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PEOPLE, RULES AND ORGANIZATIONS SUPPORTING THE
PROTECTION OF ECOSYSTEM RESOURCES

Preliminary Community Forestry Curriculum Design
and Teacher Training Needs Assessment for the
Forestry Training Institute

December 2012

This report was prepared for the United States Agency for International Development, Contract No. AID-669-C-12-00004 People, Rules and Organizations Supporting the Protection of Ecosystem Resources (PROSPER) Project

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People, Rules and Organizations Supporting the Protection of Ecosystem Resources (PROSPER)

Preliminary Community Forestry Curriculum Design and Teacher Training Needs Assessment for the Forestry Training Institute

(Contract Deliverable No. 7)

December 2012

DISCLAIMER

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ACRONYMS

FDA	Forestry Development Authority
FFI	Fauna and Flora International
FTI	Forestry Training Institute
LRCFP	Land Rights and Community Forestry Program
PROSPER	People, Rules and Organizations Supporting the Protection of Ecosystem Resources
USAID	United States Agency for International Development

Preliminary Community Forestry Curriculum Design and Teacher Training Assessment for the Forestry Training Institute

BACKGROUND

Under Intermediate Result 1.1 *(Increased educational and institutional capacity to improve environmental awareness, NRM, biodiversity conservation, and environmental compliance)* of the USAID PROSPER program, Tetra Tech ARD is tasked with improving the capacity of the Forestry Training Institute (FTI) to develop and deliver a community forestry curriculum. To that end, in November 2012 Tetra Tech mobilized Dr. Kenneth Bauer, international consultant and expert in community forestry education (scope of Work for the assignment is found in Attachment 1). The major task undertaken by the consultant was the revision of the existing community forestry curriculum being offered by Liberia's Forestry Training Institute (FTI) in Tubmanburg, Bomi County. The current curriculum is over 30-years old and does not feature community forestry content. The proposed community forestry curriculum will help prepare FTI students to support and implement the processes involved in the developing Community Rights Law-compliant community forestry management bodies, management plans, and related activities. This contributes to PROSPER's overall goal by increasing the capacity of forest practitioners who will be critical in supporting the growth and dissemination of community forestry as a viable management model in Liberia.

This Final Report includes a brief account of the tasks completed, key findings, and recommendations. Attachment 4 presents the design for two community forestry courses each containing ten modules with learning objectives, key concepts, and learning milestones for each module. The report is submitted in fulfillment of Contract Deliverable No. 7.

TASKS COMPLETED

The design of this curriculum incorporates findings from a comprehensive review of available literature on community forestry curricula as well as lessons learned through participatory workshops with FTI and a self-assessment that was supported by PROSPER. In order to draft this curriculum, the consultant reviewed:

- Existing community forestry curricula used outside of Liberia;
- Government of Liberia legal documents, the FTI self-assessment, and "How-to" handbooks developed under LRCFP;
- Community forestry curriculum currently in use by FTI;
- Conservation modules created by PROSPER partner Fauna and Flora International (FFI);
- FTI academic calendar, course and exam schedule, sample examinations, teaching materials and texts.

These documents helped to contextualize the existing FTI curriculum and led to a series of participatory assessments that were held with relevant stakeholders, as detailed in the following activities that were undertaken while in Liberia:

- Focus groups with FTI students to determine capacity levels, learning objectives, and to solicit input into content;

- Focus groups with FTI faculty to identify gaps in lecturers' knowledge related to community forestry curriculum;
- Meeting with the Forest Education Working Group to identify foundational concepts and knowledge areas needed for a community forestry curriculum in Liberia;
- Meeting with FFI, who are developing a biodiversity conservation curriculum for use at FTI, University of Liberia, and Nimba County Community College.

Incorporating the input of various stakeholders, the consultant completed the following tasks:

- Designed a proposed sequencing, streamlining, and rethinking for *all* of FTI's courses, including the Industrial Program (renamed Wood Science & Technology);
- Designed two community forestry courses containing ten modules with learning objectives, key concepts, and learning milestones for each module;
- Drafted illustrative modules inclusive of lesson plans and resources for identified courses within the curriculum.

The consultant was unable to give a lecture at FTI as students were scheduled to take term exams during the week available. The Deputy Chief of Party has granted an exception for this deliverable and the consultant recommends a more comprehensive set of lectures be prepared and delivered in a follow-up STTA [see *Recommendations*].

KEY FINDINGS

PEDAGOGY

- There is a lack of experiential and learner-centered education practiced at FTI, e.g., teamwork, class discussions, and take home assignments.

- FTI instructors lack advanced training and most are graduates of FTI; only a few faculty members have a four-year college degree and none have post graduate degrees.

- There is little interaction between instructors and students outside of lectures and exams.

- FTI faculty lack of teaching plans as well as visual aides and other appropriate pedagogic material to ensure practicality of application of the curriculum.

- Many courses are taught three successive semesters at one unit each. This leads to an average of 15 courses per term, which is more than students can realistically master. The new curriculum has been streamlined to allow students to focus on fewer courses at greater depth.

- A Peace Corps volunteer (Paul Clarke) helped to train faculty in computer use. This was ad-hoc and was not in the volunteer's job description. The faculty appears to have benefited greatly from this. A meeting with the Deputy Director of the Peace Corps revealed that 2-3 new short-term volunteers will be posted in Bomi County. However, their mandate is only to teach secondary math and science. Nevertheless, the Deputy Director noted that he would consider educational background in assigning these new volunteers (i.e., environmental education) so that they can potentially assist FTI with teacher training.

- There is no standard student evaluation of instructors, i.e., there is no meaningful way to evaluate instructor performance.

CURRICULUM

- There are few incentives for teaching staff to integrate new elements such as community forestry into existing curriculum.

- The draft curriculum prepared by FTI with support from ITTO lacked a logical sequencing of subjects over the course of the diploma and within terms.

- While faculty are aware of the importance of the 3 Cs, there are considerable challenges in incorporating them into the existing curricula. The current curricula are still more theory-based than practical.

- Currently courses do not incorporate interdisciplinary knowledge, especially with respect to community mobilization and gender as well as information about present uses and management of natural resources at the community and household levels.

- Upon suggestion that FTI eliminate engine repair and mechanics classes as part of the Industrial Program in favor of classes more focused on forestry, faculty and administration vociferously defended these classes, saying that foresters are often in remote regions and must be able to fix broken-down vehicles.

- Presently, courses in FTI curriculum are not designated by unique identification numbers or letters, leading to confusion in terms of sequencing, content, and consistency in terms of topics covered. A simple number system (e.g., FTI-001) rather than the current designations (e.g., "Introduction to Forestry – FTIIF") would simplify the curriculum for viewing, planning, etc.

- Syllabi exist for a few courses, but many faculty members have not drafted syllabi for their courses.

- A "Social Agreement" short course was recently designed and conducted at FTI that essentially reviews Forestry Development Authority's (FDA) methodology for establishing social agreements with communities. This provides an opportunity to discuss current policy issues, but does not develop the knowledge and skills underlying the development and implementation of such contracts and social relations.

- FTI desperately needs to update its teaching materials. For example, the cadastral section of the Surveying and Mapping course is being taught using a textbook published in 1979. Likewise, the surveying section of the Surveying and Mapping course is being taught solely using the "Standard Operating Procedures" manual of the FDA. While this is certainly relevant to the course and the training Forest Rangers receive at FTI, an expanded set of materials would greatly enhance these courses. Further, the mapping and surveying courses need equipment, which is currently limited to a few compasses and measuring tapes.

- The new director of FTI is pushing income-generating activities, e.g., a woodlot, rubber lot, piggery as part of the curriculum. His rationale is that learning these activities will enable graduates to gain employment and livelihood skills after graduation. While these activities are related to agroforestry, the issue of whether these activities might detract from regular courses.

- FTI is promoting woodlots in area primary schools to supply charcoal for their canteens. This seems like a positive community outreach program with learning benefits both for schoolchildren and FTI students (e.g., practicing extension skills).

- Ethics are not included in the curriculum. As such, FTI students are not learning any code of conduct with respect to professional ethics, standards, and rules.

INTERNSHIPS AND MENTORING

- Students need more mentorship – from within FDA and the industry – to properly prepare them for careers in the forestry sector. Very few FTI graduates are finding employment and there are no formal mechanisms

- Based on meetings with both the FTI and FDA, it is apparent that there is *no* coordination on internships for FTI students. No one at FDA is overseeing the assignment of FTI students to internship opportunities within the department. There

- On the whole, courses in the Forest Ranger program do not sufficiently integrate the social sciences, particularly skills in engaging communities, i.e., mobilization, conflict management, etc. The new curriculum devotes two new courses to the theory and practice of community forestry, with a focus on practical exercises.

- Students are most eager to study community forestry and conservation within their curriculum; however, these are the least taught topics in the existing curriculum.

RECOMMENDATIONS

TEACHER TRAINING
Investments in human resources will increase the effectiveness of the redesigned curriculum. FTI's faculty presently relies on lesson plans produced by the Ministry of Education and the FDA and uses outdated teaching materials. A series of teacher training workshops on course content and lecture design would enable the faculty to:

- Plan lessons based more on their own understanding of key components of the curriculum;
- Incorporate more field studies and practical lessons to enhance student understanding;
- Develop and use locally derived material that would directly relate to the content being taught;
- Expand and improve their own knowledge of forestry concepts, allowing them to better explain concepts and provide comprehensive answers to student questions.

