Frequently asked questions on REDD+

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Note: All the information contained in this document is responsibility of the author and does not reflect FAO´s position on any of the exposed topics.
Abbreviations
COP: Conference of the Parties.
GHG: Greenhouse Gases.
GPG: Good Practice Guidance.
IPCC: Intergovernmental Panel on Climate Change.
MRV: Measurement, Reporting and Verification.
NAMA: National Appropriate Mitigation Action
NFI: National Forest Inventory.
REDD+: Reduced emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks, in developing countries.

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1. UNFCCC related questions

1.1. What is the history of REDD+?

The evident role of reducing deforestation and forest degradation as global mitigation tools led to the petition by the Coalition for Rainforest Nations in Montreal 2005, at COP11, to reinforce Article 2 of the Kyoto Protocol regarding the protection and enhancement of sinks and reservoirs of greenhouse gases not controlled by the Montreal Protocol. As a result of this petition, in December 2007, COP 13 in Bali adopted 2 decisions:


Where the Intergovernmental Panel on Climate Change decided to address:

“Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries”

2. Reducing emissions from deforestation in developing countries: approaches to stimulate action Decision 2/CP.13.2. This decision provides a mandate for several elements and actions by Parties relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

A methodological decision followed in COP 15, Copenhagen 2009:

1. Methodological guidance for activities relating to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries 4/CP.15.3.

This decision requests developing country Parties to take certain guidance into account for the 5 REDD+ activities, in particular those relating to measurement and reporting:

“To establish, according to national circumstances and capabilities, robust and transparent national forest monitoring systems and, if appropriate, sub-national systems as part of national monitoring systems that:

(i) Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;

1 http://unfccc.int/documentation/decisions/items/3597.php?such=j&volltext=1/CP.13#beg
2 http://unfccc.int/documentation/decisions/items/3597.php?such=j&volltext=2/CP.13#beg
3 http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf#page=11
(ii) Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities;

(iii) Are transparent and their results are available and suitable for review as agreed by the Conference of the Parties”

In **COP 16**, Cancún 2010, a final Decision on REDD+ was made:

1. Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

This decision “Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following (...) activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances:

- (a) Reducing emissions from deforestation;
- (b) Reducing emissions from forest degradation;
- (c) Conservation of forest carbon stocks;
- (d) Sustainable management of forest;
- (e) Enhancement of forest carbon stocks”;

Moreover, this decision “Requests developing country Parties aiming to undertake activities referred (...) above to develop the following elements (...):

ii) (a) A national strategy or action plan;

iii) (b) A national forest reference emission level and/or forest reference level or, if appropriate, as an interim measure, subnational forest reference emission levels and/or forest reference levels(...)

iv) (c) A robust and transparent national forest monitoring system for the monitoring and reporting of the activities referred (...) above, with, if appropriate, subnational monitoring and reporting as an interim measure(...),

v) (d) A system for providing information on how the safeguards referred to in annex 1 to this decision are being addressed and respected throughout the implementation of the activities referred (...), while respecting sovereignty”;

Many uncertainties remain at this stage, among them:

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4 In accordance with national circumstances, national forest reference emission levels and/or forest reference levels could be a combination of subnational forest reference emissions levels and/or forest reference levels.

5 Including monitoring and reporting of emissions displacement at the national level, if appropriate, and reporting on how displacement of emissions is being addressed, and on the means to integrate subnational monitoring systems into a national monitoring system.
(i) Whether Parties can choose among those 5 activities or all activities must be considered simultaneously to enter the REDD+ mechanism (i.e. summatory of all emissions and absorptions on forest land use).

(ii) Whether the Enhancement of forest carbon stocks corresponds only to forest land or it could be extended to non-forest land such as degraded agricultural land, which would allow including reforestation/afforestation (R/A) activities. At this stage, to protect native forests and to avoid paying for areas that have suffered native forest deforestation and have been reforested with non-native species, the enhancement of forest carbon stocks does not include the possibility of plantations through R/A. However, R/A measures are still available through the CDM (Kyoto Protocol). Further negotiations might extend R/A activities as part of the enhancement of forest carbon stocks if the safeguard of protecting native forests is respected.

