



Department of Environment and Natural Resources
FOREST MANAGEMENT BUREAU

International Tropical Timber Organization



MANUAL ON AUDITING Sustainable Forest Management using the Philippine Criteria and Indicators

**"Adoption and Implementation of an Appropriate System
of Criteria and Indicators for the Philippines"**

ITTO Project PD 225/03 REV. 1 (F)

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MANUAL ON AUDITING SUSTAINABLE FOREST MANAGEMENT USING THE PHILIPPINE CRITERIA AND INDICATORS

1. INTRODUCTION

The Philippines considers Sustainable Forest Management as the main policy thrust to guarantee the long-term stability of its forest resources. The policy on SFM is largely attributable to the implementation of measures embodied in the 1987 Constitution; the Philippine Strategy for Sustainable Development and Philippine Agenda 21; the Master Plan for Forestry Development; and the adoption of the community-based forest management and watershed/ecosystem approaches as the main strategies for SFM. These key measures are supported by various policy and institutional reforms embodied in the major forestry programs and projects supported by multi-lateral and bilateral funding institutions.

To assess the current state of SFM in the Philippines, it is necessary to have a full understanding of the various components of SFM and their impacts on forest resources and ecosystems. These require a system of measurable criteria and indicators to evaluate the changes and conditions and management systems at national and forest management unit levels like timber concessions, industrial forest management areas, and community based forest management areas. In this context, the DENR through the FMB is implementing the Project "PD 225/03 Rev. 1 (F)" funded by the International Tropical Timber Organization. The project aims to adopt and implement an appropriate system of criteria and indicators based on the ITTO model. The adopted C and I will be applied as management tools for reporting progress towards SFM and enhancing capability of FMU's in managing their forest resources on a sustainable basis.

The Philippine C and I system, developed under a Pre-project [PPD 29 /01 Rev. 1 (F)] also supported by the ITTO, was pre-tested in selected FMUs in the country and presented in a series of consultations and discussions with forest managers, non-governmental organizations, academic institutions, peoples' organizations, other government agencies, and other civic society groups. The system will be used for national and FMU levels of reporting progress to SFM, identification of key factors hampering advancement, and proposing remedial measures to achieve goals and targets on SFM and Objective 2000. It was adopted in principle for implementation during a high-level meeting of DENR and other agencies' top officials held last November 2004.

A major objective of the on-going ITTO-FMB project aside from adoption of the C and I system is the formulation and implementation of an appropriate audit system for the country using the C and I for SFM resulting from the pre-project. The system will be meaningless if not applied along with auditing of the adopted C and I to be used by various FMUs including CBFM areas as a tool for SFM reporting, control, verification, and monitoring.

The manual is designed to provide guidelines and procedures for implementing an appropriate Philippine audit system for C and I with focus on internal audit for SFM performance at the FMU level. The main implementation framework includes what should be audited (C and I and their verifiers / norms), who should audit and be audited, the methods to be used, the frequency of audit for the agencies auditing or certifying,

and the means to verify the results of assessments. While the goal is for SFM auditing, the audit system should be able to link with future timber certification scheme to be developed for the country.

2. ITTO / PHILIPPINE CRITERIA AND INDICATORS

2.1 ITTO

ITTO is a pioneer in the development of criteria and indicators for SFM. It formulated an innovative forest management tool, one of the on-going 9 global processes, applicable mainly to Tropical forests. ITTO's Criteria and Indicators were originally formulated in 1991 as part of the Organization's pioneering policy work. The ITTO C&I were revised in 1998 to take account the numerous developments in ITTO and internationally after UNCED in 1992, including publication of a suite of related policy guidelines by ITTO and the development of parallel C&I processes for temperate and boreal forests.

Since 1998, ITTO has embarked on an unprecedented initiative to provide training to countries on the use of the C&I for monitoring, assessing and reporting on forest management, with the overall objective of promoting wide-scale implementation of the C&I in producer member countries. These countries now report to the Organization on the status of their forest management using the C&I via Reporting Formats (at the national and forest management unit – FMU – levels) developed and approved in 2001. ITTO's experiences in C&I training and reporting have provided valuable insights into the use of this tool. ITTO has also co-sponsored, with FAO and others, a series of international expert meetings on C&I to help to foster their uptake at a global level. In 2003, the International Tropical Timber Council [ITTC Decision (XXXVII)/17], taking into account all of these developments, decided to undertake further revisions of the ITTO Criteria and Indicators and Reporting Formats, simplifying the system and retaining the seven criteria with some modified language and the indicators were reduced from 63 to 56 and the reporting requirements from 89 to 56. These new C&I system was adopted by the 37th Session of the ITTC held last December 13-18, 2004 in Yokohama.

The purpose of ITTO's Criteria and Indicators is to provide member countries with an improved tool for assessing and reporting on changes and trends in forest conditions and management systems at the national and forest management unit levels. By identifying the main elements of sustainable forest management, the criteria and indicators provide a means of assessing progress towards sustainable forest management and the ITTO Year 2000 Objective: "to enhance the capacity of members to implement a strategy for achieving exports of tropical timber and timber products from sustainably managed sources...".

The information generated through using these Criteria and Indicators in assessing the state of the forest will help communicate the status of efforts towards sustainable forest management more effectively. It will also assist in developing strategies for sustainable forest management, in focusing research efforts where knowledge is still deficient, and in identifying weaknesses.

When the indicators are made operational a sound basis would be created for measuring sustainable forest management. The ITTO Criteria and Indicators should serve as a framework within which each country can develop its own system for determining sustainability at the national and forest management unit level.

While the overall sustainability of the management of a nation's forests depends substantially upon actions taken at the national level (such as decisions on the balance of land use between forestry and other land uses and, within forestry, between production, conservation and protection), analysis at the forest management unit level is the key to monitoring and assessing sustainable forest management. Analysis at the national level for many indicators is carried out by aggregating the results of FMU level indicators. The wide variability of size and administrative/ownership structures of forest management units means that the level and nature of aggregation required will vary greatly between countries.

All the criteria are valid at both the national level and the level of the forest management unit. In the case of the indicators, some do not apply at the FMU level.

The Criteria

A criterion is defined as an aspect that is considered important by which sustainable forest management may be assessed. A criterion is accompanied by a set of related indicators. A criterion describes a state or situation which should be met to comply with sustainable forest management.

Seven criteria are identified as essential elements of sustainable forest management. Criterion 1, ***Enabling Conditions for Sustainable Forest Management***, is concerned with the general legal, economic and institutional framework without which actions included under the other criteria will not succeed. Criteria 2 and 3 on ***Extent and Condition of Forests*** and ***Forest Ecosystem Health***, respectively, are concerned with the quantity, security and quality of forest resources. The remaining four criteria deal with the various goods and services provided by the forest, including ***Forest Production, Biological Diversity, Soil and Water Protection*** and ***Economic, Social, and Cultural Aspects***. The order of presentation of the criteria represents a logical sequence but does not indicate priority or relative importance. They correspond closely with a global set of "common thematic areas" of SFM that were internationally agreed in 2004.

The Indicators

An indicator is defined as a quantitative, qualitative or descriptive attribute that, when periodically measured or monitored, indicates the direction of change.

The indicators identify the information needed to monitor change, both in the forest itself (outcome indicators) and in the environmental and forest management systems used (input and process indicators). If the values of any indicator are placed in a time sequence, they provide information on the direction of change, either towards or away from sustainable forest management. The indicators cannot, however, by themselves, establish *whether* management is or is not sustainable.

The indicators have been carefully identified and formulated so that a change in any one of them would give information that is both necessary and significant in assessing progress towards sustainable forest management. They have also been defined so that they are clear, practical and easy to monitor, and based as far as possible on available knowledge and statistics. It should, therefore, be possible for countries to provide information on many of them.

Countries face a considerable burden in reporting to different international organizations. This load can be eased by ensuring that the nature of the data requested is as similar as possible. Indicators have, therefore, been chosen so as to be compatible with internationally agreed standards and definitions, as far as possible.

If the indicators are to give an accurate picture of trends, it is important that comparable methods are used between one assessment and the next; and that there should be a means of estimating the degree of accuracy of any data presented. Ideally, countries should use the same methods of measurement and assessment over time. However, data collection and analysis techniques are dynamic. Countries should in each report, therefore, give a description of the methods used and an estimate of the accuracy of their figures and any difficulties encountered in their collection.

2.2 PHILIPPINE C&I SYSTEM

The Philippines' C&I system is a systematic adaptation of the ITTO model refined under the country's forestry situation. The criteria and indicators in the country's context are a product of consultations amongst relevant government agencies and forest stakeholders.

The Purpose of the Philippine Set of Criteria and Indicators is to provide the government thru DENR and Forest Managers within the country an improved tool for assessing changes and trends in forest conditions and forest management systems. The criteria and indicators will also provide means of assessing progress towards the attainment of the objective set under Executive Order 318 otherwise known as "Promoting Sustainable Forest Management in the Philippines" and towards to the commitment to ITTO Year 2000 Objective.

Using the criteria and indicators as management tools will provide the forest managers a framework for understanding, planning and implementing improved forest management technique. They will have or enhanced capacity to comprehensively assess the situations of their forest management units whether they are moving towards or away sustainable forest management. This will also help policy and decision makers in developing policies and necessary actions to further strengthen SFM, focusing on aspects where knowledge is still deficient, and in identifying those areas which are in need of assistance.

When the indicators are made operational and appropriate prescriptions and standards are set, a sound basis would be created for measuring sustainable forest management. The indicators identified for the country were thoroughly assessed through a series of consultations with different stakeholders and forest managers to see to it that the identified indicators fit the forestry situation in the Philippines.

Philippine Criteria

The criteria identified by ITTO were adopted as elements of sustainable forest management in the Philippines. Every criterion was accompanied with a full meaning and description as to what this particular criterion pertains.

Criterion 1, *Enabling Conditions for Sustainable Forest Management*, covers the general institutional requirements for sustainable forest management to succeed. Criterion 2, *Extent and Condition of Forests*, deals with Forest Resource Security relates to the extent to which the Philippines has a secure and stable forest state to meet the production, protection, and other social, cultural, economic and environmental needs of the present and future generations. Criterion 3, *Forest Ecosystem Health*, relates to the condition of the country's forests and the healthy biological functioning of its forest ecosystem and it deals with the forest conditions and health as affected by a variety of human actions and natural causes. Criterion 4, *Forest Production*, deals with the production of wood and non-wood forest products

with perceptions that production can only be sustained in the long-term if it is economically and financially viable, environmentally sound and socially acceptable. Criterion 5, *Biological Diversity*, relates to the conservation and maintenance of biological functioning of the forests. Criterion 6, *Soil and Water Protection*, this criterion deals with the protection of soil and water in the forest and Criterion 7, *Economic, Social, and Cultural Aspects*, relates to the economic, social, and cultural function of the forest.

Philippine Indicators

The indicators have been carefully and comprehensively assessed and identified through a series of consultations with the different stakeholders to fit in the situation of the Philippine forestry setting.

Criterion 1 has a total of eleven (11) indicators and mainly descriptive in nature. Criterion 2 is composed of Six (6) indicators. In Criterion 3, there are two (2) indicators identified. Criterion 4 has a total of twelve (12) indicators that were designed relate to the flow of forest produce. There are a total of seven (7) indicators that were identified in Criterion 5. Criterion 6 is composed of five (5) indicators and a total of fourteen (14) indicators identified for Criterion 7. A total of 57 indicators compose the Philippine C and I. These are all applicable at the national level. At the FMU level 52 indicators are considered appropriate for the Philippine forestry situation.

The Philippine C&I system, adjusted based on simplified ITTO model per ITTC decision during its 37th Session, is shown in **ANNEX 2**. This will be used to update the March 2003 Philippine C&I Baseline Report for SFM and pilot tested for FMU reporting.