Recommendations
1. Follow-up STTA with at least one week of focused teacher training, including modules on syllabus design, interactive teaching methods, experiential learning, and other topics.
2. Coordinate with Peace Corps volunteers posted in Bomi County to augment teacher training.
3. Depute PROSPER staff in Monrovia and from field sites to lead teacher training workshops.

SHORT-TERM COURSES

In addition to regular FTI curricular offerings, PROSPER should consider supporting a series of short targeted courses on a variety of topics central to community forestry. PROSPER staff in Monrovia and from field sites would be excellent resources in teaching such short courses. These short-term training courses should leverage training materials generated under the Land Rights and Community Forestry Program (LRCFP) (e.g., how-to manuals) for the FDA. Courses should be taught in the form of workshops combining classroom instruction and discussion with practical exercises in local communities for hands-on experience. Where possible, short courses could be complemented by follow-up assignments in the field and would ideally be part of a progressive training program. Training courses should focusing on the needs of service providers i.e., government, industry, NGOs and institutions of learning who are involved in decision making, training, facilitating or implementing community forestry.

Recommendations
1. STTA to develop short courses on topics such as:
   - Community mobilization;
   - How to lead participatory sessions and conduct participatory appraisals;
   - GPS, forest mensuration and boundary demarcation in the community forestry context;
   - Conflict management;
   - NTFPs – identification, collection, processing, storage, marketing;
   - Gender mainstreaming.

2. The PROSPER program should consider supporting the participation of existing forest rangers in these short-term courses as a means of broadening the impact of PROSPER's as well as developing an *esprit de corps* in relation to community forestry. Certificates that carry the emblem/approval of the FDA should be issued for these short-term training courses to enhance the perceived value of participation.

CROSSCUTTING THEMES

Community forestry – with its messages of good governance, devolution, sustainable management, generating benefits for local communities, etc. – is relevant to all students training in the forestry sector.

Recommendations
1. The FTI should consider requiring students to take crosscutting courses, particularly those addressing social issues, irrespective of the program (i.e., Forest Ranger, Industrial) in which they are enrolled.

CURRICULUM INTEGRATION

Community forestry impacts and is relevant to many parts of the curriculum, e.g. courses in Forest Law, Policy, and Administration, Forest Management course, and more.

Recommendations
1. STTA to review content of existing courses to identify opportunities to integrate community forestry and social issues.

EXPERIENTIAL LEARNING

FTI graduates are not succeeding in finding gainful employment in the forestry sector.

Recommendations

1. PROSPER should consider hosting a "Mentoring in the Forestry Sector" and/or "Careers in Forestry" event(s) that brings together government, NGO, and private sector employers working in the sector to facilitate internships and future employment for FTI graduates.
2. FTI should expand its woodlot/plantation beyond Acacia spp. (primarily used for charcoal) to include species such as commercially useful trees and NTFPs such as Griffonia. Potential revenue source as well as practical training ground.
3. PROSPER should consider sponsoring a series of faculty-student workshops on "Issues in Forestry" to develop an informal yet professional dialogue on issues that may be difficult to discuss in detail within the constraints of the curriculum.
4. FTI should expand current woodlot programs from area primary schools to local communities. Such community outreach programs would be synergistic both with community goals and student learning goals.

MONITORING AND EVALUATION
There is presently no system of M & E to gauge the progress of curriculum development and its implementation in the classrooms of FTI.

Recommendations
1. FTI should institute a system of student evaluation of instructors. Such a system would provide valuable feedback. Feedback should be anonymous to ensure that students feel
2. FTI should institute regular evaluation of instructors by the Dean of Students as well as outside observers (e.g., Ministry of Education, FDA) where practical.

TEACHING MATERIAL
Teaching materials at FTI are out-of-date and do not reflect state-of-the-art knowledge in forestry.

Recommendations
1. STTA to gather relevant scholarly material for revised curriculum. With full access to scholarly resources and databases, the consultant would be able to compile a digital compendium of articles, case studies, etc. for each module for use by FTI.

ATTACHMENTS

ATTACHMENT 1: CONSULTANT'S SCOPE OF WORK

Scope of Work
Development of Community Forestry Curriculum at FTI

Kenneth Bauer, PhD
Natural Resource Management Curriculum Development Specialist

The Consultant will undertake work in Liberia for Tetra Tech in support of the USAID People, Rules and Organizations Supporting the Protection of Ecosystem Resources (PROSPER) Program.

BACKGROUND

Tetra Tech was contracted by USAID Liberia in May 2012 to implement PROSPER Program. The goal of the five-year program is to "introduce, operationalize, and refine appropriate models for the community management of forest resources for local self-governance and enterprise development in targeted areas."

That goal is to be achieved through the accomplishment of three major objectives:
- Expanded educational and institutional capacity to improve environmental awareness, NRM, biodiversity conservation, and environmental compliance
- Improved community-based forest management leading to more sustainable practices and reduced threats to biodiversity in target areas.
- Enhanced community-based livelihoods derived from sustainable forest-based and agriculture-based enterprises in target areas.

An important activity under the first objective is to support the development of a community forestry curriculum that will be used at the Forestry Training Institute (FTI) to support the development of the technical capacity of future forestry technicians in Liberia. PROSPER's approach to this activity involves close collaboration with FTI and FTI partners to develop a relevant and modern community forestry curriculum for Liberia that is informed by PROSPER's own implementation experience. In addition, PROSPER will provided targeted training, materials development and research opportunities to supplement curriculum and to further develop the capacity of faculty and students at FTI.

Curriculum development efforts will be coordinated through the Forestry Education Working Group (FEWG) – an entity established by FTI that includes representatives from the Forestry Development Authority (FDA), Ministry of Planning, Ministry of Education, Environmental Protection Agency (EPA), University of Liberia and FTI. PROSPER.

OBJECTIVES OF THE ASSIGNMENT

The specific objectives are as follows:
1. Develop a draft community forestry curriculum for FTI that is relevant to the Liberian context and incorporates existing curriculum as well as PROSPER and other program experiences
2. Identify FTI teacher training needs

TASKS

This Scope of Work will support several tasks under Activity 1.3 of the current Work Plan. Upon approval of the COP, **tasks presented in the present SoW may be adjusted or modified.**

Activity 1.3: Develop a CF curriculum and support capacity development of FTI staff to implement
A major deliverable for PROSPER will be a revised community forestry curriculum for FTI that will prepare FTI students to support and implement the processes involved in the development of Community Rights Law-compliant community forestry management bodies, management plans and related activities. This contributes to PROSPER's overall goal by providing capacity to forest practitioners who will support the growth, development and dissemination of community forestry as a viable management model in Liberia.

The Consultant will develop a draft curriculum that includes courses and illustrative modules and/or content that will provide students with a solid knowledge foundation in forest management planning, implementation and monitoring; organizational development; and the legal and policy framework related to community forestry. This will include the following tasks:
- Conduct a review of existing community forestry curricula used outside of Liberia
- Review legal documents, FTI self-assessment conducted under the Land Rights and Community Forestry Program (LRCFP) and community forestry "How-to" handbooks developed under LRCFP
- Review 5-Year FTI draft Master Plan (2012-2017)
- Review existing community forestry curriculum in use by FTI
- Review conservation modules under development by PROSPER partner Fauna and Flora International (FFI) under development through Darwin Initiative funds.
- Review comments on FTI New Curriculum Draft prepared by USAID (Jennifer Talbot) focused on core subjects of the Ranger Training Program
- Building on the LRCFP-supported FTI self-assessment and subsequent assessments by FFI, identify knowledge gaps in FTI lecturers related to community forestry curriculum delivery
- Conduct focus-groups with FTI students and faculty to determine capacity levels, learning objectives, and to solicit input into content and.
- Identify foundational concepts and knowledge areas needed for a community forestry curriculum in Liberia
- Design a proposed sequencing for courses complete with learning objectives, key concepts, and learning milestones
- Draft illustrative modules inclusive of lesson plans and resources for identified courses within the curriculum
- Present a lecture to FTI students on a relevant community forestry topic to be determined in consultation with the FTI Executive Director.

DELIVERABLES

1. A Final Report including a brief account of each tasks listed above, key findings and recommendations. A draft will be submitted for comment to the Deputy Chief of Party (DCOP) before the Consultant departs from Liberia.

2. Document presenting proposed sequencing for courses in the community forestry curriculum inclusive of learning objectives, key concepts, and learning milestones

3. Illustrative modules for inclusion in the draft curriculum (number to be determined in consultation with the DCOP and FTI Executive Director)

4. Lecture for inclusion on the PROSPER website

LEVEL OF EFFORT:

Up to 24 working days starting on or around November 12, 2012, allocated as follows:

- One working day for preparation and document review and two working day post-field mission to draft and finalize field mission report in the US and/or home of record.

- Two working days for international travel.

- Up to 17 working days in-country beginning on or about November 17, 2012

Up to two additional days may be used to conduct follow-up arising from the field mission, if authorized by ARD and USAID.

