Republic of Liberia

Forestry Development Authority

P.O. Box 10-3010
Kappa House, Elise Saliby's Compound, Sinkor
1000, Monrovia 10, Liberia

Socio-Economic and Reconnaissance Survey on

BLUYEAMA COMMUNITY FOREST
44,444 Hectares

October, 2011

October, 2011

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Executive summary

Following the guidelines established in the New Forestry Reform Law of 2006 and the Regulation number 102 – 07 on forest land use planning the Forestry Development Authority has outlined three Forest Management Contract areas. Each Community Forest Management Agreement area, after being designated as a proposed land use, was evaluated through the field vetting process, a forest inventory and social survey was completed in each area.

Based on the information collected in the area for Bluyeama community Forest, the following document was established as the official Social Economic Survey Document.

The area metes and bounds outlined in the document have been discussed with the community. The area contains approximately 12,902 persons and has virtually no available infrastructure or social services. The various community members, upon hearing the possibility of logging industry returning to their areas, have increased expectation for development opportunities.

Although there are no statutory tenure issues looming over the forest area in question, the area is classified as community land. The customary rights of the communities should be acknowledged and respected by any logging company. This should be reflected in the type and level of benefits provided to the communities and put in writing in the Community Forest Management Agreement.

Biologically, the forest area is sufficiently rich in volume and marketable species to support a long-term industrial logging operation. The environmental situation suggests that the area would not be irreversibly damaged or sustain cumulative environmental effects from logging operations.

The FDA makes the following recommendations:

a. Based on the volume and species make-up of the area, it should be approved as a Community Forest Management Agreement.
b. Based on the diversity of animal species and fragility of tropical forest eco-systems the contractor should follow all the requirements of the Code of Harvesting Practices and complete the Environmental Impact Assessment before any logging activities commence.
c. Based on the reliance on it for natural services and non-timber forest products for both local use and external sale, the contractor should develop a social agreement that addresses at least the following issues:
    1. Forest areas important for cultural, agricultural, or timber and non-timber forest products collection.
    2. Determine and map if there are no-go zones in the forest
    3. Vehicle and log transportation movement issues
    4. Tenure issues
    5. Conflict mitigation process
    6. What is the format of the working relationship
    7. Expectations for communities

8. Areas in the forest that is sensitive to supporting environmental services for the community or other communities downstream from the forest area watershed.

Socio-Economic Survey Objective

The major objective of the forest and socio-economic surveys was to provide data on geographic characteristics, forest characteristics and composition, animal observations, tree measurements, topology, demography, socio-economic, environmental impact assessment, and biological information on the forest to potential investors, concessionaires, planners and policy makers in Liberia for use in designing and evaluating programs.

A more specific objective was to provide baseline data for Bluyeama community forest. In order to effectively validate, plan forest management strategies and eventually evaluate the progress of the forest survey in meeting its goals, there was need for data to indicate the health situation, population density, livelihood alternatives, access to farm to market roads in targeted towns of (3) three kilometers from Bluyeama community forest. Many of the desired information were already incorporated into the model forest and socio-economic survey questionnaire; nevertheless, the survey was able to better accommodate the needs of this inventory project by adding several questions and by sampling women, men, youth, and adult living in and around the Bluyeama community forest. Another important goal of the forest inventory project was to enhance the skills of those participating in the project conducting high quality surveys in the future. Finally, the contribution of FDA's data to an expanding International dataset was also an objective of the forest inventory.

The document follows this general order, general context of development in Liberia, description of the methodology, results of the social and field surveys, and analysis and recommendations.

General Context of Liberia

Liberia's economy is considerably influenced by the importation of finished materials, equipment, and a wide variety of consumer goods. Production for the export section is carried out on a large scale through foreign investment. The most important activity in the mining and shipment of iron ore and logs; but, due to increasing World's demand, its share of the export market has included rubber, cocoa, diamond and increasingly, agricultural commodities.

The Government is the largest single employer in the country. The manufacturing industry is small and is mainly geared to supplying goods for the domestic market.
For quite some time, Liberia has subscribed to the principle of universal education. As early as 1839, a public school law and its 1912 revision promulgated compulsory education in Liberia.

Furthermore, the National Socio-economic Development Plan (1976-1980) made universal basic education an explicit development objective.

The educational system in Liberia is of two (2) types: Informal and formal. Informal consists of the "bush schools" for boys and girls, while the formal comprises three (3) levels: elementary (grades 1-6), secondary (grades 7-12), and higher education (degree program).
The Ministry of Health and Social Welfare is responsible for meeting the health and social welfare needs of the citizenry, by providing a viable health care delivery system, which will permeate urban and rural communities of Liberia.

The health policy of the Government is to provide health care for its entire people through National Health Delivery System. This system is designed to provide, in a complementary manner, preventive and curative health services throughout the country. Particular emphasis is placed on maternal and child health services, environmental sanitation, immunization, and health education. Among other things, the Ministry of Health aims at decreasing infant mortality, increasing immunization coverage of young children, educating mothers about oral rehydration therapy for diarrhea, increasing the contraceptive prevalence rate, and increasing the number of deliveries by trained health workers. Its immunization efforts are aimed at combating the six major childhood diseases: measles, tetanus, polio, tuberculosis, whooping cough and diarrhea.

Survey Methodology in Bluyeama community forest

The socio-economic survey was not a national-level survey; but rather a survey that concentrated on the accessibility of roads and the port within the range of one hundred and seventy five (175) miles radius from Monrovia, with over sampling in Salayea and Gou-Wolliah Districts, Damai clan, Wololia clan, Upper Dinah clan, Upper Damai clan, Gbarlien clan, Palama clan, Gou-Wolliah and kpelleh chiefdoms. Gbarpolu and Lofa Counties, so that separate estimates could be produced in Bluyeama community Forest.

