Forest and Mosaic Landscape Restoration in Lofa County, Liberia

Pre-study Report and Programme Proposal

June 2016

Commissioned by: Norwegian International Climate and Forest Initiative (NICFI)

NIBIO
NORWEGIAN INSTITUTE OF BIOECONOMY RESEARCH

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World Agroforestry Centre

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Executive Summary

This document reports on a pre-study assignment aimed at supporting national stakeholders in considering the social, economic and environmental viability of an ambitious landscape level restoration/reforestation and forest plantation project in Lofa County, Liberia. More specifically to appropriate, describe how such a project can be designed to improve local access to environmental services from natural forest, reduce pressure on surrounding intact forest, increase uptake of CO_2, and strengthen local employment and economic opportunities including the engagement of private sector know-how and investment and public-private cooperation for financing. It presents Lofa county and the context of the assignment, identifies the needs and opportunities for sustainable land management, the associated costs and benefits, the enabling environment and the prospects for public private partnership in transforming Lofa County. It concludes with sustainable landscape management programme proposal for Lofa County.

The report is based on extensive review of literature, a field visit and interactions with communities and key informants in face-to-face and virtual meetings, walking survey to assess the needs and opportunities for large scale landscape interventions in Lofa County, and conducted a SWOT analysis. In the two weeks spent in Lofa county and Monovia, the pre-study team interacted with two village communities, and more than 50 people from local and national government, community based-organizations and non-governmental organizations. In some instances, the pre-study team did own analysis of available data though data was generally scarce.

Located in the northwestern corner of Liberia, bordering Sierra Leone and Guinea, Lofa county is Liberia's second largest county in terms of size (9982 km^2) and has about 277000 youthful inhabitants, most of whom are subsistence farmers. Lofa has a tropical, hot and humid climate, abundant rainfall providing excellent ecological and climatic conditions for a large diversity of forestry, agroforestry and agricultural crops. Vegetation in Lofa is composed of tropical rainforest including high forest, disturbed secondary forest and bush land, as well as savannah. Main crops produced in the area include oil palm, cocoa, coffee, rice, cassava and others.

Like in most parts of Liberia, Lofa county has suffered tremendously from two major crisis in its history, the civil war and the recent Ebola crisis. Located on the border with Sierra Leone and Guinea, Lofa county was the epicenter of the Ebola outbreak and severely affected by the civil war. These two crises have impacted the social and institutional fabric of communities in the county with tremendous consequences for education and the economy. Several small and medium-scale plantation activities including cocoa, and oil palm productions were abandoned for more than 20 years during the war. Hence poverty, unemployment and food insecurity are widespread.

Two major problems, related to the agriculture and the forest sector, were identified in Lofa county. Firstly, increasing Savannah invasion into agricultural and forest landscapes from the North (Guinea border) and West (Sierra Leone border) into Lofa County, particularly in Foya

district. As a consequence, an estimated 180, 000 ha of productive forest landscape is affected by savannah invasion. Secondly, there is increased deforestation, forest degradation and fragmentation of ecosystem, threatening over 300000ha of important remaining tropical Guinean forests in the county- including two main proposed protected areas, the Foya and Wonegesi forests with the later having transboundary linkages to another protected area in Guinea. Both savannah invasion and increased deforestation and fragmentation of forests are associated with poor shifting cultivation (slash-and-burn) practices as well as uncontrolled fires.

There is an urgent need to mitigate the fast expanding savannah and restore the invaded area into a sustainable and productive mosaic agriculture and forest landscape. There is also an urgent need to reduce deforestation and forest fragmentation as well as protect the few remaining areas of natural forest in this region. Given the huge agriculture and deforestation nexus in the county, it is imperative to address agriculture and livelihood related challenges as part of a bigger approach to sustainable development in the county.

We propose a forest landscape restoration and sustainable land management programme in Lofa county (RESTORE LOFA) as follows:

Goal: Contribute to sustainable development and poverty reduction through protecting natural forests, restoring degraded landscapes and developing the agricultural sector and value chain in Lofa County.

Specific Objectives and Outcomes:

1. Savannah restoration in Foya, Kolahun and Voinjama districts 180.000 ha
    a. Up to 120.000 ha agriculture and agroforestry (including oil palm, cocoa, coffee, rice, vegetables sustainably intensified, and increased diversification through introduction of improved varieties of fruit trees and other crops)
    b. 60.000 ha of degraded forest land restored and conserved, including conservation and buffer zones around the remaining natural forest areas
2. Buffer zones 100.000 ha
    a. Up to 100.000 ha of forest restored and/or conserved
    b. 10.000 ha agriculture and agroforestry (crops as outlined in 1.a. above)
3. Conservation corridors 100.000 ha established in the area between Foya and Wonegesi PPAs
4. Income from land-based commercial activities, substantially improved for up to 20000 households
5. Up to 4000 jobs created through rural enterprise
6. 2-5MtCO2 of emission reduction

Project Components:

The project outcomes will be achieved through seven main components as follows:

1. Land use planning and governance
2. Integrated Mosaic landscape: forest-agricultural-agroforestry in Savannah invaded areas
3. Forest Landscape restoration and conservation (buffer zones and corridors)
4. Performance based incentives and rural enterprise
5. Seed and nursery infrastructure
6. Institutional strengthening, capacity development and knowledge management
7. Project management, monitoring and evaluation

Duration: 2017- 2024 in two phases. Phase I- Inception and facilitation (2017-2019) and phase II, the main implementation phase (2019-2024).

The proposed project will leverage and collaborate with several initiatives at local and strategic level. At local level, Norway funded REDD+ initiatives in Wonegesi with FFI and elsewhere with the World Bank; and two USAID supported projects on smallholder oil palm (SHOPS) and cocoa (LIFE) that work on improving productivity and values. At policy level, several forward looking strategic initiatives related to land use such as the Liberian Agricultural Transformation Agenda–LATA; The Cocoa and Oil palm export strategies by the Ministry of Commerce and Industry and the International Trade Centre (2014); the Investment Promotion Strategy by the National Investment Commission (2013) and the ongoing land reform process.

A number of positive enabling factors that need to be built on at local level include mainly the existence of strong traditional / local governance including several farmer groups and cooperatives, as well as profitable business cases for a good number of agriculture and land-based value chains. On the other hand competition from mining in the southern central part of Lofa, land tenure and poor transport infrastructure are specific challenges that would need to be addressed in creative and effective ways if an ambitious sustainable land management programme for Lofa county is to succeed.

Financing: A performance-based innovative public-private financing approach is envisaged amounting to a total of USD 60 Million in two phases. 12.8 million in phase 1 and 47.2 million in phase II. Given the financial dynamics of land management practices (agricultural and forest restoration), which often take long period before initial revenues, Phase I of the project would be based entirely on public finance in order to build the necessary conditions, while phase II could be based in part on private finance with a target of at least 25% of the implementation phase budget (i.e. 12.8 Million).

Preamble

Norwegian Forestry Group (NFG), in partnership with World Agroforestry Center (ICRAF) and Norwegian Institute of Bioeconomy Research (NIBIO), was awarded a contract from the Norwegian International Climate and Forest Initiative (NICFI) to conduct a pre-study and project development for a forest landscape restoration, reforestation and forest plantation project in Northwestern Liberia, and Lofa County in particular.

The main objective of the assignment was as follows (see ToR in appendix 1):

"The objective of this assignment is to support national stakeholders in considering the social, economic and environmental viability of an ambitious landscape level restauration/reforestation and forest plantation project. As appropriate, describe how such a project can be designed to improve local access to environmental services from natural forest, reduce pressure on surrounding intact forest, increase uptake of CO_2, and strengthen local employment and economic opportunities. In this, identify opportunities for private sector engagement and investments, and public-private cooperation for financing."

The main deliverables of the assignment were:

- A needs and opportunity assessment.
- A report laying out the opportunities of a landscape level restauration/reforestation and forest plantation project, including proposed implementation arrangements and cost estimates for various components. Components relating to private sector investments should be explored as part of a landscape level project, but may include recommendations for further analysis.
- Detailed findings, analysis and recommendations as outlined in the "scope" section above should be included as annexes to the main report.
- A brief, fact based, presentation for fundraising and private sector dialog

Pre-Study team members:

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1 Introduction and background

1.1 Liberia – a brief overview

Liberia, is a country in West Africa with a population of 4.4 million (World Bank 2014) and a total area of about 9.8 million hectares (ha), is rather rich in natural resources, such as iron ore, diamond, gold, timber, large areas of arable land and high level of rainfall to support agricultural production. The civil war (1989-2003), damaged the physical, social, political, and economic infrastructure and its institutions. While the country has shown a progress towards long-term development after the end of unrest and return of peace since 2003, the outbreak of the deadly Ebola virus (2013-2015), had once again badly affected the country's economy, particularly the public services such as health and education, as well as food security and nutrition. Additional economic downturn was caused by the drop in global prices of the main trading commodities, iron ore and rubber, resulting in a drop of the GDP growth from 8.7% in 2013 to 0.7% in 2015.

Liberia is endowed with a globally significant forest resource, namely the largest blocks, of the remaining primary Upper Guinean tropical rainforest. Covering some ten countries in West Africa, the primary Upper Guinean forests are recognized as one of the twenty-five hot spots for world biodiversity, and support numerous of indigenous people and local communities. Total forest area in Liberia is estimated at 4,389,270 ha of forest land, constituting 45.5% of the total land area. These forests are important for climate change mitigation on a global scale, but also are among the most important production assets, source of income and livelihood for local communities and the country.

Stability after the end of the long civil war created development opportunities and increased the need for better livelihood for local communities most of whom are forest dependent. Undeniably though, in Liberia, poor farming practices involving slash-and-burn agriculture, shifting cultivation, illegal cutting of timber, establishment of new settlements and other human activities are among the multiple driving forces for a continued forest loss. In attempt to garner revenue, the government issued a series of logging concessions. However, some of the large-scale logging concessions failed to generate the anticipated revenues to the government, failed to create jobs and benefits to Liberians.

Recognizing the major challenges, and to encourage investments that strike a sound balance between different interests, respecting the legal and customary rights of local people, and conserving biodiversity, the governments of Liberia and Norway signed a letter of intent on September 24, 2014. This bilateral agreement forms the foundation for long-term collaboration between the two countries from the perspective of mitigating climate change, forest conservation and developing deforestation free agriculture. The agreement aims at implementing REDD+ strategy, and at the same time reducing poverty through sustainable agricultural development and sustainable forest management.

1.2 Lofa County

1.2.1 Location and demography

Lofa County is located in the northwestern part of Liberia (Fig. 1). Lofa is the second largest county, with a total land area of about 9982 km^2. The county is bordered by Sierra Leone to the west, Guinea to the north and east and the counties of Gbarpolu and Bong, Liberia in the south. Further, Lofa county is divided into six districts: Voinjama, Vahun, Salayea, Kolahun, Foya and Zorzor.

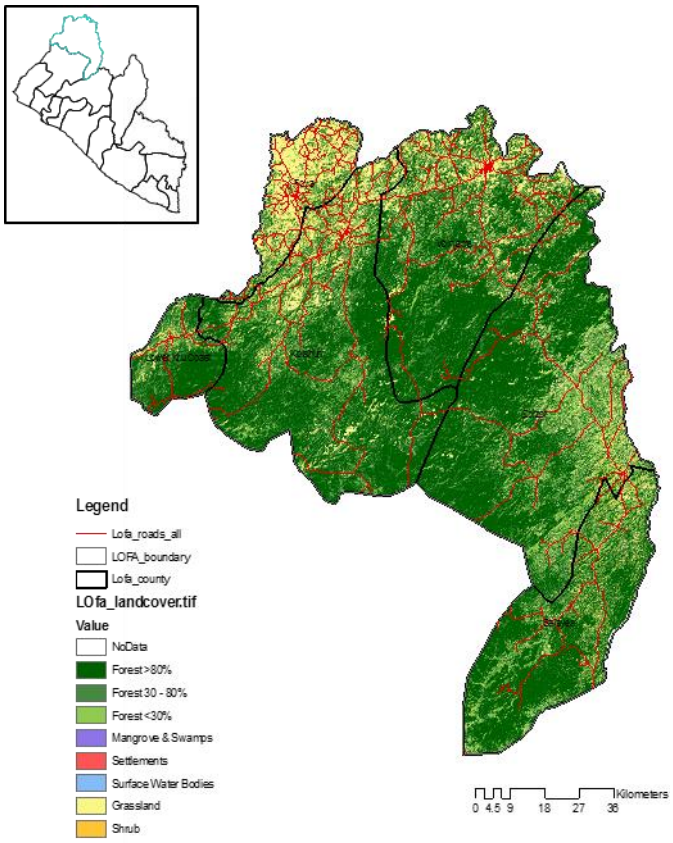

Figure 1. Location of Lofa County in Liberia (upper left). Roads, network, land cover of 2014 and the six districts of Lofa county. (Source: modified from FDA 2014).

Lofa has a total population of 276,863 (according to the 2008 population census) with at least seven groups recognized as indigenous. With a population density of 72 people per square kilometer, the population pressure on rural land area in Lofa county is generally low and is below the country average i.e. 93 people per square kilometer. The population density is unevenly distributed both among and between the different districts (Fig. 2), with Foya district having the highest share of the population (26%) and also the highest population density. The

parts of Kolahun district close to Foya district are also densely populated. Other main populated areas and other scattered settlements in the county are located along the main road connecting Voinjama and Monrovia. Lofa suffered probably more than any other county during the civil war as it was the epicenter of the struggle, resulting in massive infrastructure destruction and population displacement (Doocy 2009). Being a post-conflict area where the population largely consists of returnees, internal migration is still ongoing and new settlements in forest areas are being established.

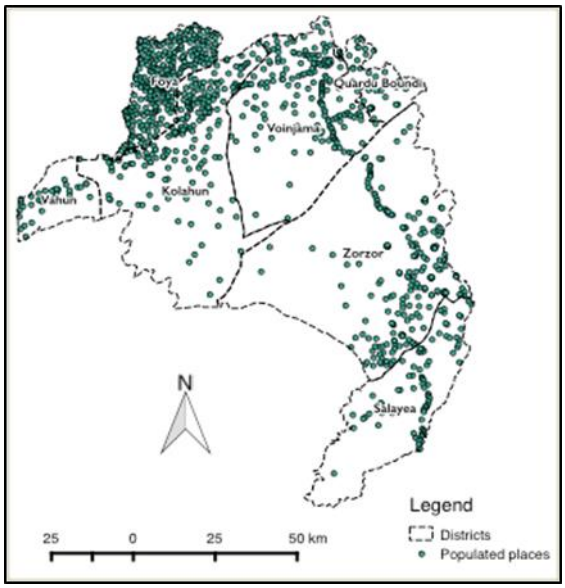

Figure 2. Population concentrations in the different districts of Lofa County.

The age structure of Lofa County population indicates the very high dependency ratio particularly from the younger population group i.e. less than 14 years of age (Fig. 3). The critical workforce for the population (15-44 years of age) is 43% of the total population according to the population census results of 2008. Due to the long period of conflict in the past, the population consist of more women than men, resulting in additional challenges to support the young population at the household level. The level of poverty is therefore generally high, particularly in rural areas. This was also reflected in 36.5% of the households in Lofa County were reported to be food insecure in 2010, and consequently depend on school-feeding, food-for-work or other forms for food aid for the most vulnerable groups.

Besides, the civil war impact, the population also endured a major influence of the latest Ebola outbreak that swept through Guinea, Sierra Leone and Liberia and claimed the lives of thousands of people. Presently, the county is in a stage of recovery, both from the civil war and the Ebola disease, and local communities are in serious need for support to rebuild their livelihood that

largely depend primarily natural resources. The migration from neighboring countries has also an effect on the poverty level and the pressure on the natural resources.

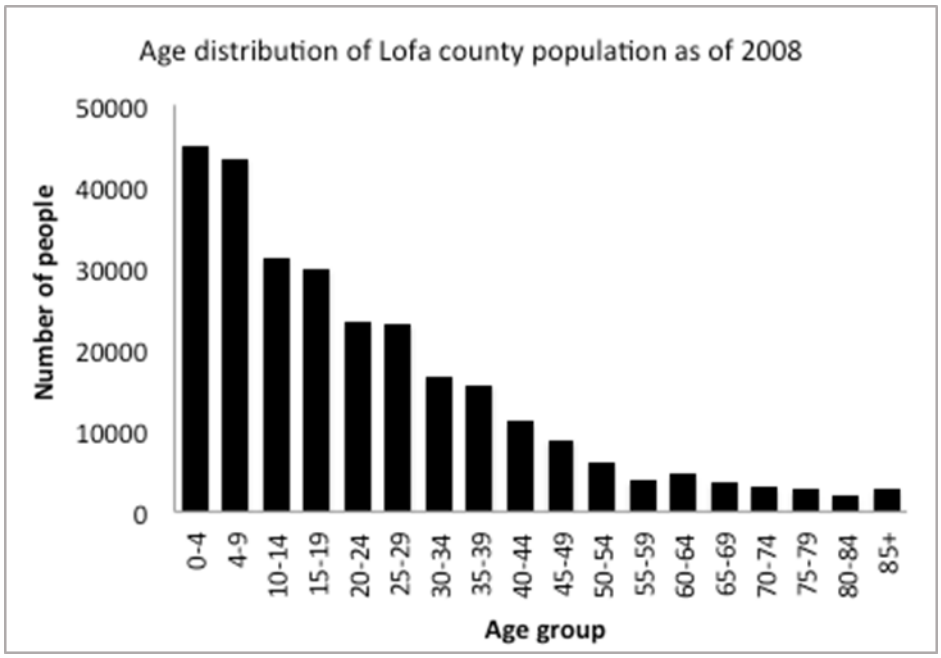

Figure 3. Lofa county population age structure (Source: produced from population and housing census of 2008).

1.2.2 Forest resources

Lofa has a tropical, hot and humid climate, and has numerous rolling hills, valleys and watercourses providing excellent ecological and climatic conditions for a large diversity of forestry, agroforestry and agricultural crops. Vegetation in Lofa is composed of tropical rainforest including primary forest, disturbed secondary forest and bush land, as well as savannah. Most of the forest in the county belongs to mixed green / moist semi deciduous forest type.

Within Lofa County there are two very important areas of primary rain forest, both of which are proposed protected areas (PPAs), namely the Foya PPA (164000 ha) and the Wonegizi PPA (29894 ha). Foya PPA also has about 44000 ha of community forest area. Efforts are underway to secure both PPAs a status of fully gazetted protected areas (PAs) under the National Forest Reform Law. Wonegizi is presently in phase 2 (areas in progress), while Foya is in phase 3 (to be gazetted by 2017). According to Forest Development Authority of Liberia, the process, including demarcations are expected to be completed within the next two years. Documents from the past

indicate that there also was a Wologozi PPA (107533 ha), but the present status of this PPA is unclear. To increase functionality of these future PAs and to protect them from destructive human activities, the Liberian Authorities have expressed a desire to design buffer zones around the PAs and conservation corridors for protection of biodiversity and facilitate free movement of wildlife between them.

The forest vegetation that used to be continuous in the 1980s is now fragmented, mainly due to the intensifying human activity in the county. Of at most significance is the vegetation cover change in the northwestern part of the county (particularly Foya district and parts of Kolahun and Voinjama districts, suggesting deforestation (Fig. 4).

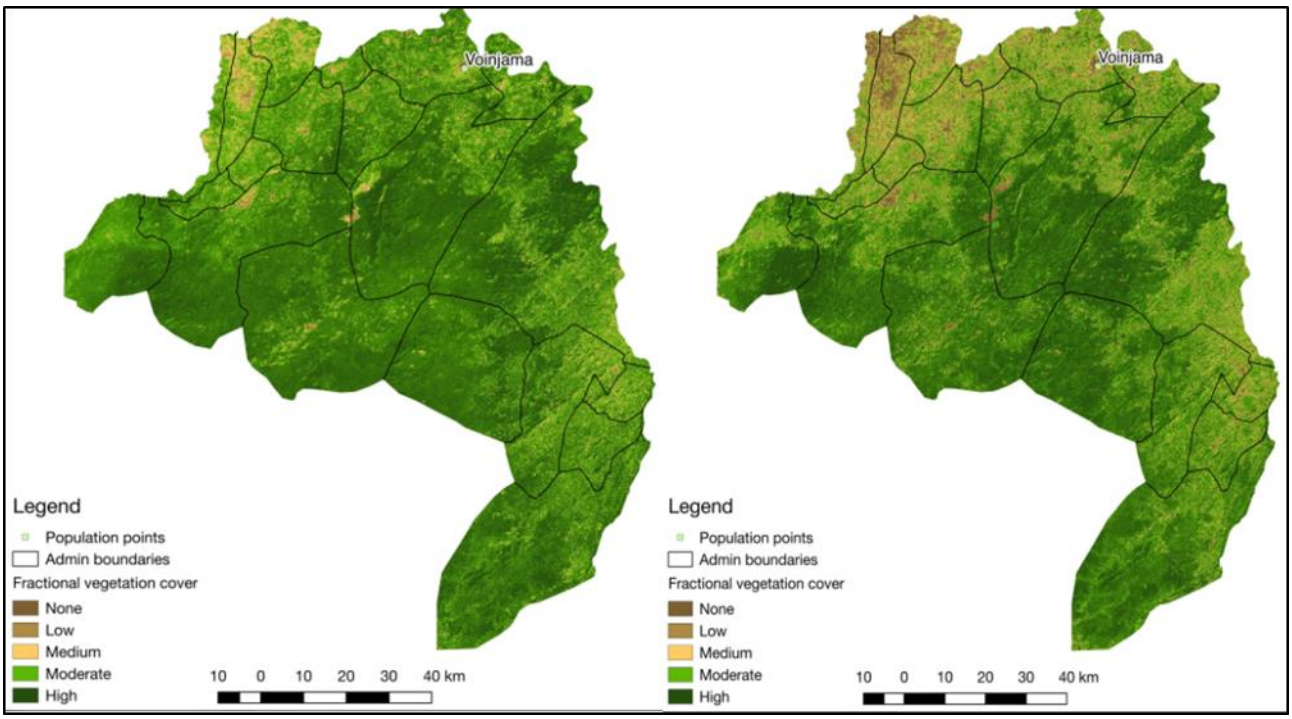

Figure 4. Fractional vegetation cover of Lofa County in 1980 (left) and 2014/2015 (right) (note, administration boundaries are from 1980).

1.2.3 Agriculture

Lofa before the war (1999-2003) was the most productive rice and cereal producing zone of Liberia, and was known as "The Breadbasket of Liberia". Agriculture in Lofa is now largely subsistence (Reeve & Speare 2010; Doocy 2009). It is the main source of income for people in the county, and at least 60% of the population is directly involved, but the dependency on agricultural value chains is also high among the remaining 40% of the population. Many people are occupied with small businesses, informal local and regional trade related to the agricultural sector.

The main staple food crops grown in Lofa are rice and cassava, while other crops such as vegetables, pulses, sweet potatoes, banana, plantain, corn, groundnuts and others are commonly grown (Fig. 5). The main cash crops grown are oil palm, cocoa, and coffee. These are also the focus crops for extension services provided by MoA. However, for all agricultural crops, both farmers and extension officers are generally facing a lack of inputs (quality seeds, fertilizer, pesticides), lack of knowledge, lack of financing, lack of lack of feeder roads and generally bad roads limits access to markets. Farming systems are mainly subsistence farming, based on slash-and-burn (a form of shifting cultivation, see chapter 2 for more details). The production methods are outdated, and the production is therefore limited, of low quality and less diversified compared to the unrealized potential.

According to estimates provided by the EPA, Lofa has about 440,149 ha cropland area. Out of this, only 86,217 ha are being utilized (68,789 ha by smallholder and 17,428 ha by large plantations). At the time, Lofa therefore has about 353,931 ha of cropland that could be used. Estimates from the same source indicated that there are about 31,477 households (farming families) with each having an average of 2.19 ha land.