A six-day working week (Monday through Saturday) is authorized under this contract whilst in Liberia.

REPORTING

The Consultant will report to the Chief of Party or his designee throughout this assignment. Briefings and/or debriefings with the USAID Contract Officer's Representative, other USG officials, or FDA officials are subject to request by these parties.

ATTACHMENT 2: RANGER TRAINING COURSE GRID AND OUTLINE

RANGER FOREST PROGRAM
COURSE GRID

Year	Term	Course Designation	Course Title	Credit Hours
1	1	FTI-	Mathematics	3
1	1	FTI-	Communications	3
1	1	FTI-	Computer	2
1	1	FTI-	Introduction to Forestry	2
1	2	FTI-	Fundamentals of Ecology	3
1	2	FTI-	Forest Policy, Law, & Administration	2
1	2	FTI-	Forest Management	3
1	2	FTI-	Introduction to Forest Plants I	3
1	3	FTI-	Forest Mensuration & Inventory	3
1	3	FTI-	Forest Conservation & Protection	2
1	3	FTI-	Forest Surveying & Mapping	3
1	3	FTI-	Introduction to Forest Plants II	3
1	3	FTI-	Tree Physiology	3
2	1	FTI -	Silviculture I	2
2	1	FTI-	Forest Products Harvesting & Utilization	3
2	1	FTI-	Forest Engineering	3
2	1	FTI-	Agroforestry I	2
2	1	FTI-	Community Forestry I	3
2	2	FTI-	Silviculture II	2
2	2	FTI-	Community Forestry II	3
2	2	FTI-	Fundamentals of Soil Science	3
2	2	FTI-	Forest-Based Industry	2
2	2	FTI-	Agroforestry II	2
2	3	FTI-	Forest Engineering & Harvesting	3
2	3	FTI-	Forest Product Utilization & Marketing	3
2	3	FTI-	Special Problems / Project	3
2	3	FTI-	Internship	2
			TOTAL	**71**

FOREST RANGER TRAINING
COURSE OUTLINE

Year	Term	Course Title	Topics
1	1	Mathematics	Basic Mathematical Operations • Set Theory • Real Numbers • Numeration • Measurement of quantities, distances, volumes • Principles of Problem Solving Applied math for forestry • Fractions, volumes, lengths, & circumference • Linear equations & functions • Graphs • Exponents & Factoring • Statistics Probability & sampling
1	1	Communications	Basic English grammar and writing skills Report writing skills Introduction to research techniques/methodology
1	1	Computer	MS-Word, PowerPoint, Excel Internet skills Basic GIS
1	1	Introduction to Forestry	History of Forestry in Liberia Forest resources of Liberia Role of forestry sector in the economy Social and cultural factors in Liberia's forests Philosophy of the 3Cs
1	2	Fundamentals of Ecology	Biotic factors and abiotic factors in forest ecosystems and their interactions Ecological succession Ecosystem services, e.g. pollination and flood control Forest product potentials assessment: Plants, animals, NTFPs

Year	Term	Course Title	Topics
1	2	Forest Policy, Law, and Administration	Forest laws and regulations Liberia Forest Policy Forest tenure systems Forest administrative and regulatory structures International conventions to which Liberia is party • international conventions, frameworks and organizations regulating trade, biodiversity, conservation, species, etc. Comparing forest policy, law and administration within the sub-region and lessons learned
1	2	Forest Management	Principles and practice of forest law enforcement Management practices in commercial, conservation, community forestry Forest resource assessment Developing Forest Management Plans: annual operational plan, strategic management plan, business plan
1	2	Forest Plants I	Species identification Arboretum establishment and development Collection, treatment and curation of herbarium and arboretum specimens Creating and maintaining databases for plant and animal species found in Liberia forests
1	3	Forest Mensuration and Inventory	Introduction to Forest Inventory Enumeration Principles and practices Determination of volume and stock quantities Application of GIS in Forest inventory
1	3	Forest Conservation and Protection	Principles of conservation biology and biodiversity conservation Direct and indirect threats to biodiversity Ecosystems services Managing forests for conservation: Principles of assessing and managing high conservation value forests; threatened species and habitats Landscape and watershed protection; restoration and stabilization Wildlife management and protection; bio-monitoring Protected area network: Selection, design, and management of PAs; Threats to biodiversity: deforestation, habitat degradation, over exploitation, invasive species. Climate change and REDD+ issues; Indicators of climate change in Liberia Example of mitigation strategies: species, habitat, and hotspot approaches to conservation Invasive species and disease control

Year	Term	Course Title	Topics
1	3	Forest Surveying & Mapping	Terminology Sources of Error, Precision & field notes Linear & Angular measurements; Measurement Errors Azimuths vs. Bearings Compass navigation Traversing & traverse computations Using rectangular coordinates Area calculations Boundary surveying Legal aspects of surveying Cartography and Cartographic tools, e.g., GPS
1	3	Forest Plants II	Dendrology: Trees and wood identification
1	3	Introduction to Plant Physiology	The physical environment How are various plant traits interrelated and how do they determine strategies for plant functioning. Water and plants: Physical properties of water. Water movement through whole plants; different forms of water stress and how plants tolerate Carbon assimilation Tradeoffs of leaf structure What is a woody plant? What is wood? Evolution of woody plants Ecophysiology of tree growth Tree height: What causes the maximum height of trees? Tree mortality

2	1	Silviculture I	Forest ecosystem concepts
			Stand dynamics-forest succession
			Competition and tolerance
			Productivity and vegetation forms of Liberia
			Forest composition and structure
			Natural regeneration of species and types
			Principle of site acquisition and selection including understanding of tenure rights and delineation
			Species selection (indigenous and exotic species based upon end use)
			  • Fast growing species such as teak, pine and eucalyptus as well as oil palm cocoa and coffee
			  • Fruit tree nurseries and plantations
			Nursery tools & techniques
			Practices of planting materials collection/preparation/ storage

Year	Term	Course Title	Topics
2	1	Forest Products Harvesting & Utilization	Grading and scaling of logs and lumber Forest product extraction, landing, and transport Timber harvesting methods • Selective harvesting and sustainable harvesting Environmental Impact Assessments (EIAs) for timber harvesting and engineering. Sawmilling and processing (value addition) • Determine quantity produced Wood drying/seasoning/treatment Packaging and storage of wood
2	1	Forest Engineering	Forest roads, bridges and buildings - layout, construction and maintenance Work place safety • Definition of unsafe environment • Safe work place practices • Avoidance of hazards and accidents • First Aid • Handling and disposal of hazardous materials • Safety equipment
2	1	Community Forestry I	Introduction to Community Forestry • Overview of forest management policy and strategies in Liberia • Definitions of community forestry • Why community forestry in Liberia • History of community forestry in Liberia Understanding local uses of forests • Livelihood Issues • Tree species used and forest products extracted Participatory approaches in community forestry • Standard approaches to forestry and their assumption about professional foresters and local users • Theory and practice of participatory approaches in community forestry Generating benefits for local people from community forestry • Variety and types of benefits of community forestry • How to generate benefits for forest resource user groups and individuals Differences and relationships among users: Tailoring community forestry activities to meet local needs • Relationships among users of forests and non-timber forest-based products (NTFPs) • Key categories for examining social and economic differences • Origins of local preferences of specific tree uses, and how resource use is negotiated among users • Relationships between local residents and external actors

Year	Term	Course Title	Topics
2	1	Agroforestry I	Principles of and ecological foundations for agroforestry Shelterbelts and windbreaks: structure, function, benefits and design Intercropping systems Structure and function of riparian systems Production of timber and specialty crops as part of agricultural systems Agro-forestry practices in Liberia (oil palm, cocoa, coffee and fruit trees) and small-scale livestock Relationship between community forestry and agroforestry Food crops Introduction to the Use of Appropriate Technologies
2	2	Community Forestry II	Organizational structures of the forester's agency: Effects and impacts on the potential of community forestry • Identification and analysis of the types of organizational structures within which the professional must work • The impact and effects of institutional structures and conditions on the professional's effectiveness in community forestry activities Planning for contingencies – the need for alternative strategies • Taking initiatives to prepare alternative community forest management strategies • Identification and assessment of uncontrollable outside events that can jeopardize community forestry initiatives Local residents' claims on forest resources and the potential threats to such claims • Identifying and securing locals' claims • Creating a common set of resource use rules and the collective will to enforce these rules • The critical need for the state to support and enforce community forestry tenure laws Institutional and social issues • Equity and gender • Local knowledge and customary practices • Common property regimes • Land and tree tenure • Conflict management • Forest governance • Decentralization and devolution Community forestry management strategies • Collaborative management • Joint forest management • Community-based forest management • Forest user groups • Protected area management • Participatory watershed management
Year	Term	Course Title	Topics