3. AUDITING SYSTEM FOR SFM

3.1 FOREST AUDITING

Auditing is defined as a systematic, documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified activities, events, conditions, management systems, or information about these matters conform with audit criteria (modified from EN ISO 14010). Thus, forest audit simply means the examination of existing evidences and data on various aspects of SFM to determine if they comply with required audit norms.

Audit criteria are policies, practices, procedures or requirements against which the auditor compares collected audit evidence about the subject matter. In forestry, the audit criteria are typically requirements related to forest management performance (in terms of inputs or outputs), or the characteristics of the management system in place (e.g. the minimum requirements of forest management plan). *Requirements* are the compulsory elements of the criteria.

The general definition of audit criteria can be applied to SFM within the context of a specific hierarchical framework developed for this purpose by Lammerts van Bueren & Blom (1997). In the context of certification of SFM, the chosen set of principles, criteria, indicators and verifiers represent the *certification standard*.

Hierarchical Framework for the Application of SFM Audit Criteria

- A *Goal* is an overall objective for a standard, e.g. sustainable forest management (SFM) or well managed forests.
- A *Principle* is a fundamental law or rule, serving as a basis for reasoning and action. Principles have the character of an objective or attitude concerning the function of the forest ecosystem or a relevant aspect of the social system that interacts with the ecosystem. Principles are explicit elements of a goal.
- A *Criterion* is a state or aspect of the forest ecosystem, or a state of the social system, which should be in place as a result of adherence to a principle. Criterion states the requirement against which conformity assessment is made. The criterion may demand for a specific level of performance (performance criterion) or state requirements on management system (management system criterion).
- An *Indicator* is a quantitative or qualitative parameter, which can be assessed in relation to a criterion. It describes in an objectively verifiable and unambiguous way features of an ecosystem or the related social system, or it describes elements of prevailing policy and management conditions and human driven processes indicative of the state of the eco- and social system.
- A *Norm* is the reference value of the indicator and is established for use as a rule or a basis for comparison. By comparing the norm with the actual measured value; the result demonstrates the degree of fulfillment of a criterion and a compliance with a principle.
- A *Verifier* is the source of information for the indicator or for the reference value for the indicator.

Source: Lammerts van Bueren & Blom, 1997

Audit evidence is verifiable information, records or statements of fact. Audit evidence, which can be qualitative or quantitative, is used by the auditor to determine whether the audit criteria are met. Audit evidence is typically based on interviews, examination of documents, observation of activities and conditions, existing results of measurements and tests, or other means within the scope of the audit.

Means of verification suggest the type of objective evidence; documents, actions or discussions that the auditors should consider in order to verify that the criterion is being met.

Verifiers define the information and its source used in auditing. Verifiers may not necessarily be exclusive or exhaustive. Auditors will not always need to use all the verifiers suggested, and may seek verification in other ways.

Audit findings are results of the evaluation of the collected audit evidence compared with the agreed audit criteria. The audit findings provide the basis for the audit report.

Audit conclusion is a professional judgement or opinion expressed by an auditor about the subject matter of the audit, based on, and limited to, reasoning the auditor has applied to audit findings (EN ISO 14010).

Auditing can be internal or external. *Internal audit* is carried out by the organization itself, often through a unit which is independent from the line organization. Internal audit is aimed at verifying that operations are carried out according to the internal rules and defined standards, and to identify where corrective action is needed. Such audits are an important management tool for continual improvement.

External audit is typically carried out by an independent third party (e.g. certification or inspection body, registered auditor). External audits can be made against a common set of requirements (e.g. certification standard) or they can be *ad hoc* by nature against a set of specified requirements. In forestry, external audits are generally carried out by a third party. However, in some instances second-party audits or reviews have been carried out. In the absence of third-party certification, buyers of forest products who have wished to obtain assurances on the quality of forest management in the source of raw material supply of the purchased products through their own (second party) audits which have generally been less formal and comprehensive than third-party audits.

The above definitions do not cover all the terms used in the ITTO Members Countries in the context of auditing systems for SFM. In some national systems auxiliary or complementary terms have been introduced often depending on the level of details used in the definition of criteria and indicators. E.g. in Malaysia a concept of “activity” was introduced to interpret what action the achievement of an indicator would require in practice.

In most cases, the object of auditing is the forest management unit which may be a concession area or a permanent forest estate (PFE) managed by the forest authority / agency. The interpretation of FMU varies between countries due to local institutional conditions.

While some indicators of audit may refer to the entire FMU (e.g. existence and contents of forest management plan), the field audits often appear to focus on the annual harvesting area (coupe, periodic block, etc.). An individual stand (of planted forest) can also be the object of audit. In the Philippines community-based forest management agreements are identified as smaller units. Monitoring of forest management in these smaller forest estates represents an additional work load for forest authorities.

The audit criteria applied by forest authorities are derived from the legal requirements and prescribed management specifications. These tend to include verification of the logging volume or trees harvested, and specified post-harvest treatments.

3.2 AUDITING SFM

SFM as an Object of Auditing

The existing regional and national sets of *Criteria & Indicators (C&I) for SFM*, such as those of ITTO, have been developed from the policy point of view and their purpose is generally to identify relevant aspects to be covered at national and forest management unit (FMU) levels. The purpose has been to provide a tool for monitoring of progress in achieving the goal of SFM. Each country (and FMU) is expected to develop its own C&I for their specific ecological and socio-economic conditions.

The *implementation* of C&I for SFM represents a challenge for auditing for a number of reasons: (i) many “new” aspects of forest management need to be verified, as the C&I for SFM are comprehensive covering many aspects beyond the legal requirements; (ii) information on verifiers may not be readily available and the assessment may have to be more qualitative than quantitative due to the nature of indicators, or lack of baseline information; and (iii) broader than technical forestry skills are needed in the assessment of non-forestry criteria.

There is a significant variation among the *definitions* related to principles, criteria, indicators, verifiers and means of verification in the ITTO Member countries. A particular cause of concern is the often lacking hierarchical framework within which the different concepts can be logically related to each other.

Existing Auditing Systems of the Public Sector

The present forest management auditing systems of forest administrations in the ITTO producer Member countries tend to cover only partially the SFM elements and the forest management process. The relevance of auditing criteria can sometimes be questioned due to the fact that forest legislation is not always up-to-date. This can lead to ineffective use of scarce human and financial resources allocated for supervision and control. In some cases, strict adherence to verification of bureaucratic requirements and cumbersome procedures can easily lead to corruption rather than effective law enforcement.

In the Philippines, traditional forest audit by DENR – FMB conducted on tenured licensees in public forest lands e.g. TLA, IFMA, CBFMA etc. are mainly silvicultural in scope and covers the following norms for verification:

- Data and proposed activities of the management plan
- Logging area and volume/trees harvested
- Volume/trees remaining in the forest
- Post-harvest treatments
- Environmental impacts
- Social aspects

Internal and External Auditing

In forest management, both internal and external auditing can be applied. The purpose of internal auditing is to assist management in achieving the objectives set while external auditing ensures credibility of internal auditing work. Internal auditing is complementary to external auditing and, if well organized, reduces the costs of the latter. In public forestry, there is a growing tendency to outsourcing; this can be expected to include auditing services as well. However, external auditing for other than certification purposes has been rare at the moment.

Requirements for Reliable Auditing Systems

A number of requirements can be suggested for reliable auditing systems aimed at verifying sustainable forest management: (i) comprehensive in the coverage of auditing criteria, (ii) objective in assessment, (iii) repeatable and consistent in results, (iv) flexible to be applicable to different forest types and varying physical, social and economic conditions, (v) applicable at alternative levels, (vi) adapted to local institutional and organizational structures, and (vii) cost-efficient.

Elements of Reliable Auditing Systems for SFM

Essential elements of reliable auditing systems for SFM include:

- (i) A clear conceptual framework for the principles, criteria, indicators, verifiers and means of verification covering all the necessary aspects of SFM, within the framework of an internationally agreed set such as the ITTO C&I
- (ii) A guideline or manual for the implementation and application of audit criteria in practice
- (iii) An appropriate transparent scoring and weighting system to summarize the results of assessment on individual criteria and indicators; weights to be assigned can be derived from policy objectives and stakeholder views
- (iv) A comprehensive structured audit procedure tailored to local institutional and organizational structures
- (v) An adequate pool for competent auditors with specified qualifications and provisions to ensure that they are institutionally and economically independent from the auditees

3.3 PHILIPPINE AUDITING PROCEDURES

AUDITING FOR OVERALL SFM PERFORMANCE BY FMU

The Philippines' auditing system of SFM at the FMU level (TLA, IFMA, CBFMA, and other types of management units with tenure on public forest lands). The audit system is designed for the evaluation of performance and monitoring of FMUs towards achieving or making progress in SFM. It is an internal audit by independent forest auditors to assess SFM performance and to serve as management tool to FMU managers by providing remedial measures to indicators and criteria that fail in meeting norms for SFM.

The Philippine C&I system will be used for auditing SFM performance of the FMU. All 7 criteria and 51 indicators applicable to the country will be audited. Verifiers, means of verification, and norms have to be provided by the FMB-DENR as management and regulatory agency for SFM. The guide to auditing SFM at FMU level as depicted in ANNEX 3 indicate the criteria, indicators, verifiers, means of verification, and norms to be used in auditing.

The hierarchy of auditing framework at FMU level applicable to Philippine setting is as follows:

GOAL: Sustainable forest management at FMU level

PRINCIPLES:

PRINCIPLE 1

Institutional and policy framework support SFM.

PRINCIPLE 2

Allocate adequate forests for SFM.

PRINCIPLE 3

Control of human and natural forest disturbances.

PRINCIPLE 4

Sustainable forest harvest should be prescribed.

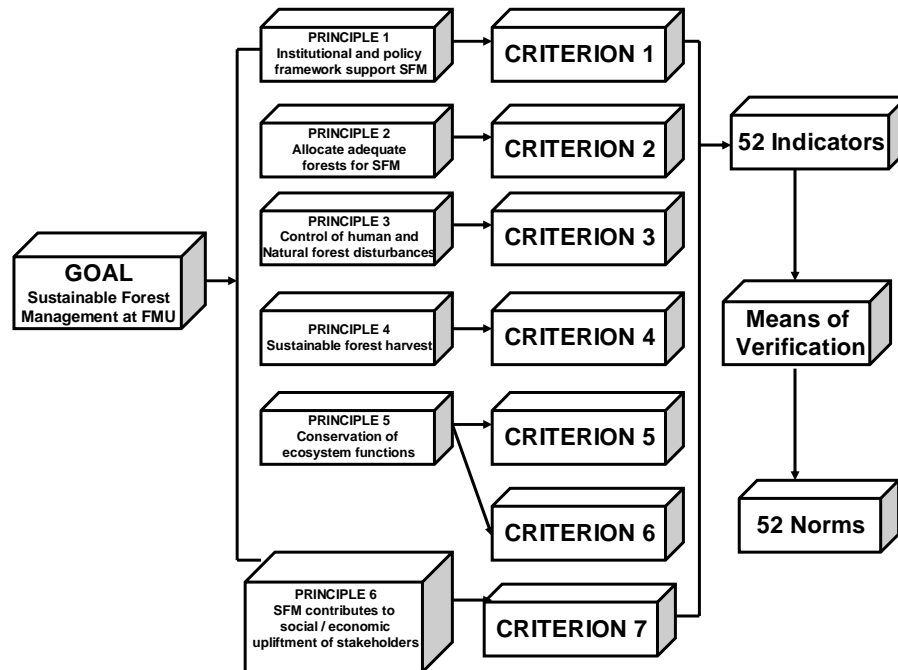
PRINCIPLE 5

Conservation of ecosystem functions must be maintained and enhanced.