The fifteen (15) targeted towns with all satellite villages covered in this survey were selected with probability proportional to size, using the 2003 population datasets from the Ministry of Planning and Economic Affairs, Liberia Institute for Statistics & Geo-Information Services (LISGIS), and the National Information and Management Information Services (NIMAC/UNDP), as a sampling frame. Field teams listed all households in each selected area of the Bluyeama community Forest, after which individual households were selected for interview. Because of the over sampling, the sample is not self-weighting at the national level, and the figures given in this Socio-Economic Survey are based on weighted data.

The socio-economic survey utilized seven (7) questionnaires:

1. demographic and statistical information;
2. social infrastructure;
3. economic system;
4. forest tenure related issues;
5. economic value of the forest;
6. contract parameters, and
7. environmental conditions

These questionnaires were produced in English and presented. The field staff for the socio-economic survey consisted of four (4) teams, four (4) team leaders, four (4) male surveyors, four (4) female surveyors, four (4) male note takers, four (4) female note takers, four (4) Ministry of Internal Affairs representatives, four (4) Environmental Protection Agency representatives, four (4) Non-governmental organization representatives, four (4) drivers from the Forestry Development Authority, four (4) CFMB representatives, and one (1) driver from the Food and Agriculture Organization.

The planning and evaluation team comprised of one (1) field coordinator, one (1) Environmental Protection Agency representative, (1) Geographic Information Systems & Remote Sensing Expert, three (3) Database analysts, three (3) representatives, one from the Commercial, Community and Conservation Departments, one (1) Environmental Impact Assessment Specialist, who are experienced Forestry Development Authority and Environmental Protection Agency staff members. All field staff were specially recruited for this survey. Two (2) training courses were held simultaneously in Monrovia and Yoma forest, Montserrado and Bomi Counties, respectively, for the entire month of May 2007. Trainings included technical and practice interviewing, both in the Geographic Information Systems & Remote Sensing Laboratory of the Forestry Development Authority, as well as in the field.

After training, four (4) teams were formed, two for each Community Forest Management Contract area. Data collection began in early October 2011 and was largely completed in January 2012. Data from questionnaires were entered into micro-computers at the Geographic Information Systems & Remote Sensing Laboratory of the Forestry Development Authority, using Arc Map 9.0, ERDAS IMAGING 8.5, Access, Excel and (SDSS) Spatial Decision Support Systems data analysis software's.

Social Survey Results

Technical description``

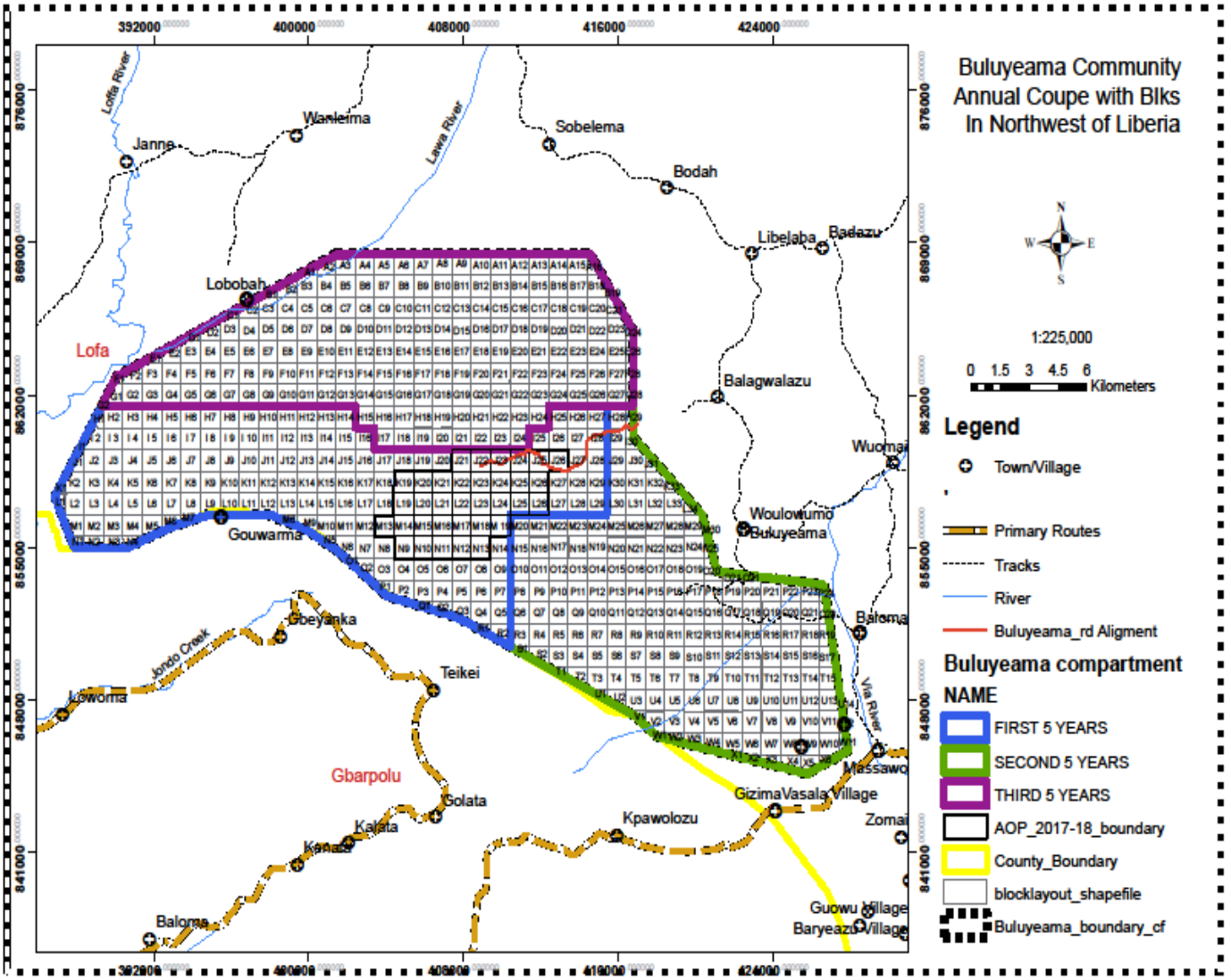
Bluyeama community Forest lies within Latitudes 7º12'0" - 7º36'0" North of the equator and Longitudes 9º36'0" - 10º0'0" West of the Greenwich meridian and it is located in Zorzor District, Lofa Counties-Liberia.

