAS (2016) Cost benefit analysis of REDD+ Strategy Options, citing Putz et al. Sustaining conservation values in selectively logged tropical forests. *Conservation Letters*, vol. 5, no. 4, pp. 296–303.
[13] Metria-GeoVille (2015) land cover assessment

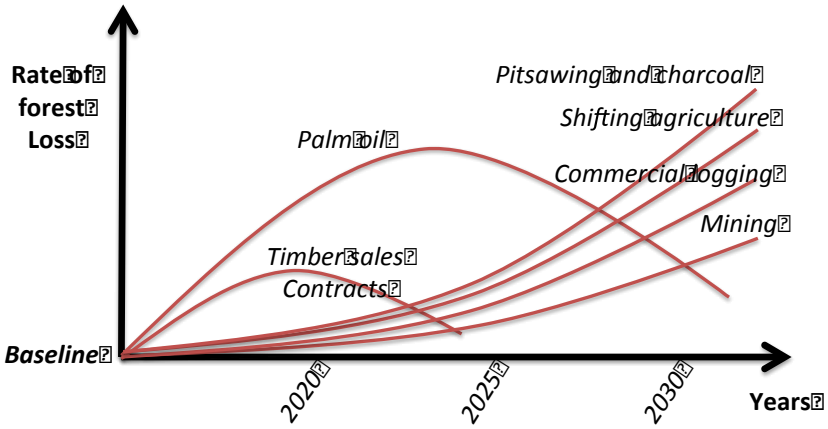


Figure 3 – Expected trajectory of main drivers of deforestation

Table 2 - Main direct drivers of deforestation and forest degradation in Liberia and their expected impact.

Palm oil conversion	The major palm oil concession-holding companies aim to clear land and establish plantations within the next 10-15 years. No major new palm oil concessions are expected although palm oil and other plantation crops are likely to expand on private estates and, possibly, community land.
Timber Sales Contracts	Although most TSCs have the status of 'proposed', rather than 'active', once fully approved the forest within can be completely cleared. It is possible, however, that the TSCs that have not been felled will lapse and remain uncleared.
Pit sawing and charcoal production	These forest uses already have a significant impact and can be quickly scaled-up as they require relatively little capital investment. Access to the resource is also particularly easy in the short-term because of lack of regulation of these activities in non-designated land, in forestry concessions and in Proposed Protected Areas. Increased prosperity could cause a rapid increase in demand, as could illicit export to neighboring countries.
Shifting agriculture	Although rising population and prosperity is creating a strong demand for new farm land, the labor and capital investment required to clear new areas, especially of dense forest, is high for communities/smallholders. The complex land ownership and tenure system that prevails in Liberia also acts as a brake on the expansion of shifting agriculture into new areas. In areas where shifting agriculture is already pervasive, it is already a major driver of deforestation and is likely to have an increasing impact on forest.
Commercial logging	Logging operations are not yet fully up to scale and impact on forest should be gradual as extraction rates should be kept at or close to sustainable limits. The road construction that accompanies forest operations will open up the forest to small scale land uses but the effect of this in terms of deforestation and forest degradation is likely to become visible after a decade or more. The extent of commercial forestry and associated forest loss may increase if there is the expected shift from company concessions to logging in community forests.
Mining	There are few mines currently operating and the pace of expansion of the industry is currently slow because of low commodity prices. It takes some years for exploration and mineral development licenses to progress into actual mining operations so a significant number of new mines are unlikely to appear within a decade. There is insufficient data to judge the current and potential impact of small scale artisanal mining.

3 STRATEGIC PRIORITIES AND REDD+ STRATEGY OPTIONS

3.1 STRATEGIC PRIORITIES

Priority 1: Reduce forest loss from pit sawing, charcoal production and shifting agriculture.

Shifting agriculture, charcoal production and pit sawing is practiced widely across Liberia, including in proposed Protected Areas. The pattern of forest loss visible today is largely a result of these small-scale commercial and subsistence use of forests. These uses can be expected to increase dramatically as population and consumption increases. Approximately 70% of the total forested area is vulnerable to deforestation and forest degradation from subsistence and small-scale uses. Pit sawing and charcoal production probably consume more timber than commercial logging. Restricting the expansion of pit sawing, charcoal production and shifting agriculture, particularly into >80% canopy cover forest, is therefore a priority.

Priority 2: Reduce impact of commercial logging

FMCs cover approximately 24% of the total forest area and almost 30% of the most dense forest. They are located in areas of high carbon stock and biodiversity. They lie between Protected Areas and are therefore important for maintaining wildlife corridors and large forest blocks. There is a relatively well-developed policy and regulation for sustainable forestry but limited practical implementation. Standards and monitoring procedures are being strengthened, particularly through the Voluntary Partnership Agreement (VPA). It is likely that some FMCs may become Community Forest Management Agreements (CFMAs) under the pending Land Rights Act. The application of same standards in CFMAs is therefore important.

Priority 3: Complete and manage a network of Protected Areas

Completion of the Protected Area Network (PAN) would protect around 18% of the total forested land in Liberia (forest canopy cover ≥30%). The policy and regulatory framework for implementing the PAN and enforcing conservation measures is already in place. Currently, only 3% of forest land is protected by established Protected Areas and even in these the capacity to enforce conservation laws is very limited. The PAN as currently proposed falls short of the commitment to conserve 30% of all forested land that is made in the 2006 Forestry Reform Law. The addition of other Protected Areas as a longer-term measure would achieve this 30% commitment and make an important contribution to REDD+.

Priority 4: Prevent or offset clearance of high carbon stock and high conservation value forest in agricultural and mining concessions.

Palm oil plantations are the most immediate and significant potential source of emissions from deforestation. The amount of forest land that is permitted for development (i.e. clearance) is equivalent to 5% of the total national forested area. Deforestation should be limited to less dense forest by Roundtable on Sustainable Palm Oil (RSPO) standards for conservation of High Carbon Stock (HCS) and High Conservation Value (HCV) forest. Even if this is achieved, the forest set aside is highly vulnerable to forest degradation and eventual deforestation from small-scale use. Pressure on forest will grow as jobs and incomes from the plantation increase local population and consumption, and as communities are displaced from plantation land.

Priority 5: Fair and sustainable benefits from REDD+

Because of the way in which Liberia's natural resources were used to fuel conflict rather than development, and because of the steps that Liberia has taken to break with this past and establish a natural resource economy that supports equity and sustainability, the REDD+ Strategy should also prioritize strategy options for distributing REDD+ benefits fairly, and for investing REDD+ income so that the benefits are sustainable.

3.1.1 The role of Protected Areas in conserving forest carbon stocks

The proposed Protected Areas Network covers an estimated 18% of the national forest land and is tightly focused on the most dense forest (>80% canopy cover). This area would be more than doubled by the national commitment to conserve 30% of forested land made in the 2006 Forestry Reform Law and reconfirmed in the Letter of Intent.

To be eligible for REDD+, the inclusion of Protected Areas must bring clear 'additionality'; in other words, it must enable conservation that would not have happened regardless of a REDD+ intervention. A small minority of the proposed Protected Area Network is actually protected by legislation, which thereby provides a case for Protected Areas being eligible in Liberia. Due to limited enforcement of conservation laws, existing and proposed Protected Areas are threatened by the drivers of deforestation described in this report. There is ample evidence from satellite imagery and from local projects that existing and proposed Protected Areas are being encroached and degraded. Protected Areas therefore represent the main strategy for conserving carbon stocks in these areas.

The Protected Area Network as currently proposed provides the basis for extending the area under statutory conservation in the short term. However, changes in the size and location of these proposed Protected Areas are very likely as the detailed survey, planning community consultation work that is required to prepare each Protected Area done. In addition, there is an opportunity to incorporate new areas in order to achieve the commitment to conserve 30% of total forest.[14,15]

The size and effectiveness of the Protected Area Networks depends on the management of land currently designated as FMC logging concessions. This is because they cover a greater area of dense forest than the current proposed Protected Areas (29%) and are typically located beside and between them. Together, Protected Areas and FMCs account for almost 50% of the dense forest and this proportion could reach 60% if the commitment to conserve 30% was reached. Securing the Protected Area Network and managing logging in FMCs so that loss of forest cover and biodiversity is minimized are therefore priorities for the national REDD+ Strategy.

Experience to-date has shown that the establishment of Protected Areas is a long process. Consultation with affected communities and the agreement of boundaries is important and typically painstaking work. Parliamentary approval of the legislation required to enact a Protected Areas also tends to take years. As a REDD+ Strategy Option, the establishment of Protected Areas is therefore likely to be divided into a short-term objective – establishing a core of Protected Areas for which the planning is relatively advanced – and a longer term effort to expand and consolidate the national network.

3.1.2 Priorities and Strategy Options

For each of the priorities, there is a set of 'Strategy Options' that define more specifically how the Strategy can be achieved. These Strategy Options are based on analysis of the available evidence and consultation with a wide range of REDD+ stakeholders.[16] They are termed 'Strategy Options' because there is a need to try different approaches and gather evidence on the effectiveness and costs and benefits of interventions. **The REDD+ Strategy aims to strike a balance between focusing on areas that are likely to have the greatest effect, whilst at the same time creating opportunities to experiment and learn.** The Strategy and the policies and measures can be refined as Liberia moves through the phases of REDD+; from preparation, to investment and demonstration, and then to full implementation.

[14] Junker, J., et al. Integrating wildlife conservation with conflicting economic land-use goals in a West African biodiversity hotspot. *Basic and Applied Ecology* (2015), http://dx.doi.org/10.1016/j.baae.2015.07.002.
[15] Kantor, J., et al. (2013) Mapping potential biodiversity benefits from REDD+. Liberia. Preliminary Results. Prepared by UNEP-WCMC, Cambridge, UK; Forestry Development Authority, Government of Liberia, Monrovia, Liberia
[16] The Strategy Options, strategic priorities and the analysis that underpins them have been consulted on, amongst a wide range of organizations relevant to REDD+.

3.2 Strategy Options

Goal	**Reduce emissions from deforestation and forest degradation and increase benefit sharing**				
Strategic priorities	*1. Reduce forest loss from pit sawing, charcoal production and shifting agriculture.*	*2. Reduce impact of commercial logging*	*3. Complete and manage a network of Protected Areas.*	*4. Prevent or offset clearance of high carbon stock and high conservation value forest in agricultural and mining concessions.*	*5. Fair and sustainable benefits from REDD+*
Strategy Options	1.1 Manage pit sawing (chain saw logging) to reduce loss of forest. 1.2 Reduce impact of charcoal industry on forest through better regulation, improved efficiency and the development of alternatives energy sources. 1.3 Increase area and productivity of non-forest land under permanent food and cash crops, to reduce the expansion of shifting agriculture. 1.4 Locate services and new infrastructure development in non-forest and less-dense forest areas.[1] 1.5 Integrate hunting, artisanal mining and forest restoration into community-led livelihood and sustainable forest management practices.	2.1 Ensure that all industrial logging is practiced to high conservation standards, so that loss of forest and biodiversity is minimized. 2.2 Conserve and maintain areas of high conservation value within commercial forestry concessions, such as important wildlife corridors. 2.3 Review Timber Sales Contracts to ensure compliance with forestry laws and EIA standards and establish a strong presumption against further TSC contracts on dense forest and within 3km of Protected Area. 2.4 Prevent unregulated pit sawing and charcoal production in forestry concessions. 2.5 Manage commercial forestry in community forests to achieve sustainable logging standards as apply to FMCs.	3.1 Complete the Protected Areas Network and strengthen management to prevent forest degradation. 3.2 Expand the Protected Areas Network to conserve 30% of forest land. 3.3 Reduce pressure on Protected Areas from surrounding communities (using priority 1 measures). 3.4 Develop and implement land use plans at landscape scale, to integrate production and conservation.	4.1 Conserve HCS-HCV forest within agricultural concession areas, including developing and implementing a policy for the sustainable management of these conserved areas (using priority 1 measures) 4.2 Apply policy of conserving HCS-HCV forest to all agricultural concessions, including large private farms. 4.3 Ensure that mining result in zero-net deforestation, through mechanisms such as biodiversity offsets. 4.4 Locate future large-scale agriculture and mining concessions in less dense and non-forest areas.	5.1 Define carbon rights and develop policies and regulations for upholding these. 5.2 Establish benefit sharing mechanisms for REDD+, in harmony with those operating in the forestry, mining, agriculture and other relevant sectors. 5.3 Operate a robust monitoring, reporting and verification system for demonstrating reductions in emissions achieved through REDD+ policies.