Revitalizing the agricultural sector in Lofa county and Liberia as a whole has become an important part of the Governments response to the devastating drop in GDP in 2014. Through The Liberia Agriculture Transformation Agenda (LATA) (transforming Liberia through agriculture, agro-processing and manufacturing) the aim of the Government is to intensify and diversify the agricultural production in Lofa County and in Liberia as a whole, in order to increase agricultural production and contribute to foreign exchange for Liberia. The LATA divides Liberia into six main agricultural clusters and agro-processing zones. The priority agricultural value chains identified in Lofa cluster are oil palm, cocoa, rice and vegetables (LATA concept note, V2 – April 4th, 2016).

Present status is that most of the oil palm fields in the county are old and far less productive than younger stands. Rehabilitation and introduction of improved early fruiting and high yielding varieties will contribute to increase the production. Similarly, the cocoa farms in Lofa County are relatively old, about 18-39 years old and less productive than younger cocoa stands. This implies that there is a need for rehabilitating the cocoa farms to improve yield and quality to ensure that Liberia can export good quality and internationally certified cocoa. Rice production is divided between upland and lowland rice, with upland rice being less productive and more labor intensive than lowland rice production. Previous mechanized lowland rice fields could be revitalized using improved varieties to make Liberia self-sufficient in rice, and even put the country in a position to export rice to neighboring countries (particularly in the ECOWAS region). Upland rice production is in addition one of the driving forces for deforestation, and a shift to lowland rice production is therefore encouraged. Coffee is also one of the cash crops produced in Lofa, but is facing similar problems as the cocoa production. There is therefore a need to improve coffee production in order to meet international standards.

Traditional farming in Lofa does not include livestock or poultry, other than in very limited and small scale (Fig. 5). Goats, pigs and sheep are the most common livestock species, most households has some free-running poultry and a few ducks. Despite the vast grassland areas emerging because of the savannah invasion (see chapter 2), cattle are very rarely seen in the county due to the sleeping disease problems and absence of tradition in the area in keeping cattle. There are however, efforts by NGOs such as Samaritan Purse, operating in Lofa, to introduce improved breed of cattle from neighboring countries such as Guinea. Developing the livestock and poultry branch of the agricultural sector could increase income and nutrition as well as contribute to reduce the need for bush-meat hunting as a protein source and income generating activity. Aquaculture is another quite unexplored area in Lofa, and is presently on the agenda of both local and central authorities for further development.

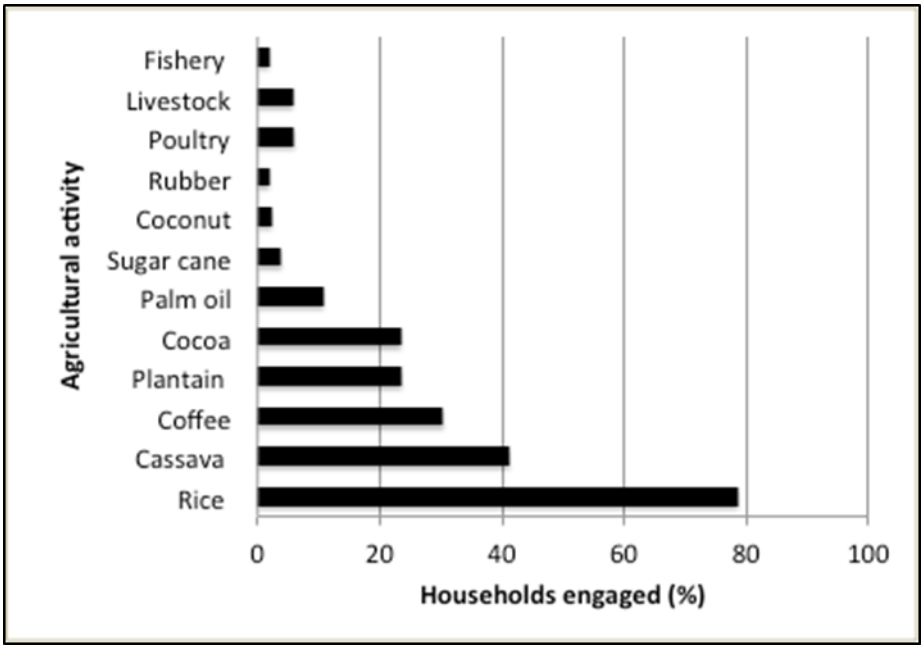

Figure 5. Smallholder agricultural activities in Lofa County (data source: LISGIS, 2008).

2 Methods and data acquisition

Interviews and discussion with key informants and stakeholders

Interviews and discussions were conducted with key informants such as county Super-intendant, District officers, Paramount Chiefs, Town Chief and Clan Chiefs, Chair persons of farmers' cooperative board, and informal talks with individual farmers (Fig. 6). The purpose was to obtain information on the natural resources base, forests and agriculture as well as comprehensive view points of the challenges facing local communities in the aspects of sustainable agriculture, Further land management, forestry and opportunities for mitigating an advancing savannah invasion were the major subjects.

Discussions in the forms of meetings were conducted with a number of stakeholders, including, authorities and technical experts at FDA (including forest rangers), EPA, Ministry of Agriculture, Ministry of Lands, Mines & Energy, Ministry of Internal Affairs (appendix 2). Subjects of the discussion included historical backgrounds of Lofa county, agriculture, forestry, land tenure and land management, conflicts and resolution, governance and notable changes if any and particular policy and economic development plans in forest, agriculture and mining sector in Lofa.

General and specific issues were discussed with civil society groups and NGOs. Particularly information were gathered from Fauna and Flora International (FFI)- on the REDD+ pilot in Wonegizi, from USAID on community forest management pilots, from Sustainable Development Institutes (SDI) on governance and community rights issues related to land and forest ownership, Winrock International on oil palm development, and IFAD on smallholder tree crops.

Figure 6. Discussion with key informants in Foya town April 2016 (Photo credit: AF Vanwen)

Public discussion with primary stakeholders, farmer groups and cooperatives

Farmers including their families together with town-chiefs and representatives, men, women, and the youth were present at towns of Mendicorma, Sembesu and Porloma, Foya district. These public discussions encouraged participants, leaders and members of the community to discuss environmental resources and challenges. Particular focus was on forest fire and savannah expansion, and the potential solutions, and priorities in agriculture and forestry.

Focused interviews were conducted with village chiefs and other key informants in Zigida town near Wonegizi PPA, in Lisco town, and other settlements close to the Wologizi mountain range. The discussion was mainly about the need for buffer zones and corridors near PPAs and agricultural intensification.

A wide scope public forum was organized with Community residents in Foya town, where farmers' cooperatives, Intofawo Cooperatives Society and Oil Palm Association, were present. Savannah expansion, oil palm development and challenges, particularly on oil palm plantations, production and marketing, rice production and forest protection were the main agenda under discussion.

Figure 7. Public discussions at Sembesu town in Foya district April 2016. (Photo credit: MG Sæthre)

Walking surveys, observations and market visits

Field surveys of agricultural and forest landscapes were made. This was to record different human activities and active fires, forest degradation and deforestation related particularly with

slash and burn. This survey extended from Foya town to the borders with Guinea and Sierra Leone, and in Voinjama and Kolahun districts to verify the extent of savannah invasion and slash and burn agriculture.

An FDA forest nursery was also visited; here a number of different tree species was cultivated. Even under quite simple conditions fairly good seedlings where produced and a nearby planting area indicated that it is possible to restore savannah areas even with limited resources.

A market survey was conducted at the main local market in Foya district, located in Foya town (Fig. 8), to identify local agricultural and forest products, as well as to have an overview of imported products (mainly from Guinea and Sierra Leone) to identify additional opportunities. The cross-border market between Liberia and Guinea, at the Makona River (close to Maah Customs) was also surveyed to identify products and goods in the informal regional market, and to identify some of the regional market and trading opportunities.

Figure 8. Local market in Foya town April 2016 (Photo credit: MG Sæthre)

Maps and literature

A simple geospatial analysis of the vegetation cover changes between 1980's and 2014 was conducted comparing fractional vegetation cover of 2014 and 1980. The Fraction of Vegetation

Cover[1] is the area of the ground covered by green vegetation. The parameter quantifies the spatial extent of vegetation in a given area and since it is independent of the illumination direction, it is preferable over other indices used to measure vegetation extents. Land cover map of 2014 was obtained from FDA to identify the extent of savannah expansion in Lofa county.

Forest concession maps from FDA, mining concessions from Ministry of Lands, Mines and Energy were available from the respective organizations. These independently or in combination were used to quantify and assess opportunity areas for landscape restoration, identify proposed protected areas and areas under severe invasion of Savannah. These maps were also used to substantiate degraded areas together with key informants such as district and county foresters. Maps of protected areas were used to identify potential buffer zone and conservation corridors between Foya and Wonegezi proposed protected areas in combination with Google earth images.

Socio-economic and policy information, list of literature on land rights, forestry act, reforms and economic growth were obtained (appendix 3). These include reports and papers on policies, strategies and programmers from central authorities, FDA, Liberia Institute of Statistics and Geoinformation services (LISGIS), Ministry of Lands, Mines and Energy and Ministry of Agriculture.

Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis

The pre-study team conducted Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis in Lofa county and Liberia in general, to better understand the feasibility of the landscape restoration interventions. (For more information see Chapter 4)

[1] http://land.copernicus.eu/global/products/fcover

3 Needs and opportunity assessment

3.1 Identified needs and challenges to be addressed

3.1.1 The need to restore Savannah invaded forest and agricultural landscapes

Drivers of savannah expansion in Lofa County

Savannah, defined as subtropical or tropical dry-grassland with drought resistant vegetation and scattered trees. The savannah forms a transitional zone between dry grassland or semi-dessert and tropical rainforest. Different types of savannah are defined on the basis of temperature and rainfall pattern, namely the Sudan Savannah, the Guinea Savannah and the Sub-humid Savannah. The Savannah ecosystem is mostly climate driven and are thus called Climatic-savannah. This naturally occurs in warm or hot climates where the annual rainfall is from about 500-1270 mm, and concentrated in six or eight months of the year, followed by a long dry period. Savannah in general covers nearly half the land area of Africa. Human activity, particularly forest clearing can also cause savannah to develop, and is thus called derived-savannah.

The commonest farming system in Lofa county, Liberia and West Africa in general, is slash-and-burn agriculture, a form of shifting cultivation, whereby forests are clear cut and any remaining vegetation burned towards the end of the dry season (Fig. 9). Shifting cultivation or 'swidden' cultivation is heavily dependent on the restoration of fertility through alternating cycles of cultivation and fallow. The cleared land will then be used for planting different crops particularly upland rice (rice is the main staple crop in Liberia), groundnuts, tropical root crops such as cassava and others. However, most of the productivity associated with the tropical rainforests is bound up in the trees and the dense vegetation. The soils are infertile and cannot sustain subsistence farming with no or little inputs for more than two-three years. Farmers will then shift to clear and burn new forests, in order to turn the nutrients locked up in the forest biomass into a soil-fertilizing ash, but only for a few years, before moving to a new forest. An additional reason for farmers to use this form of shifting cultivation is that in newly cleared forest land, the abundance of perennial weeds is far less compared to open agricultural land, which is labor saving for the farmers.

Traditionally, farmers would return to clear and burn the same area of land in cycles of about ten years' time. Presently, these cycles have become far shorter and farmers tend to return to burn the same areas after only one-three years of cropping cycle and very short fallow. As a result, the grassland has more opportunity to flourish since the broad-leaved species, the original vegetation type in the area, do not get enough time to establish themselves and suppress the grass. Even if some seedling germinates, the frequent fire kills them every coming year. Fire from adjacent slash and burn activities by local farmers has acted as a catalyzer for the savannah expansion. With the loose fire burning down the grasses they kept on reemerging in bigger and stronger clumps. This practice will only accelerate the savannah expansion, and cause a viscous cycle of

savannah invasion into forest and agricultural landscapes, which again forces farmers to clear and burn new forest areas for agricultural purposes.

Figure 9. Slash and burn activity in Voinjama district April 2016. (Photo credit: MG Sæthre).

Although the practice of slash-and-burn is an old tradition in Lofa County, both local communities and key informants agree that there are changes and poor management of the practice causing the rapid expansion of the savannah (Fig. 10). These changes can be explained as follows: 1) The intentional fire to open new land is uncontrolled and thus burns through larger areas of dense forests destroying the vegetation including valuable timber, while opening up new areas, which are often far larger than the area manageable for cultivation. 2) Availability of freely available, new, forested lands combined with unclear land rights and tenure arrangement, encourages farmers to move on to burning new forests instead of coming back to the old fallow land. 3) Cost of time and labor is less than attempting to replenish the poor soil with any kind of fertilizer or compost, and intensive agriculture still do not have enabling conditions in place for farmers to change their practices. 4) Liberia is facing increasing unemployment combined with a fast growing population of young adult individuals seeking to start new life and establish their livelihoods. In addition, there are returnees and internally displaced people that fled the civil unrest, and the easiest destination and a traditionally and socially acceptable activities for all

these groups is slash-and-burn agriculture, and bush-meat hunting both of which are resulting in forest fires.

Other explanations were also provided as possible factors that played role of the savannah expansion. One focus group discussion emphasized that in the late 1960s a company called Agrimenco came to the area in a bid to increase rice production by clearing virgin forests. Heavy machines were used to clear the forest and rice was grown in the area till 1974/75. However, the company left the area without any clear exit strategy abandoning the rice fields, leaving them bare. With limited local capacity, the community was not able to manage the whole area and as a result the farmland was overtaken by savannah.

Annual fires then contributes to maintain the area as a savannah. The annual fires in the savannah is often caused by humans, for instance poachers who want to clear dead grasses and chase away their prey, or accidents caused during charcoal production. Local communities testify that there are clear physical evidences that fire is the biggest threat to the survival of the forests in the area. The biggest forest-fire in Lofa County occurred in February 2016. Consequently, a large tract of area is turning into savannah with few remnants of old forests. Farming in the previously forested landscapes consists of upland rice, scattered natural oil palms, some few oil palm orchards with improved varieties, along with other staple and cash crops.

Figure 10. Savannah invaded area in Foya district, Lofa county April 2016. (Photo credit: L. Duguma).

Area affected by savannah invasion

A land cover map of 2014 indicates the dominance of grassland in most of Foya district as well as in the northern parts of Kolahun and Voinjama districts (Fig. 11). Further mapping exercise conducted by key informants together with county and district foresters suggest that about 85 % of the total land area of 57,000 ha in Foya district is affected by savannah that expands south and east wards from Sierra Leone and Guinea. This was also verified by the pre-study team through walking surveys, observations, and discussions with key informants and stakeholders, including local communities and FDA. The expansion of the savannah in Lofa was mentioned by all stakeholders as the main environmental challenge threatening livelihoods, biodiversity conservation and forest ecosystem management.

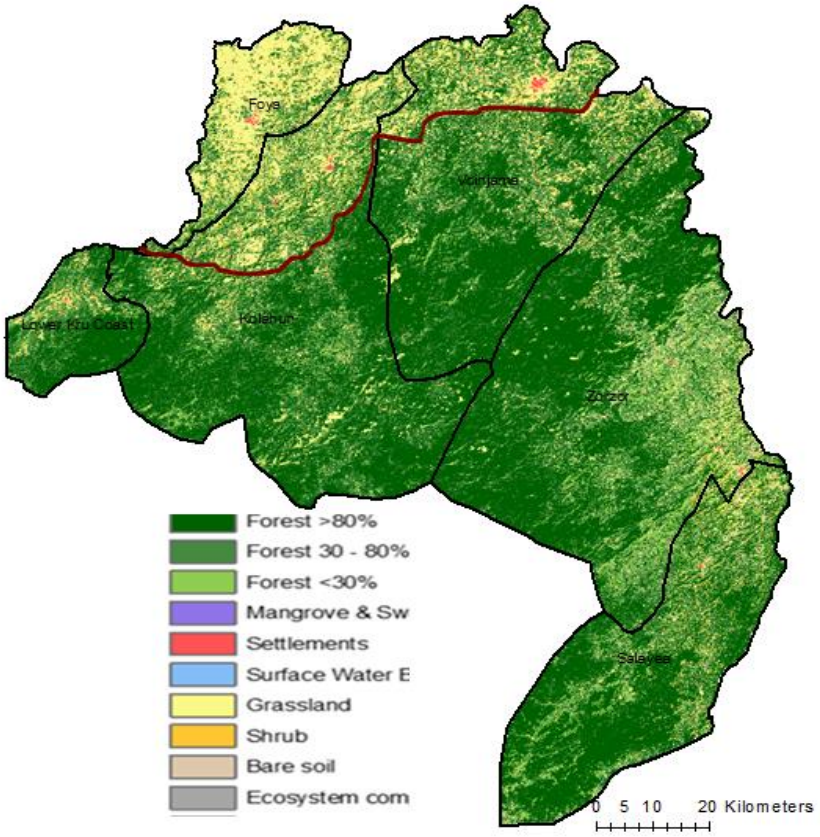

Figure 11. Land cover map of Lofa County showing areas affected by Savannah. This is the area north of the brown thick line including the entire Foya district and parts of Kalahun and Voinjama districts (the black lines are district boundaries). (Source: modified from FDA 2014).

3.1.2 The need for Buffer zones and Conservation Corridors

Foya and Wonegizi Proposed Protected Areas (PPAs)

Foya PPA covering about 100,000 ha is located in the southwestern part of Lofa County, with its southwestern part quite close to the Sierra Leonean border (Fig. 12). The Foya PPA together with the Lofa forest reserve (80,000 ha) forms part of trans-boundary Peace Park (Gillespie 2011) supported by EU, joining with the Gola Forest Reserve in Sierra Leone (75,000 ha). The trans-boundary peace park aims to secure the long-term conservation of the rain forest, its biodiversity and global carbon storage benefits and to contribute to improved cross-border forest governance between Sierra Leone and Liberia.

Wonegizi PPA with an area of more than 20,000 ha is located in northeastern part of Lofa County (Fig. 12). Wonegizi PPA meets the Guinean border forming a massive trans-boundary forest complex with the Ziama Biosphere Reserve. The Wonegizi hosts a diversity of species, many of which are endangered, including the African forest elephant, chimpanzee, pygmy hippopotamus, West African red colobus monkey and numerous threatened birds, reptiles and amphibians. It is also home to several species, including the threatened zebra duiker, which are indigenous. The PPA supports more than 5,000 people who make their homes and livelihoods in this landscape directly, and the FFI managed REDD+ pilot project is also located in Wonegizi (Source: FFI). The REDD+ pilot project follows community-based approach to establish and co-manage the protected areas with communities.

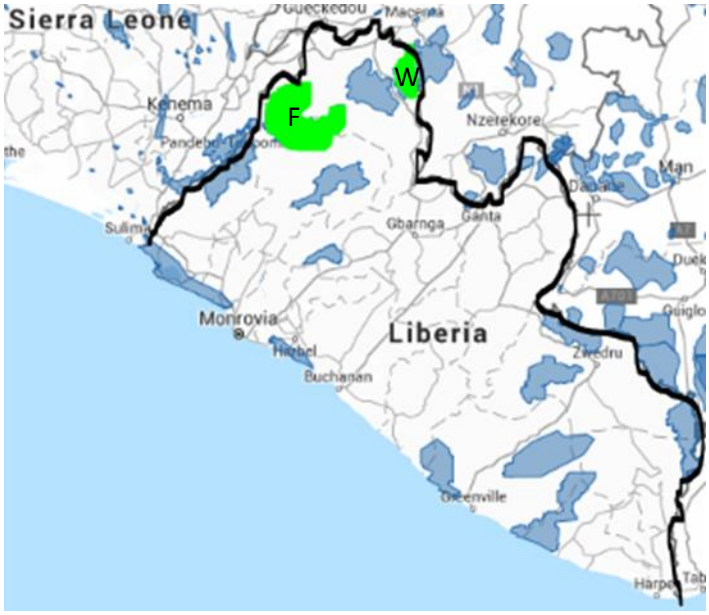

Figure 12. Location of the Foya (F) and Wonegisi (W) PPAs (Green) and other proposed or protected areas (blue polygons) in Liberia and neighboring Sierra Leone, Guinea and Cote d'Ivoire bordering Liberia (Source: Global Forest Watch 2014).

Official gazettement of the Foya and Wonegizi PPAs

Efforts are underway by the Liberia forest sector project implemented by FDA with support from World Bank, to secure both PPAs a status of fully gazetted protected areas (PAs) under the National Forest Reform Law. Wonegizi is presently in phase 2 (areas in progress), while Foya is in phase 3 (gazettement to be completed by 2017). According to FDA the processes are expected to be completed within the next two years, including demarcations.

Establishment of protected areas (PAs), strengthening and expansion of such areas requires the establishment and legal protection of conservation corridors and areas that can act as buffer zones around the PAs. In the context of the landscape zones bordering or partly overlapping with the PPAs, the pre-study team has verified that such needs exist and that landscape interventions taking these needs into account will be essential for protection of and functionality of the PAs in the future.

Proposals to include natural forest areas into PAs already in the late 1950s appeared to have had an intention of protecting the forest against concession logging as well as agricultural expansion. However, industrial logging has been practiced in different forms both legally and illegally under different governments. Farmers appear to generally respect the forests, but since the boundaries are largely unclear, expansion into the PPAs has been inevitable. In addition, internal migration, partly a result of the civil unrest, and establishments of new farmer settlements in forested areas of the PPAs are adding to deforestation of the PPAs.

For instance, in Wonegezi PPA there was a known boundary existing from a demarcation in 1972. The Community forest management based REDD+ Pilot project divides Wonegizi into three zones, 1) the agricultural zone, 2) the community forest zone, and 3) the core reserve zone. A new demarcation was conducted in 2014, however, this line was drawn closer to the communities than the old one. This is affecting the local communities, and it is a problem for both communities and rangers protecting the forest as both parties are waiting for a clarification to know their positions. In addition, as the population increases, people expect their farming areas to also increase. According to Fauna and Flora International (FFI) who is leading a REDD+ project in Wonegizi, this specifically applies to 13 communities with a population of approximately 10,000. About 1,200 people belonging to three of the communities are the most affected as they are located inside the PPA. To move these communities is a delicate and difficult task, among other reasons because they have buried their ancestors there and therefore have a strong commitment to stay and take care of the place.

Shifting cultivation and deforestation

Both old and new settlements close to and within the PPAs practice traditional slash and burn agriculture and shifting cultivation as described in 2.2.1 above (Drivers of Savannah expansion).

Figure 13. Forest areas recently slashed and burned. Note, wild oil palms still standing after fire (lower picture). (Photo credit: MG Sæthre).

Every clan member has the right to get pieces of forestland to clear and grow food crops on. Furthermore, farmers argue that forested lands are more suitable for palm oil and cacao production and that there is a clear tendency of expanding into forests, particularly when the boundaries are not clear. Fires are difficult to control and there is no practice of making fire hedges to control the expansion of fire to the forests or even planted vegetation. As a result, in most cases the farmers burn far more forest than they are capable of cultivating. Forest fire is thus a huge threat to the PPAs.

In the past, low population density and the outmigration of the locals due to the civil war, the shifting cultivation practice was not a concern. Currently, however, population has increased and with the peace and stability many are returning to their ancestral lands. As a result, deforestation continues to be the common way for making new farms.

Fragmentation of PPAs and Key Biodiversity areas

Foya and Wonegizi PPAs are at the extreme corners of the county (Foya in south-west and Wonegezi in the northeast). The two PPAs are so far apart and barely linked by Wologizi range, a large unprotected forest area. Conservation corridors are therefore required, which will serve as a safe passage of wildlife between the two PPAs. Buffer zones and corridors combined will then provide the necessary protection for the rich and unique biodiversity.

Wologizi is a logistically challenging area with respect to suitable placement of conservation corridors and buffer zones due to numerous possibilities for mining activities and mining concessions already granted. Although there clearly is a challenge with respect to where in the landscape buffer zones and conservation corridors should pass, these matters can be solved through inter-ministry and inter-agency cooperation in close collaboration with local communities.

