This Word document has been adapted from Chapter 4 of *Criteria and Indicators for the Sustainable Management of Tropical Forests*, which was published by ITTO in 2016 as Policy Development Series No. 21. The cells in the tables presented below can be filled by placing the cursor in them and typing. If the space in any given cell is insufficient, additional information can be added at the end of the document.

**4 C&I monitoring, assessment and reporting format**

**Criterion 1: enabling conditions for sustainable forest management**

*The necessary enabling conditions for SFM at all scales—national/subnational, landscape and local (FMU)—are political commitment and supportive policies, laws and regulations; conducive economic and financial conditions; appropriate institutions and adequate and equitable governance; adequate and secure forest tenure, access and use rights, including customary and traditional rights; and appropriate planning, monitoring and reporting frameworks.*

***Policy, legal and governance framework: indicators 1.1–1.3***

*Forests, especially those in the PFE, should be secured, protected and managed in accordance with best management practices involving all stakeholders, in particular indigenous peoples and local communities dependent on forests.*

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| **Indicator 1.1**  **Policies, laws and regulations for governing forests** | National level | FMU  level | Landscape level1 |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| ***Framework governing:*** | ***Policies*** | ***Laws*** | ***Regulations*** |
| a) National SFM objectives, including production,  protection and investment |  |  |  |
| b) Mechanisms for cross-sectoral policy coordination |  |  |  |
| c) Establishment and security of the PFE |  |  |  |
| d) Forest tenure and associated rights |  |  |  |
| e) Participation of local communities and other stakeholders in forest |  |  |  |
| f) Control of forest management operations |  |  |  |
| g) Control of illegal activities in forest areas |  |  |  |
| h) Health and safety of forest workers |  |  |  |
| |  | | --- | | ***Notes***   * List all relevant policies, laws and regulations * For each policy, law and regulation, give a brief description of any sections relevant to a) through h) * List significant gaps in the coverage of policies, laws and regulations (taking into account a) through h) * List significant changes made to laws, policies and regulations since the previous report | | ***Cross-references***  ITTO (2015), Principle 1; Blaser et al. (2011) and other editions of *Status of Tropical Forest Management*; Convention No. 169 of the International Labour Organization; UN Declaration on the Rights of Indigenous Peoples; UNFF reporting | | | | |
| |  | | --- | | ***Cross-references***  ITTO (2015), Principle 1; Blaser et al. (2011) and other editions of *Status of Tropical Forest Management*; Convention No. 169 of the International Labour Organization; UN Declaration on the Rights of Indigenous  Peoples; UNFF reporting | | | | |

*1 = fully applicable; = partially applicable; = not applicable.*

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| **Indicator 1.2**  **Forest tenure and ownership** | | National level | FMU  level | Landscape level1 |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
| ***Class*** | ***Category*** | ***Area (ha)*** | | |
| PFE | **Publicly owned**   * State (including subnational states or provinces, where applicable), including share designated as leasehold * Municipal/communal or public associations * Other public *[please specify]* |  | | |
| **Privately owned**   * Private investment firms * Foundations * Private associations of smallholders, communities * Individuals/families |  | | |
| **Indigenous-owned** |  | | |
| Non- PFE | **Publicly owned**   * State (including subnational states or provinces, where applicable), including share designated as leasehold * Municipal/communal or public associations * Other public *[please specify]* |  | | |
| **Privately owned**   * Private investment firms * Foundations * Associations of smallholders, communities * Individuals/families |  | | |
| **Indigenous-owned** |  | | |
| **Notes**   * Indicate the specific tenure and ownership situation according to the country’s legal context * Where applicable, specify differences between land and tree ownership, and forest carbon ownership * Distinguish between natural and planted forest | | | | |
| **Cross-references**  F[AO (2015); Rights and Resources Initiative tenure data (www.rightsandresources.org/en/resources/](http://www.rightsandresources.org/en/resources/) tenure-data) | | | | |

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| **Indicator 1.3 Forest governance** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| ***Questions to characterize the indicator*** | ***Yes/No*** | ***Further information*** | |
| a) Does the forest law include a specific statement that constitutes the national (or subnational, where applicable) policy for, or objective of, SFM? |  |  | |
| b) Are the laws governing the use of forest resources consistent and clear? |  |  | |
| c) Do laws recognize traditional and indigenous rights to  forest resources? |  |  | |
| d) Are there mechanisms in government to address forest- related policies and implementation cross-sectorally? |  |  | |
| e) Does the law protect non-marketed goods and services (e.g. ecosystem integrity, water quality, cultural resources)? |  |  | |
| f) Are stakeholders able to provide input to the creation of forest policies, public forest management plans and subsidiary rules? |  |  | |
| g) Are inventory data, management plans, laws and budgets for state-owned forests easily accessible to the public? |  |  | |
| h) Is the collection, sharing and redistribution of forest  taxes, royalties, charges and rents effective? |  |  | |
| i) Does the administration’s effort to combat forest crimes encompass the whole forest supply chain (transport, processing and trade)? |  |  | |
| j) Do serious conflicts exist between the state and stakeholders that interfere with forest use? |  |  | |
| k) Does the public have opportunities to report corrupt  practices to appropriate authorities? |  |  | |
| l) Are there regular audits of the forest agencies, and is action taken on the findings? |  |  | |
| m) Do communication strategies and feedback  mechanisms exist to increase awareness of SFM? |  |  | |
| |  | | --- | | ***Notes***   * Based on national consultation processes as appropriate | | ***Cross-references***  ITTO (2015), Principle 1; PROFOR Forest Governance Toolbox | | | | |

**Institutional framework: indicators 1.4 and 1.5**

*Appropriate and capable institutions with effective linkages between them are essential for SFM. Well- organized implementing agencies and research and educational institutions with sufficient appropriately trained personnel are needed to ensure that forests are managed in accordance with scientific, technical, socioeconomic and traditional knowledge.*

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| **Indicator 1.4**  **Institutions responsible for, and supportive of, forest management** | National level | FMU  level | | Landscape  level |
|  |  | |  |
| ***Proposed monitoring and reporting format*** | | | | |
| ***Institutions*** | ***Name*** | | ***Nature of responsibilities*** | |
| Primary ministry in charge for forest management |  | |  | |
| Other public *[please specify]* |  | |  | |
| Semi-public (e.g. public enterprises) |  | |  | |
| Supporting |  | |  | |
| Other *[please specify]* |  | |  | |
| |  | | --- | | ***Notes***   * Describe public institutions (e.g. forest agencies and enterprises) with primary responsibilities for forest   management, wildlife resources, REDD+, etc.   * “Other” institutions may include, for example, ministries and public agencies dealing with aspects   relevant to forest management, such as environment, energy and water; educational, training and  research organizations; private-sector organizations (e.g. producer organizations); civil-society  organizations; the informal sector; and financial and investment institutions | | ***Cross-references***  Blaser et al. (2011) and other editions of ITTO’s *Status of Tropical Forest Management* reports; FAO (2015);  FAO (2014a) and other editions of FAO’s *State of the World’s Forests*; FAO policy papers; PROFOR policy briefs | | | | | |

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| **Indicator 1.5**  **Availability of professional and technical personnel to perform and support forest management** | | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
| ***Category of personnel*** | ***Public [number]*** | | ***Private [number]*** | |
| **Forest management** |  | |  | |
| Professionals in forest management (university- educated/technical) |  | |  | |
| Trained forest workers in forest management |  | |  | |
| Forest-based research and forest-based education |  | |  | |
| Others *[please specify]* |  | |  | |
| TOTAL |  | |  | |
| **Downstream forest product industries and trade** |  | |  | |
| Professionals (university-educated/technical) |  | |  | |
| Trained workers |  | |  | |
| Other indirect employment *[please specify]* |  | |  | |
| TOTAL |  | |  | |
| ***Notes***   * Forest management encompasses forest management planning, the implementation of forest management plans, and monitoring, assessment and reporting, including administrative duties * As per Indicator 1.4, “public” comprises the primary ministry in charge of forest management,   semi-public institutions, and those public institutions listed in “other”; it also encompasses forestry administration, research and education   * “Private” includes forest concessions, private operations, professional organizations, non-governmental   organizations, etc. | | | | |
| ***Cross-references***  F[AO (2015); data from the International Labour Organization (www.ilo.org/global/statistics-and-databases)](http://www.ilo.org/global/statistics-and-databases)) | | | | |