3.2.1 Strategic Priority 1. Reduce forest loss from pit sawing, charcoal production and shifting agriculture.

Strategic Priority 1. Reduce forest loss from chainsaw logging, charcoal production and shifting agriculture

Strategy Options

1.1 Reduce impact of pit sawing (chainsaw logging) on forest through better regulation, improved efficiency and developing alternatives.	*1.2 Reduce impact of charcoal industry on forest through better regulation, improved efficiency and the development of alternative energy sources.*	*1.3 Reduce expansion of shifting agriculture in forest areas by promoting permanent food and cash crops in non-forest areas and through conservation agriculture.*	*1.4 Locate services and new infrastructure development beyond a 3km buffer from areas of dense forest and Protected Areas (including proposed PAs).*	*1.5 Integrate hunting, artisanal mining and forest restoration into community-led livelihood and sustainable forest management practices.*

Direct drivers

- Unsustainable level of felling and milling of timber with chainsaws.
- Unsustainable level of felling for charcoal production.
- Reduced rotation period for shifting agriculture and expansion into new primary forest areas.

Indirect drivers

- Urban demand for charcoal for cooking and lack of alternative energy sources.
- Urban demand for timber for construction and furniture.
- Demand for bush meat, charcoal and other forest products from neighboring countries with less forest.
- Increased population and consumption; especially the 'squeeze' caused by expanding populations close to concessions in combination with reduced land availability.
- Improved access to forest and markets through new roads and tracks.

Theory of Change

Community management of forest resources is the key because the community is the everyday actor in these forests. They are typically communally owned lands with customary methods for controlling access and use. Statutory authorities have limited presence or capacity to manage.

Communities prioritize livelihoods, so forest conservation must go hand-in-hand with increased jobs and income from forest resources. Poorer households and low-skilled workers are likely to be particularly affected by increased restrictions on the use of forest resources and so must be provided with alternative skills, training and enterprise support.

The inter-connected nature of land use is the reason why these different land uses are addressed within a single strategic priority. Households and communities depend on a package of livelihood options. Activities are often done in combination; e.g. pit sawyers remove larger and more valuable trees, the residues are used for charcoal and firewood and farmers then plant the cleared area. It is important to address activities such as hunting and artisanal mining at the same time. These may cause less forest loss, but they are important parts of the livelihood package. Also, forest management and good governance at local level depends on consistent treatment for all land users. Unsustainable hunting or

mining reduces forest biodiversity and hence the potential streams of funding for environmental services that is needed to complement REDD+ payments.

The basic approach to change in all these activities is to encourage sustainable management of production through zoning; encourage efficient or less harmful methods, reduce demand and enforce laws and regulations. The key to managing demand lies with urban-driven markets. Thus the demand for charcoal and firewood can be reduced by improving the efficiency of consumption (short term remedy) and by providing alternative energy sources (long-term solution) in towns and cities. Similarly, demand for timber can be suppressed by improving milling efficiency, encouraging alternative construction materials and, in the longer term, through woodlots for timber production[17].

To address shifting agriculture, the approach already adopted in national policy is to develop permanent food cropping, especially swamp rice, and to develop cash crops, so that people can buy rather than produce their food. Lessons learned from previous and existing projects will be crucial to ensure that approaches such as swamp rice and cash crops are promoted appropriately and effectively.

By focusing new services and infrastructure in larger settlements, Strategy Option 1.4 is in line with the process of urbanization. This is not about re-locating forest communities, but is about meeting the needs of the expanding future population in centers of population and economic development. This is efficient, in terms of public or private service provision and it reduces the pressure on forest that is associated with the expansion of settlements, roads and forest use. Land use planning and enforcement is the key to achieving this.

[17] Enhancement of forest carbon stock is judged to be less of a priority, at least in the short-term, because Liberia has more forested land that it can conserve compared to deforested land that it could reforest.

3.2.2 REDD+ Strategic Priority 2: Reduce impact of commercial logging in all forestry concessions

Strategic Priority 2: Reduce impact of commercial logging in all forestry concessions

Strategy Options

2.1 Ensure that all commercial logging (FMC, CFMA, TSC) is practiced to high conservation standards in keeping with national regulations and international standards.	*2.2 Conserve and maintain areas of highest conservation value within commercial forestry concessions, such as important wildlife corridors.*	*2.3 Review Timber Sales Contracts to ensure compliance with forestry laws and EIA standards and establish a strong presumption against further TSC contracts on dense forest and critical habitats.*	*2.4 Prevent unregulated pit sawing and charcoal production within forestry concessions.*	*2.5 Manage commercial forestry in community forests to achieve sustainable logging standards as apply to FMCs.*

Direct drivers

- Logging of forestry concessions and community forests to a level that is not sustainable.

Indirect drivers

- Logging roads provide access to forest for pit sawing, charcoal production, shifting agriculture, hunting and gathering.
- Uncontrolled pit sawing and charcoal production inside logging concessions adds to level of extraction and forest loss.
- Employment in logging concessions increases population, consumption and demand for forest resources.

Theory of Change

Forestry policy in Liberia is that commercial logging in FMCs and other concessions are to be managed on a sustainable basis. There is a well-developed policy and regulation for sustainable forestry but very little practical implementation. Standards and monitoring procedures are being strengthened, particularly through the VPA process. International experience indicates that selectively logged forest can retain around 50% of its carbon content and biodiversity value and this can be more like 75% if forestry practices meet high standards. Such results would need to be tested and proven in Liberia.

FMCs cover an estimated 24% of the total forest area and 29% of the dense (>80% canopy cover) forest. They are located in areas of high carbon stock and biodiversity. They lie between Protected Areas and create biodiversity corridors and large forest blocks. If managed for conservation as well as for commerce, FMCs could make a major contribution to REDD+ and Liberia's wider sustainable development goals. Forest areas in the concessions that are set-aside for their conservation value could contribute to the Protected Areas Network. To do this, logging concessions would have to be planned and managed as part of a wider, landscape-level and national-level plans for development and conservation.

Currently, there are seven FMCs being worked, and un-worked FMCs may become Community Forests (CFMAs) under the pending Land Rights Law. In addition, there are over 120 applications for CFMAs. Progress with developing community forestry has been slow. By early 2016 only nine community forests have been established (five for non-timber, four for timber harvesting), despite almost a decade of assistance from USAID (PROSPER), FDA and NGOs since around 2010. Nonetheless, in the long-term the expansion of commercial logging is most likely to occur in community forests. The application to CFMAs of the same standards that apply to FMCs is therefore important. Current regulations for commercial logging in community forests are different and less stringent, so the framework for community forestry need to be developed so that a similarly high standard of sustainable logging applies across the sector. Additional standards for reduced impact logging may have to be on a voluntary basis, certainly for existing concession contracts, and will therefore need to be accompanied by incentives. In general, a regulatory approach is unlikely to be sufficient to bring about changes in commercial forestry practices and therefore the potential for incentives should be explored.

3.2.3 REDD+ Strategic Priority 3: Complete and manage a network of Protected Areas

Strategic Priority 3: Complete and manage a network of Protected Areas

Strategy Options

3.1 Complete the Protected Areas Network and strengthen management to prevent forest degradation.	*3.2 Expand the Protected Areas Network to conserve 30% of forest land.*	*3.3 Reduce pressure on Protected Areas from surrounding communities (using priority 1 measures).*	*3.4 Develop and implement land use plans at landscape scale, to integrate production and conservation.*

Direct drivers

- Small-scale commercial and subsistence uses of forest, especially pit sawing, charcoal and shifting agriculture, but also artisanal mining, hunting and collection of non-timber forest products.

Indirect drivers

- Developments close to Protected Areas or proposed Protected Areas, such as mining and oil palm, increase population and consumption and may displace people into protected areas.
- Increasing population and consumption, especially in cities, driving demand for forest resources.

Theory of change

The creation of a network of Protected Areas, eventually extending up to 30% of forest land, is government policy as stated in the 2009 Forestry Reform Law and re-affirmed in the Norway-Liberia Letter of Intent, which sets a target of 2020 for achieving this.

Three PAs have already been established and a further three are close to being recognized in law (gazetted): Gola, Grebo and Wonegizi. The first phase of implementation will therefore consist of establishing and managing these six PAs. This will provide information on costs, management effectiveness, methods of community engagement, etc. that can be applied to the subsequent expansion of the PA network.

Existing and new PAs will be multi-use forest areas, with zones for strict conservation and areas for sustainable uses. Establishing PAs also requires solutions in 'buffer' areas to relieve pressure on the core area. The establishment of PAs must therefore go hand in hand with community development initiatives to support communities with sustainable uses of the forest. Co-management arrangements between communities and the Government and/or leading NGOs are already the norm for Liberia PAs and are likely to be so for new PAs.

The expansion of the Protected Area Network beyond these six initial areas is expected to follow the plan for proposed Protected Areas developed previously by FDA with international partners. However, each of these proposed sites need to be reviewed with up-to-date information on the forest and its biodiversity and cultural value, and with an overview of how critical sites, habitats and ecosystems between the Protected Areas are to be conserved. Land ownership is also a critical factor because much of the land in proposed PAs is likely to be recognized as community owned, under the pending Land Rights Act.

The forest set aside in forestry and palm oil concessions, and potentially other concessions, creates an opportunity to expand the PA network by adding this set-aside forest. This would require project and landscape level plans for forest conservation to be integrated into an overall national conservation plan and policy. The development of a PA network will be a gradual and long-term exercise, considering the pace of progress to-date and the substantial social and economic challenges to be overcome.

3.2.4 REDD+ Strategic Priority 4: Prevent or offset clearance of high carbon stock and high conservation value forest in agricultural and mining concessions.

Strategic Priority 4: Prevent or offset clearance of high carbon stock and high conservation value forest in agricultural and mining concessions.

Strategy Options

4.1 Conserve HCV-HCS forest within agricultural concession areas, including developing and implementing a policy for the sustainable management of these conserved areas (using priority 1 measures)	*4.2 Apply policy of conserving HCS-HCV forest to all agricultural concessions, including large private farms.*	*4.3 Ensure that mining concessions result in zero-net deforestation, through mechanisms such as biodiversity offsets.*	*4.4 Locate future large-scale agriculture and mining concessions in less dense and non-forest areas.*

Direct drivers

- Conversion of forest for palm oil plantation
- Degradation of remaining forest in concession by pit sawing, charcoal, shifting agriculture etc.
- Forest clearance for industrial and artisanal mining.

Indirect drivers

- Agricultural and mining operations attract population and increase consumption of surrounding forest resources.
- Conversion to plantation reduces the area of land available to communities, putting further pressure on the remaining forest.

