VCS VERIFIED CARBON STANDARD
A Global Benchmark for Carbon

VCS GUIDANCE

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Technical Guidance for Jurisdictional and Nested REDD+ Programs

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The views expressed in this document do not necessarily represent the views of the US Government, USAID or FCMC.

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1 | INTRODUCTION

1.1 BACKGROUND

The VCS Jurisdictional and Nested REDD+ (JNR) requirements set out an integrated accounting framework for reduced emissions from deforestation, and where relevant, reduced emissions from degradation and carbon stock enhancements. It is flexibly designed to give proponents the choice to apply the accounting framework across one or more levels in a country, which may include combinations of national and/or subnational, and project levels. The *JNR Requirements* are intended to assist governments, private entities, civil society organizations, local stakeholders and validation/verification bodies developing and auditing jurisdictional REDD+ programs and nested projects.

The *JNR Requirements* were developed by the VCS Jurisdictional and Nested REDD+ Initiative (JNRI), overseen by an advisory committee and technical expert groups, comprising representatives from national and subnational governments, leading experts in REDD+ and representatives from NGOs and the private sector[1].

The objective of this document is to assist in the development of jurisdictional programs and nested projects, as well as to provide further background and context to the *JNR Requirements*. It provides technical advice on specific paragraphs of the *JNR Requirements* and is accompanied by a second document, *Program Design Guidance for Jurisdictional and Nested REDD+ Programs*, which provides high-level advice on program design and development. The primary intended audience for these guidance documents is governments and their partners, rather than project developers (a separate guidance document may be developed that will focus on guidance for nested project developers).

The *JNR Requirements* should be read in full before developing or assessing jurisdictional baselines and REDD+ programs that use the standard. This guidance document does not form part of the *JNR Requirements* nor does it contain new requirements. The interpretation of the *JNR Requirements* should, however, be consistent with the guidance set out in this document. This guidance document may be further expanded to reflect additional guidance and lessons learned from implementation in due course. It is not intended to be comprehensive.

[1] The JNR advisory group members and contributors to this document are available on the VCS website http://www.v-c-s.org/JNR-history.

1.2 KEY REQUIREMENTS AND REFERENCES

Most of the requirements for jurisdictional and nested REDD+ are set out in the *JNR Requirements* document. Other rules, requirements and procedures may be found in the following documents and are referenced, where relevant, in the *JNR Requirements*:

- VCS Standard
- VCS Program Guide
- AFOLU Requirements
- Program Definitions
- JNR Registration and Issuance Process
- JNR Validation and Verification Process
- JNR Non-Permanence Risk Tool
- JNR Leakage Tool

The above documents are available on the VCS website (http://www.v-c-s.org) and may be updated periodically. Readers should ensure they are using the most current versions. New requirements are effective immediately upon release, though appropriate grace periods are provided to allow stakeholders developing jurisdictional programs sufficient time to transition to new requirements. Already registered jurisdictional programs are expected to comply with new requirements when they update their baseline. It is acknowledged that a sufficiently long grace period and backward compatibility will be needed especially where jurisdictions have enacted JNR requirements through a decree or legislation that would subsequently need revision.

1.3 ORGANIZATION OF THIS GUIDANCE DOCUMENT

This document contains guidance on specific sections of the *JNR Requirements*, such as developing jurisdictional baselines, applying the grandparenting rules, accounting for leakage, and designing monitoring systems. The sections are not numbered sequentially, but rather following the numbering in the *JNR Requirements*. Guidance is not provided for each section or subsection of the *JNR Requirements*.

1.4 SEEKING CLARIFICATIONS FROM VCS

Jurisdictional proponents and project proponents of nested projects that need clarification directly from VCS may submit their questions to secretariat@v-c-s.org.

2 | SPECIFIC GUIDANCE ON THE JNR REQUIREMENTS

3.2 JURISDICTIONAL PROGRAM AND BASELINE DESCRIPTION

General guidance for completing the *Jurisdictional Program Description (JPD)* is included in the template itself. The following is additional guidance on Section 1.12 of the JPD.

Benefit Sharing Mechanism

A benefit sharing or internal allocation program is good practice for scenario 2 if the jurisdictional proponent plans to request issuance of VCUs for emission reductions from non-project areas; and should be designed and documented for scenario 3. Benefits may include monetary and non-monetary incentives. They may also include the allocation of VCUs (or other form of GHG credit) by the jurisdictional proponent to local stakeholders or entities.

Where jurisdictions intend to distribute benefits or VCUs based on measured emission reductions achieved by stakeholders, technical capacity to design and implement a spatially explicit baseline and monitoring protocol will be needed. Internal leakage within a jurisdictional program will also need to be taken into account where benefit sharing or internal allocation of credits are linked to results. Guidance on addressing internal leakage for scenario 2 is provided in the Section on 3.12.10. Such guidance is also relevant for jurisdictional programs using scenario 3 and intending to link benefits to results.

Alternative benefit sharing approaches not requiring spatially explicit accounting may also be developed. For example, similar to payment for ecosystem services (PES) schemes, participating stakeholders could receive some form of payment based on land area, implementation of certain activities or other metrics. However, in any instance where payments are not linked to measured emission reductions, jurisdictional proponents should be aware of the financial risks this may entail if benefits are distributed without having assurance of emission reduction and/or removal performance, yet revenue to the jurisdictional program is primarily derived from the sale of VCUs or performance payments. More detailed guidance on designing benefit sharing mechanisms can be found in the resources listed in Appendix I.

3.5 JURISDICTIONAL REDD+ PROGRAM AND PROJECT LOCATION

3.5.1 In many cases the use of administrative boundaries may be the most appropriate. The use of an ecoregional JNR boundary may be appropriate where forest areas are concentrated in a portion of a jurisdiction, or where contiguous areas of forest span subnational administrative boundaries but are under the same management control (ie, large protected areas). Ecoregional boundaries present complications, however, where they cross administrative boundaries with different management and little coordination. In

these cases the jurisdictional proponent will need to determine how responsibilities for implementation and management of the overall JNR program will be allocated between actors involved in the program.

National governments may act as jurisdictional proponents, or split the subnational jurisdiction into its administrative areas and negotiate a joint agreement between subnational governments (grouped subnational jurisdictional proponents). It is worth noting that even administrative units nested two levels below the national level can play a role in managing and implementing program activities, even if they cannot be registered as jurisdictions under the JNR and receive direct crediting.

If a national government defines the subnational jurisdictional boundaries, the following may need to be considered:

Where administrative boundaries are used:

- How the power, control, or decision making authority over land use is managed within the country (see Section 3.8 in the companion to this guide, *Program Design Guidance for Jurisdictional and Nested REDD+ Programs*, on decentralization).
- Who may be able to act as the jurisdictional proponent and carry out the jurisdictional program (see Section 5 in *Program Design Guidance for Jurisdictional and Nested REDD+ Programs*).
- How leakage could be shared or dealt with between subnational jurisdictions (see Section 3.12 in this guide).
- Similarities or differences in laws, policy, or regulations in different political administrative regions within a country (eg, how land or forest law differs between states).

Where ecoregions are used:

- Any similarities in drivers and forest types across an ecoregion that would benefit from developing the JNR program along ecoregions versus administrative boundaries (see Section 3.1 in *Program Design Guidance for Jurisdictional and Nested REDD+ Programs* on drivers).
- Any overlaps between ecoregions, drivers, forest administration and political administration (eg, if ecoregions cross or are contained within a political boundary, or a forest ecosystem under control of an indigenous group crosses political administrative boundaries).

In both administrative and ecoregional boundaries, any existing subnational jurisdictional programs registered and their current boundaries need to be taken into account.

It must also be noted that the boundaries of a jurisdictional program delineate the area where the REDD+ program activities are carried out, which may be smaller than the geographical area over which the jurisdictional baseline and monitoring are carried out. For instance, a country may register a baseline and monitoring system covering its whole territory, including a subnational jurisdiction with a REDD+ program limited to its administrative boundaries.

3.6 OWNERSHIP AND OTHER GHG PROGRAMS

Right of use

3.6.1 Few jurisdictions have laws or regulations specifically dealing with rights to emission reductions and/or removals. While the *JNR Requirements* only require evidencing "right of use", resolving rights to emission reductions and/or removals more broadly via legislation or regulation is recommended. In the absence of laws and regulation, right of use can be clarified using contractual arrangements between the jurisdictional proponent and the land tenure holders or any other means in accordance with the *VCS Standard*. Resolving who has title to emission reductions and/or removals (in addition to a right of use or other rights) can help local stakeholders as well as investors in jurisdictional REDD+ programs.

See the companion to this guide, *Guidance for Jurisdictional and Nested REDD+ Program Design*, for additional guidance on relevance of right of use and how it may be documented.

Participation under Other GHG Programs

3.6.4 To ensure that there is no double counting of GHG emission reductions, the jurisdictional program must account for, report and remove any GHG credits issued, or that will be issued, by VCS or other GHG programs within the same jurisdictional boundary for emission reductions that occurred during the same period (ie, for the same vintage years) and for the same activities. This applies to both GHG credits from other projects as well as other jurisdictional programs. Information on VCS projects can be found in the VCS project database[2].

To identify non-VCS projects, the registries of other GHG programs may be searched. Most non-VCS projects will be listed in their respective program's registries. This includes non-VCS projects registered under voluntary programs (eg, Gold Standard or American Carbon Registry) along with compliance programs such as the Clean Development Mechanism. Other sources of information on potential projects include websites that aggregate information on terrestrial carbon projects such as the Forest Carbon Portal.[3] Project developers of non-VCS projects should be contacted to confirm the status of their projects and the volume and vintages of any credits issued before any deductions are made from a jurisdiction's GHG estimates.

Where jurisdictions follow scenario 3 or will limit the standards that can be applied at a project level in scenario 2, policies and procedures should be clearly elaborated to ensure that existing and potential future projects know and can comply with jurisdictional law, policy or regulations. In the absence of clear policy, projects may continue to issue credits under other frameworks that will need to be subtracted from jurisdictional results to avoid double counting. Mechanisms to prevent double counting may differ

[2] http://www.vcsprojectdatabase.org

[3] http://www.forestcarbonportal.com/

depending on whether the jurisdictional proponent is accessing multiple markets or results-based funds for emission reduction and/or removal performance, such as the Forest Carbon Partnership Facility's (FCPF) Carbon Fund.

For example, VCUs may be issued and subsequently cancelled when a corresponding number of credits are issued or purchased under the other program's standards or rules. A jurisdiction's VCUs may also be converted to another emission reduction unit under the other market's rules, as they would be under the California REDD+ rules proposed by the REDD Offsets Working group (ROW). Alternatively, if emission reductions and/or removals generated within the jurisdiction are issued or paid for under the other program they may never be issued as VCUs. In this case this amount of emission reductions and/or removals issued or paid for under another program must be deducted from the total number of emission reductions and/or removals that may be issued to a jurisdiction from the relevant monitoring period

3.7 SAFEGUARDS

3.7.1 A jurisdictional proponent is free to develop or use its own process to ensure transparency and stakeholder engagement. If a jurisdictional proponent plans on developing or using its own stakeholder consultation process it is recommended that the jurisdictional proponent review the processes listed in this criterion[4] and adapt key provisions to local circumstances. This may help reduce time and costs associated with developing a credible stakeholder consultation process.

3.7.2 As of this writing, the Cancun Safeguards[5] and Durban Outcome[6] are the key decisions on safeguards agreed by the UNFCCC. However, jurisdictions should reference the most recent UNFCCC decisions. Information on the application of these and national or jurisdictional safeguards may be included in the JNR monitoring report, but other methods of ensuring information is readily accessible to all relevant stakeholders may need to be considered. The Safeguard Information System required by the Durban Outcome may suffice at the national level, but it may not be sufficient for transparency at lower levels. Further guidance on provision of information may be sought from the standards listed in Appendix I.

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4 REDD+ SES (http://www.redd-standards.org) and FCPF and UN-REDD *Guidelines on Stakeholder Engagement in REDD+ Readiness With a Focus on the Participation of Indigenous Peoples and Other Forest–Dependent Communities* available at https://www.forestcarbonpartnership.org and http://www.un-redd.org

5 Decision 1/CP.16 *The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention,* Appendix 1. http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2

6 Decision 12/CP.17 Guidance on systems for providing information on how safeguards are addressed and respected and modalities relating to forest reference emission levels and forest reference levels as referred to in decision 1/CP.16: http://unfccc.int/resource/docs/2011/cop17/eng/09a02.pdf#page=16

3.7.3 The ability to receive and address grievances is an important part of good governance. Existing dispute resolution mechanisms – such as an ombudsman – may be built upon if appropriate and their mandate and capacity can be extended. The grievance redress mechanisms developed under the FCPF are also be expected to meet this provision of the *JNR Requirements* (see criterion 26 of the FCPF Carbon Fund Methodological Framework[7]).

3.8 ELIGIBLE ACTIVITIES

3.8.1 Deciding which REDD+ activities to include in the baseline should be guided by an understanding of the potential to reduce emissions or generate removals from each of the REDD+ activities as well as the technical and data requirements needed to establish the baseline and monitor these activities. Section 4 in *Program Design Guidance for Jurisdictional and Nested REDD+ Programs* provides guidance on developing jurisdictional programs which should be taken into account when determining which of the optional REDD+ activities is included in a jurisdictional program. For example, understanding the scale and nature of drivers, ability to implement mitigation activities, cost effectiveness, technical expertise, data availability, and ability to demonstrate right of use should all influence whether reduced degradation or carbon stock enhancement activities are included.

3.9 SCOPE AND JURISDICTIONAL REDD+ PROGRAM BOUNDARY

3.9.1 Activity-based accounting has been the traditional accounting approach used in mitigation projects. Activity-based accounting focuses on the activity being implemented and determines the baseline and monitors emissions and sequestration directly associated with the activity. An example is forest management where the activity might be reduced impact logging. In this case an activity-based accounting approach would focus on direct and incidental emissions and sequestration associated with the felling and extraction of timber trees. Each applicable activity's impact on carbon stocks per unit area is determined. This impact is multiplied by the area on which each activity occurs. Aggregate emissions or removals are calculated by summing across applicable activities. Activities are allowed to overlap spatially within a baseline period provided it can be demonstrated there is no double counting. The advantages of an activity-based approach are that it can reduce costs as only selected activities are included in the accounting. The disadvantage is that depending on the number of activities chosen it may fail to capture all relevant emissions within the forest sector. Activity shifting leakage also needs to be addressed with activity-based accounting.

Land-based accounting takes a broader perspective and includes total carbon stock changes across an entire area without separating by activity. For example inventory plots may be established across a jurisdiction and regularly monitored. Plots should be established systematically and at sufficient density to

[7] Available at: https://www.forestcarbonpartnership.org/sites/fcp/files/2014/MArch/March/FCPF%20Carbon%20Fund%20Methodological%20Framework%20Final%20Dec%2020%202013.pdf

capture stocks and changes in stocks across the jurisdiction's land area. A land-based approach captures changes that occur in the specific plots and multiply this sample up to the entire land area. In this case emission reductions associated with reduced impact logging would, in theory, be captured alongside all other changes in stocks in the forests because a proportion of the measurement plots would include areas that previously were conventionally logged and now have reduced impact logging. Land-based accounting represents the full ("wall-to-wall") accounting of all emissions and removals on all managed land in a jurisdiction. Another land-based approach is to stratify by density classes that can be determined by remote sensing. Thus a forest recorded as moving from rich to medium density has been degraded; a forest moving from poor to medium has enhanced.

Advantages include a more comprehensive method to estimate emission reductions and/or removals and a reduction in un-accounted leakage within a jurisdiction. Disadvantages include potentially increased cost for data collection and analysis (depending on the approach used and the capacities available), potentially lower precision in results[8], potential challenges with using different methods at project and jurisdictional scale which may make nesting of projects challenging, and potential to not capture some degradation emissions (depending on sampling frequency).

Land-based accounting is only recommended where there is significant monitoring infrastructure and availability of historical data on all significant GHG emissions and removals in all relevant geographical areas. Also, considering the challenges of nesting projects under this approach, jurisdictions aiming to implement crediting scenario 2 should give careful consideration to nesting projects before adopting land-based accounting. This may include establishing methods to separate the results from land-based accounting by activity.