3.1.3 Crosscutting needs relevant to landscape level interventions

Sustainable agricultural intensification

Agriculture, particularly the practice of shifting cultivation is the major driver of deforestation and forest degradation in Lofa. Agricultural intensification for food and cash crops production is key for reducing pressure on forests, and to increase and protect areas set aside by communities for forest restoration purposes. Investing in the agricultural sector is therefore a prerequisite for succeeding in forest restoration and protection.

Priority should be given to oil palm, cocoa, rice and vegetables, the crops identified as priority agricultural value chain crops for Lofa Cluster by MoA (LATA concept note, V2 – April 4th, 2016) (Fig. 14). Although water is not a limiting factor in Lofa, agricultural intensification will require irrigation systems. In addition, diversification of the agricultural sector is another

important area that needs attention, to increase income, and ensure food security and nutrition throughout the year.

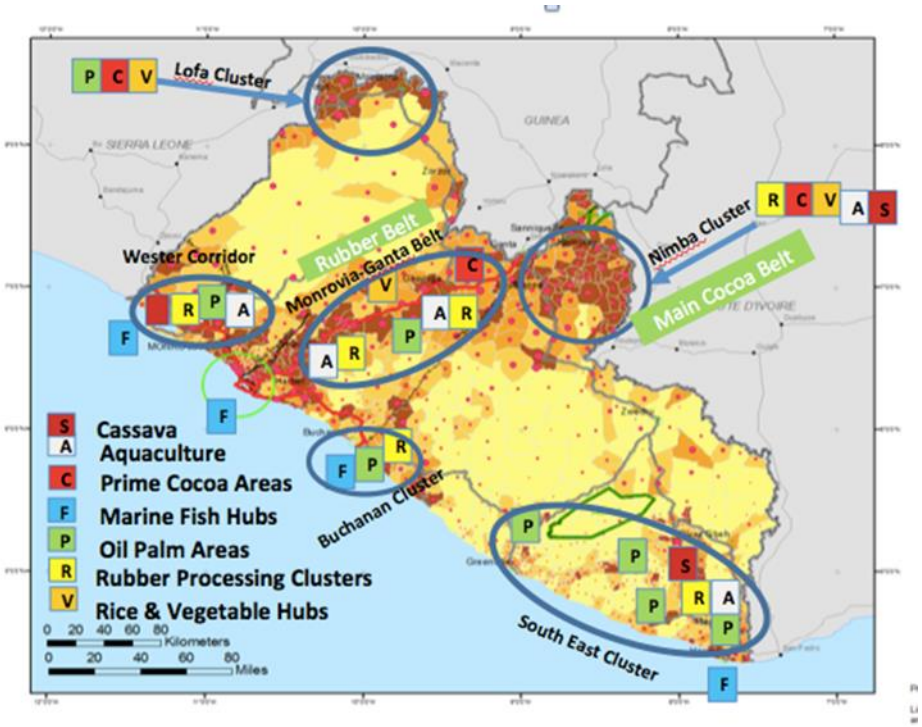

Figure 14. Priority agricultural value chain crops for Lofa Cluster (and Liberia) by MoA (Source: LATA concept note, V2 – April 4th, 2016).

The LATA list specific needs and priorities for development of the different sectors. Three examples for Lofa are given here:

Oil palm: Apart from rolling out the outgrower scheme, the oil palm sector need to focus on value addition and creating export and domestic markets. Mills for efficient processing are needed, and there is a need for certification of the palm oil as a product. Most of the oil palm stands in Foya town and its surroundings are old, up to 30-40 years (Fig. 15), which is resulting in low productivity. In addition, harvesting these very tall old stands is laborious due to the need for climbing to the top for harvesting. New, high and early yielding varieties would therefore increase profitability in the oil palm sector.

Cocoa: One of the main constraints to boost the cocoa production is the lack of a regulatory regime that supports smallholder farmers, while creating a viable export market. The main goal, when promoting the cocoa value chain, should remain on attracting value chain investors that support farmers through inputs and extension services. Presently the yield and quality of the Liberian cocoa is low.

Rice: Presently there is limited access to new and high yielding lowland rice varieties, limited processing, lack of logistics, market information and linkages. There is a need to transform the domestic market and phase out Government buying the rice to a market where private investors purchase and supply to mills.

Figure 15. Old palm tree stand in Foya town April 2016. (Photo credit: L. Duguma)

Processing and storage facilities and transport

Lack of storage and processing facilities forces farmers to sell their products during the peak harvest season at a low price. Farmers opt for selling their products to the markets in Guinea rather than transporting it to Monrovia due to the poor road condition or lack of transportation means (Fig 16). Hence, as soon as they harvest they have to process and sell at prices availed to them by the agents of the cross-border trade. One could think of alternative strategies for storage and sell the products throughout the year.

A number of efforts are being made by the local communities to add value to their agricultural products. However, for instance processing palm oil locally is very laborious task mainly done by women, including boiling, smashing with bare feet and the filtering process (Fig. 16). Though the production is very traditional and laborious, palm oil is their main source of cash income. There are several opportunities for improvement in processing, both through smaller portable processing units as well as permanent and large installations.

Figure 16. Traditional palm oil processing (left) and transportation of goods to market (right). (Photo credit: MG Sæthre)

Seed and seedling infrastructures

A major challenge of tree based forest restoration work is that it generally requires the use of many tree species at the same time and would thus require the presence of healthy and diverse seed sources. Diversity of tree species and the quality of their seed and seedlings constitutes the foundation for their adaptability and productivity in current and future landscapes. When planting is necessary, whether for replenishment or enrichment, the supply of a broad spectrum of genetically diverse, healthy and productive tree species is required. In Lofa, there are no seed/seedling improvements and supply programmes, no local or national tree seed centers that focus on forest or agroforestry based knowledge for local and exotic tree species.

Liberia does not have a national seed center to support production of high value forest trees not are there any multiplication gardens for production of seed of the major food and cash crops (rice, cocoa, coffee and oil palm). As a result, it relies on imports from the neighboring countries. Despite farmers' preference for improved fruit trees, there is very little or no information on fruit trees and fruit tree orchards. For annual crops such as rice and vegetables the access to quality seeds and new, high yielding varieties are poor. Basically, there is a strong need for quality and site specific adapted seeds and seedlings for agriculture, agroforestry and forestry.

Microfinancing

Microfinancing for loan and credit is urgently needed for farmers who would like to invest in agriculture, forestry, processing and storage. Previously the Agricultural bank was available for farmers, but currently there are no viable options. However, some negotiations with Central Bank of Liberia are under way in order to develop Community Banks for micro-credit. This is a cross-border initiative with Sierra Leone.

Policy sector

Market access is generally poor due to bad roads and lack of feeder roads. At the moment, farmers basically only have access to internal markets within the county, while informal small scale trading are taking place within Liberia and as regional cross-border with Guinea, Sierra Leone and Ivory Coast. Liberia is not a member of World Trade Organization (WTO), which is an obstacle to fully participate in international markets, particularly with respect to standardization, such as safety and quality. However, it is expected that the Parliament ratifies WTO accession by June 2016.

Capacity building

These refer to training and infrastructure needs at the central and local agriculture, forest and environmental authorities as well as individual farmers and cooperatives. Agricultural development agents and building the human capacities of the local and regional forest and Environmental protection Authorities are needed. In addition, strengthening existing cooperatives, e.g. through technical and financial assistance are required.

The ministry of agriculture has only eight agricultural officers who are serving all farmers in Lofa County. In this county, where 60% of the population are farmers, they can only provide limited extension compared to the needs. Knowledge and skills of sustainable agricultural intensification is lacking. The EPA and the FDA have few regional and district officers in the county. However, the state of the current infrastructure and human capacity of the EPA to monitor the environmental damage and the FDA to coordinate the management and conservation of regional and local forests is poor. There is an urgent need to support and strengthen existing capacities of local institutions including training of experts, and build new capacity at regional and local level.

To build capacity the gender issue is important, the women are the backbone of the agriculture sector and it is crucial to give them access to knowledge and skills. This group has to be given priority.

3.2 Verification of target areas for interventions

The main environmental challenges identified in the northern parts of Lofa are savannah invasion into agricultural and forest landscapes and fragmentation of primary forest and key biodiversity areas. These are resulting from a set of interconnected traditional social structures (including land tenure), combined with deforestation and forest degradation through shifting cultivation and use of fire in land management.

1. Restoration of savannah invaded areas in Foya district, as well as northern parts of Kolahun and Voinjama districts. This area is estimated at nearly 180,000 ha, including the entire Foya district (67,000 ha) and about the same size of land in Kolahun and Voinjama districts (Fig. 11 and 17).

2. Areas where there is a need for buffer zones for the two PPAs of Foya and Wonegizi (Fig. 17) and a corridor between the two. The buffer zone needed to protect these PPAs and the corridor joining the two will affect an area of approximately 200,000 ha.

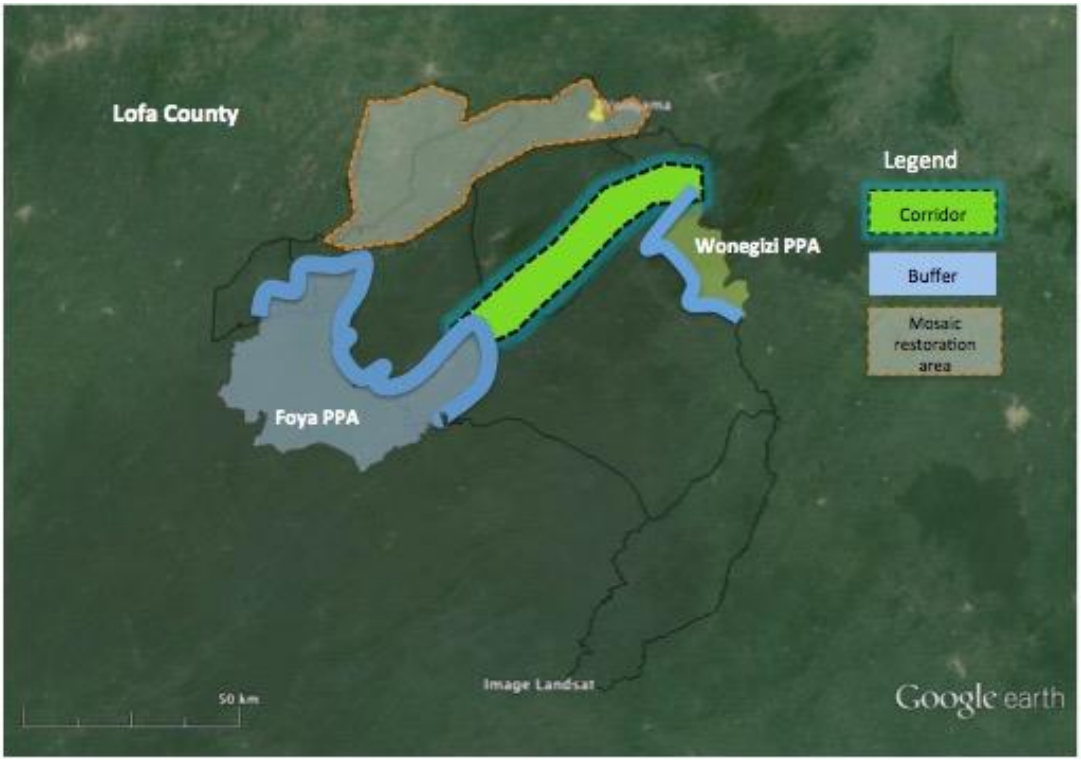

Figure 17. Proposed target areas for interventions. Savannah invaded area (mosaic restoration area), buffer zones and corridor.

3.3 Identified opportunities to address the needs – large scale landscape level interventions

3.3.1 Restoration of Savannah invaded landscapes

Sustainable intensification of agriculture and agroforestry

In a system where shifting cultivation is prevalent, it would be difficult to put boundary between the natural forests and agricultural lands for food and cash crop production. Therefore, the forest landscape restoration in this region should consider the agriculture sector as an inherent component of a forested landscape.

Lofa County is identified in the LATA (LATA concept note, V2 – April 4th, 2016) as one of the three rice-hubs in the country (Fig. 14), and a shift from upland to lowland cultivation is a goal for MoA to increase productivity in the rice sector. Large flat, swampy, inland valleys create very suitable conditions for lowland rice production, where up to three harvests per year are possible in some areas. In areas where only one harvest of lowland rice is possible per season, vegetables can be produced as the second crop. Additional intensification can be achieved through irrigation.

Lowland rice production is now encouraged by MoA, NGOs and other stakeholders as the upland rice farming has lower yields and contributes to afforestation through slash and burn. Therefore, the suitability or viability of an intensive agriculture involving rice production in the lowland areas is should be considered as an alternative. A precondition for success is that farmers growing upland rice are offered lowland areas where they can shift their production to and be trained in lowland rice production practices, as well as getting access to new, high yielding varieties.

Likewise, LATA identifies oil palm and cocoa as priority crops in the Lofa Cluster (Fig. 14), and in Lofa climate, topography and soil favors these crops. Both can be grown in the form of orchards or as part of agroforestry. Field visits and discussions with the public reveals the potential for cooperatives in oil palm production, refinery and marketing, but require incentives to support investments in improved varieties, skills of establishing and managing large scale plantations and processing.

Lofa County is also suitable for a number of other food and cash crops, such as coffee, banana, plantain, cassava, corn, ground nuts, Cola nuts, peas, pineapple, sweet potato, indigenous and exotic vegetable production and others. In addition, a number of other crops could grow perfectly well in this area, including mango, citrus, cashew, and others. However, these should be introduced in the form of improved high yielding and site-specific varieties.

Agroforestry provides an opportunity by advancing restoration of degraded lands and promoting conservation while also strengthening livelihoods. Agroforestry diversifies production, with trees creating microclimates, improving soil fertility, increase carbon sequestration, and supply timber

and other forest products. Fruit trees and vegetable production improve food security and nutrition and increase income. In the context of Lofa County, the most important cash crop in the area, oil palm can be intercropped with other a number of other food crops including pineapple and nuts. A multilayered agroforestry farms can be designed with shade trees of indigenous tree species and cacao or coffee in the understory. Agroforestry can be designed to restore degraded soils and thus enabling farmers to reduce and eventually abandon the present practice of slash and burn.

Community and private woodlots and timber plantations

Wood fuel and charcoal remain the most important sources of household energy in Liberia and most of these come from natural or semi-natural forests or woodlands, rather than from planted trees. Fuelwood and charcoal making are thus among the drivers of deforestation and forest degradation. Alternatives to wood fuels and charcoals are scarce in Lofa, which is remote from national power grids and centers of distribution of fossil-based fuels such as kerosene. Even in areas where kerosene may be available, many cannot afford them or still prefer woodfuels for cooking and even light in the evenings, as forests are currently freely available.

In an effort to conserve natural forests, among the feasible alternatives would be establishing individual and community woodlots and small-scale timber plantations to supply wood for fuel and charcoal, as well as timber. Private woodlots including agro-forestry stands and timber plantations typically target degraded landscapes, roadsides and river embankments, which are common in savannah invaded areas of Lofa. Woodlots and plantations, in addition to providing timber and energy requirements, promote local businesses and employment. This requires series of activities including seed source development, new tree nurseries, species site matching (identification of suitable tree species both indigenous and exotic) and allocation of land suitable for afforestation/reforestation with the local communities and potential investors that may be interested into public-private partnerships. The potential for cooperatives to establish timber plantations exist, but require incentives to support investments to establish and skills to manage plantations. Community woodlot should be established using fast growing; coppicing tree species and should be accompanied by energy efficiency, including introduction of energy saving stoves and improved kilns for charcoal production. Some of this wood may be used for building materials and animal fodder in well-managed systems. Such intervention may thrive if access to markets is well developed.

Allowing natural regeneration and setting aside conservation forests

The vast forest and agricultural landscape currently under savannah invasion provides opportunities for natural regeneration and also setting aside conservation areas. This requires series of activities, including awareness rising of the importance of forest landscape restoration and conservation areas, involving farmers in the planning, implementation and benefit sharing.

3.3.2 Establishment of buffer zone and conservation corridor

Community forestry and forest management in the buffer zone

Buffer zones should be designed in such a way that human activities are allowed but limited in scope and impact to sufficiently provide protection for the edges of the PPAs. Buffer zones (3-5 km wide) are required to protect the two PPAs, to serve as physical barrier against the expansion of shifting cultivation into PA, while at the same time provide ecosystem services.

Liberia recognizes Community forestry as one of its policy and legal framework approach to forest management. A number of groups and individuals have an interest in, and affected by, the management of the forests and natural resources. In the context of this report, the community forestry and community forest management refers mostly to natural forests, in reference to involvement of local communities as primary stakeholders. Community forest management should allow involving and empowering local communities in decision making, including delineating boundaries and empowering and building the local capacities of the communities to manage the resources, negotiate timber or conservation concessions with private timber companies and an equitable share of the benefits. Forests can be managed by the community for the common benefit, and all activities except slash and burn agriculture should be allowed including selective timber harvesting and regulated hunting for bush meat. Furthermore, communities can benefit from carbon markets and other ecosystem services in the context of REDD+.

Conservation corridors

This refers to establishment of forest corridor between Foya and Wonegesi protected areas. The main goal of implementing the corridor is to protect biodiversity of both animal and plant species. By reconnecting the two PPAs, seasonally relocating species can move safely and effectively through corridors without interference by human activities.

The corridors should be designed following natural paths and river and stream courses. Existing forests and woody vegetation and rivers and streams between the two PPAs provide a good opportunity to establish corridors. Nevertheless, where human activities and settlements exist, a consented relocation may be required.

REDD+ piloting

Liberia provides a highly favorable environment for REDD+, an opportunity to save the forests and a substantial financial flow that may arise particularly from avoided deforestation, and, sustainable forest management and carbon stock enhancement. Natural forests owned by communities and buffer zones and protective corridors can be managed for carbon in the context

of REDD+. This opportunities can be realized in Lofa because, forestry plantations or regenerations have high success for enhancing carbon stock due to favorable moisture and soil conditions have less risk of failure from natural disasters such as drought and there is strong traditional customary ownership of natural forests. An existing national REDD+ scheme will provide the framework for the REDD+ piloting.

4 Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of enabling conditions

4.1 Strengths

Existing Farmer groups and cooperatives

There are long-term existing traditions for cooperatives in Lofa County, which are believed to be the engines to drive agricultural transformation. In its 2008-2012 County Development Agenda (CDA), the county had 1000-acre per district community farming project which was to be operated in a cooperative model[2]. According to the CDA there are seven cooperative societies in Lofa county, of which at least three has been revitalized after the war. The three are Intofawo in Foya district (established in 1972), Guma-Mende Cooperative Society in Vahun district, and Voinjama District Society (appendix 4). Other cooperatives have also been formed more recent such as the Oil Palm Association (established in 2014) with it's headquarter in Foya town. The majority of the farmers are members of the old, established cooperatives focusing on all kinds of crops, while a limited number are (also) members of more specialized cooperatives.

There is a clear potential for strengthening existing cooperatives for activities such as extension, training, seeds and nursery, pre- and post- harvest technologies (including oil palm refinery), and other agricultural products processing and marketing. The inclusion of the poorest farm households can be established through small-scale businesses for income generation, training, and micro-credit programs for soft loans.

Strong local governance and community structures

The rural communities in Lofa, particularly in Foya district are relatively homogenous and coherent in terms of tradition, religion and organization, and that traditional governance involving chieftaincy are well recognized and have an acceptance at the modern local governance. Where religious and ethnic differences exist, tolerance existed and being encouraged. While this was mostly recognized during the pre-study, the information from the ministry of internal affairs corroborates our observation. Leaderships such as town chiefs and their deputies are often elected and as representatives receive a great respect among the locals. Tribal or village boundaries and traditional resource rights appear to be well recognized. As a result, village elders and chiefs refer to only few, if any, resource conflicts in the past. In case resource conflicts occur, communities have resolution mechanisms that are well established over generations. The rural community including the chiefs, women groups, and cooperatives-leaders and members expressed their interest to participate in forest landscape restoration that benefits them and reflect their aspiration of a better livelihood, provided that they are part of the decision making, and that there will be proper incentives to modify the practices of shifting cultivation.

[2] http://www.emansion.gov.lr/doc/LofaCDA.pdf

Existing high demands for cash crops products

Farmers in Lofa area produce a number of highly marketable agricultural products. Among those are palm oil, cocoa and coffee. Besides demands within Liberia, demands for these commodity crops are also increasing significantly from neighboring countries such as Guinea, Sierra Leone and others. In Foya area, farmers stated that most often they send their products across the border to neighboring countries due to proximity and challenges of transportation to the Monrovia and other parts of the country. During our discussions farmers stated that there is a sufficient market for their products though the pricing is a challenge that needs to be addressed.

4.2 Weaknesses

Contentious land ownership issues

Liberia does not yet have a land act that governs the land allocation and ownership processes. The draft Land Act is currently under discussion at higher administrative level e.g. in senate and parliament. According to the Ministry of Internal Affairs, land belongs to the state or the government, acknowledging that local traditions also operate at local levels. At local level, the communities rely on traditional or customary tenure arrangements, which entitle each clan member to land for various uses.

In Lofa County there is no proper land use policy or plan that can guide where various interventions should be undertaken. Communities and individuals are expanding shifting cultivation practices and the forests are being fragmented. This fragmentation is posing a serious challenge for biodiversity conservation in particular. As soon as the area that wild animals used to roam on is converted through shifting cultivation, the conflict between humans and wildlife begins to increase. Fauna and Flora International reported this increasing incidence of conflict between humans and elephants in Wonegisi PPA for instance. Various reports revealed that Wonegizi range is the habitat of forest elephants in Liberia.

Weak coordination among the various stakeholders operating in the region

There is limited interaction between the various stakeholders operating in Lofa County, particularly between the line ministries and agencies active in the area (appendix 4). For instance, the Ministry of Lands, Mines and Energy claims that Wologizi range was auctioned for extraction of minerals and the process is ongoing. While the Environmental Protection Agency, is sidelined in most of the major interventions that affect the environment. Though EPA's role is to inspect and monitor the social and environmental implications of interventions, the agency has no capacity to manage it due to logistics and skills limitation.

Poor transport infrastructure and market

Foya and the surrounding districts in Lofa County are considerably far from Monrovia. Some parts of the road connecting Lofa to Monrovia are operational during the dry season only. As a result, there is a limited transportation service between Lofa and the rest of the region. Some of the peak production period for major crops such as oil palm in Lofa area coincides with the rainy season. Transporting products from Lofa to other markets is also costly for the local farmers. Hence, farmers either transport their produces to the nearest local market or sell them to buyers who will transport it to cross-border market in neighboring Guinea and Sierra Leone. Farmers in the cooperatives highlighted that due to lack of appropriate storage facilities for their products, farmers are often forced to sell their products at prices often determined by the buyers.

Lack of improved planting materials

Both in Lofa County and at the national level, there is a major gap in ensuring the availability of good quality planting materials. For instance, the nursery for tree seedlings in the county operated by FDA has very low capacity and very few species. For tree cash crops such as oil palm, cocoa and coffee, farmers in the cooperatives confirmed that they depend on imported germinated seedlings from Ivory Coast. Unless proper phytosanitary protocols exist and adhered to, such import could lead to acquiring pests and diseases that may come with the planting materials. Networks between public and private institutions engaged in research and development within the fields of tree seed technology, tree improvement, gene resource conservation and utilization don't exist in Lofa/Liberia. There are no establishments that monitor guidelines for use, quality standards of seed sourcing, collection and seed distribution. The seed research system including staff training and higher education, and the development and maintenance of appropriate seed-technology facilities are also weak. Similarly, there is no national tree seed center to provide relevant information related to all aspects of seed and seedling production, handling and delivery systems.