***Planning and monitoring framework: indicators 1.6–1.9***

*Planning is needed at the landscape scale—that is, over areas large enough to be resilient in the face of environmental change and to maintain ecological integrity. Landscape-scale planning is essential for the sustainable management of natural resources, including forests, and it requires coordinated interinstitutional action and the participation of diverse stakeholders. Planning for SFM thus needs an adequate framework, combined with the use of appropriate technologies and effective monitoring and control.*

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| **Indicator 1.6**  **Integration of forests in national and subnational land-use planning** | | National level | FMU  level | Landscape  level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
| Land-use policies and planning |  | | | |
| ***Notes***   * Describe the mechanisms used to formulate land-use policies aimed at the conservation and   sustainable use of natural resources, including land, soils, forests and water   * Describe the extent to which SFM planning is part of landscape-level planning * Describe how multiple-use forest management is integrated into wider land-use planning * List the major constraints encountered in the integration of forests in land-use planning | | | | |
| ***Cross-references***  W[orld Bank sector analysis strategies (www.worldbank.org/en/projects-operations/country-strategies)](http://www.worldbank.org/en/projects-operations/country-strategies)) | | | | |

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| **Indicator 1.7**  **Capacity and mechanisms for management planning and the periodic monitoring of implementation** | | National level | FMU  level | Landscape  level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
| Capacity and mechanisms |  | | | |
| ***Notes***   * Describe the mechanisms used for planning SFM (including periodic monitoring, evaluation and feedback on progress) * Describe how periodic national and subnational forest resource assessments are carried out and how   data are used   * Describe how multiyear forest management plans are developed and used for management planning at   the FMU level   * Describe the capacity available and the institutions responsible for management planning and monitoring * List the major constraints encountered in management planning and monitoring | | | | |
| ***Cross-references***  FAO (2015) | | | | |

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| **Indicator 1.8**  **Long-term projections, strategies and plans for production PFE and protection PFE** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| Production PFE (including expanded use of planted forest) | [Textual response, if possible with estimates in hectares] | | |
| Protection PFE (including expanded use of planted  forest for protection purposes) | [Textual response, if possible with estimates in hectares] | | |
| ***Notes***   * Describe projections (five years and beyond), strategies or plans for production (including expanded   use of planted forest) to bring the management of harvesting practices and patterns into alignment  with SFM objectives and forest protection, based on categories as described in annexes 3, 4 and 5 | | | |
| ***Cross-references***  FAO (2015); FAO (2014a) and other editions of FAO’s *State of the World’s Forests*; national REDD+ strategies; Aichi Biodiversity Targets | | | |

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| **Indicator 1.9**  **Stakeholder participation in land-use and forest management planning, monitoring and assessment** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| List the institutions responsible for stakeholder  participation in land-use management planning |  | | |
| Describe the processes of stakeholder participation, indicating the parties involved and their levels of involvement |  | | |
| Describe any improvements proposed and any constraints to their introduction |  | | |
| ***Notes***   * List the institutions responsible for stakeholder participation in land-use management planning at the   landscape scale (for small countries, this may also be the national level) | | | |
| ***Cross-references***  ITTO (2015), Principle 2; Rights and Resources Initiative (2015); REDD+ readiness: FCPF (2013); UNEP (2014) | | | |

***Economic framework: indicators 1.10 and 1.11***

*One of the most important requirements for achieving SFM is the availability of financial resources (e.g. grants, concessional funding and loans) and the provision of incentives and appropriate economic instruments that promote and support SFM. Capturing the full value of forests, including forest products and environmental services, and ensuring the equitable distribution of costs and benefits, are essential for SFM.*

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| **Indicator 1.10**  **National, subnational and international public and private funding committed to SFM** | National level | FMU  level | Landscape   level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| *Source* | *Amount*  *(US$’000)* | *Comment*  *(including reference year)* | |
| **Government sources**   * National government * Subnational government |  |  | |
| **International aid partners**   * Grant * Loan |  |  | |
| **Private sources**   * Domestic * Foreign |  |  | |
| ***Notes***   * Provide the exchange rate if reported in national currency * Indicate if funding is annual or multiyear budget | | | |
| ***Cross-references***  Collaborative Partnership on Forests Sourcebook; REDD+ financing reporting; Matta (2015); statistics of the International Finance Corporation; Forest Trends reporting on international private funding in forestry/REDD+ | | | |

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| **Indicator 1.11**  **Incentives to encourage SFM** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| Assess and briefly describe the framework conditions (e.g.  legal, policy, institutional) to attract investments in forestry |  | | |
| Are economic instruments and other incentives being implemented to encourage SFM? |  | | |
| * If yes, give the name of each economic instrument/ incentive, a short description and explanation of how it is used, and the main institution(s) and mechanism(s) responsible for its implementation |  | | |
| Existence of a forest fund to support SFM (natural forests, planted forest). Specify the yearly amount and the major use |  | | |
| ***Notes***   * Incentives to encourage SFM include financial instruments, such as national/bilateral /multilateral aid/financing/grants/loans/subsidies; financial guarantees; differential/preferential interest rates; tax reductions; and transfer/compensation payments. They also include other kinds of economic incentive, such as capacity development; market commitment; preferred market access (e.g. FLEGT); market recognition (e.g. forest certification); risk mitigation; value adding; recognition and/or restitution of use (tenure/traditional) rights; and gains in efficiency and/or effectiveness | | | |
| ***Cross-references***  Collaborative Partnership on Forests Sourcebook; Matta (2015) | | | |

**Criterion 2: Extent and condition of forests**

*SFM is a long-term enterprise that depends on the stability and security of the PFE. This criterion lays the foundation for SFM within a well-planned distribution of production and protection forests. It considers the extent and percentage of land under natural and planted forests and the wider context of land-use planning, the need for the conservation of biodiversity and soil and water protection through the maintenance of a range of forest types, and the integrity and condition of forest resources.*

***Extent and condition of forests: indicators 2.1–2.8***

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| **Indicator 2.1**  **Extent and percentage of total land area under comprehensive land-use plans** | National level | FMU  level | Landscape   level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| *Description/title of land-use plan* | *Total area (ha)* | *Comment* | |
|  |  |  | |
|  |  |  | |
| ***Notes***   * Provide the area and percentage of the total land area under comprehensive land-use plans;   specify the area classified as PFE in the land-use plan   * Describe the processes for undertaking land-use/landscape planning * Indicate new trends in land-use planning (e.g. REDD+ and forest-related “Nationally Appropriate   Mitigation Actions”—NAMAs) | | | |
| ***Cross-references***  FAO (2015); Blaser et al. (2011) and other editions of ITTO’s *Status of Tropical Forest Management* reports | | | |

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| **Indicator 2.2**  **Extent of forests committed to production**  **and protection** | National  level | FMU  level | | Landscape level |
|  |  | |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | Dedicated to: | | | |
| Wood (and non  wood forest product) production (ha) | | Forest protection (ha) | |
| **Natural forest**   * PFE * Non-PFE\* |  | |  | |
|  | |  | |
|  | |  | |
| **Planted forest**   * PFE * Non-PFE\* |  | |  | |
|  | |  | |
|  | |  | |
| Area of PFE with boundaries physically demarcated |  | |  | |
| ***Notes***   * \*Countries lacking a PFE should complete the non-PFE row * Indicate reference year and source * Indicate the area of privately held forest in the PFE * Indicate the extent and boundaries of the PFE that are uniquely identified, registered and formally   recognized | | | | |
| ***Cross-references***  FAO (2015); Blaser et al. (2011) and other editions of ITTO’s *Status of Tropical Forest Management* reports | | | | |

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| **Indicator 2.3**  **Extent and percentage of total land area under each forest type** | | | National level | FMU  level | | Landscape level |
|  |  | |  |
| ***Proposed monitoring and reporting format*** | | | | | | |
| *Forest type* | *Total forest (ha)* | *%* | *Part of PFE (ha)* | | *Part of non-PFE (ha)* | |
|  |  |  |  | |  | |
|  |  |  |  | |  | |
|  |  |  |  | |  | |
|  |  |  |  | |  | |
| **Total** |  | **100** |  | |  | |
| ***Notes***   * Describe the forest (ecological) type classification used. Include azonal (non-climax) forest types   (e.g. mangroves, swamp forests, limestone forests and saline forests)   * Classifications of forest types based on species composition are more useful than those based on   forest structure | | | | | | |
| ***Cross-references***  FAO (2015) based on the classification of the World Conservation Monitoring Centre; Iremonger and  Gerrand (2011); WWF ecoregions (Based on Olson et al. 2001) | | | | | | |