Bluyeama community forest is 197 miles accessible by road to the Port of Monrovia.

Metes and Bounds

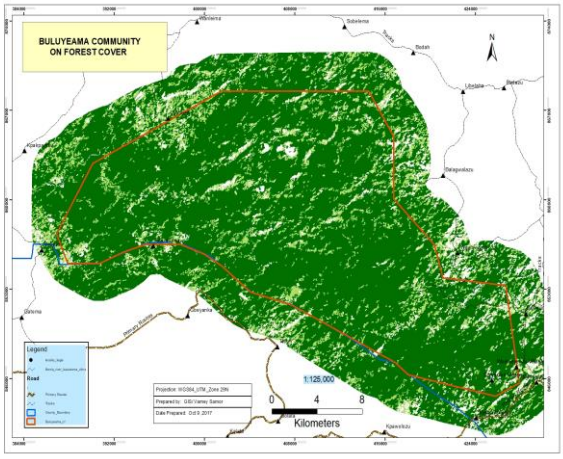
Commencing at a point marked (UTM 29N 0414526-0868512); thence running due West for132,197 meters to a point (401429 N-868511 W); thence a line runs S 64 W for 12,619 meters to a point (390076 N – 862855W); thence a line runs S 30 W for 6,369 meters to a point (386878 N – 857345 W); thence a line runs S 24 W for 2,542 meters to a point (387862 N – 855033 W); thence a line runs due East for 2,834 meters to a point (390076 N – 862855W); thence a line runs S 64 W for 12,619 meters to a point (390651 N – 855010W); thence a line runs N 67 E for 2,199 meters to a point (392831 N – 855918W); thence a line runs N 72 E for 2,006 meters to a point (394750 N – 856509W); thence a line runs due EAST for 3,257 meters

to a point (397873 N – 856510W); thence a line runs S 71 E for 2,328 meters to a point (399929 N – 855788W); thence a line runs S 58 E for 1,937 meters to a point (401484 N – 854844W); thence a line runs S 51 E for 3,217 meters to a point (404040 N – 852788W); thence a line runs S 75 E for 3,673 meters to a point (407707 N – 851788 W); thence a line runs S 62 E for 8,800 meters to a point (415461 N – 884760W); thence a line runs S 76 E for 1,354 meters to a point (416888 N – 847260W); thence a line runs S 52 E for 1,506 meters to a point (418019 N – 846325W); thence a line runs S 78 E for 7,790 meters to a point (425763 N – 844621 W); thence a line runs N 32 W for 4,021 meters to the point of commencement (UTM 29N 0414526-0868512) embracing a total of 44,444 hectares and no MORE.



General demographic description

Liberia's population has decreased during the past years, from an estimated 3.3 million persons (UNFPA 2002) to 2.8 million due to the civil war which lasted for fourteen (14) years. Also the population of Liberia is characterized by a young age distribution which is the result of high fertility and declining mortality in recent years.



Bluyeama community forest is located in the administrative division of the county (Zorzor District, Gbluyeama, Wololia, Kpelleh and Gou-Wololia Chiefdom) contains fifteen major targeted towns. The current survey was conducted in twelve (12) towns with a population of Twelve Thousand Nine Hundred and Two (12,902) persons (including targeted and satellite villages). The total population estimate for the towns seems quite realistic, owing to the fact that people are gradually returning home to rebuild their broken lives.

Twelve (12) targeted towns were reported within three (3) kilometers of the Bluyeama community Forest. The surveys were conducted in twelve of them, with an average of about eight hundred and sixty (860) persons per settlement. The total population projection for the entire surroundings was about thirteen thousand (10,000).

Male less than 18 is 20.51%, female less than 18 is 24.37%, male greater than 18 is 25.54% and female greater than 18 is 29.56%. *See aerial map for estimates.*

Table I: Population demographics for Bluyeama community Forest – all villages

	Male<18	Female<18	Male>18	Female>18	Total
Population	2,647	2,145	2,296	3,814	10,902
Percentage	24.51%	20.37%	25.54%	29.56%	99.98%

General Service in Bluyeama community Forest

The survey team completed an evaluation of the general services in the areas of health, education and infrastructure. The following results were recorded and observations made.

Health conditions in all the surveyed towns and villages have been down over the last five (5) years. Life expectancy, for instance, has fallen, while the supply of health delivery system in those towns and villages seems not to improve in relations to the size of the population of Fourteen Thousand Three Hundred and Four (14,304). Only three of the twelve towns surveyed had clinic.

Very few latrine, pump, well were found in surveyed towns and villages. This has led to heavy reliance on ground water and risks to human health resulting from poor sanitation and total collapse in solid waste management. Infrastructures and social services are not visible in these areas. Schools, health centers and other services remain in a state of omission.

