ACAP AES ECO-LABELLING
STANDARD – FORESTRY - ARS/ AES 3

Practical Guidelines for Certification

Part I

Certification Process: how it Works
The objective of this Standard is to provide forest owners and managers with environmental, economic, social, and cultural criteria and requirements that support the sustainable management of forests. The Standard is intended for application to any forests being managed for the production of forest products and services, whether native or planted forests.

To enter the certification program, the Forest owner and the forest are registered in the ACAP AES database.

**Forestry**

- Name of production/activity carried out in the forest
- Extension of the area
- Identification of production sites
- Additional information as specified in the application form

**Additional information for multisite or groups**

- The same information is required for each site included in the multisite or group
What kind of forest is included in certification?

⇒ What Forests?

- The standard can be applied to any defined forest area irrespective of scale or type of ownership, or whether natural forests or plantation.

⇒ What parts of the Forest?

- The entire forest environment which may include:
  - open areas,
  - water bodies such as rivers, lakes and ponds,
  - shrub species in addition to the trees themselves.
  - including the collective tree and woodland cover in urban areas.
  - Including any biodiversity living in the forest.

- Not Included:
  - the management of individual trees (arboriculture),
  - orchards, ornamental trees and garden trees,
  - tree nurseries, and Christmas trees.

⇒ What productions are included?

- production, harvesting and processing of forest products.
- Examples:
  - Wood
  - Propagation material (seed, cuttings, etc.)
  - Wild fruit, flowers, herbs
  - Medical herbs
  - Animals/ Fish
  - Any other product of the forest
What Models are available for certification?

⇒ **Single Legal Entity (Forest Owner)**

- In this model, one certificate is granted to one single Legal Entity (Owner of the forest (including legal contracts for the use of the forest for production purposes))
- The whole area and activities within the Forest’s limits and under the responsibility of the legal entity are covered by the audit scope.

⇒ **Group Administrator (Group of Forest Owners)**

In this model, one certificate is granted to an organization, called the ‘Group Administrator (Processors, trader…) and is responsible for the compliance of the group with the applicable ACAP AES Standard. Is responsible for:
- implementing an Internal Management System (IMS), including the commercialization of product,
- training and technical assistance for staff and group members,
- internal inspections and the corresponding follow-up actions.
- The minimum number of member of a group administrator is two members
What are the Requirements of the ACAP AES Sustainable Forestry Standard?

1. The Requirements of the Standards are grouped under 11 main Principles. Each principle describes a specific focus area of the standard:

- **Principle 1**: Legal compliance
- **Principle 2**: Economic Sustainability
- **Principle 3**: Forest Management Planning
- **Principle 4**: Monitoring and assessment
- **Principle 5**: Environmental Management
- **Principle 6**: High Conservation Value
- **Principle 7**: Indigenous people and community rights and responsibilities
- **Principle 8**: Workers rights
- **Principle 9**: Forest Production capacity
- **Principle 10**: Forest benefits
- **Principle 11**: Forest Ecosystem Contributions to Ecological Cycles

2. The Standard Zooms in detail of specific Criteria and Indicators
What aspects related to the Forest are considered by the standard?

⇒ This Standard provides requirements for the
  - sustainable production,
  - harvesting
  - processing of forest products.

⇒ The relevance of the Requirements will vary according to the site:
  - size of the forest or woodland,
  - scale of operation,
  - objectives of the forest or woodland owner.

⇒ The standard requirements include the entire forest environment,
⇒ The requirements apply to the planning and management of forests within the wider landscape and land-use context, and to all African forest types and management systems,
⇒ The Requirements have been written to be interpreted with a case-by-case degree of flexibility and applied with professional expertise.
⇒ Forest and woodland management is a long-term business and it may take more than one rotation to achieve some of the Requirements.
⇒ In assessing whether the Requirements have reasonably been met, the overall balance of benefits or ecosystem services will be taken into account.
When is the right time to receive an audit for certification?

- The best practice is to plan the audit when the higher quantity of information and documents is available with regard to the latest production cycle.
- Production process must be operating on-site at least for the main production.

1. Initial Verification Certification - Forestry:
   - At least the last 3 months of production cycle are documented and harvest is in place the day of verification.
   - Harvest can be assessed on at least one production representative of the following activities: *Harvesting/processing of wood; collection of propagation material (seed, cuttings, etc.), wild fruit, flowers, herbs, medical herbs; hunting, fishing, etc…*
   - If post-harvest activity is included in the scope of certification, it must be in place the day of verification.
   - Activities related to use of the forest for tourism purposes are covered by the ACAP AES Standard for tourism.
What is the cycle for Auditing and Certification?

The ACAP/ AES Certificate and ARSO Mark License has a life cycle of 3 years. During the 3 years compliance must be confirmed by mean of Surveillance Activities.

- During the duration of the cycle the certificate Tier can be improved according to audit results.
- It is not possible to move back to a lower Tier.
- One surveillance audit is carried out every year within 12 months from the date of the initial certification audit.

![Diagram of the certification cycle]
The Continuous Improvement Program

⇒ Continuous improvement criteria

ACAP AEM Standards contain a continuous improvement system that requires to gradually increase compliance over 4 performance levels. (Tiers)

- Maturity Model of ACAP AEM certification scheme

The Performance Tiers provide a framework for producers to improve their compliance levels in line with the continual improvement principles.

- Categorization of Requirements (Indicators)

Each indicator has been categorized in relation to its relevance for the Standard and also in consideration to the different tier in focus.

- Compliance to different maturity levels (Tiers)

According to the different categorization of the indicators, compliance can be achieved:

⇒ Before the Audit: Pre-requirements assessed during preliminary document review
⇒ The day of the audit: Critical Requirements
⇒ After the end of the audit: Required, General, Optional, upon completion and verification of corrective actions with a Follow-up audit and according to established timeframe.
⇒ Tolerances: the defined tolerances do not need to be addressed with corrective actions till next audit (ref. to the following table)
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
<th>% Bronze Tier</th>
<th>% Silver Tier</th>
<th>% Gold Tier</th>
<th>% Platinum Tier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Required</td>
<td>Mainly related to compliance of legal requirements. Compliance is required to enter the certification process</td>
<td>100% Before the Audit</td>
<td>100% Before the Audit</td>
<td>100% Before the Audit</td>
<td>100% Before the Audit</td>
</tr>
<tr>
<td>Critical</td>
<td>Cover the highest-priority and highest-risk environmental, social and labour issues. Failing to comply the day of audit results in the denial or the immediate cancellation of the certificate</td>
<td>100% The day of audit</td>
<td>100% The day of audit</td>
<td>100% The day of audit</td>
<td>100% The day of audit</td>
</tr>
<tr>
<td>Required</td>
<td>Critical for compliance and achievement of the certificate”. Failing to comply at Follow up results in the denial or the immediate suspension of the certificate</td>
<td>100% at FU audit</td>
<td>100% at FU audit</td>
<td>100% at FU audit</td>
<td>100% at FU audit</td>
</tr>
<tr>
<td>General</td>
<td>Tolerance on indicators applicable for the scope is accepted for certification</td>
<td>80% at FU audit</td>
<td>80% at FU audit</td>
<td>80% at FU audit</td>
<td>80% at FU audit</td>
</tr>
<tr>
<td>Optional</td>
<td>Tolerance on indicators applicable for the scope is accepted for certification</td>
<td>20% at FU audit</td>
<td>20% at FU audit</td>
<td>20% at FU audit</td>
<td>20% at FU audit</td>
</tr>
</tbody>
</table>
Where do we find detail for Categorization and Tiers?

- Detail is found in the ACAP AES Forestry Check-list.
- Each Tier will account the same total number of Indicators, but different number of indicators allocated in different categories

### Total Number of Requirements and distribution in different Tiers

<table>
<thead>
<tr>
<th></th>
<th>BRONZE</th>
<th>SILVER</th>
<th>GOLD</th>
<th>PLATINUM</th>
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</thead>
<tbody>
<tr>
<td>PRE-REQUIRED</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
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<tr>
<td>CRITICAL</td>
<td>7</td>
<td>9</td>
<td>15</td>
<td>18</td>
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<tr>
<td>REQUIRED</td>
<td>114</td>
<td>131</td>
<td>181</td>
<td>188</td>
</tr>
<tr>
<td>GENERAL</td>
<td>76</td>
<td>73</td>
<td>24</td>
<td>14</td>
</tr>
<tr>
<td>OPTIONAL</td>
<td>23</td>
<td>8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>N/A</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>228</td>
<td>228</td>
<td>228</td>
<td>228</td>
</tr>
</tbody>
</table>
Are Sanctions applied in case of open Non-conformances?