Theory of Change

Upholding the no-deforestation commitment that the Government of Liberia adopts in the Letter of intent with Norway would result in palm oil companies setting aside large areas of forest for conservation. The gross concession areas are large and heavily forested, containing 10% of the total national dense (>80%) forest and 12% of 30-80% canopy cover forest. The plantable area is much less than this so there is the potential to achieve both plantation and conservation. But the management of the set-aside forests is uncertain and it is vulnerable to forest degradation and eventual deforestation from small-scale uses. Pressure on remaining forest will increase dramatically as jobs and incomes from the plantation result in increased population and consumption, and as community activities are displaced from plantation land. To prevent this, investment in production (of palm oil and other community livelihoods) can be linked to conservation agreements. This requires joint action by palm oil companies and affected communities, supported by government and NGOs.

In the long term, agricultural concessions for other commodities or plantations on large farms (private or community-owned) could become a significant cause of deforestation. The policy and approach pioneered with palm oil can be applied to these other cases.

Large scale industrial mining concessions cover a small but significant area of forest (approximately 2% under Class A Mineral Development Agreements). A much larger area is subject to mineral exploration licenses and mining is expected to affect a larger area in the long term. The greatest threat to forest probably comes not from the actual clearance for the mine, but from the raised population, incomes and consumption that the economic activity creates. The situation, and appropriate response, is similar to that for palm oil concessions. Biodiversity offsets are a method for compensating for the impact of mines by conserving an area of forest elsewhere. . Small-scale and artisanal mining for gold and diamonds occurs widely across Liberia, including in proposed Protected Areas. It is almost totally unregulated and there is insufficient data to judge the current and potential impact. It is treated in this Strategy as a community livelihood activity, under priority 1. The desired approach is to manage the impact of this by controlling the location, improving mining practices and supporting the community with land rights to be involved in managing the industry sustainably and sharing in benefits.

Further major concessions are not expected in the short term, but the location of future concessions has a major influence on the extent to which they cause deforestation and forest degradation or not. Hence the proposed policy for a presumption against such developments in densely forested areas.

3.2.5 REDD+ Strategic Priority 5: Fair and sustainable benefits from REDD+

The fifth strategic priority is of a different type. It is about how REDD+ is to be implemented, rather than what needs to be done to reduce deforestation or forest degradation. The three Strategy Options cover the essential pillars for the implementation of a national REDD+ program that delivers fair and sustainable benefits.

Strategic Priority 5: Fair and sustainable benefits from REDD+

Strategy Options

5.1 Define carbon rights and develop policies and regulations for upholding these.	*5.2 Establish benefit sharing mechanisms for REDD+, in harmony with those operating in the forestry, mining, agriculture and other relevant sectors.*	*5.3 Operate a robust monitoring, reporting and verification system for demonstrating reductions in emissions achieved through REDD+ policies.*

Theory of change

Carbon rights: REDD+ gives economic value to the carbon embedded in forests, so clarity on who owns the carbon and who can benefit is essential. This clarity and security is contingent upon how carbon rights are treated in existing land and forest tenure regimes. These regimes are undergoing great change in Liberia; new categorization of land under the Land Rights Policy and draft Land Rights Act will have significant implications for how carbon rights are defined in the existing legal framework.

The Strategy is therefore to integrate provisions for carbon rights into Liberia's evolving land rights law and the regulations for applying this law to forest and land management; i.e. to treat carbon rights as a component of wider land law, rather than a new and separate topic. This approach is in line with National Land Rights Policy, which states that the ownership of customary land should extend to ownership of natural resources on the land, including forests, carbon credits, and water.

Various options for doing this through policy reform, legal reform and legislative amendments are examined in a policy and legal review completed as part of the preparation of the REDD+ Strategy.[18] These will be taken forward through planned work to develop law and policy concerning forest management and carbon rights (described in Roadmap).

Benefit sharing: A benefit sharing mechanism is required to allocate fairly the rewards of REDD+. Liberia already has such mechanisms for distributing the rent from logging, mining and agricultural concessions. These involve local and national arrangements, including for the forestry sector local committees, a National Benefit Sharing Trust Board and plans for a national Conservation Trust Fund. These are established in law and regulation but are all in need of further development before they become effective. The approach for REDD+ is therefore the same as for carbon rights; to build on the existing arrangements and integrate the specific requirements for REDD+.

This requires new policy guidelines, strengthening of managerial capacity and of oversight, and the strengthening of decentralized arrangements for distributing benefits. Options for this are examined in detail in the legal and policy review and are taken forward in the implementation Roadmap. The ideal model depends upon the geographical scale and the conditions for disbursing REDD+ income. Implementation of REDD+ in Liberia will begin at a sub-national level, with rewards linked to inputs rather than carbon outcomes. Thus an input-based benefit sharing mechanism to allow pilot projects to demonstrate the working of REDD+ activities would be appropriate. An important principle for

[18] LTS-NIRAS (2016) Liberia REDD+ Policy, Legal and Institutional Framework. Report to FDA, June 2016.

benefit sharing mechanisms is that they should always aim to provide benefits to those whose livelihoods are affected adversely by REDD+ interventions.

REDD+ financing will not be available forever and so the underlying strategy in Liberia is to use it to create a 'virtuous cycle' of investments in natural and human capitals that delivers benefits for climate, development and conservation over the long term.[19] Thus REDD+ is intended as a catalyst for green growth that is eventually self-sustaining.

Measurement, Verification and Reporting: A system for the measurement, reporting and verification of emissions reductions is required to account for the results of REDD+ activities and thereby trigger the results-based payments that will flow into a benefit sharing mechanism. A high standard of proof of results is required by the international actors who are compensating emission reductions and so a system of data gathering, data management and reporting is required.

The approach being taken is set out in a MRV Roadmap[20] and it is to develop and test a system for monitoring and carbon accountability at the level of sub-national landscapes. It will initially be focused on measures for the sustainable management of Protected Areas and community forests and will monitor changes in forest cover (activity data) and associated GHG emissions (based on emissions factors for the different types of forests within the targeted landscapes) compared to a business-as-usual reference level.

3.3 Appraisal of Strategy Options: Cost Benefit Analysis and Strategic Environmental and Social Assessment

Consideration must be given to the economic efficiency of the Strategy Options and to their feasibility to be implemented, given the strengths and weaknesses of Liberia's institutions and regulatory framework. REDD+ Strategy Options must also be inclusive of safeguards on environmental and social issues. This section therefore provides an appraisal of the REDD+ Strategy Options, applying three forms of assessment: Cost-Benefit Analysis (CBA), feasibility analysis and Strategic Environmental and Social Assessment (SESA).

3.3.1 Cost-benefit analysis

The CBA estimates the economic implications of the REDD+ Strategy Options. Economic models were developed for the land uses associated with each of the strategic priorities for REDD+, to compare their financial performance under two scenarios: a business-as-usual scenario and a 'with REDD+ interventions' scenario. Under the REDD+ scenario it is assumed these land uses will change to more sustainable forms, causing less deforestation and forest degradation. The cost of implementing REDD+ measures to bring about this change is also considered. The method and results of the CBA are presented in full in a separate report.[21] Because of the limited data on costs, benefits, land use and carbon stocks the economic assessment is preliminary and can be improved as better data becomes available from further research and monitoring of REDD+ implementation.

[19] This is in line with the UN-REDD approach as described in Sukhdev, P. et al REDD+ and a green economy. UN-REDD program policy brief, Issue number one.
[20] Herold, M. et al (2015) Terms of reference for developing capacities for a forest monitoring and measurement reporting and verification system. Report to FDA, January 2015.
[21] LTS-NIRAS (2016) *Cost-benefit analysis of REDD+ Strategy Options*. Final Report Technical Annex E.

Estimated cost of implementing REDD+

The estimated REDD+ implementation cost over 25 years is $1.7 billion USD. The establishment and maintenance of PAs alone is estimated to cost $750 million USD, constituting over 40% of the total estimated cost.

The **financial net-benefit** of REDD+ is difficult to quantify, given that costs are highly dependent on the selected strategy and scale of implementation. Currently the scale for results-based payment for emission reductions is limited (e.g. FCPF Carbon Fund, Germany's REDD+ Early Mover Program, and Norway). Assuming a price of USD 5/t CO_2 (as in the emission reduction purchase agreement with Costa Rica and currently paid by the FCPF Carbon Fund) the implementation of Protected Areas and sustainable forestry at full scale is likely to result in a substantial net-cost (Table 3).

Table 3: Potential REDD+ benefit

		Protected Areas	Forestry
Emission reductions	Million tCO_2	20	40
Implementation cost	Million USD	750	520
REDD payments USD/tCO_2 $5	Million USD	100	200
Net-deficit	Million USD	- 650	- 320

Source: LTS-NIRAS (2016) *Cost-benefit analysis of REDD+ Strategy Options.* Final Report Technical Annex E.

Potential REDD+ results-based payments cannot cover all investments and costs envisioned in the REDD+ Strategy. Funding sources to meet the deficit cannot, at this stage, be fully identified. The Norway-Liberia Letter of Intent provides a very important source, and income from voluntary carbon credit schemes are possible within the next five years, although on a small scale. Accordingly, the potential REDD+ results-based payments can only be seen as a trigger for a sustainable development pathway for the forestry and agricultural sectors, rather than the sole means to it.

REDD+ investments can be prioritized by weighing the potential GHG emission reductions, cost of interventions and likely impact on the socio-economic development potential of Liberia:

- Sustainable Forest Management (SFM) is the most attractive option with an estimated annual cost of less than $10 USD/ha. It comes at relatively low public cost and can generate substantial GHG emission reductions in comparison to, for example, agriculture. The private sector will carry a large share of the financial burden of implementing SFM in order to reduce annual allowable cuts to a sustainable rate.
- Sustainable forestry can be a mechanism for forest protection. SFM should be seen as an alternative and/or complementary approach to PAs, with the combination likely being less costly. However, if SFM is to have a protective function it must be supported by better regulations, enforcement and alternative livelihoods for people relying on forests (similar to PAs). Investments in sustainable forestry and conservation have the wider benefit of ensuring continued benefits from forests for the country for future generations.
- Effectively managed Protected Areas can be very expensive. Cost efficiency can be improved by concentrating Protected Areas on large areas. Wherever possible alternative revenue streams (e.g. biodiversity) should be identified.
- Agricultural intensification (including oil palm) increases profit per unit of land and can reduce the need for agricultural expansion if combined with effective land use planning and a better legal framework and its enforcement.

Strategic priority 1: Reduce forest loss from pit sawing, charcoal production and shifting agriculture.

The business-as-usual case for a mix of forest uses in a community forest setting produces an estimated profitability (Net Present Value) of approximately $33 USD/ha[22] to the community. This is in the absence of forest management cost to the community and likely results in overexploitation and,

[22] Based on 15 years duration of CFMA

eventually, deforestation. Considerably fewer revenues accrue if communities formalize their claim in a Community Forest Management Agreement (CFMA) and manage forests sustainably. The initial cost for forest management planning is especially high, while day-to-day management costs (monitoring, contract management, adjustment of plans) of the community are unknown and, hence, not factored into the CBA. The estimated NPV in a managed CFMA situation is $12 USD/ha, but is offset by reduced emission reductions of >300 tCO_2/ha, which could be worth approximately $100 USD/ha per year. Based on these estimates, a change to REDD+ could bring a net gain, but the public sector would have to fund the considerable conversion costs of around $20 USD/ha per annum.

For pit sawing operators, in unregulated circumstances, the profitability is high; an estimated $300 USD/ha (harvesting of all trees with market value). In the REDD+ scenario it is much lower, at only around $34 USD/ha. The lower harvesting volumes will result in higher carbon stocks.