Although the educational system has expanded rapidly over the last three decades in response to this national commitment, the fulfillment of universal education even at a standard primary level is yet to be attained in Bluyeama community forest as there is not a single public or private school in most of the area. Generally, school attendance rates are higher in urban areas than in rural areas, particularly among small farmers who constitute the majority of the population in Bluyeama community forest. Literacy is not a requirement for daily life. However, there is a great need to expand the school system in the entire Bluyeama community forest to accommodate school aged children. All communities surveyed in Bluyeama community Forest expressed their desire for schools, clinics, good road networks, water and sanitation as benefits from the company.

Education is inversely related to age, that is, older women are generally less educated than younger women. In Bluyeama community forest for example, only 24% of the women (18-25) have had no formal education, over 76% of women aged 30 and above are illiterate. The proportion of respondents with no formal education is considerably higher in rural areas (75%) than in urban areas (46%).

Infrastructure is nearly no-existent at this point in time. Few schools and clinics currently exist in the area and roads and access are limited.

Religion

Based on the socio-economic survey data collected, 74% of the populations is Christian, while the remaining 16% is Muslim, and 10% belongs to the category of “others”. The distribution by ethnic affiliation shows that the lorma tribes are predominantly Christian; Churches were found through out the survey parameters of Bluyeama community forest.

Economic situation

The economic and construction activities are also limited in Bluyeama community forest.
About 98 % of the Lorma population living around the Bluyeama community forest is engaged in traditional agriculture (growing rice, vegetable productions, beans and other cash crops)

other economic activities also include corn and tuber crop production. Realizing low yields and incomes, these activities have had little influence on the social and economic conditions of Bluyeama community Forest.

The major livelihood activity in the area is agriculture. Nonetheless, an individual or a family may engage in two or more livelihood activities (oil palm, peanuts, coffee etc). In terms of infrastructure facilities and development within Bluyeama community Forest; there is absolutely nothing much to show. Few accesses to safe drinking water, school, medical health care, pump, well, latrine and access to communication.

Economic Activity	Percentage of the Population	Order Importance Economically	**Order Importance Culturally**
Vegetable	60%	1st	**1st**
Rice	50%	3rd	**2nd**
Rubber	40%	4th	**3rd**
Palm Oil	55%	5th	**4th**
Cocoa and Coffee	45%	6th	**5th**
Trade goods	100%	7th	**6th**
Forest benefits	**100%**	**8th**	**7th**

Currently, human caused emission sources: agriculture (Shifting Cultivation), soil degradation, fuel collection/over grazing, deforestation, wetland conversion contributes 15-25% global carbon emissions into the atmosphere. The FDA should be working with the Ministry of Agriculture and Environmental Protection Agency to seek solutions to deal with this problem.

CALENDAR OF ACTIVITIES

Calendar	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Brushing & Felling												
Burning & Clearing												
Harvesting of rice & vegetable												
Gathering of seeds & fruits												
Rubber tapping												
Harvesting of cocoa												
Seasonal migration												
Poro												
Sande												

Work in any contract areas should follow this schedule to the point possible.

Forest land tenure in Bluyeama community Forest

Community land tenure systems

The communal or customary land tenure systems have been in place in Liberia for longer than the written history and have been the key management system for communal caretaking of all natural resources. Under this system, forest resources are owned by the community as a whole and not by specific individuals unless previously arranged through the community allocation process. There are no deeds or documentary records of the customary ownership.

Individuals that are seeking private land within the community to start a new farm or other activities must first request for access by the community group of elders. The elders will call together all the decision makers in the community (youth leader, family leaders, elders, woman's group leader, and others) to deliberate on the request. Also, ownership can be established by planting of tree/cash crops in a given area after land clearing or other work on the land has been completed.

Previous land laws recognized the customary tenure rights of communities. In the present day situations it is unclear as to the exact structure and application of these laws or if they are still recognized in the courts. The Governance Commission is currently addressing or preparing to address land tenure issues.

Communities use traditional conflict resolution methods when there are land tenure disputes over forest areas. For cases within the clan or community, the system is similar to basic conflict resolution methods where all disputing parties are brought to the same forum for discussion and eventual compromise. Generally, the elders of the community and family representatives sort out these issues. When conflicts arise between communities, the elders of the communities resolve the problem through discussions and negotiations. Occasionally, the bush devil system is used to solve conflicts as well.

In forestry- related activities, the communities have not engaged into logging activities due to lack of finance and technical capacity. Or they are not fully aware of other value of the forest that they may derive sufficient benefit from other than the standing trees that they prefer not to cut.

For any logging company in the past to gain access to the forest, it traditionally had to request permission from the community and elders in the traditional way outlined above. However, during the interviews, there were many instances where logging companies would arrive with a letter from the FDA, Senator, or other person of power that would grant direct access to the forestland. The logging companies in these cases could not formally request permission from the communities to enter the forest.

Over the course of interviews, the socio-economic teams asked county officials, villagers, and farmers to compare land tenure arrangements on arable land to that of forestland, and to describe the characteristics of each type of land that might necessitate different approaches to each land tenure system. The below table summarizes their responses:

Arable land	Forest land
✓ For most villages and communities in the Community forest area, arable land plays both subsistence and income functions; therefore it is a type of social security. In farmer's words, it has a production function. ✓ Households with a larger population and less lands face more pressure.	✓ For most villages and communities, forest land plays important environmental protection and economic functions. In farmer's words, its primary function is ecology, not production. ✓ Forest land possesses great potential, although it has not formed a pressure to households.

Tenure results from the survey

The status of land tenure in this area was classified by the survey teams as having previous land tenure conflicts based on a discussion of statutory land tenure claims such as deeds, fees for simple or other statutory land tenure.