3.9.5 Deciding which carbon pools and GHGs to include requires an initial high-level assessment to identify which carbon pools and GHG sources are significant and which can be considered *de minimis*. The significance of pools and sources will depend on the usual practices of the baseline deforestation agents and on the proposed REDD+ measures, as well as on specific national or regional characteristics - for instance, emissions from the soil carbon pool may not be significant in many countries, but may be a potentially significant source of emissions in countries with peatland areas. In general, the following emissions sources and carbon pools may often be assumed to be insignificant in REDD+ activities[9] and hence may be neglected in the development of baselines and in the monitoring plan, unless country-specific circumstances are identified that may affect their relative importance[10]:

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[9] Based on the "REDD Methodological Tool: Determining the significance of emissions sources and changes in carbon pools in REDD project activities" Version - April 2010.

[10] See also Section 4.3.3 of the VCS *AFOLU Requirements* on pools and sources that may be usually insignificant according to the type of REDD+ activity.

Emissions sources:

- Fertiliser application
- Removal of herbaceous vegetation
- Transportation
- Fossil fuel combustion
- Nitrous oxide (N_2O) emissions from decomposition of litter and fine roots from N-fixing trees

Carbon pools:

- Litter

Note that defaults (eg, IPCC or those established in the scientific literature) may be used for insignificant carbon pools, which are defined by VCS as those representing less than 15% of total carbon stocks.

Jurisdictions should also consider reviewing the significant carbon pools included in the baselines of pre-existing AFOLU projects and be aware of how the selected scenario and the scope of activities and carbon pools may affect the financial viability of these projects (see guidance on Section 3.11.14 on grandparenting and nesting baselines).

3.11 JURISDICTIONAL BASELINE

3.11.2 A baseline period represents the period of time over which a proposed jurisdictional baseline is valid (ie, can be used to estimate emission reductions), which is decided by the jurisdiction and may run from 5 to 10 years. Such baseline is built based on historical data on greenhouse gas emission reductions and/or removals covering a historical reference period. The following aspects may be considered when deciding on the length of a jurisdictional baseline period:

1) The nature and pattern of drivers over the course of the historic baseline period due to exogenous factors, and the ability to capture this when modeling the forward-looking baseline.
2) The costs of updating the baseline and the availability of resources to do so.
3) The potential for improvement in the availability and/or quality of data (eg, due to ongoing or planned readiness efforts). More frequent refinement of the existing baseline may be attractive, for instance, in cases where the initial baseline is overly conservative due to limited availability and/or quality of existing data at the time of its development. Note that this refinement can be done on an as-needed basis where the jurisdiction is refining the existing baseline (ie, not updating the time period covered). Where refining and updating to cover different years, this must be done as a full baseline update.
4) For subnational jurisdictions nested under a national baseline, the frequency and timing of national baseline updates where such baselines have not been registered with the VCS Program. Or, where a national baseline does not exist, the frequency of publication of official data used for the development of the jurisdictional baseline, where applicable. Subnational jurisdictions may also take into account the expected date of establishment of a higher-level baseline under any relevant scheme or of a national baseline under the UNFCCC.

5) How the length of the baseline may affect financial certainty for the jurisdiction and any nested projects or jurisdictional programs. Longer baselines provide more certainty for projecting generation of emission reductions and/or removals, which can provide greater certainty for investors.

Historical GHG Emissions and Removals

3.11.5 Chapter 2 of the IPCC GPG LULUCF[11] provides three approaches for representing land area that may be used to estimate the activity data required to determine historical GHG emissions and removals. All approaches require data collection for estimating the historical trends in land use, which are needed for the inventory methods described in the IPCC Guidelines and GPG LULUCF. The approaches are also intended to make the best use of available data and models, and to reduce, as far as practicable, possible overlaps and omissions in reporting land areas. For more information on the 3 approaches, see the IPCC GHG LULUCF chapter.

Approaches 1 and 2 may be followed for minor pools and activities as set out in the *JNR Requirements*.

3.11.7 - 3.11.9 A number of existing publications provide detailed guidance on the use of remote sensing imagery and other sources for the construction of jurisdictional baselines. For example, the Lowering Emissions in Asia's Forests (LEAF) program has published a manual *Technical Guidance on Development of a REDD+ Reference Level*, which describes how the technical components of establishing a reference level fit within the IPCC framework and the best practices that can be used to produce transparent, consistent and accurate estimates of historic emissions with low uncertainties that feed into the RL projection[12]. Likewise, Section 2.2 of the GOFC-GOLD Sourcebook[13] provides detailed steps on how to estimate historical GHG emissions and removals using remote sensing imagery. Box 1 offers a list of the main issues involved in this task, as well as references to key sources of methodological guidance.

The use of non-remote sensing data (or “ground-based surveys”) to estimate GHG emission reductions and/or removals is discussed in Section 2.4.4.2 of Chapter 2 of the IPCC GPG LULUCF.

[11] http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp2/Chp2_Land_Areas.pdf

[12] Available at: http://www.leafasia.org/tools/technical-guidance-development-redd-reference-level

[13] Available at: http://www.gofcgold.wur.nl/redd/sourcebook/GOFC-GOLD_Sourcebook.pdf

Box 1: Main considerations on the use of remote sensing for the estimation of historical GHG emissions and removals

Remote sensing techniques can be used to monitor changes in forest areas (ie from forest to non-forest land – deforestation – and from non-forest land to forest land - forestation) and collect the data required to estimate historical GHG emission reductions and/or removals. The techniques to monitor changes in forest areas (eg, deforestation) provide high-accuracy 'activity data' (ie, area estimates) and can also allow reducing the uncertainty of emission factors through spatial mapping of main forest ecosystems. Remote sensing techniques can also be used to monitor area changes within forest land which leads to changes in carbon stocks (eg, degradation). Satellite and remote sensing approaches are now available to measure both deforestation and associated emissions and degradation and associated emissions, but may not be available for some jurisdictions. However, the techniques to monitor changes within forest land generally provide lower accuracy 'activity data' and give poor additional information for the estimation of carbon stock changes.

Determining a land classification/forest stratification system: In some areas due to cloud cover or with certain forest types, the resolution of most inexpensive and readily available remote sensing imagery may not be good enough to differentiate between different forest types or even between disturbed and undisturbed forest, and thus cannot differentiate between different forest carbon stocks. However, stratifying forests is important for obtaining forest carbon stock data. Stratifying into relatively homogeneous forest cover units with respect to their carbon stocks can result in a more cost effective field sampling design and more precise and accurate estimates of carbon stocks across a landscape. There are two possible approaches for stratifying forests for national carbon accounting, both of which require some spatial information on forest cover within a country. In Approach A, all of a country's forests are stratified 'up-front' and carbon stock estimates are made to produce a country-wide map of forest carbon stocks. At future monitoring events, only the activity data need to be monitored and combined with the pre-estimated carbon stock values. Such a map would then need to be updated whenever the jurisdictional baseline is updated. In Approach B carbon estimates are made at each monitoring event only in those forest strata that have undergone change, so a full land cover map of the whole country does not need to be created. For a detailed description of these two approaches, see Section 2.3.4 of the GOFC-GOLD Sourcebook.

How to include areas where forest systems have cyclical changes in forest cover, such as slash-and-burn systems, short-rotation managed forests and temporarily unstocked forests: Land that only temporarily transitions from forest to non-forest, and transitions back to forest after a short while is considered temporarily unstocked forest and may not be counted towards the total deforestation rate or increases in forest area. For every deforestation transition, the jurisdiction could select the maximum time length that an area can be out of forest cover and still be considered temporarily unstocked and use a value based on jurisdiction specific conditions. See for instance the approach used in VCS methodology VM0006 *Methodology for Carbon Accounting in Project Activities that Reduce Emissions from Mosaic Deforestation and Degradation, v2.1*.

Detecting forest degradation using remote sensing: Mapping forest degradation with remote sensing data is more challenging than mapping deforestation because the degraded forest is a complex mix of different land cover types (vegetation, dead trees, soil, shade) and the spectral signature of the degradation changes quickly (ie, < 2 years). Useful guidance on the methods available to detect and map forest degradation caused by selective logging and forest fires – the most predominant types of degradation in tropical regions – using optical sensors is presented in Section 2.2.2 of the GOFC-GOLD Sourcebook.

Detecting reforestation or natural regeneration using remote sensing: Identifying increases in newly grown forest area from remote sensing is generally more difficult than identifying decreases in forest cover from deforestation. Increases in forest area occur relatively slowly, so that increases can only be identified after several years. Time series of images should be used to distinguish seasonal behavior (in particular for deciduous forest which can appear as bare ground during the dry season) from regrowth of secondary forests (eg, from reforestation/afforestation or crop abandonment). Methods for identifying increases in forest cover from remote sensing are presented in Section 2.1.2.5 of the GOFC-GOLD Sourcebook. In order to avoid net deforestation accounting (which is not in line with JNR requirements), REDD+ activities converting non-forest land to forest land must be accounted as forestation (carbon stock enhancement), and not as part of activities reducing deforestation.

Determining accuracy of RS-based LULC classification: An independent accuracy assessment is an essential component to link area estimates to a crediting system. Reporting accuracy and verification of results are essential components of a monitoring system. Accuracy could be quantified following recommendations of Section 5 of IPCC Good Practice Guidance 2003. Accuracies of 80 to 99% are achievable for monitoring with mid-resolution imagery to discriminate between forest and non-forest. Accuracies can be assessed through in-situ observations or analysis of very high-resolution aircraft or satellite data. In both cases, a statistically valid sampling procedure should be used to determine accuracy. A detailed description of methods to be used for accuracy assessment is provided in Section 2.6 (“Estimating uncertainties in area estimates”) of the GOFC-GOLD Sourcebook.

Project-level methodologies may also contain useful approaches on how to estimate other elements relevant for the development of jurisdictional baselines, such as emission factors and forest stratification techniques. For emissions factors, methodologies provide guidance on how to measure or estimate usually significant carbon pools, and/or provide references to conservative default values to be applied for negligible pools. For forest stratification techniques, most methodologies stratify project areas by carbon

stocks as a means of improving precision of stock estimates and accuracy of emission estimates, and thus offer guidance or references to literature on sampling and forest inventory methods.[14]

Baseline GHG Emission Reductions and Removals

3.11.12. Once the historical data has been collected for a given activity, showing the two options of historical annual average and historical trend (as required under paragraph 1 of this section of the *JNR Requirements*) should be a simple exercise of developing two line graphs through the historical data points. Note that it is not necessary to calculate GHG emissions at this stage; activity rates are sufficient for developing these alternative baseline scenarios.

Jurisdictions may also use modeled adjustments to the historical rates (as allowed under paragraph 2) to reflect national or jurisdictional circumstances, which may be appropriate in certain situations, such as:

1) Cases where drivers of historical deforestation change, making conditions substantially more or less favorable for deforestation (eg, the effects of an economic crisis, changes in land-use related policies, or law enforcement related to forests significantly improving or worsening).

2) Cases where there is greater certainty using modeling than for the linear average or trend projection (eg, a large road was built or there was a significant migration of people).

3) Cases where variables reflecting other national circumstances that affect the country's forest emission reductions and/or removals (eg, a HFLD country that is expected to increase deforestation as a consequence of infrastructure development) need to be considered in the baseline projections in order to increase their accuracy.

In the first case, the baseline is built using data from one or more identified variables with a demonstrably high correlation with deforestation. A practical example of how this approach is applied to construct deforestation baselines at the project level is provided by the "population driver approach" of VCS methodological module VMD0007 *Estimation of Baseline Carbon Stock Changes and Greenhouse Gas Emissions from Unplanned Deforestation (BL-UP)*[15]. VCS methodology VM0007 *Methodology for Avoided Unplanned Deforestation*[16] also includes an alternative approach to model the baseline using data and assessments on relevant drivers. Although these methodologies may not be applicable to jurisdictions in full, their rationale on such issues may inform the construction of jurisdictional baselines, for example

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[14] The "Project Developer's Guidebook to VCS REDD Methodologies, Version 2.0, February 2013" published by Conservation International offers a useful summary on how registered methodologies address these issues. Available at: http://www.conservation.org/global/carbon_fund/Documents/Guidebook_VCS_REDD_methodologies_lowres.pdf

[15] Version 3.1, 20 November 2012, available at: http://v-c-s.org/sites/v-c-s.org/files/VMD0007%20BL-UP%20v3.1.pdf.

[16] Version 1.1, 3 December 2012, available at: http://v-c-s.org/sites/v-c-s.org/files/VM0015%20Methodology%20for%20Avoided%20Unplanned%20Deforestation%20v1.1.pdf

based on population or other variables, and provide ideas for the development of approaches combining the use of remote sensing and data on such variables.

Moreover, to help project the spatial location (pursuant to paragraph 3), approaches used in project level VCS REDD methodologies contain methods to project the spatial location of deforestation and/or forest degradation could be reviewed and adapted for jurisdictions where appropriate.[17]

In the second case, a number of alternatives to adjust deforestation baselines based on national circumstances have been proposed and analyzed to some extent in the literature[18]. In these initial assessments, a few alternatives have proved to be relevant and robust enough to justify baseline adjustments (eg, national policies such as road-building, investment, and development programs). If the effects a jurisdictional policy will have on deforestation rates and forest emissions can be justified, the policy may be considered in adjusting the baseline. Such a justification may be supported by evidence that the policy will in fact be implemented during the baseline period and by quantifying its effects. Evidence may include, *inter alia*, third-party assessments of likely forest impacts of the programs and projects, documental evidence on their stage of implementation, their funding, and their level of institutional development.

Other approaches, such as adjustments based on GDP per capita, drivers of deforestation and the forest transition theory are usually not considered adequate to adjust baselines in a robust and credible manner.

Regardless of the approach chosen, jurisdictions should clearly demonstrate that it adequately reflects national and/or subnational circumstances and that the resulting baseline is conservative.

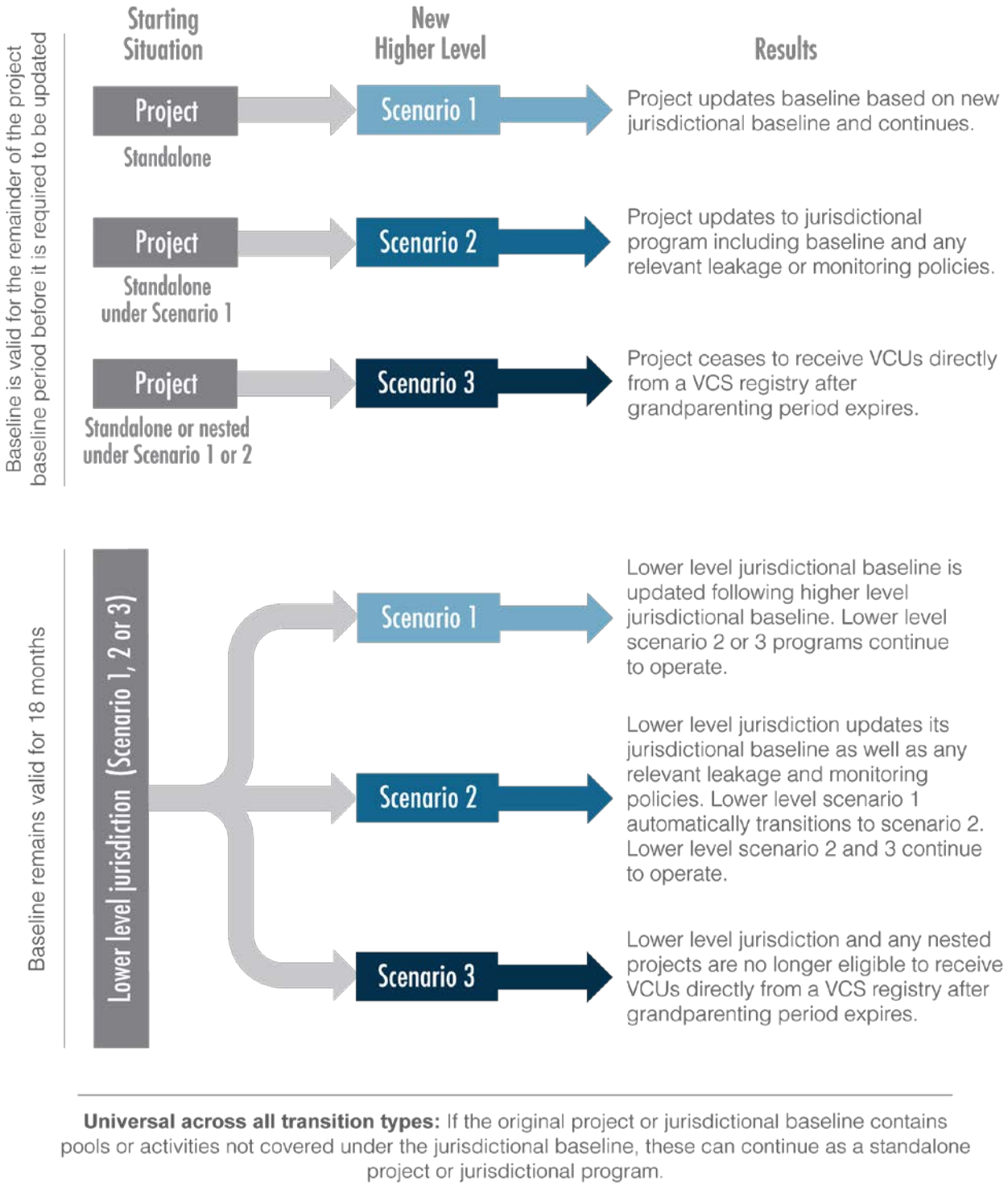
Nesting and updating Jurisdictional Baselines

3.11.14. Figure 6: *Summary of grandparenting rules* illustrates the situations where grandparenting and nesting rules are applied, as well as the outcomes of such processes. Note that these rules also apply to transitioning between scenarios.