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| **Indicator 2.4**  **Multiyear forest management plans in FMUs** | National level | FMU  level | Landscape  level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
|  | *Total forest*  *(ha)* | *PFE (ha)* | *Non-PFE*  *(ha)* |
| **Production forests:** natural forests and natural regeneration forests, including protected areas in production forests)   * Number of management plans * Area (ha) |  |  |  |
| **Production forests:** planted forests   * Number of management plans * Area (ha) |  |  |  |
| **Protected forests**  (including for soil, water and biodiversity)   * Number of management plans * Area (ha) * Purpose of protection |  |  |  |
| Describe the effectiveness of implementation of forest  management plans. How is implementation monitored? | [Textual response] | | |
| ***Notes***   * Management plans include multiyear multipurpose forest management plans to manage forest products and environmental services in natural forest areas and forest management plans in planted forests for any purpose * Please indicate the year(s) to which data apply | | | |
| ***Cross-references***  Blaser et al. (2011) and other editions of ITTO’s *Status of Tropical Forest Management* reports; national  data; FAO (2015) | | | |

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| **Indicator 2.5**  **Forest area in compliance schemes** | National level | | FMU  level | Landscape level |
|  | |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Total forest (ha)* | Comments | | |
| **Forest management certification**   * Natural forests, including natural regeneration forests * Planted forests |  |  | | |
| Other legality assurance system |  | [Please specify] | | |
| ***Notes***   * See definitions of “natural” and “planted” forests in Annex 2 * Natural forest may include assisted natural regeneration, including the second generation of initially planted trees * Specify the forest management certification schemes in place * Indicate the year(s) to which data apply | | | | |
| ***Cross-references***  Forest Stewardship Council website (ic.fsc.org); Programme for the Endorsement of Forest Certification website (www.pefc.org); ITTO Market Information Service (www.itto.int/market\_information\_service) | | | | |

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| **Indicator 2.6**  **Change in forested area** | National  level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
|  | *Total forest*  *(ha)* | *PFE (ha)* | *Non-PFE*  *(ha)* |
| Forest area legally converted to agriculture since previous report *[please give year span]* |  |  |  |
| Forest area legally converted to settlements and infrastructure since previous report *[please give year span]* |  |  |  |
| Forest area legally converted for other purposes *[please specify]* since previous report *[please give year span]* |  |  |  |
| Area legally converted to forests since previous report  *[please give year span]* |  |  |  |
| Estimated forest area deforested illegally since previous  report *[please give year span]* |  |  |  |
| Forest area added since previous report  *[please give year span]:*   * Planted forest (afforestation) * Natural regrowth (as available) |  |  |  |
| |  | | --- | | ***Notes***   * Differentiate, if possible, between PFE and non-PFE * To the extent possible, the period for which change is reported should immediately follow the period   covered in the previous report | | ***Cross-references***  REDD+ reporting; FAO (2015) | | | | |

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| **Indicator 2.7**  **Forest Condition** | National level | FMU  level | Landscape  level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
|  | ***Total area (ha)*** | ***PFE (ha)*** | ***Non-PFE***  ***(ha)*** |
| Undisturbed/unmanaged natural forest |  |  |  |
| Managed natural forest |  |  |  |
| Degraded natural forest |  |  |  |
| Secondary forest (successional forest) |  |  |  |
| Degraded forest lands presently unstocked |  |  |  |
| ***Notes***   * See definitions in Annex 2 and ITTO (2015) * Undisturbed natural forests are forests without visible disturbances by humankind | | | |
| ***Cross-references***  ITTO (2002); Bonn Challenge (www.bonnchallenge.org); national REDD+ strategies | | | |

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| **Indicator 2.8**  **Forest carbon stock** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| *Reference year:* | *Carbon stock in total forest area (’000 tonnes)* | *Carbon stock*  *in PFE (’000*  *tonnes)* | *Carbon stock in non-PFE (’000 tonnes)* |
| Aboveground |  |  |  |
| Belowground |  |  |  |
| All five carbon pools |  |  |  |
| Indicate the area of “total forest” (ha) | | |  |
| Describe the method of measurement/formula applied | | |  |
| ***Notes***   * The five carbon pools in forests are: 1) aboveground biomass; 2) belowground biomass; 3) dead wood;   4) litter; and 5) soil organic matter | | | |
| ***Cross-references***  Intergovernmental Panel on Climate Change Best Practices; formula in Chave (2005); Winrock (2012) | | | |

**Criterion 3: forest ecosystem health and resilience**

*Natural tropical forests and planted forests can be affected by a variety of human actions, such as encroachment, illegal harvesting, human-induced fire, pollution and contamination, animal grazing, mining, poaching, invasive species and the spread of pests. Forests are also affected by natural phenomena, such as extreme weather events (e.g. severe winds, heavy rainfall, flooding and drought), wildfire, and pests and diseases. SFM requires attention to forest health, which may include restoring vulnerable and degraded forests and taking measures to increase the resilience of forest ecosystems.*

***Addressing threats to, and vulnerabilities of, forests: indicators 3.1–3.3***

*There is concern in tropical countries about the impacts of climate change and climate variability on forest health. Approaches are needed to monitor the threats to, and vulnerability of, forest ecosystems. Specific management practices may be required to monitor damage, keep abreast of emerging threats, and determine when interventions are necessary.*

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| **Indicator 3.1**  **Threats to forests caused directly by human activities** | | National level | FMU  level | Landscape  level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
| *List the five major direct human threats on forests (in particular in the PFE)* | | | | |
| *Direct human threats on forests* | *Area affected*  *(ha)* | *Control procedures* | *Area of*  *control (ha)* | *Estimated effectiveness* |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |
| Describe the extent and nature of forest encroachment, degradation and disturbance caused by humans and the control procedures applied | |  | | |  |
| List the invasive species observed in forests, identify the species of greatest concern, and indicate the measures undertaken to control invasive species | |  | | |  |
| |  | | --- | | ***Notes***   * If appropriate, indicate the institutions responsible for implementing control procedures * In “estimated effectiveness”, list constraints in implementing control procedures and any proposed improvements | | ***Cross-references***  ITTO (2002); Thompson et al. (2013) | | | | | |  |

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| **Indicator 3.2**  **Vulnerability of forests to natural disturbances** | | | | National level | | FMU  level | | Landscape level |
|  | |  | |  |
| ***Proposed monitoring and reporting format*** | | | | | | | | |
| List the five most important natural disturbances that make forests vulnerable | | | | | | | | |
|  | *Major natural*  *disturbances* | *Area affected*  *(ha)* | *Control procedures* | | *Area of control*  *(ha)* | | *Estimated effectiveness* | |
| 1 |  |  |  | |  | |  | |
| 2 |  |  |  | |  | |  | |
| 3 |  |  |  | |  | |  | |
| 4 |  |  |  | |  | |  | |
| 5 |  |  |  | |  | |  | |
| Describe the causes of the enumerated natural disturbances and the remedial actions taken to reduce the vulnerability of forests to biotic and abiotic stresses | | | [Textual response] | | | | | |
| Describe the steps taken to strengthen the capacity of forest managers to address new and emerging issues affecting the health and resilience of forests | | | [Textual response] | | | | | |
| ***Notes***   * Indicate the extent and nature of forest degradation and disturbance due to natural causes and the   control procedures applied   * Indicate the institutions responsible for implementing control procedures * List the constraints in implementing control procedures and any proposed improvements | | | | | | | | |
| ***Cross-references***  FAO (2013); ITTO (2015), Principle 3 | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Indicator 3.3**  **Forest resilience and climate-change adaptation** | | National level | FMU  level | Landscape  level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Yes/No* | *Comment* | | |
| Are climate-related trends known and monitored in the forest area? |  |  | | |
| Are the frequency and severity of climate-change-related impacts on natural and planted forests being monitored? |  |  | | |
| Are studies available to assess impacts on forests (natural and planted forests)? |  |  | | |
| Have short and long-term climate-related risks been assessed? |  |  | | |
| Do forest management plans in natural forests and afforestation plans describe measures to address the resilience of trees and forest ecosystems? |  |  | | |
| Are adaptation measures being applied in forest management planning to address vulnerability and resilience? |  |  | | |
| Describe research work being undertaken (e.g. on species genetics; droughts; forest fire) | [Textual response] | | | |
| ***Notes***   * In comments, indicate any differences between natural and planted forests in the approach taken | | | | |
| ***Cross-references***  CIFOR (2008); FAO (2013) | | | | |