PRINCIPLE 6

SFM should contribute to social / economic upliftment of stakeholders

FIGURE 1. HEIRARCHY OF C&I AUDITING ELEMENTS



The 6 principles appropriate for the country will maintain and enhance SFM in FMUs. They provide fundamental guidelines in achieving the goal towards SFM. The criteria, indicators, verifiers, means of verification, and norms are as reflected in ANNEX 3.

3.4 PROCEDURAL GUIDELINES FOR AUDITING SFM

The audit procedure includes the following main steps:

1. Preparatory audit activities which may include a scoping visit, analysis of available documentation of the FMU to be audited, and inception meetings with FMU management and stakeholders
2. Identify gaps on documentation
3. Main audit - data collection, field checks, interviews, assessment

Verification and assessment of compliance to measurable norms (qualitative and quantitative) of indicators and compiling for the 7 criteria will be done using a scoring system for degree of compliance or non-compliance with required procedures, documents, policies, or management prescriptions.

The norms are specific to each FMU situation and hence vary from different FMUs like annual allowable cut, silvicultural prescriptions, biodiversity and soil and water protection methods.

SCORING SYSTEM FOR C&I

Each indicator will have the following scores (compatible with SGS Forestry ; FSC-accredited certification body).

Full compliance with norm – 3 points
Partial compliance with minor corrective measures – 2 points
Partial compliance with major corrective measures – 1 point
Non-compliance – 0 point,

A maximum point per indicator is 3. The total maximum points for all 52 indicators of SFM are 156 broken down based on number of indicators per criteria as follows:

Criteria 1 – 30 points
Criteria 2 – 18
Criteria 3 – 6
Criteria 4 – 36
Criteria 5 – 15
Criteria 6 – 12
Criteria 7 – 39

The degree of compliance and non-compliance is left to the objective evaluation of the audit team.

4. Audit report on criteria and indicators and its review (by the audited, external peer review panel, etc.)

Based on scoring system, compile the points for each indicator per criteria. The FMU has to show compliance to SFM norms for all 7 criteria but may fail in compliance with certain specific indicators.

5. Performance evaluation report

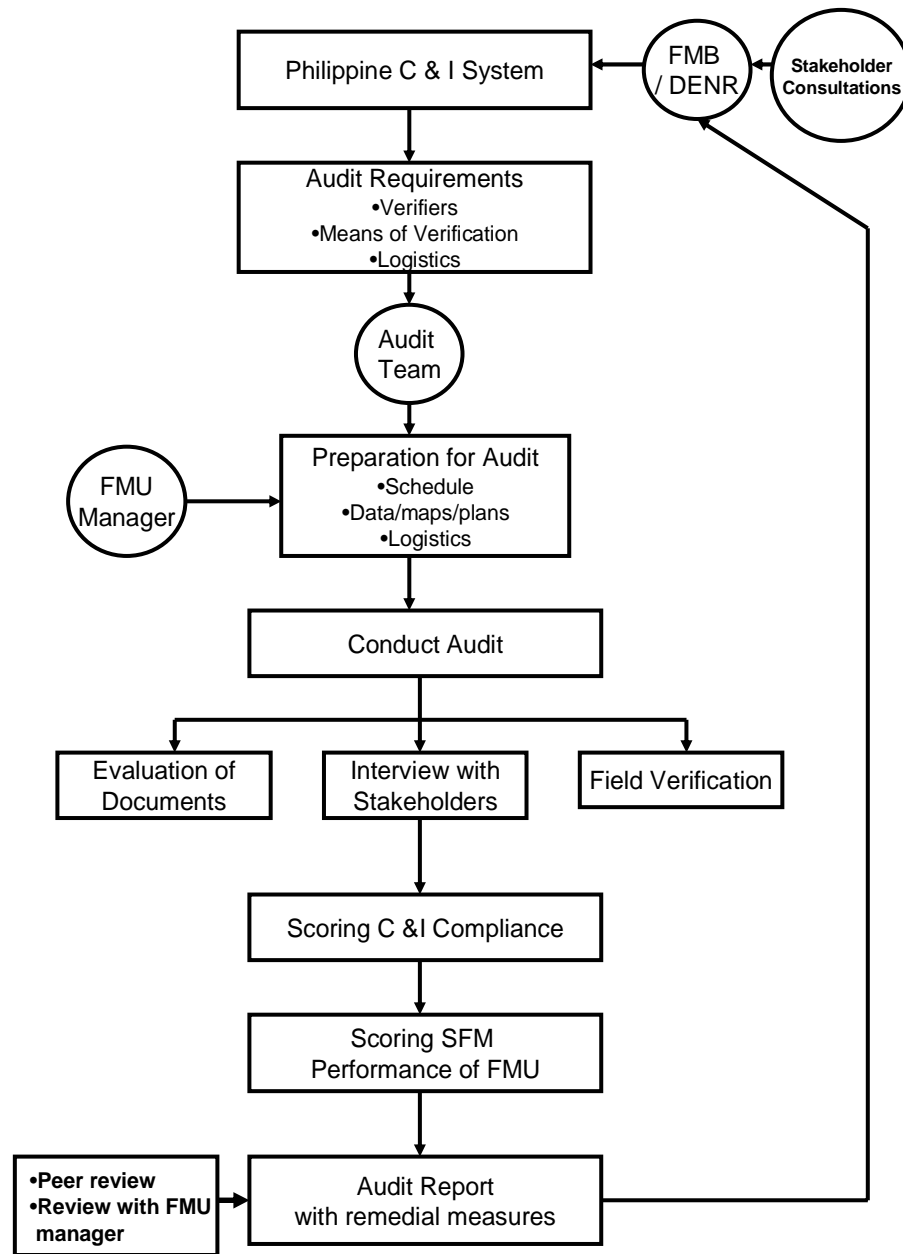
The aggregate score per criteria can be summed to indicate overall SFM performance of the FMU. The sum for all points per criteria will be added to evaluate the over-all FMU performance on SFM based on the following scores:

Good performance – 104-156
Poor performance – 51-103
Failure – 1-50

The threshold for each criterion is zero (non-compliance for all indicators within a criterion) and for indicators we use the 1-50 rating which is failure. Thus, to have an acceptable performance for SFM an FMU should not have a zero for total points in any of the criterion and must have a rating for all indicators above 50. These thresholds values should be adjusted with more stern rating for national and international certification for sustainable sources and all other aspects of the forest management custody chain.

The procedural framework for auditing the Philippine C&I system is shown below as Figure 2.

FIGURE 2. PROCEDURAL FRAMEWORK FOR AUDITING PHILIPPINE C&I



The Audit Form to be used is appended as ANNEX 4.

3.5 AUDITING SFM FOR SPECIFIC CRITERIA OR COMPONENTS

The Philippine audit system for SFM at FMU level can also be used to conduct performance evaluation for each of the specific criteria or combination of criteria as management tool to determine certain aspects of forest management system. Or a

particular forest management aspect can be selected and their applicable indicators verified for compliance to norms. The applicable scores per indicator depicted in ANNEX 3 can be used to compile scores and can be aggregated for performance pertaining to the specified forest management aspect.

For example in auditing forest management planning the following indicators, as determined by the Audit Team are applicable and their hypothetical scores:

AUDIT OBJECTIVE	APPLICABLE INDICATORS (9 of 51)	SCORES Verification of Norms (Maximum 3)
Forest management planning	Indicator 1.9 Capacity and mechanisms for planning sustainable forest management and for periodic monitoring, evaluation and feed-back on progress	2
	Indicator 1.10 Public participation in forest management planning, decision making, data collection, monitoring and assessment	3
	Indicator 1.11 Existence of forest management plans.	3
	Indicator 2.1 Extent (area) and percentage of total land area under comprehensive land-use plans.	2
	Indicator 4.5 Existence and implementation of: (a)Forest harvesting/operational plans (within forest management plans); and (b)Other harvesting permits (small, medium and large scale permits without forest management plans).	3
	Indicator 4.8 Long-term projections, strategies and plans for forest production.	3
	Indicator 6.1 Extent and percentage of total forest area managed exclusively for the protection of soil and water.	1
	Indicator 7.13 Extent to which indigenous knowledge is used in forest management planning and implementation	1
	Indicator 7.14 Extent of involvement of indigenous people, local communities and other	2

	forest dwellers in forest management capacity building, consultation processes, decision-making and implementation.	
	TOTAL SCORE INDICATORS	20

From the above example, the maximum points for 9 indicators is 27 and the FMU can be rated as poor performance with total of 20 points when compared to maximum. Indicators 6.1 and 7.13 have partial compliance with norms that will require major corrective measures.

4. AUDIT FINDINGS

The results of auditing SFM performance at FMU level will be presented in an audit report with the following indicative format:

FORMAT FOR AUDIT REPORT

SECTIONS	CONTENTS
1. Executive Summary	Brief statement on audit results and performance evaluation
2. Introduction	<ul style="list-style-type: none"> • FMU (name, location, size, tenure) • Audit team • Date and duration of assessment
3. Methods for auditing	<ul style="list-style-type: none"> • Review of documents • Interviews with agencies and stakeholders • Field verification of compliance
4. Results of assessment	<ul style="list-style-type: none"> • Summary of scoring for criteria and indicators • Final grading results for SFM performance
5. Summary of observations	<ul style="list-style-type: none"> • Management aspects which meet the desired norms • Management aspects which do not meet the desired norms
6. Recommendations for improvement of sustainable forest management	<ul style="list-style-type: none"> • Recommendations for improving existing mode of operational procedures for the 7 criteria and specific indicators • Proposed remedial measures for indicator score with partial compliance with major corrective measures
7. Conclusion	<ul style="list-style-type: none"> • Concluding summary statement

5. AUDIT TEAM

Auditing SFM at FMU level using the Philippine criteria and indicator system is the basic responsibility of the DENR as part of its regulatory and developmental functions in forest management. It can deploy a 5 man team from the FMB and field operations (multi-disciplinary) to act as internal auditors for each FMU.

The composition and basic requirements for the DENR audit team should be flexible enough to accommodate evaluation need of specific FMUs. For example for TLAs and IFMAs we can add an ecosystem research, plantation or protected area specialists and for CBM areas a community forester.

The composition and basic requirements for the team members are as follows:

LEAD AUDITOR

- B.S. or M.S. in Forestry
- At least 10 years experience in forestry particularly forest management
- Currently in supervisory position
- Adequate knowledge of criteria and indicators
- Training on auditing SFM
- Independent
- Local knowledge and language

FOREST AUDITORS (2 members)

- B.S. or M.S. in Forestry
- At least 5 years experience in forestry particularly forest management, operations, or forest policy
- Adequate knowledge of criteria and indicators
- Training on auditing SFM
- Independent
- Local knowledge and language

SOCIO-ECONOMIST

- B.S. or M.S. in Sociology or Economics
- At least 5 years experience in community – based forestry or socio-economics aspects of forest management
- Adequate knowledge of criteria and indicators
- Training on auditing SFM
- Independent
- Local knowledge and language

BIODIVERSITY CUM ENVIRONMENTAL FORESTER

- B.S. or M.S. in Forestry, Environmental Science, or Biology or related fields
- At least 5 years experience in environmental aspects of forest management
- Adequate knowledge of criteria and indicators
- Training on auditing SFM
- Independent
- Local knowledge and language

ANNEX 1. DEFINITION OF TERMS

CRITERIA AND INDICATORS

Biological Diversity

The variability among living organisms from all sources including, i.e., terrestrial, marine and aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Criterion

An aspect that is considered important by which sustainable forest management may be assessed. A criterion is accompanied by a set of related indicators. (ITTO 1992)

Economic Instruments

These are interventions designed to influence the behavior of those who highly regard the natural environment, utilize it or cause adverse impacts as a side effect of their activities e.g. user's fee, forest charges, performance bonds, user's right etc. (ENRA)

Encroachment

The act or action of using forest land contrary to the provisions provided for in forestry laws and regulations with regard to forest land uses.

Endangered species

Species or subspecies that is not critically endangered but whose survival in the wild is unlikely if the causal factors continue.