2	2	Silviculture II	Variability testing Reforestation using forest species (development of nursery, plantation and crop maintenance) Rubber Culture practices (nursery, establishment and maintenance and protection) Plant growth assessment
2	2	Fundamentals of Soil Science	Below ground interactions Nutrient uptake and assimilation; structure and function of roots; rhizosphere interactions; plant-mycorrhizae interactions. Nutrient cycling Soil conservation
2	2	Forest-based Industry	Status of Liberian Forestry, forest types, changing trends Supply and demand status of wood, export and import of tropical timber, its products and market channels Status of solid wood, reconstituted and handicraft industry Types of value added/transformation activities can add value to timber for national and external markets
2	2	Agroforestry II	Shifting cultivation, multiple and mixed cropping Energy plantations and homestead gardens Reclamation of degraded land through agroforestry interventions Environmental impacts of biomass energy Use of appropriate Technologies to enhance sustainable forest management Afforestation, Reforestation: constraints, scope and basic principles Multipurpose trees: Their characteristics and management practices for fuel, fodder, fruits and timber production. Social aspects of agroforestry: land tenure, gender issues

Year	Term	Course Title	Topics
2	3	Forest Engineering and Harvesting	Forest roads, bridges and buildings - layout, construction and maintenance Forest product extraction, landing, and transport Timber harvesting methods Work place safety • Definition of unsafe environment • Safe work place practices • Avoidance of hazards and accidents • First Aid • Handling and disposal of hazardous materials Safety equipment
2	3	Forest Product Utilization and Marketing	Principles of marketing and small-scale nature-based enterprise development Marketing timber products Chain of Custody system Non-timber and non-wood forest products (NTFPs) Ecotourism and environmental services; Record keeping, stock book maintenance and reporting FLEGT/VPA process, chain of custody, etc.
2	3	Special Problems / Project	Student project
2	3	Internship	Field tours & service-learning at industrial, community forestry, & conservation project sites Internships with FDA, NGO projects, industrial partners

Year	Term	Course Title	Topics
2	2	Sawmill Machines	Types and operation of sawmill machines Sawmill safety
2	3	Sawmill Management	Log yard operations Types of sawmill processing machines Methods of managing human and material resources in the sawmill Sawmill layout and log yard (dry or log pond) Use of both primary and secondary conversion machines in the sawmill Preservation of timber (impregnation)
2	3	Forest-Based Industry	Status of Liberian Forestry, forest types, changing trends Supply and demand status of wood, export and import of timber, its products and channels Status of solid wood, reconstituted and handicraft industry
2	3	Internship	Field tours & service-learning at industrial, community forestry, & conservation project sites Internships with FDA, industrial partners

ATTACHMENT 3: WOOD SCIENCE AND TECHNOLOGY COURSE GRID AND OUTLINE

WOOD SCIENCE & TECHNOLOGY
COURSE GRID

Year	Term	Course Designation	Course Title	Credit Hours
1	1	FTI-	Communications	3
1	1	FTI-	Mathematics	3
1	1	FTI-	Computer	2
1	1	FTI-	Introduction to Forestry	2
1	2	FTI-	Forest Policy, Law, & Administration	2
1	2	FTI-	Forest Management	3
1	2	FTI-	Forest Mensuration & Inventory	3
1	2	FTI-	Forest Conservation & Protection	3
1	3	FTI -	Forest Engineering & Harvesting	3
1	3	FTI-	Forest Products Harvesting & Utilization	3
1	3	FTI-	Mechanics of Sawing	3
1	3	FTI-	Engineering Science	3
2	1	FTI -	Saw Doctoring	3
2	1	FTI-	Wood Technology	3
2	1	FTI-	Metallurgy	2
2	1	FTI-	Grinding Wheel	3
2	2	FTI-	Circular Saws	3
2	2	FTI-	Band Saws	3
2	2	FTI-	Gang/sash saws	3
2	2	FTI-	Sawmill Machines	3
2	3	FTI-	Sawmill Management	3
2	3	FTI-	Forest-Based Industry	3
2	3	FTI-	Internship	3
			TOTAL	**64**

WOOD SCIENCE & TECHNOLOGY
COURSE OUTLINE

Year	Term	Course Title	Topics
1	1	Communication Skills for Forestry	Basic English grammar and writing skills Report writing skills Introduction to research techniques/methodology
1	1	Mathematics	Basic Mathematical Operations • Set Theory • Real Numbers • Numeration • Measurement of quantities, distances, volumes • Principles of Problem Solving Applied math for forestry • Fractions, volumes, lengths, & circumference • Linear equations & functions • Graphs • Exponents & Factoring • Statistics Probability & sampling
1	1	Computer	MS-Word, PowerPoint Internet skills Excel Basic GIS
1	1	Introduction to Forestry	History of Forestry in Liberia Forest resources of Liberia Role of forestry sector in the economy Social and cultural factors in Liberia's forests Philosophy of the 3Cs
1	2	Forest Policy, Law, and Administration	Forest laws and regulations Liberia Forest Policy Forest tenure systems Forest laws and regulations Forest administrative and regulatory structures International conventions to which Liberia is party Comparing forest policy, law and administration within the sub-region and lessons learned

Year	Term	Course Title	Topics
1	2	Forest Management	Principles and practice of forest law enforcement
			Management practices in commercial, conservation, community forestry
			Developing Forest Management Plans: annual operational plan, strategic management plan, business plan
			Natural resource assessment
1	2	Forest Mensuration and Inventory	Enumeration Principles and practices
			Determination of volume and stock quantities
			Application of GIS in Forest inventory
1	2	Forest Conservation and Protection	Principles of conservation biology and biodiversity conservation
			Direct and indirect threats to biodiversity
			Ecosystems services
			Managing forests for conservation: Principles of assessing and managing high conservation value forests; threatened species and habitats
			Landscape and watershed protection; restoration and stabilization
			Wildlife management and protection; bio-monitoring
			Protected area network: Selection, design, and management of PAs;
			Threats to biodiversity: deforestation, habitat degradation, over exploitation, invasive species.
			Climate change and REDD+ issues; Indicators of climate change in Liberia
			Example of mitigation strategies: species, habitat, and hotspot approaches to conservation
			Invasive species and disease control
1	3	Forest Engineering	Forest roads, bridges and buildings - layout, construction and maintenance
			Work place safety
			• Definition of unsafe environment
			• Safe work place practices
			• Avoidance of hazards and accidents
			• First Aid
			• Handling and disposal of hazardous materials
			Safety equipment
1	3	Forest Products Harvesting & Utilization	Grading and scaling
			Forest product extraction, landing, and transport
			Timber harvesting methods
			Environmental Impact Assessments (EIAs) for timber harvesting and engineering
			Sawmilling and processing (value addition)
			• Determine quantity produced
			Wood drying/seasoning/treatment
			Packaging and storage of wood

Year	Term	Course Title	Topics

1	3	Mechanics of Sawing	Types of metal saw blades (alloy steel)
			Calculations
			   • Length of band saw to fit slue machine
			   • Feed speed of carriage with log to saw (FPM)
			   • Cutting speed of band saw / circular saw
			   • Revolution of blade (RPM)
			   • Revolution of grinding wheel (RPM)
			Safety

1	3	Engineering Science	Engine maintenance and repair Maintenance and repair
2	1	Saw Doctoring	The art of saw doctoring Types of saws and their maintenance Chainsaw and its parts Mode of operating system Servicing
2	1	Wood Technology	Types of wood Characteristics of wood that can affect saw Performance – Wolley, grain type (cross, straight) Wood containing silica
2	1	Metallurgy	Ferrous metals Nonferrous metals Alloys Reaction of metal to heat treatment Carbon chemicals and carbon content of saw steel
2	1	Grinding Wheel	Composition of abrasive grinding wheel Action of grinding wheel Suitable abrasive grinding wheel for saw sharpening How to select and order abrasive grinding wheel
2	2	Circular Saws	Benching Setting, cutting and sharpening of blade Grinding wheels Tooth geometry

Year	Term	Course Title	Topics
2	2	Band saw (horizontal, vertical)	Benching Setting, cutting and sharpening of blade Tensioning Tooth geometry Joining band saw Stellit tipping (hard facing cutting tooth)
2	2	Gang/sash saws	Benching Setting, cutting and sharpening of blade Grinding wheels Tooth geometry
2	2	Sawmill Machines	Types and operation of sawmill machines Sawmill safety
2	3	Sawmill Management	Log yard operations Types of sawmill processing machines Methods of managing human and material resources in the sawmill Sawmill layout and log yard (dry or log pond) Use of both primary and secondary conversion machines in the sawmill Preservation of timber (impregnation)
2	3	Forest-Based Industry	Status of Liberian Forestry, forest types, changing trends Supply and demand status of wood, export and import of timber, its products and channels Status of solid wood, reconstituted and handicraft industry
2	3	Internship	Field tours & service-learning at industrial, community forestry, & conservation project sites Internships with FDA, industrial partners

ATTACHMENT 4: COMMUNITY FORESTRY COURSE OUTLINE AND ILLUSTRATIVE COMMUNITY FORESTRY COURSE LESSON PLAN MODULES ~DRAFT

MODULE 1: INTRODUCTION TO COMMUNITY FORESTRY

This module introduces students to the overall structure and organization of the course and provides students with an orientation to key issues and themes in community forestry in Liberia. The forestry sector and the legislation guiding it have evolved from viewing forests primarily as extractable commodity to recognizing the critical roles these resources can play in the sustainable development of Liberia. We also consider the role that community forestry can play as an entry-point for governance reform. An approach focused on community management of revenues from forest exploitation can encourage a critical shift in social and economic relations in Liberia. A series of numbered lecture outlines with Learning Objectives, Key Concepts and Issues, and Learning Milestones are detailed below.