***Restoration of degraded forests and lands: indicators 3.4 and 3.5***

*FLR is an emerging approach that encourages the involvement of stakeholders in all affected land-use sectors as well as participatory decision-making. The objective of FLR is to restore degraded landscapes to a healthy and productive state in order to fulfil the needs of people and the environment in a sustainable fashion. FLR makes use of collaborative approaches to harmonize the land-use decisions of stakeholders with the aims of restoring ecological integrity, forest resilience and economic productivity and enhancing the socioeconomic development of local communities.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Indicator 3.4**  **Degraded forests and landscapes restored** | | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Yes/No* | *Comment* | | |
| Have there been efforts to assess the degree of forest degradation at the landscape level and to identify restoration opportunities? |  |  | | |
| Has a baseline study been conducted  to assess the causes of degradation? |  |  | | |
| Are field-level FLR activities being conducted? If yes, please indicate the area involved and describe the measures taken |  |  | | |
| Are local stakeholders involved in the development of restoration strategies and their implementation? If yes, please describe such involvement |  |  | | |
| Are local stakeholders involved in the participatory monitoring of landscape restoration activities? |  |  | | |
| Has a national/subnational forest restoration strategy/plan been formulated? |  |  | | |
| * If yes, is the strategy/plan being implemented? |  |  | | |
| *–* If yes, what is the scale and timeframe of the effort, and what percentage of area has been restored in recent (e.g. previous three) years? | [Textual response] | | | |
| ***Cross-references***  ITTO (2002); Global Partnership on Forest and Land Restoration (www.forestlandscaperestoration.org); the World Resources Institute’s Global Restoration Initiative; the Restoration Opportunities Assessment Methodology (ROAM)—IUCN and World Resources Institute (2014) | | | | |

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| --- | --- | --- | --- | --- |
| **Indicator 3.5**  **Area of formerly degraded forest or forest  land restored** | | National level | FMU  level | Landscape  level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Area (ha)* | *Comment* | | |
| Total area restored (3-year period)  *[please indicate applicable years]* |  |  | | |
| Total area restored through natural  regeneration/combination of enrichment  (3-year period) *[please indicate applicable years]* |  |  | | |
| Total area restored through plantations, including in agroforestry systems (3-year period) *[please indicate applicable years]* |  |  | | |
| ***Notes***   * Where possible, indicate the area of forest land restored with planted forests and woodlots, the area of forest land restored though (assisted) natural regeneration, the area of degraded forest restored   through silvicultural practices, the area of land restored with agroforestry systems, and the area of land restored with improved fallows | | | | |
| ***Cross-reference***  ITTO (2002) | | | | |

**Criterion 4: Forest production**

*This criterion addresses the objective of maintaining the multiple functions of forests and their capacity to deliver products and environmental services. Such functions and capacity can only be sustained in the long term if forest management is economically and financially viable, environmentally sound and socially acceptable.*

*Forests earmarked for timber production are able to fulfil a number of other important functions, such as environmental protection, carbon storage and the conservation of species and ecosystems. These multiple roles 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.*

***Resources assessment: indicators 4.1–4.4***

*Forest resource assessments carried out periodically are vital for ensuring the sustainable production of forest goods and environmental services for society. They provide information not only on the quantities of wood and non-wood products that may be harvested sustainably but also on other forest values and how those might change over time.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Indicator 4.1**  **Natural production forest inventories, by product** | | National level | | FMU  level | | Landscape level | |
|  | |  | |  | |
| ***Proposed monitoring and reporting format*** | | | | | | | |
| Area inventoried  *[please give reference year]* | *PFE* | | | | *Non-PFE (ha)* | | |
| *ha* | | *%* | | *ha* | | *%* |
| Timber (industrial roundwood) |  | |  | |  | |  |
| Other wood (locally used, woodfuel) |  | |  | |  | |  |
| Non-wood forest products |  | |  | |  | |  |
| Total inventoried area |  | |  | |  | |  |
| ***Notes***   * Indicate the extent and percentage of forest for which inventory and survey procedures have been used to determine the quantity of the main forest products (e.g. wood, fibre, gums, saps, food animals and plants, and medicines) | | | | | | | |
| ***Cross-references***  Blaser et al. (2011) and other editions of ITTO’s *Status of Tropical Forest Management* reports;  FAO (2015); FAO Forest Monitoring and Assessment programme | | | | | | | |

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| **Indicator 4.2**  **Actual and allowable harvest of wood and**  **non-wood products in natural forests** | | | | | National level | | FMU  level | | Landscape  level | |
|  | |  | |  | |
| ***Proposed monitoring and reporting format*** | | | | | | | | | | |
|  | *Total forest area*  *(i.e. PFE + non-PFE)* | | | *PFE* | | | | *Non-PFE* | | |
| *Number of species harvested* | *Top five species harvested, by volume* | | *Annual actual  harvest* | | *Annual allowable harvest* | | *Annual  real  harvest* | | *Annual allowable harvest* |
| Timber (industrial roundwood) |  | 1 |  | m3 | | m3 | | m3 | | m3 |
| 2 |  | m3 | | m3 | | m3 | | m3 |
| 3 |  | m3 | | m3 | | m3 | | m3 |
| 4 |  | m3 | | m3 | | m3 | | m3 |
| 5 |  | m3 | | m3 | | m3 | | m3 |
| Other wood  (e.g. locally used; woodfuel) |  | 1 |  | m3 | | m3 | | m3 | | m3 |
| 2 |  | m3 | | m3 | | m3 | | m3 |
| 3 |  | m3 | | m3 | | m3 | | m3 |
| 4 |  | m3 | | m3 | | m3 | | m3 |
| 5 |  | m3 | | m3 | | m3 | | m3 |
| Non-wood forest products *[please specify]* |  | 1 |  | kg | | kg | | kg | | kg |
| 2 |  | kg | | kg | | kg | | kg |
| 3 |  | kg | | kg | | kg | | kg |
| 4 |  | kg | | kg | | kg | | kg |
| 5 |  | *kg* | | *kg* | | *kg* | | *kg* |
| ***Notes***   * Indicate average harvesting levels for the most recent 3-year period for which data are available (give the   source of the data and the unit of measurement)   * Describe the method for estimating the annual allowable cut for industrial roundwood | | | | | | | | | | |
| ***Cross-references***  Blaser et al. (2011) and other editions of ITTO’s *Status of Tropical Forest Management* reports | | | | | | | | | | |

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| **Indicator 4.3**  **Actual harvest of wood and non-wood products in planted forests** | | | | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | | | |
|  | *Total annual planted-forest harvest* | *List the top five species harvested (by volume or weight) for*  *each category, and actual annual harvest* | | | | |
| Timber  (industrial roundwood) | m3 | 1 |  | | m3 | |
| 2 |  | | m3 | |
| 3 |  | | m3 | |
| 4 |  | | m3 | |
| 5 |  | | m3 | |
| Other wood  (e.g. locally used; woodfuel) | m3 | 1 |  | | m3 | |
| 2 |  | | m3 | |
| 3 |  | | m3 | |
| 4 |  | | m3 | |
| 5 |  | | m3 | |
| Non-wood forest  products | kg | 1 |  | | kg | |
| 2 |  | | kg | |
| 3 |  | | kg | |
| 4 |  | | kg | |
| 5 |  | | kg | |
| ***Notes***   * Indicate the reported average harvest levels over the latest 3-year period, together with the source of the data | | | | | | |
| ***Cross-references***  FAO (2015); Blaser et al. (2011) and other editions of ITTO’s *Status of Tropical Forest Management* reports;  Jürgensen et al. (2014); FAO’[s webpage on non-wood forest products: www.fao.org/forestry/nwfp/en](http://www.fao.org/forestry/nwfp/en) | | | | | | |