Forest Management Unit

A clearly defined forest area, managed under a set of objectives and according to a long-term management plan.

Forest Type

A community of generally similar tree species composition, structure and function.

Forest workers

A person engaged or employed to do forest work and includes a person engaged under a contract who supplies equipment or employs others to do forest work. (<http://www.bcli.org>)

Indicator

A quantitative, qualitative or descriptive attribute that, when periodically measured or monitored, indicates the direction of change.

Natural Forest

Forests composed of indigenous trees, not planted by man.

Non-wood forest products

These are classified and referred to as minor forest products or all other forest products except timber, pulpwood and chipwood. These includes firewood, charcoal, rattan,

bamboo, daluru, bark resin, gum, wood oil, beeswax, nipa, buri, fibre, dyewood, vine, flowering plants, ferns, orchids and other forest growth. ([http:// www.fao.org](http://www.fao.org))

Permanent Forest Estate

Land, whether public or private, secured by law and kept under permanent forest cover. This includes land for the production of timber and other forest products, for the protection of soil and water, and for the conservation of biological diversity, as well as land intended to fulfill a combination of these functions.

Plantation Forest

Forest stands established by planting or/and seeding in the process of afforestation or reforestation.

Protection Forest

An area wholly or partly covered with woody vegetations, managed primarily for its beneficial effects on water, climate, soil, aesthetic value and preservation of genetic diversity.

Rare species

Species with small populations which could be threatened if the environment worsens.

Sustainable Forest Management

Sustainable forest management is the process of managing forest to achieve one or more clearly specified objectives of management with regard to production of a continuous flow of desired forest products and services without undue reduction of its inherent values and future productivity and without undue undesirable effects on the physical and social environment.

Threatened species

General term to denote species or subspecies considered as critically endangered, vulnerable or other accepted categories of wildlife whose population is at risk of extinction.

FOREST AUDITING

Auditing

A systematic, documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified activities, events, conditions, management systems, or information about these matters conform with audit criteria (modified from EN ISO 14010). Thus, forest audit simply means the examination of existing evidences and data on various aspects of SFM to determine if they comply with required audit norms.

Audit criteria

Policies, practices, procedures or requirements against which the auditor compares collected audit evidence about the subject matter. In forestry, the audit criteria are typically requirements related to forest management performance (in terms of inputs or outputs), or the characteristics of the management system in place (e.g. the minimum requirements of forest management plan). *Requirements* are the compulsory elements of the criteria.

Audit evidence

Verifiable information, records or statements of fact. Audit evidence, which can be qualitative or quantitative, is used by the auditor to determine whether the audit criteria are met. Audit evidence is typically based on interviews, examination of documents, observation of activities and conditions, existing results of measurements and tests, or other means within the scope of the audit.

Audit findings

Results of the evaluation of the collected audit evidence compared with the agreed audit criteria. The audit findings provide the basis for the audit report.

Goal

Overall objective for a standard, e.g. sustainable forest management (SFM) or well managed forests.

Means of verification

Suggest the type of objective evidence; documents, actions or discussions that the auditors should consider in order to verify that the criterion is being met.

Norm

The reference value of the indicator and is established for use as a rule or a basis for comparison. By comparing the norm with the actual measured value; the result demonstrates the degree of fulfillment of a criterion and a compliance with a principle.

Principle

A fundamental law or rule, serving as a basis for reasoning and action. Principles have the character of an objective or attitude concerning the function of the forest ecosystem or a relevant aspect of the social system that interacts with the ecosystem. Principles are explicit elements of a goal.

Verifier

The source of information for the indicator or for the reference value for the indicator.

ANNEX 2. PHILIPPINE CRITERIA AND INDICATORS

Criterion 1: Enabling Conditions for Sustainable Forest Management

This criterion addresses the general institutional requirements that are necessary to make sustainable forest management possible. Most of related indicators cover the legal, policy and institutional frameworks and are mainly descriptive in nature. Taken together, the information gathered indicates the extent of a country's political commitment to sustainable forest management.

Policy, legal and governance framework

To ensure sustainable forest management, it is important that the forest resources, especially the permanent forest estate, are secured and protected and that they are managed in accordance with best management practices involving all stakeholders, in particular local communities who are dependent on the forest.

Indicator 1.1

Existence and implementation of policies, laws and regulations to govern forest management.

- (a) national objectives for forest including production, conservation, protection and investment
- (b) the establishment and security of the permanent forest estate
- (c) forest tenure and property rights in relation to forests
- (d) the participation of local communities and other stakeholders in forest management
- (e) the control of illegal activities in forest areas
- (f) the control of forest management
- (g) the health and safety of forest workers

Table 1.1 Presence (+) or absence (-) of laws, policies and regulations

	Laws	Policies	Regulations
national objectives for forest including production, conservation, protection and investment			
the establishment and security of the permanent forest estate			
forest tenure and property rights in relation to forests			
the participation of local communities and other stakeholders in forest management			
the control of illegal activities in forest area			
the control of forest management			
the health and safety of forest workers			

NOTE:

- List all relevant laws, policies and regulations.

- For each of the laws, policies and regulations, give a brief description of any sections that are significant in relation to the categories (a) to (g).
- List any significant gaps in the coverage of laws, policies and regulations and indicate how it is proposed that these gaps will be filled.
- List any significant changes that have been made to the laws, policies and regulations listed in your first or most recent report and give the date of each change

Indicator 1.2

Forest tenure and ownership

Table 1.2 Extent of forest tenure and ownership of forests

Type of Forest Tenure	Class	Area (ha)

NOTE:

- Specify tenure and ownership situation according to the country's laws.

Economic framework

One of the most important requirements for sustainable forest management to succeed is the availability of financial resources, as well as the provision of incentives and appropriate economic instruments that promote and support sustainable forest management.

Indicator 1.3

Amount of funding in forest management, administration, research, and human resource development

Table 1.3 Amount of funding for the latest available year

Source	Year	Funding (US Dollar)	Comments
Government sources - national government - sub- national government			
International development partners - grant - loan			
Private sources - domestic - foreign			

NOTE:

- Provide exchange rate if reported in national currency.
- Indicate if funding is annual or multi-year budget.

Indicator 1.4

Existence and implementation of economic instruments and other incentives to encourage sustainable forest management

NOTE:

- Are economic instruments and other incentives being implemented to encourage sustainable forest management?
- If yes, give name of each economic instrument/incentive, a short description and explanation of how it is used and the main institution(s) responsible for its implementation.

Institutional framework

Besides the availability of financial resources, there must be adequate institutions and personnel to undertake sustainable forest management. These include effective implementing agencies, research institutions and appropriately trained personnel to ensure that management is in accordance with scientific and technical knowledge.

Indicator 1.5

The structure and staffing of institutions responsible for sustainable forest management

Table 1.5 Institutions responsible for SFM

Name	Nature of Responsibilities	Staff (Number)	Contact (Website)
Primary ministry in charge - - -			
Other institutions - - -			

Indicator 1.6

Number of professional and technical personnel at all levels to perform and support forest management

Table 1.6 Personnel implementing and supporting forest management

Category of personnel	Number
<i>Governmental</i> Professionals (university or technical qualification) Trained forest workers, full and part time Others	

SUB-TOTAL	
Non-Governmental	
Professionals (university or technical qualification)	
Trained forest workers, full and part time	
Others	
SUB-TOTAL	
TOTAL	

Indicator 1.7

Existence of communication strategies and feedback mechanism to increase awareness about SFM

Indicator 1.8

Existence of, and ability to apply, appropriate technology to practise sustainable forest management and the efficient utilisation and marketing of forest products

NOTE:

- Describe any technology (especially forest engineering and harvesting technology) used to enhance SFM and the effects of using such technology.
- Describe any recent changes in the technology used.
- Are any improvements proposed?
- Are there any constraints to introducing improvement?

Planning framework

Adequate planning, the use of proper technologies and effective monitoring and control are essential to achieve sustainable forest management.

Indicator 1.9

Capacity and mechanisms for planning sustainable forest management and for periodic monitoring, evaluation and feed-back on progress

NOTE:

- Describe the mechanisms used for planning SFM (including periodic monitoring, evaluation and feed-back on progress).
- Describe the capacity available and institutions responsible for these purposes.
- List the major constraints encountered in planning

Indicator 1.10

Public participation in forest management planning, decision making, data collection, monitoring and assessment

NOTE:

- List the institutions responsible for these processes.
- Describe the processes of public participation, indicating the parties involved and their level of involvement.
- Are any improvements proposed, and are there constraints for their introduction?

Indicator 1.11

Existence of forest management plans.

Table 1.11 Existence of forest management plans.

	Number of management plans	Area (ha)
<u>PFE</u>		
Production forests		
Protected forests		
<u>Non-FPE</u>		
Production forests		
Protected forests		

NOTE:

- Describe the effectiveness of implementation of forest management plans.
- Are any improvements proposed, and are there constraints for their introduction?

Criterion 2: Extent and Condition of Forests

Sustainable forest management is a long-term enterprise and depends critically upon the stability and security of a nation's forest estate. Hence, this criterion lays the basic foundation for sustainable forest management within production and protection forests. It considers the extent and percentage of land under natural and planted forests, the needs for the conservation of biological diversity through the maintenance of a range of forest types and the integrity and condition of forest resources.

Description of resource base

An overall land-use plan is important to ensure sustainable forest management, especially of the permanent forest estate, in relation to other sectors of the economy. In this context, the external boundaries of the permanent forest estate should be clearly demarcated and changes in their extent should be regularly monitored.

Indicator 2.1

Extent (area) and percentage of total land area under comprehensive land-use plans.

NOTE:

- Provide the area (1000 ha) and percentage of total land area under comprehensive land-use plans.

Indicator 2.2

Extent of forests committed to production and protection:

Table 2.2 Extent of Forest Cover

Land Cover/Land-use	Natural		Plantation		Total Area	Percentage of Total Land Area+
	Ha	%	ha	%	ha	%
PUBLIC FOREST LAND						
PRODUCTION FOREST						
PROTECTION FOREST						
Sub-Total						
A & D LANDS						
PRODUCTION						
PROTECTION						
Sub-Total						
TOTAL						

+ Refers to total land area of the Forest Management Unit, excluding inland water bodies and A&D.

Indicator 2.3

Extent (area) and percentage of total land area under each forest type.

Table 8: Area and percentage of total land area under each forest type

Forest Type	PFE (ha)	Non-PFE (ha)	Total (ha)

NOTE:

- Describe the forest type classification used.
- Classifications of forest types based on species composition, if available, are more useful than those based on forest structure.

Indicator 2.4

Percentage of PFE with boundaries physically demarcated.

Table 2.4 External limits of the permanent forest estate

PFE Class	Area (Ha)	Percentage Demarcated (%)	Comments on effectiveness of demarcation
Production			
Protection			

Indicator 2.5

Changes in forested area

Table 2.5 Changes in Forested Area

Area	Description	Permanent Forest Estate (ha)	Non-PFE (ha)
Area at last reporting (give date)			
Area formally converted to agriculture			

Area formally converted for settlements and infrastructure development			
Area formally converted for other purposes (please specify)			
Area formally added			
Area converted illegally (estimate)			

NOTE:

- Periods for which changes are reported should correspond to reporting intervals. For the first report provide details of periods corresponding for all data.

Indicator 2.6

Forest Condition

Table 2.6 Forest Condition

Area	PFE (ha)	Non-PFE (ha)
Area of primary forest		
Managed primary forest		
Area of degraded primary forest		
Area of secondary forest		
Area of degraded forest lands		

Criterion 3: Forest Ecosystem Health

This criterion relates to healthy biological functioning of forest ecosystems. This can be affected by a variety of human actions such as encroachment, illegal harvesting, human induced fire and pollution, grazing, mining, poaching, etc. and natural phenomena such as fire, insect attacks, diseases and climate change related events such as severe wind and rainfalls, flooding, drought, etc.