1. Overview of forest management policy and strategies in Liberia

Learning Objectives

- Introduce students to the overall structure and organization of the "Community Forestry I" course.
- Examine the historical status and current extent of forests in Liberia.
- Evaluate major trends of forest policy and management in Liberia over time.
- Get students to think critically about the multi-scale, contextual factors that influence forestry outcomes.

Key Concepts and Issues

- Forests are complex and dynamic natural systems.
- Forests and people interact with one another to form socio-ecological systems.
- Forests play multiple roles in the livelihoods and ways of life of different subgroups in a community.
- Stakeholders' interests and influences in the forestry sector are shaped by their worldviews, economic status, and social position.

Learning Milestones

Students will be able to …

- Identify where Liberia's forests are, what types there are, and how forests/forest cover are changing.
- Describe different forest types in Liberia based on the modes of management, tenure, etc.
- Describe the evolution of forest policy and management over time in Liberia and assess progress achieved thus far.
- Identify the multi-scale, contextual factors that impact Liberia's forestry sector and consequently outcomes in community forestry (i.e. stakeholder interests, international treaties, national legislation, local cultural practices, etc.)

2. Definitions of and synonyms for community forestry

Learning Objectives

- Provide definitions and synonyms for community forestry.
- Explore the conceptual underpinnings, efficacy, and practice of community forestry in global forest management.
- Understand that people who have been residing in or near their local forests for generations have the rights, knowledge, and incentives to manage their own resources sustainably.

Key Concepts and Issues

- Social forestry
- Common property
- Sustainable development
- Benefits of community forestry
- Benefit sharing
- Resource governance

Learning Milestones

Students will be able to …

- Define community forestry and core aspects of this mode of resource management.
- Present case studies from global forest management that illustrate best practices and lessons learned in community forestry.
- Explain why community forestry can be a viable strategy for conserving forest ecosystems and supporting local livelihoods and cultural values.
- Describe the benefits of community forestry including: increased self-reliance and local employment in rural communities, protection of watersheds, and biodiversity conservation, among others.

3. Community forestry and its justification from a global perspective

Learning Objectives

- Understand the international and national conventions, frameworks, and organizations regulating forest resources trade and biodiversity conservation.
- Provide an overview of national, regional, and local level networks involved in community forestry in Liberia.
- Outline the benefits of community forestry for Liberia.

Key Concepts and Issues

- Global community forestry experiences
- Obligations and opportunities of international treaties to which Liberia is party
- Implications of international treaties for indigenous peoples of Liberia
- Potentials for and constraints to biodiversity conservation as a result of Liberia's accession to international treaties
- Challenges to implementation of international treaties in Liberia

Students will be able to …

- Enumerate the international treaties relating to community forestry to which Liberia is party and the legal and policy ramifications of these commitments.
- Summarize the government and non-government organizations and networks involved in community forestry in Liberia and their roles in this sector.
- Describe the benefits and challenges of Liberia's participation in the international community forestry movement.

4. History of community forestry in Liberia

Learning Objectives

- Compare and contrast the history of community forestry in Liberia with that of other countries.
- Identify the gaps in Liberia's community forestry policies that need to be addressed.

Key Concepts and Issues

- Customary rights
- Communal land title
- Community forestry policies and legislation
- The 3 Cs in Liberia's forestry – community, conservation, commercial

Learning Milestones

Students will be able to …

- Discuss the ways in which community forestry has been implemented in Liberia.
- Enumerate past and current legislation and policies affecting the forestry sector and related resources.
- Describe how community forestry fits into the broader framework of Liberia's forestry sector.
- Understand the various types of community forest management including commercial timber harvesting.

5. Community forestry as an approach to resource governance reform and rural development

Learning Objectives

- To understand how community forestry can be used as an approach to resource governance reform.
- Demonstrate the mutually supportive roles that can be played by 'supply-side' policy changes and 'demand-side' means to build accountability from below.
- Illustrate the importance of macro- and micro-level connections in promoting pro-poor change, and the ways in which improved governance can be made to satisfy both a poverty reduction and governance agenda.
- Review the challenges that remain, relating both to governance and livelihoods.

Key Concepts and Issues

- Creating a community forestry constituency through forest user groups

- Principles of good governance: participation, accountability, predictability, and transparency
- Decentralization and devolution
- Regulating and monitoring the chain of custody

Learning Milestones

Students will be able to …

- Describe the relationships, rights, responsibilities, and incentives among stakeholders including forest communities, industries, and government.
- Articulate why creating a more transparent environment for forest exploitation could have a wider impact on public governance in Liberia.
- Explain how community forestry can contribute to the improvement of forest conditions and community livelihoods through capital formation in rural communities
- Describe how the process of community empowerment and social change is related to governance reform.
- Recognize the challenges involved in shifting from one nexus (government/forest industry) to another, even more complicated, one (government/forest industry/communities) and the need to supervise the interface between numerous weak and dispersed rural communities and powerful industrial concerns.

6. **Relationship between community forestry and agroforestry**

Learning Objectives
- Understand the relationships between community forestry and agroforestry, e.g., the existence of agroforestry cropping systems in forests.
- Understand that so-called agroforestry zones in Liberia have often been abused, giving free rein to timber extraction by elites and private investors.

Key Concepts and Issues

- Definitions of agroforestry and the variety of agroforestry systems practiced in Liberia (e.g., agricultural, silvicultural)
- Afforestation in the community forestry context

Learning Milestones

Students will be able to …

- Explain the external and internal forces driving agroforestry practices, e.g., ambiguous tenure and weak enforcement of land laws, and how they can be addressed by community forestry.
- Describe the relationships between shifting cultivation and community forestry.
- Demonstrate the potential of community forestry to improve the viability and productivity of agroforestry practices.
- Describe how community forestry can provide local communities exclusive access to land and NTFPs as well as selected access to agroforestry products.
- Describe how small-scale, community afforestation/reforestation projects mixed with other land uses such as agroforestry can help mitigate deforestation through multiple-use forest management.

Illustrative Assignment

Students should prepare a detailed report on the current state of forests in Bomi County, Liberia. The presentation should include the following elements:

- Map(s)
- Geographic distribution of major forest types within Bomi county
- Who owns these forests? What is the land tenure situation?
- To what extent do native peoples inhabit/own/manage these forests?
- What are the main management and conservation issues in the forests of this county? Any current news related to this county's forests?

Provide tables, and figures that help us understand the comparative county-level forest and socioeconomic indicators as detailed below.
- Total forest area
- % of land area covered by forest
- Area under plantations
- Annual rates of change in forest cover
- Production, trade and consumption of key wood products
- Forest sector contribution to:
- Employment (% of total labor force)
- GDP (% contribution of forestry sector)
- Protected areas (Portion of land area protected by IUCN category, e.g., I and II; II, IV and V; and VI and other)
- Population density
- Annual growth rate of the population
- Under-one mortality rate (per 1000 births)
- Life expectancy at birth
- Youth literacy rate (% of people ages 15-24)
- Percentage of internet hosts per 100 people
- GDP per capita
- Gini coefficient/index
- National poverty rate (% of population which earns less than country's poverty line)
- Income share of richest 10%

MODULE 2: UNDERSTANDING HOW PEOPLE USE FOREST PRODUCTS

A thorough understanding of forest resources and user interactions with these resources provides the basis for successful community forestry initiatives. A series of numbered lecture outlines with Learning Objectives, Key Concepts and Issues, and Learning Milestones are detailed below.

1. Tree species used and forest products extracted

Learning Objectives
- Build students' knowledge base concerning how rural Liberians use forest products.
- Identify the various individuals and groups who use and depend on forests, trees, and other resources.
- Identify groups or individuals who are responsible for making decisions about the use of forest resources.
- Understand how individuals and user groups interact with forests and forest resources.

Key Concepts and Issues
- Tree species and forest products used in Liberia
- Importance of non timber products, goods, and services
- Current resource management strategies in Liberia's forest-dependent communities
- Differences within user groups with respect to age, income, gender, and ethnicity
- Traditional approaches to the use of trees and other forest resources
- The roles that forests have played in the histories of different tribes in Liberia
- Importance of forest resources compared with farming activities
- Traditional land and tenure rules governing resource use in Liberia

Learning Milestones

Students will be able to …

- Identify and list the forest products and tree species used to meet community needs in Liberia across different tribes.
- Describe resource management strategies for local forest resources and trees.
- Describe resource use preferences on the basis of age, ethnicity, income and gender.
- Describe traditional land and tenure rules governing resource use in Liberia

MODULE 3: PARTICIPATORY APPROACHES IN COMMUNITY FORESTRY

This module discusses the theory and practice of participatory approaches and shows how the involvement of local people in planning, implementing, and monitoring community forestry activities improves effectiveness and increases local people's benefits. A series of numbered lecture outlines with Learning Objectives, Key Concepts and Issues, and Learning Milestones are detailed below.

1. **Standard approaches to forestry and their assumptions about professional foresters and local users**

Learning Objectives

- Introduce critiques of standard forestry approaches and broaden students' thinking about different approaches to forestry.
- Challenge students' assumptions that professionally trained foresters know best in terms of how to manage forest resources.
- Show students how standard approaches to forestry have excluded the knowledge, technical and otherwise, of Liberians.