For charcoal producers, estimates of the economic return per hectare are as high as $341 USD/ha for production linked to land clearance for shifting agriculture, and $76 where waste wood from timber harvesting activities is used (less biomass is available per hectare). This drops substantially to around $25 USD/ha if charcoal is managed sustainably.

For farmers and investors, the profitability of agroforestry and production of staple food crops with improved management (using example crops of cocoa and rice) is estimated to be 15 to 20 times greater than that achieved with traditional practices. With support for modern methods and inputs, yields can be increased substantially making permanent farming economically more attractive than shifting cultivation. But without the inputs of modern farming, fertilizer, pesticides etc. permanent farming cannot compete with shifting agriculture and so farmers have no incentive to change. Thus considerable public sector investment will be required to change agricultural practices in Liberia. Higher yield per unit of land can help to reduce the expansion of agricultural land into forests. However, more profitable agriculture may create a reverse incentive, leading to accelerated forest conversion if not supported by an appropriate legal framework and enforcement.

Strategic priority 2: Reduce impact of commercial logging

A reduction of volume harvested to Reduced Impact Logging levels would likely have a significant impact on the profit of logging companies, possibly reducing profitability by two-thirds; from an estimated $650 USD/ha to less than $200 USD/ha. The change in management could result in an increase in carbon stock over time, but with less of a value than the profit foregone. From a national policy perspective, a shift to sustainable forestry is in any case necessary if the Government of Liberia is to achieve its policy objective of having a timber industry that generates employment and revenues for the long term. However, REDD+ results-based payments alone will not fill the gap, although they could be used to offset the costs to private operators to encourage more sustainable practices.

Strategic Priority 3: Complete and manage a network of Protected Areas

The cost of establishing and effectively managing the Protected Areas Network is estimated to increase nearly ten-fold, from current levels of expenditure. However, carbon savings can be substantial if compared to alternative uses of the proposed Protected Area (e.g. if it is used for commercial forestry or shifting agriculture) and hence there is potential to generate revenue from REDD+ results-based payments. The example of Gola, from neighboring Sierra Leone, suggests that REDD+ could cover core management costs, with a surplus to create an endowment to cover costs in perpetuity. However, this does not include the up-front investment costs of establishing the Protected Areas, which in Liberia's case will be very high.

Box example: REDD funds for Gola
In Sierra Leone, funding was secured from the EU to develop the Gola REDD+ project and additional funds were provided by project partner RSPB, to develop the project and sustain conservation work until carbon revenues are available. The partners are holding negotiations to sell the credits that will be generated by the project after the first verification and are confident that sales will cover the required core annual budget ($1,686,117 = c. $25/ha/pa for 68,500 ha PA) with excess revenues being placed in a trust fund to ensure that the area is protected beyond the lifetime of the project.

Protected Areas do have other income streams which can help fill the gap; 10% of stumpage fees and 10% of forest product fees are meant to be allocated to cover operations cost of the Protected Areas Network. Protected Areas also attract substantial funding from donors for biodiversity conservation. Biodiversity offsets from the mining sector are another potential source of significant income.

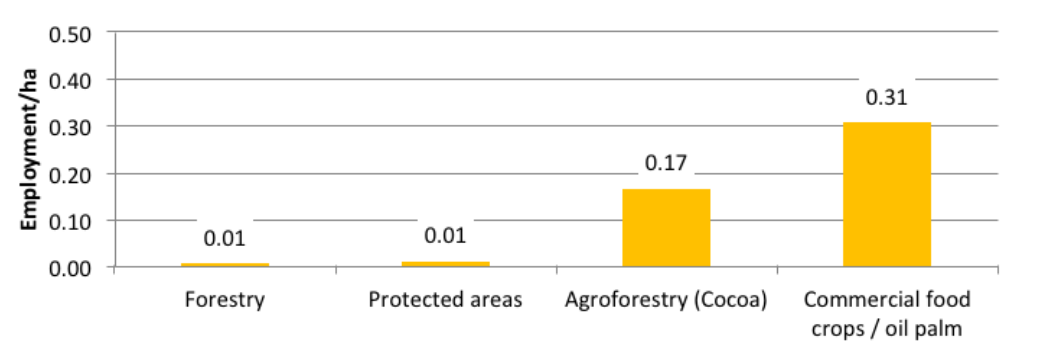
Strategic Priority 4: Prevent or offset clearance of high carbon stock and high conservation value forest in agricultural and mining concessions.

Palm oil production is the land use with the highest profitability and therefore the highest opportunity cost if REDD+ interventions restrict the development of plantations. Returns to palm oil out growers selling unprocessed fruit are possibly 20 times higher than returns from forestry or traditional farming systems. The net-benefit to communities from land rent and employment for plantations established by the concessionaire is lower, but still an estimated eight times higher than income from traditional land uses.

This profitability will drive the expansion of oil palm on concessions and by out growers, hence the potential for emission reductions comes from avoiding the clearance of HCV/HCS forest. This is substantial, because the majority of the palm oil concession land is forested. A greater area can be conserved than cleared of HCS/HCV forest is set-aside. The costs and benefits that are relevant are therefore those for conserving the set-aside forest; i.e. the same as for Protected Areas or areas where conservation is achieved through sustainable forestry practices.

Wider economic benefits

Significant gains in yield and subsequently economic success can be generated by improving agriculture standards. Thus, in the long term, public sector investments into agriculture will be repaid in increased tax revenues and reduced need for aid in rural areas. A comparison for the potential gain in employment is presented in Figure 4 as number of people employed per hectare in a given land use. Both forest conservation and large scale commercial forestry employ few people in comparison to smallholder agroforestry cash crops such as cocoa, which require approximately 17 people per 100 ha, and food crops which employ about twice as many again (assuming modern agriculture but not mechanized).



Employment stated is for improved management. Employment in agriculture includes self and informal employment. Land management relies on manual labor rather than mechanized systems.

Figure 4 – Employment generated in different land uses

Source: LTS-NIRAS (2016) Cost-benefit analysis of REDD+ Strategy Options. Final Report Technical Annex E.

3.3.2 Social and environmental safeguards

A Strategic Environmental and Social Assessment of the REDD+ Strategy Options was conducted through extensive research and consultation, presented in full in a separate report.[23] The SESA is a requirement of the FCPF REDD+ process and an important tool for better implementation and monitoring of social and environmental safeguards. The SESA has informed adjustments in the Strategy Options to mitigate negative impacts and strengthen positive impacts. It also provides the basis for an Environmental and Social Monitoring Framework (ESMF) which identifies the social and environmental risks arising from REDD+ interventions that are to be monitored on an ongoing basis.

[23] Government of Liberia (2016) Strategic Environmental and Social Assessment of the REDD+ Readiness activities of the Liberian Environmental Protection Agency. Report by TetraTech (forthcoming)

Summary of key social and environmental risks and Strategy responses

Strategic Priority 1. Reduce forest loss from pit sawing, charcoal production and shifting agriculture

Social and environmental risks	*Strategy response*
Interventions to restrict activities such as pit sawing, charcoal production and shifting agriculture risks peoples' livelihoods and food security. Expansion of the Protected Areas Network will restrict access to resources by communities in and around these areas, with the same risks to livelihoods.	The focus of the Strategy should be on limiting the future expansion of unsustainable forest uses, not preventing current levels of use.
Concentrating new infrastructure, services and other development away from dense forest areas may deprive communities in these dense forest areas.	Conservation measures are to be accompanied by development and alternative livelihoods interventions. The approach to small-scale commercial activities is to make sustainable activities profitable to the forest owning and/or using communities.
Greater regulation of the pit sawing and charcoal sectors will result in increased prices for urban and rural consumers.	There is recognition in the Strategy of the need to provide incentives and not just rely on regulation to change practices.
Very little is known about the feasibility and effectiveness of changing traditional agriculture practices, or developing community-based forest management programs. The large-scale application of untested changes could create large social and environmental risks so initially a pilot approach, in localized areas should be followed.	The Strategy Options were developed to include demand-side approaches, e.g. reducing urban demand for charcoal by developing alternative energy sources and by planning the location of infrastructure and service centers.
Agricultural intensification will results in water and soil pollution (e.g. by pesticides).	Interventions are focused on limited geographical area so that impacts can be closely observed and managed, and so that packages of complementary measures can be applied together.

Strategic Priority 2: Reduce impact of commercial logging in all forestry concessions

Social and environmental risks	*Strategy response*
Conservation goals will not be achieved and environmental impacts avoided without specific standards for logging, reduced impact logging, HCV, HCS, management of set-aside forest etc., and without established regulations and effective management to uphold these standards. A heavy reliance is placed on local and national institutions whose capacity is known to be extremely limited. Institutional responsibilities, for enforcing new standards, legislation and processes need clarification, including clarification of respective roles, and interaction between, the FDA, EPA and community bodies in relation to both FMC and CFMA. The leakage of community activities from forest concessions, and population influx to areas near concessions, will indirectly affect areas where conservation of HCS/HCV forest is desired. The imposition of higher standards and tighter controls on logging operations will reduce short-term profitability to private operators and potentially revenue to government.	The Strategy does not directly deal with the need to develop existing standards and management of these, but relies on this being covered by measures being implemented through LFSP, VPA and other initiatives. Institutional strengthening is recognized as a serious barrier and the Strategy links to capacity building measures within existing and planned programs. Institutional strengthening measures are described in the Roadmap (section 4.4). The Strategy takes a landscape approach in which the various land uses and interventions are planned together, with an emphasis on integrate land use planning. The Strategy recognizes the need to provide incentives for logging companies, especially if they are to be asked to exceed the standards defined in their contracts and existing forestry codes.

Strategic Priority 3: Complete and manage a network of Protected Areas

Social and environmental risks	*Strategy response*
The currently proposed PAN may not target the best biodiversity sites and may exclude the opportunities that arise for including set aside forest in community forestry, commercial logging and palm oil concessions. Failure to meet FPIC principles and to properly engage communities in identifying/planning for the completion and expansion of the PAN will result in adverse impacts on affected communities. The PAN may underperform if there are no opportunities for communities and the private sector to be more actively engaged in forest management. Restrictions on pit sawing, charcoal etc. in an expanded PAN may cause problems in meeting domestic demand for construction and other wood materials and urban demand for energy sources.	Completion and expansion of the PAN is treated in the Strategy as a process that involves review and a new strategy for the remaining PAN, and for inclusion of set-aside forest. The Strategy takes a strong community-led approach, reflecting that in current and planned interventions. It recognizes the need for private sector involvement and incentives as well as regulations. The approach to implementation is to pilot through projects and landscape-scale initiative, which will provide evidence on the effects of interventions on urban markets etc. before the interventions are scaled up.

Strategic Priority 4: Prevent or offset clearance of high carbon stock and high conservation value forest in agricultural and mining concessions.

Social and environmental risks

To have their intended impact, set aside and offsetting arrangements need to be specified clearly. Lack of capacity amongst national and local institutions may prevent the development of such specifications, the negotiation of ways to apply them with companies and communities and the monitoring of compliance.

The influx of population to areas where there are concessions and employment will create added pressure on forests. Alternatively, community land uses displaced from concessions will lead to new areas of forest being exploited.

Strategy response

The Strategy does not directly address capacity constraints although it recognizes them as a barrier and relies upon these being addressed by REDD+ interventions. The main aim of the Strategy is to bring agriculture, mining (and energy) firmly into the REDD+ Strategy, so that a multi-sector approach can be taken.

The indirect effects of concessions are addressed through Strategy Options for managing land uses displaced into set-aside forest in concessions or in protected areas. In particular, a strategy to link concession benefits to conservation agreements is adopted.

Strategic Priority 5: Fair and sustainable benefits from REDD+

Social and environmental risks

Changes to land use and mechanisms for distributing REDD+ benefits could have harmful social impacts if done without local involvement and consent.