Indicator 3.1

The extent and nature of forest encroachment, degradation, and disturbance caused by humans and the control procedures applied

Table 3.1 The five human activities most damaging to the PFE and Non-PFE

5 major activities	Area affected (ha)	Control procedures	Area of control (ha)	Estimated effectiveness

NOTE:

- Indicate institutions responsible for implementing control procedures.
- List constraints in implementing control procedures and any proposed improvements.

Indicator 3.2

The extent and nature of forest degradation, and disturbance due to natural causes and the control procedures applied.

Table 13: The five natural causes most damaging to the PFE and Non-PFE

5 major causes	Area affected (ha)	Control procedures	Area of control (ha)	Estimated effectiveness

NOTE:

- Indicate institutions responsible for implementing control procedures.
- List constraints in implementing control procedures and any proposed improvements.

Criterion 4: Forest Production

This criterion is concerned with forest management for the production of wood and non-wood forest products. Such production can only be sustained in the long-term if it is economically and financially viable, environmentally sound and socially acceptable.

Forests earmarked for timber production are able to fulfil a number of other important forest functions, such as environmental protection, carbon storage and the conservation of species and ecosystems. These multiple roles of forest should be safeguarded by the application of sound management practices that maintain the potential of the forest resource to yield the full range of benefits to society.

Resource Assessment

Forest resource assessments carried out periodically are vital for ensuring the sustainable production of forest goods and services for society. They provide the necessary information not only on the level of yield that may be harvested but also the type and quality of forest produce that may be extracted.

Indicator 4.1

Extent and percentage of forest for which inventory and survey procedures have been used to define the quantity of the main forest products

Table 4.1 Forest areas inventoried by product

Type of Forest Products	Source of Forest Products	Public Ownership						Private Ownership										Source of Information		
		State			Other Public Institution			Individuals			Forest Industries			Other Private Institutions			Indigenous or Tribal People			
		Area (ha)	%	Ave. Vol./Ha.	Area (ha)	%	Total Net Vol	Area (ha)	%	Total Net Vol	Area (ha)	%	Total Net Vol	Area (ha)	%	Total Net Vol	Area (ha)		%	Total Net Vol

Note:

1. Exclusivity of rights and ownership over the area should be clarified/defined properly;
2. Under Other Public Institutions, it includes reservation (military, civil, etc)
3. Other tenurial instruments i.e. TLA, IFMA, SIFMA, CBFM etc are all under the state ownership
4. Source of forest products is either plantation forest or natural forest
5. Source of Information must include the date of inventory

Indicator 4.2

Actual and sustainable harvest of wood and non-wood forest products

Table 4.2 Harvesting level of the principal forest products

Forest Products	Unit of Measure	Volume by source											
		Annual										Total	Average
		1		2		3		4		5			
		N	P	N	P	N	P	N	P	N	P	N	P

Indicator 4.3

Composition of harvest

Table 4.3 The most important species or species groups harvested

PFE		Non-PFE	
Products	Harvesting quantity	Products	Harvesting quantity

NOTE:

- Report the 5 most important species or species groups.
- Report average harvest levels over the latest 3-year period together with the source of the data and the unit of measurement.
- Forests from which harvested include natural forest types as specified in Table 8 as well as planted forests.

Indicator 4.4

Total amount of carbon stored in forest stands.

Table 4.4 Estimate of carbon stock in forests

CARBON STOCK	AMOUNT
Above ground (forest vegetation carbon stock)	
Soil carbon stock	

Note: Describe methods of measurement. Express in tonnes of elemental carbon (C).
Indicate reference year.

Planning and Control Procedures

Planning procedures have to be sound and effective as the production of forest goods and services generally requires a long gestation period. It is through proper planning and control that investment in forestry activities will yield the desired returns to society.

Indicator 4.5

Existence and implementation of:

- (a) Forest harvesting/operational plans (within forest management plans); and***
- (b) Other harvesting permits (small, medium and large scale permits without forest management plans).***

NOTE:

- Describe the procedures and processes for formulating plans and assessing effectiveness of implementation of:
 - (a) Forest harvesting/operational plans
 - (b) Any other type of harvesting/cutting permits within and outside the PFE

Indicator 4.6

Extent of compartments/coupes harvested according to:

- (a) Harvesting/operational plans; and***
- (b) Any other harvesting/cutting permit.***

NOTE:

- Calculate average over most recent 3-year period.
- Specify the different types of permits and report on their effect(s) on forest sustainability.

Indicator 4.7

Existence of a log tracking system or similar control mechanisms

NOTE:

- Describe type of system(s) and its implementation (including responsible parties).

Indicator 4.8

Long-term projections, strategies and plans for forest production.

NOTE:

- Describe any projections (5 years and beyond), strategies, or plans for production (included expanded use of planted forest) to bring current management of harvesting practices and patterns into alignment with sustainable forest management objectives.

Indicator 4.9

Availability of historical records on the extent, nature and management of forests

NOTE:

- Are historical records available about the extent, nature or management of the forests? Describe the type of records.
- Do archives of forest data (e.g. growth, yield, health, uses, etc.) exist and are they accessible for forest planning and management?
- Have such records/data been used? Have they proved useful?

Silvicultural and harvesting guidelines

Clear guidelines will ensure that all forestry operations are carried out according to high standards. These can include pre-felling inventories for prescribing sustainable cutting levels, post-felling inventories for assessing the condition of logged-over forests and the types of silvicultural treatments required, harvesting procedures to reduce damage to the forest ecosystem, silvicultural prescriptions for planted forests and procedures for periodic monitoring and evaluation of management practices.

Indicator 4.10

Availability and implementation of silvicultural procedures for timber and non-wood forest products.

NOTE:

- Does a country have recommended silvicultural systems? What are they?
- Are they being implemented?
- Is their effectiveness being monitored? At what geographical scale? Describe post-harvesting surveys to assess the effectiveness of silvicultural activities.
- Are monitoring data being archived to evaluate cumulative effects of silvicultural systems over time?
- Do silvicultural systems include the use of chemicals? If yes, specify and assess risks.

Indicator 4.11

Availability and implementation of harvesting procedures for timber and non-wood forest products

NOTE:

- Does a country have recommended harvesting systems? What are they?
- Are they being implemented?
- Is their effectiveness being monitored? At what geographical scale? Describe post-harvesting surveys to assess the effectiveness of harvesting activities, establishment and monitoring of silvicultural treatment and regeneration plots, etc.
- Are monitoring data being archived to evaluate cumulative effects of harvesting system over time?

Indicator 4.12

Area over which silvicultural and harvesting procedures are effectively implemented

Table 4.12 Implementation of Silvicultural and harvesting procedures

Procedures	PFE (ha)	Non-PFE (ha)
<i>Silvicultural</i> - - - - -		
<i>Harvesting</i> - - - - -		

Criterion 5: Biological Diversity

This criterion relates to the conservation and maintenance of biological diversity, including ecosystems, species and genetic diversity. The general principles and definitions used here are those established by CBD and IUCN.

Ecosystem Diversity

The conservation of ecosystem diversity can best be accomplished by the establishment and management of a system of protected areas (combinations of IUCN Categories I to VI)¹ containing representative samples of all forest types linked as far as possible by biological corridors or 'stepping stones'. This can be ensured by effective land-use policies and systems for choosing, establishing and maintaining the integrity of protected areas in consultation with and through the involvement of local communities.

Indicator 5.1

Protected areas containing forests

Table 5.1 Forest Protected Area

Type of Protection Forest	Location w/in FMU (UTM/GC)	Extent (area)	Percentage of each Forest Type Covered	Percentage of Boundaries demarcated or clearly defined

Indicator 5.2

Protected areas connected by biological corridors or stepping stones

Table 5.2 Forest protected areas connected by corridors

IUCN Category	Number connected	Percent of total number of forest protected areas
I-II		
III-IV		
V-VI		

Species Diversity

Although the conservation of biological diversity is best assured by preventing species from becoming rare, threatened or endangered in the first place, it is also important to have national procedures to monitor and protect such species effectively.

Indicator 5.3

Existence and implementation of procedures to identify and protect endangered, rare and threatened species of forest flora and fauna

Procedures	Institutions Responsible	Proposed Improvements	Possible Constraints

NOTE:

- Describe procedures to identify, list, and protect endangered, rare and threatened species of forest flora and fauna.
- List the institutions responsible.
- Describe any recent changes in the procedures.
- Are there any constraints to introducing improvements?

Indicator 5.4

Number of endangered, rare and threatened forest dependant species

Table 5.4 Number of endangered, rare and threatened forest dependant species

Forest-dependent species group (1)	Name of Species (2)	Endangered (3)	Endemic species (4)	Legally protected at national level (5)
Trees - -				
Flowering Plants - -				
Ferns - -				
Birds -				

-				
Fresh Water Fish				
-				
-				
Amphibians				
-				
-				
Reptiles				
-				
-				
Mammals				
-				
-				
Butterflies				
-				
-				
Others (Pls. Specify)				

NOTE:

- Put a “check sign” in the column 3, 4, and 5 if the identified forest dependent species is endangered, endemic, or legally protected species at the national level.

Genetic Diversity

Effective conservation of biological diversity requires the maintenance of the genetic diversity of all species of fauna and flora. Although this may be difficult to achieve in practice, an appropriate place to focus limited resources is on species that are rare, threatened or endangered, as well as species with identified commercial value.

Indicator 5.5

Measures for in situ and/or ex situ conservation of the genetic variation within commercial, endangered, rare and threatened species of forest flora and fauna

Description	Institutions Responsible	Recent Changes	Proposed Improvements	Possible Constraints

NOTE:

- Describe the measures applied to conserve genetic diversity, both in situ and ex situ, of endangered forest dependent species.

Procedures for biodiversity conservation in production forests

An important contribution to conservation of biological diversity can be made by management measures in production forests that contribute to forest quality and enable neighbouring protected areas to be more effective. Detailed guidelines are given in Recommended Actions 8-17 of the ITTO Policy Development Series No.5 (*ITTO Guidelines on the Conservation of Biological Diversity in Tropical Production Forests*).

Indicator 5.6

Existence and implementation of procedures for protection and monitoring of biodiversity in production forests by:

- (a) Retaining undisturbed areas;***
- (b) Protecting rare, threatened and endangered species;***
- (c) Protecting features of special biological interest (e.g. nesting sites, seed trees, niches, keystone species, etc); and***
- (d) Assessing recent changes in (a) to (c), above through inventories, monitoring/assessment programs, and comparison with control areas.***

NOTE:

- Describe any procedures being implemented.
- Is their effectiveness being monitored? At what geographical scale?
- Describe procedures for assessing changes in production areas compared to control areas.
- Are records kept over time?

Indicator 5.7

Extent and percentage of production forest which has been set aside for biodiversity conservation.

Table 5.7 Area set aside for biodiversity conservation in production forests

Area (ha)	
Percentage (%)	

Criterion 6: Soil and Water Protection

The importance of this criterion is two-fold. First, it has a bearing on maintaining the productivity and quality of soil and water within the forest and its related aquatic ecosystems (and therefore on the health and condition of the forest, Criterion 3); secondly, it also plays a crucial role outside the forest in maintaining downstream water quality and flow and in reducing flooding and sedimentation.

Quantitative indicators of the effects of forest management on soil and water are, therefore, such measures as soil productivity within the forest and data on water quality and average and peak water flows for streams emerging from the forest. This information is difficult and expensive to obtain and is seldom available for more than a limited number of sites, as each site has its own

characteristics in this respect (e.g. slope, geological structure and the inherent erodibility of the soil type).

The protection of soil and water is therefore best ensured by specific guidelines for different situations; these can only be based on experience and research. Valid national indicators can only be derived from the aggregation of data from indicators at the forest management unit level, or from the fact that adequate national guidelines exist and are properly enforced in conformity with the variation in local conditions.