[17] For a detailed discussion on existing project-level methodologies, refer to the *Project Developer's Guidebook to VCS REDD Methodologies*, Version 2.0, February 2013, published by Conservation International. Available at: http://www.conservation.org/global/carbon_fund/Documents/Guidebook_VCS_REDD_methodologies_lowres.pdf

[18] See for instance the Meridian Institute reports "Modalities for REDD+ Reference Levels: Technical and Procedural Issues" and "Guidelines for REDD+ Reference Levels: Principles and Recommendations".

Figure 1: Summary of grandparenting rules



The grandparenting rules apply only to the activities and pools that are covered by the higher level baseline. For example, if a newly established national baseline does not include degradation but the subnational baseline does, the subnational jurisdiction may continue to use its degradation baseline (as

long as mechanisms are in place to ensure no double counting where any spatial overlaps between degradation and deforestation exist), but would adopt the national deforestation baseline. When a lower level baseline is “replaced” by the higher level one, this includes data used to create the lower level baseline. For example, if there is different activity data between the higher and lower level baselines for the same area of forest the higher level categorization will prevail once the grandparenting period has expired.

Where a lower-level baseline (ie, a project or subnational jurisdictional baseline) is registered first, followed by a higher-level baseline (subnational or national), nesting takes place once the grandparenting period for the lower-level baseline has finished. To illustrate what this situation looks like in practice, a highly simplified example is presented below:

Jurisdiction A, which belongs to country ABC, starts a jurisdictional REDD+ program, registering a jurisdictional baseline with VCS at time *t*-5. Such baseline, shown in Table 1, covers only deforestation, and the above ground biomass (AGB) and below ground biomass (BGB) carbon pools.

Table 1: Jurisdiction A – baseline for the period *t*-5 to *t* +4

Jurisdiction	Activity & forest strata	Pools	Baseline GHG Emissions from *t*-5 to *t* +4		
			Activity data (ha/year)	C content (tCO_2e/ha)	GHG emissions (tCO_2e /year)
A	Deforestation stratum a	AGB	100,000	120	12,000,000
		BGB	100,000	50	5,000,000
	Deforestation stratum b	AGB	100,000	70	700,000
		BGB	100,000	20	2,000,000
Annual baseline emissions					19,700,000
10-year baseline emissions					197,000,000

Jurisdiction A’s baseline was originally assumed to run from *t*-5 to *t*+4, but at *t* 0, the national government starts implementing a national REDD+ program and registers a 10-year national baseline covering deforestation and forest degradation considering only the AGB carbon pool for the two activities.

Jurisdiction A is able to keep its baseline for up to an 18 month grandparenting period. At t+1 Jurisdiction A adopts the national baseline and registers an independent VCS jurisdictional program covering the

BGB carbon pool for deforestation with a 9 year baseline period. Table 2 shows the details of country ABC's national baseline, plus the nested jurisdictional program's BGB baseline for Jurisdiction A.

As can be noted by comparing Tables 1 and 2, the activity data and carbon content data for strata a and b are different between Jurisdiction A and the national estimates. This is due to the fact that Jurisdiction A developed more refined activity data and carbon stock data that were not used by the national government. However, the national government plans to incorporate such data in the next national baseline update.

Table 2: Country ABC - National deforestation baseline fixed for the period *t*0 to *t*+9

Jurisdiction	Activity & forest strata (only AGB)	Baseline GHG Emission from *t* 0 to *t*+9		
		Activity data (ha/year)	C content (tCO_2e/ha)	GHG emissions (tCO_2e/year)
A	Defor. stratum a	130,000	100	13,000,000
	Defor. stratum b	100,000	30	3,000,000
	Deg. stratum a	0	0	0
B	Defor. stratum c	220,000	100	22,000,000
	Defor. stratum d	165,000	20	3,300,000
	Deg. stratum a	11,000	80	880,000
C	Defor. stratum a	390,000	90	35,100,000
	Defor. stratum d	100,000	10	1,000,000
	Deg. stratum c	100,000	50	5,000,000
Annual baseline emissions				83,280,000
10-year baseline emissions				832,800,000
Individual pool baselines developed as an independent jurisdictional program				
A (only BGB)	Defor. stratum a	130,000	50	6,500,000
	Defor. stratum b	100,000	70	7,000,000
Annual baseline emissions				13,500,000
9-year baseline emissions				121,500,000

While the grandparenting period is much longer for projects (until their next baseline period) than for lower level jurisdictions (18 months), the requirement to change baselines after the grandparenting period

may have a much greater impact on projects, because projects may have used project level methodologies that are not necessarily consistent with jurisdictional approaches. It should be noted that a jurisdiction may encourage projects to adopt the jurisdictional baseline immediately or more quickly than the predetermined grandparenting period, or projects may choose to do so themselves in order to have nested status and potentially access additional sources of finance. The jurisdiction should be clear from the outset about any requirements for projects so that there is certainty. Additionally, the selection of crediting options (whether direct crediting to projects or the use of an internal allocation or benefits sharing mechanism) is likely to be of particular importance to project proponents, especially for those that have already sold VCUs and are implementing activities according to a defined work plan and budget relying on a steady stream of revenue. See Section 4.11 of the companion to this guide, *Guidance for Jurisdictional and Nested REDD+ Program Design,* for additional guidance on the choice of scenarios and how this can impact pre-existing lower level jurisdictional programs or projects.

3.11.15. Where a baseline is developed at a lower level after the registration of a higher-level jurisdictional baseline, nesting occurs automatically, either through direct "cookie-cutting" from the higher-level baseline (ie, where the higher-level baseline is spatially explicit, by spatially identifying the applicable data from the higher-level baseline) or, in the case of non-spatially explicit baselines, through the estimation of a lower-level baseline approved by the higher-level government. A simplified illustration of this follows, drawing on the example provided in the guidance for 3.11.14 above:

Country ABC has started a national REDD+ program and has registered a 10-year national baseline covering deforestation and forest degradation including only the AGB carbon pool for both activities, as described in Table 2 above. At time *t*+2, subnational Jurisdiction B decides to start its own jurisdictional REDD+ program that includes measures to reduce deforestation and implement reduced impact logging (RIL) activities to address forest degradation. For the deforestation baseline it "cookie-cuts" the part of the national spatially-explicit baseline corresponding to its territory, and develops a separate baseline for the forest degradation activities using jurisdiction-specific activity data - which are higher than the values used by the national government for jurisdiction B when creating the national baseline (see Table 3). Jurisdiction B then submits this baseline to the national government for approval/no-objection. The national government will need to decide whether it accepts the baseline submitted by Jurisdiction B or not. If it approves/does not object to the baseline it will need to either revise and validate the national baseline, or adjust the forest degradation baselines it had set for the other jurisdictions accordingly, if it deems it politically feasible.

Table 3: Jurisdiction B - baseline for the period *t*+2 to *t*+9

Jurisdiction	Activity & forest strata	Baseline GHG Emissions from t+2 to t+9		
		Activity data (ha/year)	C content (tCO_2e/ha)	GHG emissions (tCO_2e/year)
B	Defor. stratum c	220,000	100	22,000,000
	Defor. stratum d	165,000	20	3,300,000
	Deg. stratum a	15,000	80	1,200,000
Annual baseline emissions				26,500,000
8-year baseline emissions				212,000,000

Successful baseline nesting – both in terms of achieving the highest accuracy and of accommodating all relevant actor´s interests – depends to a great extent on the continuous and effective communication among actors across levels. Jurisdictions and project proponents located within higher-level jurisdictions and/or countries that are likely to build a baseline in the foreseeable future - either to be registered under the JNR, the UNFCCC or another program - should coordinate whenever possible with the higher-level government body in charge of REDD+ issues (and, if already designated, the authority responsible for developing the baseline). Clear decisions from the national government on topics such as the methods, activity data and emission factors that will be used to develop the national baseline will also be important.

Participation by lower-level jurisdictional authorities and project proponents in REDD+ fora and/or meetings can help inform national government thinking and align the efforts carried out at different levels. This interaction will help ensure, to the extent possible, that the higher-level baselines being built are aligned and harmonized with lower level baselines and that all baselines have access to the most recent and accurate data. For example lower level jurisdictions and project proponents should be able to share information on carbon stocks, the drivers and agents of deforestation they have identified, the understanding of regional deforestation trends and the forest inventory methods and baseline approaches they used.

3.11.16. Periodic baseline updating is important to maintain the environmental integrity of any results-based REDD+ program. It provides an opportunity to revise a baseline based on changes in circumstances, to improve the accuracy of emission reduction estimates, and expand the scope of a baseline.

Developing a plan to produce all the necessary information for the periodic update before a baseline expires will help the updating. Such a plan could provide for the collection of the following:

- The monitoring results from the latest monitoring period, and any other monitored data, as applicable (eg, data on activities and pools not included in the current baseline).
- An updated analysis of drivers and agents of deforestation and other relevant activities (see guidance in Section 4.1 in the companion to this guide, *Guidance for Jurisdictional and Nested REDD+ Program Design*).
- A revision of the deforestation models (and models of other activities, where relevant) applied in the previous baseline period, where applicable (see guidance on Section 3.11.12 in this document).
- A reassessment of the significance of carbon pools, where relevant (see guidance on Section 3.9.5 in this document).
- An evaluation of the effectiveness of the REDD+ policies and measures implemented during the baseline period, both of the emission reductions arising from market-based measures and those financed through other sources.

3.11.18 A review of REDD+ policies and measures to be financed via non-market mechanisms during the subsequent baseline period Although the *scope* of baselines may be expanded at any time, jurisdictions could benefit from assessing the potential and cost-effectiveness of adding additional REDD+ activities (ie, other than deforestation) and pools before the periodic update, so as to avoid the cost of multiple updates in a single baseline period (see guidance on Section 3.9.1 in this document for guidance on deciding on the scope of a baseline).

3.12 LEAKAGE

General guidance on leakage accounting is provided in the *JNR Leakage Tool*.

3.12.2 The procedure described in the CDM *Tool for testing significance of GHG emissions in A/R CDM project activities*[19] may be adapted to help determine if leakage from jurisdictional REDD+ programs may be considered *de minimis*[20].

Such procedure may also be useful for jurisdictions applying scenario 2 when establishing their own criteria and procedures to determine *de minimis* leakage, although other approaches may also be developed.

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19 Available at: http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf

20 Section 3.9.5 of the JNR requirements offer guidance on how to determine when a source can be deemed *de minimis*, and may be excluded.

Subnational Jurisdictions (Scenario 2 and 3)

3.12.8 Leakage is addressed in four steps of 1) identify, 2) mitigate, 3) account, and 4) deduct. The *JNR Leakage Tool* and accompanying *Global Commodity Leakage Module: Production Approach (LM-P)* and *Global Commodity Leakage Module: Affective Area Approach (LM-EA)* set out an optional process that can be applied to meet these steps. A jurisdiction is also free to develop its own approach to addressing external leakage. This could be similar to the approach set out in the *JNR Leakage Tool* or something different, provided the four steps are followed.

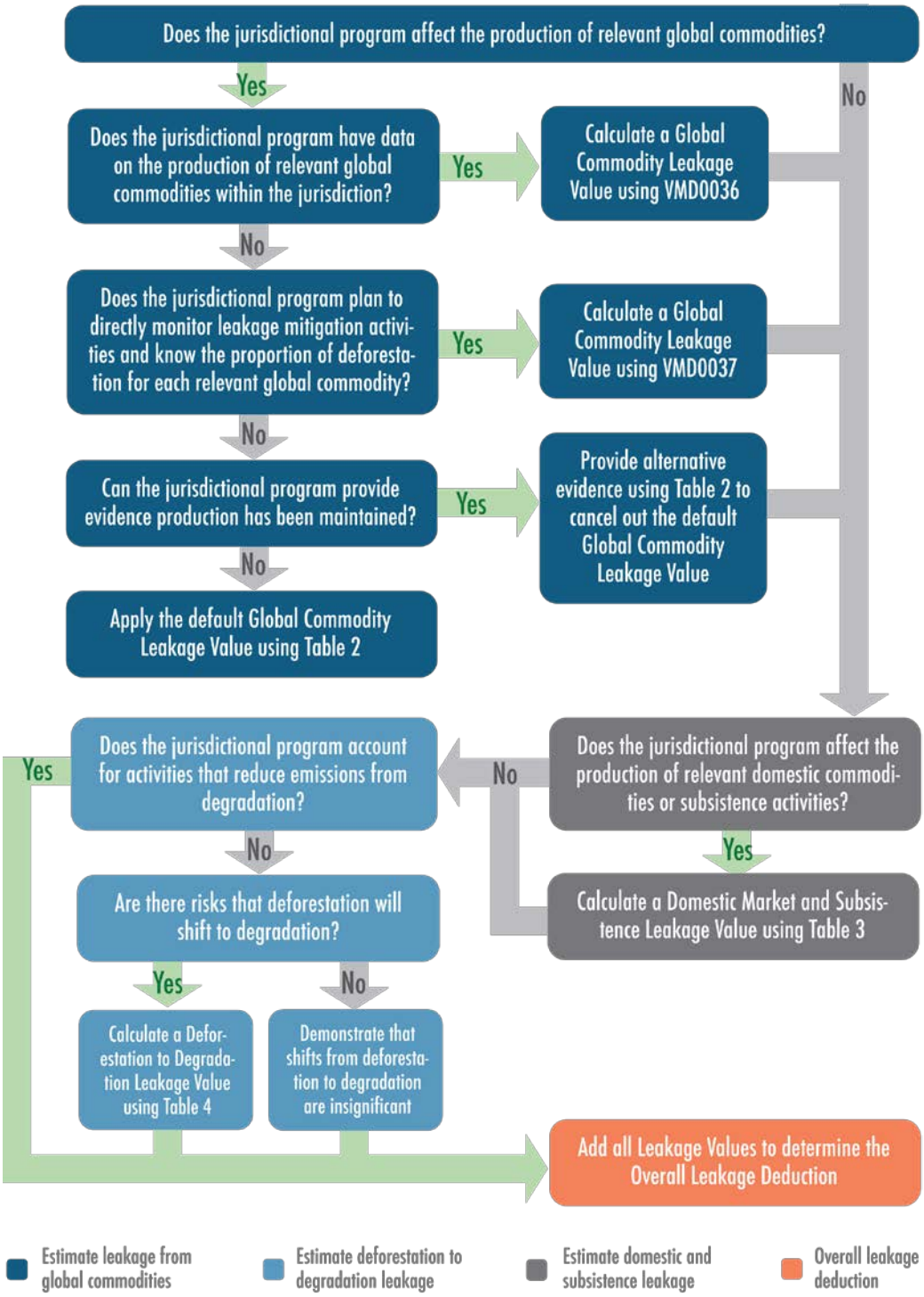
The following guidance is on the application of the optional *JNR Leakage Tool.* The tool provides a step-wise approach for calculating a jurisdictional leakage deduction, which is calculated by summing the leakage value for three types of leakage; i) global commodity leakage, ii) domestic market and subsistence leakage, and iii) deforestation to degradation leakage. Table 4 summarizes the different types of leakage covered by the tool.