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| --- | --- | --- | --- |
| **Indicator 4.4**  **Forest carbon stock** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
|  | *Forest area*  *(ha)* | *Tonnes of carbon committed* | *Timeframe*  *(years)* |
| Forest carbon stocks conserved through the sustainable management of natural forests and forest conservation |  |  |  |
| Restoring degraded carbon stocks through the enrichment of degraded forests and guided natural restoration |  |  |  |
| Creating new carbon stocks through afforestation and reforestation in non-forested areas |  |  |  |
| ***Notes***   * Include all forest-related climate-change mitigation programmes, such as REDD+, forest NAMAs, INDCs, Clean Development Mechanism Afforestation/Reforestation * Where possible, distinguish on the basis of the currently applied REDD+ strategy | | | |
| ***Cross-references***  Forest Carbon Partnership Facility Carbon Fund; UN-REDD Programme (www.un-redd.org); UNFCCC’s REDD+ web platform (http://redd.unfccc.int); Clean Development Mechanism Afforestation/Reforestation (https://cdm.unfccc.int) | | | |

***Harvesting planning and control procedures: indicators 4.5–4.7***

*Harvesting planning procedures in natural forests should enable good technical control, provide safe and healthy working conditions, minimize costs, and reduce environmental impacts. Sound and effective harvest planning procedures will help ensure that forest investments yield adequate financial, economic and social returns while minimizing environmental damage.*

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| **Indicator 4.5**  **Timber harvesting arrangements in natural production forests** | | | | National level | | FMU  level | | Landscape level | |
|  | |  | |  | |
| ***Proposed monitoring and reporting format*** | | | | | | | | | |
| *Natural forest harvesting contracts*  *[please indicate reference year]* | *Total number of contracts* | *Total area contracted (ha)* | *Smallest/ largest area contracted (ha)* | | *Duration of contract (years)* | | *Annual allowable harvest and area of harvest (m3; ha)* | | *Annual actual harvest (volume and area) (m3; ha)* |
| Long-term private  concession |  |  |  | |  | |  | |  |
| Long-term community concession |  |  |  | |  | |  | |  |
| Medium-term logging concession/ contract |  |  |  | |  | |  | |  |
| Short-term logging permit (area-based) |  |  |  | |  | |  | |  |
| Short-term logging permit (volume- based) |  |  |  | |  | |  | |  |
| Other  *[please specify]* |  |  |  | |  | |  | |  |
| ***Notes***   * Specify the main terms of the various natural forest harvesting contracts currently in place * Indicate the share of harvesting contracts operating under multiyear forest management plans * Indicate the share of other official harvesting permits (small-, medium- and large-scale permits)   operating without forest management plans | | | | | | | | | |
| ***Cross-reference***  FAO (2001a) | | | | | | | | | |

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| **Indicator 4.6**  **Forest product tracking systems or similar control mechanisms** | | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
| *Type of tracking* | *System in place [Yes/No]* | *Responsible*  *institution(s)* | *Comment (e.g. scale of*  *application, efficiency)* | |
| Log tracking (from stump to processing unit) |  |  |  | |
| Wood tracking  (from processing unit to port/end-user) |  |  |  | |
| Tracking of other forest products  (e.g. wild meat, wildlife, charcoal, other  non-wood forest products) *[please specify]* |  |  |  | |
| ***Notes***   * In comments, describe the type(s) of system, and implementation (e.g. responsible parties, scope and scale) | | | | |
| ***Cross-reference***  Seidel (2012) | | | | |

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| **Indicator 4.7**  **Historical records on the extent, nature and management of forests** | National level | FMU  level | | Landscape  level |
|  |  | |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Natural forests* | | *Planted forests* | |
| Describe the availability of historical records on the extent, nature and management of forests (nationally, subnationally or locally) |  | |  | |
| Do archives of forest data (e.g. growth, yield, health and uses) exist, and are they accessible for forest planning and management? |  | |  | |
| Have permanent sample plots been established?  If yes, specify when they were established and the year of most recent re-measurement |  | |  | |
| ***Notes***   * In many countries, records exist of historical forest trials and measurements of the growth of tree species, as well as of harvesting and silvicultural practices in natural and planted forests. Such records have often been neglected, but they could be valuable sources of information on the long-term behaviour and growth of tree species and forest stands | | | | |
| ***Cross-references***  Archives of forest concessionaires; national forest research institutes | | | | |

***Silviculture in natural and planted forests: indicators 4.8–4.10***

*The provision of clear silvicultural guidelines helps ensure that all forest operations are carried out according to high standards. In natural forests, these may encompass harvesting inventories as a means of establishing sustainable cutting levels (for wood and non-wood forest products), inventories for assessing the condition of forests after harvesting, and the types of silvicultural treatments required to ensure adequate regeneration and long-term forest health. Guidance is also needed to reduce forest damage caused by harvesting and on silviculture in planted forests, forest restoration, and procedures for the monitoring and evaluation of management practices.*

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| **Indicator 4.8**  **Reduced impact harvesting and silvicultural operations** | National level | FMU  level | | Landscape level |
|  |  | |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Natural forests* | | *Planted forests* | |
| Describe existing recommended harvesting systems and guidelines and the extent to which they are being implemented |  | |  | |
| Describe existing recommended silvicultural systems and guidelines for wood and non-wood forest products, and the extent to which they are being implemented |  | |  | |
| Indicate the extent to which reduced impact harvesting and silvicultural treatments are being monitored, including by whom and at what geographical scale |  | |  | |
| Indicate the extent to which monitoring data are being archived to allow the evaluation of the cumulative effects of harvesting systems and silvicultural treatments over time |  | |  | |
| Describe post-harvesting surveys to assess the effectiveness of harvesting and silvicultural activities to enhance forest stands and tree regeneration establishment and the monitoring of silvicultural treatments |  | |  | |
| ***Notes***   * A silvicultural system is a process by which forest trees are tended, removed and replaced by new trees. Silviculture comprises all operations used in manipulating forest stands, including harvesting operations (see Annex 2 for a definition of reduced impact harvesting) | | | | |
| ***Cross-references***  ITTO (2015), principles 4 and 5; FAO (1996); Tropical Forest Foundation (2007); ITTO (1993); FAO (2006b) | | | | |

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| --- | --- | --- | --- |
| **Indicator 4.9**  **Silvicultural management in planted forests** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| *Silvicultural issue in planted forests* | *Indicate the approaches taken* | | |
| Species selection for planted forests (e.g. whether local species, introduced species, including consideration of invasive species, source of planting materials) |  | | |
| Use of biotechnology and genetic modification of species |  | | |
| Selection of the silvicultural treatment and maintenance  of planting sites beyond first rotation |  | | |
| Control of pests and diseases (e.g. use of herbicides,  pesticides, fungicides and other chemicals) |  | | |
| Use of fertilizers (nursery, afforestation sites) |  | | |
| Fire control |  | | |
| Water management in planted forest landscapes |  | | |
| ***Notes***   * Defining the specific silvicultural and operational treatments for planted forest management is important,   whether it is for productive or protective functions, or a combination of these | | | |
| ***Cross-references***  ITTO (1993); FAO (2006a); FAO (2006b); Evans (2009) | | | |

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| **Indicator 4.10**  **Strategic monitoring of silvicultural systems  in natural and planted forests** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| Describe the system in place for strategically monitoring the impacts of harvesting and the implementation of the silvicultural system |  | | |
| *Silvicultural system at FMU level* | *Total area per year (ha)* | | |
| **Natural production forest (PFE)** (natural forest timber concessions, licences, community harvesting, non-wood forest product harvesting) |  | | |
| - Area over which yield control is applied |  | | |
| - Area over which pre-harvesting operations are applied |  | | |
| - Area over which post-harvesting operations are applied |  | | |
| - Area over which silvicultural treatments to induce  or assist natural regeneration are applied |  | | |
| - Area over which enrichment planting *[please specify main species]* is performed |  | | |
| Describe the system in place for strategically monitoring the impacts of harvesting and the implementation of the silvicultural system |  | | |
| **Planted forest (PFE)** (Industrial plantations timber/fibre/  woodfuel; community plantations; protective planting) | Total area per year (ha) | | |
| - Tending and thinning in monospecific plantations  *[please specify main species used]* |  | | |
| - Tending and thinning in multispecies plantations  *[please specify mix of species used]* |  | | |
| - Replacement of forest stand after harvesting *[please indicate the % of replacement]* |  | | |
| ***Notes***   * Strategic monitoring provides data on the long-term effects of forest operations so that potential problems can be identified and resolved. To guide silvicultural decisions, a simple assessment method (diagnostic sampling) can be applied at the FMU level to determine the need for specific treatment * Indicate reference year * Common treatments to induce or assist natural regeneration include tending natural regeneration, soil scarification, prescribed burning, the liberation of future crop trees, thinning, liana cutting and enrichment planting | | | |
| ***Cross-references***  ITTO (2015); FAO (1996); Tropical Forest Foundation (2007); ITTO (1993) | | | |