4.3 Opportunities

Willingness of the communities to address the problems

During the pre-study, it was evident that communities facing the savannah invasion were willing to address the problem, as expansion of the savannah severely affected their livelihood. Communities (including small settlements) living near or within PPAs also expressed their willingness to change their agricultural practices if necessary knowledge and training on how to intensify agricultural production was provided. For instance, farmers will to a large extent be willing to give up upland rice (a driver for deforestation) if land suitable for lowland rice production and high yielding varieties was made available for them. Incentives including,

additional infrastructure such as irrigation, seeds and seedlings, access to markets, development of eco-tourism and other ecosystem services are also opportunities mentioned by communities and key informants.

The return of peace and stability

One of the fundamental requirements for any successful development interventions is peace and stability. After the end of the civil war in 2003, there is a growing peace and stability in the country. The country took swift measures to move forward and the efforts paid off to a considerable extent. For instance, Liberia made significant progress in the millennium development goals (MDGs) compared to other African countries that had peace and stability for a period longer than Liberia. Among the key successes in the MDGs include promoting gender equality and empowering women, and developing a global partnership for development.

National forest reforms, laws, policies and strategies

Recent roadmap for reforms in Liberia took a more sustainable, transparent and development-focused approach to forestry. Reforms such as the National Forest Reform Law (NFRL) of 2006 and the subsequent National Forest Policy 2006 and National Forest Sector Strategy of 2007 provide the framework for the forestry sector's legal, participatory, and transparent operation (appendix 3). The recent emphasis on the 4Cs (Community, Conservation, Commercial and Carbon) within the forestry sector also forms an innovative platform for thinking beyond the widely seen commercial benefits of forests through timber, especially in the West and central African countries endowed with timber rich tropical forests.

The 'National forestry policy and implementation strategy recognizes among others, Public participation and awareness to improve the quality of policy implementation through partnerships involving government, the private sector, communities and other stakeholders. Special attention should be given to the potential for forests to contribute more to local people and communities. The need to address key issues relating to the rule of law, including strengthening of forest governance and law enforcement and resolving problematic issues regarding land tenure are considered. These reforms will create favorable policy environment for forest landscape restoration involving local communities both in decision-making and benefit sharing.

Recognizing the rights of the local communities to resources in their surrounding is believed to be the corner stone for the success of managing forests and other resources. Though in many countries this has not gone beyond a leap-service to get support of international communities, Liberia has enacted a law that specifically addressed the issue recognizing the crucial nature of the need to assure community rights to the forest resources in their area. The Community Rights

Law (CRL) of 2009 with respect to Forest Lands recognizes local community rights to own and manage forest resources on community forestlands.

Engagement in REDD+ (Reducing Emissions from Deforestation and Forest Degradation)

Liberia also participates in REDD+, an effort to reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks. Liberia submitted the REDD+ Readiness Preparation Proposal in May 2011 to the Participants Committee (PC) of the Forest Carbon Partnership Fund, which identified driving forces of deforestation and forest degradation and suggested emerging opportunities to address such drivers through REDD+. The REDD+ Readiness proposal introduced a range of new priorities and instruments to serve the sustainable economic growth, as well as to support the livelihood of local and rural communities, and to ensure that its natural forests are conserved.

Fauna & Flora International (FFI) is currently piloting a REDD+ project in Wonegizi forest, funded by the Norwegian Agency for Development Cooperation (NORAD). The capacity building, policy development opportunities and lessons learned from the pilot project will be an opportunity to incorporate into future forest landscape restoration plans in the region.

A Letter of intent between Liberia and Norway, 2014, focuses among others on supporting REDD+ implementation in Liberia, protection of natural forests, restoring degraded lands and developing deforestation free, sustainable agriculture. The partnership creates an opportunity for forest landscape restoration through, improving local capacities, increasing support for communities to manage their forests, and respect the rights of rural landowners, and ensures that communities are involved in decision-making.

Growing emphasis on community forestry

Community forest is a forestland adjacent to a forest that is set aside for the use of the surrounding community for their livelihood activities. According to FDA reports there are currently about eight community forests covering more than 220,000 ha of land. In Lofa County, there is only one, the Bluyeama community forest, covering about 44,444 ha. International NGOs such as the USAID are working with Liberian authorities on how to pilot the community forestry schemes. In general, the growing emphasis on community forests and the existing practical skills and experiences of implementing it are great opportunities in promoting forest landscape restoration. This community forestry scheme is very important in the buffer zones to reduce the extent of forestland clearance for agricultural expansion.

The Lofa County Development Agenda

Among the core values of the Lofa County Development Agenda (2008-2012) are preservation of natural resources and environmental protection and economic growth and job creation. It puts strong emphasis on natural resources as the pillars of economic development and environmental sustainability. The agenda reveals the very strong political commitment to address the problems in the county. The agenda identifies some major areas within the context of investment. These are commercial farming and food processing and forestry and wood processing activities. This suggests an opportunity for private sector engagement, while assuring environmental and social safeguards.

The Liberia Agricultural Transformation Agenda (LATA)

LATA is a new agenda aiming to transform agriculture in Liberia by engaging private sector as key role players in the value chains of the key commodity crops, livestock, aquaculture and fisheries. The agenda focuses on anchoring high impact agricultural value chains into the long-term economic development programme. The LATA hence is a great opportunity for developing outgrower schemes and with appropriate regulatory tools in place, it will benefit farmers.

Progresses with the protected areas networks

There is an ongoing process to finalize the demarcation of the Foya and Wonegizi PPAs under the Liberia forest sector project. This is a great opportunity for the proper design and implementation of the corridors and buffers around these two PPAs. Due to lack of the clear demarcation of the protected areas, encroachment for agricultural expansion is still common.

4.4 Threats

Mining concessions

The most critical threats are the absence of land use plan and unclear land tenure arrangements. A number of overlapping interests are emerging in Lofa County particularly between forestry, mining, agriculture and biodiversity conservation. The growing mining interest in Lofa and surrounding counties is of particular focus here. The Lofa County Development Agenda 2008-2012 has clearly indicated the presence of large deposits of minerals in Mount Wologizi. Companies called BHP Billiton and Mano River Resources have started exploration near the proposed project area. According to development agenda, exploration of the minerals is among the pillars for boosting the counties economy. Though the Minerals and Mining Law of 2000 provides conditions for environmental safeguards and environmental impact assessments for

every mining license to be granted, discussions with the Ministry of Land, Mines and Energy revealed that there is limited capacity to monitor whether these compliance requirements are fulfilled especially once the exploration commences. This lack of capacity to monitor the environmental impacts of various investments is also strongly echoed by the EPA.

Shifting cultivation and uncontrolled fire

Despite the wide recognition slash and burn agriculture is the main driver for deforestation and forest degradation it remains as the main agricultural practice. Unless a strong awareness creation is conducted in the county, the pressure posed by slash and burn agriculture could continue increasing. Changing the current practice of shifting cultivation in Liberia requires a fundamental change in the incentives availed to the local communities.

Uncontrolled fire is another major threat to the sustainable land management intervention in Lofa County. Slash and burn agriculture and charcoal production and activities related to hunting of bush meat and wild honey extraction, are the major causes of uncontrolled fire that often destroys large significant area of forests. Such fire could also pose a threat to other land-based interventions.

4.5 Strategies for dealing with the identified weaknesses and challenges

To address the challenges posed on Lofa County, the crucial first-hand intervention is to conduct land use planning and frame a land use policy for the county. This will be the foundation for all potential interventions to be conducted in the area. Despite the existing contentious land ownership issue, with proper land use plan it is possible to craft effective interventions that could reduce the extent of the economic, environmental and social challenges posed on the community in Lofa County. This land use plan is the key to unlock the potential of the land resources of the county. Since this has strong political, governance and administrative elements, it is necessary that it is done with proper consultation with the government bodies responsible for the county. In addition to the land use plan, below are some specific strategies that could help address the problems facing Lofa County.

Livelihood and environment

As discussed in the previous chapters of this report, savannah expansion and aging oil palm and cocoa farms were the key challenges for the livelihood improvement of the farming communities in Lofa. There is a strong emphasis by the community to restore the degraded ecosystems due to the savannah expansion. FDA has already begun some activities to reclaim a very small fraction of the land that was overtaken by the savannah. It is necessary to design interventions around these existing experiences. FDA has established teak and other mixed tree species plantations,

which seemed to be performing well if the recent fire incident in last February did not destroy the large part of the plantation. The pre-study team observed that the teak plantations are recovering. This highlights the strong need for proper species selection that match to the site. Through such plantation schemes constituting small-scale woodlots, farmers could generate income.

Another strategy could also be revitalization of the oil palm, cocoa and coffee systems, which were already aging, with very low productivity. There are a number of efforts ongoing in the area, including the IFAD projects from which important lessons could be learnt. In engaging in such revitalization process, it is also necessary to ensure that there are appropriate marketing strategies and value chain structures for the farmers to benefit fairly from their products. The revitalization of such crops requires establishing local infrastructure and capacity and skills of local communities to engage in the process. Among the key infrastructure mentioned as a priority by FDA and members of the cooperatives is the tree seed centers and nursery.

Forest management and conservation

Since most of the forest areas in Lofa County (except the PPAs) are influenced by the interventions of the local communities, one feasible strategy to address the challenges facing the forest change is through forest landscape restoration (FLR). The FLR scheme should focus on the existing forest area whose boundaries are clear to some degree. In this scheme, activities like restoration of degraded landscapes through natural regeneration, replanting of deforested areas, and afforestation and reforestation of degraded forest areas could be key intervention areas. The forest patches that are scattered in production landscapes will have to be managed and restored through the interventions within the mosaic landscape restoration. Linking with the ongoing REDD+ strategies could also be a strong opportunity to protect the forests and benefit the communities within the forested areas.

With the rate of forest fragmentation happening in the area, there is a dire need for conservation corridors. The two PPAs were found to be important habitat areas for forest elephants, chimps, birds, pigmy hippos, etc. With the intensifying human activity in the area, it is not going to be long until these forests could be separated forever. Averting this at its current stage is possible if there is a commitment from the government, local communities and the companies interesting in mining and other investments in the area. Hence, creating a conservation corridor that links the two forested areas remains a priority. This process of conservation corridor creation should be done in a consultative way by engaging all the stakeholders who have interests in those specific areas where the corridor could likely be positioned. This consultation is crucial to ensure the balance between the needs for economic development and biodiversity conservation. For the local communities living along the areas that the corridor might be covering a proper livelihood strategy should be carefully designed with proper considerations of the diverse groups, needs and

interests of the people affected. Recently there is some process led by the World Bank Group[3] on developing national biodiversity offset schemes in sync with the REDD+ and mining sector activities.

The corridors could also be strategic interventions for the mining sector companies intending to operate in Wologizi range, which lies between the Foya and Wonegizi PPAs. According to the Minerals and Mining Law of 2000, section 8.3 clearly states that any water polluted due to the mining activity should be restored to its initial state. Preserving the corridors could be very helpful in achieving reducing the extent of the water pollution by sedimentation. The same section of the law also clearly states that any forests cleared due to the mining activities need to be restored. When this is harmonized with the ongoing National biodiversity offset mechanisms by World Bank and IFC (International Finance Corporations), the mining companies targeting Wologizi range could strongly benefit to fulfill their compliance with the required compliance stated in the minerals and Mining law and World Bank and IFC guidelines for environmental guidelines. Furthermore, any engagement of the mining company through support to the corridor creates a positive image for the company in the form of Corporate Social Responsibility (CSR) principles.

[3] http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2015/04/24/090224b082e0380b/1_0/Rendered/PDF/A0national0bio0eria0s0mining0sector.pdf

5 Prospects for private sector engagement

5.1 The Private Sector in Lofa County

Lofa ranks fifth in terms of counties with the highest number of households engaged in oil palm countrywide. However, the county does not host any of the four big industrial plantation companies operating in Liberia. This is significant because together, the four oil palm companies have attracted the highest foreign direct investment (FDI) flows into Liberia during the post-war period, up to 4 Billion USD (Sime Derby – 3.1 Billion to 2025; Golden Veroleum – 2 Billion to 2017; Equatorial Palm Oil- 800 Million to 2017; and Maryland Oil Palm Plantations- 20 Million to 2015).

According to the Lofa County Development Agenda (2008-2012), forestry activities were restricted to charcoal production, firewood harvesting and pit-sawing, with some illegal timber harvesting (no evidence of quantification of the same) until recently when a few agreements were signed including:

- Loggers in the Lofa County are Alpha Logging & Wood Processing Incorporated who ratified a Forest Management Contract Area "A" in Lofa County with the FDA on May 27, 2009[4]. Although this is outside the proposed project area, this might affect the project due to its proximity.
- Private Use Permit Between FDA and the People of Voinjama District, Lofa County, October 6, 2011[5] (currently inoperative following moratorium on development).
- Private Use Permit Between FDA and the People of Zorzor District, Lofa County October 6, 2011 [6] (currently inoperative following moratorium on development).
- Private Use Permit Between the FDA and Lofa Development Corporation (Mary Kpoto), November 25, 2009 to commercialize harvestable tree species[7] (currently inoperative following moratorium on development).
- Private Use Permit between FDA and the People of Bella Yella District, Lofa County October 6, 2011[8] (currently inoperative following moratorium on development).
- An Act Ratifying the Concession Agreement between the Republic of Liberia and ADA Commercial Inc.[9].

[44] https://www.scribd.com/collections/4297724/Lofa-County
[5] http://www.scribd.com/doc/151738220/Pivate-Use-Permit-Between-Forestry-Development-Authority-and-the-People-of-People-of-Voinjama-District-Lofa-County-October-6-2011
[6] http://www.scribd.com/doc/151738274/Private-Use-Permit-Between-Forestry-Development-Authority-and-the-People-of-Zorzor-District-Lofa-County-October-6-2011
[7] http://www.scribd.com/doc/151739130/Private-Use-Permit-Between-The-Forestry-Development-Authority-and-Lofa-Development-Corporation-Mary-Kpoto-November-25-2009
[8] http://www.scribd.com/doc/151739267/Private-Use-Permit-Between-The-Forestry-Development-Authority-and-the-People-of-Bella-Yella-District-Lofa-County-October-6-2011
[9] http://www.scribd.com/doc/152412349/An-Act-Ratifying-the-Concession-Agreement-between-the-Republic-of-Liberia-and-ADA-Commercial-Inc

Mining activities flourished in the 1950s and 60s along the Lofa and Lawa rivers, but the pre-study team did not find evidence of any currently active licenses.

This means that the main entrepreneurs in Lofa remain the small-scale farmers of oil palm, cocoa, coffee, rice, some cassava and plantain (see also chapter 1). These farmers are registered in several cooperatives, and some farmers are member of more than one cooperative. With the USAID market study indicating that Lofa is one of the counties with the most farmers subscribed to cooperatives. This being the case, there is thus great potential for aggregation, marketing and value addition through enterprise development at the level of cooperatives.

5.2 Previous experiences in enterprise development in Lofa County

Smallholder Oil Palm Support (SHOPS)

ACDI/VOCA and partner Winrock International implemented the three-year, $3.7 million Smallholder Oil Palm Support program (SHOPS) in Liberia with funding from USAID. The aim was to strengthen the palm oil value chain and drive rural economic growth. With a focus on the key agricultural counties of Bong, Lofa, Nimba, and Grand Bassa, SHOPS was designed to "fast track" improvements and increase productivity along the entire value chain of Liberia's smallholder palm oil industry.

Achievements:

1. Created 300 small business that utilized their own capital to invest USD 738, 300 in agricultural sector, not including annual wages and in kind payments to over 3805 employees and seasonal workers
2. Stimulated over 9000 farmers, technology users and entrepreneurs to generate 7.7 million USD in increased income
3. Collaboration with entrepreneurs and cooperatives to access loans from financial institutions and engagement with one rural community to establish a MC2 rural community financial institution in collaboration with Afriland First Bank and the CBL. This resulted in approval of USD 197000 in loans to 102 beneficiaries.
4. SHOPS used volunteers to develop a support program on financial management for local enterprise and also the development of local credit unions for financial services.
5. Connected 43 decentralized nurseries for improved tenera oil palm seedlings with two well-known Liberian business operators that import primary material for nurseries

(Source: http://acdivoca.org/our-programs/project-profiles/liberia-smallholder-oil-palm-support-shops)

Livelihood Improvement for Farming Enterprises (LIFE) III (Smallholder Cocoa Farmers Increase Incomes)

The USAID funded Livelihood Improvement for Farmer Enterprises (LIFE) III project implemented by ACDI/VOCA has two objectives: (i) Increase the production of cocoa by focusing on the business capacity of the producer organizations and facilitating rural access to financial services while strengthening the farm management and income diversification capacity of cocoa producers; and (ii) Expand the export of cocoa by strengthening commercial channels for input supplies and facilitating market access and market information for cocoa producers. It is implemented in Lofa and five other counties.

Specific activities and approaches include:

- Train 5,590 farmers in improved production and quality management techniques including farm rehabilitation, pruning, integrated pest management, and post-harvest processing
- Train 4,250 farmers in Farming as a Business farm management techniques including record-keeping, business planning, and access to capital
- Train 6,000 members of cocoa-producing communities in income diversification including community gardens and artisanal cocoa byproducts
- Facilitate ready and frequent access to current market information for 7,000 association members
- Facilitate access to community-based financial services, such as credit unions and village savings and loan clubs, for 5,000 association members
- Facilitate the distribution or sale of 1.2 million high-yield, disease-free cocoa seedlings while supporting the sustainable growth of commercial nurseries

(Source: http://acdivoca.org/our-programs/project-profiles/liberia-livelihood-improvement-farming-enterprises-life-iii)

Community-based Forest Enterprise Development in Liberia (2009 – 2010)

This project supported the implementation of pilot community forestry activities in Liberia, in collaboration with the World Bank and other Liberia Forestry Initiative (LFI) partners. It represents a component of the project "Development Forestry Sector Management" funded by the World Bank. The key actors involved include the World Bank, the FDA, the Liberian Agency for Community Empowerment (LACE), the University of Liberia, two local NGOs: Lofa Youth Educational awareness Program (LYEAP) and Sustainable Livelihood Promoters Program (SLPP), rural communities of the Protected Areas of Lake Piso and Wonegizi, small forest entrepreneurs and their associations in Liberia.

5.3 Challenges for private sector investment

Supply side factors: the absence of financial institutional infrastructure and staff in rural areas; inadequate understanding and interest in appropriate methodologies for agricultural and NRM lending; and incompatibility between loan duration limits and the nature of agricultural business return on investment curves (see graph below)- that require long repayment periods as investments take time to begin yielding any benefits.

Demand side factors: Limited financial literacy and capacity in bookkeeping that can help determine potential cash flows; undertaking market assessments that can contribute to planning and making a business case for investments in landscapes; developing a following–up on loan proposals and in many cases lack of management experience that could alleviate perceived risk of management.

Information: A further structural challenge for investment is the lack of timely and accurate data for most food, industrial crops and livestock. Such data include production statistics overtime, pricing patterns, costs of production, farm budgets, trade flows and marketing data (USAID, 2015). The Ministry of Agriculture (MOA) and The Liberian Institute of Statistics and Geo-Information Services (LISGIS) collect agricultural commodity / product prices regularly, but it often comes a month or so later (USAID, 2015).

Land tenure challenges: The success of agriculture and agro-forestry plantation and/or woodlot forests in the landscape restoration process depends heavily upon the legal right to land, with permission to access and use the land and resources, as laid out in a Users` Rights (License) /Lease Agreement. The Lease must be sufficient to allow for a minimum of one full rotation in the production cycle, including the harvesting and reforestation of the entitlement.

As indicated in chapter 3, land tenure is a challenge in Lofa and Liberia in general, and a minimum of legal clarity and ownership is needed to foster any enterprise and investments in land use activities.

5.4 Opportunities for private sector investment

Profitable business cases for specific value chains: The Liberia Market study for selected agricultural products, completed by Enabling Agriculture Trade Project (EAT) Project (USAID, 2015), concluded that there are viable and profitable business cases for investing in a number of agricultural products as follows:

1. Cocoa production presented the best opportunities for smallholders;
2. Palm oil production can be profitable on a small scale;
3. Vegetable production, goats, poultry and fish farming can be viable enterprises for small holders;

4. Beekeeping, pulses and beans production hold some promise;
5. They however note that rice cannot compete at current import prices, while cassava though widely produced is not profitable on a short-term basis.

Growing Foreign Direct Investment (FDI) in the industrial plantain: The industrial plantation sector has by far been the most attractive sector for FDI in Liberia in the post war period- Attracting about 4 Billion USD through four main companies (Sime Derby – 3.1 Billion to 2025; Golden Veroleum – 2 Billion to 2017; Equatorial Palm Oil- 800 Million to 2017; and Maryland Oil Palm Plantations- 20 Million to 2015). This provides tremendous opportunities for an infrastructure that could enable out-grower schemes. Even though none of these companies are in Lofa, it would be possible to connect with any locations in neighboring counties such as Nimba where road linkages allow.

Linkages can also be forged with timber companies in Lofa and neighboring counties with any eventual plantations established through grassland and reforestation programmes with the aim of improving the value chains.

Strategic policy initiatives: A number of key policies exist that could potentially incentivize and promote enterprise and investments in the land use sector. These include the Liberian Agricultural Transformation Agenda–LATA, The Cocoa and Oil palm export strategies by the Ministry of Commerce and Industry and the International Trade Centre (2014), and the Investment Promotion Strategy by the National Investment Commission (2013). All of these policies aim to catalyze an economic transformation of Liberia following a protracted war and the recent Ebola crisis. Hence, a strong opportunity for synergy exists with any eventual landscape restoration programme.

5.5 Potential Pathway for Private Sector Engagement

The proposed potential landscape restoration programme could seek to address private sector engagement through a two-step process. First through a readiness phase and then a phase for public-private partnership mechanisms, see also theory of change described in chapter 7. To attain the overall programme objectives and encourage the private sector to participate in the Forest Landscape Restoration (FLR) process, incentive schemes shall be developed for different private sector groups. Private farmers are probably the most important group, but also professional investors who can be interested in establishing commercial businesses related to forestry, agriculture or horticulture are important.

The Readiness Phase

This phase would focus on the demand side, that is financial management, business planning skills etc. for local farmers and entrepreneurs. It also focuses on the supply side (lack of cost and benefit data, and or appropriate financing approaches to small-scale farmers etc. on the investor side) and challenges for developing concrete mechanisms for linking both sides. This phase is likely to be entirely funded by public funding with the objective of setting up the minimum conditions necessary for private sector investments (finance and technical know-how). This phase could possibly involve developing a performance-based finance mechanism within the project.

The programme will investigate and develop a number of incentive schemes included performance-based mechanisms that will enable investments and private sector participation. This is envisaged as a results-based financing framework, based on a mutually agreed set of economic, social and environmental indicators and robust monitoring and reporting. The grant or incentive scheme should cover a big variety of cultures, from tree species for development of the commercial forestry sector, including both wood (poles, fuel, sawn timber, pulp) and non-wood (medicinal plants, herbs, honey, fodder, fruits, snails, palm wine, bush meat) forest products to agriculture and horticulture. Farmers interested in starting with livestock or poultry could probably also be included in such a grant scheme.

Encouraging the development of agriculture and forest sector that has the ability to finance itself in the medium- to long-term, while contributing both to FLR and valuable employment and improvement of livelihoods in the rural communities, will be a big step for Liberia towards meeting their goals for environmental sustainability. The carbon balance from commercial forest plantations will also play an important role in the climate change initiative in Liberia.

Forest rehabilitation in the commercial context often, but not solely, includes the establishment and maintenance of plantation forests through a full production cycle. To ensure a sustainable commercial forestry sector requires the involvement of the private sector. Funding of commercial forest plantations may be a combination of private investments, development grants and/or soft loans, as shown in the illustration below. Establishment of commercial plantations has the potential to mitigate climate change at both the local and global level and significantly reduce the expansion of the Guinea Savannah while securing access to energy and rural livelihoods through forest-based businesses. The investment in plantations by local private investors must have a clear financial upside to be of interest. The introduction of a broad spectrum of species for commercial use may act as a catalyst to fostering understory regeneration of native plants and thus support biodiversity conservation in Liberia.