Indicator 6.1

Extent and percentage of total forest area managed exclusively for the protection of soil and water.

Table 6.1 Forest area managed exclusively for soil and water protection

	Total forest area (PFE and Non-PFE)	Forest area managed exclusively for protection of soil and water	Total Area	Percentage
AREA				

Indicator 6.2

Procedures to assure the protection of downstream catchment values

NOTE:

- Are there procedures to assure protection of downstream catchment values?
- Are they being implemented?
- Is their effectiveness being monitored? At what geographical scale?

Protective functions in production forests

Indicator 6.3

Procedures to protect soil productivity and water retention capacity within production forests

NOTE:

- Are there procedures to protect soil productivity and retain water retention within production forests?
- Are there provisions to prevent contamination of forest soil and water?
- Are they being implemented?
- Is their effectiveness being monitored? At what geographical scale?

Indicator 6.4

Procedures for forest engineering including:

- (a) Drainage requirements;**
- (b) Conservation of buffer strips along streams and rivers;**
- (c) Protection of soils from compaction by harvesting machinery;**
- (d) Protection of soil from erosion during harvesting operations.**

NOTE:

- Are their recommended forests engineering procedures in regard to the protection of soil and water?
- Are they being implemented?
- Is their effectiveness being monitored? At what geographical scale?

Indicator 6.5

Extent and percentage of areas in PFE production which has been defined as environmentally sensitive (e.g. very steep or erodible) and protected

Table 6.5 Area defined as ecologically vulnerable

Area characteristic	Area (ha)	Percentage
Slopes		
Poor drainage		
Buffer strips		
Other characteristics (Pls. Specify)		

Criterion 7: Economic, Social and Cultural Aspects

This criterion deals with the economic, social and cultural aspects of the forest. A well-managed forest is a constantly self-renewing resource and it produces a host of benefits, ranging from high quality timber to satisfying the basic needs of people living in and around the forest. It also contributes to the well-being and enhances the quality of life of the population in providing opportunities for recreation and ecotourism, as well as in generating employment and investment in the processing industries. Hence, if sustainably managed, the forest has the potential to make an important contribution to the overall sustainable development of the country.

Socio-economic aspects

The very existence of forest is often dependent on the forest being able to generate sufficient financial resources to ensure its sustainability, besides providing employment and other social and environmental benefits to society.

Indicator 7.1

Value and percentage contribution of the forestry sector to the Gross Domestic Product (GDP)

Reference year: (specify)	GDP total (US\$)	Forestry Sector Contribution (US\$)

NOTE:

- Indicate/describe to which extent the informal forestry sector contributes to GDP.
- Indicate sources used.

Indicator 7.2

Value of domestically produced wood, non-wood forest products, and environmental services in the:

(a) Domestic market;

(b) Export markets; and

(c) Informal markets including subsistence and illegal activities.

Table 7.2 Estimated market value of forest products and services

Purpose	Type of Forest Products	Unit of Measure	Year 1		Year 2		Year 3		Year 4		Year 5		Total	
			Vol	Val	Vol	Val	Vol	Val	Vol	Val	Vol	Val	Vol	Val
(a) Domestic	Wood													
	Non-wood													
	-													
	-													
(b) Export	wood													
	Non-wood													
	-													
	-													
(c) Others (specify)	Wood													
	Non-wood													
	-													

Indicator 7.3

Forest products industry structure and efficiency

Table 7.3 Forest production capacities

Year (y= report year)	Volume of Forest products Processed (m ³)	Volume of Products Produced (m ³)	Efficiency of the wood-based industry (%)
(1)	(2)	(3)	(4)
y-5			
y-4			
y-3			
y-2			
y-1			

Indicator 7.4

Existence and implementation of mechanisms for the equitable sharing of forest management's costs and benefits

NOTE:

- List any mechanisms for the distribution of incentives and the fair and equitable sharing of costs and benefits among the parties involved
- Are they being implemented?
- Are there obstacles to their implementation?
- Are there improvements proposed?

Indicator 7.5

Existence and implementation of conflict resolution mechanisms for resolving disputes between forest stakeholders

NOTE:

- List any mechanisms for conflict resolution.

- Are they being implemented?
- Are there obstacles to their implementation?
- Are there improvements proposed?

Indicator 7.6

Number of people depending on forests for their livelihoods

Table 7.6 Forest dependent people

	Total Number	Male	Female	Migrants
Employed in forest operations				
Employed in forest products industry				
Other indirect employment				
Subsistence				

Indicator 7.7

Training, capacity building and manpower development programs for forest workers

NOTE:

- Indicate the number and main focus of universities, technical institutions, etc. with formal program on SFM.
- List short- and medium-term training programs for forest managers over the last year.
- List short- and medium-term training programs for concessionaires over the last year.

Indicator 7.8

Existence and implementation of procedures to ensure the health and safety of forest workers

NOTE:

- What mechanisms are in place to ensure the health and safety of forest workers?
- Are these mechanisms being implemented? Identity any constraints.
- Are mechanisms in conformity with ILO Resolution 169?
- Indicate the number of serious accidents (death, serious injury) in forest management operations over the past 3 years. Specify the causes.

Indicator 7.9

Area of forests upon which people are dependent for subsistence uses and traditional and customary life styles

NOTE:

- Specify types of forests used for subsistence, traditional and/or customary life styles.

Indicator 7.10

Number and extent of forest sites available primarily for:

(a) Research and education; and

(b) Recreation.

Table 7.10 Forest areas for research and recreation

	Research and education	Recreation
Number of sites		
Area (ha)		
Average annual number of users (most recent 3 years)		

Cultural aspects

Forests often contain natural, archaeological or cultural features of outstanding or unique value. In many countries forests also play significant spiritual roles (e.g. sacred forests).

Indicator 7.11

Number of important archaeological, cultural, and spiritual sites identified and protected.

Table 7.11 Forests with cultural and spiritual value

Type	Number/s	Area (ha)	Protection Status
Archaeological			
Cultural			
Sacred forests			
Others (Pls. Specify)			

NOTE:

- Provide an overall assessment of whether the integrity of such areas is protected and how.

Community and indigenous people tenure rights and participation

Community participation is vital at all levels of forestry operations to ensure transparency and accountability in forest management, conservation and development, as well as to ensure that all

interests and concerns are taken into account. This requires openness from forest services, forest owners and concessionaires.

Indicator 7.12

Extent to which tenure and user rights of communities and indigenous peoples over publicly-owned forests are recognized and practiced

NOTE:

- Are such tenure and user rights recognized and practiced?
- Is so, how?
- Describe any constraints and proposals for improvements.

Indicator 7.13

Extent to which indigenous knowledge is used in forest management planning and implementation

NOTE:

- Is indigenous knowledge used?
- Is so, how?
- Describe any constraints and proposals for improvements.

Indicator 7.14

Extent of involvement of indigenous people, local communities and other forest dwellers in forest management capacity building, consultation processes, decision-making and implementation.

NOTE:

- Describe extent of involvement in forest management:
 - Capacity building;
 - Consultation processes;
 - Decision-making; and
 - Implementation (e.g. financial and economic aspects of forest utilization).
- Indicate the legal basis for this involvement.
- Describe shortcomings and proposals for improvement.

ANNEX 3. GUIDE TO AUDITING SFM BASED ON PHILIPPINE CRITERIA AND INDICATORS

CRITERIA	INDICATORS	VERIFIER	MEANS OF VERIFICATION	NORMS
Criterion 1: Enabling Conditions for Sustainable Forest Management	Indicator 1.1 <i>Existence and implementation of policies, laws and regulations to govern forest management.</i>	Internal Policies on Forest Management	<ul style="list-style-type: none"> • Evaluation of existing internal policies on forest management • Interview with FMU forestry manager, DENR, local government 	Consistency of the internal policies with national policies
	Indicator 1.2 <i>Forest tenure and ownership</i>	Tenurial instruments over public forests or private ownership	<ul style="list-style-type: none"> • Evaluation of tenure documents like TLA, IFMA, CBFMA etc • Interview with FMU forest managers • Validation with government records 	Tenure in good standing per RP regulations and no record of suspension and cancellation
	Indicator 1.3 <i>Amount of funding in forest management, administration, research, and human resource development</i>	Annual total FMU funding for all forest management activities from all sources	<ul style="list-style-type: none"> • Annual budget and expenditure; financial cash flow, management plan • Interview with forest managers 	Annual budget required to meet forest management targets
	Indicator 1.4 <i>Existence and implementation of economic instruments and other incentives to encourage sustainable forest management</i>	Economic instruments and incentives for SFM	<ul style="list-style-type: none"> • Evaluation of economic instruments / incentives • Interview with FMU management and stakeholders • Field validation 	Presence and implementation of economic instruments and incentives
	Indicator 1.5 <i>The structure and staffing of institutions responsible for sustainable forest management</i>	For national – FMB as pertains to government institutions		
	Indicator 1.6	Total number of	<ul style="list-style-type: none"> • Evaluation of FMU 	Adequacy of

	<i>Number of professional and technical personnel at all levels to perform and support forest management</i>	professional and technical personnel performing and supporting forest management	<ul style="list-style-type: none"> personnel records • Validation with government records • Interview with FMU management and key personnel • Sample field inventory 	professional and technical staff to perform and support forest management compared to work targets
	Indicator 1.7 <i>Existence of communication strategies and feedback mechanism to increase awareness about SFM</i>	IEC and other strategies to increase awareness about SFM	<ul style="list-style-type: none"> • Examination of management and IEC plans • Interview with FMU management and IEC personnel; stakeholders • Discussion with relevant stakeholders 	Presence of IEC and related strategies and effectiveness to create awareness about SFM
	Indicator 1.8 <i>Existence of, and ability to apply, appropriate technology to practise sustainable forest management and the efficient utilisation and marketing of forest products</i>	Appropriate technologies to practice SFM, efficient utilization and marketing of forest products	<ul style="list-style-type: none"> • Review of technologies in the management plan • Results of completed and on-going research • Interview with FMU management • Field investigation of application of technologies 	Existence and capacity to apply appropriate SFM technologies
	Indicator 1.9 <i>Capacity and mechanisms for planning sustainable forest management and for periodic monitoring, evaluation and feedback on progress</i>	Mechanisms for planning and monitoring SFM	<ul style="list-style-type: none"> • Evaluation of forest management and SFM plans and processes involved • Interview with SFM management • Review of forest management plans as submitted to government 	<ul style="list-style-type: none"> • Presence of SFM and related plans • Capacity to formulate SFM plans
	Indicator 1.10 <i>Public participation in forest</i>	Extent of public participation in all phases of forest management	<ul style="list-style-type: none"> • Interview with relevant stakeholders and FMU 	Adequate public participation in all phases of forest

	management planning, decision making, data collection, monitoring and assessment	planning	management <ul style="list-style-type: none"> Evidence of participatory meetings and consultations 	management planning
	Indicator 1.11 Existence of forest management plans.	Long-term, medium, and annual forest management operations and SFM plans	<ul style="list-style-type: none"> Review of all types of forest management plans Interview with FMU management and stakeholders Validation of submitted plans to government 	Submission and approval of all types of forest management plans per government regulations
Criterion 2: Extent and Condition of Forests	Indicator 2.1 Extent (area) and percentage of total land area under comprehensive land-use plans.	Total FMU area under comprehensive land-use plans based on WEM and other approaches	<ul style="list-style-type: none"> Evaluation of existing comprehensive land- use plans Field examination of comprehensive land uses Interview with stakeholders and FMU management 	Adequacy of areas devoted to comprehensive land uses
	Indicator 2.2 Extent of forests committed to production and protection:	Total areas of production and protection forests	<ul style="list-style-type: none"> Evaluation of forest inventories and remote sensing data per government regulation every 5 years submission Forest management and SFM plans Interview with FMU management Validation of FMB-PAWB and other government records 	Acceptable ration of production to protection forests per government regulations on old-growth, mossy forests, secondary commercial forests etc
	Indicator 2.3	Area and percentage of land area under each	<ul style="list-style-type: none"> Review of forest inventories, permanent 	Adequacy of various forest types to meet