(iii) The participation of subnational scales for monitoring and reporting is officially opened. This most likely will lead to subnational financing mechanisms. How these mechanisms and their MRV systems will be connected to the national scale is still unclear.

1.2. **What is the difference between REDD and REDD+?**

The plus added to the word REDD refers to several aspects, which are specified at Holloway and Giandomenico (2009)’s paper entitled The History of REDD Policy.

The concept of REDD+ was born during the 29th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) in Pozan, COP14, 2008. However, it officially appears in the Convention Decisions as REDD-plus in COP15, Decision 48; and in the AWG-LCA report from its 7th session in Copenhagen 2009, COP15 (FCCC/AWGLCA/2009/17). Main differences between REDD and REDD+ include:

1) Equal priority between reducing emissions through Deforestation and Degradation, and removals through sinks such as conservation, sustainable management of forests and enhancement of forest carbon stocks. (COP14 Pozan, 2008). It was already in Bali, COP13, that the removal of emissions by sinks was officially recognized as part of REDD. However it was only in Pozan, COP14, that Parties accepted to give both emissions and removals the same priority.

2) Long-term estimations of emission and removals should be done on a land basis instead of an activity basis since land-based approaches reflect more accurately the

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6 Safeguard: actions are consistent with the conservation of natural forests and biological diversity, ensuring that actions referred to (REDD+ activities) of this decision are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits.


land’s true effect on the environment and it is more consistent with the principle of environmental integrity.

3) Inclusion of the rights of Indigenous Peoples and new social and environmental safeguards.

4) Introduction of concepts around financial mechanisms and equitable distribution of funds.

1.3. **Do countries really need to apply stratification to their land to report under the UNFCCC and under REDD+?**

Yes. The subdivision of the national land into a first level that considers **managed and unmanaged land** is a Good Practice Guidance from the IPCC, with implications on how much land a country is responsible for in terms of reporting under the Convention. It has an implication on a country’s benefits from future carbon credit markets. Countries will only need to report on any emission/removal that has an anthropogenic origin, and therefore comes from their human-influenced, managed land9. This excludes reporting on areas without human influence. Environmental disturbances such as droughts, wind blows, insect outbreaks, etc., on managed land must be reported under the Convention in a country’s national GHG reports. However, how to include climatic “force majeure” conditions under REDD+ is still under negotiation. This is also the case for historic climatic “force majeure” conditions for the establishment of REL/RL levels (i.e. countries might not need to consider all their climate-driven emissions in their REL/RL to avoid including hot air)

The selection of managed/unmanaged has to be carefully thought. The main constrain refers to land where future human activities are predicted but are not happening yet (e.g. future oil/forest/mining concessions or development infrastructure such as roads, dams, etc). These future human-influenced areas can be incorporated to managed land beforehand, or as soon as there is evidence that forest land uses are being degraded and/or transformed into other land uses.

Once the country has been divided into managed and un-managed land, the Convention needs to be reported on this decision. Managed land will then be subdivided into other strata that helps create homogeneous strata from the perspective of carbon stocks (i.e. ecological zones, forest types, human activities in the forests (i.e. conservation activities, low impact logging, degraded forests, reforestation, plantations, etc). This last hierarchy should subdivide the forest types into any of the 5 REDD+ activities the country is interested in.

1.4. **Why do we need MRV systems under REDD+?**

National Measurement, Reporting and Verification (MRV) systems are a key guarantee that parties will effectively meet their respective mitigation commitments under the United

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9 The concept of manager land has no relationship with conventional understanding of forest management. Managed land refers to human influenced areas where active management can be in place or not.
Nations Framework Convention for Climate Change (UNFCCC), while building trust among Parties and instill confidence in the post 2012 international climate regime (Wemaere 2009). The national MRV systems will be a key pillar for purposes of accountability and credibility of the governance system of the post-2012 climate regime.

Current negotiations foresee at least two possible tracks for the REDD+ mechanism:

1) REDD+ will be a NAMA (National Appropriate Mitigation Action) and emission estimates will be MRV’ed (Verification might be substituted by “reviewing” (MRV, financing, capacity building, technology transfer have to be consistent with those for other NAMAs).