An incentive scheme(s) needs to be developed to stimulate private investment into small-scale plantations. The incentive schemes may be designed in a number of different ways, from being fully reliant upon grants, alternatively grants combined with private investments, to only supplying an input of high quality planting materials. The level of support that is required for

various activities will be analysed in the inception phase of the proposed programme (see Chapter 7). Development of grant schemes/incentive programmes for private individuals, investment companies and local communities will help ensure sustainability of commercial plantations. One model that will be considered is shown in Fig. 17, but several other options will be assessed simultaneously and a diversity of models developed.

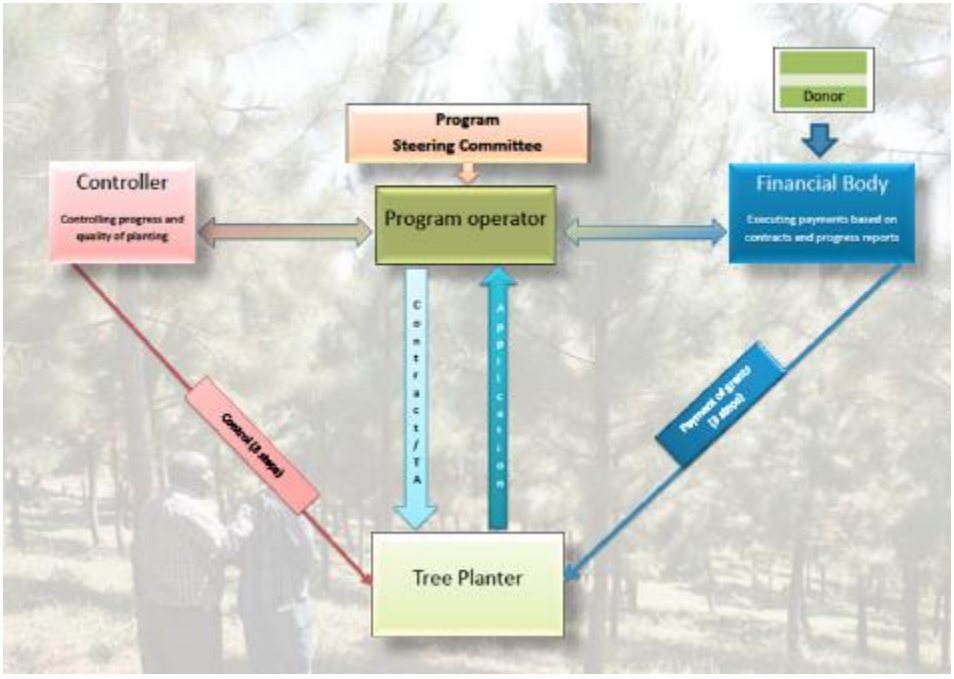

Figure 18. Example model of grant schemes/incentive programmes for private individuals, investment companies and local communities to ensure sustainability of commercial plantations.

Public-Private-Partnership (PPP) Phase

This phase would seek to implement all PPP mechanisms and incentives developed and piloted in the first phase. This could include performance-based financing schemes, technical collaboration partnership, pairing, out-grower schemes between smallholder oil palm growers and industrial operators, nursery operators and material dealerships, including CSR arrangements.

6 Cost and benefit estimates for landscape level interventions

6.1 Background and assumptions

Understanding the costs and benefits of different interventions is a crucial step in deciding whether to invest in an intervention or not. One of the most straightforward measures to do this is the Benefit: Cost ratio (B/C). From an economics point of view, when the B/C ratio is greater than one it is considered an investable business. The B/C ratio is also useful to compare among interventions and decide on which investment is more attractive. Though such estimates are rather strait forward for directly marketable products, for environmental benefits the situation is more complex. The total environmental benefits resulting from various interventions can be difficult to identify and it is therefore also difficult to account for all the benefits and estimates of their appropriate market values. Hence, in most cases, there is scarce data on the cost benefit estimates of the total environmental benefits of a specific intervention.

During the pre-study, it was not possible to collect primary data that could be used for the cost benefit analysis of the various land management interventions identified in 2.4. Information were therefore collated from the existing literature and present some proxy figures. Although most sources identified may not be comparable to either ecoclimatic conditions and/or social structures in Lofa County, or even in Liberia, they can still be useful as guidance for future in depth analyses.

For plantation crops systems, data from within Liberia was obtained through the works of the World Bank and the IFAD (International Fund for Agricultural Development). For these interventions, some of the values are specific to Lofa County where the proposed project activity is envisaged to happen. For the other systems i.e. forest restoration, mixed agroforestry systems, corridors and buffers, aggregated figures from various sources were used that conducted extensive analysis of previous works (publications). The figures used for corridors are from Madagascar since such estimates do not exist for West Africa in particular. The same is true with mixed agroforestry systems for which estimates from Mali were used.

Shifting from upland to lowland rice production, will involve making land suitable for lowland rice production available for farmers through a participatory land use planning process at the county, district and village levels. The pre/study team has not gone into cost calculation of such shifts in the production systems.

To address the caveats associated with the values presented in this section, the pre-study team ecommend that during the inception phase of the proposed programme, extensive cost benefit analyses of the various intervention options should be done.

6.2 Forest restoration

The table below presents estimates of the costs and benefits for the restoration of tropical forest, woodlands and scrublands, and degraded lands. The estimates reveal that all the restoration options considering do have a very high B/C ration over a long period of time e.g. 40 years. For instance, the tropical forest restoration B/C is close to 40 over the 40 years' time span considered and the annualized benefits were close to 7000 USD/ha. These estimates were from meta-analysis of over 94 cases of restoration that TEEB (The Economics of Ecosystems and Biodiversity) analyzed. Since the forest area in Lofa is also part of the tropical forests, the TEEB estimates could be an indication only and accurate calculations for the target area should be part of the inception phase of the programme (Chapter 7).

	Benefits and costs (USD/ha)	Remarks
A. Tropical forest restoration		Figures are aggregates of metadata on restoration at global level. They could serve as good proxy estimates until comprehensive analysis will be done for the specific project areas. Data source: TEEB 2009[10]
(-) Restoring a tropical rainforest (High cost scenario)	3450	
(+) Estimate of average annual benefit	7000[11]	
(+) Net Present Value of benefits over 40 years	148700	
Benefit:Cost ratio	37.3	
B. Woodland and shrub lands		
(-) Restoration costs	990	
(+) Estimate of average annual benefit	1571	
(+) Net Present Value of benefits over 40 years	32180	
Benefit:Cost ratio	28.4	
C. Restoration of degraded lands		Experience from Mali (Sidibe et al. 2015)[12]
(+) Increased firewood	321	
(+) Enhanced shallow aquifer recharge	120.9	
(+) Enhanced carbon sequestration	3995.8	
(-) Implementations costs	298.7	
Benefit:Cost ratio (benefit includes aquifers replenishment and carbon benefits)	14.86	

Note: (+) and (-) denote benefits and costs respectively.

[10] TEEB. 2009. http://www.teebweb.org/media/2009/09/TEEB-Climate-Issues-Update.pdf

[11] This value is even an optimist estimate compared to other figures from studies like Pearce (2001). [Pearce, D. W. (2001). The economic value of forest ecosystems. *Ecosystem health*, *7*(4), 284-296].

[12] Sidibe et al., 2015. http://inweh.unu.edu/wp-content/uploads/2015/09/ELD-IUCN-Case-Study-Mali.pdf

6.3 Plantation crops rehabilitation and establishment

The cost benefit estimates for the plantation crops shown in the table below are directly from Liberia as indicated earlier. The values were derived from IFAD and World Bank project documents. In this context, rehabilitation involves management of the existing stands of the various crops.

	Costs (USD/ha)	Year 0 costs	Yield (kg/ha)	Farmgate price (USD/kg)	Annual revenue (USD/ha)
Plantation crops: Cocoa systems					
Rehabilitation - high input	763	763	1800	1.4-1.8	2520
Rehabilitation - medium input	366	225	600	1.4-1.8	840
New planting - high input	285	200	1500	1.4-1.8	2100
New planting - medium input	n.d.	n.d.	2000	1.4-1.8	2800
Business as usual	n.d.	n.d.	120	0.31[13]-0.5	60
Plantation crops: Coffee systems					
Coffee rehabilitation - low input	334	200	600	1	600
Plantation crops: Oil palm					
Rehabilitation	50	50	3500	0.1	350
Replanting (Smallholder farmers)	350	350	8000	0.1	800
Replanting (Out-grower schemes)	1703	672	13000	0.1	1300
Source of data: Summarized and Computed from IFAD (2011)[14] and World Bank (2012) [15] Project documents in Liberia.					

Note: Time to peak production: Cocoa rehabilitated - 3-4 years, Cocoa replanting - 7-8 years, Coffee - 3-4 years, Oil palm -7-8 years. n.d. – no data. High input scenario includes use of improved varieties, fertilizers and other chemical inputs. Medium input is when using improved varieties and fertilizers.

[13] English (2008) found that the actual farmgate value of a kg of cocoa is about 0.31 USD in Lofa County. The author also computed the LIFFE (World price) estimate of 1.67 USD/kg for Lofa, which is close to the values used by IFAD and World Bank in their estimates.
[14] IFAD. 2011. Smallholder tree crop revitalization support project document.
[15] The World Bank. 2012. Liberia - Smallholder Tree Crop Revitalization Support Project

6.4 Estimates of costs and benefits for mixed agroforestry systems

Mixed agroforestry systems are sources of fuelwood, animal feed, construction wood and farm tools. There is no specific cost benefit analysis done for the Lofa area, and the estimates in the table below are based on data from Mali. The limitation of using these data, however, is that Mali is an arid to semiarid country in contrast to Liberia.

	Present value (USD/ha)	Remarks
Agroforestry: Mixed tree-crop-livestock systems		
(+) Increased firewood	73.9	Experience from Mali (Sidibe et al. 2015)
(+) Increased nitrogen fixation	211.2	
(+) Increased soil moisture	382.2	
(+) Enhanced animal fodder	296.5	
(+) Enhanced shallow aquifer recharge	120.9	
(+) Enhanced carbon sequestration	1220.6	
(-) Implementations costs	33.8	
(-) Management costs	145.9	
Benefit:Cost ratio for smallholders	5.36	Computed from data from Sidibe et al. 2015.
Benefit:Cost ratio at watershed level (includes benefits such as aquifers and carbon sequestration)	12.83	

Note: (+) and (-) denote benefits and costs respectively.

6.5 Cost estimates for corridors for biodiversity conservation

For the corridors, data for benefits are lacking, it was impossible to compute the B/C ratio. The table below presents the cost figures from two corridors established in forested ecosystem in Madagascar. These figures were used as proxies due to lack of data for Liberia.

	Cost (USD/ha)	Remarks
A. Corridor: Areas managed for creating corridors for wildlife		Corridors linking patches of forests in Madagascar. Data source: Holloway et al. 2009[16]
Tree and plant nurseries	11-223	
Plantation establishment	19-372	
Forest maintenance	15-670	
Aggregated cost	45-1265	Computed based on figures from Holloway et al. 2009
B. Restoration of rainforest corridors		Restoring degraded wasteland to a mosaic of integrated diverse productive ecosystems and natural forest in Madagascar (Holloway et al. 2009)
Sourcing and planting of trees	570-1250	

[16] Holloway, L. L.; Andrianjara A. H. and Zafindrandalana, J. M. (2009) Direct costs of Masoala Corridors Restoration Project. Ma- soala National Park, Madagascar.

6.6 Investing in adequate planting material

When the aim of scaling up is to reach tens or hundreds of thousands of farmers, it is essential not to underestimate the importance of quality planting material in scaling-up processes, even for relatively low-value tree crops.

Plantation forestry illustrates the value that proper attention to delivery of tree planting material to growers can provide. In plantation forestry, *internal rates of return of 10 %* from tree domestication are common.

Seed source selection can provide physical gains of 10-30%. Selection within a seed source may add 10-25% and further gain of 15-25% can be added by breeding. Through a simple process, it is thus possible to achieve 35-80% *gain* with very high returns of investment.

The increased cost of using genetically superior germplasm is well justified, especially as it is typically only a small fraction of total establishment costs.

Relatively few agroforestry species have been tested for their performance but two of the most widely planted agroforestry species in East Africa, *Calliandra calothyrsus* and *Gliricidia sepium*, demonstrate wide differences between provenances for wood and leaf biomass (the main product), where the most productive provenances produced about 2 to 3 times the yield of the poorest provenances. For *Bauhinia purpurea* in Nepal, annual gains of 2-5% more biomass (including fodder) has been demonstrated through simple phenotypic selection.

The problems of inbreeding and genetic deterioration, documented for unmanaged exotic land races of many timber trees, will eventually develop also for agroforestry tree species, once local natural forests are lost or inaccessible and on-farm trees become the dominant seed sources, resulting in significant losses, unless care is taken to avoid the genetic impoverishment in the domestication process.

When matching of planting material to planting site is inadequate, huge losses of higher productivity opportunities are common. The loss may be complete, when plants simply die, or may be in the form of severely reduced productivity if they survive. Adding up the loss from inappropriate choice and the additional opportunities of gain from well planned domestication can easily provide for manifold improvements. For example, widely planted species of acacia illustrate the importance of utilising the right material, where the careful choice of an improved variety developed from superior natural provenances versus using an (inbred) landrace can provide up to *four times higher* volume growth.

7 Proposed programme

Summary

Title	Forest Landscape Restoration and Sustainable Land Management Programme in Lofa County, Liberia (RESTORE LOFA)
Goal	Contribute to sustainable development and poverty reduction through protecting natural forests, restoring degraded landscapes and developing the agricultural sector and value chain in Lofa County.
Objectives / Outcomes	Program area includes approximately 380.000 ha in Lofa County: 1. Savannah restoration in Foya, Kolahun and Voinjama districts 180.000 ha a. Up to 120.000 ha agriculture and agroforestry (including oil palm, cocoa, coffee, rice, vegetables sustainably intensified, and increased diversification through introduction of improved varieties of fruit trees and other crops) b. 60.000 ha of degraded forest land restored and conserved, including conservation and buffer zones around the remaining natural forest areas 2. Buffer zones 100.000 ha a. Up to 100.000 ha of forest restored and/or conserved b. 10.000 ha agriculture and agroforestry (crops as outlined in 1.a. above) 3. Conservation corridors 100.000 ha established in the area between Foya and Wonegesi PPAs
	4. Income from land-based commercial activities, substantially improved for up to 20000 households
	5. Up to 4000 jobs created through rural enterprise
	6. 2-5 MtCO2 of emission reduction
Main Components	1. Land use planning and governance 2. Integrated Mosaic landscape: forest-agricultural-agroforestry in Savannah invaded areas 3. Forest Landscape restoration and conservation (buffer zones and corridors) 4. Performance based incentives and rural enterprise

	5. Seed and nursery infrastructure 6. Institutional strengthening, capacity development and knowledge management **7.** Project management, monitoring and evaluation
Duration	Phase I: 2017 – 2019 Inception and facilitation phase
	Phase II: 2019 – 2024 Main Implementation phase
Budget	Total: 60 Million USD Phase 1: Inception and facilitation 10 mill USD Phase II: Main implementation 50 mill USD *NB: Potential private sector contribution expected to be about 25% of Phase II budget (12.5 Million USD)*
Potential implementing Partners and Collaborators	Phase I: NFG, NIBIO, ICRAF, FDA, Min of Agriculture, Agricultural Research Institute, Environmental Protection Agency (EPA), Conservation NGOs Phase II: Institutions listed in phase I, Local NGOs and CBOs and Private Sector, Banks and others

The Main Challenges in Lofa County

Like in most parts of Liberia, Lofa County has suffered tremendously from two major crisis in its history, the civil war and the recent Ebola crisis. Located on the border with Sierra Leone and Guinea, Lofa County was the epicenter of the Ebola outbreak and severely affected by the civil war. These two crises have impacted the social and institutional fabric of communities in the county with tremendous consequences for education and the economy. Several small and large-scale plantation activities including forest,cocoa, and oil palm productions were abandoned for more than 20 years during the war. Hence poverty and food insecurity are widespread.

Two major problems related to the agriculture and the forest sectors were identified in Lofa County.

1. Increasing Savannah invasion into agricultural and forest landscapes from the North (Guinea border) and West (Sierra Leone border) into Lofa County, entire Foya, northern parts of Voinjama and Kolahun districts. Savannah invasion follows a shifting cultivation and frequent

fire. As a consequence, an estimated 180,000 ha of productive forest landscape is affected by savannah. There is an urgent need to mitigate the fast expanding savannah and restore the invaded area into a sustainable and productive mosaic agriculture and forest landscape. There is also an urgent need to protect the few remaining areas of natural forest in this region.

2. Deforestation and forest degradation associated with poor and unsustainable farming practices involving slash and burn, where the fire almost always burn larger areas than the farmer can manage to cultivate. As a result farming and forest fires are expanding into forested landscapes and pose serious threats to over 300,000 ha of important biodiversity conservation areas in the county, namely Foya (164000 ha); Wologesi (100,000 ha), Wonegesi (38,000 ha) and 44,000 ha of community forests. There is thus need to protect these forests as well as enable greater benefit from these separate islands of forests through a corridor that ensures connection and connectivity. Buffer zones could be designed to sufficiently provide protection for the edges of the PPAs that serve as physical barrier against the expansion of shifting cultivation into PA, while at the same time provide ecosystem services. Conservation corridors could enable ecological connectivity between PA and important remnants of forests in the county, i.e. Foya and Wonegesi forests given that fragmentation has been growing due to fires and agricultural expansion.

The proposed programme will seek to address these challenges in a comprehensive way, involving all necessary partners from the public including the communities, private and civil society sectors in accordance with the following theory of change (see also appendix 5):

In order to achieve the project goal of sustainable development and reducing poverty, the project assumes three complementary impact pathways. First increasing landscape productivity aimed at addressing the underlying cause of degradation and deforestation, and sparing land for restoration and conservation (Component 2, 3 and 5). Secondly enabling conservation through creating and supporting the effective and efficient implementation of conservation corridors and buffer zones (Components 2, 3 and 5). Thirdly by incentivizing value chains, enterprise, emission reductions to absorb and market the increased productivity, create employment, and encourage climate change mitigation through REDD+ (Components 4, 6 and 7). The process starts with a participatory land use planning process that is supported by a strong evidence-base at county, district and village levels (Component 1), and aims to end up with sustainable financing mechanisms and public-private-partnerships that enable continuity beyond the project. This approach is comprehensive because it optimizes synergies and minimizes trade-offs. It is generally proven that increased productivity at tropical forest margins without corresponding conservation and protection measures eventually leads to deforestation and degradation. Similarly, without markets and incentives both productivity and conservation approaches are unlikely to succeed.

The Project Goal:

Contribute to sustainable development and poverty reduction through protecting natural forests, restoring degraded landscapes and developing the agricultural sector and value chain in Lofa County.

Specific Project Objectives / Outcomes are:

Program area includes approximately 380.000 ha in Lofa County:

1. Savannah restoration in Foya, Kolahun and Voinjama districts 180.000 ha
    a. Up to 120.000 ha agriculture and agroforestry (including oil palm, cocoa, coffee, rice, vegetables sustainably intensified, and increased diversification through introduction of improved varieties of fruit trees and other crops)
    b. 60.000 ha of degraded forest land restored and conserved, including conservation and buffer zones around the remaining natural forest areas
2. Buffer zones 100.000 ha
    a. Up to 100.000 ha of forest restored and/or conserved
    b. 10.000 ha agriculture and agroforestry (crops as outlined in 1.a. above)
3. Conservation corridors 100.000 ha established in the area between Foya and Wonegesi PPAs
4. Income from land-based commercial activities, substantially improved for up to 20000 households
5. Up to 4000 jobs created through rural enterprise
6. 2-5 MtCO2 of emission reduction

The Programme outcomes will be achieved through seven main components as follows (Fig. 19):

1. Land use planning and governance
2. Integrated Mosaic landscape: forest-agricultural-agroforestry in Savannah invaded areas
3. Forest Landscape restoration and conservation (buffer zones and corridors)
4. Performance based incentives and rural enterprises
5. Seed and seedling infrastructure
6. Institutional strengthening, capacity development and knowledge management
7. Project management, monitoring and evaluation

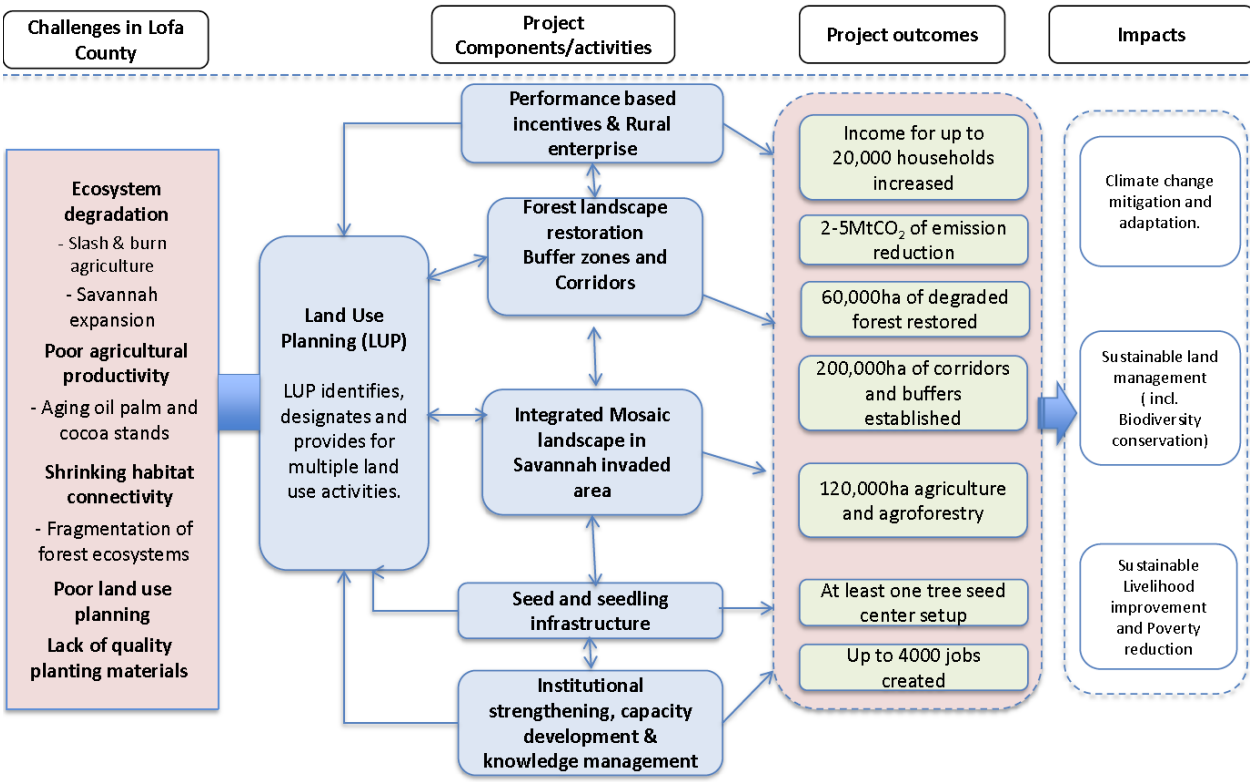

Figure 19. Summary of the key problems being addressed, the project components, outcomes and impacts.

Component 1: Land use planning and governance

Aim: Facilitate the development of an enabling planning and policy environment for implementing sustainable development approaches.

This will set a transformative agenda for Lofa county in a participatory process, that enables a common vision through land use planning at county, district and village levels in the project area. Such a vision would ensure increased productivity and better livelihoods without compromising environment services further, while enhancing climate change mitigation, forests and biodiversity in the area. Most appropriate target areas for restoration would be identified as well as the necessary land governance actions and policies for facilitating action initiated.