**Criterion 5: Forest biological diversity**

*This criterion relates to the conservation and maintenance of biodiversity, including ecosystem, species and genetic diversity, with an emphasis on biodiversity conservation in production forests and at the landscape scale. The ITTO/IUCN Guidelines for the Conservation and Sustainable Use of Biodiversity in Tropical Timber Production Forests (ITTO/IUCN 2009) are designed to support the monitoring of biodiversity in forest landscapes. The general principles and definitions used here are those established by the Convention on Biological Diversity and IUCN.*

***Ecosystem diversity: indicators 5.1 and 5.2***

*The conservation of ecosystem diversity can best be accomplished by maintaining functional landscapes and through the establishment and management of a system of protected areas (combinations of IUCN categories I–VI)5 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.*

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| **Indicator 5.1**  **Forest extent in protected areas** | National level | | FMU  level | | Landscape  level | |
|  | |  | |  | |
| ***Proposed monitoring and reporting format*** | | | | | | |
| *a. Forest protected areas* | ***IUCN protected-area category*** | | | | | |
| *Total* | *I–II* | | *III–IV* | | *V, VI* |
| Number of protected areas (not necessarily forested;  excluding sea) |  |  | |  | |  |
| Range in size (smallest to largest protected area; ha) |  |  | |  | |  |
| Area of forest in protected areas (ha) |  |  | |  | |  |
| Area of ecological forest types represented in  protected areas *[please specify]* |  |  | |  | |  |
| Ecological forest types considered to be  underrepresented in protected areas *[please specify]* |  |  | |  | |  |
| *b. Forest conservation concessions* | | | | | | |
| If not included in (a), indicate the number and area of forest conservation concessions, and their status and duration |  |  | |  | |  |
| ***Notes***   * The area of forest in protected areas constitutes the protection PFE * Forest conservation concessions are areas within production forest allocated to conservation organizations for conservation purposes (and in which wood production is excluded). Although formally production   forests, such areas should be reported here as protected areas, albeit only for the period of the leases | | | | | | |
| ***Cross-references***  ITTO/IUCN (2009); IUCN protected-area categories (see Annex 3) | | | | | | |

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| **Indicator 5.2**  **Buffer zone management and connectivity of protected forest areas** | | | National Level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | | |
| *IUCN category* | *Areas of buffer zone managed (ha)* | *Number of forested protected areas connected* | *Description* | | |
| I–II |  |  |  | | |
| III–IV |  |  |  | | |
| V–VI |  |  |  | | |
| Describe the national or subnational strategy for ensuring (or increasing) connectivity between forested protected areas | | |  | | |
| ***Cross-references***  ITTO/IUCN (2009); IUCN protected-area categories (see Annex 3) | | | | | |

***Species diversity: indicators 5.3 and 5.4***

*In strategies for preventing species from becoming rare, threatened, endangered or extinct, it is important to have national/subnational procedures for monitoring and protecting species diversity. Emphasis should be given to the monitoring of key tree species in production forests.*

|  |  |  |  |  |  |  |  |
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| **Indicator 5.3**  **Threatened forest-dependent species** | | | | National Level | | FMU  level | Landscape   level |
|  | |  |  |
| ***Proposed monitoring and reporting format*** | | | | | | | |
| *Forest-dependent species group* | *Total number*  *of species* | *Of which:* | | | | *List the three most important*  *species (keystone species)* | |
| *Threatened* | *Legally protected at national level* | | *Endemic* |
| Trees |  |  |  | |  |  | |
| Flowering plants |  |  |  | |  |  | |
| Ferns |  |  |  | |  |  | |
| Mammals |  |  |  | |  |  | |
| Birds |  |  |  | |  |  | |
| Reptiles |  |  |  | |  |  | |
| Amphibians |  |  |  | |  |  | |
| Freshwater fish |  |  |  | |  |  | |
| Butterflies |  |  |  | |  |  | |
| Others  *[please specify]* |  |  |  | |  |  | |
| ***Notes***   * Indicate sources * “Threatened” includes vulnerable, endangered or critically endangered according to the IUCN Red List | | | | | | | |
| ***Cross-references***  IUCN categories of threatened species (see Annex 4 of this document) | | | | | | | |

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| **Indicator 5.4**  **Procedures for conserving tree species diversity in natural tropical forests** | National Level | FMU  level | Landscape   level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| Comment on whether there have been declines in populations of key tree species (e.g. high-value commercial species) |  | | |
| List the major commercial tree species (wood and non- wood forest products) for which conservation status has changed in the last five years |  | | |
| Describe measures (in FMU) for analyzing the conservation status of tree species and interventions (e.g. age and diameter class distribution of key species) |  | | |
| List the tree species in each of the CITES Appendices |  | | |
| Describe the measures undertaken to maintain species diversity at the FMU level, in particular the most commonly used wood and non-wood product species |  | | |
| Describe procedures undertaken to maintain the stock of major wood and multipurpose tree species in natural forests |  | | |
| Indicate the type and area (ha) of *in situ* conservation of forest tree species nationally |  | | |
| |  | | --- | | ***Notes***   * Describe procedures to identify, list and protect recover/restore threatened species of forest flora and fauna * List the institutions responsible and describe any recent changes in the procedures | | ***Cross-references***  FAO (2014c); ITTO (2005); IUCN Red List (www.iucnredlist.org) | |  | | | | |

***Genetic diversity: indicator 5.5***

# Biodiversity conservation involves maintaining the genetic diversity of all species of fauna and flora. This

*may be difficult to ensure in practice, and it is appropriate to focus limited resources on species that are*

*threatened or that have identified commercial value.*

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| **Indicator 5.5**  ***In situ* conservation of genetic variation within**  **specified forest tree species** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
|  | Comment | | |
| Forest tree species identified to serve as indicator  species for the conservation of genetic variation |  | | |
| Plans and projects in place to ensure the *in situ* and *ex situ* conservation of the genetic variation of key species of flora and fauna *[please specify the species]* |  | | |
| ***Notes***   * Conserving genetic diversity within tree species of actual or potential economic, environmental, scientific   or societal value is essential for ensuring continued ecosystem productivity and health and the capacity  of species to adapt to climate change and other environmental change | | | |
| ***Cross-references***  FAO (2014c); FAO et al. (2004) | | | |

***Biodiversity conservation in production forests: indicators 5.6 and 5.7***

# Management measures in production forests can make important contributions to biodiversity conservation (for example, logging intensity is directly related to the presence or absence of birds and other seed distributors), which should be fully integrated into forest management plans and harvesting plans.

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| **Indicator 5.6**  **Biodiversity conservation measures in natural production forests** | National level | FMU  level | | Landscape level |
|  |  | |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Total area (ha)* | | *% of total* | |
| Area set aside for biodiversity conservation in natural production forests (FMU level) |  | |  | |
| Measures for retaining undisturbed areas (FMU level) | [Textual response] | | | |
| Procedures for protecting ecologically important features (e.g. nesting sites, seed trees, niches and keystone species) | [Textual response] | | | |
| Procedures for protecting particular tree species and other plants for local livelihood needs, cultural values, food security, etc. | [Textual response] | | | |
| Average volume of wood harvested (FMU level) | [m3 per ha per year] | | | |
| ***Notes***   * In textual responses, indicate the effectiveness of the procedures being monitored * In textual responses, indicate procedures for assessing changes in biodiversity values in production   areas compared with control areas | | | | |
| ***Cross-references***  ITTO/IUCN (2009); Burivalova et al. (2014) | | | | |

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| **Indicator 5.7**  **Biodiversity conservation in planted forests** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | |  |
|  | *Average annual area (ha)* | *Year span* | *Main species used* |
| Area of planted forest established (3-year average  *[please specify])* |  |  |  |
| Afforestation: planted forest on non-forested land  (not replacing natural forest habitats) |  |  |  |
| Reforestation: planted forest on previously forested sites  (e.g. degraded forest and forest land) |  |  |  |
| Planted forests established using native tree species |  |  |  |
| Describe measures undertaken to conserve native fauna  and flora in planted forest landscapes\* | [Textual response] | | |
| ***Notes***  \* e.g. keeping natural sites along waterways, creating biological corridors or stepping stones | | | |
| ***Cross-references***  ITTO (1993); FAO (2006b) | | | |

**Criterion 6: soil and water protection**

# This criterion addresses the crucial landscape-scale role of forests in maintaining downstream water quality and flow and controlling flooding and sedimentation. It also pertains to maintaining the productivity and quality of soil and water within forests (and associated aquatic ecosystems) and therefore forest health and condition.