Table 4: Overview of Leakage Types

<table>
<tr><th>Leakage Type</th><th>Area Displaced to</th><th>Type of Activities</th><th>Source of Demand</th></tr>
<tr><td>Global Commodity Leakage</td><td rowspan="3">Outside the Jurisdiction</td><td rowspan="2">Commercial Activities</td><td>International demand</td></tr>
<tr><td>Domestic Market Leakage</td><td>Domestic / regional demand</td></tr>
<tr><td>Subsistence Leakage</td><td>Subsistence Activities</td><td>Household / local demand</td></tr>
<tr><td>Deforestation to Degradation Leakage</td><td>Within the Jurisdiction</td><td>Commercial and Subsistence Activities</td><td>All of the above</td></tr>
</table>

Figure 2 below is a flow chart for jurisdictional programs applying the *JNR Leakage Tool*. The following sections provide detailed guidance for each type of leakage.

Figure 2: Flow Chart for applying the JNR Leakage Tool*



* Note that references to tables in this figure refer to tables in the *JNR Leakage Tool*

Differentiating Global and Domestic Commodities

The *JNR Leakage Tool* requires identification of relevant commodities. Relevant commodities are commodities whose production contributes to a significant source of GHG emissions from deforestation and/or degradation within the jurisdiction.

Relevant commodities must be distinguished between relevant global commodities and relevant domestic commodities. If more than 5 percent of the country's production of that commodity is traded on international commodities markets it is considered a global commodity. Domestic commodities fall under domestic market and subsistence leakage. Data to determine the amount of a commodity's international trade should be from peer-reviewed publications, appropriately qualified organizations such as FAO or published by a government agency. Most agricultural and livestock commodities that are a significant source of emissions will likely be designated as relevant global commodities. Where collection of fuelwood is significant it is automatically designated as a relevant domestic commodity, as any international trading of fuel wood is generally limited to domestic or regional markets. Table 4 provides an overview of the various leakage types.

Global Commodity Leakage

Where the jurisdictional program affects the production of relevant global commodities, a global commodity leakage value must be determined. Where the jurisdictional program does not affect the production of relevant global commodities the global commodity leakage value is 0. The *JNR Leakage Tool* provides four options for determining a global commodity leakage value:

1) Use the country-specific default values.
2) Apply VMD0036 to calculate a value.
3) Apply VMD0037 to calculate a value.
4) Provide alternative evidence that production within the jurisdiction has been fully maintained.

Jurisdictions may choose to use the default values, or where they have the necessary data, may choose to use a more detailed analysis, including one of the two optional modules.

Global Commodity Leakage Module: Effective Area Approach

VMD0036 (the effective area approach) should be applied where a jurisdictional proponent has the following information:

- Historical production (including total production volume, or area (in ha) of production and yields) of relevant global commodities within the jurisdiction during the historical reference period used to develop the jurisdictional baseline.
- Production of relevant global commodities within the jurisdiction during the jurisdictional monitoring period.

Global Commodity Leakage Module: Productions Approach

VMD0037 (the production approach) should be applied where a jurisdictional proponent has the following information:

- Historical commodity yields for relevant global commodities within the jurisdiction during the historical reference period used to develop the jurisdictional baseline.
- Proportion of deforestation driven by each relevant global commodity.
- Amount of increase in production or decrease in demand of relevant global commodities generated by leakage mitigation activities or policies implemented by the jurisdictional program.

Domestic Market and Subsistence Leakage and Deforestation to Degradation Leakage

Guidance on all other types of leakage is provided in the *JNR Leakage Tool.*

Nested Projects and Nested Subnational Jurisdictions (Scenario 2)

3.12.10 Internal leakage (ie, leakage from nested projects or jurisdictions to other areas within the (larger) jurisdiction) is picked up in jurisdictional monitoring so it does not need to be estimated precisely and a jurisdiction may choose not to account for it. However, if internal leakage is not accounted for or is under- or over-estimated for one area or activity, other parts of the jurisdictional program may be impacted. For example, if internal leakage is under-estimated and nested projects therefore receive more VCUs than they should, the jurisdictional program proponent will be able to claim a lower amount of emission reductions and/or removals than it is due. Internal leakage is also important for internal allocation and benefit sharing mechanisms under scenario 2 or 3 if internal allocation or benefit sharing is linked to results achieved by specific actors or geographic areas. See the guidance on Section 3.2 in this document for additional guidance on benefit sharing and internal allocation programs.

There are number of ways to address internal leakage. Jurisdictions could require projects to use project level leakage accounting (from approved methodologies), require subnational jurisdictions use the *JNR Leakage Tool*, apply leakage discounts (ie, a deduction of VCUs based on an analysis of displacement risk), a leakage tax (ie, a monetary rather than VCU deduction), use leakage sharing agreements, or a combination of these.

Leakage deductions require setting the amount of VCUs deducted from a nested project or program. This could be a flat amount applied to all similar activities, or estimated for each. In either case the jurisdictional proponent will need to quantify the number of VCUs deducted for leakage. There are a number of project level guidelines and tools that could support the development of a jurisdictional policy

on internal leakage and/or help quantify leakage deductions.[21] The *JNR Leakage Tool* can also be used to estimate deductions for nested jurisdictional programs.

A leakage tax compensates the jurisdictional program for internal leakage without making any VCU deduction from the nested project or nested jurisdictional program. If developing a tax, the following could be considered:

- Conditions where a tax could be applied instead of other approaches.
- Methodological approach to quantify the tax. This should consider how the amount of leaked emissions is quantified along with the value or cost of those emissions. This value / cost estimate could consider the market value of a VCU along with the cost to the jurisdiction of absorbing this leakage, including the opportunity cost to overcome the emission. Depending on how the tax is quantified it can in practice shift the price risk of selling VCUs from the higher level jurisdiction to the nested projects or programs.
- Procedures to collect and manage the revenues from the tax.
- Procedures to monitor the effectiveness of the tax application.

For example, a jurisdiction may choose to collect a tax of US$ X per tonne of CO_2 equivalent emitted as leakage. The X value corresponds to the cost of either the jurisdiction implementing leakage prevention measures, or an estimate of the value of lost revenue from reduced VCUs generated in "non-project" areas within a jurisdiction.

A leakage sharing agreement is an agreement between two or more jurisdictions (inside a country), that would ideally be legally binding. The aim of the agreement is to promote collaboration between

[21] For example: "Guidelines on conditions under which increase in GHG emissions attributable to displacement of pre-project crop cultivation activities in A/R CDM project activity is insignificant" available at http://cdm.unfccc.int/Reference/Guidclarif/ar/methAR_guid29.pdf; "Guidelines on conditions under which increase in GHG emissions related to displacement of pre-project grazing activities in A/R CDM project activity is insignificant" available at: http://cdm.unfccc.int/Reference/Guidclarif/ar/methAR_guid28.pdf; "Tool for testing significance of GHG emissions in A/R CDM project activities", available at: http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf; "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity", available at: http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-15-v1.pdf; "Estimation of emissions from activity shifting for avoided planned deforestation (LK-ASP)", available at: http://www.v-c-s.org/sites/v-c-s.org/files/VMD0009%20LK-ASP%2C%20v1.1.pdf; "Estimation of emissions from activity shifting for avoided unplanned deforestation (LK-ASU)", available at: http://www.v-c-s.org/sites/v-c-s.org/files/VMD0010%20LK-ASU%20Unplanned%20leakage.pdf; "Estimation of emissions from market effects (LK-ME)", available at: http://v-c-s.org/sites/v-c-s.org/files/VMD0011%20LK-ME%20Leakage%20market%20effects.pdf; "Estimation of emissions from displacement of fuelwood", available at: http://www.v-c-s.org/sites/v-c-s.org/files/VMD0012%20LK-DFW%20Fuelwood%20leakage.pdf.

jurisdictions and help reduce the overall risk of leakage. The agreements are more likely to be adopted if they produce benefits for participating jurisdictions. Such benefits may be in the form of sharing costs of MRV or mitigation activities along with reductions in credit deductions (where appropriate).

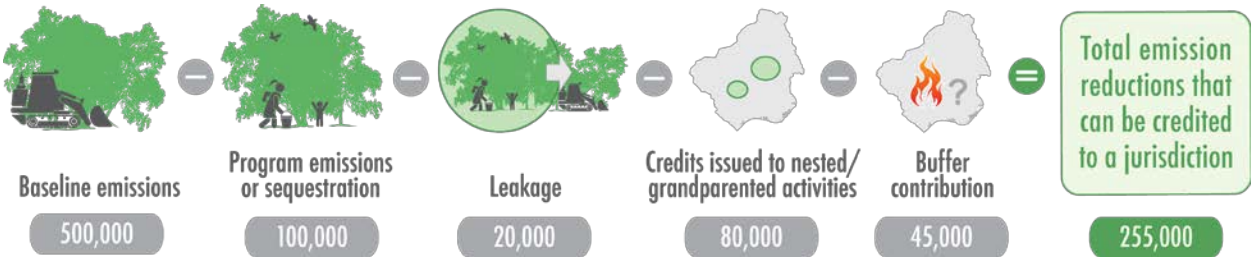
The scope of a leakage sharing agreement may include:

- Assigning or sharing responsibility/liability for leakage along with potential revenue
- MRV of forests where leakage may occur. This may include agreement on MRV procedures, costs, and/or sharing MRV data amongst other things
- Avoidance of double counting emissions
- Carrying out certain leakage mitigation activities in collaboration
- Conditions that trigger the agreement (eg, amount of activity displaced)
- Conditions where the agreement is not valid (ie, leakage should not be considered)
- Provisions for the cancellation of the agreement
- Timeframe of the agreement.

3.13 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

3.13.3 The quantification of total emission reductions and/or removals that can be issued as VCUs is summarized in Figure 8. The specific formulae will vary depending on the scenario.

Figure 3: Quantification of VCUs



Under scenario 2 VCUs may be issued to the jurisdictional proponent if it elects to request issuance and can demonstrate right of use (see Section 4.12 of the companion to this guide, *Guidance for Jurisdictional and Nested REDD+ Program Design,* for additional guidance on relevance of right of use and how it may be documented). Note that these formulae result in the total number of emission reductions and/or removals that can be attributed to the jurisdiction and may be issued as VCUs. However, the jurisdiction need not issue VCUs for the full amount and may issue them whenever they are required (ie, sold), once registered. They may also remain verified reductions or removals without being issued as VCUs and may be sold or paid for by other mechanisms without being issued as VCUs. Where emission reductions are paid for or sold under other mechanisms, they may not be subsequently issued as VCUs, and

jurisdictions and VCS registries should ensure total verification quantities eligible to be issued as VCUs are kept up to date.

The formulae for calculating the number of VCUs eligible to be issued to a jurisdictional proponent under scenario 2 (VCU_{j2}) can be expressed as:

$$VCU_{j2} = M_j – L_j – P_j – (VCU_{gj} + VCU_{gp}) - (VCU_{nj} + VCU_{np})$$

Where:

M_j Monitored net GHG emission reductions or removals across the jurisdiction since the last issuance (ie, including jurisdiction's emissions associated with carrying out REDD+ activities).

L_j Deduction for jurisdictional leakage.

P_j Deduction for jurisdictional non-permanence risk following *JNR Non-permanence Risk Tool*.

VCU_{gj} VCUs issued to grandparented lower level jurisdictions for the same activities and pools covered by the higher-level jurisdiction, which are calculated as either VCU_{j2} or VCU_{j3} depending on the scenario followed by the lower level jurisdiction.

VCU_{gp} VCUs issued to grandparented projects for the same activities and pools covered by the higher-level jurisdiction, which are calculated following the monitoring, non-permanence risk, validation and verification requirements set out in the *VCS Standard, AFOLU* Requirements and *Registration and Issuance Process.*

VCU_{lnj} VCUs issued to lower level nested jurisdictional programs, which are calculated as:

$$VCU_{lnj} = M_{nj} – L_{nj} – P_{nj} – VCU_{njp}$$

Where:

M_{nj} The nested program's net GHG monitoring results (ie, including the program's emissions associated with carrying out REDD+ activities), which may either be based on the project's or the program's monitoring data.

L_{nj} Deduction for jurisdictional leakage associated with the nested program.

P_{nj} Deduction for jurisdictional non-permanence risk following *JNR Non-permanence Risk Tool*.

VCU_{pnlj} VCUs issued to projects nested within the lower level jurisdiction for the same activities and pools covered by the lower-level jurisdiction, which can be calculated following the same formula as VCU_{np}.

VCU_{np} VCUs issued to nested projects in the higher jurisdiction, which are calculated as:

$VCU_{np} = M_{np} – L_{np} – P_{np}$

Where:

M_{np} The nested project's net GHG monitoring results (ie, including project emissions), which may either be based on the project's or the jurisdictions monitoring data.

L_{np} Deduction for leakage associated with the nested project, following rules established by the applicable jurisdiction.

P_{np} Deduction for non-permanence risk for the nested project, following *AFOLU Non-permanence Risk Tool.*

[See Section 3.14.4 below for guidance on reconciliation of monitoring data referenced in the JNR Requirements Section 3.13.3 (2).]

Under scenario 3, VCUs may be issued to the jurisdictional proponent for areas where can demonstrate right of use, and the VCS registry may only issue VCUs to projects or lower level jurisdictions during the grandparenting period (see guidance on Section 3.11.14 in this document). The formulae for calculating the number of VCUs issued to a jurisdictional proponent under scenario 3 (VCU_{j3}) can be expressed as:

$VCU_{j3} = M_j – L_j – P_j – (VCU_{gj} + VCU_{gp})$

Where:

M_j Monitored net GHG emission reductions or removals across the jurisdiction since the last issuance (ie, including jurisdiction's emissions associated with carrying out REDD+ activities).

L_j Deduction for jurisdictional leakage.

P_j Deduction for jurisdictional non-permanence risk following the *JNR Non-Permanence Risk Tool*.

VCU_{gj} VCUs issued to grandparented lower level jurisdictions for the same activities and pools covered by the higher-level jurisdiction, which are calculated as either VCU_{j2} or VCU_{j3} depending on the scenario followed by the lower level jurisdiction.

VCU_{gp} VCUs issued to nested projects for the same activities and pools covered by the higher-level jurisdiction, which are calculated following the monitoring, non-permanence risk, validation and verification requirements set out in the *VCS Standard, AFOLU Requirements* and *Registration and Issuance Process.*

3.14 MONITORING

3.14.1 A monitoring plan should contain information on where monitoring should occur, what needs to be monitored, when monitoring takes place, who is involved in the monitoring, and procedures for managing the data including resolving anomalies or conflicts. See Section 3.14.6 below for guidance on where to monitor, 3.14.2 for guidance on what to monitor, and 3.14.8 on when to monitor.

Regarding who conducts the monitoring, it is helpful to establish monitoring roles and responsibilities for all involved parties. An internal quality assurance and quality control system should also be set up so that quality issues with monitored data can be determined and corrected in due time. As with any complex project that relies on many interacting parts, good management of monitoring plans will be essential. In addition, since field crews will be distributed, procedures should be put in place to ensure consistency of work among field crews. Examples of such procedures include periodic re-measurement of the same plot by different crews, training sessions in which field crews can exchange lessons learned and present their experiences, and a solid train-the-trainers program. See Section 3.14.9 below for additional guidance on community-based monitoring.

Processes should also be established to determine what happens with the monitoring data once collected, and more specifically, what happens if an anomaly or conflict is detected during monitoring. This could include transparent procedures of action after detecting an anomaly. If members of local communities are submitting monitored data, including data that establishes an infraction of agreements, it is important that action and feedback is provided back to the communities in a transparent manner to ensure the participation and motivation of communities.

REDD+ programs may also include some sort of monitoring of discrete deforestation or forest degradation events. For example, local communities may detect an instance of illegal timber logging or other type of forest encroachment. Responding appropriately to these community-monitored discrete events is critical for a successful REDD+ program.