The benefit sharing arrangements should provide benefits to those that are displaced economically from their livelihoods, and to those who are responsible for changing land use practices, in order to avoid adverse impacts and to provide the necessary incentives.

Given the potential for conflict, a credible forest grievance and conflict resolution mechanism (FGRM) needs to be in place and operational as a first step in the implementation of these Strategy Options.

Strategy response

The Strategy reflects the community-led approach that is established in Liberian policy; e.g., with the emphasis on the role of community forestry. It does not include new or additional policies for how this should be done using FPIC, the development of local institutions, or a new FGRM, as these are incorporated into existing or planned interventions.

The Strategy links the benefit sharing mechanism to the incentives required to bring about land use changes and does not see it as just a passive compensatory instrument. It supports the approach of combining REDD+ results-based payments with other sources of income (e.g. biodiversity offsets from mining) to create an investment fund for local activities that deliver both development and conservation objectives.

3.3.3 Capacity building needs

The main barrier to the implementation of the REDD+ Strategy is the limited capacity of Government and its partners to enforce laws governing the use of forest resources in the country and to plan and regulate for sustainable forest use.

Small and medium scale land users also lack the capacity to change their practices to achieve REDD+. Farmers and other business people in communities typically lack capital and access to affordable credit and they lack experience of new techniques and forms of business. Poverty, food insecurity and a lack of secure tenure greatly limits the ability of smallholders and business people to invest or change their practices. Although there are trade organizations or unions for charcoal, pit sawing and farming these institutions themselves lack the ability to provide capital, inputs or technical know-how to their members. Government bodies such as the Ministry of Agriculture, Ministry of Commerce and Industry and the FDA can provide very little of this support, because they have limited resources and staff, particularly in more remote rural areas.

The capacity limitations across the private, public and NGO sectors in Liberia and the resulting challenges for forest governance are well documented and they apply similarly to the others sectors important to REDD+: agriculture, mining, energy and community development.[24] A strategy for addressing the capacity deficit for implementation of REDD+ has emerged from experience in the forestry sector and is incorporated into the design of the Liberia Forest Sector Project. It consists of:

- Substantial support to strengthen sub-national institutions in the targeted landscape, including Community Forest Management Bodies (CFMBs), District and County Government, the regional and local offices of FDA and the development of new partnerships to bring these actors together at landscape level (Multi-Agency Regional Rask Teams. See Figure 7).
- Support for the strengthening of key national institutions, especially the REDD+ Implementation Unit and the two organizations who contribute to that unit; the FDA and EPA.

Through the LFSP, these public agencies at subnational and national level will benefit from capacity strengthening measures that emphasizes service delivery and law enforcement, forest information systems and mapping, monitoring and evaluation, communications, FM, and community engagement, including through support for the development and strengthening of benefit sharing/social agreements, gender equality, and community forest management.

The approach to capacity building in the LFSP is also evident in other REDD+ related projects: The VPA Support Unit supports capacity building across the forestry sector, to improve forest governance, and is increasingly directing its support towards the FDA regional offices and staff that will monitor and enforce forestry laws on a day-to-day basis. Community Forestry projects support local institutions and governance processes. Biodiversity conservation projects in specific Protected Areas or wider landscapes also emphasize support to communities, local government staff and public-private partnerships. Over time, the FDA, EPA and others will take increasing responsibilities for the activities that are currently being implemented through donor-supported projects. It is vital that the resources available to these agencies through central revenue support, via the Ministry of Finance, grows to reflect their increasing role. Further details on strengthening institutional arrangements are provided in the Roadmap (section 4.4).

[24] Making the Forest Sector Transparent Liberia VPA Transparency Gap Assessment 2012. SDI Global Witness. Liberia: Assessment of key governance issues for REDD+ implementation through application of PROFOR forest governance tool, funded by FCPF-World Bank, 2013. Capacity issues are also identified in the barrier analysis conducted for the REDD+ Strategy, drawing on published sources and expert interviews. The SESA also identifies critical capacity barriers to achievement of the REDD+ Strategy.

3.3.4 The role of research institutions

Managing development and conservation in Liberia's forest land requires a firm evidence base. The REDD+ process requires detailed information to measure and verify emission reductions. The piloting and demonstration phase of REDD+ requires evidence on the effectiveness and impacts of measures. Further evidence on the value of forests resources and the potential revenue streams that could complement REDD+ benefits (such as from biodiversity, payments for ecosystem services and non-timber forest products) would also be valuable. So would further cost-benefit analysis of the various land use options? Research and academic institutions therefore have an important role to play. This is recognized in the LFSP. Subcomponent 1.1 ($7.57 million) includes support to skills development, training, scholarships, study visits and development of forest management curricula.[25]

[25] LFSP Project Appraisal Document, pp.46-48.

4 CONTRIBUTION OF REDD+ TO NATIONAL GOALS AND LOCAL COMMUNITIES

4.1 NATIONAL DEVELOPMENT STRATEGY OBJECTIVES

Liberia Rising 2030, the national long-term development strategy, has the goal of creating a vibrant and inclusive middle-income economy; one in which more than half of the workforce is employed in the formal sector. This is to be led, but not dominated by, the concessions economy[26].

Agenda for Transformation, the national development plan for 2012-2017, sets out more immediate and tangible steps towards the 2030 vision. The REDD+ Strategy most obviously relates to the economic transformation pillar of Liberia's national development strategy, which includes forestry, agriculture, mining and energy. REDD+ also relates to the cross-cutting issue of Environment[27].

In 2015 Liberia adopted the United Nations 2030 Agenda for Sustainable Development and its 17 SDGs ('Global Goals'). These include: 1. *No poverty*; 2. *Zero hunger*; 7. *Affordable and clean energy*; 8. *Decent work and economic growth*; 11. *Sustainable cities and communities*; 12. *Responsible production and consumption*; 13. *Climate action* and 15. *Life on land*.

National development objectives are also contained in sectoral strategies such as the National Biodiversity Strategy and Action Plan[28]. Those most relevant to REDD+ are described below. There are some national priorities for which the REDD + Strategy is clearly complementary, as well as some potential contradictions:

- In general, REDD+ could make a major contribution to harmonizing national development and conservation goals, because it provides a potentially large income stream for the sustainable management of forests.
- The REDD+ Strategy contributes to, and relies on, various sectors and can therefore act as unifying or coordinating tool for Government.

Some potential areas of tension between the REDD+ Strategy and national priorities are:

- Economic development, income and jobs are an overriding priority, suggesting that REDD+ measures must not inhibit development goals if they are to be accepted. The REDD+ Strategy accepts this in principle and is comprised of Strategy Options that emphasize sustainable resource management as a development tool. However, the extent to which community forestry, and protected areas can actually deliver jobs and prosperity, as well as forest conservation, is largely unknown because there are not yet working examples at scale in Liberia. The Strategy is therefore about testing the 'green growth' model of development.
- Concessions are seen in national economic policy as providers of electricity, roads, rail, schools, health services and so on, filling the gap left by a state with inadequate resources or technical capacity. This objective needs to be carefully balanced with national sustainable development objectives and the REDD+ Strategy which looks to concessions in densely forested areas to 'tread lightly' and be leaders in a public-private effort to balance production and protection.
- The *Agenda for Transformation* goal for the regulatory environment is to "reduce impediments to expansion of employment and production", whereas REDD+ involves the tightening of regulation of land uses affecting forestry. This is in line with national forestry policy but not with the goal of lighter regulation.

[26] Government of Liberia (2015) Liberia National Vision 2030. National long term development strategy.
[27] Government of Liberia (2012) Agenda for Transformation: Steps towards Liberia rising 2030. National Development Strategy 2012-2017.
[28] Government of Liberia (2004) Liberia's National Biodiversity Strategy and Action Plan.

- The national objectives for transport are to improve road connections between all regions of Liberia, especially for southeast counties, and open more secondary and feeder roads. The REDD+ Strategy Option of limiting the construction of roads in densely forested areas may run against this objective. Practically, this won't be an issue for some time because the short-medium term national priority is rehabilitating the primary paved roads.

4.1.1 Forestry

National strategic objectives for the forestry sector focus on developing community and private-sector forest enterprises in order to increase incomes, employment and government revenues. An expansion of forest production for domestic and export markets is sought, through improved user rights, increased community participation and sustainable forest management. At the same time, the objective is also to minimize the illegal harvesting of forest resources and to assimilate informal forestry activities. The national Strategy must consider the transboundary nature of timber exports and trans-border conservation arrangements through collaborative agreements with neighboring countries.

4.1.2 Agriculture

National agricultural policy is focused on food security and production. The strategic objective in the *Agenda for Transformation* is sustainable growth in both the family-farm and plantation sub-sectors, and improved nutrition for low-income households. Further objectives are to increase agricultural productivity, add value and ensure environmental sustainability, especially for smallholders.

The *National Food and Agricultural Policy*[29] maintains the focus on food security, and also acknowledges the close ties between forestry and farming. It recognizes that the majority of Liberia's population subsists on small-scale agriculture, much of it slash-and-burn farming in Liberia's extensive forests. It identifies forestry, natural resources management and climate change as priority action areas. The policy is to move towards permanent agriculture, and mechanisms put forward to achieve this include subsidies for inputs and awareness raising of conservation agriculture and forest resources. Measures put forward for achieving the strategy of ensuring sustainable use and management of natural resources, include:

- Establishment of forests for watershed protection, conservation of biodiversity and stabilization of the global climate;
- Supporting participatory EIA in agricultural and forestry concessions;
- Giving priority to tenure arrangements that adopt sustainable and inclusive land management practices;
- Promoting sustainable cropping systems to conserve the natural resource base.

4.1.3 Mining

The strategic objectives for mining are about maximizing the contribution of the sector to national revenue and the growth of employment and enterprises. Mining companies are expected to make investments in power and transport infrastructure, to benefit other sectors and the surrounding population. The objective of strengthening the small-scale mining sector is included to help reduce poverty by providing job opportunities, income and commercial activities as well as reduce urban in-migration. The Mineral Policy of Liberia (2010) provides that the mining sector should strive to, "*put in place a mechanism for the evaluation of competing land use options*" and "*eliminate environmental degradation due to mining activities*." Currently, the 2000 Minerals and Mining Law is being updated to include much higher standards of environmental protection. Some improved standards include taking into account competing land use priorities in consultation with other government agencies, as well as considering conservation

[29] Government of Liberia (2008) Food and Agricultural Policy and Strategy.

needs prior to granting mining licenses. A zero-net deforestation policy for the sector is gaining ground internationally and Liberia has taken steps towards exploring this possibility. For example, a Roadmap for creating a national system for biodiversity offsets in the mining sector was conducted in 2015 with support from the World Bank.[30]

4.1.4 Energy

Strategic objectives for the energy sector are to supply affordable electricity from the grid to businesses and households in urban areas, while supporting alternative modes of generation for off-grid areas using small-scale renewable energy technologies. Public private partnerships, especially agreements with mining companies to fund power generation and transmission to serve the surrounding area, are looked for. The energy sector is encouraged to increase its environmental sustainability, including reduced use of charcoal and wood for fuel. The *National Energy Policy*[31] prioritizes universal energy access and protection of most vulnerable households. Recognizing that rural Liberians will receive central-grid electricity only much later, or not at all, the policy introduces the Rural Renewable Energy Agency (RREA) to promote access to modern, renewable energy, including high efficiency charcoal, solar power, and small hydroelectric schemes. The national policy notes the importance of wood fuel and promotes greater efficiency of use.