# Information on the effects of forest management on soil and water is difficult to obtain and is seldom available for more than a limited number of sites. Valid national indicators should be derived from the aggregation of data from indicators at the landscape and FMU levels, or from the existence and adequate enforcement of national guidelines in conformity with local conditions.

***Extent of protection: indicators 6.1 and 6.2***

*An essential element of multipurpose forest management is the landscape-scale maintenance of downstream benefits, such as water quality and flow and reductions in flooding and sedimentation.*

|  |  |  |  |  |
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| **Indicator 6.1**  **Forest area managed primarily for the protection of soil and water** | National level | FMU  level | | Landscape level |
|  |  | |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Area (ha)* | | *%* | |
| Forest area (natural and planted, PFE and non-PFE)  managed primarily for the protection of soil and water |  | |  | |
| Forest area (natural and planted, PFE and non-PFE) managed for other protection purposes *[please specify purposes]* |  | |  | |
| ***Notes***   * Collect national or subnational data * Other protection purposes might include cultural heritage sites, belts around industrial complexes,   military sites, etc.   * For each specific purpose, indicate the responsible agencies (e.g. forest agency, environmental agency,   water agency, mining agency) | | | | |
| ***Cross-references***   * FAO (2015); UNEP and UNISDR (undated) | | | | |

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| **Indicator 6.2**  **Protection of downstream catchment values at the landscape level** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| Describe the procedures in place in both the PFE and the non-PFE to ensure the protection of downstream catchment values, and the extent to which such procedures are being implemented |  | | |
| Describe the extent to which forests are integrated into  national and regional disaster risk management |  | | |
| ***Notes***   * Trees and forests play fundamental roles in disaster risk management, such as by sustaining water   supplies, protecting soils and reducing the impacts of natural hazards such as floods and landslides | | | |
| ***Cross-references***  UNEP and UNISDR (undated); FAO (1990); FAO (2005a) | | | |

***Protective functions in production forests: indicators 6.3–6.5***

*As an integrative part of multipurpose forest management, it is important to ensure effective soil and water management as a way of maintaining the productivity and health of forests and their hydrological regulation functions.*

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| **Indicator 6.3**  **Soil productivity and water retention capacity in production forests** | National level | FMU  level | Landscape   level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| Describe the procedures in place to protect soil productivity and retain water in production forests |  | | |
| Describe the extent to which provisions are being applied to prevent the degradation of forest soils and water |  | | |
| ***Cross-references***  FAO (1990); FAO (2005a) | | | |

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| **Indicator 6.4**  **Area of production PFE considered environmentally sensitive and protected** | | National level | FMU  level | | Landscape level |
|  |  | |  |
| ***Proposed monitoring and reporting format*** | | | | | |
| *Area defined as environmentally sensitive (and therefore protected) due to:* | *Area (ha)* | *% of production PFE* | | *Comment* | |
| Slope/elevation  *[please specify parameters—e.g. >X%]* |  |  | |  | |
| Drinking water sources |  |  | |  | |
| Buffer strips (e.g. along water courses) |  |  | |  | |
| Poor drainage |  |  | |  | |
| Other characteristics *[please specify]* |  |  | |  | |
| ***Cross-references***  FAO (1990); FAO (2005a) | | | | | |

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| **Indicator 6.5**  **Forest engineering for soil and water protection** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| *In production PFE:* | | | |
| a) Indicate required measures to ensure adequate water management (drainage) during and after wood harvesting |  | | |
| b) Indicate requirements for buffer strips along streams and rivers |  | | |
| c) Indicate the measures required to minimize soil compaction by harvesting machinery |  | | |
| d) Indicate the measures required to protect soil from erosion after harvesting operations |  | | |
| Indicate the measures in place to ensure the  implementation of a–d |  | | |
| ***Notes***   * Are the measures being implemented? Is their effectiveness being monitored? At what geographical scale? | | | |
| ***Cross-reference***  Bonell and Bruijnzeel (2005) | | | |

**Criterion 7: Economic, social and cultural aspects**

*This criterion deals with the economic, social and cultural aspects of forests. A well-managed forest is a self-renewing resource that produces a host of benefits for people. For example, forests provide opportunities for recreation and ecotourism and generate employment and investment in processing industries. Sustainably managed forests, therefore, can make important contributions to the overall sustainable development of countries.*

***Economic aspects: indicators 7.1–7.3***

*The economic challenge for forest management is to make SFM a profitable activity that is attractive to investors and competitive with other land uses. A viable forest products industry is likely to be an essential element in addressing this challenge.*

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| **Indicator 7.1**  **Contribution of the forest sector to gross domestic product** | | National level | FMU  level | Landscape  level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Total gross domestic product*  *(GDP; US$)* | | *% of forest-sector*  *contribution to GDP* | |
| Reference year *[please specify here]* |  | |  | |
| Reference year minus five years *[please specify here]* |  | |  | |
| Indicate which economic activities are counted under “forest sector” | [Textual response] | | | |
| Indicate the extent to which the informal  forest sector contributes to GDP | [Textual response] | | | |
| Describe the national/subnational environmental accounting system in place (if any) | [Textual response] | | | |
| ***Cross-reference***  World Bank (2016) | | | | |

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| **Indicator 7.2**  **Value of domestically produced forest products and environmental services** | | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Markets (US$ or local currency; if the latter, please indicate the exchange rate for US dollars)* | | | |
| *Domestic market*  *(rural/urban)* | *Export market* | *Informal domestic/ transboundary* | |
| Timber products |  |  |  | |
| Woodfuel |  |  |  | |
| Non-wood forest products |  |  |  | |
| Water |  |  |  | |
| Carbon (US$ or local currency— please specify—per tonne CO2 ) |  |  |  | |
| Ecotourism/recreation  (entry fees, etc.) |  |  |  | |
| Other *[please specify]* |  |  |  | |
| ***Notes***   * Indicate reference year for data * Values for timber products should be the sums of primary and secondary products (including wood   furniture); indicate which products are included | | | | |
| ***Cross-references***  ITT[O Market Information Service (www.itto.int/market\_information\_service);](http://www.itto.int/market_information_service)%3B) Ecosystems Marketplace  (www.ecosystemmarketplace.com) | | | | |

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| **Indicator 7.3**  **Wood and non-wood forest product processing**  **capacities and efficiency** | | | National level | | FMU  level | | Landscape level |
|  | |  | |  |
| ***Proposed monitoring and reporting format*** | | | | | | | |
| *Forest product processing stage* | *No. of companies* | *Industrial roundwood intake (m3)* | | *Conversion*  *rate (%)* | | *No. of full-time equivalent employees (formal)* | |
| Roundwood (forest to mill) | *n/a* |  | |  | | *n/a* | |
| Primary wood processing |  |  | |  | |  | |
| Secondary wood processing |  |  | |  | |  | |
| Tertiary wood processing |  | *n/a* | | *n/a* | |  | |
| Industrial non-wood forest product processing *[please specify products]* |  | *n/a* | | *n/a* | |  | |
| Continuity of supply of wood and non-wood products | [Textual response] | | | | | | |
| ***Notes***   * “Industrial roundwood intake” includes roundwood from domestic production and imported roundwood processed in the country—it is the total volume of roundwood processed in mills (not the volume of harvested wood) * Conversion rate is the ratio of output volume to input volume, expressed as a percentage | | | | | | | |
| ***Cross-references***   * ITT[O Market Information Service (www.itto.int/market\_information\_service);](http://www.itto.int/market_information_service)%3B) national statistics | | | | | | | |

***Social and cultural aspects: indicators 7.4–7.9***

*SFM should recognize and aim to meet social and cultural needs as they relate to forests including by ensuring the provision of education, employment and safe working conditions. Forest management decisions should consider the livelihood needs of forest-dependent people. SFM should be participatory and inclusive, and the costs and benefits should be shared equitably among involved parties.*