Even when such discrete events are not the focus of the monitoring system, it is important to expand the monitoring system to not only gather information, but also build in concrete actions when certain critical events occur. For example, when an illegal deforestation event is detected through either remote sensing imagery or community-based monitoring, law enforcement agencies could be informed. Likewise, when the monitoring system detects a marked increase in forest degradation, a dialogue could be started with the agents of degradation to understand their motivation and to evaluate their role in the REDD+ program. Conversely, if the stakeholders responsible for monitoring are not included in any decision-making and do not see a concrete result of their monitoring efforts they may lose motivation. Therefore, while monitoring systems may be designed with the best intentions at the jurisdictional level, if they do not contain a feedback loop back to the local level, to the stakeholders involved and communities, they may become more difficult to maintain over time. A monitoring system should not only outline which data elements are to be gathered and by whom, but also what will happen to the data, and if there are any critical levels associated with the monitoring element, above which appropriate action should be taken. The results of

the monitoring could be discussed with stakeholders at regular intervals to evaluate the effectiveness of any program actions and to adapt program actions, if necessary.

Many project-level methodologies have a very detailed description of the variables and parameters required to be monitored. The monitoring sections may be adapted for a jurisdiction-level monitoring plan. This includes monitoring procedures pioneered in VCS AFOLU projects. For example, projects have relied on text-message-based monitoring to gather data on deforestation and project activities. Other projects have used smartphones to support monitoring spatial data on anything from intervention, tree survival to sightings of rare and endangered species. All of these approaches can be applied to jurisdiction-level monitoring.

For additional guidance on monitoring in general, see the *REDD+ Measurement, Reporting and Verification (MRV) Manual*, which provides an overall review of data, models, techniques and accounting methods that should, or could, be part of a monitoring program for REDD+ at the national, sub-national, and project levels.[22]

It is important to note the difference between *measurement* and *monitoring*. Measurement is what is referred to under MRV and is the accounting of changes in carbon stocks and the accounting of emission reductions and/or removals. Measurement is the process through which we directly collect the information that allows us to calculate potential offsets. Monitoring is a less targeted process that is no less valuable. Monitoring systems are required in order to receive early warning of where forest loss or forest degradation is occurring. Communities may often be involved in monitoring both sources of emissions (such as fire or illegal logging) and the direct and indirect co-benefits of REDD+ including impacts on livelihoods, water quality and biodiversity.

3.14.2 Monitoring methods and technologies vary over time. It is therefore likely that the monitoring methods and/or technologies used to produce the data to determine the baseline may change over the baseline period. Consequently, jurisdictional participants may need to identify correction methods to ensure the monitored data is comparable to the data applied to build the baseline. For survey data or statistics, it is important that the exact questions and data elements that are gathered are consistent over time. For example, a statistic such as the volume of timber may be dependent on the minimal diameter used to distinguish timber from poles, and which tree species are included. If the method used to determine timber volume changes from the baseline determination to monitoring, a correction will be necessary to ensure that the data remains consistent over time. Likewise, remote sensing sensors may fail during a project's lifetime. It is thus a good idea to look for an alternative remote sensing data source at validation of the JPD, and check the equivalence of the alternative sensor to the original sensor based on near infrared bands, spectral characteristics and ability to distinguish land use classes. In any case, situations such as those mentioned above should be avoided as much as possible and improved data and methods produced during the baseline period should not be used in such period to avoid

[22] Available at: http://www.fcmcglobal.org/mrvmanual.html

inconsistencies with the existing baseline. However, such improved data and methods should be applied to update the baseline and estimate emissions in the following baseline period.

3.14.4 - 3.14.5

Incorporating lower-level monitoring results into higher level monitoring and data reconciliation can occur when there are grandparented or nested projects or programs. The different monitoring data and results from different levels need to be periodically reconciled. The jurisdiction is required to decide at the start of its baseline period which level of monitoring data will prevail for reconciliation – ie, either the higher or lower level results will prevail. This decision applies to all activities and is fixed until the next baseline update (eg, no picking and choosing for different projects).

The core of the issue on reconciling different level monitoring systems is how monitoring done at the higher level (eg, national) can be used within the context of the smaller level (eg, the subnational) and vice versa.

Afforestation and deforestation can be determined unambiguously and the monitoring methods are usually very similar (ie, based on remote sensing), which facilitates the integration of deforestation or afforestation across different levels. If the national level and subnational level agree on a forest definition, there should be very little discrepancy in the areas deforested or afforested between the lower and higher level.

For forest degradation or other activities, many different quantification approaches are available, such as survey-based, proxy-based, or using high-resolution remote sensing imagery. Therefore, integrating forest degradation data from the subnational level into the national level is more challenging. Section 3.14.4 of the *JNR Requirements* stipulates that the highest-level determines which level of monitoring is used. The assumption is that the level that is selected has the greatest accuracy across all levels. A discussion on the available monitoring and quantification approaches for degradation among all the levels (eg, national level, subnational level and project level) will help to assess this and aid in the decision on which monitoring level is used in reconciliation. Such a dialog may also help all levels understand the merits, accuracy and costs of the monitoring and how, eventually, the procedures for monitoring degradation can converge. Coming to an agreement on an operationalized definition of forest degradation that builds off the VCS definition of forest degradation[23] would also be a beneficial outcome of these discussions.

[23] While VCS defines forest degradation as “The persistent reduction of canopy cover and/or carbon stocks in a forest due to human activities such as animal grazing, fuelwood extraction, timber removal or other such activities, but that does not result in the conversion of forest to non-forest land, and falls under the IPCC 2003 Good Practice Guidance land category of forest remaining forest”, the jurisdiction may decide to operationalize this definition by fixing the minimum duration required before loss in canopy cover is considered persistent, the minimum extent of the reduction in canopy cover and carbon stocks (eg, 30% loss in canopy cover, or a difference of at least 45 Mg DM ha^{-1})

Lower levels may have more capacity or resources for detailed monitoring within their boundary. However, when a JNR program is being designed and no monitoring has been done in the past at any level, the higher-level has the opportunity to design the rules in such a way that lower levels are incentivized to engage in robust monitoring with potentially greater accuracy than the higher level, while avoiding any potential discrepancy among levels. To achieve this trade-off between flexibility and avoiding discrepancy the following could be considered: (1) an operationalized definition of deforestation and forest degradation, (2) a land use and land cover classification system that is representative for all land use and land cover types present within the jurisdiction and that is set up hierarchically so that more detailed land classes fit into broader land classes.

It is important to note that even if the higher-level jurisdictional monitoring data are used to reconcile any discrepancies, the results from the lower level may be included in the official higher-level dataset to improve its accuracy, where applicable.

3.14.6 In some situations it may be advantageous to monitor areas excluded from accounting. This may be the case, for instance, of areas excluded from the baseline due to large forest loss from large infrastructure projects and geological or weather-related impacts that have a return interval of greater than 10 years. If there are plans to incorporate such areas into the accounting system at a subsequent baseline update, it could be helpful to monitor such areas – even if not at great detail – in order to determine the moment at which they have recovered to a state similar to that which existed prior to the disturbance and to gather carbon stock data. Similarly if there are plans to incorporate new activities and/or pools at subsequent baseline updates, it may be useful to include these in the monitoring plan, so as to start collecting data that will serve to build a historical baseline in subsequent periods.

3.14.8 While the minimum frequency for creating a monitoring report is five years, it is highly recommended to monitor land-use changes and impacts of interventions more frequently – for instance, in the current UNFCCC REDD+ decisions, biennial updates are required. Satellite imagery such as MODIS (revisit time of one day with resolution of 250m for relevant bands) and the new Landsat 8 (revisit time of 16 days with resolution of 30m for relevant bands) enable a near real-time monitoring of broad land-use change and adaptive management. Doing more frequent surveys than every five years may help detect any issues with a jurisdictional program – including social and environmental components – and make corrections to interventions and policies in a timely and systematic way. Tools such as Global Forest Watch (http://www.globalforestwatch.org) may be valuable for monitoring jurisdictional programs.

3.14.9 Community-based monitoring can be cost-effective and an important component of stakeholder engagement, capacity building, and establishing communities' ownership of REDD+ interventions in some cases. Sound quality control measures and training procedures must be in place if community-based monitoring is established. Some relevant resources providing guidance on community-based monitoring are listed in Appendix I.

3.14.12 The quantification of emission reductions and/or removals is complex and based on many input variables. Each of the input variables has some level of uncertainty associated with it such that the

uncertainty of the total emission reductions and/or removals compounds all the individual uncertainties of input parameters.

The basic concepts on uncertainty, how uncertainty is compounded and how it can be addressed through the discounting of calculated emission reductions and/or removals, are explained in other resources within the context of the CDM, IPCC, or VCS projects. These other sources have established a solid introduction to the concepts of uncertainty. The essential components are the distinction between precision and accuracy and the equivalent distinction between systematic and random errors. Uncertainties can be addressed in a number of ways. Systematic errors, or bias should be avoided by good measurement practices. Increasing the sample size will not help with reducing bias if the source of the error is systematic. Random errors, in contrast, tend to cancel each other out and can be managed by selecting an appropriate sample size. It is useful to analyze the sources of uncertainty for the categories into which input parameters are generally categorized: activity data and emission factors. See Box 2.

Box 2: Uncertainty in emission factors and uncertainty in activity data

Uncertainty in emission factors

The biggest source of uncertainty in the calculation of emission factors is sampling uncertainty. Uncertainty related to stratification, plot measurement, and allometric equations should also be considered.

The uncertainty induced by stratification can be reduced by a continuous re-evaluation of the stratification as new data comes in. When programs operate on large areas, it is to be expected that many forest and ecosystem types will be present in the area. Therefore, stratification of forests into discrete forest types that can be assumed homogeneous for measurement purposes will help reduce uncertainty, although defining many strata does not necessarily increase the accuracy and precision of the estimates. There must also be a good relationship between the number of strata and the number of sample plots per stratum. The true value of the biomass density on biomass plots is not known and high accuracy can only be approached by employing good and sound measurement techniques, ensuring that all personnel and communities involved in monitoring are well trained and continuous cross-checking among field crews is conducted. This is especially important within the context of a jurisdictional program as many different field crews will be operating at the same time, producing data that must be comparable. If it turns out that the measurements produced by one field crew are consistently smaller than the measurements of other field-crews, it might be advisable to re-train this specific field crew. Typical examples of reasons why biomass plot measurements are biased are incorrect measurement of buttressed trees, angled trees, or trees with lianas and vines. All of these sources of bias can be avoided by good training. The uncertainty of emission factors for forest regeneration or gradual forest degradation is best measured on permanent sampling plots.

Allometric equations are often a source of error in the calculation of emission factors. The uncertainty from allometric equations can be quantified by destructively harvesting a number of trees ranging in

diameter. Jurisdictional programs will often span a large area, and multiple allometric equations may be necessary.

It is advisable to analyze the impact of the uncertainty around each of the individual components feeding into the calculation of the emission factor and focus efforts on reducing the greatest source of uncertainty first. For example, it is sub-optimal to increase the number of biomass plots when the greatest uncertainty is coming from the allometric equation.

Uncertainty in activity data

Remote sensing-based rates of land use change should be evaluated by comparing the land use and land cover assigned on a map to the actual land use and land cover (LULC) observed in the field. This requires collecting a database of ground-truthing points. Special attention should go to transitional land cover classes such as secondary forest and slash-and-burn plots. Ground-truthing data is rarely available historically which makes it challenging to thoroughly evaluate historical LULC maps. Comparing data from multiple sources can help to evaluate the uncertainty on historical maps. Ground-truthing data to assist in the uncertainty evaluation of activity data, including discrete deforestation and degradation events, is a good example of data that can be collected by communities in the field using hand-held GPS devices. Alternatively, an accuracy assessment may be done only for the most recent map and the estimated accuracy may be assumed to be representative of the average accuracy of the entire historical time series, provided however that all historical maps were created with the same method.

Jurisdictional REDD+ programs may last for many decades. Therefore, it is very important to ensure consistency over time and set up systems so that the source data gathered is stored well and procedures are recorded. For example, field sheets can be scanned in electronic format and backed up with sufficient redundancy, and the procedures of all field and remote sensing work should be written down in precise detail in Standard Operation Procedures to ensure consistency over time. Having consistency over time is often crucial for variables that change relatively slowly, such as forest biomass as measured on permanent sampling plots.

Systematic errors can be minimized through good practices, training, periodic re-measurement, and an unbiased sampling design. Random errors can be minimized through increasing the sampling size. It is recommended to: (1) estimate the magnitude of errors and focus efforts on the largest sources of errors before engaging in any monitoring or field work, and (2) develop comprehensive documentation on how to continuously check for systematic errors, what to do if systematic errors or bias is detected and how random errors are minimized.

3.15 NON-PERMANENCE RISK AND NATURAL DISTURBANCES

3.15.1 Jurisdictions using scenario 1 are not required to apply the *JNR Non-Permanence Risk Tool* or deposit credits into the jurisdictional pooled buffer account. Validated projects apply the *AFOLU Non-Permanence Risk Tool* to determine the number of buffer credits. Such projects contribute to the AFOLU pooled buffer account and utilize such buffer account in the event of a loss event.

Jurisdictional programs following scenario 2 and 3 must apply the *JNR Non-Permanence Risk Tool.* Nested projects also deposit buffer credits to the jurisdictional pool, which covers losses throughout the jurisdiction (including nested areas). The following text provides guidance on certain factors within the tool.

Program Design and Strategy

The second category captures that risks that the program does not (or cannot continue to) adequately address drivers of deforestation and degradation and thus is exposed to reversals. The first mitigation (b) is applied when the risk from commodity-driven opportunity costs is reduced or not significant in the jurisdiction. The jurisdiction must provide evidence of its ability to maintain commodity production levels as outlined in Table 2 (b), which could be supported by a deforestation driver's analysis that identifies a link between commodity production and deforestation in the jurisdiction. For commodities where there is a quantifiable link, a review of the historic and forecasted productions levels could be provided with the identification of how the jurisdictional program (as evidenced by workplans and policy documents) maintains the production levels.

The second mitigation (c) is earned for programs where the deforestation drivers in a jurisdiction are subsistence-based and the program can demonstrate that its activities address a majority of the agents. This mitigation could also draw on the analysis of drivers of deforestation, and, based on work plans and policy documents, the number (or percentage) of subsistence-based agents that are impacted by the REDD+ program may be estimated.

The third mitigation (d) is earned in cases where it can be demonstrated that the jurisdictional program activities to reduce deforestation and degradation has been integrated into a broader low-emission development strategy. Evidence could be provided of the adopted policies specifying a formal component and defined governmental agency responsibilities for reducing deforestation within the low emission development strategy or otherwise articulating how the REDD+ program is integrated in the broader strategy.

The fourth mitigation (e) is earned through documentation (workshop minutes, public commenting processes, implementation partnerships) supporting that the inputs from the main agents of deforestation have been incorporated into the design of the REDD+ program. This same evidence would likely be included to support implementation of safeguards requirements. The final mitigation for country level REDD+ readiness is similar to the *AFOLU Non-permanence Tool*, Table 8 (d). Examples of how this has been demonstrated by projects can be found in project documents on the VCS project database.

Natural Risk

The final risk factor relates to the natural disturbance risk. This factor, which measures the frequency and significance using historical data is very similar to the *AFOLU Non-Permanence Risk Tool* and the documentation used for registered projects may provide useful guidance for applying this at the jurisdictional level.

3.15.6 Jurisdictional proponents are required to report any significant unplanned losses using the *Loss Report Template* that estimates the emissions caused by the loss. Calculating forest loss may be done by monitoring the full area affected, which can be performed using remote sensing analysis, rural appraisals and/or field data collection. The emissions associated with the forest loss must be calculated, using methods consistent with the JPD and previous monitoring reports.

4 GOVERNMENT APPROVAL, VALIDATION AND VERIFICATION REQUIREMENTS

4.1 APPROVALS

4.1.1 If a country has already established regulations regarding the implementation of REDD+, jurisdictions should identify whether these regulations cover or replace the government approvals required under JNR. It should be noted that such domestic regulations do not need to specifically refer to approving baselines under the JNR to be considered relevant.

If there are no regulations in place governing approval and regulation of REDD+ activities, jurisdictions may want to consider developing them. Many countries have decentralized forest management responsibilities that may create uncertainty regarding which entities (at the national or subnational level) are eligible to develop, register and manage a JNR program. Clarifying the appropriate agency or entity to take on the role of JNR proponent is therefore important. Subnational JNR proponents should work with relevant higher-level jurisdictional authorities to clearly understand the decision making authority granted to them in the registration and implementation of a JNR program.