2) REDD+ will be an independent mitigation action for the forest sector with its own specific rules and modalities. Estimates might not require MRV approaches.

Independently of which final track REDD+ undergoes, countries undertaking REDD+ will need to demonstrate credible reductions in deforestation and/or forest degradation in comparison to historic scenarios in order to obtain performance-based financial incentives. The UNFCCC decision 4/CP15 requests countries to provide forest emission estimates that are transparent, consistent, as far as possible accurate, and to establish national forest monitoring systems. The most plausible way of establishing a forest monitoring system and of obtaining transparent, consistent and accurate estimates of forest emissions and removals is through MRV systems.

Moreover, FCCC/AWGLCA/2009/17 Section G states that the implementation of REDD+ activities should be (...) result-based.

This reinforces the path towards internal and/or external review (~verification) of the emission inventory data coming from REDD+ to guarantee that they are result-based, therefore promoting the need of MRV systems.

1.5. What is the difference between NAMAs and REDD+

Current negotiations under the AWG-LCA regarding National Appropriate Mitigation Actions (NAMAs) are heading towards including the REDD+ mechanism as a NAMA, and most importantly, that NAMAs must be encouraged by financial incentives. Post-2012 climate regime has to provide systematic incentives (i.e. including financial) for NAMAs in developing countries. As NAMAs will be taken in the context of sustainable development by developing countries, carbon market based on NAMA carbon credit will be more conducive to sustainable development.

1.6 What is the relationship between REDD+ and a National Communication

REDD+ is an expected mechanism under the UNFCCC. Everything that falls under the UNFCCC has to be included in the National Communications of Parties (articles 4.1 and 12 of the Convention). Since REDD+ is not yet an operational mechanism, countries are not

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11 http://unfccc.int/files/meetings/ad_hoc_working_groups/lca/text/plain/non-paper_from_korea.txt
requested to submit information on it yet, but as soon as REDD+ will enter into force, countries will have to include it. Under UNFCCC each Party has only one Institution/person that is allowed to submit communication on behalf of the country and this institution has the legal responsibility in front of the Convention. Activities in the context of REDD+ should be done in agreement and through a good communication with the institution in charge of the National Communication.

1.7 What are the main principles under the Convention

Article 3 from the United Nations Framework Convention on Climate Change (FCCC/INFORMAL/84)\(^{12}\) reports a series of Principles that should guide Parties in the implementation of the provisions of the Convention:

1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

2. The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.

3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

4. The Parties have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.

5. The Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties, thus enabling them better to address the problems of climate change. Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.

\(^{12}\) http://unfccc.int/essential_background/convention/background/items/2853.php
1.6. **What are the reporting requirements under the Convention?**

The updated UNFCCC reporting guidelines on annual inventories *(FCCC/SBSTA/2006/9)*\(^{13}\) specify that:

“National greenhouse gas inventories, should be transparent, consistent, comparable, complete and accurate”.

This reporting requirements/principles also apply to REDD+. Hence, the latest Convention Decision on REDD+ *(4/CP.15)*\(^{14}\) requests Parties to:

“Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities”

In the context of these UNFCCC reporting guidelines on annual inventories:

*Transparency* means that the assumptions and methodologies used for an inventory should be clearly explained to facilitate replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of information;

*Consistency* means that an inventory should be internally consistent in all its elements with inventories of other years. An inventory is consistent if the same methodologies are used for the base and all subsequent years and if consistent data sets are used to estimate emissions or removals from sources or sinks. Under certain circumstances referred to in paragraphs 15 and 16, an inventory using different methodologies for different years can be considered to be consistent if it has been recalculated in a transparent manner, in accordance with the Intergovernmental Panel on Climate Change (IPCC) Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories and Good Practice Guidance for Land Use, Land-Use Change and Forestry;

*Comparability* means that estimates of emissions and removals reported by Parties in inventories should be comparable among Parties. For this purpose, Parties should use the methodologies and formats agreed by the COP for estimating and reporting inventories. The allocation of different source/sink categories should follow the split of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, and the IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry, at the level of its summary and sectoral tables;