However, the area is actually managed communally and does provide benefits to the community via collection of timber and non-timber forest products. There are no industrial activities currently underway in this forest area. Tenure management is classified as customary and parts of this forest are also used for cultural events such as poro /sande. This will need to be understood and incorporated into the Social Agreement to avoid potential conflict and maintain the credibility of the FDA with communities and civil society organizations.

If this area is defined as a Community Forest Management Agreement, the prospectus must take into account the need to respect cultural areas, maintain where possible existing economic benefits accruing to communities from forest resources and incorporate community management objectives. All of these issues including the analysis of potential management conflicts must be addressed in the Social Agreement.

Forest Description

Physical description of the area

The infrastructure, transport, communication and energy are in fairly bad state. In the Bluyeama community Forest, most of the infrastructure (roads, schools, clinic, etc) would be developed by investors as part of the contractual obligation.

When commercial logging activities resume in this area, some improvement in infrastructure are expected. In the short run, infrastructure may not pose a constraint, but in the long run, it would. However, the port of Monrovia, which is One Hundred and Sixty Seven (167) miles south from Bluyeama community Forest, is in good condition to facilitate the exportation of

logs. Bluyeama community Forest is still endowed with significant areas of forests of high commercial value that can sustain commercial and non commercial extraction activities as well as community based forestry activities. The inventory data revealed the existence of primary and secondary species for both domestic and export markets in Bluyeama community Forest. They include Canarium schweinfurthii (Aiele), Ceiba pentandra (Fromager), Gilbertiodendron preussii (Limbali), Hallea ciliata (Abura), Heritiera utilis (Niangon/Whismore), Piptadeniastrum africanum (Dahoma), Anopyxis klaineana (Kokoti), Oldfieldia africana (Dantoue), Erythrophleum spp (Tali/Sasswood).

In addition to the above mentioned species and with the opening of Asian markets where there is strong demand for Lesser-Known Species, there exists a strong trend towards the utilization of these species. However, population of some larger species of birds and mammals are almost certainly depleted in the North Eastern part of Bluyeama community Forest due to habitat destruction. This may result into threats of extinction over significant areas in Bluyeama community Forest.

Inventory data summary

The inventory was completed by measuring round plots of 12.5 meters radius every 1,600 meters on random transects of 3×3 kilometer grid across the contract area. The team measured a total of 69 plots in October 2011. Based on the transect and plots information the inventory team extrapolated estimates for the entire contract area. All results for this exercise are estimates.

The maximum slope measured 35% on one plot, however only 1.9% of the area has a slope greater than 35%. Approximately 30,340 hectares of the area are dry land, while 11,071 hectares are possible wet areas, and 8,073 hectares are possible rocky areas. Approximately 42,213 hectares of the area contain no waterways, 45,993 hectares are adjacent to small streams from 0 – 3 meters across and 8,517 ha are adjacent to larger stream of 3 – 10 meters.

Some forms of animal observation (scat, prints, call or sighting) were recorded on 25.7% of the plot areas.

The total estimated volume for the area in all three species classes (A, B, and C) is 1,672.42 meters cubed based on the three (3%) forest inventory. The total Basal Area calculated is 194.1 and Diameter 93,327.812 cm.

The total estimated volume for the area is, in three species classes (See ANNEX 2: Inventory Summary Tables).

Environmental situation

Two (2) ecosystems noticed in Bluyeama community Forest were inland wetlands and forest. The inland wetland stretches from the North through the South of the area. These wetlands consist of small mangrove swamp, less than Five Thousand (5000) hectares. The Lioya River

which runs not too parallel to the Jondo creek empties in the Saint Paul River. The inland wetlands ecosystem is mainly characterized by streams, creeks, raphia palm, bamboons and mitragyna species.

The next ecosystem is the forests, which are found in abundance, forming overlapping mosaic with primary and secondary forests throughout the area, especially in the South Western portions of the boundary limit. In general, the biological and topographical situations are unique and favorable for logging.

The field studies were carried out by teams with members from the FDA, Civil Society and the Environmental Protection Agency. Based on the Memorandum of Understanding between the EPA and FDA the joint field teams evaluated the area to determine if logging activities would have a lasting and substantial impact on the landscape and integrity of the environment. The fieldwork has provided information that if a logging company follows the general guidelines from the Code of Harvesting Practices, the Forest Management Contract and the forestry regulations, there should be a minimum permanent impact and no additional special provisions that are assigned to this contract area under Part C of the Community Forest Management Agreement.

Forest use practices

Forests within and around the Bluyeama community Forest is fundamental to all towns and villages visited and surveyed. The forests are the source of subsistence, economic activity and cultural identity for the rural communities and also provide medicines, construction materials, fuel, food and commodities to sell for cash.

The forests in general are of great cultural importance to nearly all Liberians. The traditional "sande" and "poro" (secret) societies, that are hugely important to rural communities, conduct their rituals in certain groves and rivers within the forests. Fortunately for Bluyeama community Forest, cultural and historic sites were found in a small portion less than five hectares of the 49.444 hectares of forest land.
In addition, the minute lost of forest in the North Eastern part of Bluyeama community Forest has been caused by two (2) factors:

1. Historically, subsistence agriculture-in particular of upland rice, has been the most significant anthropogenic factor influencing forests, in the form of shifting cultivation, or slash and burn agriculture. Large areas are cleared to grow food crops for a short period, which are than left to regenerate.
2. It has been the development of small roads, which also facilitates easier access for hunters and farmers. The connectivity of roads is clearly linked to forest change and fragmentation.