Key Concepts

- Standard or scientific management of forests
- Indigenous knowledge

Learning Milestones

Students will be able to …

- Differentiate between, and give examples of, the two main approaches (standard vs. participatory) in forestry.
- Describe the negative consequences of traditional approaches to forestry, e.g., lack of recognition of local knowledge systems and management skills.
- Identify the weaknesses of traditional forest management and show how these can be strengthened with participatory approaches, methods, and techniques.

2. **The theory and practice of participatory approaches in community forestry and their values**

Learning Objectives

- Equip practitioners with the basic knowledge and skills needed to employ participatory approaches in the planning, implementation, and evaluation of community forestry activities.
- Students will learn extension methods that incorporate the use of indigenous knowledge and materials.
- Students will review appropriately pitched messages and social marketing that encourage buy-in to community forestry programs.
- Students will learn the differences and similarities between RRA and PRA in order to make informed decisions in their choice and application of these approaches.
- Students will study the factors that determine participation

Key Concepts

- Participation
- Triangulation
- Stakeholder
- Rules of entry
- Social norms and perceptions
- Household endowments and attributes

Learning Milestones

Students will be able to …

- To define and illustrate the basic concepts of participatory approaches from both theoretical and practical perspectives.
- Articulate how participatory methods can elicit peoples' knowledge and expertise.
- Describe how participatory methods build local capacity for effective problem solving and action.
- Demonstrate techniques for participatory data collection and analysis.
- Review the basic principles of rapid rural appraisal (RRA) and participatory rural appraisal (PRA) and describe the methods and techniques associated with these approaches.
- Review model community forest management plans that have been applied in Liberia.

3. **Bio-cultural approaches to natural resources management**

Bio-cultural approaches recognize and support cultural resources (e.g., language and knowledge systems) as a potent force in shaping how biological resources are managed and used. This community knowledge-centered approach to forestry is in stark contrast to the standardized methods, which focus on technically acquired knowledge and skills. The importance of bio-cultural management in Liberia, in particular, is underscored by the fact that what forests mean to locals closest to them, on one hand, and those who enact forest management policies and strategies on the other, are rarely the same.

Learning Objectives

- Explore the pivotal role that local languages and knowledge systems play in the management of forest resources and the conservation of biological resources.

Key Concepts and Issues

- Bio-cultural resources
- Indigenous knowledge

Learning Milestones

Students will be able to …

- **Describe relevant participatory methods and techniques that can be used to compile and assess local language and knowledge systems used in managing forest resources.**
- **Compare bio-cultural management with standard methods of managing biological resources.**
- Describe the ways in which culture is expressed in Liberia's forest-dependent communities and how culture shapes and supports natural resource management.

MODULE 4: COMMUNITY FORESTRY MANAGEMENT STRATEGIES

The 'solutions' offered by centralized resource management no longer work in isolation from or in opposition to local resource users. One of the most promising new directions in resource management is the sharing of power and responsibility with local communities. Community-based forestry is gaining momentum and advocates in Liberia as a vehicle for shared and collaborative problem solving in the forestry sector. A series of numbered lecture outlines with Learning Objectives, Key Concepts and Issues, and Learning Milestones are detailed below.

1. Types of community forestry management strategies

Learning Objectives

- Introduce students to different types of management and how each shares power and responsibility in community forestry.
- Learn how flexible, participatory governance systems can help communities cope with change and thereby enhance adaptation and resilience.
- Learn about different types of types of forest management based on land ownership and the rules/legislation guiding each.

Key Concepts and Issues

- Governance
- Participation and levels of participation in various community forest schemes including …
  - Collaborative management
  - Joint forest management
  - Community based forest management
  - Participatory forest management
  - Protected area management
  - Participatory watershed management
- Roles and Responsibilities of various stakeholders in community forestry groups including …
  - Enforcement
  - Awareness raising
  - Consultation
  - Monitoring and evaluation

Learning Milestones

Students will be able to …

- Recognize that the constituencies interested in forest management are diverse and have multiple agendas and priorities that need to be accounted for.
- Explain that forest management is not necessarily based on land ownership and rules/legislation, i.e., there are a range of other management options – protected area management, joint forest management, community forest management – that may be possible under an enabling legislative framework.
- Identify the range of roles and responsibilities various stakeholders can hold within community forestry whether it be joint forest management, social forestry, protected area management, etc.

MODULE 5: GENERATING BENEFITS FOR LOCAL PEOPLE – THE PRIMARY OBJECTIVE OF COMMUNITY FORESTRY

This module will illustrate why community forestry activities must generate benefits for Liberia's citizens. Students will learn that a community forestry project must deliver a variety of goods and opportunities to diverse stakeholders. Community foresters must try to remove constraints that hinder Liberia's people from receiving these benefits. A series of numbered lecture outlines with Learning Objectives, Key Concepts and Issues, and Learning Milestones are detailed below.

1. **Benefits of community forestry**

Learning Objectives

Students will …

- Learn about alternative values and uses of forest resources e.g., ecosystem services and conservation.
- Explore the kinds of management options, institutional arrangements, and harvesting practices that forest user groups can leverage to generate benefits for their communities.
- Appreciate the differences between poaching, encroachment, and traditional resource use and the linkages to rights and benefits.

Concepts

- Non Timber Forest Products (NTFP)
- Watershed health
- Cost-benefit analysis
- Ecological economics
- Liberia National Benefits Sharing Trust

Key Issues

- Importance of transparency in ensuring equitable distribution of benefits from community forestry
- Accurate record and accounts keeping
- Elite capture

Learning Milestones

Students will be able to …

- Give examples of how community forestry activities can generate benefits for Liberians.
- Describe the variety of goods and services that forests can generate for community user groups.
- Identify the constraints (e.g., elite capture, state policies, market access) that hinder local people from realizing benefits from community forestry.
- Describe best practices in the sub-region.

2. How to generate benefits for local forest resource user groups

<u>Learning Objectives</u>

- Teach students how working with communities can transform existing use practices into sustainable forest-based enterprises.
- Introduce collaborative methods to assemble simple and practical community forest management plans with local communities.
- Learn why transaction costs – i.e., the cost of participating in forest user group – are essential in understanding the behavior and incentives of community members.

<u>Key Concepts and Issues</u>

- Community benefit sharing schemes
- Small and Medium-sized Forestry Enterprises (SMFE)
- Enterprise development
- Value Chains
- Timber compliance mechanisms

<u>Learning Milestones</u>

Students will be able to …

- Describe the different kinds of natural resources that SMFEs in Liberia can sustainably harvest.
- Develop and present a value chain analysis of one imported forest product [see Field Practicum and Illustrative Assignment below]

<u>Field Practicum</u>

This practicum is designed to help students engage community members in a discussion of the benefits that community forestry can bring. Initiate the discussion by asking a series of guiding questions, which are written on a flipchart:

- What benefits do you get from the forest?
- Do you want the benefits from the forests to continue?
- How should you use forest resources in order to continue to benefit from the forest?
- What are the differing effects if you use the forest in sustainable or non-sustainable ways?

Introduce the concept of forest management and the activities involved beginning with those activities familiar to villagers, e.g. protection of sacred forests.

- Can these activities be done solely by the villagers? If the response is no, ask why not. If yes, probe.
- Can these activities be done solely by the state forestry staff? If no, ask why? If yes, probe.

Introduce the concept of community forestry and the partnership between villagers and state forestry staff.

- Why is there a need for village forestry and for a partnership between the villagers and state forestry staff in sustainably managing the forest?
- Why is village forestry or this partnership between the villagers and state forestry staff important?
- What are the objectives of village forestry or this partnership in sustainable forest management?

ILLUSTRATIVE ASSIGNMENT: VALUE CHAIN ANALYSIS (GROUP ASSIGNMENT)

The objective of this assignment is for groups of students to compare and contrast value chains (production-to-consumption chains) of forest products harvested and sold in Liberia. This comparison will illuminate global linkages and demonstrate the environmental, socioeconomic, and political contexts under which forest products are harvested and transformed. The presentation should include a geographic map of the flow of goods from production, to processing, to local markets, and to their final destination. Student groups should answer the following questions in their analysis.

Questions for Value chain analysis

Product origin

- What is the species harvested? Provide genus, species and family.
- Where does this product come from?
- Who harvests it? How is it harvested? Tell us a little about the producers.
- To what extent is the product important to local people economically and socially? How do they use the species locally? Does it have cultural value?
- In what types of ecosystem(s) is this species found and/or grown? (i.e., mature tropical forest, secondary forest, plantation?)
- Is there a seasonality to harvest? Any information on whether it is harvested sustainably? Using what criteria?

Transformation

- How is the species processed and where?
- Are there multiple steps to processing? What are they?
- Who are the middlemen involved in getting this product from producer to processor to market?
- Are brokers used? Or do processors usually purchase directly from the producer?
- What is the approximate average mark-up for each middle person? Is there seasonality to these transformations?
- To what degree is the Production-to-Consumption system (PCS) vertically integrated? What are the horizontal linkages?
- Who are the major market participants in the PCS and what is their sale price?
- What is the geographic path that the product takes to get from extraction to processing to consumption? Use a map to show this path.