	<i>Extent (area) and percentage of total land area under each forest type.</i>	forest type – per government rule on forest cover (old-growth, secondary etc) and types (Dipterocarp, mossy, leguminous etc)	forest plots stand and stock tables, management plans and other relevant data <ul style="list-style-type: none"> • Interview with forest management of FMU • Checking government records • Field verification of samples in permanent forest plots 	commercial sustainable production and biodiversity
	Indicator 2.4 <i>Percentage of PFE with boundaries physically demarcated.</i>	Areas and percentage of PFE within FMU that have been demarcated and monumented in accordance with government regulations	<ul style="list-style-type: none"> • Evaluation of LC records and government forest boundary maps • Spot-check boundary monuments • Interview with FMU management and LC (NAMRIA) and other government agencies 	Acceptable demarcation and monumenting of production and protection forests within FMU legal boundaries
	Indicator 2.5 <i>Changes in forested area</i>	Changes (addition or subtraction) of FMU classified forest lands to other non-forestry uses like agriculture, settlements etc.	<ul style="list-style-type: none"> • Evaluate documents related to changes in forest land uses and inventories, management planning • Ground verification of land use changes • Validation with government data on land use changes • Interview with FMU management and stakeholders 	No negative change in classified forest area converted to other uses
	Indicator 2.6 <i>Forest Condition</i>	Maintenance or enhancement of primary (old-growth) and	<ul style="list-style-type: none"> • Review of forest inventory and management plans 	Control of degradation and denudation of primary and

		adequately stocked secondary forests	<ul style="list-style-type: none"> • Interview with FMU management and stakeholders and DENR field staff • Field checking of forest condition • Verification with government records 	secondary forests
Criterion 3: Forest Ecosystem Health	Indicator 3.1 <i>The extent and nature of forest encroachment, degradation, and disturbance caused by humans and the control procedures applied</i>	Total areas of FMU affected by main human disturbance like settlements, shifting agriculture, illegal logging, poaching, infrastructure etc.	<ul style="list-style-type: none"> • Evaluation of forest inventories and management plans • Ground check of human disturbances • Interview with FMU management, stakeholders, and DENR field personnel 	Acceptable level of human disturbance thru effective control measures
	Indicator 3.2 <i>The extent and nature of forest degradation, and disturbance due to natural causes and the control procedures applied.</i>	Total areas of FMU affected by natural causes like fire, typhoons, landslides, earthquakes, etc.	<ul style="list-style-type: none"> • Evaluation of forest inventories and management plans • Ground check of natural disturbances • Interview with FMU management, stakeholders, and DENR field personnel 	Acceptable level of natural disturbance thru effective control measures for causes that are non-force majeure like fire and landslides which can be prevented and controlled
Criterion 4: Forest Production	Indicator 4.1 <i>Extent and percentage of forest for which inventory and survey procedures have been used to define the quantity of the main forest products</i>	Extent and percentage of forest for which inventory and survey procedures have been used to define the quantity of the main forest products (area and volume control per Philippine selective logging system)	<ul style="list-style-type: none"> • Assessment of relevant documents on management plans, inventories and surveys, logging set-ups in annual OP, permanent sampling plots, stand and stock tables, selective logging and other handbooks, 	100% inventory and survey or acceptable equivalent for annual logging set-up per timber harvesting regulations

			<ul style="list-style-type: none"> per government regulations • Interview with FMU management and DENR field personnel 	
	<p>Indicator 4.2</p> <p><i>Actual and sustainable harvest of wood and non-wood forest products</i></p>	Harvesting level of timber and other forest products	<ul style="list-style-type: none"> • Assessment of relevant documents on management plans, inventories and surveys, logging set-ups in annual OP, permanent sampling plots, stand and stock tables, selective logging and other handbooks, per government regulations • Interview with FMU management and DENR field personnel • Selected field validation of cutting area or logging set-up 	FMU Annual Allowable Cut for timber and other forest and non-forest products as indicated in the Annual OP
	<p>Indicator 4.3</p> <p><i>Composition of harvest</i></p>	Most important forest species or species groups harvested	<ul style="list-style-type: none"> • Assessment of relevant documents on management plans, inventories and surveys, logging set-ups in annual OP, permanent sampling plots, stand and stock tables, selective logging and other handbooks, per government 	Acceptable harvest of species and species groupings per government regulations

			<ul style="list-style-type: none"> regulations • Ground check of species harvested in cutting area • Interview with FMU management and DENR field personnel 	
	<p>Indicator 4.4</p> <p><i>Total amount of carbon stored in forest stands.</i></p>	Measurement procedure and estimate of carbon stocks in forest stands	<ul style="list-style-type: none"> • Evaluation of data and research results on carbon stock estimation • Interview with FMU management and ERDB and other agencies and forestry professionals working on carbon stocks 	Presence of methodology and estimate for carbon stocks in forest stands
	<p>Indicator 4.5</p> <p><i>Existence and implementation of:</i> <i>(a) Forest harvesting/operational plans (within forest management plans); and</i> <i>(b) Other harvesting permits (small, medium and large scale permits without forest management plans).</i></p>	Existence and implementation of Integrated Annual Operations Plan (IAOP) related to timber harvest and other forest and non-forest products	<ul style="list-style-type: none"> • Assessment of current Annual IAOP • Interview with FMU management • Validation with government records on IAOP 	Government approved IAOP for implementation
	<p>Indicator 4.6</p> <p><i>Extent of compartments/coupes harvested according to:</i> <i>(b) Harvesting/operational plans; and</i> <i>(b) Any other harvesting/cutting permit.</i></p>	Extent of harvests in cutting area covered by IAOP and other permits	<ul style="list-style-type: none"> • Review of AAC in cutting areas per IAOP and other types of harvesting permits within FMU • Interview with FMU management and DENR field personnel • Field investigation of harvesting in various 	AAC for timber and other forest products harvested in cutting area per IAOP

			cutting areas per IAOP	
	<p>Indicator 4.7</p> <p><i>Existence of a log tracking system or similar control mechanisms</i></p>	Existence of a log tracking system or similar control mechanisms	<ul style="list-style-type: none"> • Review of management plans, data base, and pertinent documents and evidence on log control and monitoring per government regulations from harvesting, transport etc. • Interview with FMU management and DENR field personnel • Field investigation of log movements and control 	Presence of log control system or similar mechanisms
	<p>Indicator 4.8</p> <p><i>Long-term projections, strategies and plans for forest production.</i></p>	Presence of long-term, medium-term plans for timber production,	<ul style="list-style-type: none"> • Review of Long-term and medium-term plans submitted to government • Interview with FMU management and FMB-DENR field personnel 	Approved long-term and medium-term forest management plans
	<p>Indicator 4.9</p> <p><i>Availability of historical records on the extent, nature and management of forests</i></p>	Historical records on the extent, nature and management of forests	<ul style="list-style-type: none"> • Interview with FMU management and DENR personnel • Review of FMU historical archives and data base and previous plans and inventories • Interview with stakeholders and local communities and IPs 	Presence and effective use of historical records for forest management
	<p>Indicator 4.10</p> <p><i>Availability and implementation of silvicultural procedures for timber and non-wood forest</i></p>	Silvicultural procedures for timber and non-wood forest products. (TSI, planting and reforestation, pre-and	<ul style="list-style-type: none"> • Assessment of pre and post harvest silvicultural procedures per government regulations; all approved forest 	Compliance with silvicultural guidelines and regulations of government on pre and post harvest

	products.	post harvest operations etc.)	management plans <ul style="list-style-type: none"> • Interview with FMU and DENR personnel • Ground validation of silvicultural treatments and measures 	operations
	Indicator 4.11 <i>Availability and implementation of harvesting procedures for timber and non-wood forest products</i>	Harvesting procedures for timber and non-wood forest products	<ul style="list-style-type: none"> • Review of Philippine selective logging handbook and regulations as applicable to secondary forests harvesting • Interview with FMU and DENR personnel • Ground validation of harvesting procedures 	Compliance with harvesting procedures of Philippine selective logging on diameter limits, area and volume control etc. per government regulations
	Indicator 4.12 <i>Area over which silvicultural and harvesting procedures are effectively implemented</i>	Forest areas over which silvicultural and harvesting procedures are effectively implemented	<ul style="list-style-type: none"> • Review of documents and policies on silviculture and harvest on secondary commercial forests • Interview with FMU and DENR personnel • Ground validation of harvesting and silvicultural procedures in sample designated areas 	Effective implementation of silvicultural and harvesting procedures in designated areas

Criterion 5: Biological Diversity	Indicator 5.1 <i>Protected areas containing forests</i>	Area of protected forests per RP classification, not IUCN (old-growth, above 50% slope, NIPAS law coverage, embankment of rivers, critical watersheds and habitats etc)	<ul style="list-style-type: none"> • Review of policies and regulations on protected areas within forest lands including NIPAS Law etc. • Interview with FMU management and PAWB-FMB-DENR field personnel • Reconnaissance of sample protected areas 	Adequacy of protected areas containing forests
	Indicator 5.2 <i>Protected areas connected by biological corridors or stepping stones</i>	Not applicable		
	Indicator 5.3 <i>Existence and implementation of procedures to identify and protect endangered, rare and threatened species of forest flora and fauna</i>	Procedures to identify and protect endangered, rare and threatened species of forest flora and fauna	<ul style="list-style-type: none"> • Assessment of records and documents on procedures governing identification and protection of endangered, rare and threatened species of forest flora and fauna • Interview with FMU management and PAWB-FMB-DENR field personnel • Field observations of any identified and protected endangered, rare and threatened species of forest flora and fauna 	Presence and effective implementation of procedures to identify and protect endangered, rare and threatened species of forest flora and fauna

	<p>Indicator 5.4</p> <p><i>Number of endangered, rare and threatened forest dependant species</i></p>	<p>Number of endangered, rare and threatened forest dependent species per IUCN 1994 categories</p>	<ul style="list-style-type: none"> • Review of records on FMU endangered, rare and threatened forest dependent species per IUCN 1994 categories • Interview with FMU management and PAWB-FMB-DENR field personnel • Field observations of any identified and protected endangered, rare and threatened species of forest flora and fauna 	<p>Acceptable number of endangered, rare and threatened forest dependent species Or positive change from baseline surveys</p>
	<p>Indicator 5.5</p> <p><i>Measures for in situ and/or ex situ conservation of the genetic variation within commercial, endangered, rare and threatened species of forest flora and fauna</i></p>	<p>Not applicable</p>		
	<p>Indicator 5.6</p> <p><i>Existence and implementation of procedures for protection and monitoring of biodiversity in production forests by:</i> <i>(a) Retaining undisturbed areas;</i> <i>(b) Protecting rare, threatened and endangered species;</i></p>	<p>Procedures for protection and monitoring of biodiversity in production forests</p>	<ul style="list-style-type: none"> • Review of any existing procedures for protection and monitoring of biodiversity in production forests • Interview with FMU management and PAWB-FMB-DENR field personnel • Field observations of any existing procedures for 	<p>Existence and effective implementation of existing procedures for protection and monitoring of biodiversity in production forests</p>