The ACAP AES Standard considers different level of sanctions according to the different level of Non-conformances and the timeframe taken to complete corrective actions

- **Warning**: Major or Minor NC’s detected during verification, to be closed within given time with FU audit

- **Suspension**: When the causes of a Warning are not resolved within given time. Can be applied for maximum 6 months.

- **Withdrawal and Cancellation**: The ARSO Certificate and the ARSO Mark license can be withdrawn by the CB in case:
  - The causes of a Suspension are not removed on time
  - The Producer is not able to manage the Certification anymore
  - Serious infringement of integrity
  - Bankruptcy
  - Destruction of natural ecosystems (minor exceptions to be evaluated for compensation)

- **Child labor remediations**: Producers shall provide evidence of remedial actions for child laborers and his or her family following their removal from farm employment
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Part II

Principles, Criteria & Indicators

Focus and Compliance
Principle 6.1: Legal compliance:

Compliance with all applicable laws and regulations.

What does “Applicable laws and regulation” means?

“national laws and regulations and applicable international treaties and agreements”

Applicable to the Operation: means all the regulation that has in focus the activity in place (ex: forestry conservation and biodiversity or related to the production related to the forest)

Applicable to the Standard: means all the regulation that is clearly mentioned by the Standard or involving the requirements of the Standard.

Some example:

- licenses, permits required by law for the production under certification
- working conditions, contracts and wages for workers
- rules on conservation areas
- use of water and land

VERY IMPORTANT

- Applicable legislation must be identified, available and documented
- A system to keep update with legislation must be in place
- No existing unresolved issues of legal non-compliance demonstrated
Assure that all legally prescribed fees and royalties, taxes and other charges are paid by due date.

- Keep records of payment of taxes related to the forestry activity
- Assure payments are done by subcontractors
- Keep documents for export and payments
**Principle 6.2: Economic Sustainability**

*To produce process and trade forestry products in an economically and financially viable way.*
Economic viability: the capability of developing and surviving as a relatively independent unit. It does not always include profitability.

Criteria. Forest management shall strive towards economic viability while:

- taking into account the full environmental, social and operational costs of production
- ensuring the investments necessary to maintain the ecological productivity of the forest.
Optimal use and local processing of forest products

**Criteria:** Forest management and marketing operations shall encourage the optimal use and local processing of the forest’s diversity of products

Support for local value-added processing:
- Wood carving,
- Non-Timber Products

Provision of amenities to the communities
- list of amenities
- Social Responsibility assess.

Optimum use of timber species

Local processing of lesser used species

Collection of Non-Timber Forest Products

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Strengthen and diversify the local economy

**Criteria:** Forest management shall strive to strengthen and diversify the local economy avoiding dependence on a single forest product
Rate of use of forest products

Criteria: The rate of use of forest products shall not exceed levels which can be permanently sustained

⇒ Rates of forest products based on current inventory, growth and yield data.
  ▪ current quantities of timber and their replenish rates
  ▪ Permanent Sample plots, inventory and stock survey methodology
⇒ Rates of forest product harvesting shall be established prior to permitting harvesting for each resource type within each compartment.
⇒ The yield selection methods and limits on harvesting shall be clearly stated and documented

10 Steps for Economic Sustainable Approach in Forestry

1. Identify initial investment for forest management
2. Identify costs and benefits from the production activity
3. Identify additional costs to comply to sustainability standard
4. Identify the sources of funding for management of the Forest
5. Identify potential remunerative products coming from the forest
6. Enhance as much as possible diversification of uses of the forest remunerative products and activities.
7. For each product identify the rate of use that is sustainable for the forest’s ecosystem.
8. Accurately estimate the current quantities of timber (and other products) and their replenish rates
9. Establish sustainable rates of harvested product and confirm with trials before starting with real production
10. Implement methodology for trials and constant survey of stock
Principle 6.3: Forest management planning

Establish and implement an appropriately scaled forestry management plan

Forest management planning and stakeholder involvement. **Criterion:** The operator shall, proportionate to scale, intensity and risk of management activities, proactively and transparently engage affected stakeholders in its management planning processes, and shall engage interested stakeholders on request.

**Stakeholders**

A person or group with an interest in, in this case, forest and tree resources. It includes those with rights to, claims on, and/or responsibilities for forest and woodland areas, trees, forest and woodland goods and services.

**Broad grouping:**

⇒ State
⇒ Private Sector
⇒ Individual
⇒ Community

**Resources user:**

⇒ who use a forest resource
⇒ may not be a stakeholder
⇒ may be a very weak stakeholder (with little power) despite being important user

Interesting reading: [IUCN Eastern Africa Programme](https://core.ac.uk/download/pdf/48022483.pdf)
**Forest management plan**

**Criterion:** The Forest Management Plan shall provide the policy, vision/values, scope and objectives of forest management.

Due to the complexity of the Forest environment, a Management plan may require more years to be completed and developed in different timeframes:

**Example of planning for Forest management**

- **strategic planning**
  - plan for the whole business cycle, this may chance according to the kind of production in place in the forest (ex: for gum 9 to 18 years)
  - Plan and budget for planting, maintenance and harvesting in sustainable way.

- **intermediate planning**
  - establish an intermediate timeframe (ex: 5 years)
  - check for changes and/or improvements of the plan
  - check market and social/natural environment for changes

- **Annual Planning**
  - prepare budget for next year
  - make the point on the state of forest and productive areas (planting, harvesting...)
  - update maps and plan

- **Monthly plan**
  - prepare planning for next month
  - check costs from previous month to assure they are within budget
  - adjust plan according to budget

- **weekly Plan**
  - planning for next week
  - assure everything needed for production in place
  - prepare plan for purchasing of materials, labour organization, staff need, holidays, etc...

- **Daily Planning**
  - planning for daily activities
  - check work done on the day
What Actions should be taken to comply with the AES Standard Criteria 6.3.2?

1. **List** Management Objectives (ex: sustainability, production, community)
2. **Describe** the forest:
   - resources to be managed,
   - environmental limitations,
   - land use and ownership status,
   - socio-economic conditions and a profile of adjacent lands.
3. **Describe** silvicultural and/or other management system
4. **Establish** a rationale for rate of annual harvest and species selection.
5. **Establish** procedure for monitoring of forest growth and dynamics.
6. **Establish** environmental safeguards based on environmental assessments.
7. **Develop** plans for the identification and protection of rare, threatened and endangered species
8. **Draw** maps describing
   - the forest resource base
   - protected areas
   - planned management activities
   - land ownership.
9. **Describe and justify** harvesting techniques and equipment used.
10. **Establish** operational plans, procedures, controls and guidelines
11. **Update and revise** periodically the management planning and procedural documentation.
Staff competencies

**Criterion:** Adequate competencies among staff and contractors to implement the forest management plan that are fully consistent with the policies and objectives shall be established

**To build competence and awareness about forest management done in sustainable way:**

⇒ Specifications for staff competence
⇒ Employment and training records
⇒ Competence needed for implementation of the management plan
⇒ Consistency with relevant international agreements
⇒ Understanding of ecosystem-based management

Forests preservation

**Criterion:** The forest operator shall make best use of natural structures and processes.

⇒ Identify Flora and Fauna species living in the forest or in some way depending from the forest for their life
⇒ Implement preventative measures to maintain and enhance the health and vitality of forests
⇒ Assure that the structure of the vegetation is not changing irreversibly
⇒ Assure that conservation areas are maintained for future regeneration of the forest
Publicity of management plan

Criterion: While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan.