As described in Section 4.1.1(2), jurisdictional programs following scenario 2 should have procedures in place to approve or provide no objection to nested projects or jurisdictional programs that seek registration with the VCS. The *JNR Requirements* recognize that jurisdictions ought to have a high degree of autonomy and flexibility when they approve nested projects or programs. The scope of the approval is therefore open – ie, it is up to the jurisdictional program proponent to determine the criteria it will use to grant approval or provide a no-objection letter. Procedures should be developed as part of the jurisdictional program that stipulate the approval / no objection process including documentation that needs to be submitted, time taken to provide a response, the criteria used to determine whether or not approval or no objection is granted, and any administration fees. All approval / no objection decisions should be public, including reasons for granting or rejecting a request for approval / no objection. There should also be a process to request a review of a decision not to grant approval / a no objection letter if the submitter thinks the decision was wrongly made, along with a separate process to re-submit a request for approval / no objection that are correctly rejected. The scope and approval procedures used by a country's Designated National Authority to provide written approval under the CDM could be reviewed as a starting point for developing REDD+ approval procedures.

Appendix 1: List of resources

A.1 GENERAL

The Knowledge and Skills Needed To Engage In REDD+; A Competencies Framework

The REDD+ competencies framework is designed to be broad in scope, addressing ten thematic areas related to REDD+. The ten themes are: The Science of Climate Change and the Role of Forests; REDD+ Policies Under the UNFCCC; The Scale of REDD+: National and Sub-national Systems (Jurisdiction and Projects) and Nested Approaches to REDD+; REDD+ Readiness; Stakeholder Engagement; Elements and Perspectives on Free, Prior and Informed Consent (FPIC) Currently Discussed in the Context of REDD+; REDD+ Social and Environmental Safeguards; Measurement, Reporting and Verification (MRV); Jurisdictional Reference Levels; REDD+ Funding and Finance.

For each of these themes, it includes an overview of important knowledge, including the policy context, key terms, and key skills that are needed for more detailed engagement on that topic. This document is designed to be a broad reference and not a detailed manual on any of the themes. A list of references of specialized resources is provided for each theme.

Available at: http://theredddesk.org and http://www.iucn.org/

Re-Framing REDD+

This Earth Innovation Institute publication discusses jurisdictional REDD+ as a policy framework for low-emission rural development.

Available at: http://earthinnovation.org/wp-content/uploads/2013/09/reframing-redd.pdf

USAID LEAF Program Resources and Publications

The LEAF website includes a variety of resources (by topic, type or country) and tools related to technical capacity building focused on REDD+ and policy and market incentives for improved forest management and land-use planning.

Available at: http://www.leafasia.org/resources_tools

A.2 RIGHT OF USE / CARBON RIGHTS

The Little Book of Legal Frameworks for REDD+

Produced by Global Canopy Programme, this book highlights some of the steps that countries have taken through their legal framework to implement or prepare for implementation of REDD+, including addressing carbon rights.

Available at: http://www.globalcanopy.org/sites/default/files/LittleBookofLegalFrameworksforREDD+.pdf

Status of Forest Carbon Rights and Implications for Communities, the Carbon Trade, and REDD+ Investments

This brief presents findings from a preliminary assessment of the status of communities' rights to carbon in 23 low and middle income countries, and examines the status of existing legal frameworks regarding indigenous peoples' and local communities' rights to trade forest carbon.

Available at: http://www.rightsandresources.org/documents/files/doc_6594.pdf

A.3 SOCIAL AND ENVIRONMENTAL

REDD+ Social and Environmental Standards (REDD+ SES)

The REDD+ SES provides a mechanism for country-led, multi-stakeholder assessment of REDD+ program design, implementation and outcomes to enable countries to show how internationally- and nationally-defined safeguards are being addressed and respected.

Available at: http://www.redd-standards.org

Guidelines on Stakeholder Engagement in REDD+ Readiness with a Focus on the Participation of Indigenous Peoples and Other Forest – Dependent Communities

Guidelines on stakeholder engagement developed by the Forest Carbon Partnership Facility and UN-REDD.

Available at: https://www.forestcarbonpartnership.org and http://www.un-redd.org

UN-REDD Programme Guidelines on Free, Prior and Informed Consent (FPIC)

The Guidelines outline a normative, policy and operational framework for seeking and obtaining FPIC in the context of REDD+.

Available at:

http://www.unredd.net/index.php?option=com_docman&task=cat_view&gid=2648&Itemid=53

A.4 SURVEYS

Tools and Resources to Assist with Use of CCB Standards (with particular focus on the Community Section)

Available at: https://s3.amazonaws.com/CCBA/Tools/CCB_Standards_Tools%26Resources_December_2013+(1).pdf

Verified Carbon Standard methodologies

Methodologies that cover mosaic and frontier deforestation (VM0006, VM0007, VM0015) as well as any validated project documents that have applied these methodologies.

Available at: http://www.v-c-s.org/methodologies and http://www.vcsprojectdatabase.org/

Rapid Rural Appraisal, Participatory Rural Appraisal and Aquaculture (Chapter 3)

Available at: http://www.fao.org/docrep/006/w2352e/W2352E03.htm#ch3

Participatory Subnational Planning for REDD+ and other Land Use Programmes: Methodology and Step-by-Step Guidance

Available at: http://www.fao.org/docrep/006/w2352e/W2352E03.htm#ch3

A.5 BASELINES

IPCC GPG LULUCF

Chapter 2 provides three approaches for representing land area that may be used to estimate the activity data required to determine historical GHG emissions and removals.

Available at: http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp2/Chp2_Land_Areas.pdf

The GOFC-GOLD Sourcebook

Section 2.2 provides detailed steps on how to estimate historical GHG emissions and removals using remote sensing imagery.

Available at: http://www.gofcgold.wur.nl/redd/sourcebook/GOFC-GOLD_Sourcebook.pdf

Project Developer's Guidebook to VCS REDD Methodologies, Version 2.0, February 2013

This contains a detailed analysis and discussion of project-level baseline methodologies, some of which could be draw from when developing jurisdictional baselines.

Available at: http://www.conservation.org/global/carbon_fund/Documents/Guidebook_VCS_REDD_methodologies_lowres.pdf

Decision Support Tool for Developing Reference Levels for REDD+

A 2012 tool from Winrock International that helps to decision-making regarding the construction of RELs/RLs based on the scope, scale, forest definition and particular national circumstances.

Available at: http://www.leafasia.org/library/decision-support-tool-developing-reference-levels-redd

A.6 REMOTE SENSING DATA

Global Land Cover Facility (GLCF)

The GLCF develops and distributes free remotely sensed satellite data and products that explain land cover from the local to global scales.

Available at: http://landcover.org/data/helpme.shtml

Global Forest Change

Published by M.C. Hansen et al. (University of Maryland), these high-resolution maps were created by Earth observation satellite data depicting global forest loss and gain between 2000 and 2012 at a spatial resolution of 30 meters. Available at: http://earthenginepartners.appspot.com/science-2013-global-forest

A.7 MONITORING AND REPORTING

Refer to *The GOFC-GOLD Sourcebook* in Baselines section above.

Standard Operating Procedures for Terrestrial Carbon Management

The purpose of this document by Winrock International is to provide standardized approaches for field measurements to support the quantification of organic carbon in different pools within a landscape. The methods prsented in each Standard Operating Procedure (SOP) have been developed over time by foresters and ecologists to estimate carbon pools with precision and efficiency. Available at: http://www.winrock.org/sites/default/files/publications/attachments/Winrock_Terrestrial_Carbon_Field_SOP_Manual_2012_Version.pdf

Error Propagation and Scaling for Tropical Forest Biomass Estimates

This scientific paper quantifies 4 types of uncertainty that could cause statistical error from estimating aboveground biomass: (i) tree measurement error; (ii) alometric model selection error; (iii) sampling uncertainty related to the size of the study plot; (iv) representativeness of sampling plots across a large forest landscape. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1693335/

Toward Error Analysis of Large-Scale Forest Carbon Budgets

This scientific paper undertakes an analysis of error for estimation of tree volumes and changes in volume determined by repeat measurements of permanent sampling plots in the southeast of the United States. Recognized types of error include: error from sampling plot section, error from measurement of

tree diameter, and error from regression of tree volume. The most significant error came was sampling error. Available at: http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2699.2000.00197.x/abstract

A.8 BENEFIT SHARING

Making Benefit Sharing Arrangements Work for Forest-Dependent Communities

PROFOR commissioned three studies to inform the design of benefit sharing arrangements in REDD+ initiatives. The first provides practical guidance on how to identify and work with beneficiaries when rights are unclear. The second clarifies how mechanisms that transfer benefits are structured and helps identify which mechanism type may be most suited for a country's context. The third builds on a report titled Rethinking Forest Partnerships and Benefit Sharing: Insights on What Makes Collaborative Arrangements Work for Communities and Landowners and field work in Latin America and Africa -- it discusses how to set up agreements among parties and determine benefits.

Available at: http://www.profor.info/node/2010

Contributions to the National REDD+ Strategy: A Proposal for Allocation between States and the Union

This document presents a proposal put forward by Brazilian state governments (as part of the Governors' Climate and Forest Task Force (GCF)) to the Brazilian national government. The proposal is an example system whereby REDD+ units are allocated to the six GCF states in the Amazon based on "stock-flux" – characterized by the distribution of positive incentives to states in regions at the frontiers of deforestation and to those with large forest stocks.

Available at: http://www.gcftaskforce.org/documents/contributions_national_REDD+_strategy_proposal_allocation-state_union_EN.pdf

CliPAD Project in Laos has developed a benefit-sharing program incorporating rural banking and village accounts. This has been documented in a report that can be shared. Contact: dietmar.braeutigam@gfa-group.de

Appendix 2: Guidance for Multiple Frameworks

For Jurisdictions Aiming for Compliance with the UNFCCC REDD+ Rulebook and/or Forest Carbon Partnership Facility's (FCPF) Methodological Framework (MF)

The aim of this appendix is to provide guidance to those jurisdictions using the JNR Requirements that are also aiming for compliance with the United Nations Framework Convention on Climate Change (UNFCCC) REDD+ Rulebook and the Forest Carbon Partnership Facility's Methodological Framework (MF). It draws heavily from a comparative analysis of these frameworks conducted by Winrock International[24].

After several years of negotiations and discussions at the international level, the UNFCCC 19th Conference of the Parties (COP19) in December 2013 adopted the 'Warsaw Framework for REDD+' (the REDD+ Rulebook), which sets out high-level requirements and methodological guidance countries must fulfil in order to access results based finance, and which all existing and potential REDD+ funding agencies are expected to follow.[25] The recently created Green Climate Fund, which will serve as a financing entity for REDD+, has also been requested to apply the methodological guidance consistent with UNFCCC when providing results-based finance.[26]

The MF is a set of 38 criteria and related indicators associated with five major aspects of emission reductions (ER) programs: level of ambition, carbon accounting, sustainable program design and implementation, and ER program transactions. ER programs proposed by REDD+ countries to the Carbon Fund are expected to demonstrate conformity with the criteria of the MF.

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[24] Gibbon, A.E., Rey, D., Casarim, F, Pearson, T.R.H and Sidman, G. (2014). A Gap Analysis of the FCPF's Carbon Fund Methodological Framework and the UNFCCC's REDD+ Rulebook relative to the VCS Jurisdictional and Nested REDD+ Requirements. http://www.v-c-s.org/sites/v-c-s.org/files/CF%20VCS%20JNR%20UNFCCC%20Comp%20Analysis_20141204_CLEAN%20(2).pdf

[25] UNFCCC Decision 9/CP.19 paragraphs 5 and 6

[26] With UNFCCC decisions 4/CP.15, 1/CP.16, 2/CP.17, 12/CP.17 and 11/CP.19 to 15/CP.19, in order to improve the effectiveness and coordination of results-based finance.

By designing a VCS JNR program that follows the guidance in this appendix, a jurisdiction can meet or exceed compliance with the MF in a manner that is consistent with the decisions of the UNFCCC's REDD+ Rulebook. 99% of MF indicators and 97% of UNFCCC requirements will likely present little or no risk of gaps for JNR-compliant REDD+ programs and would require only minimal work for alignment. The VCS *JNR Requirements* (and accompanying VCS documentation) go into more detail on many issues and are more specific in their requirements compared to the MF, and are far more in depth go into much more detail than the UNFCCC requirements. The VCS JNR framework also addresses, in depth, subjects that are not considered by the MF or UNFCCC, such as how to nest emissions accounting between various spatial scales and how to account for leakage emissions and permanence.

The analysis below lists the UNFCCC or MF requirement (Sections 1 and 2, respectively), then explains what the program needs to do in order to fulfil each one *beyond complying with the JNR Requirements*. Items in yellow boxes were classified in the Winrock report as likely compatible, items in orange boxes were noted as potentially minor gaps, and items in red boxes are potentially major gaps. Full alignment is expected between JNR and those UNFCCC requirements and MF indicators not listed here. The *JNR Requirements* may be updated from time to time, and when updated, changes will be made consistent with UNFCCC requirements, to the extent possible. Many of the gaps listed here are expected to be closed in future updates to the *JNR Requirements*.

1. THE UNFCCC'S REDD+ RULEBOOK

The REDD+ Rulebook is really a collection of decisions and cross-references that were organized into sections in the Winrock report as follows: 1) Monitoring, reporting and verification, 2) Reference levels, 3) National forest monitoring systems, 4) Safeguards, and 5) Drivers. Where more than one reference was made to a specific requirement, some were left out of this report for the sake of brevity. Overall, issues that programs wishing to be consistent with the UNFCCC will need to consider above and beyond the JNR are mostly related to linkages to national systems, the development of REDD+ over time, and reporting to the UNFCCC itself.

Requirement 1.4: Improvements over time and consistency with FREL/FRL *Encourages Parties to improve the data and methodologies used over time, while maintaining consistency with the established or, as appropriate, updated, forest reference emission levels and/or forest reference levels in accordance with decision 1/CP.16, paragraph 71(b) and (c)* *14/CP.19 paragraph 5*

JNR programs should also improve and update their monitoring methods when updating and revalidating their jurisdictional baselines, maintaining consistency with the FREL/FRL to the extent possible.

Requirement 1.5: Data provided through biennial updates *Decides that, consistent with decision 1/CP.16 and decision 2/CP.17, annex III, the data and information referred to in paragraph 3 above should be provided through the biennial update reports by Parties, taking into consideration the additional flexibility given to the least developed countries and small island developing States*

14/CP.19 paragraph 6

Monitoring and verification is required by the JNR *Requirements* at least every five years. Programs aiming for consistency with UNFCCC requirements should aim for monitoring and reporting at least every two years.

Requirement 1.6: *Requirement for technical annex requests developing country Parties seeking to obtain and receive payments for results-based actions, when submitting the data and information referred to in paragraph 3 above, through the biennial update reports, to supply a technical annex as per decision 2/CP.17, annex III, paragraph 19;* *14/CP.19 paragraph 7*

Underlines that the submission of the technical annex referred to in paragraph 7 above is voluntary and in the context of results-based payments; *14/CP.19 paragraph 8*

Decides that the data and information provided in the technical annex referred to in paragraph 7 above shall be consistent with decisions 4/CP.15 and 12/CP.17 and follow the guidelines provided in the annex *14/CP.19 paragraph 9*

The *JNR Requirements* calls for information similar to that required by the technical annex referred to in UNFCCC requirement 1.6. However, programs aiming for consistency with UNFCCC requirements should ensure that they include the exact information specified by the UNFCCC decisions. In the *Gap Analysis of the FCPF's Carbon Fund Methodological Framework and the UNFCCC's REDD+ Rulebook relative to the VCS Jurisdictional and Nested REDD+ Requirements*, details of the required information is grouped into UNFCCC requirements 2.11-2.17.