Consumers

- Who are the major buyers of this product?
- What does one pay for this product here in Monrovia (and elsewhere throughout the production-to-consumption chain)?
- Are there global/national trade agreements surrounding this product?

MODULE 6: DIFFERENCES AND RELATIONSHIPS AMONG USERS – TAILORING COMMUNITY FORESTRY ACTIVITIES TO MEET LOCAL NEEDS

This module will examine the relationships among users of forest and tree resources and demonstrate that an understanding of these relationships is critical for the community forestry field worker. Community foresters must be able to identify differences within and between communities as opposed to standardized forest management methods, in which communities are viewed as uniform entities. Social and economic differences within communities must be identified so that community forestry activities will credibly and appropriately match the needs of the various socio-economic groups that are represented at each level. A series of numbered lecture outlines with Learning Objectives, Key Concepts and Issues, and Learning Milestones are detailed below.

1. **Relationships among users of forests and non-timber forest-based products (NTFPs)**

Learning Objectives

Students will …

- Understand the characteristics of resources that are most important in determining incentives for resource use behavior.
- Understand why the inter-relationships within user groups are critical.
- Explore the relationships among users of timber and non-timber resources.

Key Concepts and Issues

- Degrees of power
- Enforcement capacity
- Stakeholders

Learning Milestones

Students will be able to…

- Identify the variety of resources and products used by local communities.
- Analyze the incentives that are associated with various resources.
- Identify the key characteristics of forest resources, particularly the feasibility of exclusion and the nature of consumption.

2. **Key categories for examining social and economic differences**

Learning Objectives

- Identify and examine the key social and economic differences in communities such as age, cultural traditions, ethnicity, gender, and income levels, among others.

Key Concepts and Issues

- Essential social, economic, and cultural markers, e.g., gender, income/household wealth, age, ethnicity, and religion that affect forest uses and relationships among resource users
- Origins of social and economic differences among forest resource user groups

Students will be able to …

- Describe participatory methods and techniques for identifying and assessing key social and economic differences among people in relation to resource use.

3. Capturing the origins of local preferences of specific trees, and how resource use is negotiated among users

Learning Objectives

- Illustrate the concept of local preferences for specific trees, their origins, and how resource use is negotiated among users of forest resources**.**

Key Concepts and Issues

- How the use of forest products is negotiated between user groups and its effects on resource exploitation

Learning Milestones

Students will be able to …

- Describe how locals in different group use forests and trees and the nature of the relationships between groups as well as within a group.
- Develop and implement field exercises that identify differences and relationships between forest resource user groups.
- Select the appropriate participatory methods and techniques for determining how locals in different groups use forests and trees and the nature of the relationship between groups as well as within a group.

4. Relationships between local residents and external actors

Learning Objectives

- Discern the various relationships between locals and external actors in community forestry and use this knowledge to detect or anticipate the potential impact of external actors on local people's access to forest and trees.

Key Concepts and Issues

- Local land claims and competing claims (NGOs, logging concessions, tree crop plantations, mining and pharmaceutical interests, nature reserves, etc.)
- Differences among stakeholders and how these differences can be used to predict and/or manage conflicts

Learning Milestones

Students will be able to …

- Describe the process of a stakeholder analysis that identifies differences among stakeholders and participatory approaches for anticipating and managing conflicts.

- Evaluate relationships between locals and external actors in community forestry and identify which factors in these relationships have negative impacts on locals' access to forests and trees in relation to external actors.

MODULE 7: INSTITUTIONAL AND SOCIAL ISSUES

The promotion of community forestry becomes viable and of interest to communities only when it is seen as part of a larger process of empowerment, one which addresses the priorities of communities including the provision of water, food, housing, health services, employment and education. For community forestry to be successful, it must contribute to income generation, improved health/nutrition, and labor (e.g., time saving when collecting fuel), crop protection (e.g. from wind or flood damage), etc. Moreover, community forestry must address latent and active tensions within the community, which divide resource users and undermine the collective will needed for effective community forest management. Forest use in communities is complex, involving multiple products as well as multiple user groups that have different ethnic, geographic or economic profiles as well as different interests and priorities. This increases the potential for dispute and conflict, which increases the difficulty and cost of developing and maintaining effective institutions to monitor and control use. A series of numbered lecture outlines with Learning Objectives, Key Concepts and Issues, and Learning Milestones are detailed below.

1. Equity and gender

Learning Objectives

Students will learn about …

- Techniques for eliciting women's participation and input into decision-making in community forestry planning and management (e.g., separate focus groups for women)
- Traditional leadership patterns and family structures.

Key Concepts and Issues

- Differences between men and women in terms of orientation to production for the market versus consumption oriented products
- Inclusiveness, elite capture, and exclusion of members of user groups
- Inequities in the distribution of benefits from forest products
- Allocation mechanisms for community funds
- Benefit sharing systems for forest resources
- Constraints in women's access to land and decision making
- Systemic factors that affect equity and institutional efficiency
- Types of participation (e.g., nominal, passive, consultative, activity-specific, active)

Learning Milestones

Students will be able to …

- Articulate the importance of equal gender participation and women's involvement in planning and decision-making.
- Describe the potential differences in how men and women perceive forest management practices and forest conditions.
- Explain that men and women are involved in different activities related to use of forests and how this impacts community forestry planning and management.

2. Local knowledge and customary practices

<u>Learning Objectives</u>

- Study local knowledge and customary practices in managing forests in Liberia.
- Understand the relevance and complexity of the social and cultural context of community-based resource management.

<u>Key Concepts and Issues</u>

- Customary resource use and management practices among Liberia's diverse ethnic groups
- How local knowledge is transmitted in the use and management of forest resources

<u>Learning Milestones</u>

Students will be able to…

- Articulate the relevance and complexity of the social context in community-based resource management.
- Explain socioeconomic as well as cultural adaptations to forest ecosystems.
- Identify alternative (indigenous) forest classification and management systems for particular socio-ecological contexts.
- Describe traditional forest protection and forest values

3. Common property regimes

<u>Learning Objectives</u>

- Understand that common property regimes can provide social cohesion and authority at the user group level.
- Explain that contemporary systems in Liberia comprise multiple forms of overlapping and interpenetrating land and resource rights that encompass both group and individual claims on rights to forests, water, fuel, grazing, cultivation plots, etc.
- Understand that rights of access and use may vary according to season, social identity, species or type of usage.
- Describe factors that undermine common property regimes such as increasing population pressure, market opportunities and pressures, the option of purchasing rather than producing certain goods, adoption of agricultural technologies (such as tractors) that permit cultivation of larger areas, increasing capacity to capture benefits through privatization, and changes in rural labor availability and allocation.

<u>Key Concepts and Issues</u>

- Key characteristics of common property regimes including clear user group membership, established systems of authority, monitoring and enforcement mechanisms
- How common property regimes allocate and distribute resources
- Role of common property in reducing income inequality
- Effects of inequality, ethnic heterogeneity, technological and demographic change, and migration on common property

Learning Milestones

Students will be able to …

- Describe how professional foresters can support common property institutions environment by providing technical and financial assistance to community forestry groups.
- Recognize that some resources are simply indivisible or, like many forest ecosystems, have to be managed in their entirety in order to produce some of their outputs (including mobile resources such as wildlife).
- Explain that in Liberia's forests, which have competing uses, coordination among users is essential to cope with problems caused by multiple uses.
- Explain how group control, and thus group enforcement of rules, can be an efficient way of coping with the costs of monitoring otherwise porous boundaries and of enforcing restraints on forest use within those boundaries.

4. Land and tree tenure

Learning Objectives

- Understand that successful community forestry requires tenure security since return-on-investment may take many years.
- Understand that land users need to have the guarantee that their investments in the land will yield good potential returns and they must be confident that they will be able to harvest and use the products of their forests.

Key Concepts and Issues
- Principles and practices of identifying, delineating, and securing tenure rights for land and forest resources

Learning Milestones

Students will be able to …

- Describe in detail the process of assisting the community in identifying forest areas and establishing secure resource tenure for a community forest user group.

5. Conflict management

Learning Objectives

- Understand the causes of conflict surrounding the use, management, and protection of forests within communities.
- Understand the causes of conflicts between the stakeholders of a local community and outside groups, such as logging companies, government, NGOs and nearby villages.
- Study the conflict management processes

Key Concepts and Issues

- Local communities are not homogeneous, but composed of various subgroups of stakeholders.
- Differing interests or access to information of subgroups within communities can give rise to conflicts about land ownership, boundaries, and traditional authority.
- Conflict mitigation and conflict mediation

Students will be able to …

- Describe how negotiation has both competitive and collaborative aspects, and how to steer the process toward collaboration
- Explain the stages within the process of community forestry where conflicts may emerge and must be managed …
  - → Entry point: understanding who initiated a conflict and its causes
  - → Analysis of conflict: determine who needs to be involved, and the scale and boundaries of the conflict.
  - → Broader engagement of stakeholders: raising public awareness about the conflict management effort, sharing the preliminary analysis of the conflict, etc.
  - → Stakeholder analysis of conflict: identify key stakeholders or groups to involve in conflict resolution.
  - → Assessment of conflict management options: assess the various options available for managing the conflict and devising a response and strategy for achieving stakeholder interests.
  - → Negotiation of agreements: based on the individual and shared needs and interests that have been identified.
  - → Evaluation, learning and conflict anticipation: identify necessary changes to support improved governance in community-based forestry.