⇒ Objectives
⇒ Assessments results
⇒ Forest monitoring procedures (… growth … dinamics…)
⇒ Forest resources
⇒ Prescribed fees, royalties, taxes, etc.
6.4 Monitoring and assessment

**Principle 4: Conduct appropriately scaled monitoring and evaluation of forest management activities.**

**Monitoring frequency**

**Criterion:** The frequency and intensity of monitoring shall be determined by

- the scale and intensity of forest management operations
- the relative complexity and fragility of the affected environment.

Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of

**Main Steps for monitoring process**

- Monitoring is proportionate to the scale, intensity and risk of activities,
- Document and implement a mechanism for monitoring of the forest activities
- Engage the stakeholders and experts.
- Assess changes in the status of High Conservation Forest Values and...
- Adapt management strategies to ensure their effective protection.
- Qualify the personnel who does the evaluation
- The evaluation system is based on operation annual plan

**Records:**

- Keep records of frequency and intensity of monitoring
- Keep records of forest management.
- Keep records of monitoring management activities.

**Assessment of the management plan**

**Criterion:** update and revise periodically the management planning and procedural documentation and incorporate the results of monitoring and evaluation, stakeholder engagement or new scientific and technical information

**Main Steps for Assessment**

- Prepare a periodic review program
- Keep records of the reviews
- Merge results from monitoring and external info (ex: legal, science, technical ...)
Documentation of records for chain of custody

Criterion: Documentation shall be provided by the operator to enable monitoring and certifying organizations to trace each forest product from its origin, a process known as the chain of custody.

- List all products from the forest
- Implement chain of custody procedures
- Keep records of traceability
Research and data collection

**Criterion:** Forest management shall include the research and data collection needed to monitor, at a minimum:\(^1\):

⇒ **Yield** of all forest products harvested.
   - **Action:** List all products coming from the forest and all quantities harvested, from where and in what dates
   - **Question:** is my harvest kept under control?

⇒ **Growth rates**, regeneration and condition of the forest.
   - **Action:** check how the forest regenerates after harvest.
   - **Question:** is harvested product regenerated? In what quantity? How much time is needed?

⇒ **Composition** and observed changes in the flora and fauna.
   - **Action:** assess the status of plants and animals living in the forest for possible changes
   - **Question:** is my harvest changing conditions for life of plants and animals?

⇒ **Environmental and social impacts** of harvesting and other operations.
   - **Action:** evaluate the impact of harvesting on environment and communities (users of the Forest)
   - **Question:** How much impact? What are the consequences?

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\(^1\) At a Minimum = the listed elements must be present to comply. More can be added if needed.
⇒ **Costs, productivity, and efficiency** of forest management.
   Action: collect all data related to cost and productivity. Establish indicators to measure efficacy of the forest management
   Question: what is the cost for the management of the forest? What is the productivity? Is it balancing the costs? Is the forest managed in an effective way?

⇒ Checking operational plans and practices for **compliance with legislation**, codes of practice, regional and local prescriptions, guidelines and other relevant controls.
   Action: to keep updated on all relevant legislation and code of practices.
   Question: do I have a good system to keep updated? Are my operational practices in compliance with legislation?
6.5 Environmental management

**Principle 5:** Conserve water resources, soils and unique and fragile ecosystems and landscapes to maintain the ecological functions and integrity of the forest.

**Assessing environmental impacts**

**Criterion:** Assessment of environmental impacts shall be:

- completed
- appropriate to the scale, intensity of forest management and the uniqueness of the affected resources
- adequately integrated into management systems.

- Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities.
- **Environmental impacts shall be assessed prior to commencement of site-disturbing operations.**

To be considered for the assessment:

1. the quality and quantity of forest resources
2. site specific impacts
3. impacts on other resources
Collect relevant data …

including environmental and ecological data that will serve as regional and landscape-level context for the environmental impact assessment.

**The information shall include (at a minimum):**

<table>
<thead>
<tr>
<th>Maps of ecosystems:</th>
<th>Prepare a map and identify</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>▪ fragile Eco sites</td>
</tr>
<tr>
<td></td>
<td>▪ soil type</td>
</tr>
<tr>
<td></td>
<td>▪ forest cover and natural disturbance(^2) for the forest;</td>
</tr>
</tbody>
</table>

| Inventory of site specific environmental/ecological characteristics sensitive to impacts by forest operations. | ▪ steep slopes, |
|                                                                                     | ▪ shallow soils, |
|                                                                                     | ▪ moist soils |
|                                                                                     | ▪ soil subject to compaction (e.g. structured clay); |

| Maps of High Conservation Value Forests | Identify HCVF on map and describe the specific attributes of the forest |
| Classification of water bodies and identification of spawning grounds | Identify on map and describe. Ex: river, lake, sea, springs, etc.. |
|                                                                                     | Specify areas relevant for reproduction of aqua species |

| Information regarding management regimes in surrounding forests, in particular for the areas or sites abutting the forest. | Identify surrounding forests and other border areas |
|                                                                                     | Describe activities in place in the surrounding forests (how are they managed?) |

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\(^2\) A disturbance is a temporary change in environmental conditions that causes a pronounced change in an ecosystem. Fires and floods are examples of natural disturbances that force change upon an ecosystem. Natural disturbances are also caused by diseases, severe storms, insects, volcanic activity, earthquakes, droughts, and long-term freezing.
What is an Ecosystem

An ecosystem is comprised of all the non-living elements and living species in a specific local environment. Components of most ecosystems include water, air, sunlight, soil, plants, microorganisms, insects and animals. Ecosystems may be terrestrial – that is, on land – or aquatic. Sizes of ecosystems vary: they could entail a small puddle or an enormous swath of desert. Likewise, natural ecosystems can look quite different from one another.

Amy Harris, March 13, 2018
The natural variability and historic local pattern of the forest has been characterized.

The assessment is reviewed by qualified specialists and available for public review.

1. mean distribution and/or composition of tree species, forest cover types and/or forest unit as appropriate;

2. typical age class distribution.

3. major disturbance factors, including disturbance intervals

Benchmarks of current forest condition at the stand and landscape levels are in place to serve as references during impact assessment.

How is my forest compared to similar forests?

What can I do to improve?

Am I above, below or within the standards?
The results of environmental assessments are incorporated into management planning and implementation.

When the assessment indicates that the proposed management activities pose environmental impacts of significant risk, it is necessary to apply the needed actions:

a) reduce the risk to an **acceptable level** by employing an **alternative** management approach or mitigative measures;

b) The operator provides a **rationale**\(^3\) that includes evidence that the chosen option is acceptable based on the conservation of biodiversity and/or other environmental values. This rationale is to be compared with the risk of taking no actions.

c) In case no mitigation action is not possible, management activities do not occur.

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\(^3\) Rationale: Explanation of the logical reasons or principles employed in consciously arriving at a decision or estimate. Rationales usually document (1) why a particular choice was made, (2) how the basis of its selection was developed, (3) why and how the particular information or assumptions were relied on, and (4) why the conclusion is deemed credible or realistic.
Implement conditions necessary to achieve the intent of the silvicultural and harvest prescriptions including but not necessarily limited to:

⇒ Assure residual stocking:
  ▪ structure,
  ▪ species
  ▪ composition
  ▪ quality
⇒ Preserve specific habitat requirements
⇒ Protect sensitive sites
⇒ Employ trained tree markers
  ▪ Where forest workers have not received specific training

Summary: 6.5.1 Assessing environmental impacts
Endangered species

**Criterion:** Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collecting shall be controlled.

**ARS/AES3: 3.1.1 Biodiversity:**

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

WWF endangered species directory  [https://www.worldwildlife.org/species/directory?page=2](https://www.worldwildlife.org/species/directory?page=2)

IUCN red list of Threatened Species  [https://www.iucnredlist.org/](https://www.iucnredlist.org/)
Rare and uncommon species protection

**Criterion:** Special prescriptions shall be applied to protect rare and uncommon species.

- **rare and uncommon plant and wildlife species,**
  - appropriate buffer zones or
  - harvest modifications are applied
  - Species and habitat protection plans.
  - Records of activities
  - Establishment of a target for the future distribution and abundance of rare tree species
  - Target management plan and operational plans designed to:
    - Increase its relative abundance;
    - Conserve genetic diversity;
    - Ensure successful regeneration;
    - Maintain a balance of age classes in the management unit;
  - Harvest isolated stands only if
    - adequate natural regeneration is present within the stand or
    - seed from the appropriate seed zone is used to successfully regenerate (free to grow) an equivalent site within the seed zone;
  - Harvest isolated individuals only where they are showing signs of severe decline and are hazardous.