Sub-Components:

1.1 Land Use Planning

This sub-component will identify opportunities and gaps in land-use planning so as to improve resource-use efficiencies for key supply and value chains without jeopardizing (or in fact enhancing) mitigation, adaptation and biodiversity/ecosystem services conservation.

1.2 Land Resource Governance, Administration and Certification

This would be largely around mechanisms for securing rights and tenure arrangements necessary- could include community forestry processes. It would also look at issues of representation, especially where and how traditional and modern governance systems interact in order to understand opportunities for positive reinforcement or needs to remove obstacles.

1.3 Policy Support and Citizen Engagement

This component will identify develop and facilitate policy changes required to support sustainable land management at local and national level, both in the short and long term. It will also look at other aspects of managing natural capital for a step change to a development of a sustainable mosaic agricultural and forest landscape. Of particular importance here are policies that support performance based incentives and financing schemes in the context of public-private-partnership.

Indicators:

-Land use plans updated and developed (County, district and village levels)
-No of individual and communal lands secured for NRM
-Number of policy instruments impacted by project
-Number of individuals and or communities benefiting from land certification
- Land area legally recognized for restoration, and conservation

Relationship to other components:

This component sets the basis for the implementation of components 2-4 in terms of identifying and securing appropriate land use plans and tenure arrangements for the local communities required for restoration and rural enterprises.

Component 2: Integrated Mosaic landscape: forest-agricultural-agroforestry in Savannah invaded areas

Aim: Support the adoption and scaling up of forest landscape restoration and afforestation in degraded savannah areas, while contributing to increased productivity and incomes and nutritional security through diversification.

This component will address one of the major problems in Lofa County through a mosaic landscape restoration approach in four broad ways, assisted natural regeneration, forest plantations, agroforestry (based on oil palm, cocoa and coffee systems) and conservation of any remaining forest patches that exist. This component will specifically target Foya, Kolahun and Voinjama districts.

Sub-Components:
2.1 Mosaic landscape restoration
2.2 Sustainable Intensification of agricultural and agroforestry crops (including Oil Palm, Cocoa, coffee, rice, vegetables, fruit trees etc)
2.3 Vocational training, agriculture and natural resource management
2.4 Woodlots and plantation forest establishment

Indicators:
-Area restored / reforested
-No of households adopting sustainable intensification practices
-Area of crops intensified (ha)
-Area of woodlots and tree plantations established (ha)
-Area of remnant natural forest conserved (ha)
-No of people trained
-Carbon stocks and Emission Reductions

Relationship to other components:
This component is strongly linked to component 3, because it sets the foundation for reclaiming land for buffer zones and corridors. It also sets the basis for the implementation of land-based enterprises in components 4 by developing the products and increasing land productivity.

Component 3: Forest landscape restoration and conservation (buffer zones and corridors)

Aim: Support the adoption and scaling up of forest conservation and forest landscape restoration and preserve the country's unique biodiversity.

This component will focus on supporting conservations efforts in the two main protected areas in the county namely Foya and Wonegesi forests. This will be done through the support of a mixed set of ecological intensification of agriculture and restoration activities in designated buffer zones around the two protected areas. Secondly, this component will explore, design and implement a corridor between both protected areas in a bid to reduce the current fragmentation and growing disconnect between the areas. Thereby enhancing biodiversity, not only in Lofa County, but potentially in the Liberia Guinea area through the Lofa river (one of the potential corridor paths, see figure on corridors and buffers in site verification section of the report).

Sub-Components:
3.1 Community-based forest landscape restoration (in buffer zones around PPAs)
3.2 Establishment of forest / ecological corridor (between Foya and Wonegesi PPAs)
3.3 Establishment of forest plantations

3.4 Improve forest management
3.5 Vocational training, for natural resource management and agriculture
3.6 Sustainable Intensification of agricultural and agroforestry crops in and outside the corridor and buffer zone areas

Indicators:
-Area restored / conserved
-Area of community forests created (ha)
-Area of forest plantations created (ha)
-Area of crops intensified (ha)
-No of people given training
-Carbon stocks and Emission Reductions

Relationship to other components:
This component sets the basis for the implementation of land-based enterprises in components 4 by developing the products and increasing land productivity, and contributes to development of the mosaic landscape (component 2).

Component 4: Performance based incentives and rural enterprises

Aim: Enhance incomes of farmers and local communities through value chains development and incentives for land related enterprises

This component constitutes a major innovation of the project. It will develop and implement performance-based incentives and financing that will enable multiple climate, biodiversity and livelihood objectives and ensure private investment inflows into the county through value chain development. The component will develop and test a financing mechanism conditioned on delivery of results and supported by a robust real time monitoring platform. Monitoring will be based on a set of mutually agreed economic, social and environmental indicators.

Sub-Components:
4.1 Development of product value chains
4.2 Performance-Based financing of land-based enterprise
4.3 Development of incentive schemes
4.4 Strengthen community-based NRM and farmers' associations

Indicators:
-Value chain improvement technologies adopted

-No of jobs created
-% Change in household incomes
-% Change in communal incomes
-No of enterprises supported
-No of private sector partners engaged / or volumes of transactions

Relationship to other components:
This component will provide vital investment support and technology support required for transformative development in component 2 and 3 above.

Component 5: Seed and seedling infrastructure

Aim: Complements and supports the development of tree-based restoration activities by developing quality planting material delivery systems.

The proposed interventions should ensure that both the forest restoration and agricultural tree-crop project planting actors have better information on the best seed sources, the right tree species, best tree-crop genetic resource, best approaches to propagate and multiply to ensure a sustainable delivery systems. Firstly, a much better general understanding will need to be obtained regarding the usefulness, effectiveness and possible integration of different botanic, genetic and genomic types of surveys for supporting a sustainable use and conservation of socio-economic, ecological and agriculturally important tree species in Liberia. Following this a number of actions would be implemented: i) develop the necessary knowledge and information systems, (ii) mobilizing and building the tree genetic resources for the future, (iii) Identify existing- and established new seed production cum conservation areas of the priority tree species (commercial and indigenous) in Lofa county; and (iv) capacity building in the sub-sector and contribute to establishment of a national tree seed centre.

Sub-Components:
5.1 Review of tree-seed sub-sector knowledge and information base
5.2 Contribute to establishment of functional county/national seed infrastructure
5.2 Establishment of functional Rural Resource Centre network

Indicators:
- Number of species (diversity) targeted for restoration
-Material generated for uptake of the diverse species (propagation and multiplication methodologies)
-Amount / volumes of seeds collected and preserved
-No of seeds distributed

-No of seedlings produced / distributed
-No of individual and community nurseries established
-No / Area of Mother-plots and breeding seed orchards (BSOs)

Relationship to other components:
This component will provide essential technical support to components restorations 2 and 3 above through the development of good quality seeds and seedlings delivery systems.

Component 6: Institutional strengthening, capacity development and knowledge management

Aim: To complement the ground implementation of activities in components 1-5 by strengthening and enhancing capacity at the institutional level and building relevant skills and knowledge of key stakeholders including government, community, farmers, private sector, schools, vocational training institutions and academia engaged in sustainable land management in Lofa County.

This component sets out the 'nuts and bolts' of the capacity strengthening that will be required in order for a step-change to take place. Here, capacity strengthening is interpreted in terms of the institutions and organizations involved in Lofa County and human capacity development. A number of measures are proposed that have worked to develop networks of rural 'agri-entrepreneurs' that offer employment and advancement for rural youth, with a consideration for women's advancement. Facilitate public-private-partnerships to ensure access to basic infrastructure (mills, roads, storage facilities) in order to make investments in agriculture, agroforestry and forestry pay off.

Sub-Components:
6.1 Institutional support and capacity development
6.2 Land management enterprise support
6.3 Facilitate public-private-partnerships
6.4 Knowledge generation and management (ICT-Based information systems)

Indicators:
-Functional stakeholder networks
-Enhanced NRM institutions improved and farmers' associations strengthened
-Functional information systems
-Number of farmers benefiting from training
-Number of communities benefiting from enhanced information systems
-Evidence of public-private-partnerships

Relationship to other components:
This component will provide essential technical support to components 1-5 above through institutionalization and capacity building at government, regional and community levels.

Component 7: Project management, monitoring and evaluation

Aim: To ensure effective and efficient project management arrangements and mechanisms, including planning, contracting, coordination and integration, reporting, monitoring and evaluation.

Clearly, a program as ambitious as this will need to go well beyond standard best practices in project management. Two important and innovative topics are considered that will require small specialist teams: the management of the diverse partnerships that will be required in order for change management processes to have traction and the facilitation, 'log-jam breaking' actions that will catalyze the change needed (7.2). This sub-component is in addition to an efficient program/project management team and a monitoring and evaluation (M&E) sub-component that feeds into rapid learning and adaptation of the program as a whole.

Sub-Components:
7.1 Project administration
7.2 Change management and catalysis
7.3 Learning, monitoring and impact evaluation

Relationship to other components:
This component will provides support to all components above, and feeds off and back into the insights from the sub-component of local governance (1.2).

SUSTAINABILITY FRAMEWORK

Sustainability would be built into the architecture of the project in a number of ways as summarized in the table below:

Sustainability Parameter	**Mechanisms**
Financial / Economic	Performance-based financing schemes that will generate enterprises that will be able to attract green investments.
	Public-Private-Partnerships: Partnerships will be sought with the private sector- e.g. out-grower schemes for oil palm, or cocoa with larger companies, banks such a KFW and commercial banks to enable green, and relatively low interest loans with conditions necessary for land-based activities, and lastly in terms of payments or compensation for ecosystem services through Corporate Social responsibility.
Social and political sustainability	Participatory approaches will be at the heart of the design (fine-tuning levels of the project during the inception phase) and at implementation phase to enable ownership at local and national levels.
	Engaging policy partners such as MoA, FDA, EPA and others is aimed at providing feedback to decision-making at policy level based on lessons from the project.
	Engaging Local NGOs and CBOs as main scaling-up partners during the second phase. These should be carefully selected and trained during the inception and innovation phase.
	Ensuring that all interventions are gender and youth sensitive and inclusive will ensure that adoption and learning from the project effective and equitable, thus potentially sustainable.
	Ensure respect for human rights in all aspects of the project especially regarding creation of corridors and restoration areas.
Environmental sustainability	The project will ensure that environmental criteria are embedded in performance approaches for both implementers and beneficiaries of the project as will be practiced in incentive schemes in Component 4 and in partner implementation contracts as well.

BUDGET FRAMEWORK

The budget estimates provided below are based on little data available for Lofa County and proxy numbers from literature in similar environments. Phase I of the project would be based entirely on public finance, while phase II could be based in part on private finance with a target of between 15 and 30% of the budget. Bank loans for private farmers and entrepreneurs along the value chain, corporate social responsibility based finance for incentives, private-public based financing.

COMPONENTS	**PHASE I**	**PHASE II**	**TOTAL**
1. Land use planning and governance	2.000.000	2.500.000	4.500.000
2. Integrated mosaic landscapes	2.500.000	20.000.000	22.500.000
3. Forest landscape restoration and conservation	2.000.000	8.000.000	10.00.000
4. Performance based incentives and rural enterprises	2.000.000	7.500.000	9.500.000
5. Seed and seedling infrastructure	2.000.000	3.500.000	5.500.000
6. Institutional strengthening, capacity and knowledge management	1.000.000	3.500.000	4.500.000
7. Project management, monitoring and evaluation	1.200.000	2.300.000	3.500.000
Totals in USD	12.700.000	47.300.000	60.000.000

8 List of Appendices

Appendix 1: Terms of Reference for the pre-study tender

Appendix 2: Field survey

Appendix 3: Review of polices, strategies and action plans in Liberia and Lofa County

Appendix 4: Actors in Lofa County

Appendix 5: Theory of change for landscape restoration

Appendix 6: Short CV of the pre-study team members

Terms of Reference for developing a forest landscape restoration/reforestation project in Northwestern Liberia

Background

The forest sector in Liberia is a source of livelihood for many rural Liberians, and it has the potential to reduce poverty and generate prosperity. Liberia contains approximately 4.3 million hectares (Mha) of lowland tropical forest that comprise 43 percent of the remaining Upper Guinea forests of West Africa, which extend from Guinea to Togo. While the overall extent of these forests has declined to an estimated 14 percent of its original size, Liberia still hosts two massifs of forest including evergreen lowland forests in the southeast and the semi-deciduous mountain forests in the northwest. Upper Guinea Rainforestis listed as one of 35 global biodiversity hotspots. Most of Liberia's rural population is dependent on forests and their various products and ecosystem services. Forests play an important role as a safety net for vulnerable and marginalized people, especially those living around forest areas.

Deforestation and forest degradation remained relatively low during the civil conflict, but as peace was restored, pressure on the forest and its natural resources increased. The country's forests are under threat due to large scale agricultural development, expanding shifting cultivation, logging and mining investments.

Following the 2003 United Nations Security Council sanctions to prohibit Liberia's trade in roundwood and timber products, the Government established a roadmap for reforms towards a more sustainable, transparent and development-focused approach to forestry. Some of the reforms included: the National Forest Reform Law (NFRL) of 2006; the National Forest Sector Strategy of 2007 that provided the framework for the sector's legal, participatory, and transparent operation; and the Community Rights Law (CRL) with Respect to Forest Lands of 2009 which recognized local community rights to own forest resources on community forest lands. These reforms highlighted sustainable forest management as a national goal and promoted a change in direction establishing closer relationships between commercial operations, the forest environment and affected communities. These reforms introduced the "Three C's (3Cs)" approach (and most recently the 4th C - Carbon) that aims to balance and integrate community, commercial, conservation and carbon uses of the forests.

Further reforms, policies and initiatives have been conducted by the Government to serve the common interest in managing Liberia's forests in a balanced way for long-term sustainable economic growth; to support the livelihood of local and rural communities; and to ensure that its important national and global heritage is conserved.

On September 23, 2014, the Government of Liberia and the Government of Norway signed a letter of Intent (LoI) establishing a forest and climate partnership with the purpose of: (i) supporting the development and implementation of Liberia's REDD+ strategy to ensure significant net reductions in greenhouse gas emissions from deforestation and forest degradation; (ii) contributing to sustainable development in Liberia through protecting natural forests, restoring degraded lands, and developing Liberia's agricultural sector; and, (iii) working together to support progress on global efforts regarding climate change and sustainable development in general and REDD+ in particular.

The National Forestry Policy and Implementation Strategy of 2006 require the Authority to: a) Develop and implement a National Reforestation Program, based on sound, scientific and technical principles (best practices) including realistic annual targets for planting, enrichment planting and

agro-forestry; b) Develop appropriate mechanisms and incentives to encourage involvement of the private sector and local communities in reforestation; and c) Encourage tree planting for environmental improvement and income generation in green belts within and around urban areas. In support of this, and in line with the purpose of the forest partnership with Norway, the Forest Development Authority (FDA) and partners considers further reforestation and tree planting activities in Lofa County a priority task.

Objectives

The objective of this assignment is to support national stakeholders in considering the social, economic and environmental viability of an ambitious landscape level restauration/reforestation and forest plantation project. As appropriate, describe how such a project can be designed to improve local access to environmental services from natural forest, reduce pressure on surrounding intact forest, increase uptake of CO2, and strengthen local employment and economic opportunities. In this, identify opportunities for private sector engagement and investments, and public-private cooperation for financing.

The project description will form the basis for a fundraising effort, dialogue with private sector actors, and subsequent implementation.

Scope of Work

The consultant will provide a "needs and opportunity assessment" which considers the additional value of a new forest landscape restoration project that builds on ongoing projects. This will include a geographic "mapping" describing the history of deforestation/degradation in the target landscape, and analysis of environmental and social opportunities for landscape level restauration/reforestation through a combination of restauration/reforestation of natural forest and commercial plantations.

The consultant will review and summarize relevant Liberian regulations, policies, environmental condition, and historic and ongoing projects related to reforestation and forest plantation. Special attention should be given as to if and how a new project can build on recent and ongoing projects and related local experience (including ITTO and FDA implemented/supported reforestation projects and other relevant project activities supported by among others IUCN/LLS, FFI, RSPB, FAO and CHAYO), and supplement rather than compete with other planned activities in the target area.

The proposed target area, to be verified by the consultant, will be in Lofa County in the northwestern corner of Liberia. Specifically, the consultant will consider a landscape zone bordering and partly overlapping with the target area of the Liberia Forest Sector Project (LFSP, World Bank), where the restored/planted area should function as an additional "buffer" to natural forest within the LFSP target area. Particular attention should be given to strengthen the forest "buffer" zone north of Foya, west of Wonegisi and between the two planed protected areas.

On this basis and in close cooperation with national and local authorizes, local communities and other relevant stakeholders, the consultant will consider opportunities for a mosaic landscape that will support various economic activities while strengthening the robustness and service provisions of the natural forest landscape. Various types, sizes and combinations of plantations and restored natural forest should be explored, covering a range of economic activities from planting for charcoal and wood production mixed with subsistence farming (e.g. the " Willie Smits" method or similar), to planting for wood and tree crops at both household, community and industrial scale. Industrial scale

production of timber for local power production should also be considered. For all options, the role and involvement of local communities and relevant authorities should be discussed and clarified.

Land rights and tenure issues that need to be considered before implementation of a project should be highlighted and discussed. Any challenges in, and a potential process for clarifying, land rights in relation to private investments should be identified.

Financial requirements for different options should be outlined and opportunities for private sector investments particularly considered. Opportunities for integration with ongoing and planned projects should be considered from a landscape perspective. Assessments of commercial opportunities, including tree crops should draw on the wealth of existing experience and analysis.

Relevant opportunities should be evaluated with a final recommendation considering both environmental, social and economic criteria, and how various elements can integrate for synergies and positive environmental impact at the landscape level.

A draft report including analysis and recommendations should be circulated for consultation with local stakeholders, including relevant communities, civil society organizations and local and national authorities prior to submission of a final report and project proposal.

Key Deliverables

- A needs and opportunity assessment.
- A report laying out the opportunities of a landscape level restauration/reforestation and forest plantation project, including proposed implementation arrangements and cost estimates for various components. Components relating to private sector investments should be explored as part of a landscape level project, but may include recommendations for further analysis.
- Detailed findings, analysis and recommendations as outlined in the "scope" section above should be included as annexes to the main report.
- A brief, fact based, presentation for fundraising and private sector dialog

Appendix 2: Field itinerary to Liberia and Lofa County

Date	Activity	Institutions
4th April	Meeting	Meeting with FDA, Meeting with Ministry of Interior Affairs
5th April	Meeting	Ministry of Lands, Mines, Energy (Minster, Assistant Minister Mines, Assistant Minister Energy), Environmental Protection Authority Ministry of agriculture, LISGIS (Liberian Institute of Statistics and Geoinformation Services) Land Cartography Department
6th April	Travel to Voinjama and Meeting	Meeting with FDA Regional forester and his team
7th April	Meeting, departure to Foya and visit to FDA nursery	Meeting with Lofa county Superintendent Meeting with paramount Chief and statutory chief of Foya District Meeting with Winrock international Visit to FDA nursery Meeting with head of cooperative and Winrock Oil palm expert
8th April	Meeting at Sembesu community and Field visit to areas close to Sierra Leone border	Meeting with Sembesu community Focused interview with youth members Visit to the savannah expansion areas close to Sierra Leone Meeting with the Nanorni cooperatives – Foya city hall
9th April	Field visits	Foya afforestation project (Koimei village) Visit to savannah expansion area in Guinea Conakry Border)

10th April	Visit to areas for potential corridors	Visit to Lesco/ Alabama Camp – timber harvesting concessions Visit to Senator Kpoto family concession – area operated by Kenwood Focused interviews with Lesco town chief, Two other selected community members, Meeting with community at Kpadeh village (recently established by clearing forests)
11th April	Meetings	Meeting with IFAD representative Meeting with Ministry of Agriculture representative at Voinjama Meeting with FDA regional officer Meeting with EPA Lofa county representatives Meeting and field visit to Wonegisi reserve
12th April	Meeting FDA MD	After-field briefing visit
13th April	Meetings at FDA HQ, SDI and USAID	Meeting with GIS department of FDA Meeting with Sustainable Development Institute Liberia Meeting with USAID

Review of Policies, Strategies and Key Actors in Lofa County, Liberia: a closer look at land-based sectors

Summary

This report, using existing literature relating to Liberia, reviewed the existing policies and strategies and other related document that are developed in the country to guide activities in the various land use sectors. The report also compiled who the key actors in Lofa County are and the past and present initiatives in the land use sector. The review is part of the tender that was awarded by NICFI to the team (NIBIO, NFG and ICRAF) to undertake a pre-study in Lofa County Liberia on potential forest and mosaic landscape restoration potentials and opportunities.

A. Laws, policies, and strategies governing sectoral interventions in the land sector

1. Forest sector

Early laws establishing forest reserve and conservation sites were included in the Conservation of the Forests of the Republic of Liberia Act of 1953. This law together with the Supplementary Act of 1957 relating to the conservation of the forest of Liberia provided a robust legal framework for the use of forest resources in Liberia and allowed for the creation of government forest reserves, native authority reserves, communal forest, and national parks (UNEP, 2004).

The 1976 Forest Act of Liberia created the Forest Department Authority (FDA), defined their responsibilities, and stipulated offenses and penalties for those who default the act. The act also created an Advisory Conservation Committee on forest issues and clearly specified the role of forestry officers in the management of forest reserves. The Liberian National Resources Law of 1979 had a chapter on Forests. This chapter gave the FDA the legal authority to create government forest reserves and national parks where logging, hunting, and mining were strictly prohibited (UNEP, 2004).

The Liberian Forestry Law of 2000 also had provisions for sustainable forest protection and conservation. Chapter 8 of the law stipulates that “all forestry operations and activities shall be conducted so as to avoid waste and loss of biological resources and to protect natural biological resources against damage, as well as to prevent pollution and contamination of the environment” including forest ecosystems. This law also provided for the creation of protected areas and communal forests, research in the conservation of forest resources, reforestation and afforestation programs, and the conduction of education and awareness programs on forest resource conservation and management (UNEP, 2004). A major provision of this law also prohibited the waste of forest resources.

In October 2003, the Liberian president signed three laws which were aimed at protecting the Liberian forest from deforestation and forest degradation. These laws included the Protected Forest Area Network Law, the Sapo National Park Act, and the Nimba Nature Reserve Act. Protected Forest Area Network Law created eight protected forest areas in the country, the Sapo National Park Act expanded the Sapo National Park from 130,845 hectares to 180,500 hectares, while the Nimba Nature Reserve Act created the Nimba nature reserve which is about 13,400 hectares (UNEP, 2004).

Liberia's National Forest Policy was introduced in 2006. This policy established a Conservation Department within the Forestry Development Authority and a Community-Based Forest Resource Management (CBFRM) Division within the Conservation Department. It has eight fundamental objectives including:

- Ensure that commercial forestry, community forestry, and forest conservation activities are integrated in forest management and balanced to optimize the economic, social, and environmental benefits from the forest resource.
- Conserve a representative sample of forest ecosystems so that important environmental functions are maintained.
- Contribute to the national development goals of poverty alleviation and increased food security by increasing the opportunities of forest-based income generating activities.
- Grant more equitable access to forest resources so that the potential for future conflict is reduced and the benefits from forestry development are shared throughout the Liberian society.
- Ensure that all stakeholders participate in the formulation of forest policies and in the conservation and management of forest resources.
- Maximize the contribution of the forestry sector to income, employment, and trade through the development of appropriate processing activities.
- Ensure that forestry development contributes to national development goals and international commitments (including regional cooperation and transboundary issues) and is coordinated with other relevant branches of the government.
- Ensure that activities in the forestry sector (including forest management, plantation development, harvesting, conservation and industrial development) are based on sound scientific and technical principles.