Requirement 2.2: National or interim subnational FREL or FRL *Requests developing country Parties aiming to undertake the activities referred to in paragraph 70 above, in the context of the provision of adequate and predictable support, including financial resources and technical and technological support to developing country Parties, in accordance with national circumstances and respective capabilities, to develop the following elements: (a) A national strategy or action plan; (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, in accordance with national circumstances, and with provisions contained in decision 4/CP.15, and with any further elaboration of those provisions adopted by the Conference of the Parties* *1/CP.16 paragraph 71*

JNR Requirement 3.11.13(1) suggests that subnational or national jurisdictions that already have reference levels submitted to the UNFCCC and approved (ie, "technically assessed in the context of results based payments"[27]) may be used as the (VCS) jurisdictional baseline as long as that

[27] See UNFCCC decision 12/CP. 17, section II. Modalities for forest reference emission levels and forest reference levels, and decision 13/CP19, paragraph 2

baseline is equally or more conservative than a baseline developed according to the JNR requirements. Such reference levels, if they exist, must be used where programs aim for compatibility with the UNFCCC. If the UNFCCC baseline is not assessed at the registration of the JNR program, criterion 3.11.16 of the *JNR Requirements* mandates updating the jurisdictional baseline to be consistent with the UNFCCC baseline within 18 months of that baseline's approval (ie, technical assessment in the context of results-based payments).

Requirement 2.8: Technical assessment of (a) consistency with national GHG inventories *The technical assessment of the data, methodologies, and procedures used by the developing country Party under assessment in the construction of its forest reference emission level and/or forest reference level in accordance with decision 12/CP.17, chapter II, and its annex, will assess the following: (a) The extent to which the forest reference emission level and/or forest reference level maintains consistency with corresponding anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks as contained in the national greenhouse gas inventories….* *13/CP.19 paragraph 2a;*

"The most recent IPCC guidance and guidelines" are referred to in 4/CP.15 as a basis for estimating anthropogenic forest-related GHG emissions and removals and the 1996 IPCC Guidelines are referred to in 2/CP.13

According to UNFCCC decisions, the Revised 1996 IPCC Guidelines and Good Practice Guidance for Land Use, Land-Use Change and Forestry will need to be used for the national GHG inventories. However, there is a lot of ambiguity around what the UNFCCC actually requires or will accept. VCS suggests the use of 2006 guidelines. However, JNR programs that aim for compatibility with the UNFCCC should use the IPCC Guidelines for the creation of emissions factors and reference levels in line with those that are used for their national GHG inventories, checking with the UNFCCC to ensure that those methods used in the national GHG inventories are acceptable.

Requirement 2.13: Justification of pools, gases and activities *(f) Pools and gases, and activities included in the forest reference emission level and/or forest reference level, and justification of why omitted pools and/or activities were deemed not significant*

13/CP.19 paragraph 2f

For compatibility with the UNFCCC, programs should provide justification of why pools and/or activities have been omitted that includes an explanation of why they were not significant.

Requirement 2.14: Forest definition *(g) Whether the definition of forest used in the construction of the forest reference emission level and/or forest reference level has been provided and, if it is different from the one used in the national greenhouse gas inventory or from the one reported to other international organizations, why and how the definition used was chosen* *13/CP.19 paragraph 2g*

The *JNR requirements* do not contain any reference to what forest definitions can be used. The *AFOLU Requirements* require for a REDD project area that it meet an internationally accepted

definition of forest. JNR programs that aim for compatibility with the UNFCCC should align their definition with that used for the national GHG inventory or explain why and how another definition was chosen.

Requirement 3.1: National Forest Monitoring System and Subnational in interim *Decides that the development of Parties' national forest monitoring systems for the monitoring and reporting of the activities[1], as referred to in decision 1/CP.16, paragraph 70, with, if appropriate, subnational monitoring and reporting as an interim measure, should take into account the guidance provided in decision 4/CP.15 and be guided by 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 basis for estimating anthropogenic forest-related greenhouse gas emissions by sources, and removals by sinks, forest carbon stocks, and forest carbon stock and forest-area changes*

11/CP.19 paragraph 2; national forest monitoring systems (NFMS) are also required in 4/CP.15

The *JNR Requirements* do not explicitly refer to a NFMS. JNR programs aiming for compatibility with the UNFCCC should pay particular attention to documenting alignment/integration of JNR monitoring plans with emerging NFMSs.

[See UNFCCC requirement 2.8 above for a discussion on the references made by the JNR to IPCC guidelines that may or may not be compatible with the UNFCCC approach.]

Requirement 3.3: Build on existing systems *Further decides that national forest monitoring systems, with, if appropriate, subnational monitoring and reporting as an interim measure as referred to in decision 1/CP.16, paragraph 71(c), and in decision 4/CP.15, paragraph 1(d) should: (a) Build upon existing systems, as appropriate* *11/CP.19 paragraph 4a*

The *JNR Requirements* do not mention the use of existing monitoring systems, but programs should use them where appropriate in order to be compatible with the UNFCCC.

Requirement 3.4: Assessment of different types of forest *Further decides that national forest monitoring systems, with, if appropriate, subnational monitoring and reporting as an interim measure as referred to in decision 1/CP.16, paragraph 71(c), and in decision 4/CP.15, paragraph 1(d) should:*

(b) Enable the assessment of different types of forest in the country, including natural forest, as defined by the Party *11/CP.19 paragraph 4b*

Though it is not specifically required in the *JNR Requirements*, program proponents will likely need to stratify their assessments by forest type in order to achieve the required level of accuracy. Programs aiming to achieve compliance with the UNFCCC should use national forest monitoring systems that enable the assessments of different forest types.

Requirement 3.5*: *Flexibility *Further decides that national forest monitoring systems, with, if appropriate, subnational monitoring and reporting as an interim measure as referred to in decision 1/CP.16, paragraph 71(c), and in decision 4/CP.15, paragraph 1(d) should: (c) Be flexible and allow for improvement* *11/CP.19 paragraph 4c*

The *JNR Requirements* do not require continual improvement in forest monitoring. However, if programs aiming to achieve compliance with the UNFCCC use subnational monitoring and reporting as an interim measure, they should have plans for how that monitoring and reporting can be improved over time.

Requirement 3.6: Phased approach *Further decides that national forest monitoring systems, with, if appropriate, subnational monitoring and reporting as an interim measure as referred to in decision 1/CP.16, paragraph 71(c), and in decision 4/CP.15, paragraph 1(d) should: (d) Reflect, as appropriate, the phased approach as referred to in decision 1/CP.16, paragraphs 73 and 74* *11/CP.19 paragraph 4d*

The UNFCCC suggests that a phased approach be used to implement NFMS. This is not relevant to JNR, which represents an advanced stage in this phased approach (results-based actions that are fully measured, reported and verified). Programs aiming for compatibility with the UNFCCC requirements should be sure to document all of the prior stages: 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 that could involve further capacity-building, technology development and transfer and results-based demonstration activities, and finally the results-based actions.

Requirement 3.7: Synergies between NFMS [National Forest Monitoring Systems] and SIS [Safeguards Information Systems] *Acknowledges that Parties' national forest monitoring systems may provide, as appropriate, relevant information for national systems for the provision of information on how safeguards in decision 1/CP.16, appendix I, are addressed and respected.* *11/CP.19 paragraph 5*

The UNFCCC promotes exploration of synergies between the SIS and NFMS where information gathered by NFMS is relevant to the SIS. VCS does not directly promote this, but programs that wish to be compatible with the UNFCCC should consider linking their NFMS and SIS.

Requirement 3.8: Plots and remote sensing *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* *4/CP.15 paragraph 1di*

Under the *JNR Requirements*, programs could include monitoring methods that are beyond the scope of those described by UNFCCC (for example, social surveys). Programs that aim to be

compatible with UNFCCC requirements should be able to justify monitoring based only on the use of remote sensing and ground-based forest carbon inventory systems. If social surveys are part of their process, the program should document the reasons for using such methods and earn advance approval.

2. GUIDANCE FOR JURISDICTIONS AIMING FOR COMPLIANCE WITH THE METHODOLOGICAL FRAMEWORK

Guidance on the following MF indicators is included below because they require jurisdictional proponents to develop their programs in specific ways to meet both the VCS JNR and the MF.

Indicator 1.1 *The ER Program Measures aim to address a significant portion of forest-related emissions and removals.*

There is no specific requirement under the JNR to address a significant portion of emissions through the program activities. Programs using the MF and JNR should demonstrate that they are addressing a "significant portion" of their emissions.

Indicator 1.2 *The ER Program is ambitious, uses new or enhanced ER Program measures to reduce emissions or enhance removals, is undertaken at a jurisdictional scale and/or takes a programmatic approach (ie,, involves multiple land areas, landowners or managers within one or several jurisdictions), and reflects a variety of interventions from the national REDD+ strategy in a coordinated manner.*

The *JNR Requirements* do not set any requirements about the ambition and variety of interventions, nor their degree of coordination. Programs using the MF and JNR should demonstrate their ambition and use a number of coordinated interventions.

Indicator 2.1 *The Accounting Area is of significant scale and aligns with one or more jurisdictions; or a national-government designated area (eg, ecoregion) or areas.*

There is no VCS rule that stipulates jurisdictions be of "significant" scale. Therefore, a jurisdictional program (eg, two levels below national scale or a small jurisdiction one level below national scale) could be deemed by the Carbon Fund to not have significant scale. *Programs using the MF* and JNR should either demonstrate that their jurisdictional accounting area be of a scale acceptable to the MF as significant *or* use a higher-level jurisdictional scale in their application to the MF.

Indicator 5.1 *The ER Program identifies the IPCC methods used to estimate emissions and removals for Reference Level setting and Measurement, Monitoring and reporting (MMR).*

The VCS rules make various references to the use of the latest IPCC methods or default values mostly as suggestions rather than requirements. As such, some non-IPCC methods could be used for VCS jurisdictional programs that would be deemed ineligible under the MF. Programs using the MF and JNR should use IPCC methods consistent with those used in its national GHG inventory to estimate emissions and removals for Reference Level (baseline, in VCS terms) setting and Measurement, Monitoring and Reporting (measurement and monitoring, in VCS terms).

Indicator 6.1 *The following methodological steps are made publicly available: Forest definition; Definition of classes of forests, (eg, degraded forest; natural forest; plantation), if applicable; Choice of activity data, and pre-processing and processing methods; Choice of emission factors and description of their development; Estimation of emissions and removals, including accounting approach; Disaggregation of emissions by sources and removal by sinks; Estimation of accuracy, precision, and/or confidence level, as applicable; Discussion of key uncertainties; Rationale for adjusting emissions, if applicable; Methods and assumptions associated with adjusting emissions, if applicable.*

Indicator 6.2: *For the following spatial information, maps and/or synthesized data are displayed publicly, and reasonable efforts are made to explain how these were derived from the underlying spatial and other data, and to make key data sets or analyses publicly available: Accounting Area; Activity data (eg, forest-cover change or transitions between forest categories); Emission factors; Average annual emissions over the Reference Period; Adjusted emissions; Any spatial data used to adjust emissions, if applicable*.

Jurisdictional proponents should ensure that the specific methodological steps mentioned in indicator 6.1 and spatial information, maps and/or synthesized data mentioned in indicator 6.2 are taken into account when developing programs meant to comply with both the MF and JNR. Any methodological steps and spatial information that the MF requires to be public should be presented in the emission reductions program document (ER-PD).

Indicator 9.1: *Uncertainty associated with activity data and emission factors is quantified using accepted international standards, for example by providing accuracy, confidence interval, distribution of error, and propagation of error. Where errors in data and methods are considered large as defined in IPCC Guidelines, Monte Carlo methods (numerical simulations) should be used to estimate uncertainty.*

Indicator 9.2 *Uncertainty of the estimate of Emission Reductions is quantified using Monte Carlo methods. Underlying sources of error in data and methods for integrated measurements of deforestation, forest degradation and enhancements (eg, as in a national forest inventory) are combined into a single combined uncertainty estimate and are reported at the two-tailed 90% confidence level.*

Following IPCC recommendations and the *JNR Requirements*, a program may choose not to do a Monte Carlo simulation for error propagation, even when the errors are large. Programs using the MF and JNR that have large errors or uncertainty in data and methods (as defined by IPCC) should use Monte Carlo methods, which use multiple trials and random variables to approximate

the probability of certain outcomes. See the IPCC Good Practice Guidance for LULUCF, Section 5.2.2.2[28] for more detail on estimating uncertainties by category using Monte Carlo analysis.

Indicator 10.2: *The ER Program explains how the development of the Reference Level can inform or is informed by the development of a national Forest Reference Emission Level or Forest Reference Level, and explains the relationship between the Reference Level and any intended submission of a Forest Reference Emission Level or Forest Reference Level to the UNFCCC.*

Section 3.13.3(1) of the *JNR Requirements* states "Where the baseline (or reference level) has been accepted and approved under the UNFCCC for the purposes of generating GHG emission reductions for market-based mechanisms, such baseline may be used for the jurisdictional REDD+ program". Programs aiming for compliance with the MF and JNR *must* use the reference level that will be or has been submitted to the UNFCCC, or explain the relationship to the UNFCCC-submitted reference level. If other baselines/reference levels are being developed at higher or lower jurisdictional scales, proponents should explain how this work will influence such (UNFCCC) reference level development in the future.

Indicator 10.3: *The ER Program explains what steps are intended in order for the Reference Level to achieve consistency with the country's existing or emerging greenhouse gas inventory.*

VCS JNR does not require that jurisdictional proponents explain what steps are intended in order for the reference level (baseline) to achieve consistency with the country's existing or emerging greenhouse gas inventory, however, programs aiming for compliance with the MF and JNR should consider this and describe the steps in the ER-PD.

Indicator 12.1: The definition of forest used in the construction of the Reference Level is specified. If there is a difference between the definition of forest used in the national greenhouse gas inventory or in reporting to other international organizations (including a Forest Reference Emission Level or Forest Reference Level to the UNFCCC) and the definition used in the construction of the Reference Level, then the ER Program explains how and why the forest definition used in the Reference Level was chosen (UNFCCC SBSTA 12/CP.17 Annex Para. 4).

Similar to UNFCCC requirement 2.14 in this document: The *JNR Requirements* does not contain any reference to what forest definitions can be used. The *AFOLU Requirements* requires for a REDD project area that it meet an internationally accepted definition of forest. JNR programs that

[28] Paciornik, N. and Rypdal, K. Good Practice Guidance for Land Use, Land-Use Change and Forestry. Intergovernmental Panel on Climate Change: 2003. http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp5/Chp5_1_&_5_2_Uncertainties.pdf

aim for compatibility with the UNFCCC should align their definition with the one of the national GHG inventory or explain why and how another definition was chosen.

Indicator 13.1: *The Reference Level does not exceed the average annual historical emissions over the Reference Period, unless the ER Program meets the eligibility requirements in Indicator 13.2. If the available data from the National Forest Monitoring System used in the construction of the Reference Level shows a clear downward trend, this should be taken into account in the construction of the Reference Level.*

The *JNR Requirements* allows the use of trends and modeling that could result in a baseline being higher than the historical average if the alternative approach was demonstrated to produce the most plausible baseline. Programs aiming for compliance with the MF and JNR should use the JNR option of "a scenario that is more conservative than the most plausible, and shall provide justification of the criteria and procedures used to determine the selected scenario". For example, where an increasing trend is more plausible than the historical average, the jurisdiction may elect to use the more conservative historical average to fulfil the MF requirement (see Section 3.11.12 of the *JNR Requirements*).

Indicator 13.4: *An adjustment of the Reference Level above the average annual historical emissions during the Reference Period may not exceed 0.1%/year of Carbon Stocks.*

The VCS JNR requirements do not place any absolute limits on the upward adjustments that can be made to the average annual historical emissions during the reference period. Programs aiming for compliance with the MF and JNR should limit their adjustment, where relevant, to the baseline above average annual emissions to 0.1%/year of carbon stocks.

Indicator 14.2: *Activity data are determined periodically, at least twice during the Term of the ERPA [Emissions Reduction Program Agreement], and allow for ERs to be estimated from the beginning of the Term of the ERPA. Deforestation is determined using IPCC Approach 3. Other sinks and sources such as degradation may be determined using indirect methods such as survey data, proxies derived from landscape ecology, or statistical data on timber harvesting and regrowth if no direct methods are available.*

A jurisdictional program using the VCS JNR maximum five years between monitoring and verification (criterion 3.12.8) may or may not achieve the two activity data monitoring events required by the MF, depending upon the length of the ERPA. Programs aiming for compliance with the MF and JNR should design their monitoring frequency to comply with the requirement for two events during the ERPA period.