**Exotic species**

**Criterion:** The use of exotic species is carefully controlled and actively monitored to avoid adverse ecological impacts.

- Use justified and monitored. Only species known to be non-invasive
- Description, records, inspection and monitoring of areas of plantation
Ecological functions and values

**Criterion:** Ecological functions and values shall be maintained intact, enhanced or restored, including:

⇒ Forest regeneration and succession;
⇒ Genetic, species and ecosystem diversity; and,
⇒ Natural cycles that affect the productivity of the forest ecosystem.

**Objectives and Management**

- Determine a long-term desired future forest condition that maintains, enhances or restores natural conditions in natural forests.
- Set quantitative short to mid-term (e.g., 2–5 years) objectives to maintain, enhance or restore natural conditions in natural forests.
  - Set habitat objectives for species whose habitat requirements have not been addressed.
- Develop and implement plans to achieve the objectives.
- Comply with all regulations conditions for harvesting. Implement “best management practices” for protection of soils, water quality, sensitive sites.
- In partial cuts in natural forests, harvesting and other activities leave residual structures in sufficient quantity and distribution for them to serve their ecological functions. Precise objectives for different structural components are determined and documented.
- In clear cuts, harvesting maintains residual structures in sufficient quantities and distribution to fulfill their ecological functions. Specific ranges are described in the forest management plan, and are implemented.
Roads and Machinery management and Soil

Develop strategic access management plan to minimize and mitigate the negative impacts of roads. Collaborate with relevant authorities in implementing the strategic access management plan.

Comply with all regulations conditions for road construction.

Forest roads, skid trails and landings are well planned and designed to minimize soil erosion and loss of productive area during construction and use.

Harvest planned during periods of the year when risks are minimized.

Where mechanical site preparation is adopted it keeps to a minimum soil compaction, erosion and organic nutrient displacement.

In natural forests regeneration efforts should emulate natural processes such as natural regeneration, direct seeding, and use local seed sources.

Regeneration occurs in a timely fashion, and consistent with successional objectives.
Gap analysis

**Criterion:** Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.

⇒ identify potential gaps in the representative completeness of protected areas in the appropriate ecological unit contained on the management unit.
  - land cover gap analysis;
  - Enduring features gap analysis.
  - engage interested parties and qualified experts in carrying out the gap analysis and identifying candidate protected areas and seek for general consensus on decision taken
  - do not undertake forest management activities, including harvesting, silviculture and road construction in designated protected areas.

At its simplest, a gap analysis is an assessment of the extent to which a protected area system meets protection goals set by a nation or region to represent its biological diversity. Gap analyses can vary from simple exercises based on a spatial comparison of biodiversity with existing protected areas to complex studies that need detailed data gathering and analysis, mapping and use of software decision packages.

Gap analysis is a tool used in wildlife conservation to identify gaps in conservation lands (e.g., protected areas and nature reserves) or other wildlands where significant plant and animal species and their habitat or important ecological features occur.

It is used as a basis for providing recommendations to improve the representativeness of nature reserves or the effectiveness of protected areas so that these areas provide the best value for conserving biological diversity.
Erosion control

**Criterion:** Written guidelines shall be prepared and implemented to: control erosion; minimize forest damage during harvesting, road construction, and all other mechanical disturbances; and protect water resources.

| The presence of **soil erosion** in forests is a prime indicator of forest degradation. 

**Soil erosion** can have a major impact on a range of forest services – it reduces water quality, pollutes watersheds with nutrients and sediments, and is an indicator and cause of reduced soil fertility (and potentially, therefore, reduced forest productivity).

Soil erosion occurs when wind and water translocate soil particles. It is exacerbated by poor land management practices, such as the inappropriate placement of roads or timber extraction methods, especially in areas prone to soil movement, such as steep slopes or where there is loose or bare soil. |

Soil Management Plan

A soil management plan, which aims to maintain and protect soil health, quality and productivity and reverse soil degradation, shall be developed and implemented.

⇒ Implementation of Standard Operating Procedures that cover at a minimum the harvesting and silvicultural requirements that relate to erosion control and minimizing forest damage.
### Definition and scoring for erosion types

<table>
<thead>
<tr>
<th>Soil erosion type</th>
<th>Code</th>
<th>Definition</th>
<th>How to recognize</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Splash (1)</td>
<td>SP</td>
<td>Raindrop impact displaces soil particles vertically and downslope</td>
<td>Soil particles on lower parts of plants and/or a compacted (or dispersed) soil surface crust</td>
</tr>
<tr>
<td>2 Sheet wash/sheet (2)</td>
<td>S</td>
<td>Erosion of the top layer of the soil (also termed mudflow), as opposed to linear erosion (such as rill, gully and ravine)</td>
<td>Gravel/stone protruding from soil surface; root exposure; loss of darker topsoil horizon; subsoil exposure</td>
</tr>
<tr>
<td>3 Rill (2)</td>
<td>R</td>
<td>Irregular, downslope linear channels, up to 0.3 m deep and wide</td>
<td>Shallow, commonly long channels running downslope</td>
</tr>
<tr>
<td>4 Gully (4)</td>
<td>G</td>
<td>Irregular, v-shaped, steep-sided linear channel formed in loose material, 0.3 - 2.0 m deep, formed by water erosion</td>
<td>Deep pronounced channels</td>
</tr>
<tr>
<td>5 Ravine (4)</td>
<td>A</td>
<td>As per the definition of ‘gully’ but very deep and wide (i.e. &gt; 2 m deep and wide)</td>
<td>Very deep and wide channels</td>
</tr>
<tr>
<td>6 Landslide (4)</td>
<td>L</td>
<td>Sudden downslope movement of a concentrated mass of soil and rock, triggered by water saturation or earthquake (sometimes termed mass movement)</td>
<td>Almost vertical sides; rounded head (gully has narrow or sharp head)</td>
</tr>
<tr>
<td>7 Slumping (2)</td>
<td>SL</td>
<td>Slow, irregular, downward progression of a thin (&lt; 1 m) layer of soil, due to water saturation, possibly in combination with freezing-thawing process</td>
<td>Rounded scar; irregular, uneven downslope surface</td>
</tr>
<tr>
<td>8 Rotational slumping (3)</td>
<td>RS</td>
<td>A form of mass movement where rock and soil move downward along a concave face (see also ‘slumping’). The rock or soil rotates backward as it moves in a rotational slip. Rotational slumping differs from a landslide as it always has a concave sliding plane and multiple scars; landslides have relatively straight shear planes</td>
<td>Series of irregular scars and wide cracks</td>
</tr>
<tr>
<td>9 Terracette (2)</td>
<td>T</td>
<td>Small, irregular step-like formations due to a combination of slumping and preferential animal movement (tracks) on the surface of moderate-to-steep slopes</td>
<td>Irregular contour steps of about 0.1 - 0.2 m height on moderate-to-steep slopes in grasslands</td>
</tr>
<tr>
<td>10 Tunnel (3)</td>
<td>TU</td>
<td>Often hidden subsurface holes and tunnels that can break through to form surface gullies</td>
<td>Often hidden but may break through the soil surface as potholes and gullies</td>
</tr>
<tr>
<td>11 Roadside erosion (2 or 3)</td>
<td>RE</td>
<td>Erosion (mostly gullies) caused by concentrated water flow over an impervious road surface, cutting back into the road and damaging the road or eroding downslope. Score depends on gully or tunnel intensity</td>
<td>Erosion features below the point where water runs off the road</td>
</tr>
<tr>
<td>12 Streambank erosion (2 or 3)</td>
<td>SE</td>
<td>Undercutting of streambank by running water. Score depends on gully or tunnel intensity</td>
<td>Fresh cuts in banks; exposed tree roots; collapsed structures</td>
</tr>
<tr>
<td>13 Wind erosion (variable)</td>
<td>WE</td>
<td>Detachment and transport of soil particles by wind. Scoring is difficult because observed features (e.g. dunes and the scarring of vegetation and fence posts) are almost always the effects of wind erosion</td>
<td>Scouring on windward side; deposits at leeward side of obstacles; sand dunes</td>
</tr>
</tbody>
</table>

Soil management plan: recommended steps

1. Prepare a map or maps of the whole forest showing the risks of runoff and water erosion, flow pathways where water runs across the surface
2. Identify fragile soil and areas sensitive for erosion and compaction
3. Identify actions to reduce or prevent soil erosion and compaction
4. Identify different quality and productivity of soil
5. Identify the sustainable abstraction forestry products
6. Establish monitoring plan to keep erosion under control
7. Identify actions to preserve soil from erosion
8. Land and conservation areas at risk are identified and the policy and management measures are formulated
Non-chemical pest management methods

**Criterion:** Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and avoid the use of chemical pesticides.

If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks.