4.1.5 Environment

Environment is a cross-cutting issue in the *Agenda for Transformation*. The strategic objectives are to develop and implement clear environmental policies and quality standards to guide environmental management, including a National Plan for a Low Carbon and Climate Resilient Economy. Strengthening the monitoring capacity of government agencies, the private sector and CSOs is also an objective, as is strengthening ownership and participation of communities in decentralized natural resource management. The REDD+ Strategy has drawn on, and will contribute to, all these objectives and its implementation will provide valuable lessons on how, in practice, a low carbon economy can be created in forested landscapes. REDD+ is potentially a very important means by which Liberia can achieve its national strategy for biodiversity and meet its international biodiversity commitments. Forest that is conserved to reduce CO2 emissions is also forest that will continue to support Liberia's globally important wildlife and habitats.

4.1.6 Decentralization

The path to REDD+ in Liberia begins at the local level. It will first be achieved at project and landscape-scale, before possibly building up to a national program. This aligns with the Government of Liberia's strategic objective of preparing for the decentralization of administrative and fiscal capacity to local government within Vision 2030. It is recognized that Liberia is highly centralized and therefore the devolution of powers will be a 'major, long term undertaking'. A national policy on decentralization and local governance was launched in 2012 and deconcentration of service delivery to regional hubs of education, security and health has begun.[32,33] Decentralization is being led by the Ministry of Internal Affairs, with a focus on building the capacity of regional and district level government. The REDD+ Strategy and Roadmap, and actual practices in REDD+ related projects to-date, have a number of features that contribute to the national decentralization agenda:

[30] Johnson, S. (2014) Aggregated Biodiversity Offsets: A Roadmap for Liberia's Mining Sector. World Bank Group and PROFOR.
[31] Government of Liberia (2009) National Energy Policy: an agenda for action and social and economic development. Ministry of Land, Mines & Energy, May 2009
[32] Government of Liberia (2012) Agenda for Transformation: Steps towards Liberia rising 2030. National Development Strategy 2012-2017
[33] USAID, (2012) An assessment of decentralization and local governance in Liberia. Report by Social Impact, September 11 2012.

- Development of a landscape approach with partnership governance arrangements (government, Community, NGO and private sector) that relate to district and County government.
- Strong community engagement principles and practices, such Free Prior and Informed Consent (FPIC) being applied in the development of natural resource management projects.
- Pioneering work with co-management of protected areas (Government and Communities) and self-governance of community forests, including the creation of local institutions such as Community Forest Management Bodies (CFMB).

The main challenge for those implementing REDD+ and related natural resource management projects is to ensure that the institutions and processes being established are not parallel and competitive with the emerging arrangements for decentralized government, but are firmly embedded in these. This is critical for the successful implementation of REDD+ through activities such as land use planning, land use management and dispute resolution, as described in the REDD+ Strategy Roadmap.

4.2 NATIONAL CLIMATE CHANGE POLICY

A national climate change policy is being prepared, led by the EPA. The long-term strategy for climate change is expressed in Liberia's recent Intended Nationally Determined Contributions document (INDC) and to be integrated into the 2030 Vision, is to achieve carbon neutrality by 2050. The strategic options for mitigation in the INDC are the energy sector (electricity, transport) and the waste sector. The energy sector is identified as the highest contributor of greenhouse gases (GHG) in Liberia, emanating mainly from the use of traditional fuels such as firewood, charcoal and palm oil and the use of petrol and diesel for power and transport. The INDC seeks to reinforce the National Energy Policy with additional long-term targets and related activities, which includes:

- Reducing GHGs by at least 10% by 2030;
- Improving energy efficiency by at least 20% by 2030;
- Raising share of renewable energy to at least 30% of electricity production and 10% of overall energy consumption by 2030; and
- Replacing cooking stoves with low thermal efficiency (5-10%) with the higher efficiency (40%) stoves.

Various measures are put forward for achieving these targets, including:

- Strengthen institutional and individual capacity in renewable energy technology and management;
- Implement and strengthen policy that promotes private investment in renewable energy (hydro, biomass and solar etc.);
- Produce and distribute 280,543 energy saving cooking stoves that use fuel wood and 308,004 energy saving cooking stoves that use charcoal by 2030; and
- Implement large scale biomass projects to generate about 30 MW by 2030.

Besides energy and waste, the third sector featured in the INDC is agriculture. This is treated as an adaptation measure in the INDC and hence the Strategy and recommended measures are about developing drought resistance, flood resistance, and other forms of resilience. REDD+ measures would contribute to climate-smart agriculture, by supporting agro-forestry systems and the conservation of forest to maintain ecosystem services such as stable micro-climates, catchment water retention and flood control.

4.3 CONTRIBUTION TO LOCAL COMMUNITIES

The REDD+ Strategy places a strong emphasis on community benefits. "Fair and Sustainable" benefits are a strategic priority. Under this goal there is the objective to establish benefit sharing mechanisms for REDD+, in harmony with those operating in the forestry, mining, agriculture and other relevant sectors (Strategy Option 5.2).

The actions that contribute towards REDD+, described in more detail in the Roadmap, have a strong emphasis on communities benefitting from the management of forest resources. The Wonegizi REDD+ pilot project was set up explicitly as a 'pro-poor' initiative, with the aim of demonstrating how communities could benefit economically from forest conservation measures. Other projects, such as Conservation Agreements in East Nimba, Community Forestry supported by PROSPER/FIFES and the Production-Protection Agreements proposed for palm oil out growers share the same dual objective of community development and forest conservation. As such, they reflect the strong emphasis on poverty reduction and community rights that is a feature of Liberian policy for forestry and land use.

The LFSP, the main implementation program for REDD+, adopts this same approach. One of its three core indicators of success is the number of people with increased monetary or non-monetary benefits from forests (the other two core indicators are area of forest cover and emission reductions & carbon sequestration). The main intended beneficiaries of the LFSP are Liberian communities most directly dependent on forest resources. Specifically, the LFSP aims to benefit approximately 40 communities in the targeted landscapes in the Northwest region (Bomi, Lofa, Gbarpulo, and Grand Cape Mount Counties) and in the Southeast region (south section of Grand Gedeh County and Sinoe, Grand Kru, River Gee, and Rivercess Counties) (See Figure 5). The intended benefits from LFSP take several forms:

- The strengthening of community governance and institutions;
- Support to existing and new small-scale and community enterprises that are based on sustainable forest resource use;
- Support for sustainable agricultural practices that reduce slash-and-burn agriculture including agroforestry and food crop cultivation.

Benefits to communities in the form of funding for community projects is the same approach that is used in the commercial forestry sector. A share of logging revenues is put into a fund, which is used to support community projects, but has not worked effectively so far. Both the LFSP and VPA projects contains actions to improve the forestry benefit sharing mechanism.

The REDD+ Strategy Roadmap sets out an approach to establishing benefit sharing mechanisms for REDD+. Firstly, this involves improvement to the existing mechanisms in the forestry, mining and agricultural sectors. In line with the Strategic Priorities, these sector-specific mechanisms can then provide models for the results-based payments from the Norway-Liberia agreement to build on. Eventually, the objective put forward in the Roadmap is to have benefit sharing mechanisms that can combine REDD+ with forestry, mining and other relevant funding streams, so that communities are supported in an efficient and integrated way. Always, the type of benefits received by communities will depend on the type of land use activities they are engaged in, or are affected by.

It is important to note that REDD+ activities should provide social and ecological 'co-benefits' beyond the primary goal of mitigating greenhouse gas emissions. These are the benefits of maintaining the forests on which people depend for food, materials, clean water, a stable climate, shade, animals and birds, a logging industry with a long-term future and so on. They are benefits that communities and national policies for sustainable development are in favor of. The role of REDD+ is to tip the economic arguments in favor of sustainable forest management so that Liberia benefits from keeping more forest and the world benefits from reduced emissions.

4.3.1 Gender equality

It is widely recognized in studies and by experts and stakeholders that women play a prominent role in forest-based activities such as shifting agriculture, gathering of non-timber forest products and the trading of a wide range of forest products, from bush meat to charcoal. Women are also recognized as being potentially more vulnerable to changes in land use or land rights arising from REDD+ or other interventions. The successful implementation of the REDD+ strategy therefore relies upon a balanced and fair approach to the role of women and men in forest management. The Government of Liberia has participated in the Global Gender Climate Alliance and produced its own Climate Change Gender Action Plan. This includes a chapter specifically on forestry and REDD+, with recommended actions for FDA, EPA, the REDD+ Technical Working Group and others.[34] Approaches to engage women in the design of interventions and to involve them in benefits are evident in REDD+ related projects. For example, community consultations are typically structured to encourage representation by women and other marginalized groups. The Ministry of Gender, Children and Social Protection should continue its engagement with REDD+, remain an active member of the REDD+ Technical Working Group and encourage others to champion women's involvement and equal rights.

[34] IUCN (2012) Climate Change Gender Action Plan for the Government of Liberia. Global Gender Office, IUCN, for the Ministry of Gender, Children and Social Protection and EPA in Liberia.

5 IMPLEMENTATION FRAMEWORK

5.1 APPROACH, GEOGRAPHICAL SCALE AND TIMING OF REDD+ IMPLEMENTATION

The national REDD+ Strategy is accompanied by a Roadmap for implementation. These are key outputs from the current '*Readiness'* phase of the REDD+ process. There are a further two phases. Phase II '*Transformation'* is about piloting and demonstrating land use changes that reduce emissions, and strengthening the policies, laws and institutions that support this effort. Phase III '*Results-based payments'* is when Liberia can demonstrate that its changes to land use have resulted in a reduction of emissions from forest loss, and is therefore eligible for results-based payments.

The interventions required to start implementing the REDD+ Strategy are mostly already planned and funded. In particular:

- The Liberian Forestry Sector Project (LFSP) funded by Norway is a large and comprehensive program of community forestry and sustainable agriculture activities at community and landscape-level. It will also build capacity and processes for managing REDD+ at national level.
- The Voluntary Partnership Agreement (VPA) has complementary activities to improve the sustainability of the commercial forestry sector and improve forestry laws and governance.
- There is a strong package of measures for forest conservation in Protected Areas, community forests and commercial concessions led by international and Liberian NGOs and funded by a variety of bilateral and multilateral donors.

These programs and the REDD Strategy take a practical and step-by-step approach to REDD+, beginning with actions on the ground that will demonstrate how land use change can be achieved whilst at the same time benefitting forest-dependent communities. Successful activities can then be scaled up to produce measurable reductions in emissions at landscape level and then possibly at national level. Ultimately, the ambition is to have a national REDD+ program that attracts results-based payments on a substantial scale, enough to transform the economics of sustainable forestry, but this goal is some years away and the scale of operations and results-based payments cannot be known until the readiness and investments phases are completed.

The Roadmap for implementing the REDD+ Strategy therefore focuses on the short-medium term (1-5 and 5-10 years). The focus is on using existing institutions and processes; strengthening these and adding to the national framework for REDD+ only when there is a clear need. The aim is to avoid creating a complex and expensive infrastructure for REDD+ that distracts from practical action.

5.1.1 Geographical scale of REDD+ actions

Implementation of practical REDD+ measures in Liberia has started at a project and landscape scale. Liberia is therefore taking a 'nested' approach to REDD+, meaning that interventions are taken at a sub-national level and are fitted within a national framework for enabling and monitoring REDD+ results.

The piloting of community-based REDD+ approaches begun in 2009 and there is now a set of projects that are testing and demonstrating interventions that contribute directly to the REDD+ Strategy. The major examples of these are:

- Wonegizi REDD+ pilot project;
- Biodiversity program for East Nimba Nature Reserve and surrounding communities;
- Grebo Protected Area bio monitoring and community engagement program; and

- Gola Forest National Park gazettement and GolaMa community forestry connecting with the proposed Foya Nature Reserve.