6. Forest governance

Learning Objectives

- Understand the institutions and design principles of community-based institutions.
- Examine communities' capacity for collective action.
- Analyze the rules by which communities govern resources as well as outside rules that affect forest management.
- Learn how to assist communities in managing institutional change and the consequences of such change.

Key Concepts and Issues

- Social capital
- Process and criteria for establishing legally recognized structures and organizations within community forest regulations
- Types of rules in communities in relation to resource use, e.g., formal and non-formal rules
- Types of rules in community forestry, e.g., operational rules and how these interface with community forest governance.

Learning Milestones

Students will be able to …

- Gather information about the rules and (informal) governance systems operating in local communities.
- Enumerate the process for establishing community forest organizations that will be recognized by GoL.

7. Decentralization and devolution

<u>Learning Objectives</u>

- Understand community forestry as a political process in which control and rights of ownership over forest resources are devolved to local communities.

<u>Key Concepts and Issues</u>

- Role and responsibilities of forestry officers, advocacy groups, and community members in devolving governance powers in the context of community forestry

<u>Learning Milestones</u>

Students will be able to …

- Describe the provisions within Liberia's forestry policies and laws that allow for and enable decentralization and devolution.
- Explain the forest management functions that can and should be performed by devolved community organizations.

MODULE 8: ORGANIZATIONAL STRUCTURES OF THE FORESTER'S AGENCY: IMPACTS ON THE POTENTIAL OF COMMUNITY FORESTRY

This module introduces students to the organizational structures within which Liberian foresters work and the impacts of these structures on community forestry. Through this module, students will understand that a host of factors within bureaucratic organizations can impede the effectiveness of even the most well designed community forestry program. Institutional arrangements are shaped by a variety of local authorities, some of which have been created or given substantial new powers in the reform process but lack experience and clear accountability relations. The state often appears more concerned with establishing management regulations than with defending community rights; for their part, communities and their organizations must spend time and resources defending their rights from outside interests, rather than using these to strengthen local governance and forest management capacity. A series of numbered lecture outlines with Learning Objectives, Key Concepts, and Learning Milestones are detailed below.

1. **Identification and analysis of the types of organizational structures within which professional foresters must work**

Learning Objectives

- Identify and analyze the organizational structures within which a professional community forester and how these impact the lives of local forest users.

Key Concepts and Issues

- Factors that affect the professional's effectiveness
  → hierarchy and chain of command within FDA and between government agencies
  → information loops and feedback mechanisms
  → administrative bottlenecks
  → management style
  → staff initiative and commitment

Learning Milestones

Students will be able to …

- Outline the chain of command within the forest agency and the FDA and the manner in which inputs are integrated from the bottom to the top.
- Evaluate the chain of command between the FDA and other administrative bodies and the integration of inputs from outside of the agency to the inside.

2. **The impact and effects of institutional structures and conditions on the professional's effectiveness in community forestry activities**

Learning Objectives

- Discuss and illustrate how institutional structures in community forestry impact the ability of foresters to meet the needs of communities in forest resource use and management.
- Understand that the forestry sector is much broader than just FDA and includes the private sector, NGOs, civil society advocacy organizations, and agricultural producers, among others.

- Understand how statutory laws and customary laws regarding forests and land interact in Liberia.

<u>Key Concepts</u>

- Impacts of institutions and institutional incentives on professional foresters' work in community forestry initiatives
- Policy formulation and regulatory functions that should be performed by the government to create an enabling environment for community forestry
- Management styles and their impacts on staff initiative and commitment
- The forest management functions that can and should be performed by devolved community organizations

<u>Learning Milestones</u>

Students will be able to …

- Describe the organizational structure arrangements of the forester's agency.
- Describe the role of civil society and advocacy groups in community forestry.
- Discuss the balancing of goals and roles between the forest service agency, the Forestry Development Authority in Liberia, and the communities in the planning and implementation of community forestry activities.
- List organizational and structural elements that can be considered obstacles to the promotion of good forest governance at national, county, and local levels

CLASSROOM EXERCISE

The following questions on forest governance and the institutional context of community forestry can be used to generate dialogue or be incorporated into an assignment (take-home, group or individual).

- What are your opinions about the implementation of forest governance in your area?
- To what extent is the community/public is involved in decision making in your community.
- Do people have autonomy over their resources? Why? Why not?
- Do you know how men and women use the forest in your community? What are the differences?
- How does good forest governance help to empower your community economically?
- How does weak forest governance contribute to increased poverty in your community?

MODULE 9: CONSIDERING LOCAL LAND AND RESOURCE TENURE CONSTRAINTS IN PLANNING AND IMPLEMENTATION

1. Identifying and ensuring local claims to forest lands

Learning Objectives

- Understand existing forest uses and claims by local communities, specifically cultural customs and existing practices related to forest resource use.
- Learn how to identify and clarify the location and boundaries of local communities and their forests.
- Learn how to identify and clarify the location of forests under the jurisdiction of government agencies.
- Learn how to identify and clarify the location and boundaries of forest concessions.

Key Concepts and Issues

- How local claims can be reinforced by the community and forest agencies
- Legal mechanisms within Liberia's community forestry regulations that apply to local land and resource tenure
- Security of claim or tenure

Learning Milestones

Students will be able to ...

- Discuss threats to Liberian rural residents' claims to forest resources (e.g., outsiders' commercial claims).
- Describe the process of identifying and the location of and jurisdiction over forest resources in Liberia.

2. The critical need for the state to support tenure laws of community forestry with its own enforcement power

Learning Objectives

- Understand the existing policies and laws governing forest tenure in Liberia, including regulations that control forest industries.
- Understand the kinds of activities that are possible in a community forest given specific tenure constraints.
- Review case studies that illustrate the influence of different tenure arrangements on community forestry activities.

Key Concepts and Issues

- The various types of tenure situations that impact specific community forestry activities
- Relative costs of management/enforcement in community forestry versus other management systems

<u>Learning Milestones</u>

Students will be able to …

- Explain how insecurity of tenure affects community interest in investing in resource improvement and management.
- Describe different types of land and tree tenure laws and the rules of access or use as well as the sanctions that apply if these rules are broken.

MODULE 10: PLANNING FOR CONTINGENCIES – THE NEED FOR ALTERNATIVE STRATEGIES

It would be a mistake to assume that understanding the local ecosystem and social structure and eliciting local cooperation are sufficient for the success of a community forestry project. Uncontrollable outside events can easily ruin such an initiative. This module will illustrate how unforeseen events can affect activities and the need to prepare alternative strategies. A series of numbered lecture outlines with Learning Objectives, Key Concepts and Issues, and Learning Milestones are detailed below.

1. Taking initiatives to prepare alternative community forest management strategies

Learning Objectives

- Demonstrate how unforeseen events can affect community forestry activities.
- Recognize the need for development initiatives such as community forestry to prepare alternative strategies.
- Study potential contingencies and unforeseen events in community forestry through discussions of students' own experiences and case studies.

Key Concepts and Issues

- Flexibility in planning
- Adaptive management

Learning Milestones

Students will be able to …

- Outline and discuss the kinds of unforeseen events that affect community forestry and suggest the means to address them.
- Provide examples of real-life situations that impinge on the success of community forestry initiatives and approaches to overcoming the challenges they pose.

2. Obstacles to community forestry

Learning Objectives

- Identify and assess obstacles to successful community forestry outcomes.

Key Concepts
- Elite capture
- Conflict and conflict management: conflict early warning,
- Outside pressures (e.g., government takeover, extraction of NTFPs important to local communities)
- A 'community' may be poorly defined or heterogeneous, or increasing in size due to in-migration and high birthrates.
- The rewards from new plantations or rehabilitated secondary forests may seem too far away to be worth striving for.
- Community forests are often degraded due to past logging or agricultural activity.
- The community may not be interested in maintaining forest cover, preferring to clear it for agriculture or to make money.

- Communities may lack the technical skill to manage the existing forest or to plant new ones.
- Communities may not have sufficient capital to establish viable processing facilities.
- Participatory decision-making can be cumbersome and unwieldy.
- Outside agencies may have particular outcomes in mind, which are not necessarily in tune with the wants and needs of the community in question

Key Concepts and Issues

- Typical barriers to successful community forestry such as …
  → lack of legal rights and recourse
  → the failure of the state to define the tenure rights (i.e., tenure ambiguity and lack of security)
  → factions within communities
  → conflicts with other resource claimants
  → weak village institutions
  → models for benefit sharing that are not equitable
  → lack of effective conflict management
  → poor markets, lack of market information, and high transport costs
  → competing land uses that have higher potential for revenue generation
  → limited experience and technical knowhow with different models of community forestry

Learning Milestones

Students will be able to …

- Understand that the concept of community forestry on degraded or logged-over land may be acceptable to powerful interests, but it may not have the same level of appeal when applied to primary forests.
- Describe the fact that there are often uncertainties about the way to integrate community forestry with current land use designations.
- Recognize that remote areas are difficult to survey.
- Understand that community forestry is difficult to scale up and that the development of community forestry is labor intensive for the forestry service.