Chemical pesticides shall only be used when their use is essential to attain the following silvicultural objectives:

- The regeneration or restoration of non-forest lands;
- The regeneration of challenging species;
- The control of invasive exotic species;
- To control major insect outbreaks.

The rationale for each chemical pesticide use is documented and publicly available.
What is Integrated Pest Management (IPM)? What are the requirements for AES Standard?

⇒ IPM is a plant protection program based on ecological principles for the control of harmful pests (most common are insects, diseases, animals and weeds).

⇒ It gives priority to the use of physical, mechanical, cultural and biological control methods, in order to reduce and rationalize the use of agrochemicals.

⇒ It includes 3 main pillars: Prevention, Monitoring, Intervention

⇒ IPM actions taken to protect the plants are recorded
  • Traceability of propagation material used (seeds, seedlings, cuttings)
  • Results of monitoring and scouting activities
  • Forest management records
  • Spray and other intervention records (dosage, name of product)
  • Re-entry intervals
  • Pre-harvest intervals and harvest records
  • Training of Operators involved in Pesticide application

Steps to follow:

⇒ identify potential hazards (pests) and related control measures, including authorized chemicals
⇒ enforce a company policy on use of pesticides and assure this policy is understood by relevant employees
⇒ keep records of actions
⇒ train operators on Integrated Pest management
⇒ use pesticides only when there is no viable alternative control measure to be applied
Prevention

to implement practices to create the best conditions to prevent the development of harmful pests.

1. **Increase the resistance of the plants** to be affected by diseases or attacked by harmful pests and **eliminate or control** the conditions for the surviving, growth and reproduction of diseases and parasites

   **Examples:**
   - Best forest management practices (including prevention of erosion/compaction of soil, or occurrence of conditions unhealthy for the forest and its ecosystems) to obtain a healthy ecosystem with higher self-immunity level to resist parasites attacks.
   - For regeneration and re-plantation: use of healthy propagation materials and use species and varieties well acclimated to the area of the forest
   - Use non-chemical methods to prevent insects breeding and development.

Monitoring

Keep under control the presence of harmful pests in the forest or identify favorable conditions for their growth or reproduction.

1. Establish monitoring techniques and appropriate indicators to be checked

   **Examples of actions:**
   - Establish Monitoring frequency
   - Establish what to verify to assess presence of harmful pests
   - Establish the best conditions for the pests to start and complete their life cycle (ex: season, climate conditions, etc…)
   - Identify scouting techniques according to different targets (ex: fungus or insects) and their life habits
   - Use of special tools to detect presence of pests or to measure climate conditions (ex: pheromone traps, color attractive traps, or local meteo station)
   - Record results of monitoring

2. Establish intervention thresholds
According to scientific and practical experience establish the level of tolerance acceptable for presence of harmful pests before moving to the following step: intervention.

**Intervention**

This is the last step to be applied for forest protection form harmful pests.

Intervention has the scope to control and reduce the population of pests infesting the Crops.

Different methods of control can be applied:

**Examples:**

1. Use of pest’s natural enemies (**biological control agents**)
2. Use of products allowed for organic agricultural productions
3. Use of not-prohibited Plant protection products

**Biological control agents**

**Criterion:** Use of biological control agents shall be documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.

⇒ used only where other non-chemical pest control methods are expected to be ineffective.

⇒ The rationale for the use is documented and based on scientific evidence.

⇒ Records of application of biological control agents.
Waste disposal

**Criterion:** Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner at off-site locations.

- **Procedures** for safe handling, transportation and disposal of chemicals, liquid and solid non-organic wastes.
- **Written waste management program** (with recycling as a first option) is in place for used oil and plastic containers. **Inspections and awareness** of field workers.
- Instructions in the event of a hazardous product spillage
- Leaking equipment is repaired or taken out of the forest. Recovered material is taken to a designated disposal site.

Forest conversion

**Criterion:** Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion: (a) Entails a very limited portion of the forest management unit; (b) Does not occur on high conservation value forests; and (c) Will enable clear, substantial, additional, secure long term conservation benefits across the forest management unit.

- Not exceed 5% of the productive forest area.
- Do not occur on HCVF areas.
- Forest conversion demonstrates benefits across the landscape.
- Actions to convert all non-forest areas back to forest once the non-forest use has ceased.
6.6 High conservation value forests (HCVF)

**Principle 6:** Forest management activities shall maintain and enhance the high conservation values in the forest, applying precautionary approach in decision making.

**HCVF**

**Criterion:** The operator, through engagement with interested and affected stakeholders and other means and sources, shall assess and record the presence and status of the following High Conservation Values in the forest, appropriate to the scale, intensity and risk of impacts of management activities, and likelihood of the occurrence of the High Conservation Values:

- habitat of migratory species.
- forest types or ecosystems and old-growth forest which are rare, depleted or under-represented in the regional system.
- globally, regionally or nationally significant concentrations of biodiversity values (e.g. endemism, endangered species, refugia).
- globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.
- contain rare, threatened or endangered ecosystems.
- provide basic ecosystem services in critical situations.
- fundamental to meeting basic needs of local communities.
- critical to local communities' traditional cultural identity.
- Natural Heritage Places.

![map out HCVF areas in forest management plans](image)

![consultation with local stakeholders](image)

![identify all attributes of HCVF](image)

![assessment procedure, results and review documented](image)
Maintaining HCVF

**Criterion:** The operator shall develop and implement **effective strategies** that maintain and enhance the identified high Conservation Values,

⇒ through engagement with affected and interested stakeholders and experts.
⇒ apply the precautionary approach and be proportionate to the scale, intensity and risk of management activities.
  ▪ management plan with specific measures for conservation value attributes.
  ▪ statement of the measures to ensure high conservation value attributes

Managing change of HCVF

**Criterion:** The operator shall demonstrate that periodic monitoring is carried out to assess changes in the status of HCV’s, and shall adapt its management strategies to ensure their effective protection.

⇒ The monitoring shall include engagement with interested and affected stakeholders and experts.
  ▪ annual monitoring of effectiveness of the measures for HCVF.
  ▪ mechanism for identification of stakeholders and experts.
  ▪ data collection on harvest inventory
  ▪ records of protected species and method(s) and procedures for monitoring of HCVF
  ▪ documented programme for collecting data sufficient to demonstrate maintenance of any HCV.
  ▪ documented and implemented strategies to maintain and enhance HCVs
Assessment of HCVF

**Criterion:** The operator shall conduct an assessment of the HCVFs in accordance to relevant in consultation with relevant stakeholders.

⇒ clearly map all areas and each of the attributes identified for the specific HCVF
⇒ assessment of measures to maintain or enhance conservation attributes.

Consultation with specialists

**Criterion:** The consultative portion of the certification process shall place emphasis on the identified conservation attributes, and options for the maintenance thereof.

⇒ consult with knowledgeable specialists, scientific authorities and interested parties in the preparation of the assessment of High Conservation values.
⇒ interested stakeholder groups involved
6.7 Local community, local community land tenure, use rights and responsibilities

**Principle 7:** Maintain or enhance the long term social and economic wellbeing of forest workers and local communities as well as recognize and respect the legal, tenure and customary rights of local communities to own, use and manage their land, territories and resources.