The current projects are largely focused on single Protected Areas and the 'buffer zone' around these, although they are intended as catalysts for larger landscape initiatives that are eventually transboundary; the Tai-Grebo-Sapo complex into Côte d'Ivoire, the Gola Peace Park with Sierra Leone and the Nimba Mountain area stretching into Guinea.

More substantial land use changes and emission reductions will be achieved through landscape programs which cover a larger area; including several Protected Areas, with integrated projects and partnerships of organizations from different sectors, brought together within an integrated plan. The LFSP takes this approach, with interventions targeted at two landscapes in western Liberia and in the south east.[35] The main purpose of the LFSP interventions is to test and demonstrate approaches for achieving land use change. Like the other projects, it is part of the '*Transformation*' phase of Liberia's REDD+ process. It does not aim directly to produce verifiable reductions in emissions within its duration to 2020.[36]

Liberia therefore has well developed plans, partnerships and funding sources for projects and landscape level initiatives. These are at the planning and piloting stage but in the next 5-10 years they are expected to produce land use changes which will contribute to REDD+. There is a high degree of geographical overlap between initiatives, coinciding with the areas that the LFSP has adopted as targeted landscapes, and a 'critical mass' of activities which could produce emissions reductions and results-based payments within a decade.

[35] The World Bank. Project appraisal document for a Liberia forest sector project. April 19, 2016

[36] The objectives and results framework of the LFSP do not include emissions reductions, although this is the intended outcome of the preparatory actions supported by the project.

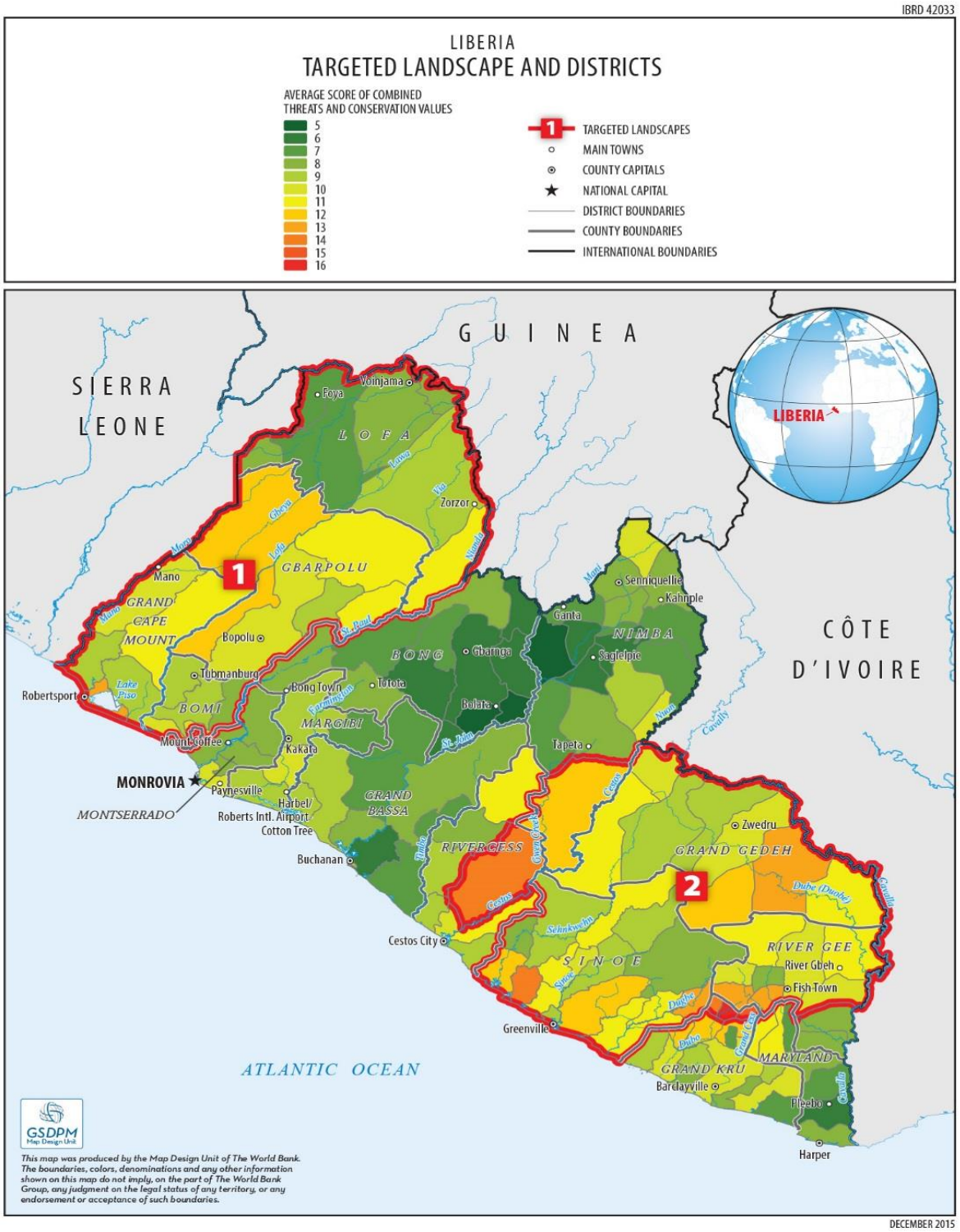


Figure 5 – Targeted landscapes for REDD+ in Liberia
Source: Liberia Forest Sector Project

5.1.2 Timescale for the REDD+ Strategy

A guide to the timescale for implementing REDD+ is given by the Norway-Liberia Letter of Intent to cooperate on REDD+ and developing Liberia's agricultural sector.[37] The Liberia Forest Sector Project (LFSP) that resulted from this agreement will be the main vehicle for implementing REDD+ in Liberia. It consists of three overlapping phases:

- The first 'preparation' phase is to support the completion of Liberia's REDD+ Readiness activities by approximately 2017-2018 (complementing the FCPF).
- The second 'transformation' phase is to 2020 and is to establish the plans, the institutional capacity, the legal and policy framework, the monitoring and reporting processes, and the social and environmental safeguards required to implement REDD+.
- The third phase is 'contributions for verified emissions reductions'. This introduces a results-based benefit sharing mechanism that will reward Liberia for independently verified emissions reductions with financial contributions, channeled through the World Bank, to support low carbon development.

The stated intention to begin the results based payments phase by 2018 means that the preparations, including a MRV system capable of measuring verifiable emissions reductions, should be in place by then. Actual emission reductions at a scale that can be measured and visible changes in forest cover resulting from REDD+ interventions are not expected to become apparent until well after 2020. Approximate time-lines for some of the major components of REDD+ are illustrated in Figure 6. This indicates that the achievement of a scaled up REDD+ program capable of producing substantial carbon payments coincides with the timing of the national long-term strategy *Vision 2030*.

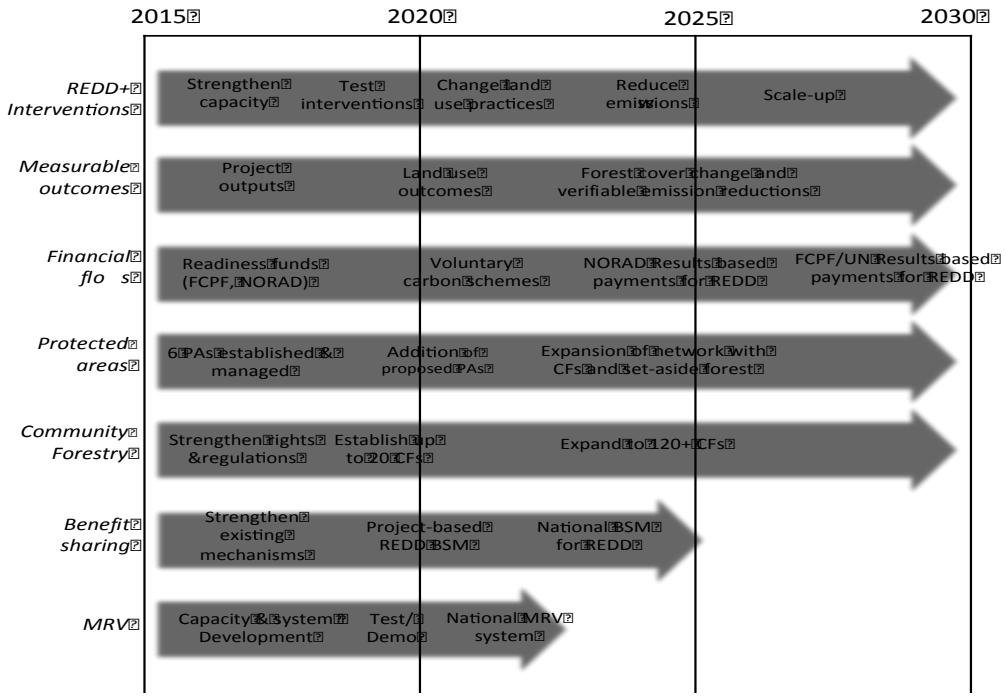


Figure 6: Approximate phases and timescale for key parts of REDD+ implementation
Source: Based on timings of LFSP and other key initiatives as described in documents and consultations conducted during preparation of the REDD+ Strategy.

[37] Letter of intent between the Government of the Republic of Liberia and the Government of the Kingdom of Norway on cooperation on reducing greenhouse gas emissions from deforestation and forest degradation (REDD+) and developing Liberia's agricultural sector. New York, 23 September 2014.

5.2 INSTITUTIONAL ARRANGEMENTS

The FDA leads the forestry component of Liberia's climate change agenda and has managed the REDD+ preparations with the Environment Protection Agency (EPA). These two institutions continue to work jointly on finalizing the REDD+ Readiness 'R-Package', with EPA leading on the environmental and social impacts assessment and monitoring and FDA leading on the Strategy and Implementation Plan. There are therefore well-established institutional arrangements for managing REDD+ readiness process and these have been adopted for implementation through the Liberia Forestry Sector Project.

At the technical level, coordination and consultation of implementation activities with Government and non-government organizations is arranged through a REDD+ Technical Working Group (RTWG). This is co-chaired by FDA and EPA and the membership includes ministries, agencies, civil society, development partners, academia, and the private sector.

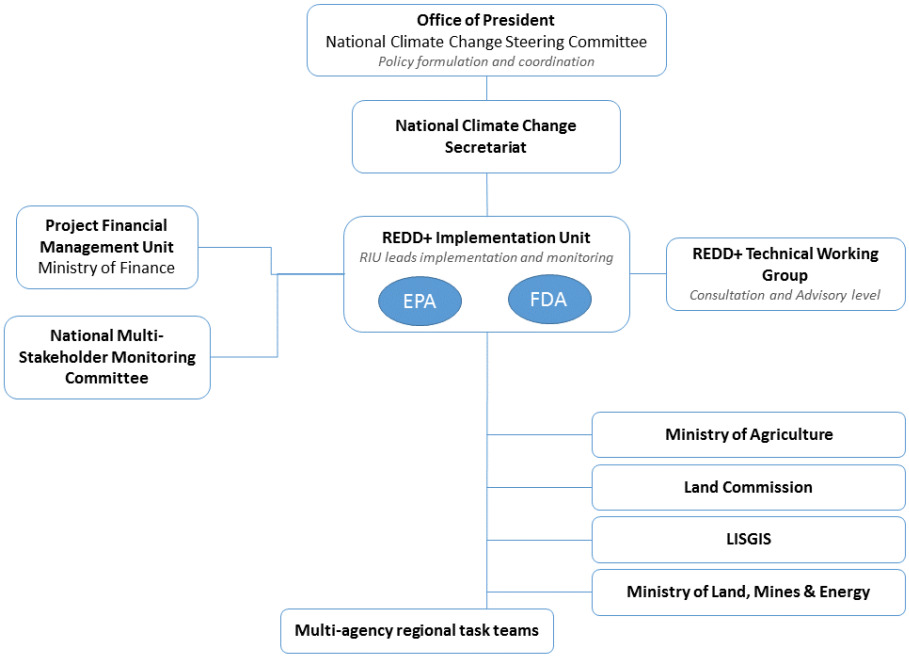


Figure 7: Institutional arrangements for the Liberia Forest Sector Project

5.2.1 Integration of REDD+ with national coordination arrangements for development and environment

Successful coordination between forestry and other sectors is a critical component of REDD+. Many of the drivers of deforestation and forest degradation emanate from sectors outside of forestry, including agriculture, mining, and energy. These other sectors all have activities and policy, legal and institutional frameworks that significantly affect land use, forest cover and the success of REDD+ activities.