*Completeness* means that an inventory covers all sources and sinks, as well as all gases, included in the IPCC Guidelines as well as other existing relevant source/sink categories which are specific to individual Parties and, therefore, may not be included in the IPCC Guidelines. Completeness also means full geographic coverage of sources and sinks of an Party;

*Accuracy* is a relative measure of the exactness of an emission or removal estimate. Estimates

\(^{13}\) http://unfccc.int/resource/docs/2006/sbsta/eng/09.pdf

\(^{14}\) http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf#page=11
should be accurate in the sense that they are systematically neither over nor under true emissions or removals, as far as can be judged, and that uncertainties are reduced as far as practicable. Appropriate methodologies should be used, in accordance with the IPCC good practice guidance, to promote accuracy in inventories.

2. IPCC related questions

2.1. What are the carbon pools considered under the Convention?

![Table 1.1: Definitions for Carbon Pools Used in AFOLU for Each Land-Use Category](image)

<table>
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<th>Pool</th>
<th>Description</th>
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| Biomass                  | **Above-ground biomass**  
|                          | All biomass of living vegetation, both woody and herbaceous, above the soil including stems, stumps, branches, bark, seeds, and foliage.  
|                          | Note: In cases where forest understory is a relatively small component of the above-ground biomass carbon pool, it is acceptable for the methodologies and associated data used in some tiers to exclude it, provided the tiers are used in a consistent manner throughout the inventory time series.  
| Below-ground biomass     | All biomass of live roots. Fine roots of less than (suggested) 2 mm diameter are often excluded because these often cannot be distinguished empirically from soil organic matter or litter.  
| Dead organic matter      | **Dead wood**  
|                          | Includes all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps, larger than or equal to 10 cm in diameter (or the diameter specified by the country).  
| Litter                   | **Litter**  
|                          | Includes all non-living biomass with a size greater than the limit for soil organic matter (suggested 2 mm) and less than the minimum diameter chosen for dead wood (e.g. 10 cm), lying dead, in various states of decomposition above or within the mineral or organic soil. This includes the litter layer as usually defined in soil typologies. Live fine roots above the mineral or organic soil (of less than the minimum diameter limit chosen for below-ground biomass) are included in litter where they cannot be distinguished from it empirically.  
| Soils                    | **Soil organic matter**  
|                          | Includes organic carbon in mineral soils to a specified depth chosen by the country and applied consistently through the time series. Live and dead fine roots and DOM within the soil, that are less than the minimum diameter limit (suggested 2 mm) for roots and DOM, are included with soil organic matter where they cannot be distinguished from it empirically. The default for soil depth is 30 cm and guidance on determining country-specific depths is given in Chapter 2.3.3.1.  

1 Includes organic material (living and non-living) within the soil matrix, operationally defined as a specific size fraction (e.g., all matter passing through a 2 mm sieve). Soil C stock estimates may also include soil inorganic C if using a Tier 3 method. CO₂ emissions from liming and urea applications to soils are estimated as fluxes using Tier 1 or Tier 2 method.  
2 Carbon stocks in organic soils are not explicitly computed using Tier 1 or Tier 2 method, (which estimate only annual C flux from organic soils), but C stocks in organic soils can be estimated in a Tier 3 method. Definition of organic soils for classification purposes is provided in Chapter 3.

Source: IPCC (2006) Guidelines. Chapter 4, AFOLU sector.$^{15}$

2.2. Do Parties need to report on all carbon pools?

Following the reporting requirements/principles under the Convention, Parties must report GHG inventories that are complete.

Under the UNFCCC reporting guidelines on annual inventories *completeness* means that an inventory covers all sources and sinks, as well as all gases, included in the IPCC Guidelines as well as other existing relevant source/sink categories which are specific to individual Parties and, therefore, may not be included in the IPCC Guidelines. Completeness also means full geographic coverage of sources and sinks of a Party;

While completeness is a reporting requirement, Parties must prioritize their efforts towards the complete reporting of *key categories* (IPCC, 2006, Chapter 1). Categories that are not key, or carbon pools that are not key must be reported, but they could be reported using Tier 1 approaches, based in reference values for their emission factors, as contained in the IPCC annexes.