**Why Community well-being is a relevant part in the ESMS?**

The Forest Management operation must consider the interests of local populations and community interest groups, regarding forest activities or changes that could have an impact on their health, employment or local natural resources.

**Community well being**

**Criterion:** The communities within or adjacent to the forest management area shall be given the first opportunity for employment, training, and other services.

- procurement of goods and services from local suppliers and communities.
- local workers and contractors
- build capacity and enhances quality of life and stability.
- sponsorship of local events, scholarships, sports teams, etc.
- emphasis on providing continuous employment opportunities
- continuing education in local communities.
- minimize or mitigate negative impacts on employment
- good practices on local employment and remuneration
6.8 Workers’ rights

**Principle 8:** Forest management operations shall maintain or enhance the long term social and economic wellbeing of forest workers

Criteria and Indicators for this principle are based on respect of Human Rights as from the Universal Declaration of Human Rights.

⇒ Proofed Respect of Local Authority Legislation (No open issues on violation of Human Rights)
⇒ Implemented declaration on social practices supporting Human Rights

**What are the ILO Conventions?**

- A part of the United Nations, the ILO has set minimum standards that should be a right for every worker, all over the world.
- The International Labor Organization (ILO) is a tripartite organization consisting of trade unions, governments and companies, and is part of the United Nations system.
- Conventions: are legally binding international treaties that may be ratified by member states. A convention lays down the basic principles to be implemented by ratifying countries.
This AES Standard is based on a voluntary choice for implementation. Legislation relevant to an Indicator of the AES Standard, more demanding of the Standard overrides the AES requirement. Where there is no legislation (or legislation is not so strict) the AES Standard requirements apply.

This concept also applies for Principle 6.8 in the case where the AES Standard indicator is more restrictive than local legislation.

⇒ **Forced or slave labor.**

- Employment is Freely Chosen when workers work voluntarily and without threat of penalty of any kind.
- Workers keep their documents and are free to live work on agreed schedule and live employment on due notice
- Possible exploitation channels:
  - Directly by the Forest manager
  - By an intermediary, such as labor broker
  - By third parties (unknown by the supplier and intermediary)

Migrant workers and indigenous people are particularly vulnerable to forced labour.
Child labour

The operator does not use child labour as stipulated in ILO Conventions 138 and 182.

- is a violation of fundamental human rights and has been shown to hinder children's development, potentially leading to lifelong physical or psychological damage.
- **Minimum Age**: no less than the age of completion of compulsory schooling and, in any case, no less than 15 years.
- **Hazardous Work**: work which is likely to jeopardize the health, safety or morals of young persons. The minimum age shall not be less than 18 years.
- **Light Work**: is not harmful for health and development and is not prejudice for attendance at school.
- **National laws** or regulations may permit the employment or work of persons 13 to 15 years of age on light work
- **Family Work**: special local rules apply for children helping the Family outside school. Regulation changes by Country.
Trade unions, freedom of association and the right to organize (ILO Conventions 87 and 98 as well as local legislation)

- right of forming and joining or not joining trade unions, freedom of association, the right to organize, and to collectively bargain, according to national law.
- The same right is guaranteed also when restricted by national law
- Formal and documented election of workers representatives
- No penalties and consequences for representatives and workers

Contracts

- contract or equivalent document, covering workers’ wages and working conditions, according to national law and relevant collective agreements.

Working conditions

- Minimum wage: minimum amount of remuneration that an employer is required to pay wage earners for the work performed during a given period. It usually defined by law Cannot be reduced by collective agreement or an individual contract
- proof that all agreed wage is paid
- men, women and migrant workers earn equal pay for equal work.
- Overtime hours are volunteer, recorded, limited, agreed, paid.
- Training on workers’ rights and two-way communication.

Wages:

⇒ Directly paid to the workers,
⇒ Freedom of the worker to dispose of his wages.
⇒ When needed, goods and services must be provided on site at a normal local price
⇒ Deductions from wages only under conditions prescribed by national laws
⇒ Prohibited any deduction from wages to obtaining or retain employment, made by a worker to an employer or his representative or to any intermediary
⇒ Health, safety and hygiene policy

Why the Health and safety Risk assessment is required?
This exercise has the aim to identify all significant hazards related to the health and safety of the workers while they carry out day-by-day work.

What are the steps for Health and safety Risk assessment?
The methodology to be applied includes the following steps:
4. Make a list of all activities carried out by the workers and related to the work carried out, including transportation from and to the work place.
5. Identify all possible hazards related to the work
6. Identify the possible origin/ causes of the hazard
7. Describe the probability for the Hazard to happen
8. Describe the consequences and their severity
9. Identify significant hazards likely to happen and prioritize significance
10. Describe mitigation and preventive actions to be implemented for each hazard
11. Identify actions to be taken in case of incident (happening of the hazard)
12. Prepare procedure and instructions

What is required to comply with AES St.?
⇒ written and updated occupational health, safety and hygiene policy and procedures
⇒ risk assessment base on recognized standards methodology
⇒ identification of risk significant for the operation carried out on site
⇒ evidence of training on HSE for all employees and effectiveness of training
⇒ clear identification and assignment of dangerous tasks to qualified employees
⇒ visual and documented evidence of application of measure to prevent accidents
⇒ record of accidents and statistics for improvement
⇒ evidence of monitoring and corrective actions
⇒ Emergency equipment (ex: first aid kits, fire extinguishers, operator contamination response material) available in enough quantity (i.e. readily available and accessible to workers) and quality (i.e. current and periodically serviced and appropriate to hazard) at all sites including mobile facilities
1. Training of workers for use of such equipment
2. Personal Protective Equipment available and correctly used
3. Visible warning signs


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</tr>
</thead>
<tbody>
<tr>
<td>Pruning</td>
<td>Cutting</td>
<td>Pruning tools</td>
<td>Cutting of hands, damage to eyes</td>
<td>High</td>
<td>High</td>
<td>Protection gloves and googles</td>
<td>Training on use of dangerous equipment</td>
<td>12345</td>
</tr>
</tbody>
</table>
Internet is an important source of information on how to address Health and Safety on forest works.

Follows some example of references for Health and Safety Management:

Occupational Health and Safety in Forestry – Issues of Relevance in Tropical Concessions – FAO
http://www.fao.org/forestry/45322-0d44ab967c53c998c7d84672da59993b0.pdf


⇒ Social welfare and benefits: evidence of compliance to legislation and collective negotiation

⇒ Non-discrimination: Workers shall be free of discrimination of any kind, whether in employment or opportunity, with respect to gender, wages, working conditions, and social benefits.

⇒ Retrenchment: upon consultation with workers, follow legislation

What is required to comply with AES St.?
This chapter is mainly based on interview of the workers and document assessment

⇒ Written self-declaration to comply with ILO 111 Convention
⇒ Employees are not aware of any form of discrimination, punishment, oppression, abuse, harassment
⇒ No gender or migrant workers discrimination
⇒ Job opportunities are publicly available
⇒ Evidence of protection of disabled people’s rights
⇒ Evidence of remedy actions to compensate previous discriminations

⇒ Retrenchment: upon consultation with workers, follow legislation
What is required to comply with AES St.?

⇒ Procedures for treatment of personal data
⇒ Procedures for surveillance methods applied
⇒ Evidence that employees have been informed
⇒ Compliance to local legislation about privacy
⇒ Records of personnel and complaints

⇒ Right to Privacy:
  ▪ employees are informed about the use of information, follows legislation
  ▪ Surveillance measures are done without harassment or intimidation and according to defined procedures
6.9 Forest production capacity

**Principle 9:** Forest management shall maintain the productive capacity of forests and land.

**Long term productive capacity of the land**

**Criterion:** The operator shall identify existing and potential productive uses of the defined forest area to support the maintenance of the long term productive capacity of the land.