Indicator 14.3: *Emission factors or the methods to determine them are the same for Reference Level setting and for Monitoring, or are demonstrably equivalent. IPCC Tier 2 or higher methods are used to establish emission factors, and the uncertainty for each emission factor is documented. IPCC Tier 1 methods may be considered in exceptional cases.*

The MF indicator only allows IPCC Tier 1 methods in "exceptional cases", whereas the JNR allows their use in "*used for carbon pools representing less than 15 percent of total carbon stocks".* This may or may not be deemed exceptional circumstances by the Carbon Fund. Programs aiming for compliance with the MF and JNR should only use Tier 1 methods in demonstrably exceptional circumstances.

Indicator 15.1: *ER Programs articulate how the Forest Monitoring System fits into the existing or emerging National Forest Monitoring System, and provides a rationale for alternative technical design where applicable.*

There is no JNR requirement to explain the relationship between monitoring for the JNR program and any emerging or existing National Forestry System. Programs aiming for compliance with the MF and JNR should explain the relationship between monitoring for the program and any emerging or existing National Forestry System, and encourage harmonization between the two.

Indicator 16.1: *The ER Program demonstrates that it has explored opportunities for community participation in Monitoring and reporting, eg, of ER Program Measures, activity data, emission factors, safeguards and Non-Carbon Benefits, and encourages such community participation where appropriate.*

The *JNR Requirements* Section 3.14.9.6 "encourages" community based monitoring where appropriate, but does not require a demonstration that opportunities have been explored. Programs aiming for compliance with the MF and JNR should demonstrate that proponents have explored opportunities for community participation in monitoring and reporting per indicator 16.1, and encourage such community participation where appropriate.

Indicator 17.1: *Deforestation and degradation drivers that may be impacted by the proposed ER Program Measures are identified, and their associated risk for Displacement is assessed, as well as possible risk mitigation strategies. This assessment categorizes Displacement risks as high, medium or low.*

VCS JNR calls only for identification of displacement risks must be identified. However, programs aiming for compliance with the MF and JNR should classify their displacement risks as *high, medium* or *low*.

Indicator 19.1: During the Term of the ERPA, the ER Program accounts for Reversals from ERs using one *of the following options:*

Option 1: The ER Program has in place a Reversal management mechanism (eg, buffer reserve or insurance) that is substantially equivalent to the Reversal risk mitigation assurance provided by the ER Program CF [Climate Fund] Buffer approach referred to in option 2 below, appropriate for the ER Program's assessed level of risk, which in the event of a Reversal during the Term of the ERPA will be used to fully cover such Reversals.

Option 2: ERs from the ER Program are deposited in an ER Program-specific buffer, managed by the Carbon Fund (ER Program CF Buffer), based on a Reversal risk assessment. ERs deposited in the ER Program CF Buffer (Buffer ERs) will not be transferred to the Carbon Fund. In the event that a Reversal event occurs during the Term of the ERPA, an amount of Buffer ERs will be cancelled from the ER Program CF Buffer equivalent to the amount of transferred ERs affected by the Reversal event.

Footnote to option 2: The modalities for the ER Program CF Buffer will be developed separately including the Reversal risk assessment. The ER Program CF Buffer shall cover Reversal events, provided that the ER Program Entity is in full compliance with its obligations under or in connection with the ERPA. The ERs set aside to cover Reversal events in the ER Program CF Buffer will have a minimum set aside of 10% and a maximum set aside of 40% of the ERs generated, verified and transferred to the CF at each time of ER transfer.

The JNR buffer system allows a maximum deduction of 60%, which is greater than the 40% allowed by the CF buffer system. Programs aiming for compliance with the MF and JNR should be designed so that the result of their JNR risk assessment does not bring them over 40% deduction.

***Indicator 24.1:** The ER Program demonstrates through its design and implementation how it meets relevant World Bank social and environmental safeguards, and promotes and supports the safeguards included in UNFCCC guidance related to REDD+, by paying particular attention to Decision 1/CP.16 and its Appendix I as adopted by the UNFCCC (FMT Note CF-2013-3 describes World Bank Safeguard Policies and the UNFCCC REDD+ Safeguards)**.

JNR programs are required to "*provide information in the monitoring reports with respect to how they have avoided (and where necessary mitigated) negative and enhanced positive social and environmental impacts in accordance with all of the safeguards contained in Appendix 1 of Decision 1/CP.16 of the UNFCCC Cancun Agreements and relevant jurisdictional (national and subnational) REDD+ safeguards requirements.*" There is no JNR requirement to demonstrate compliance with World Bank environmental and social safeguards. Programs aiming for compliance with the MF and JNR should be designed so that they address the World Bank safeguard requirements. These programs should document progress on safeguards in the ER-PD and other reports.

Indicator 24.2: *Safeguards Plans address social and environmental issues and include related risk mitigation measures identified during the national readiness process, eg, in the SESA process and the ESMF, that are relevant for the specific ER Program context (eg, land tenure issues), taking into account relevant existing institutional and regulatory frameworks. The Safeguards Plans are prepared concurrently with the ER Program Document, and are publicly disclosed in a manner and language appropriate for the affected stakeholders. (If final Safeguards Plans are not provided at the time of ERPA signature, they become a condition precedent which must be fulfilled in order for the sale and purchase obligations under the ERPA to become effective.)*

The *JNR Requirements* do not specifically require that any safeguard plans are prepared and disclosed (only that safeguards are demonstrated to have been adhered to in monitoring reports). Programs aiming for compliance with the MF and JNR should design and disclose safeguard plans, at least in their ER-PD and other reports to the FCPF.

Indicator 25.1: *Appropriate monitoring arrangements for safeguards referred to in Criterion 24 are included in the Safeguards Plans.*

JNR does not have a requirement to develop monitoring for safeguard arrangements. Programs aiming for compliance with the MF and JNR should develop safeguard plans that address the World Bank safeguards and include a monitoring component.

Indicator 25.2: *During ER Program implementation, information on the implementation of Safeguards Plans is included in an annex to each ER monitoring report and interim progress report. This information is publicly disclosed, and the ER Program is encouraged to make this information available to relevant stakeholders. This information is also made available as an input to the national systems for providing information on how safeguards are addressed and respected (SIS) required by the UNFCCC guidance related to REDD+, as appropriate. (The abbreviation "SIS" will be used throughout this Methodological Framework to describe a national system for providing information on how the Cancun safeguards are addressed and respected, as contained in UNFCCC Decision 12/CP.17.)*

VCS JNR does require a SIS, but does not require that information to be provided in relation to the WB safeguards when relevant. Programs aiming for compliance with the MF and JNR should provide information in relation to World Bank safeguards, at least in their ER-PD and other reports to the FCPF.

Indicator 26.1: *An assessment of existing FGRM [Feedback and Grievance Redress Mechanism], including any applicable customary FGRMs, is conducted and is made public. The FGRM applicable to the ER Program demonstrates the following: (i) Legitimacy, accessibility, predictability, fairness, rights compatibility, transparency, and capability to address a range of grievances, including those related to benefit-sharing arrangements for the ER Program; (ii) Access to adequate expertise and resources for the operation of the FGRM.*

Indicator 26.2: *The description of FGRM procedures, included in the Benefit-Sharing Plan and/or relevant Safeguards Plans, specifies the process to be followed to receive, screen, address, monitor, and report feedback on, grievances or concerns submitted by affected stakeholders. As relevant, the Benefit-Sharing Plan and/or relevant Safeguards Plans and/or ER Program Document describe the relationship among FGRM(s) at the local, ER Program, and national levels.*

Indicator 26.3: *If found necessary in the assessment mentioned in Indicator 26.1, a plan is developed to improve the FGRM.*

VCS JNR does not require assessment of existing FGRMs. Programs aiming for compliance with the MF and JNR should conduct this assessment, make it public, and make their best effort at improving existing FGRMs according to the results of the assessment. Principle 6.4 of the REDD+ Social and Environmental Standards – referenced in indicator 3.7.3 of the JNR Requirements – can be used as a guide for including national, local, regional, international, and customary processes in the program's FGRM.

Indicator 27.1: *The ER Program identifies the key drivers of deforestation and degradation, and potentially opportunities for forest enhancement.*

There are no JNR requirements to identify the drivers of degradation if degradation is not in scope for a JNR program, nor are there any requirements to assess the potential for forest enhancement. Programs aiming for compliance with the MF and JNR should include degradation drivers and opportunities for forest enhancement even if degradation or enhancement are not in scope for JNR. The JNR now allows Tier 1 accounting for degradation, though no VCUs can be issues for that level of accounting.

Indicator 28.1: *The ER Program reviews the assessment of land and resource tenure regimes carried out during the readiness phase at the national level (ie,, SESA) and, if necessary, supplements this assessment by undertaking an additional assessment of any issues related to land and resource tenure regimes in the Accounting Area that are critical to the successful implementation of the ER Program, including:*

i. The range of land and resource tenure rights (including legal and customary rights of use, access, management, ownership, exclusion, etc.) and categories of rights-holders present in the Accounting Area (including Indigenous Peoples and other relevant communities);

ii. The legal status of such rights, and any significant ambiguities or gaps in the applicable legal framework, including as pertains to the rights under customary law;

iii. Areas within the Accounting Area that are subject to significant conflicts or disputes related to contested or competing claims or rights, and if critical to the successful implementation of the ER Program, how such conflicts or disputes have been or are proposed to be addressed; and

iv. Any potential impacts of the ER Program on existing land and resource tenure in the Accounting Area.

The ER Program demonstrates that the additional assessment has been conducted in a consultative, transparent and participatory manner, reflecting inputs from relevant stakeholders.

***Indicator 28.2:** The ER Program explains how the relevant issues identified in the above assessment have been or will be taken into consideration in the design and implementation of the ER Program, and in the relevant Safeguards Plan(s). If the ER Program involves activities that are contingent on establishing legally recognized rights to lands and territories that Indigenous Peoples have traditionally owned or customarily used or occupied, the relevant Safeguards Plan sets forth an action plan for the legal recognition of such ownership, occupation, or usage. Beyond what is required for the successful implementation of the ER Program, the ER Program is encouraged to show how it can contribute to progress towards clarifying land and resource tenure in the Accounting Area, where relevant.*

VCS JNR does not require assessment of land and resource tenure regimes carried out at the national level during the FCPF ER Program readiness phase. It does require assessment of the issues listed under this indicator within the program boundary. VCS JNR does not have a specific requirement for right of use assessments to be transparent; however, transparency is a VCS principle, and programs do have to involve transparent and document stakeholder interactions (3.7.1). Programs aiming for compliance with both the MF and JNR should follow and document (at least in the ER-PD and other reports to the FCPF) a process that complies with the MF's indicator 28.1. Furthermore, program proponents should document how the relevant issues identified in the assessment have been or will be taken into consideration in the design and implementation of the ER Program, and in the relevant Safeguards Plan(s).

***Indicator 30.1**: The Benefit-Sharing Plan is made publicly available prior to ERPA signature, at least as an advanced draft, and is disclosed in a form, manner and language understandable to the affected stakeholders for the ER Program. The Benefit-Sharing Plan contains the following information:*

i. The categories of potential Beneficiaries, describing their eligibility to receive potential Monetary and Non-Monetary Benefits under the ER Program and the types and scale of such potential Monetary and Non-Monetary Benefits that may be received. Such Monetary and Non-Monetary Benefits should be culturally appropriate and gender and inter-generationally inclusive. The identification of such potential Beneficiaries takes into account emission reduction strategies to effectively address drivers of net emissions, anticipated implementers and geographical distribution of those strategies, land and resource tenure rights (including legal and customary rights of use, access, management, ownership, etc. identified in the assessments carried out under Criterion 28), and Title to ERs, among other considerations.

i. Criteria, processes, and timelines for the distribution of Monetary and Non- Monetary Benefits.

ii. *Monitoring provisions for the implementation of the Benefit-Sharing Plan, including, as appropriate, an opportunity for participation in the monitoring and/or validation process by the Beneficiaries themselves.*

The JNR requires a benefit-sharing plan be set out in the JPD and monitored going forward. It is likely that programs would cover the Carbon Fund requirements when writing this plan, but some of the specific points could be missed. Programs aiming for compliance with the MF and JNR should be sure to include in their benefit-sharing plan all of the elements required in MF indicator 30.1.

Indicator 31.1: *The Benefit-Sharing Plan is prepared as part of the consultative, transparent and participatory process for the ER Program, and reflects inputs by relevant stakeholders, including broad community support by affected Indigenous Peoples. The Benefit-Sharing Plan is designed to facilitate the delivery and sharing of Monetary and Non-Monetary Benefits that promote successful ER Program implementation. The Benefit-Sharing Plan is disclosed in a form, manner and language understandable to the affected stakeholders of the ER Program.*

While the VCS JNR have no specific requirement that the benefit-sharing plan be disclosed in a form, manner and language understandable to the affected stakeholders of the ER Program (beyond general transparency requirements noted above); programs aiming for compliance with the MF and JNR should be sure to do this.

Indicator 34.1: *The ER Program outlines potential Non-Carbon Benefits, identifies priority Non-Carbon Benefits, and describes how the ER Program will generate and/or enhance such priority Non-Carbon Benefits. Such priority Non-Carbon Benefits should be culturally appropriate, and gender and inter-generationally inclusive, as relevant.*

Indicator 35.1: *The ER Program proposes an approach utilizing methods available at the time to collect and provide information on priority Non-Carbon Benefits, including, eg, possibly using proxy indicators. If relevant, this approach also may use information drawn from or contributed as an input to the Safeguard Information System.*

Indicator 35.2: *Information on generation and/or enhancement of priority Non-Carbon Benefits will be provided in a separate annex to each ER Program monitoring report and interim progress report, and will be made publicly available.*

The VCS's treatment of non-carbon benefits is tied to positive enhancements on social and environmental issues related to safeguards (see criterion 3.7.2). The MF implies that non-carbon benefits are wider than enhancements related to safeguards, and hence would require monitoring beyond a safeguard information system. Programs aiming for compliance with the MF and JNR should identify and monitor priorities among the non-carbon benefits of their interventions that are

culturally appropriate, and gender and inter-generationally inclusive. A report on these non-carbon benefits should be made publically available with each monitoring and progress report.

Indicator 37.1: *Based on national needs and circumstances, the ER Program host country has made a decision whether to maintain its own comprehensive national REDD+ Program and Projects Data Management System, or instead to use a centralized REDD+ Programs and Projects Data Management System managed by a third party on its behalf.*

Indicator 37.3: *The information contained in a national or centralized REDD+ Programs and Projects Data Management System is available to the public via the internet in the national official language of the host country (other means may be considered as required).*

The VCS provides elements that could form part of a national REDD+ Program and Data Management System: the VCS registry system would contain program and project title information and record issuances of VCUs, and the VCS database would record spatial information, project documentation (including information on REDD+ activities, carbon pools and baseline). Programs aiming for compliance with the MF and JNR should make clear that they are making use of these VCS data management systems alone or in combination with national data management systems.

However, the VCS registry system and database are only in English. In countries where English is not an official national language, programs would need to share documentation in an official national language (in addition to English) and make sure that the VCS registry could be accessed in that language (using a web-based language conversion tool, or by approaching VCS registry providers (Markit or APX) about the potential to offer a local-language interface) in order to comply with the MF's indicator 37.3.

Indicator 37.4: *Administrative procedures are defined for the operations of a national or centralized REDD+ Programs and Projects Data Management System; and an audit of the operations is carried out by an independent third party periodically, as agreed with the Carbon Fund.*

VCS and the FCPF are working together as of the publication of this document to ensure streamlining of various systems; the verification process is one that might be streamlined. However, programs aiming for compliance with the MF and JNR should be aware that they may need to be audited under both systems.

Indicator 38.2: *The national or centralized ER transaction registry reports ERs for the Carbon Fund using the accounting methods and definitions described above in the MF.*

It is not clear exactly what the specific "accounting methods and definitions" the MF indicator requires registries to adhere to. However, the VCS registries operate according to standard registry procedures. Programs aiming for compliance with the MF and JNR should check with the FCPF about specific criteria the registry reports must meet.

Indicator 38.4: *Operational guidance exists, or is in advanced stage of preparation, that clarifies the roles and responsibilities of entities involved in the national or centralized ER transaction registry, as well as rules for operation of the registry.*

Programs using a VCS registry and aiming for compliance with the MF and JNR should make reference to this guidance in their documentation.