Timber Products	***Timber, round poles, rafters***	***From secondary forest***
Non Timber Forest Products (NTFP's)	**Rattan, bitter root, thatches, mushroom,bamboo,walnuts,**	**From secondary forest**

	bush meat, worlor, bush cherry, bush yam, bitter cola	

Liberia has large potential water resources. The climate is of tropical type, with heavy rainfall that ranges from 2,000-4,000 mm per year. Average annual rainfall is estimated at 2,375 mm for Lofa County. Water tables in Liberia are on average of 7-13m below ground level and easily accessible for shallow well development. Due to the war, water and sanitation remains in a state of decline, uncertainty and un-improvement. The poor water supply has resulted in communities and families drinking water from streams and creeks.

Biological situation

Bluyeama community Forest is known for richness in biodiversity. The rich biodiversity of the country is currently threatened by two (2) major sources. First, loss and fragmentation of habitat caused by deforestation. Second, wildlife remains a critical source of protein to all Liberians, as well as a source of cash income. Animals in Bluyeama community Forest are killed and eaten locally, or sent raw or smoked to urban areas for sale. 25% hunting is traditionally a male activity in Bluyeama community Forest, principally done with firearms, snares and pits, while females sell the bush meat on the road side or market places. In some cases, the hunting of bush meat has reached the status of a cash crop and forest dwellers completely abandon agriculture in favor of hunting. Few commercial hunters in surveyed towns are particularly indiscriminate, tending to favor large animals to get the biggest financial return.

Although hunting is governed by Regulation # 25, managed by the Wildlife and National Parks Division of the Forestry Development Authority, logistical reasons and a lack of implementation capacity make the implementation and enforcement of Regulation # 25 problematic.

Site: Bluyeama community Forest – species list identified by the team or community in the area

Name of fauna/SPECIES	Type of observation	Community observation
Red colobus monkey	Common	-
Parrots	Common	-
Hawk	Common	-
Horn bills	Common	-
Forest buffalo	Common	-
Water duiker	-	Rare
White antelope	-	Rare
Bats	Common	-
Squirrels	Common	-

Turtle	Common	-
Porcupine	Common	-
Crocodile	-	Rare
Elephant	-	Rare

Analysis and Recommendations

Logging feasibility assessment

The Forestry Development Authority do hereby confirmed that Bluyeama community Forest is capable for production of wood and non-wood forest products. Such production could only be sustained in the long run if it is economically and financially viable. The forests earmarked for timber production are able to fulfill a number of other important forest functions, such as environmental protection, and ecosystems. These multiple roles of the forest should be safeguarded on the part of the logging company by the application of sound management practices that maintain the potential of the forest resource to yield the full range of benefits to the community and Liberians at large.

All forestry operations in Bluyeama community Forest would be carried out according to high standards (planning, control procedures, and harvesting guidelines). These include pre-felling inventories for assessing the condition of logged-over forests and the types of silvicultural treatments required, harvesting procedures to reduce damage to the forest ecosystem.
However, the area is feasible for commercial logging due to the terrain, topology, and forest composition.

Social agreement status

Community and indigenous people's rights is vital at all levels of forestry operations to ensure transparency and accountability in forest management, development and that all interests and concerns are taken into account.

The Superintendent, District Commissioners, Town Chiefs, Clan Chiefs, Women Leaders Elders, and Youth Leaders agreed in principle that the Forestry Development Authority move immediately in tendering 44,444 hectares, Bluyeama community Forest for competitive bidding.

The Social Agreement should contain at least the following items based on the survey work; however it is recommended that the FDA work with community, NGO and industry representatives to develop further an actual format for the Community Management Social Agreement.

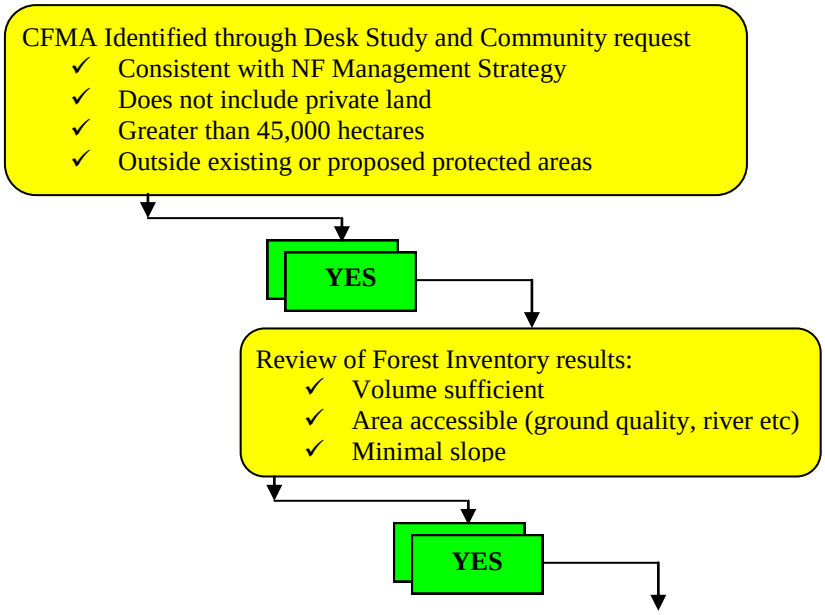
1. Forest areas important for cultural, agricultural, or timber and non-timber forest products collection.
2. Determine and map if there are no-go zones in the forest.
3. Vehicle and log transportation movement issues
4. Tenure issues
5. Conflict mitigation process
6. What is the format of the working relationship
7. Expectations for community – school, clinic, road, bridges, water and sanitation, employment.