**Harvesting rates**

**Criterion:** The operator shall identify harvesting rates for forest products commensurate with the long term productive capacity of the land. The operator shall consider:

1. structure and condition of the forest
2. estimates of sustainable yield
3. social impacts
4. Markets
5. optimal use of the defined forest area

⇒ long term sustainable harvesting rates calculated and applied
⇒ productive capacity of the defined forest area is not compromised.
⇒ Monitoring of forest condition, growth and harvest rates.
Selection of suitable species

**Criterion:** The operator shall manage plantations to ensure that planning considers the selection of suitable species for plantation establishment appropriate to each site.

⇒ Management plan developed and being implemented and include species selection method(s).

From: Aspects of Tree Species Selection - Dr Jens Haufe:


Infrastructure

**Criterion:** The operator shall plan, establish and maintain adequate infrastructure such as roads, tracks and bridges to ensure efficient delivery of forest products while minimizing negative impacts on the environment.
Appropriate silvicultural systems

**Criterion:** The operator shall use silvicultural systems that have been demonstrated to be appropriate for the forest type, the specific stand and site conditions, forest management and biodiversity objectives and market or product requirements.

Natural or assisted regeneration of natural forests

**Criterion:** The operator shall ensure that natural or assisted regeneration of native forests and establishment of plantations is effective and timely.

(species composition, forest health and productive capacity are not diminished, and effective establishment and growth are in place).

⇒ Assessment of the effectiveness of regeneration
⇒ Assessment of the stocking rate of plantations
⇒ Remedial actions where necessary
⇒ Arrangements to minimize damage to forest growing stock during forest operations.
Management of fire incidents

Criterion: The operator shall implement measures to manage the extent and impact of unplanned fires.

⇒ A Fire plans that has been developed and implemented
⇒ Procedure for fire management established and implemented
⇒ Training of workers and local communities for fire management

Use of non-wood products

Criterion: The operator shall regulate, monitor and control the use of non-wood products from the defined forest area where the operator is responsible for regulation of such use.

⇒ monitor and control use of non-wood products

Non-wood forest products (NWFP) play an important role in the daily life and well-being of millions of people worldwide.

NWFP include products from forests, from other wooded land and from trees outside the forest. Rural and poor people, in particular, depend on these products as sources of food, fodder, medicines, gums, resins and construction materials.

Traded products contribute to the fulfilment of daily needs and provide employment as well as income, particularly for rural people and especially women.

Internationally traded products, such as bamboo, rattan, cork, gums, aromatic oils and medicinal plants, contribute to economic development.

However, most NWFP are used for subsistence and in support of small-scale, household-based enterprises.

FAO - Global Forest Resources Assessment 2000
Table 10-1. Main categories of NWFP on which data have been collected

<table>
<thead>
<tr>
<th>Categories</th>
<th>Description</th>
<th>Categories</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant products</td>
<td></td>
<td>Animals and animal products</td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>Vegetable foodstuffs and beverages provided by fruits, nuts, seeds, roots,</td>
<td>Living animals</td>
<td>Mainly vertebrates such as mammals, birds, reptiles kept/bought as pets.</td>
</tr>
<tr>
<td></td>
<td>mushrooms, etc.</td>
<td>Honey</td>
<td>Products provided by bees.</td>
</tr>
<tr>
<td>Fodder</td>
<td>Animal and bee fodder provided by leaves, fruits, etc.</td>
<td>Beeswax</td>
<td></td>
</tr>
<tr>
<td>Medicines</td>
<td>Medicinal plants (e.g. leaves, bark, roots) used in traditional medicine</td>
<td>Bushmeat</td>
<td>Meat provided by vertebrates, mainly mammals.</td>
</tr>
<tr>
<td></td>
<td>and/or for pharmaceutical companies.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perfumes and cosmetics</td>
<td>Aromatic plants providing essential (volatile) oils and other products</td>
<td>Other edible animal products</td>
<td>Mainly edible invertebrates such as insects (e.g. caterpillars) and other</td>
</tr>
<tr>
<td></td>
<td>used for cosmetic purposes.</td>
<td></td>
<td>&quot;secondary&quot; products of animals (e.g. eggs, nests)</td>
</tr>
<tr>
<td>Dying and tanning</td>
<td>Plant material (bark and leaves) providing tannins and other plant parts</td>
<td>Hides, skins for</td>
<td>Hide and skin of animals used for various purposes.</td>
</tr>
<tr>
<td></td>
<td>(especially leaves and fruits) used as colortants.</td>
<td>trophies</td>
<td></td>
</tr>
<tr>
<td>Utensils, handcrafts and</td>
<td>Heterogeneous group of products including thatch, bamboo, rattan, wrapping</td>
<td>Medicine</td>
<td>Entire animals or parts of animals such as various organs used for</td>
</tr>
<tr>
<td>construction materials</td>
<td>leaves, fibres.</td>
<td></td>
<td>medicinal purposes.</td>
</tr>
<tr>
<td>Ornaments</td>
<td>Entire plants (e.g. orchids) and parts of the plants (e.g. pots made from</td>
<td>Colourants</td>
<td>Entire animals or parts of animals such as various organs used as</td>
</tr>
<tr>
<td></td>
<td>roots) used for ornamental purposes.</td>
<td></td>
<td>colourants.</td>
</tr>
<tr>
<td>Exudates</td>
<td>Substances such as gums (water soluble), resins (water insoluble) and latex</td>
<td>Other non-edible</td>
<td>Bones used as tools.</td>
</tr>
<tr>
<td></td>
<td>(milky or clear juice), released from plants by exudation.</td>
<td>animal products</td>
<td></td>
</tr>
</tbody>
</table>

FAO - Global Forest Resources Assessment 2000
6.10 Benefits from the forest

**Principle 10:** Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

**Diversity of benefits and products**

**Criterion:** The operator shall identify, produce, or enable the production of, diversified benefits and/or products, based on the range of resources and ecosystem services existing in the forest in order to strengthen and diversify the local economy proportionate to the scale and intensity of management activities.

⇒ utilisation and/or harvesting plan that allows sustainability and optimal use of forests products.
⇒ List of identified benefits and products obtained from forests.

**Sustainable harvesting**

**Criterion:** The operator shall normally harvest products and services from the forest at or below a level, which can be permanently sustained.

⇒ Information on Quantities of Production and consumption
⇒ optimal utilization of harvested forest products.
⇒ Investment in research, development for new and improved technologies in forest management. Financial Plan
Mitigating positive and negative externalities

**Criterion:** The operator shall demonstrate that the positive and negative externalities of operation are included in the management plan.

⇒ Developed and implemented plan guiding operations.
⇒ Area and percentage of forest land managed for general recreation and tourism in relation to total area of forest land
⇒ Range and use of recreation and tourism activities available
⇒ Local processing, services and value addition

Forest externalities are those forest goods and services which are not actively marketed, but which are also valuable for other people than the forest owners. Often these externalities include biodiversity, erosion protection and recreation – externalities that we know to be valuable, but the value of which is difficult to assess. This makes it also difficult to promote them and to offer the forest owners incentives to do so.
Local processing, services and value addition

**Criterion:** The operator shall use local processing, local services, and local value adding to meet the requirements of the organization where these are available, proportionate to scale, intensity and risk. If these are not locally available, the operator shall make reasonable attempts to help establish these services.

⇒ Local processing using local services shall be used in **value adding operations** unless there is valid justification to use external services.
⇒ make available some proportion of **diversified forest products for use by local users** and such use shall be encouraged.

Commitment to long-term economic viability

**Criterion:** The operator shall demonstrate, through its planning and expenditures proportionate to scale, intensity and risk, its commitment to long-term economic viability

⇒ Investment and expenditure = viability of the investment.
⇒ The **annual budget** and **long-term plan** is available on site.
⇒ report(s) of indication of economic viability of forest.

Economic viability, including the environmental and social benefits deriving from forests, is a pre-requisite for wider adoption of sustainable forest management practices.
Efficient and optimal use of harvested forest products

**Criterion:** The operator shall pursue the efficient and optimal use of harvested forest products to encourage best use of forests within the defined forest area having due regard to the environmental, economic, social and cultural requirements of the standard.

⇒ harvesting plan: consider environmental, economic, social and cultural requirements.