	<p>(c) Protecting features of special biological interest (e.g. nesting sites, seed trees, niches, keystone species, etc); and</p> <p>(d) Assessing recent changes in (a) to (c), above through inventories, monitoring/assessment programs, and comparison with control areas.</p>		<p>protection and monitoring of biodiversity in production forests</p>	
	<p>Indicator 5.7</p> <p>Extent and percentage of production forest which has been set aside for biodiversity conservation.</p>	<p>Area of production forest which has been set aside for biodiversity conservation</p>	<ul style="list-style-type: none"> • Review of documents , maps, and policies on biodiversity conservation areas in production forests including research and foreign-assisted projects • Interview with FMU management and PAWB-FMB-DENR field personnel • Field observations of any biodiversity conservation areas in production forests 	<p>Adequacy of biodiversity conservation areas in production forests</p>
<p>Criterion 6: Soil and Water Protection</p>	<p>Indicator 6.1</p> <p>Extent and percentage of total forest area managed exclusively for the protection of soil and water.</p>	<p>Not applicable</p>		
	<p>Indicator 6.2</p> <p>Procedures to assure the</p>	<p>Procedures to assure the protection of downstream catchment values</p>	<ul style="list-style-type: none"> • Evaluation of documents and policies pertaining to Procedures to assure the 	<p>Existence of procedures to assure the protection of</p>

	<i>protection of downstream catchment values</i>		<p>protection of downstream catchment values</p> <ul style="list-style-type: none"> • Interview with FMU management and FMB-DENR field personnel • Field observations of any area with protection of downstream catchment values 	downstream catchment values
	<p>Indicator 6.3</p> <p><i>Procedures to protect soil productivity and water retention capacity within production forests</i></p>	Procedures to protect soil productivity and water retention capacity within production forests	<ul style="list-style-type: none"> • Evaluation of documents and policies pertaining to procedures to protect soil productivity and water retention capacity within production forests • Interview with FMU management and DENR field personnel • Visit and investigation of forest production areas where soil productivity and water retention capacity are protected 	Existence and implementation of procedures to protect soil productivity and water retention capacity within production forests
	<p>Indicator 6.4</p> <p><i>Procedures for forest engineering including:</i></p> <p><i>(c) Drainage requirements;</i></p> <p><i>(d) Conservation of buffer strips along streams and rivers;</i></p> <p><i>(c) Protection of soils from compaction by harvesting machinery;</i></p> <p><i>(d) Protection of soil from</i></p>	Procedures for forest engineering relating to soil and water conservation	<ul style="list-style-type: none"> • Assessment of existing documents on procedures for forest engineering relating to soil and water conservation • Interview with FMU amangement, DENR, Bureau of Soils, DPWH, and related agency and inter-agency bodies 	Existence of procedures for forest engineering relating to soil and water conservation

	<i>erosion during harvesting operations.</i>		<p>dealing with soil and water conservation</p> <ul style="list-style-type: none"> • Ground observation of existing forest engineering relating to soil and water conservation 	
	<p>Indicator 6.5</p> <p><i>Extent and percentage of areas in PFE production which has been defined as environmentally sensitive (e.g. very steep or erodible) and protected</i></p>	<p>Areas in PFE production which has been defined as environmentally sensitive (e.g. very steep or erodible) and protected</p>	<ul style="list-style-type: none"> • Evaluation of relevant documents, data, and maps on areas in PFE production defined as environmentally sensitive • Interview with FMU management, DENR, Bureau of Soils, DPWH, and related agency and inter-agency bodies dealing with soil and water conservation • Ground observation of existing environmentally sensitive sites in PFE production areas 	<p>Adequate areas in PFE production defined as environmentally sensitive (e.g. very steep or erodible) and protected</p>
<p>Criterion 7:</p> <p>Economic, Social and Cultural Aspects</p>	<p>Indicator 7.1</p> <p><i>Value and percentage contribution of the forestry sector to the Gross Domestic Product (GDP)</i></p>	<p>Not applicable to FMU</p>		
	<p>Indicator 7.2</p> <p><i>Value of domestically produced wood, non-wood forest</i></p>	<p>Total value of domestically produced wood, non-wood forest products, and</p>	<ul style="list-style-type: none"> • Review of FMU financial statements, sales records, exports, and government records on 	<ul style="list-style-type: none"> • Increase over total average values for last 3 years • Presence of

	<p>products, and environmental services in the:</p> <p>(b) Domestic market;</p> <p>(b) Export markets; and</p> <p>(c) Informal markets including subsistence and illegal activities.</p>	<p>environmental services in the domestic, export , and informal markets including subsistence and illegal activities.</p>	<p>timber and forest products flows including data bases</p> <ul style="list-style-type: none"> • Discussions with FMU management and DENR, DOF • Visit to processing plants and cottage industries 	<p>procedure for valuation of environmental services</p>
	<p>Indicator 7.3</p> <p>Forest products industry structure and efficiency</p>	<p>Forest products harvesting and processing structure and efficiency</p>	<ul style="list-style-type: none"> • Inventory and assessment of forest products production and processing sectors records / documents • Review of processing permits • Interview with FMU management and selected workers • Visit to harvesting sites and processing plants 	<p>Acceptable processing capacity and efficiency based on timber processing permit by DENR</p>
	<p>Indicator 7.4</p> <p>Existence and implementation of mechanisms for the equitable sharing of forest management's costs and benefits</p>	<p>Existence and implementation of mechanisms for the equitable sharing of forest management's costs and benefits</p>	<ul style="list-style-type: none"> • Evaluation of existing partnerships, collaborative management, CBFM sharing, government tenures with mechanisms etc. • Interview/group discussions with FMU management, DENR field officials, communities / organizations and other stakeholders • Field verification of sharing schemes 	<p>Presence and acceptable implementation of mechanisms for the equitable sharing of forest management's costs and benefits</p>

	Indicator 7.5 <i>Existence and implementation of conflict resolution mechanisms for resolving disputes between forest stakeholders</i>	Existence and implementation of conflict resolution mechanisms for resolving disputes between forest stakeholders	<ul style="list-style-type: none"> • Review of documents and evidence for conflict resolution mechanisms and existing disputes amongst stakeholders • Interview with identified stakeholders 	Existence and implementation of conflict resolution mechanisms for resolving disputes between forest stakeholders
	Indicator 7.6 <i>Number of people depending on forests for their livelihoods</i>	Total number of people depending on forests for employment and their livelihoods	<ul style="list-style-type: none"> • Assessment of socio-economic data on employment and livelihood, FMU records on employment and provision of livelihood • Interview with FMU management and forest dependent people • Evaluation of field evidence of employment and livelihood 	Acceptable number of people depending on forests for employment and their livelihoods based on FMU-government targets
	Indicator 7.7 <i>Training, capacity building and manpower development programs for forest workers</i>	Training, capacity building and manpower development programs for forest workers	<ul style="list-style-type: none"> • Review of FMU and government, universities training and manpower development programs • Interview with FMU management, workers, and government field officials, training institutions • Assessment and visit of training sites and institutions 	Presence and implementation of training, capacity building and manpower development programs for forest workers
	Indicator 7.8 <i>Existence and implementation of procedures to ensure the health</i>	Existence and implementation of procedures to ensure the health and safety of	<ul style="list-style-type: none"> • Assessment of documents pertaining to procedures to ensure the health and safety of 	Compliance to government regulations on health and safety of forest

	and safety of forest workers	forest workers	<p>forest workers, government regulations on the matter including labor fiats and guidelines</p> <ul style="list-style-type: none"> • Interview with FMU management, regional offices of DOH, DOLE, and DENR • Field observations of safety procedures in timber operations and processing sites 	workers
	<p>Indicator 7.9</p> <p><i>Area of forests upon which people are dependent for subsistence uses and traditional and customary life styles</i></p>	Total and sub-total area of forests upon which people are dependent for subsistence uses and traditional and customary life styles	<ul style="list-style-type: none"> • Review and identification of areas tenured or allocated to indigenous people, ancestral domains/claims/community-based forest management and LGU responsibilities • Assessment of provisions of IPRA Law, EO on CBFM, and Local government Code • Field observations of areas used for subsistence uses and traditional and customary life styles 	Areas identified and allocated to people who are dependent for subsistence uses and traditional and customary life styles
	<p>Indicator 7.10</p> <p><i>Number and extent of forest sites available primarily for:</i></p> <p><i>(a) Research and education;</i></p>	forest sites available primarily for research and education; and recreation.	<ul style="list-style-type: none"> • Evaluation of FMU-government documents and records on forest sites available primarily for research and 	<ul style="list-style-type: none"> • Presence of forest sites available primarily for research and education; and

	and (b) Recreation.		<p>education; and recreation.</p> <ul style="list-style-type: none"> • Interview with FMU management, DENR-ERDB, research institutions and universities • Field observations of forest sites available primarily for research and education; and recreation. 	<p>recreation.</p> <ul style="list-style-type: none"> • Implementation of research and education; and recreation programs
	Indicator 7.11 <i>Number of important archaeological, cultural, and spiritual sites identified and protected.</i>	Important archaeological, cultural, and spiritual sites identified and protected.	<ul style="list-style-type: none"> • Evaluation of records and documents on Important archaeological, cultural, and spiritual sites within FMU; also records of DENR, DECS, PAWB, FMB, Catholic Church and other appropriate agencies and institutions • Interview with FMU management and relevant government agencies at regional level • Observation visit to identified archaeological, cultural, and spiritual sites 	Important archaeological, cultural, and spiritual sites identified and protected.
	Indicator 7.12 <i>Extent to which tenure and user rights of communities and</i>	Extent to which tenure and user rights of communities and indigenous peoples over	<ul style="list-style-type: none"> • Review of tenure and other documents over public forest lands such as ancestral domain 	Government approved tenure and user rights of communities and indigenous peoples

	<i>indigenous peoples over publicly-owned forests are recognized and practiced</i>	publicly-owned forests are recognized and practiced	claims per IPRA Law, EO on CBFM and provisions on rights and responsibilities <ul style="list-style-type: none"> • Interview with FMU management, Indigenous peoples' groups, community organizations, local governments, • Field investigations of areas with CADC, CBFM tenures 	over publicly-owned forests
	Indicator 7.13 <i>Extent to which indigenous knowledge is used in forest management planning and implementation</i>	Extent to which indigenous knowledge is used in forest management planning and implementation	<ul style="list-style-type: none"> • Assessment of various available indigenous knowledge used in forest management planning and implementation in the FMU • Interview with leaders and key informants of identified indigenous people as well as FMU management use • Field observation of how indigenous knowledge were used in planning and implementation 	Effective use of indigenous knowledge in forest management planning and implementation
	Indicator 7.14 <i>Extent of involvement of indigenous people, local communities and other forest dwellers in forest management capacity building, consultation</i>	Involvement of indigenous people, local communities and other forest dwellers in forest management capacity building, consultation processes,	<ul style="list-style-type: none"> • Review documents and evidence (participatory meetings and consultations) of IP involvement in forest management • Interview with leaders 	Involvement of indigenous people, local communities and other forest dwellers in forest management capacity building, consultation

	<p><i>processes, decision-making and implementation.</i></p>	<p>decision-making and implementation.</p>	<p>and key informants of identified indigenous people, local communities, and forest dwellers: as well as FMU management</p> <ul style="list-style-type: none"> • Attendance and observations to scheduled consultations with key stakeholders • Field observation of sample participatory forest management project implementation 	<p>processes, decision-making and implementation.</p>
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ANNEX 4: **AUDITING FORM**

FOREST MANAGEMENT UNIT

NAME : _____
 LOCATION : _____
 SIZE : _____
 TENURE : _____

MEMBERS OF AUDIT TEAM : _____
DATE AND DURATION OF AUDIT : _____

CRITERIA (7)	INDICATOR (52)	NORMS AUDITED	METHODS	INDICATOR SCORE (MAXIMUM 3 POINTS PER INDICATOR)	CRITERIA SCORE (MAXIMUM TOTAL FOR 7 CRITERIA 156)	COMMENTS /REMEDIAL MEASURES	SFM PERFORMANCE OF FMU (BASED FROM CRITERIA TOTAL)
1	1.1						
XXXXXX	XXXXXX						
XXXXXX	XXXXXX						
XXXXXXX	XXXXXX						
7	7.14						

SIGNATURES OF AUDIT TEAM MEMBERS: _____

Should be signed under oath if used for regulatory purposes involving legal sanctions