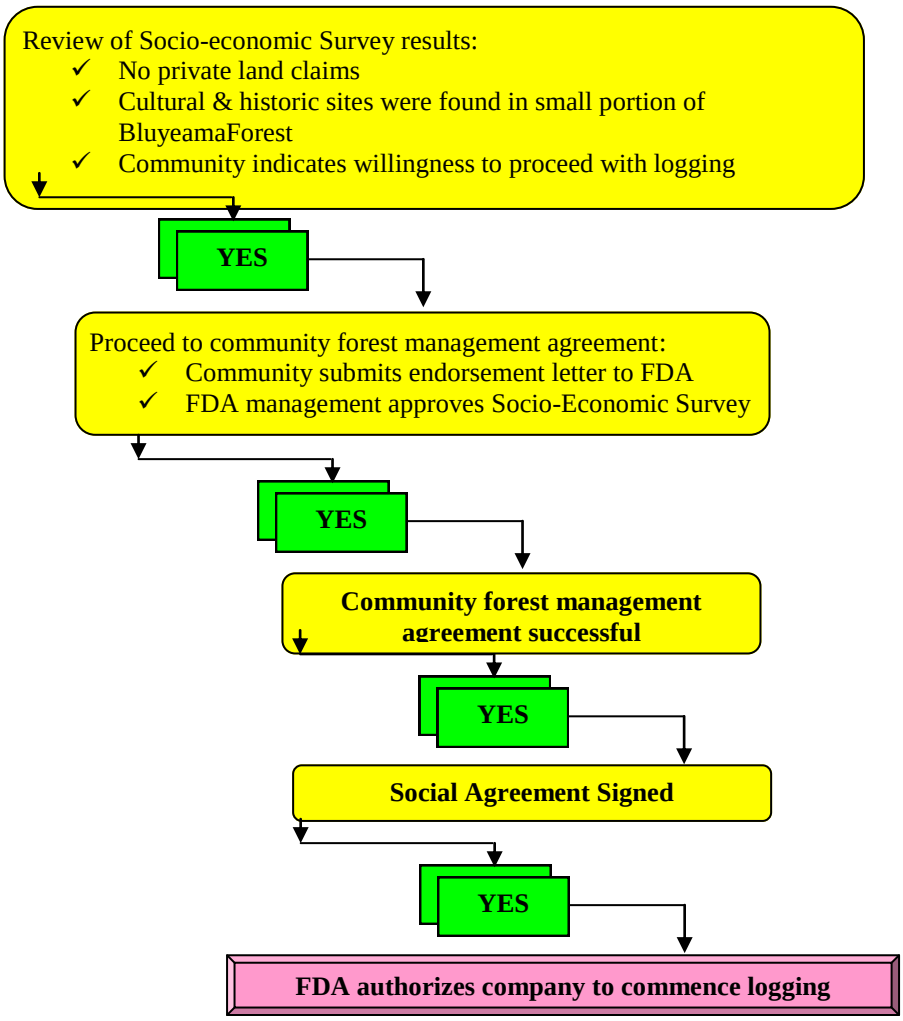
Recommendations

Relevant stakeholders have assessed the data and developed this document to explain pros and cons of developing, advertising and awarding a Community Forest Management Agreement in this area. The stakeholders have developed the following recommendations based on the field inventory and social studies.

1. The Bluyeama community Forest is sufficiently rich in species and volume of timber to be developed as a Forest Management Contract
2. The area does not have existing statutory land tenure claims; however the forest area is communally managed. The communities have submitted letters attesting that they would welcome a logging contract in the area.
3. The FDA must work with communities and industry to facilitate an appropriate Social Agreement that takes into account community benefits, current timber and non-timber forest products, and cultural needs in the forest area.
4. There are not additional adverse environmental issues identified that need to be addressed and managed under Special Provisions, Section C in the contract, beyond the need to follow the forestry law, regulations, code of harvesting practices and the terms of the contract.

ANNEX 1: Threshold Criteria Diagram





ANNEX 2: Inventory information

Forest inventory results **Bluyeama community Forest**

Slope, ground type and other observations

Total number of Plots: 69 Total Area: 119,240 ha

Plots by slope category (in %)		**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**>=30**	**n.s.**
Number of plots in slope category		14	36	10	7	1	1		0
Percent of plots in slope category		20.3%	52.2%	14.5%	10.1%	1.4%	1.4%		0.0%
Area in slope category (ha)		24,194	62,212	17,281	12,097	1,728	1,728		0
Maximum recorded slope	25%								
Length of transect > 25%	1%								
Length of transect with cliff	0%								

Plots by ground type	Dry	Wet/swampy	Rocky	n.s.
Number of plots of each type	54	10	5	0
Percent of plots of each type	78.3%	14.5%	7.2%	0.0%
Area of each type (ha)	93,318	17,281	8,641	0

Waterways on transects	None	<3 m wide	3-10 m wide	>10 m wide
Number of observations	33	27	5	5
Percent of transect	47.1%	38.6%	7.1%	7.1%
Approx. area with waterways (ha)	56,213	45,993	8,517	8,517

Swampy/lowland areas on transects	None	<1 hectare	1-5 hectares	>5 hectares
Number of observations	50	9	7	4
Percent of transect	71.4%	12.9%	10.0%	5.7%
Approx. swamp area (ha) 51,125				

Cleared areas on transects	None	<1 hectare	1-5 hectares	>5 hectares
Number of observations	64	0	3	3
Percent of transect	91.4%	0.0%	4.3%	4.3%
Approx. cleared area (ha) 38,335				

Animal observations on transects	Tracks	Scat	Vocalisations	Citings
Number of observations	51	18	64	19
Percent of transect	72.9%	25.7%	91.4%	27.1%
Approx. area with observations (ha)	86,875	30,662	109,019	32,365