Recovery of wasted forest products

**Criterion:** The recovery and value adding of otherwise wasted forest products shall be encouraged wherever possible.

⇒ Value adding and recycling operations well defined and implemented. Trainings on use of wasted products

Relevant works are done to identify added values to forests wastes.

It is important to carry out an in-deep evaluation on what kind of wastes are coming from the production operations in the forest.

Wastes coming from sawmilling of different wood species may contain different natural compounds and can be used for different purposes. Examples:

⇒ Production of biomass for energy purpose
⇒ Extraction of valuable compounds for medical, cosmetic or other use
⇒ Further processes to obtain added value materials.
6.11 Forest ecosystem contribution to ecological cycles

**Principle 11:** Forest Management shall maintain forest conditions and management activities that contribute to the health of ecological cycles.

**Anthropogenic forest related emissions by sources and removals by sinks**

**Criterion:** The operator should identify, quantify, document and report anthropogenic forest related emissions by sources and removals by sinks, forest carbon stocks, and forest carbon stock and forest-area changes resulting from implementation of operators’ forest activities.

⇒ Process/procedure for identification, quantification, documentation and reporting of anthropogenic forest related emissions by sources and removals by sinks,

⇒ forest carbon stocks and forest-area changes resulting from operators’ forest and non-forest activities

⇒ Strategy and action plan for reducing anthropogenic forest related emissions by sources;

⇒ strategy and action plan for promoting sustainable management of forests and enhancement of forest carbon stocks prepared and being implemented.

⇒ Record of all data and activities

⇒ Where a forest carbon projects is one of the objectives, the forest carbon program is defined in a published document
### ACAP AES Standards
**Practical Guidelines for Certification**
**ACAP AES Sustainability FORESTRY ARS/AES 3**

**Table 11.2** Summary of supply-side mitigation options in the AFOLU sector: Technical Mitigation Potential: Area = (tCO₂eq/ha/yr); Animal = percent reduction of enteric emissions. Low = < 1; < 5% (white); Medium = 1–10; 5–15% (light grey); High = > 10, > 15% (grey); Ease of implementation (acceptance or adoption by land managers): Difficult (white), Medium (light grey), Easy, i.e., universal applicability (grey); Timescale for implementation: Long term (at research and development stage; white), Mid term (trials in place, within 5–10 years; light grey), Immediate (technology available now, grey).

<table>
<thead>
<tr>
<th>Categories</th>
<th>Practices and Impacts</th>
<th>Technical Mitigation Potential</th>
<th>Ease of Implementation</th>
<th>Timescale for implementation</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reducing deforestation</td>
<td>C: Conservation of existing C pools in forest vegetation and soil by controlling deforestation, protecting forest in reserves, and controlling other anthropogenic disturbances such as fire and pest outbreaks. Reducing slash and burn agriculture, reducing forest fires.</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>CH₄ N₂O: Protection of peatland forest, reduction of wildfires.</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Aforestation/Reforestation</td>
<td>C: Improved biomass stocks by planting trees on non-forested agricultural lands. This can include either monocultures or mixed species plantings. These activities may also provide a range of other social, economic, and environmental benefits.</td>
<td></td>
<td></td>
<td></td>
<td>3, 4, 5</td>
</tr>
<tr>
<td>Forest management</td>
<td>C: Management of forests for sustainable timber production including extending rotation cycles, reducing damage to remaining trees, reducing logging waste, implementing soil conservation practices, fertilization, and using wood in a more efficient way, sustainable extraction of wood energy.</td>
<td></td>
<td></td>
<td></td>
<td>6, 7, 8, 9</td>
</tr>
<tr>
<td></td>
<td>CH₄ N₂O:1. Wildlife behaviour modification.</td>
<td></td>
<td></td>
<td></td>
<td>10, 11, 12</td>
</tr>
<tr>
<td>Forest restoration</td>
<td>C: Protecting secondary forests and other degraded forests whose biomass and soil C densities are less than their maximum value and allowing them to sequester C by natural or artificial regeneration, rehabilitation of degraded lands, long-term follow up.</td>
<td></td>
<td></td>
<td></td>
<td>13, 14</td>
</tr>
<tr>
<td></td>
<td>CH₄ N₂O: Wildlife behaviour modification.</td>
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<tr>
<td>Integrated systems</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture, forestry and agroforestry (including agroforestry and agrosilvopastoral systems)</td>
<td>C: Mixed production systems can increase land productivity and efficiency in the use of water and other resources and protect against soil erosion as well as serve carbon sequestration objectives.</td>
<td></td>
<td></td>
<td></td>
<td>79, 80, 81, 82, 83, 84, 85, 86, 87, 88</td>
</tr>
<tr>
<td></td>
<td>N₂O: Reduced N inputs will reduce emissions.</td>
<td></td>
<td></td>
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<tr>
<td>Other mixed biomass production systems</td>
<td>C: Mixed production systems such as double cropping systems and mixed crop-livestock systems can increase land productivity and efficiency in the use of water and other resources as well as serve carbon sequestration objectives. Perennial grasses (e.g., bamboo) can in the same way as woody plants be cultivated in shelter belts and riparian zones/buffers strips provide environmental services and support C sequestration and biomass production.</td>
<td></td>
<td></td>
<td></td>
<td>82, 89, 90</td>
</tr>
<tr>
<td></td>
<td>N₂O: Reduced N inputs will reduce emissions.</td>
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<td></td>
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<tr>
<td>Integration of biomass production with subsequent processing in food and bioenergy sectors</td>
<td>C: Integrating feedstock production with conversion, typically producing animal feed that can reduce demand for cultivated feed such as soy and corn and can also reduce grazing requirements. Using agricultural and forestry residues for energy production.</td>
<td></td>
<td></td>
<td></td>
<td>91, 92, 93, 94, 95</td>
</tr>
<tr>
<td></td>
<td>N₂O: Reduced N inputs will reduce emissions.</td>
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</table>
Control of air pollution and emissions

**Criterion:** The operator should identify, assess, document and report pollution and emissions, including greenhouse gases resulting from the operators activities.

Process, procedure for identification, assessment, documentation and reporting of pollution and emissions,

⇒ **greenhouse gases** from the operators forest and non-forest activities, (GHGs, Pools, tier level, land use categories, context, etc.)

⇒ control of air pollution and emissions policy at a minimum:
  - avoid of fossil fuel carbon emissions by use of biomass for energy;
  - develop and implement practices to reduce pollution and GHG emission
  - Provide for establishment of dedicated plantations for sustainable production of biomass for energy;
  - Provide for substitution of fossil fuels and energy-intensive materials.

  - restraints on the burning of vegetation to control greenhouse gas emissions and to protect organic matter and biodiversity.

<table>
<thead>
<tr>
<th>Negative emission</th>
<th>carbon sequestration</th>
<th>storage in forests and forest products;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive emission</td>
<td>manufacturing-related emissions</td>
<td>Forest and non-forest emissions</td>
</tr>
<tr>
<td>Positive emission</td>
<td>other emissions associated with the cradle-to-gate portion of the value chain</td>
<td>all activities, direct and ancillary, starting in the forest</td>
</tr>
<tr>
<td>Positive emission</td>
<td>emissions from product transport and use</td>
<td>not including end-of-life emissions;</td>
</tr>
<tr>
<td>Positive emission</td>
<td>emissions associated with use and end-of-life</td>
<td>transport of product</td>
</tr>
</tbody>
</table>

from: FAO Forestry Paper 159 – Impact of global forest industry on atmospheric GHG - 2010
Energy efficiency and renewable energy

**Criterion:** The operator should have an energy efficiency programme with goals and implementation activities for increased efficiency, for reducing dependency on non-renewable sources and for increasing the use of renewable energy.

1. Make an energy efficiency **programme**
2. specify **goals** and its **implementation**
3. Identify and **use renewable energy sources**
4. **report** on review of **energy efficiency** use
5. **reduce** dependency on non-renewable sources
6. implement practices to **reduce** pollution and GHG

**Renewable energy** is energy that is collected from renewable resources, which are naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat.

**Renewable energy** often provides energy in four important areas: electricity generation, air and water heating/cooling, transportation, and rural (off-grid) energy services.

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Wikipedia