The Liberian National Forest Reform Law was also passed in September 2006. Together with National Forest Strategy, these two pieces of initiatives called for a more balanced and integrated development of Liberia's forests for commercial, community, and conservation uses. This represents a complete deviation from the traditional focus in Liberian forest sector, which prior to the enactment of these initiatives was largely limited to the exploitation of the forests for commercial purposes.

To further promote community forestry in Liberia, the Community Rights to Forest Lands Law was passed in 2009. The objective of the 2009 Community Rights Law is to empower communities to fully engage in sustainable management of the forests (and the resources therein) within the Liberian territory by establishing a legal framework that defines and supports community rights in the management and use of forest resources. Specifically, this law also provided clarity on the following issues (Liberia Forestry Training Institute, nd):

- The rights of communities with regards to ownership, occupation, and use of customary forest lands and how those rights relate to the government—and specifically to the Forest Department Authority.

- How communities can manage forestland under clear rules and obligations.
- How forest-related activities are to be undertaken so as not to jeopardize or interfere with community rights to forestland.
- What conflict resolution mechanisms are available to resolve disputes on community rights to forest lands.

2. Agricultural sector

After the end of the civil war, the government of Liberia formulated a series of initiatives to promote agriculture in the country. This included the 2008 "Lift Liberia" Poverty Reduction Strategy, the Statement of Policy Intent for the Agricultural Sector of 2006, the 2008 National Food Security and Nutrition Strategy (NFSNS), and the 2009 Food and Agriculture Policy and Strategy (FAPS). Each is examined in turn.

In April 2008, the Government of Liberia launched an ambitious agenda called the "Lift Liberia" Poverty Reduction Strategy. This Strategy has agriculture as its main entry point since growth in the agricultural sector is essential for poverty reduction. Thanks to this Strategy, a series of deliverables have been achieved in the agricultural sector including (Republic of Liberia, 2008; IMF, 2012):

- Support in the replanting of smallholder tree crop farms by providing training on best practices (use of improved seed and stock varieties, etc.), improving technical services, and mandating out-grower schemes in agricultural concession agreements.
- Transfer of appropriate technology to farmer via research and extension.
- Provision of strategic farm inputs, e.g., fertilizer and high yield varieties of seeds and stocks, at affordable prices, carefully targeting the most needy on a time-limited basis so as to mitigate disruptions to input markets.

The Statement of Policy Intent for the Agricultural Sector in Liberia was launched in 2006. It is an interim measure that envisioned the comprehensive development of Liberia's agriculture into a sustainable, diversified, income generating, modernized, and competitive sector well-integrated into domestic and international markets (Cegbe, nd). This Policy also provided for the necessity of writing and documenting effective land administration, flexible land use planning methods, adaptive sustainable land management practices, and other improvements approaches (Ibid).

Liberia's National Food Security and Nutrition Strategy (NFSNS) was introduced in 2008. The key objective of the NFSNS is to ensure that every Liberian has unfailing access to the food they need and are able to utilize the food to live active and healthy lives. The strategy also seeks to accomplish this goal by addressing four separate dimensions of food security: availability, access, utilization, and vulnerability. Finally, the strategy calls for enabling factors for promoting sustainable agriculture such as sufficient human capacity, improved knowledge on household food security, and strengthened community-level actions.

The Food Agriculture Policy and Strategy (FAPS) of Liberia was enacted in 2009. According to Ministry of Agriculture of the Republic of Liberia (2009), FAPS objective is to achieve "revitalized and modernized food and agriculture sector that is contributing to shared, inclusive and sustainable economic growth and development of Liberia by":

- Making safe and nutritious foods available in adequate quantity and quality all the times to fulfill the nutritional demands of all Liberians ;
- Ensuring inclusive and pro-poor growth in agricultural production, productivity, competitiveness, value addition and diversification, and linkages to markets; and
- Constructing effective and efficient human and institutional capacities of all stakeholders to design, provide services, invest, and monitor activities, while simultaneously sustaining natural resources, mitigating risks to producers and mainstreaming gender and youth considerations.

FAPS also identifies specific sector and sub-sector policies and strategies that will be implemented to revitalize and strengthen the food and agriculture sector and to reduce food insecurity. Some key policy and their strategies which are related to landscape restoration are presented in table 2.

Table 2. Some key policy and strategies of FAPS

Action Area	Key policy	Main Strategy
Tree Crops	Increased production and productivity of Rubber, Oil Palm, Cocoa and Coffee.	Creating linkages between out-growers and processors, improving land utilization and provision of essential inputs, and providing adequate investment incentives.
Forestry	Ensure sustainability of Liberia's forest resources.	Balancing conservation, community and commercial utilization of forest resources, undertaking environmental impact assessment, and designing and implementing environmental sound plans in agricultural projects.
Planting Materials and Agro-chemicals	Smallholders have access to adequate, affordable and quality planting materials, fertilizers and pest management inputs.	Design and implement a planting materials supply program and improve crop protection knowledge and skills.
Land Tenure System	Access to land, tenure security, and sustainable land use.	Supporting activities of the Land Commission, discouraging land holding for speculative purposes, promoting alternative to land distribution such as out growers scheme.
Natural Resource Management	Effective transition from shifting cultivation to sedentary farming.	Providing technical support and best practices for sustainable land use, organic and integrated farming, and participatory management of forest resources.
Climate Change	Monitored sector activities especially agriculture and forestry to prevent contribution to climate change and reduce the impact of climate change on various sectors.	Provide farmers as well as other stakeholders with information on climate change and implement programs on climate change adaptation including incentives.
Agriculture and the Environment	Mainstream environmental considerations in agricultural programs.	Establishing an environmental unit in the Ministry of Agriculture and strengthening collaboration with the Environmental Protection Agency including monitoring of activities in the agricultural sector

Source: Ministry of Agriculture of the Republic of Liberia, 2009

3. Mining sector and policies related to Small and Medium Enterprises (SMEs)

The new Minerals and Mining Law was approved in April 2000. This law is used to minimize land degradation and other environmental problems arising from mineral resources development. Specifically, the law calls for restoration of the terrestrial ecosystems to its previous state after mining activities have been conducted. According to the law, all medium- to large-scale mining

activities are to submit Environmental Impact Statements. Environmental audits and periodic assessments are undertaken to ensure compliance.

To boost the implementation of the Minerals and Mining Law of 2000, the Environment Protection Agency Act was established in 2002. The act requires that environmental impact assessments (EIAs) be carried out for all project activities (including medium to small scale mining, large and medium sized oil palm companies, and forest concession) that are likely to have an adverse impact on the environment. It provides for a mechanism for ordering SMEs to restore degraded ecosystems emanating from their operations. The act also requires the formulation of environmental protection standards, guidelines and procedures; and economic incentives to encourage environment-friendly business practices by SMEs.

Under the auspices of the National Environmental Commission of Liberia, established in 1999, the National Environmental Policy of the Republic of Liberia was prepared and submitted to the Office of the President in August 2001. The policy document was approved in November 2002. In order to promote effective implementation of sectoral environmental policies and strategies, the National Environmental Policy, among other things, calls for the strengthening of institutional mechanisms and reviewing – and where necessary – formulating environmental legislation. It seeks to develop and implement systems and guidelines for assessing environmental impacts of the operations of SMEs and to increase environmental education and public awareness.

B. Land tenure in Liberia and associated issues

Land distribution: Liberia is administratively divided into 15 counties. About 40% of the country is considered coastal, extending 40–50 kilometers inland and is also referred to as county Liberia or littoral. About 10% of the coastal area is held under long-term leases by large, mostly foreign-owned agribusiness interests. An undetermined portion of Liberia remains under the control of the indigenous population. The other 60% of the country, referred to as Interior Liberia or the Hinterlands, is divided among the indigenous groups on a tribal basis, in discrete settlements bounded by rivers, streams and other natural boundaries. There is little information on the distribution among and within the different indigenous groups. Agriculture provides a livelihood for the majority of the population, while most farming activities are carried out on small landholdings; there are also a number of large commercial plantations. Portions of the interior have been allocated by the government to immigrant settlers and foreign companies as well, or brought under mining and logging concessions (Wily 2007; USAID 2010).

Land Tenure: From 1950s, Liberia has maintained a plural land tenure system based on a combination of customary and statutory laws. Liberia's land administration practice (largely the statutory law) recognizes three major land tenure categories: private land, public land and community land. Common knowledge is that private land corresponds with individual ownership rights that are deeded and all land that is not deeded is treated as public. Liberia has an urban-based population, the descendants of Americo-Liberians and the majority of indigenous Liberians living in rural areas. The land-tenure system in the country reflects this division of the population (USAID 2010).

In the Liberian hinterland, indigenous Liberians use customary systems, which are based on community or collective ownership of discrete territories. The urban population found in coastal regions however, use a statutory system of land ownership based on individual fee simple titles.

The statutory tenure system was introduced in the early 1800s by the American Colonization Society (ACS), which purchased land along the coast of present-day Liberia from indigenous African chiefs and, in the 1820s, began bringing freed slaves from the United States to settle. Each settler was allotted 10 acres of farmland, 25 acres for married couples, or a town plot, which they held in fee simple title, giving them permanent, heritable, and fully transferable rights (Land Commission 2013; De wit 2012; Wily 2007 & Namubiru-Mwaura et al. 2012).

Since all land that is not formally titled is public land owned by the state, it paved the way to the grant of concessions of vast tracks of customary lands for logging, mining (iron ore), and rubber plantations, as well as the creation of national parks and reserves. However, this classification has inevitably weakened the tenure rights of the majority of citizens whose claim on ownership was based on customary tenure systems. This inevitably generated conflict contributing to violence throughout Liberia's history, including a 14 years of civil war (1989 to 2003) and land tenure insecurity that bred long-standing tensions between the state and rural communities; as indigenous communities lost their food and livelihood source and their cultural heritage. As a result, they had to buy back their lands from the government to acquire legal ownership. Some groups did so, acquiring collective titles to their lands. Titles were issued to whole clans, towns, and groups, as well as in the name of individuals who are considered to be holding land in trust for a particular group which are either issued in the name of the community or in the name of a chief who holds the land in trust for the people. The nature of this right is collective as compared to individual private rights held by individual persons or a private entity. Despite the predominance of customary tenure in rural areas, the prevalence of statutory claims to land and natural resources is becoming more widespread (USAID 2010; De wit 2012; Wily 2007 & Namubiru-Mwaura et al. 2012).

Tenure types: Statutory law recognizes absolute ownership, while customary law limits tenure to legal rights. There are several types of statutory or legal title (Wily 2007; USAID 2010):

1. *Land Deed*: covers allocations made to the original immigrant settlers by the colonization societies from 1821 onwards (out of lands purchased from indigenous tribes).
2. *Aborigines Land Deed*: collective title granted to indigenous tribes under the Hinterland Law and later the Aborigines Law.
3. *Public Land Sale Deed:* title acquired through the purchase of public land, either by a settler or citizen. Public lands may be allocated to tribal peoples who have become civilized, in fee simple, but only in the amount allowed, 25 acres per family.
4. *Warranty Deed:* title acquired through the purchase of privately owned land.
5. *Leasehold:* right of possession and use granted by a person or the government, for a specified period and under certain conditions.

Legal framework governing land: The 1986 Constitution (which replaced the 1847 Constitution) governs land ownership in Liberia and lays down the requirements for the expropriation of land. The 1904 Public Lands Law (last amended in 1972) and the 1905 Hinterland Law (last amended in 1949) lay down the procedures for the purchase, allotment to aborigines (indigenous peoples), or lease to foreigners of public lands, and the procedures for claiming back land that has reverted to the government recognized customary ownership, not just legal rights, with respect to the Hinterlands. While indigenous communities were allowed to formally register their lands in fee simple collective ownership, lack of formal titles did not diminish or affect their ownership rights (Wily 2007).

Customary land rights are also recognized in the 1956 Aborigines Law, but as legal rights, not as ownership rights. These rights include the use and possession of as much of the public land in the inhabited area required for farming and other enterprises essential to tribal necessities. Lands that were not occupied, actively cultivated or privately titled were deemed public lands owned by the state. This law limited the ability of tribes to sell their land, except by public land sales. However, although land in the hinterland is owned collectively; the use rights to that shared property are customarily owned on an individual basis, mainly by individual families (USAID, 2010; Wily 2007).

> *There are two different statutes for tribal land under the Hinterlands Rules and other laws: Tribal Reserves and Communal Holdings. Neither of these is fee simple ownership. The Communal Holding is land that has been surveyed and deeded, but it is explicitly stated that the tribes cannot pass fee simple ownership by sale of the land to another person. Only a small number of communities have secured their communal areas under fee simple properties, although the areas cover a large proportion of forested lands. In forested areas these include at least 14 Aborigines Deeds and 19 Public Land Sale Deeds which together amount to over 2.5 million hectares; additional entitlements affecting forested areas may exist. The 1974 Registered Land Law formalizes the land registration system. It empowers the government to designate areas for adjudication and registration, and requires landholders to register landholdings. (Wily 2007)*.

Women's Rights to Land: Women's issues come to the fore with regard to the land question primarily in terms of land access and inheritance, with these two issues being intertwined. In this regard women tend to have fewer rights regarding land under customary law than under statutory law (Unruh 2007). Women's property rights in land are clear in the statutory situation. This is due to a long history in respect of the immigrant community; in 1824 the ACS agent passed a law dictating that single female immigrants were entitled to allocation of town or farm lots albeit to slightly less acreage than for single male immigrants. In due course however, this evolved into a less gender specific provision (1929). Most recently, women's land rights were revisited within a law designed to bring customary unions into line with statutory union (Wily 2007).

In the customary situation, women access and gain rights to land through many of the same channels as men: inheritance and gifts from their natal families, borrowing, and, much less frequently, through planting life trees. However, a primary means by which women access land is through marriage, such that women's rights to land are substantially framed by customary marriage traditions. In all Liberia's tribes, the marriage system is predominantly patrilocal, whereby women relocate to the husbands' community upon marriage and therefore access land for housing and farming there. Before marriage, daughters, like sons, typically farm with their parents. For land dedicated to seasonal farming, daughters usually acquire an entitlement to farm on their extended family land or the land of their own by virtue of being a member of that extended family. In individualized land (e.g., house plots, cultivated land) or where rights are bestowed on immediate families, in several clans, daughters are increasingly inheriting or being given land by their parents. Daughters may either inherit land jointly with their brothers or receive a share of the land divided among the children. When land is divided, daughters tend to receive smaller portions than their brothers (Namubiru-Mwaura et al. 2012).

It is very uncommon for married women to administer and exercise control rights over land inherited from their parents, especially in the case of joint inheritance. This is primarily because customary rules stipulate that one can only manage the land of their own extended family and most women leave their natal communities when they marry. As a result, men are usually the ones to administer land on behalf of their families or extended families with the exception Dobli clan

(Kpelle people) where the oldest child will manage inherited land on behalf of his or her siblings, regardless of sex. Here, too, women farm on land both in their natal community and their husband's community (Namubiru-Mwaura et al. 2012; Wily 2007).

C. The key actors and ongoing initiatives in Lofa County

This section provides a snapshot of Lofa county's institutional capacity and actors with respect to land-use sectors such as forestry, environmental management, agriculture and energy. It introduces the key stakeholders (e.g. independent agencies, government ministries, domestic and international NGOs, private actors and other organizations related to the above land–use sectors) and presents a number of approaches and projects through which the actors are operating and influencing land resources.

1. Key Actors

A. Forestry and Environmental sector

Independent agencies	▪ The Forestry Development Authority (FDA) is the main independent agency responsible for sustainable management of Liberia's forests and related resources. The agency provides forestry planning, develops forestry policy, administers and enforces the forestry laws, administers concession agreements, calculates forestry fees, carries out reforestation and forest research and training, monitors the activities of timber companies, and sets up and administers national parks. It is also charged with implementing the 2006 Forestry Law and associated regulations (USAID, 2008)[1]. Contact: Jeremiah Karmo (REDD+ Implementation Unit, FDA) ▪ The Liberia Institute of Statistics and Geo-Information Services (LISGIS) is responsible for compilation, analysis, publication and dissemination of all data from individuals, establishments and geo-spatial Information in the country, including Lofa County (USAID, 2008). ▪ Environmental Protection Agency (EPA) authorized by law in 2003, but functional in 2006. It is charged with implementing the Environment Protection and Management Law. EPA serves as the principal authority for managing environmental quality, and it is directed to coordinate all activities relating to environmental protection and the sustainable use of natural resources. It also promotes environmental awareness and oversees the implementation of international conventions related to the environment (USAID, 2008). ▪ Ministry of Planning and Economic Affairs: It serves as a direct link among Liberian government institutions, private and non-profit organizations, and international organizations. It is responsible for providing guidance to government institutions in preparing development programs and projects; reviewing proposals for new development programs and projects; and reviewing progress made on development programs and projects. The Division of Environmental Planning's mandate is to assist all institutions

[1] Liberia environmental threats and opportunities assessment (ETOA). Final report.

	involved with the protection of the environment by helping to ensure that all national policies and guidelines concerning environment, natural resources and biodiversity remain within national boundaries. It also helps collect and analyze biodiversity data, especially those collected by EPA (USAID, 2008).
Local NGOs	▪ Skills and Agricultural Development Services (SADS) is a local NGO very active in Lofa County established in March 1998 and which implements a wide range of education and developmental programs designed to improve social services, in areas such as sustainable ecosystem management, water and sanitation, Human Rights, general agriculture, biological research and survey, gender equity, HIV/AIDS awareness education, food security and livelihoods incomes generation alternative skills (USAID, 2008). Skills and Agricultural Development Services Address: Apt #C6, Roland Duo's Estate, S.K.D. Boulevard, Paynesville Monsterrado 1000-10 Liberia. Mobile: +231-886-687-330 ▪ Lofa Youth Educational awareness Program (LYEAP) ▪ Sustainable Livelihood Promoters Program (SLPP) ▪ Liberian Agency for Community Empowerment (LACE) ▪ Save My Future Foundation (SAMFU) founded in 1987 with the mission of facilitating and promoting sustainable community-based natural and human resources management and development.
International NGOs	▪ McCall MacBain Foundation (MCMBF) ▪ Conservation International (CI) established its office in Liberia in 2002 and is working with the Government of Liberia to set up a network of protected areas. Contact: Renee A. Murray ▪ Forest Trends (FT) ▪ Nature Conservation Research Centre (NCRC) ▪ Fauna and Flora international which seeks to conserve threatened species and ecosystems worldwide, has made Liberia the central pillar of its West African program and was the first international environmental group to establish an office in the country in 2001 (USAID, 2008).
Private sector	▪ Loggers in the Lofa County are Alpha Logging & Wooding Processing Incorporated who ratified a Forest Management Contract Area "A" in Lofa county with the FDA on May 27, 2009[2]. ▪ Private Use Permit Between FDA and the People of Voinjama District, Lofa County, October 6, 2011[3] ▪ Private Use Permit Between Forestry Development Authority and the People of Zorzor District, Lofa County October 6, 2011 [4] ▪ Private Use Permit Between the FDA and Lofa Development Corporation (Mary Kpoto), November 25, 2009 to commercialize harvestable tree species[5] ▪ Private Use Permit Between The Forestry Development Authority and the People of Bella Yella District, Lofa County October 6, 2011[6]

[22] https://www.scribd.com/collections/4297724/Lofa-County

[3] http://www.scribd.com/doc/151738220/Pivate-Use-Permit-Between-Forestry-Development-Authority-and-the-People-of-People-of-Voinjama-District-Lofa-County-October-6-2011

[4] http://www.scribd.com/doc/151738274/Private-Use-Permit-Between-Forestry-Development-Authority-and-the-People-of-Zorzor-District-Lofa-County-October-6-2011

[5] http://www.scribd.com/doc/151739130/Private-Use-Permit-Between-The-Forestry-Development-Authority-and-Lofa-Development-Corporation-Mary-Kpoto-November-25-2009

	▪ An Act Ratifying the Concession Agreement between the Republic of Liberia and ADA Commercial Inc.[7]
Civil society	▪ Lofa County Forest Forum (LCFF) which brings together cross- section stakeholders including County Superintendent, District commissioners, Paramount Chiefs, City Mayors, Town Chiefs, NGOs, Market Association, Hunters, Farmers Association, Pit-Sawyers associations, Rural Women Groups, Youth groups and CBOs. The LCFF serves as platform through which forestry issues and concerns are flagged, discussed and given priority with the equal involvement and participation of stakeholders at the town, district and county levels. ▪ Community Forestry Development Committee (CFDC)
Research	▪ University of Liberia
Other	▪ Liberia Forest Initiative (LFI) was created to support the government of Liberia in establishing an approach to forest management that would address the conditions needed to lift the sanctions and ensure the appropriate use and management of forest resources. The LFI ultimately comprised fifteen partners: the Center for International Forestry Research, Conservation International, the Environmental Law Institute, the European Commission, Flora and Fauna International, the Food and Agriculture Organization, Forest Partners International, the International Monetary Fund, the International Union for Conservation and Nature, the UN Environment Programme, the U.S. Agency for International Development, the U.S. Department of State, the U.S. Forest Service, the World Agroforestry Centre, and the World Bank.8

B. Agriculture sector

Independent agencies	▪ Ministry of Agriculture, established in 1910—plans, administers, and supervises agricultural programs and provides extension services. It also trains local farmers in improved agricultural practices and provides farm inputs to increase food security. The Ministry also implements agricultural programs, protects farmers' interests, encourages investment in the agricultural sector, and monitors overall activities including the movement of agricultural commodities into and out of the country. It has a Department of Technical Services which works in food security, crops and animal production, and agrochemical sectors, as well as international trade in these commodities.
Local NGOs	▪ Skills and Agricultural Development Services (SADS) ▪ Lofa Education and Agriculture Foundation ▪ Lofa Community Empowerment Program (LOCEP) founded in 2010 with the aim to help build a society in which men and women, boys and girls have equal access to, and opportunities for, employment and basic social services. (LOCEP) Liberia.

[6] http://www.scribd.com/doc/151739267/Private-Use-Permit-Between-The-Forestry-Development-Authority-and-the-People-of-Bella-Yella-District-Lofa-County-October-6-2011

[7] http://www.scribd.com/doc/152412349/An-Act-Ratifying-the-Concession-Agreement-between-the-Republic-of-Liberia-and-ADA-Commercial-Inc

[8] https://www.eli.org/sites/default/files/docs/CGP%20Chapters/CGP_014_Goldman.pdf

	▪ Farmers Associated to Conserve the Environment (FACE): this organization endeavors to empower local farmers in appropriate farming practices that are sustainable and environmentally ethical. FACE is involved in seed rice multiplication and mangrove conservation. ▪ Environmental Foundation for Africa
International NGOs	A few NGOs operate in the Lofa area and support farming activities by providing seeds and farm tools: ▪ Catholic Relief Services ▪ Concern Worldwide ▪ USAID ▪ Winrock International ▪ ACDI/VOCA (to promote economic opportunities for cooperatives, enterprises, and communities through the innovative application of sound business practice) ▪ Samaritan Purse ▪ Development Education Network of Liberia
Private sector	▪ No Information
Civil society	▪ Zorzor District Women Care (ZODWOCA) ▪ Ziama Farmer Cooperative Group (SADS, 2010[9]) ▪ Salayea Multi- purpose Cooperative Association (SADS, 2010) ▪ Quardi- Gboni Farmer cooperative Society (SADS, 2010) ▪ Intofawo Cooperative Society, Foya District ▪ Guma-Mende Cooperative Society, Vahun district ▪ Voinjama District Cooperative Society ▪ Lofa County Hunter Association (SADS, 2010) ▪ Salayea Women Agriculture Program**:** in 2013 three women's groups, composed primarily of the Kpelle, lorma, and Mandingo ethnic groups, were reformed into a farmer's cooperative aimed at enhancing food production and providing income for members[10].
Research	▪ **No data.**

C. Mining sector

Government agencies	▪ Ministry of Lands, Mines, and Energy established in 1972—is responsible for developing Liberia's mineral, water, and energy resources. It coordinates and regulates all mining activities, including iron, gold and diamonds and is responsible for issuing mining licenses. The Ministry is responsible for administering and regulating public and private lands (USAID, 2008) ▪ Liberian Hydrological Services whose mandate is to serve as a research organization in water management, environmental

[9] Final project completion report on the establishment of the Lofa County Forest Forum (LCFF)

[10] http://www.insightonconflict.org/conflicts/liberia/peacebuilding-organisations/lofa-community-empowerment-program-locep/

	management and air quality (USAID, 2008) ▪ Environmental Protection Authority
Local NGOs	▪ No information.
International NGOs	▪ No information.
Private sector	▪ Mineral Exploration Agreement between The Republic of Liberia and G-10 Exploration Inc.[11] ▪ Some international companies including BHP Billiton have been assessing the mining possibilities in Lofa, which could lead to a major concession[12]and significant investment and jobs creation.
Civil society	▪ No information.
Research	▪ No information.