“A key category is one that is prioritised within the national inventory system because its estimate has a significant influence on a country’s total inventory of greenhouse gases in terms of the absolute level, the trend, or the uncertainty in emissions and removals. Whenever the term key category is used, it includes both source and sink categories”

As far as possible, key categories should receive special consideration in terms of three important inventory aspects.

✓ Firstly, identification of key categories in national inventories enables limited resources available for preparing inventories to be prioritised. It is good practice to focus the available resources for the improvement in data and methods onto categories identified as key.

✓ Secondly, in general, more detailed higher tier methods should be selected for key categories. For most sources/sinks, higher tier (Tier 2 and 3) methods are suggested for key categories, although this is not always the case. In some cases, inventory compilers may be unable to adopt a higher tier method due to lack of resources. This may mean that they are unable to collect the required data for a higher tier or are unable to determine country specific emission factors and other data needed for Tier 2 and 3 methods. In these cases, although this is not accommodated in the category-specific decision trees, a Tier 1 approach can be used. It should in these cases be clearly documented why the methodological choice was not in line with the sectoral decision tree. Any key categories where the good practice method cannot be used should have priority for future improvements.

✓ Thirdly, it is good practice to give additional attention to key categories with respect to quality assurance and quality control (QA/QC).

Any inventory compiler who has prepared a national greenhouse gas inventory will be able to identify key categories in terms of their contribution to the absolute level of national emissions and removals. For those inventory compilers who have prepared a time series, the quantitative determination of key categories should include an evaluation of both the absolute

level and the trend of emissions and removals. Some key categories may be identified only when their influence on the trend of the national inventory is taken into account.

Key category analysis helps a country to achieve the most reliable inventory given the resources available. Key category analysis is required to identify the following:

- which land-use and management activities are significant;
- which land-use or livestock (sub)category is significant;
- which CO2 emissions or removals by sinks from various carbon pools are significant;
- which non-CO2 gases and from what categories are significant; and
- which tier is required for reporting.

**Carbon pools:** The results of the key category identification will be most useful if the analysis is done at the appropriate disaggregation level of categories. The disaggregation level has to do with which pool categories to report. Inside a key category, higher reporting levels will be required for those carbon pools that contribute the most in that category. A progressive improvement of the Tier Levels can be applied to the other carbon pools in a key category, as soon as resources become available.

### 2.3. Can countries develop country specific emission factors using carbon maps and report them under the UNFCCC?

There are different ways of creating carbon maps:

1) simply assigning field-collected carbon values and uncertainties through National Forest Inventories, to different forest types in a map (Tier 2)

2) extrapolating carbon values from field-measured points/plots to areas through environmental variables (Tier 1),

3) carbon modeling based on forest growth dynamics, or on ecophysiological approaches, parameterized with real field data (e.g. Canada age-based forest model, and Australia ecophysiological-based model) (Tier 3).

From these approaches only the first and third ones guarantee that the uncertainties really relate to a country’s specific field-derived carbon estimates (since it simply assigns the values obtained in the field through a NFI to the different forest types in a map, without any processing).

The second approach has problems with their uncertainties: either there are no uncertainty values offered per pixel, or the pixel’s associated uncertainties relate to the environmental variables used to extrapolate from point data to area (i.e. soils, climate, topography, etc) rather than to the biomass variability per se, and uncertainties also relate to the extrapolation approach selected. Moreover, this second approach frequently offers data for Aboveground biomass but not for the other pools.

The third approach requires a solid amount of data to be able to offer trustable results, and a solid understanding on how tropical forest dynamics work. Although this is an interesting and useful approach, only 2 Annex I countries have used it for their own reporting, indicating its complexity, and most non-Annex I countries do not count on enough data for developing and
parameterizing modeling approaches to carbon dynamics. Moreover, we are still to develop reliable tropical forest dynamic models that could allow Tier 3 reporting. The simple reproduction of Annex-I countries’ models, such as the temperate models used in Canada and based in the cohort-age dynamics, are unlikely to work in tropical forests where age distribution is not sustained as in temperate forests.