Liberia's climate change and REDD+ institutions have been designed to include different land-use sectors, different government ministries and a wide range of non-governmental interests. Thus, the National Climate Change Steering Committee (NCCSC) serves as the policy formulation and coordination body for REDD+. The LFSP has reinforced these arrangements by formalizing the implementation role of the EPA and other key Ministries or Agencies in written Memoranda of Understanding (MoUs).

Nonetheless, the NCCSC is a newly-forming body and there is a general tendency for climate change issues to be lower priority, so there remains a challenge to truly integrate REDD+ into national policy making. Strengthening links with the policy and coordination structures that exist for national development planning is recommended. The Liberian Development Alliance (LDA) is the steering committee for the national development agenda. It is the Government's most strategic forum for engaging the private sector, civil society and development partners in making progress towards the goals in Liberia's 2013-2018 *Agenda for Transformation*, the long-term development strategy *Vision 2030: Liberia Rising* and major donor initiatives such as the *New Deal for Fragile and Post-Conflict States.*[38] The LDA is chaired by the president and led by The Ministry of Finance and Development Planning, with the Planning Coordination Unit at MFDP acting as secretariat. Under the LDA there are sub-committees for each pillar of the *Agenda for Transformation* (AfT). Forestry sits under pillar 2, *Economic transformation*. This structure for monitoring and implementing the AfT is repeated at county level with County Development Steering Committees and pillar sub-committees.

5.3 REDD+ Financing and Benefit sharing

There are various sources of REDD+ finance – both market and fund-based – for advancing Liberia's REDD+ readiness and achieving emissions reductions. Voluntary carbon schemes such as the Verified Carbon Standard allow for pilot projects – such as the Wonegizi pilot REDD+ project – to test the implementation at local level. Multilateral and bilateral sources of funding – e.g., the FCPF Readiness Fund and the initial portion of the Norway-Liberia Letter of Intent – can focus on building the capacity and systems for sub-national, and eventually national, implementation of REDD+ activities in line with the national Strategy.

A benefit sharing mechanism is required to allocate fairly the rewards of REDD+. Liberia already has such mechanisms for distributing the rent from logging, mining and agricultural concessions. These are well established in law and regulation but are all in need of further development before they become effective and efficient at delivering benefits to communities.

Options for REDD+ benefit sharing models are examined in detail in the REDD+ legal and policy review. The ideal model depends upon the geographical scale and the conditions for disbursing REDD+ income. With a sub-national 'nested' approach, a combination of sub-national input-based and sub-national performance-based benefit sharing is appropriate. This can use either existing benefit sharing mechanisms (e.g. National Benefit Sharing Trust) or new ones created at sub-national level (e.g. Conservation Funds for specific PA/PPAs like East Nimba Nature Reserve or Wonegizi). A common feature of the NBST mechanism and the REDD+ pilot is that community benefits are delivered in the form of projects, for sustainable agriculture for example.

If REDD+ in Liberia grows into a national program, a national benefit sharing system is appropriate. This entails the creation of a National REDD+ Fund, similar to other countries like the DRC REDD+ Fund, GRIF (Guyana) and FREDDI (Indonesia). The initial steps to establish a national REDD+ fund are to develop a national fund investment plan and operational manual. The sub-national benefit sharing mechanisms are then eventually merged into the national fund.

The REDD+ Strategy is concerned also with benefit sharing from mining and agriculture concessions. It looks, in the long-term, towards a financial arrangement in which REDD payments form part of a package of income streams for socio-economic development linked to forest conservation. It therefore advocates the eventual integration of sectoral benefit sharing mechanisms, for several reasons:

- REDD+ payments will not, by themselves, be sufficient to fund the transformation of land use practices;

[38] UNDP (2013) text from program document for support to the LDA.

- Benefits from agriculture, forestry and mining concessions can be used to help fund forest conservation inside concessions (through conservation agreements) and outside concessions (through offsets or out grower schemes);
- For communities and project implementers especially, it is confusing and inefficient to have multiple funds and management committees. Integrated funding is required for integrated management plans at local and landscape level.

The policy of an aggregated offsets scheme for mining that feeds into a conservation trust for managing protected areas (in Strategy Option 4.3) fits in with this approach, as does the work of NGOs, now supported by LFSP, to develop a Conservation Trust Fund. This is initially for East Nimba Nature Reserve but with the ambition that it becomes a national fund for the Protected Areas network.

The Roadmap accompanying this Strategy gives further details on actions in the LFSP to strengthen the National Benefit Sharing Trust Board. It also sets out a series of steps for developing a benefit sharing mechanism for REDD+, starting with the existing models: is therefore an incremental process with a series of possible steps, each of which needs to be tested:

- Strengthen the existing benefit sharing mechanisms for forestry (and mining and agriculture) and demonstrate that they can work fairly and efficiently.
  - Establish a benefit sharing mechanism for results-based payments within the LFSP project that is in harmony with the principles of the forestry benefit sharing mechanism.
    - Explore the possibilities for aligning the LFSP system for results-based payments with the forestry benefit sharing mechanism; through a pilot scheme in a chosen landscape(s) where forestry and REDD+ funding is combined and project approval criteria are developed to reflect sustainable development and REDD+ objectives.
      - Test the potential for streamlining multiple funds into a single benefit sharing mechanism in a landscape(s) where there are multiple income sources; from protected areas, forestry concessions, agriculture concessions, LFSP results-based payments and, possibly, mining offsets.

5.4 Monitoring and Learning from REDD+ Results

To qualify for results based payments, Liberia must be able to measure the reduction in emissions that result from REDD+ activities; for this it needs a Measurement, Reporting and Verification system (MRV) compliant with United Nations Framework Convention on Climate Change (UNFCCC) guidance.

The three primary components of a MRV are (1) satellite land monitoring system, (2) forest inventory, and (3) Greenhouse Gas inventory. Countries are expected to progressively develop and operationalize these components over the three phases of REDD+, and align them with monitoring systems, so that by the third phase of REDD+ they have a fully functional National Forest Monitoring System (NFMS).

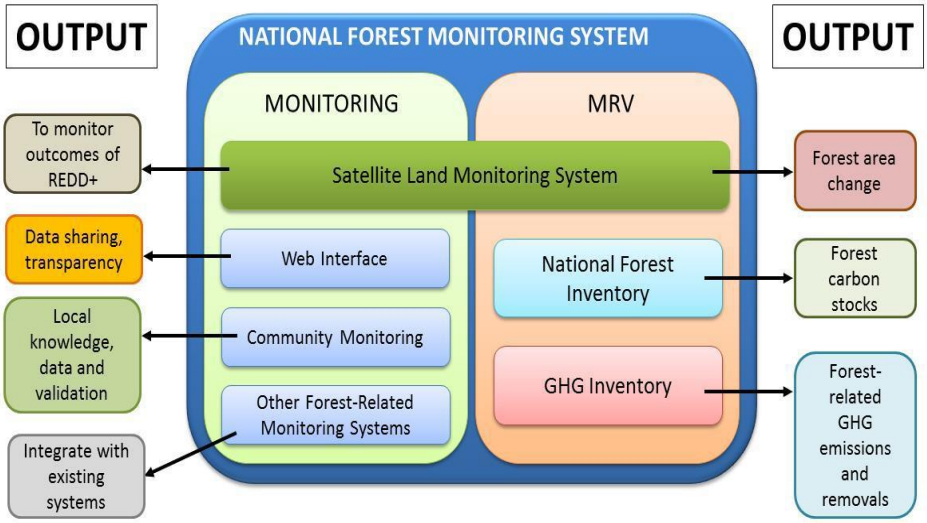


Figure 8: Components of a national forest monitoring system
Source: Liberia MRV Road Map, 2015

5.4.1 Liberia's road map to a MRV system

A Roadmap for preparing a MRV system has been produced.[39] Implementation involves the following activities, planned to take place between 2016 and 2019:

1. Establish institutional arrangements
2. Improve national forest monitoring: activity data
3. Improve national forest monitoring: carbon stocks and emission factors
4. Improve estimation and international Land Use, Land Use Change and Forestry, GHG inventory and REDD+ reporting capacities
5. Prepare for MRV of REDD+ activities on the national level
6. Implement a program for continuous improvement and capacity development
7. Continued national and local communication mechanism on REDD+ monitoring

The FDA, through the REDD+ Implementation Unit, takes the lead role in implementation. It will be partnered by the national statistics body, Liberia Institute of Statistics and Geo-Informational Services (LISGIS), and guided by a new national steering group for MRV/NFMS. Capacity building support is required for the FDA to oversee the technical work and serve the national MRV steering group. Preparation of the MRV needs to happen quickly, so that it can be applied to pilot activities during the 'transformation' phase of REDD.

5.4.2 Environmental and Social Monitoring Framework and the Feedback and Grievance Redress Mechanism

The MRV system measures the impact of REDD+ actions on emissions, but the wider environmental and social impact is also important. For this, an Environmental and Social Monitoring Framework (ESMF) has been developed. This is based on the priorities identified in the Strategic Environmental and

[39] Herold, M. et al (2015) Terms of reference for developing capacities for a National Forest Monitoring and Measurement, Reporting and Verification System to support REDD+ participation of Liberia: Background, Capacity Assessment and Roadmap. Report to FDA January 12 2016.

Social Assessment (SESA) and provides a guide to managing potential environmental and social impacts of the interventions contained in the REDD+ Strategy and Roadmap.[40]

An additional tool for monitoring social impacts is provided by the Feedback Grievance and Redress Mechanism (FGRM) that is being produced for REDD+. This is a required part of the REDD-Readiness "package" and it will be an important source of information on how communities and other interests are being affected by REDD+ interventions.

5.4.3 Review and updating of Strategy

The Strategy is a 'living document' and will need to be refreshed in the future. Reviewing and updating is especially important because of the current lack of solid information on deforestation trends and causes, and on the effectiveness of interventions. Because Liberia is at the start of the "testing and demonstrating" stage of REDD+, much will be learned from research, pilot projects and new projects over the next 3-5 years. This information needs to be captured, analyzed and used to improve the Strategy.

The process and timing for a review of the Strategy should be linked to the monitoring and evaluation system that is being put in place for the LFSP, because that is the major instrument for implementing the Strategy. The mid-term review and final evaluation of the LFSP (in years 3 and 5) are appropriate points at which the REDD+ Implementation Unit, supported by the REDD+ Technical Working Group, can review progress with the REDD+ Strategy. This will entail bringing together the lessons from LFSP with those from VPA and the other projects contained in the REDD+ Strategy and Roadmap, and combining this with information from the MRV, ESMF and FGRM.

[40] EPA (2016) Environmental and Social Monitoring Framework for REDD+. Report by Tetra Tech