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| **Indicator 7.4**  **Capacity building of the workforce in forest management and forest industry** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| The number and main focus of universities, technical institutions, vocational training and other professional schools with formal programmes on SFM |  | | |
| Existing capacity for training and support using appropriate technology, including through technology transfer, for SFM and the efficient use and marketing of wood and non-wood forest products and environmental services *[please describe and quantify]* |  | | |
| Number of people graduated (tertiary, technical and vocational) from forest-related courses in the last three years *[please specify years]* |  | | |
| Percentage of graduates (tertiary, technical and vocational) of forest-related courses in the previous three years obtaining employment in the forest sector *[please specify years]* |  | | |
| Number of graduates from professional training programmes for forest managers, previous three years *[please specify years]* |  | | |
| Other training courses not included above (e.g. capacity development programmes for small and medium-sized forest enterprises) |  | | |
| ***Cross-references***  Convention No. 169 of the International Labour Organization (www.ilo.org); ITTO (2015), Principle 6 | | | |

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| **Indicator 7.5**  **Procedures to ensure the health and safety of forest workers** | | National level | | FMU  level | Landscape level |
|  | |  |  |
| ***Proposed monitoring and reporting format*** | | | | | |
| *Existence and implementation of policies addressing:* | *National level (Yes/No)* | | | *FMU level (Yes/No)* | |
| * Elimination or control of risks in forest management operations |  | | |  | |
| * Provision of safe work methods and procedures |  | | |  | |
| * Procedures for ensuring maximum safety of machinery and handling of chemicals, etc. |  | | |  | |
| * Use of safety gear and provision   of workforce training on workplace health and safety |  | | |  | |
| * Proper compensation for employees in case of accidents, injuries and damage during the performance   of duties |  | | |  | |
| What mechanisms are in place nationally/subnationally to ensure the health and safety of forest workers? | [Textual response] | | | | |
| To what extent are such mechanisms being implemented? Please identify any constraints | [Textual response] | | | | |
| Are such mechanisms in conformity with the International Labour Organization’s Convention No. 169? | [Yes/No] | | | | |
| The number of serious accidents in forest management operations over the past three years, by cause: | No. of deaths | | No. of serious injuries | | |
| Cause 1 *[please specify here]* |  | |  | | |
| Cause 2 *[please specify here]* |  | |  | | |
| *Cause 3 [please specify here]* |  | |  | | |
| *Cause 4 [please specify here]* |  | |  | | |
| ***Cross-references***  Convention No. 169 of the International Labour Organization; ITTO (2015), Principle 6; FAO Harvesting [(www.fao.org/forestry/harvesting/86024/en)](http://www.fao.org/forestry/harvesting/86024/en)) | | | | | |

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| **Indicator 7.6**  **Mechanisms for the equitable sharing of the costs**  **and benefits of forest management** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| *Policies in place for:* | *Yes/No* | *Comment* | |
| * The equitable treatment of stakeholders in activities related to the use and management of forests |  |  | |
| * Providing opportunities to be employed under comparable conditions to those in other economic sectors |  |  | |
| * The sharing of profits obtained by forest companies and investors through forest use with local communities and other stakeholders |  |  | |
| * Providing forest landowners or rights-holders   (e.g. government, private, community) with opportunities to receive fair returns for forest use |  |  | |
| Mechanisms in place for the distribution of incentives and the fair and equitable sharing of costs and benefits among stakeholders *[please comment on whether such mechanisms are being implemented, the obstacles to their implementation, and any proposed improvements]* | [Textual response] | | |
| ***Cross-references***  Convention No. 169 of the International Labour Organization; ITTO (2015), Principle 6 | | | |

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| **Indicator 7.7**  **Mechanisms for resolving disputes between forest stakeholders** | National level | | FMU  level | Landscape level |
|  | |  |  |
| ***Proposed monitoring and reporting format*** | | | | |
| *Matters that may be taken into account:* | *Yes/No* | *Comment* | | |
| * The existence of effective mechanisms for communication and the resolution of conflicts between interested parties |  |  | | |
| * The extent to which stakeholders have an effective voice in decisions related to forest management, including consideration of gender equity |  |  | | |
| * Early consultation on major new decisions to invest in forest management, in both natural and planted forests |  |  | | |
| * Mechanisms for conflict resolution, the extent to which they are being implemented, and any obstacles to implementation | [Textual response] | | | |
| ***Cross-references***  F[AO resources for conflict management in forestry (www.fao.org/forestry/conflict/56824/en);](http://www.fao.org/forestry/conflict/56824/en)%3B) FAO (2014b); United Nations Declaration on the Rights of Indigenous Peoples [(www.un.org/esa/socdev/unpfii/](http://www.un.org/esa/socdev/unpfii/) documents/DRIPS\_en.pdf) | | | | |

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| **Indicator 7.8**  **Local livelihoods and forest management** | | National level | | FMU  level | | | Landscape level |
|  | |  | | |  |
| ***Proposed monitoring and reporting format*** | | | | | | | |
| *Forest-dependent people (FMU level)* | *No. female* | | *No. male* | | | *Total* | |
| Number of people in the FMU practising  mainly subsistence farming |  | |  | | |  | |
| Proportion of forest-dependent people who have lived in the FMU for more than one generation (%) |  | | | | | | |
| *Forest area for subsistence and traditional use:* | *Forest area (ha)* | | | | *Comment* | | |
| * In informal areas within existing FMUs [please specify land uses and measures for managing overlapping land uses] |  | | | |  | | |
| * On land reserved for livelihood activities—e.g. indigenous peoples’ reserves, community forests, other reserved areas [please specify whether in or adjacent to FMU] |  | | | |  | | |
| ***Cross-references***  ITTO (2015), Principle 6; FAO (2015) | | | | | | | |

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| **Indicator 7.9**  **Forests reserved for specific cultural, research and**  **educational purposes** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| *Extent of forest area assigned to specific uses* | *No. of forests* | *Area (ha)* | *Protection status* |
| Archaeological sites in the forests |  |  |  |
| Cultural sites in forests |  |  |  |
| Sacred forests (as defined in the country) |  |  |  |
| Forests for research and educational purposes |  |  |  |
| Forests for recreation, local tourism and peri-urban uses |  |  |  |
| Other *[please specify]* |  |  |  |
| ***Cross-reference***  ITTO (2015), Principle 6 | | | |

***Community and indigenous peoples’ rights and participation in forest management: indicators 7.10–7.12***

*Community participation is vital at all levels of forest operations to ensure transparency and accountability in forest management, conservation and development and that all interests and concerns are taken into account. Forest agencies, forest owners and concessionaires must be willing and able to adapt their behaviour in light of such participation.*

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| **Indicator 7.10**  **Tenure and user rights of indigenous peoples and local communities over publicly owned forests** | National level | FMU  level | | Landscape level |
|  |  | |  |
| ***Proposed monitoring and reporting format*** | | | | |
|  | *Area (ha)* | | *Comment* | |
| Area of publicly owned forest for which the tenure and user rights of indigenous peoples and other communities are recognized and practised |  | |  | |
| Estimated area of PFE or FMU with recognized tenure and use rights for indigenous peoples and other local communities |  | |  | |
| Processes for resolving disputes over the forest-related  rights of indigenous peoples and other local communities | [Textual response] | | | |
| ***Notes***   * Describe any constraints and proposals for improvements | | | | |
| ***Cross-references***  ITTO (2015), Principle 6; FAO (2015); Rights and Resources tenure database (www.rightsandresource.org) | | | | |

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| **Indicator 7.11**  **Involvement of indigenous peoples and local communities in forest management** | National  level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| Indicate the extent of involvement of indigenous peoples, local communities and other forest dwellers in forest management capacity building, consultation processes, decision-making and implementation |  | | |
| Describe the legislative and other efforts in place for achieving gender equity in forest management planning and implementation, in particular to enable the participation of indigenous and other local women |  | | |
| ***Cross-references***  ITT[O (2015), Principle 6; United Nations Declaration on the Rights of Indigenous Peoples (www.un.org/](http://www.un.org/) esa/socdev/unpfii/documents/DRIPS\_en.pdf); SFM Toolbox module on gender in forestry [(www.fao.org/](http://www.fao.org/) sustainable-forest-management/toolbox/modules/gender-in-forestry/basic-knowledge/en) | | | |

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| **Indicator 7.12**  **Recognition and value of the forest management knowledge and skills of local people** | National level | FMU  level | Landscape level |
|  |  |  |
| ***Proposed monitoring and reporting format*** | | | |
| Indicate the extent to which indigenous and traditional forest-related knowledge and practices are integrated in forest management planning and implementation, and the constraints to greater integration |  | | |
| ***Cross-references***  ITTO (2015), Principle 6 | | | |

**Additional information**

**[please specify the indicator(s) to which it refers]**