Reporting to the Convention through carbon maps is therefore problematic at this point, due to the lack of valid uncertainties associated to biomass estimates for each forest stratum. The first option could be valid, however, to estimate the Reference Emission Levels (historic data + national circumstances).

2.4. What are the IPCC proposed tier levels?

Tier reporting relates to the level of data accuracy required for reporting and the availability of country-specific data. Table 2 shows the characteristics of the three Tiers available for reporting under the Convention. In general, moving to higher tiers improves the accuracy of the inventory and reduces uncertainty, but the complexity and resources required for conducting inventories also increases for higher tiers. If needed, a combination of tiers can be used for different categories and for different pools inside a category, e.g., Tier 2 can be used for biomass and Tier 1 for soil carbon.

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<td><strong>Framework of tier structure for AFOLU methods</strong></td>
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**Tier 1** methods are designed to be the simplest to use, for which equations and default parameter values (e.g., emission and stock change factors) are provided in this volume. Country-specific activity data are needed, but for Tier 1 there are often globally available sources of activity data estimates (e.g., deforestation rates, agricultural production statistics, global land cover maps, fertilizer use, livestock population data, etc.), although these data are usually spatially coarse.

**Tier 2** can use the same methodological approach as Tier 1 but applies emission and stock change factors that are based on country- or region-specific data, for the most important land-use or livestock categories. Country-defined emission factors are more appropriate for the climatic regions, land-use systems and livestock categories in that country. Higher temporal and spatial resolution and more disaggregated activity data are typically used in Tier 2 to correspond with country-defined coefficients for specific regions and specialized land-use or livestock categories.

At **Tier 3**, higher order methods are used, including models and inventory measurement systems tailored to address national circumstances, repeated over time, and driven by high-resolution activity data and disaggregated at sub-national level. These higher order methods provide estimates of greater certainty than lower tiers. Such systems may include comprehensive field sampling repeated at regular time intervals and/or GIS-based systems of age, class/production data, soils data, and land-use and management activity data, integrating several types of monitoring. Pieces of land where a land-use change occurs can usually be tracked over time, at least statistically. In most cases these systems have a climate dependency, and thus provide source estimates with interannual variability. Detailed disaggregation of livestock population according to animal type, age, body weight etc., can be used. Models should undergo quality checks, audits, and validations and be thoroughly documented.
2.5. Why does FAO support Tier 2 reporting for key categories?

Tier 2 requirements include country specific estimates and uncertainties. These two conditions are a guarantee that donors/market are paying for performance-based actions whose thresholds of error are known. Without uncertainty information, countries undertaking REDD+ will not be able to demonstrate credible reductions in deforestation and/or forest degradation in comparison to historic scenarios. Few donors/potential carbon credit buyers would be interesting in purchasing carbon credits blindly.

Countries willing to report under key categories under Tier 2 will need to develop national forest inventories (NFI) to estimate country specific data and their uncertainties, and a forest monitoring system with ground validation that allows the estimation of uncertainties associated to land uses and changes in land uses. While countries can start using default values provided by the IPCC (Tier 1), their access to performance-based financial rewards will be retarded by the lack of country specific data + uncertainties. For these reasons, FAO suggests to run, from the beginning of the MRV process, IPCC consistent NFI and forest inventory systems, therefore bringing a higher level of exigency to the countries, in exchange of guaranteed technical compliance with UNFCCC and donors’ requirements.

Tier 2 reporting is required for Key Categories. All REDD+ activities will be considered as key categories.

2.6. What are the available Good Practice Guidance and Guidelines under the IPCC for non-Annex I to elaborate their GHG Inventories under REDD+?

Under the Convention, non-Annex-I countries are reporting their National Communications following the 1996 Guidelines (Adopted by the Convention), although they are encouraged to use the most recent IPCC Guidance and Guidelines. However, under REDD+, Parties must follow the 2003/2006 Good Practice Guidance for LULUCF which are land use based, and are encouraged under the convention.

There are two COP decisions in this regard:

Decision 2/CP.13
• Encourages the use of the most recent reporting guidelines as a basis for reporting GHG emissions from deforestation, noting also that Parties not included in Annex I to the Convention are encouraged to apply the GPG/LULUCF.