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LIST OF ANNEXES

Annex 1

Relevant Initiatives in Lofa County

1. **Project Name: The Wonegizi Youth Environmental Rights Awareness & Educational Training Program, Ziama Clan, Lofa County, Liberia**

Date: 2011-2012
Description: The developed SADS environmental conservation training program is comprised of three lessons which are developed to with specific focus on youth in forest dependent communities, which SADS intend to pilot in three communities in Ziama Clan. The major strategy for the implementation of this program is the developing of environmental education teaching aids materials (i.e. booklets) that provide visuals explanations to issues discussed throughout the lessons. The major activities of this project are the establishment of Wonegizi Environmental Nature Club, production of environmental education teaching aids materials and training of Environmental Education Team.
Key actors involved: SADS
Source: http://www.rufford.org/rsg/projects/peter_mulbah_1
Contact: Read about Peter's previous SADS work
http://www.ruffordsmallgrants.org/rsg/projects/peter_mulbah_0
Email: Sads_inc@yahoo.com or pmulbah_sads@yahoo.com
Website: www.sadsliberia.org

2. **Project Name: Continuation of the Wonegizi Youth Environmental Rights Awareness & Educational Training Program, Ziama Clan, Lofa County, Liberia**

Date: 2013-2014
Description: The Wonegizi area is recognized internationally a key biodiversity conservation hotspot and covers 37,979 hectares located in Ziama clan, comprising 20 towns and 47 satellite villages with an estimated population of 40,000 people. SADS has seven years strong working relation with communities around Wonegizi that is built around trust and mutual respect. SADS work has focus on promoting environmental conservation, sustainable forest management and alternative livelihood provision, as means of generating incomes to support their life style.
Key actors involved: SADS
Source: http://www.rufford.org/projects/peter_mulbah
Contact: http://www.ruffordsmallgrants.org/rsg/projects/peter_mulbah_1
Email: Pmulbah_sads@yahoo.com Website: www.sadsliberia.org

3. **Project Name: Liberian Protected Areas**

Date:
Description: The project is based in Wonegizi / Wolegizi, Lofa County, and Lake Piso, Cape Mount County, Liberia and aims at helping local farmers and their communities to combine income from tree crops, NTFPs, ecotourism, and carbon credits to achieve economic, social, and environmental objectives, and to link that support to reducing deforestation pressure in these locations.

Key actors involved: International NGOs: McCall MacBain Foundation (MCMBF), Conservation International (CI), Forest Trends (FT) and Nature Conservation Research Centre (NCRC). Local NGOs: SADS and FACE
Source: http://www.katoombagroup.org/incubator/project.php?id=221
Contact: Rebecca Ashley Asare rasare@forest-trends.org

4. Project Name: Wonegizi Community-based REDD+ pilot project

Date:
Description: The project is located in Liberia, Lofa County, Zorzor District, Ziama Clan and aims at improving forest protection and livelihoods of communities within/around the Wonegizi Proposed Protected Area (PPA), through community capacity building and empowerment, coordinated land-use planning, linked to PA management, sustainable use of forest resources, explore long-term/sustainable finance options, for forest conservation, including improved agriculture and sales of carbon credits.
Key actors involved: Fauna and Flora international
Source: http://www.planvivo.org/docs/PIN_Plan-Vivo_Wonegizi_published.pdf
Project coordinator & contact details: Dr. Nouhou Ndam Nouhou.ndam@fauna-flora.org
+231 (0) 886765087

5. Project Name: Liberia – Smallholder Oil Palm Support (SHOPS)

Date:
Description: ACDI/VOCA and partner Winrock International implemented the three-year, $3.7 million Smallholder Oil Palm Support program (SHOPS) in Liberia to strengthen the palm oil value chain and drive rural economic growth. With a focus on the key agricultural counties of Bong, Lofa, Nimba, and Grand Bossa, SHOPS was designed to "fast track" improvements and increase productivity along the entire value chain of Liberia's smallholder palm oil industry. With funding support from USAID, the SHOPS project, implemented by ACDI/VOCA, increased the productivity and profitability of Liberia's smallholder oil palm sector, improved the marketing and trade capacity of this sector and improved the enabling environment and market support functions.
Key actors involved: ACDI/VOCA and Winrock International
Source: http://acdivoca.org/our-programs/project-profiles/liberia-smallholder-oil-palm-support-shops
Contact:

6. Project Name: Community-based Forest Enterprise Development in Liberia

Date: 2009-2010
Description: This project supports the implementation of pilot community forestry activities in Liberia, in collaboration with the World Bank and other Liberia Forestry Initiative (LFI) partners. It represents a component of the project "Development Forestry Sector Management" funded by the World Bank.
Key actors involved: the World Bank, the FDA, the Liberian Agency for Community Empowerment (LACE), the University of Liberia and two local NGOs: Lofa Youth Educational awareness Program (LYEAP) and Sustainable Livelihood Promoters Program (SLPP), rural communities of the Protected Areas of Lake Piso and Wonegizi, small forest entrepreneurs and their associations in Liberia.
Source: http://www.fao.org/forestry/enterprises/59998/en/

Implementation Completion Report (ICR) Team leader: Sophie Grouwels
ICR Primary Authors: Laura Schweitzer Meins and Samoa Perucca

7. **Project Name: Improving livelihoods Lofa County (districts of Kolahun, Vahun and Foya) in Liberia**

Overall term: 2012 to 2014
Description: The objective is to have the means of livelihood improved in selected municipalities in the districts of Vahun, Kolahun and Foya in Lofa County through: improving the conditions for agricultural production, processing agricultural products, rebuilding the rural infrastructure, promoting governmental organizations and local traditional authorities, promoting social cohesion at municipality level.
Key actors involved: Commissioned by: German Federal Ministry for Economic Cooperation and Development (BMZ); Lead executing agency: Ministry of Agriculture
Source: https://www.giz.de/en/worldwide/20001.html

8. **Project Name: Liberia – Livelihood Improvement for Farming Enterprises (LIFE) III (Smallholder Cocoa Farmers Increase Incomes)**

Description: ACDI/VOCA implements the final phase of the Livelihood Improvement for Farmer Enterprises (LIFE) III project. Working in Bong, Nimba, **Lofa**, Gbarpolu, Grand Gedeh, and River Gee counties of Liberia, the USDA-funded program continues ACDI/VOCA's work to empower 10,000 smallholder cocoa farmers, farmer organizations, and suppliers to improve livelihoods by increasing the productivity, profitability, quality, and marketability of Liberian cocoa.
Key actors involved: ACDI/VOCA
Source:http://acdivoca.org/our-programs/project-profiles/liberia-livelihood-improvement-farming-enterprises-life-iii

9. **Project Name: Smallholder Tree Crop Revitalization Support Project (STCRSP/IFAD) in Lofa County**

Project Duration: July 2012 – December 2017
Type of Support: Cocoa & Coffee Rehabilitation
Source of Funding: IFAD, GoL, Private Sector, Beneficiaries
Executing Agency: Ministry of Agriculture
Budget: USD 24.9 millions
Project Duration: July 2012 – December 2017

Description: Goal is to empower the rural poor to increase their food security & improve their livelihoods in Lofa County by IFAD. **Objectives:** Increase incomes of targeted cocoa & coffee smallholder producers **Targeted Beneficiaries:** 15,000 smallholder farmers **Project Components:** Cocoa & Coffee revitalization, Rehabilitation of Farm to Market Roads, Institution Capacity Building, Project Management; **Expected Results:** 15000 smallholder farmers use improved cocoa & coffee product's and have access to drying , storage & packing facilities; 315 km of farm to market roads rehabilitated; 3 no. cooperatives legally instituted and have access to technical advice
Project Sustainability plan: The project will revitalized cocoa farmers and provide improve varieties of cocoa which will produce and marketed by farmers through farmers cooperative and post harvest processing facilities will be encouraged to add value to the product produce by farmers in the counties with improve road net work for movement
Source: http://moa.gov.lr/content.php?content&sub=206&related=27&third=6&pg=tp

Other general initiatives

a) The Government of Liberia (GoL) through the FDA has received financing from the Global Environment Facility (GEF) for Biodiversity Conservation through Expanding the Protected Area Network (EXPAN) and intends to apply part of the grant for consulting services for Socio-economic study for Wonegisi and Grebo Forests[13] .
Contact: Forestry Development Authority

b) The William Pitman Kennedy United Methodist Church Environmental Protection Program (WPKUMC-EPP) Community Tree-Planting Project was launched in Voinjama, Lofa County on Saturday, 29 August, 2009, where the Environmental Protection Agency Officer assigned in the County, Mr. Stephen Martor requested media practitioners to spearhead the 'Plant a Tree Campaign' which was launched by the United Nations Environment Program (UNEP). In his technical remarks at the ceremony, Mr. Martor, said that the UNEP requires everyone in the world to plant a tree so that by December, 2009, 7 billion trees would have been planted worldwide and that all Liberians should not let the opportunity pass without making some contribution to the drive. http://allafrica.com/stories/200909010880.html

c) **Pygmy Hippos (*Choeropsis liberiensis*) – and moreover, conservation of this critically endangered species, and their forest habitat – are little known, underfunded and largely ignored.** SOS – Save Our Species funded the project of Fauna & Flora International (FFI) to support long-term conservation of key Pygmy Hippo habitat Wonegizi forest in Liberia, through the gazettement of the projected area and co-management. The project places the highest importance on inclusion and participation of the local, forest-dependent community. This co-management approach is a pioneering concept in Liberia, where Protected Areas have traditionally been places of exclusion, rather than inclusion. Wonegizi Proposed Protected Area, in Liberia's north-west, home to such rare and charismatic species as Western Chimpanzees (*Pan troglodytes*) , Forest Elephants (*Loxodonta cyclotis*) and the endemic Pygmy Hippo (*Choeropsis liberiensis*), faces many challenges says Josh Kempinski, the Project Coordinator. The local Ziama clan are dependent upon the forest, for their water, wild-caught protein ('bushmeat'), medicines and land for farming. Whilst holding the forest sacred and knowing full-well its multiple values, they are nonetheless unable to stop driving its slow, creeping degradation and fragmentation. This tragedy of the commons; the result of no formal forest management or protection, acute poverty, low and unreliable yields and a growing population, means that local villagers are trapped in cycle of destruction, both of their own resources and biodiversity of the highest conservation value.
http://www.sospecies.org/sos_news/success_stories/?18983/First-steps-to-protecting-key-Pygmy-Hippo-habitat-in-Liberia

[13] http://emansion.gov.lr/doc/Economic_1.pdf

Actors in Lofa County

All government ministries and bodies are represented in the county. Hence, the government agencies are by default the key actors in the county. This included:

a. Government, county and local organizations

- *Central government:* Authorities and Agencies (FDA, EPA), Ministries (Ministry of Finance for Development Planning, Ministry of Agriculture, Ministry of Justice, Ministry of Lands, Mines & Energy, Ministry of Internal Affairs, Ministry of Gender and Development), the Land Commission, etc.
- *Local government of Lofa County*: County superintendents and county officers, District officers, Paramount chiefs, Town chiefs and Clan chiefs
- Community Forestry Development Committees (CFDCs), Community Assemblies and Community Forest Management Bodies established in or around areas of community forest, Community elders, Households.

The following sections largely focus on actors in Lofa area who are not linked to the ministries.

b. Non-governmental organizations

NGOs	Activities
Winrock International	Capacity building, technical support to farmers, Oil palm seeds, linking farmers to Freedom Mill traders
US Food and Enterprise Development	Livestock development (Goat farms)
ACDI VOCA	Cocoa rehabilitation, planting material supply, input supply
Samaritan Purse	Cattle introduction, pig farming, aquaculture, swamp developments, agroforestry, health, social/ girl education
GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH)	Swamp development, road rehabilitation, cocoa seedling supply
ITTO (International Timber Trade Organization)	Reforestation policy, afforestation strategy formulation
FAO (Food and Agriculture Organization of the United Nations)	Forest and forestry related activities
WFP (World Food programme)	Emergency food aid logistics

IFAD (The International Fund for Agricultural Development)	Smallholder Tree Crop Revitalization Support project

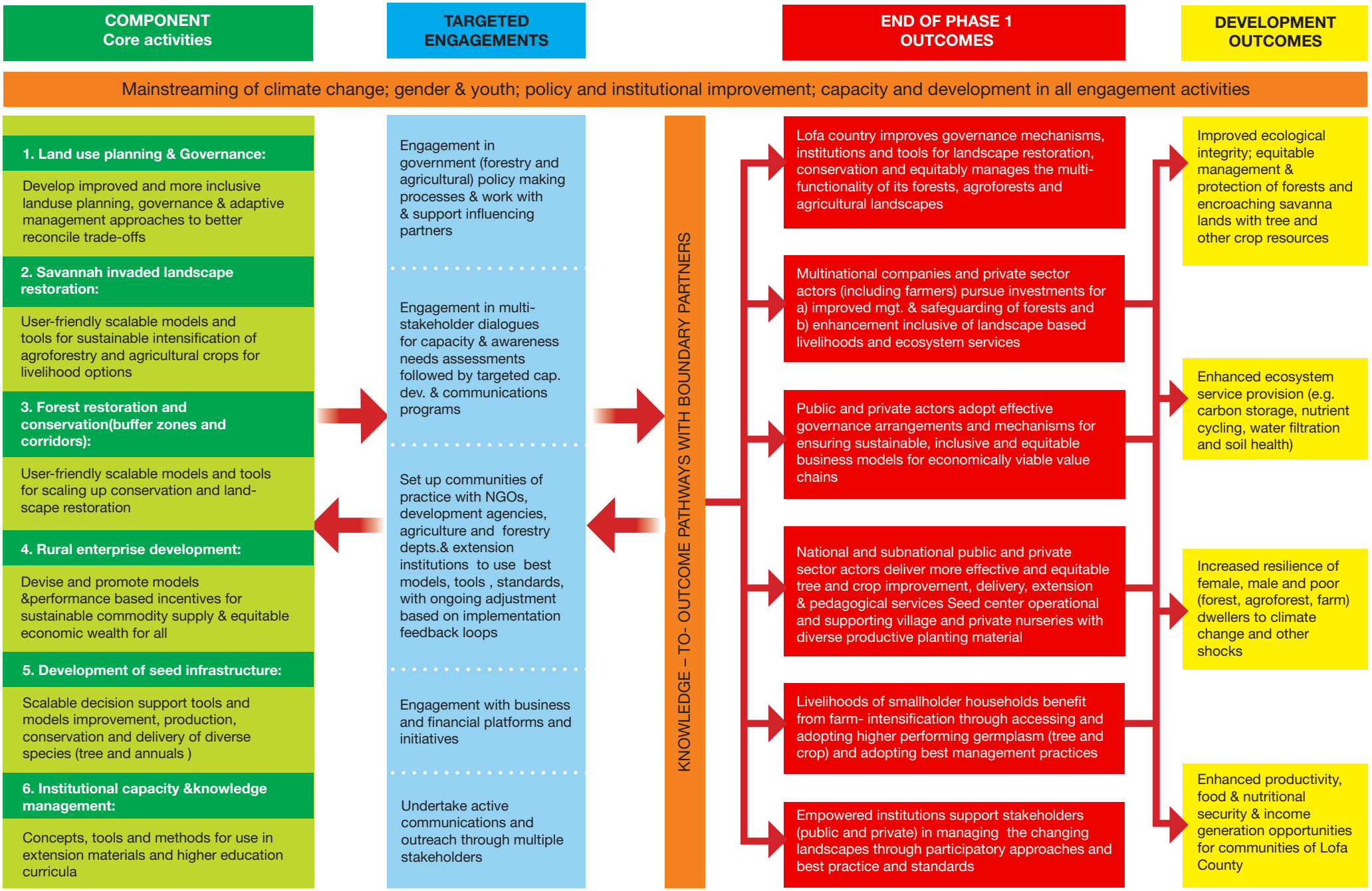
Note: this list is not comprehensive. It only captures those we were able to get information for through telephone contact etc.

c. Private sector, associations, cooperatives

Private sector, associations, cooperatives	
	Activities
Sethi Brothers	Fertilizers supply, polythene bags and garden tools supply,
Evergreen Inc.	Agrochemicals, vegetable seeds
Liberia Agriculture and Asset Development Company	Cocoa buyer
Nanorni oil palm cooperatives	Oil palm production, cattle introduction
N'torfawor cooperatives	Buy products (rice, coffee, cocoa), cattle, support to farmers
Maliando cocoa cooperative	Buy products (rice, coffee, cocoa), cattle, support to farmers
Manni rice farmers cooperative	Buy rice and support farmers
Foya rural women cooperative	Poultry and oil palm nursery production
City builders	Construction materials supply
Cemenco	Cement supply
Smallholder farmers	The main producers of the agricultural commodities (both cash and food crops).

Note: this list is not comprehensive. It only captures those we were able to get information for through telephone contact etc.

THEORY OF CHANGE FOR LANDSCAPE RESTORATION/REFORESTATION



Short Curriculum View of the Pre-study Team Members

Mr. Øystein Aasaaren

Mr. Aasaaren has more 30 years of professional experience from the forestry sector in Norway. The professional career include positions in Ministry of Industry, Ministry of Agriculture, in the forest service as a county forest officer as well as a long period in an Association for forest Owners. For many years Aasaaren was the head of the Forest Management Unit at the Norwegian Forestry Association. Mr. Aasaaren has been strongly involved in project development and implementation within the forestry and environmental sector. These project include a number of different subjects as; forest management, forest owner co-operation, forest management planning, watershed management, multiple use planning, forest evaluation, and systems for forest mapping and monitoring, sustainable natural resource management including private sector development. Mr. Aasaaren was the initiator of establishing the Norwegian Forest Group (NFG) in 1996. He has from that time been the Managing Director of the Group. The Group has been developing and implementing a number of international forestry programs in a large number of countries. Mr Aasaaren has been involved in most of these programs either through the initiation and development of the programs or the implementation. Mr. Aasaaren has working extensive experience from Norway and in addition from Sweden, Russia, Bosnia and Herzegovina, Serbia, Montenegro, Kosovo, Uganda, South-Sudan, Ethiopia, Tanzania, Mozambique, Liberia, Ghana, Belize, Nicaragua, The Kyrgyz Republic, Tajikistan, Kazakhstan, Uzbekistan, Armenia, China and Sri Lanka.

Dr. May-Guri Sæthre

Dr. May-Guri Sæthre earned her PhD in Agricultural Entomology in 2002 from the Agricultural University of Norway and her MSc in Horticulture from the same university in 1993. Dr. Sæthre's main research field is integrated pest management (IPM) (including the overuse of pesticides and a long-term effort to find routes to reduce pesticide use) and agricultural entomology applied on various agroecosystems. More recent she is combining this background with multidisciplinary research and development at the landscape level. Dr. Sæthre's research has a clear international footprint with extensive collaboration with national and international partners, with a special focus on Africa where she has been coordinating large and complex projects. She held a postdoc position at Africa Rice in Nigeria, developing biological control options and IPM tools for rice farmers in West Africa. She has worked on urban and peri-urban horticulture in Benin, Banana and plantain in Tanzania, Alien and invasive species. Other research and development experiences includes: farmer field schools; work on quarantine pests, risk assessments in relation to the WTO-SPS-agreement; evaluations of national IPM-programmes (Nepal); pesticide usage surveys in different crops (Norway and Benin); teaching and evaluation committees. Dr. Sæthre has supervised a number of students (PhD, MSc, BSc) at Universities in Norway, France, Benin, and Tanzania. She is a member of EPPO/IOBC-panel, and the Norwegian Scientific Committee for Food Safety.

Dr. Belachew Gizachew Zeleke

Dr. Belachew Gizachew Zeleke is currently a Research Scientist at the Forests and Climate department of the Norwegian Institute of Bioeconomy Research (NIBIO). He is also appointed as senior international advisor for the Tanzanian National Carbon Monitoring Center (NCMC). Current research interests include climate change and related policies including REDD+, forest carbon monitoring and reporting, ecosystem restoration, and payments for ecosystems. He has also been involved in development of a number of development and research projects relevant to REDD+, particularly in forest landscape restoration and MRV. He has at least seven years of experience in tropical forestry in Africa, working both as a field forester and forest researcher. He has studied Forest sciences (PhD) and Development and Resource Economics (MSc) both at the Norwegian University of Life Sciences, Ås Norway. He earned BSc in Forestry from Haramaya University and Wondo Genet College of Forestry, Ethiopia.

Dr Peter Akong Minang

Dr. Peter A Minang is Principal Scientist, Leader – environmental services and landscapes research and Global Coordinator of the ASB Partnership for the Tropical Forest Margins at the World Agroforestry Centre (ICRAF). He has more than 20 years experience on REDD+, Landscape approaches, conservation, environmental education, climate forestry, payments for ecosystem services and development policy and practice in tropical forest landscapes. He has published widely and also advices several African bodies and institutions on land use and climate change related issues. His current research interests include the nexus between adaptation and mitigation to climate change; and the interface between environmental services and development and multifunctional landscapes. He recently published a book on climate smart landscapes.

Dr. Lalisa A. Duguma

Lalisa Duguma is a scientist working on sustainable landscapes and integrated climate actions at the World Agroforestry Centre and the ASB Partnership for The Tropical Forest Margins. He received his Doctoral degree in Agricultural Sciences from University of Life Sciences Vienna Austria in December 2010. From January 2011 to May 2012 he worked as Postdoctoral Fellow at the same university jointly with Bioversity International. From June 2012 – May 30, 2014 he was a postdoctoral fellow at the World Agroforestry Centre and ASB Partnership for Tropical Forest Margins. The position further included providing some empirical evidences on current efforts of promoting synergies between mitigation and adaptation in the land use sector. His current research interests include sustainable landscape management, enhancing and managing multifunctionality at landscape level, drivers of change at landscape scale, integrated climate change actions that respond to both mitigation and adaptation needs, ecosystem services as pillars of sustainable development objectives, Community based natural resources management, and other related subjects.

Ms RAMNI H. JAMNADASS PhD

Citizen: Kenyan**; Address:** World Agroforestry Centre (ICRAF), Phone: +254 710602227; r.jamnadass@cgiar.org

Profile : Main area of expertise: Tree domestication, Delivery systems, Conservation genetics; Tree functional diversity .e.g. Food trees for nutritionand health; on farm timber, medicinal trees. I have >10 years' of experience of science team management.

Employment (last 10 years): 1) Science Domain Leader for Diversity, Domestication and Delivery and ICRAF Genebank); 2) Leader for African Orphan Crops Consortium genomics Lab (AOCC) and ; 3) Leader for CRP-phase 2 Flagship 1: 'Tree genetic resources to bridge production gaps and promote resilience' for CGIAR Research; ICRAF Global Research Program Leader (2007-2011); Head, Genetics Resources Unit ;Dec 2005- Jun 2007).

Education: 1994 PhD: Brunel University London, Kenyatta University (Kenya) and International Livestock Research Institute (ILRI);Post-doctoral fellowship (joint between ILRI and University of Nairobi)