Forest inventory results — Bluyeama community Forest

Stocking by forest type

Trees with dbh 50>=cut limit

Forest type	No. of plots		Number	Basal area (m2)	Volume (m3)
2.3 **Mixed agricultural & forest**	**10**				
		Average per ha	13.3	9.5	124.8
		Std Dev	117%	113%	129%
		Std Err (p=0.1)	68%	66%	75%
*2.** **All agricultural areas with**	**10**				
		Average per ha	13.3	9.5	124.8
		Std Dev	117%	113%	129%

		Std Err (p=0.1)	68%	66%	75%
3.1	**Agriculture degraded forest**	**10**			
		Average per ha	8.8	7.3	70.0
		Std Dev	175%	194%	196%
		Std Err (p=0.1)	101%	113%	113%
3.2	**Open dense forest**	**25**			
		Average per ha	27.4	17.2	212.1
		Std Dev	112%	138%	157%
		Std Err (p=0.1)	38%	47%	54%
3.3	**Closed dense forest**	**24**			
		Average per ha	23.9	14.2	166.9
		Std Dev	86%	109%	126%
		Std Err (p=0.1)	30%	38%	44%
3.*	**All forest dominated strata**	**59**			
		Average per ha	22.9	14.3	169.6
		Std Dev	111%	135%	154%
		Std Err (p=0.1)	24%	29%	34%
Total		**69**			
		Average per ha	21.5	0	**1.0**
		Std Dev	113%	135%	153%
		Std Err (p=0.1)	23%	27%	31%
		Total	2,559,385	**64.7**	**1,206.42**

Forest inventory results — Bluyeama community Forest

Stocking by species category

Trees with dbh50>=cut limit

Species category			**Number**	**Basal area (m2)**	**Volume (m3)**
A	**Stumpage Fee Class A**				
		Average per ha	10.6	8.0	**0.55**
		Std Dev	146%	171%	185%
		Std Err (p=0.1)	29%	34%	37%
		Lower CI	7.5	5.3	61.0
		Total	1,260,593	**101.64**	**660.99**
B	**Stumpage Fee Class B**				
		Average per ha	4.8	0.00	**0.22**

	Std Dev	235%	268%	302%
	Std Err (p=0.1)	47%	54%	61%
	Lower CI	2.5	1.2	13.7
	Total	572,997	**58.17**	**270.81**

C Stumpage Fee Class C

Average per ha	6.1	0.00	**0.23**
Std Dev	196%	210%	233%
Std Err (p=0.1)	39%	42%	47%
Lower CI	3.7	1.7	16.7
Total	725,796	**34.29**	**275.34**

Number of trees per ha by species and diameter classes

Total number of Plots: 69 Selected Stratum: * All strata

Total for all species categories:		50.0		11.9	10.9	4.8	3.8	3.5	1.6	1.0	1.6	1.0		134
Category	**Botanical name**	**Total**		**50-59**	**60-69**	**70-79**	**80-89**	**90-99**	**100-109**	**110-119**	**120-129**	**130-139**	**140-149**	**>= 150 max**
A	**Stumpage Fee Class A**	22.7		4.5	3.5	1.3	2.6	2.2	1.0	1.0	1.3	0.6		134
	Canarium schweinfurthii	0.6			0.3									60
	Ceiba pentandra	0.6							0.3		0.3			128
	Chlorophora spp (Regia ex.)	1.0		0.3		0.3								71
	Gilbertiodendron preussii	1.6		0.6	0.3									69
	Hallea ciliata	3.2		1.3			0.6							84
	Heritiera utilis	4.5		1.3	1.0	0.3								78
	Khaya anthotheca	0.3			0.3									60
	Lophira alata	2.2			0.6		0.6		0.3			0.6		134
	Piptadeniastrum africanum	7.0		0.6	0.6	0.3	1.0	2.2	0.3	0.6	1.0			128
	Terminalia ivorensis	1.6		0.3	0.3	0.3	0.3			0.3				117
B	**Stumpage Fee Class B**	9.3		1.3	2.9	2.6	0.3	0.6	0.6		0.3			125
	Anopyxis klaineana	1.6		0.6	0.3	0.3								70
	Antiaris welwitschii / africana	0.3												49
	Bombax buonopozense	1.3				1.0	0.3							86
	Chrysophyllum spp	1.3		0.3	0.3	0.3					0.3			125
	Daniella thurifera	0.3			0.3									64
	Erythrophleum spp	1.3			0.3	0.3		0.3	0.3					101
	Nesogordonia papaverifera	0.3			0.3									66
	Oldfieldia africana	0.3							0.3					105
	Pyonathus angolensis	1.9		0.3	1.0	0.3		0.3						93
	Rhodoguaphalon brevicuape	0.3			0.3									64

Category		Botanical name	Total	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	>=
		Sacoglottis gabonensis	0.3			0.3								70
C	**Stumpage**	**Fee Class C**	17.9	6.1	4.5	1.0	1.0	0.6				0.3		130
		Aubrevilea platycarpa	1.0	0.3	0.6									69
		Calpocalyz spp (aubrevillei)	2.6	0.6	1.3									66
		Cassipourea spp	0.3											46
		Dialium spp	0.6	0.3										52
		Fagara macrophylla	1.0	0.3	0.3									64
		Funtumia elastica	0.3	0.3										55
		Monopetalanthus spp	0.3	0.3										55
		Musanga cecropoides	0.3											42
		Other species	2.9	0.6	0.6		0.3							86
		Parinari excelsa	4.5	2.2	1.0	0.3						0.3		130
		Parkia bicolor	1.3	0.3		0.6		0.3						91
		Ricinodendron heudelotii	0.3		0.3									60
		Strombosia glaucescens	0.6				0.3							88
		Uapaca spp	1.9	0.6	0.3		0.3	0.3						92