Decision 4/CP.15
• Requests developing country Parties (…) to take the following guidance into account for activities relating to decision 2/CP.13 (…) in particular those relating to measurement and reporting:

“To use the most recent Intergovernmental Panel on Climate Change guidance and guidelines, as adopted or encouraged by the Conference of the Parties, as appropriate, as a
While currently only 1996 Guidelines are adopted, 2003 Good Practice Guidance on LULUCF are encouraged. This means countries should start moving towards the 2003 LULUCF GPG to estimate their forest-related GHG Inventories (LULUCF). The way of reporting differs significantly between both approaches since 1996 guidelines are “activity based” and 2003 LULUCF GPG are “land based”. The land approach requires reporting under the following categories:

- Emissions and Removals of Forest Land Remaining Forest Land
- Emissions and Removals of Other Land changing to Forest Land
- Fire emissions
- Other (insect damage, storm-hurricane damage, etc)

2003 Guidelines are also specific about complete reporting, meaning that data estimates on emissions or removals must be given for the five carbon pools defined by the IPCC.

### 2.7 What are the quality assurance and the quality control used for?

An important goal of IPCC inventory guidance is to support the development of national greenhouse gas inventories that can be readily assessed in terms of quality. It is good practice to implement quality assurance/quality control (QA/QC) and verification procedures in the development of national greenhouse gas inventories to accomplish this goal.

A QA/QC and verification system contributes to the objectives of good practice in inventory development, namely to improve transparency, consistency, comparability, completeness, and accuracy of national greenhouse gas inventories. QA/QC and verification activities should be integral parts of the inventory process. The outcomes of QA/QC and verification may result in a reassessment of inventory or category uncertainty estimates and to subsequent improvements in the estimates of emissions or removals. For example, the results of the QA/QC process may point to particular variables within the estimation methodology for a certain category that should be the focus of improvement efforts.

The terms ‘quality control’, ‘quality assurance’, and ‘verification’ are often used in different ways. The definitions of QC, QA, and verification in Box 6.1 will be used for the purposes of this guidance.
3. MRV REDD+ related questions

3.1. What is the final goal of an MRV system for REDD+?

It is a UNFCCC COP decision 4/CP15 that countries interested in the REDD+ mechanism should provide forest emission estimates that are transparent, consistent, as far as possible accurate, using a forest monitoring system. To do so, countries will:

i) Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes.

Therefore, for REDD+ implementation, countries must provide forest-related GHG estimates (emissions and removals) and the most operative way to do it is through an MRV system that allows the development of National Forest Greenhouse Gas Inventories.

3.2. What is a national forest monitoring system?

The methodological decision on REDD+ 4/CP.15 requests developing country Parties to take certain guidance into account for the 5 REDD+ activities, in particular those relating to
measurement and reporting:

“To establish, according to national circumstances and capabilities, robust and transparent national forest monitoring systems and, if appropriate, sub-national systems as part of national monitoring systems that:

(iv) Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;

(v) Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities;

(vi) Are transparent and their results are available and suitable for review as agreed by the Conference of the Parties”

Therefore, a national forest monitoring system must be:

i) designed to measure, monitor and report forest resources at a national scale, although with the possibility to measure and report at subnational levels.

ii) should rely on both remote sensing and ground based national forest inventory approaches.

iii) the final goal is to estimate anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks.

The most operative way to establish a national forest monitoring system and to demonstrate credible (transparent, consistent and accurate) reductions in deforestation, forest degradation, and/or increases in carbon absorption, is through an MRV (Measurement, Reporting and Verification) system17. An MRV system is a combination of components that are interrelated and coordinated to obtain a final common goal, which in our case is the development of an inventory of Greenhouse Gas (GHG) emissions associated to human practices that affect the forest sector, with particular interest on the REDD+ activities. Key components of an MRV system include:

1) A national system to evaluate carbon stock changes: a national forest inventory (Emission Factors).

2) A national remote sensing system to evaluate changes in land uses: the most operative way to measure these changes at a national scale (Activity Data) would be through a satellite system. However, National Forest Inventories can also be used to report on land use changes, if they count on enough sampling units (which is frequently not the case in non-Annex I countries)

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17 An even more appropriate approach would be to refer to National Forest Monitoring Systems that are MRVable, this last understood as a set of rules rather than as a system.
3) A national Greenhouse Gas Inventory System: that produces national estimates on forest emissions and absorptions associated to the forest sector (and able to report on the forest REDD+ activities)

4) Outside of the MRV system, but key to make it operative, countries must define their Reference Emission Levels and/or their Reference Levels (REL/RL)

5) None of the above mentioned components can move forward nor become operative without a thorough analysis and reinforcement of a country’s institutional arrangements.

National MRV systems are a key guarantee that parties will effectively meet their respective mitigation commitments under the United Nations Framework Convention for Climate Change (UNFCCC), while building trust among Parties. National MRV systems will be key pillars for purposes of accountability and credibility of the governance system of the post-2012 international climate regime (Wemaere 2009)\(^{18}\).

### 3.3. How does the information generated with an MRV system can (or needs to) feed back into the policy domain?

The REDD+ mechanism is a global mitigation tool under the Convention of Climate Change to help the UNFCCC attend its ultimate objective, thus:

“The ultimate objective of the Climate Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner”

Therefore, the final goal of REDD+ is to help reduce emissions, not just monitor them. MRV systems must necessarily be embedded into a legal and institutional framework that can guarantee its best performance. MRV systems will help identifying drivers of Deforestation and Degradation by a sound monitoring system, which should then promote legal actions through policies and measures to alter them. Countries will have to identify their best approaches to efficiently combine the near-real control of their territory with measures that make a difference.

### 3.4. Why does the REDD+ mechanism have a multi-phase approach?

Non-Annex I Parties need to follow their own speed when developing their MRV systems to support the REDD+ mechanism. This process implies the improvement of their technical, institutional, and legislative capacities to move in the direction of performance-based

incentives. The natural gradual improvement of a country’s capacities is the reason behind the REDD+ mechanism having a multi-phase approach (FCCC/AWGLCA/2009/17):

“The Conference of the Parties Decides that the activities undertaken by Parties referred to REDD+ activities [should][shall] be implemented in phases, beginning with the development of national strategies or action plans, policies and measures and capacity-building, followed by the implementation of national policies and measures, and national strategies or action plans and, as appropriate, subnational strategies, that could involve further capacity-building, technology transfer and results-based demonstration activities, and evolving into results-based actions [that shall be fully measured, reported and verified];”

REDD+ multi-phase development is likely to include the following phases in order to access financial incentives:

1) Readiness phase: improvement of a country’s capacities (e.g. 1-2 years).
2) Implementation phase supported by predictable funds (i.e. Amazon Fund): countries will need to have an operative national forest monitoring system working and data on forest land use changes for at least 1 year + conservative estimates of forest carbon stocks
3) Operational phase with performance-based payments: countries will need to have the operative national forest monitoring system + country specific data and uncertainties of their forests’ carbon stocks and carbon stock changes, and national forest inventories of GHG emissions by sources and removals by sinks.

In any case, REDD+ is a voluntary mechanism under the Convention. No country should feel pressure to implement it if not appropriate or interesting for the Country in general or under current country circumstances.

4. How to make REDD+ as simple as possible?

KISS (keep it super simple) approaches should be considered when developing national forest monitoring systems through MRV, to implement REDD+. However, the Convention petition to establish:

(... robust and transparent national forest monitoring systems (...) that use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes”

does not make MRV systems super simple.

Unlike other organizations, FAO’s approach towards MRV systems is ruled by certain goals that guarantee a country’s compliance with the UNFCCC reporting requirements, and ensures countries will be eligible by donors, and ready to access the financial incentives as soon as possible. This approach is intended to develop trust among countries and is based on best technical advice available, but it also implies a higher level of exigency, which includes:
1. National forest MRV systems will follow the IPCC guidelines on the development of forest GHGs estimates (i.e. country stratification process based on IPCC).

2. National forest GHG inventories will offer estimates that include country specific data for the emission factors.

3. Uncertainties are required for country-specific data on emission factors and on activity data (Tier 2 reporting).