THIS PUBLICATION RESULTS FROM ONGOING COLLABORATIVE EFFORT AMONG:









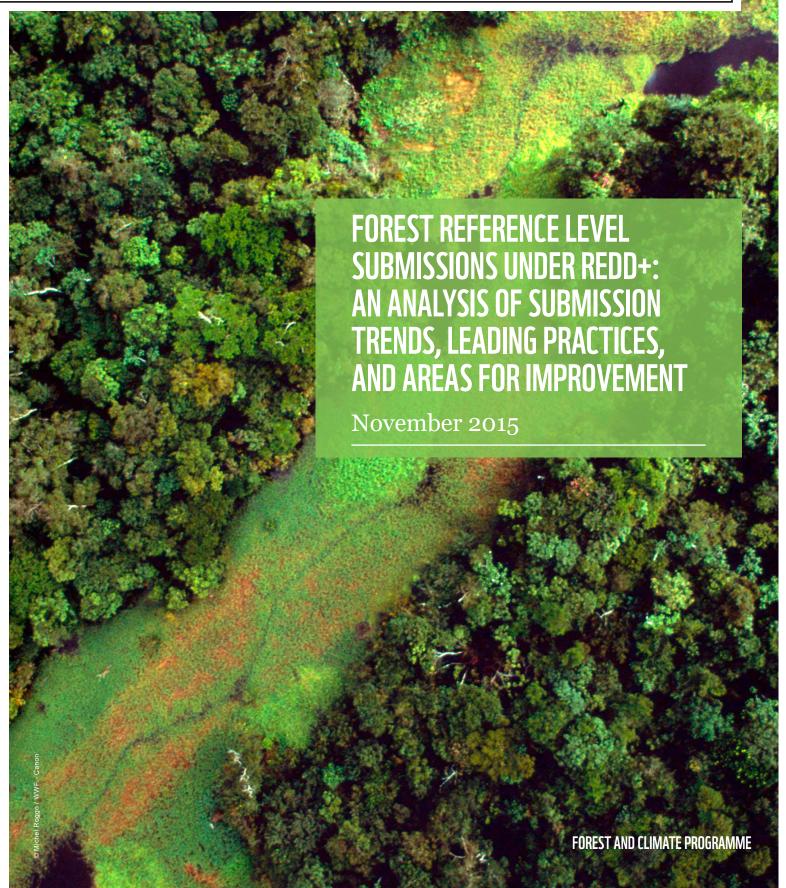


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BACKGROUND

educing Emissions from
Deforestation and Forest
Degradation-plus (REDD+) is a
mechanism under the United
Nation's Framework Convention on
Climate Change (UNFCCC) to incentivize
countries' efforts to undertake five climate
mitigation activities:

- 1) reducing emissions from deforestation;
- 2) reducing emissions from forest degradation;
- 3) conservation of forest carbon stocks;
- 4) sustainable management of forests; and,
- 5) enhancement of forest carbon stocks."1

In support of their participating in REDD+ mitigation activities, countries are asked to develop four elements: a National Strategy or Action Plan, a National Forest Monitoring System, a Safeguard Information System, and a Forest Reference Level (FRL).² FRLs³ are the emissions baselines against which to measure emissions reductions.

Countries may choose to create a FRL for several reasons. Under the UNFCCC, REDD+ pay-for-performance requires the establishment of a FRL.⁴ Countries also may develop FRLs to evaluate national policies and measures implemented to mitigate climate change in the forest sector and/or to contribute to international mitigation through REDD+.⁵

The UNFCCC FRL guidelines, based on relevant international decisions, ⁶ are designed to give countries flexibility in interpreting FRL construction in line with their national circumstances and capacities. ⁷ The UNFCCC guidelines for

what countries should include in the FRLs are:8

- Information that was used by Parties in constructing the FRL, including historical data and details on national circumstances, in a comprehensive and transparent way;
- Transparent, complete, consistent, and accurate information, including methodological information, used at the time of construction of the FRL;
- Pools and gases, and activities included in FRL and the reasons for omitting a pool and/or activity from FRL construction; and,
- The definition of forest used for the construction of the FRL and, if different than the definition used in the national greenhouse gas (GHG) inventory, an explanation of why and how the definition used in the FRL construction was chosen.

UNFCCC, Decision 1/CP.16.par. 70.

² UNFCCC, Decision CP.16/1/Add.1/par. 71

³ A Forest Reference Emission Level (FREL) is generally understood to refer to activities that reduce emissions; FRLs include a broader range of activities that both reduce emissions and increase carbon removals. This report will refer to FRLs. FAO, 2015.

Decision 9/CP.19, par. 11b and Decision 13/CP.19, par. 2

⁵ FAO 2015

⁶ 1/CP.16, 2/CP.17, 12/CP.17, 9/CP.19 – 15/CP.19

⁷ These include the Warsaw Framework for REDD+ (9/CP.19 – 15/CP.19), safeguards (1/CP.16 Annex I), IPCC 2006 Guidelines for National Greenhouse Gas, as well as UNFCCC parties' agreed modalities for FRL submissions (UNFCCC, Decision 12/CP.17, par. 7, UNFCCC, Decision 4/CP.15, par. 7, UNFCCC, Decision 12/CP.17, par. 8, UNFCCC, Decision 4/CP.15, par. 7 and Decision 12/CP.17, par. 9, UNFCCC, Decision 12/CP.17, par. 10 and 12, UNFCCC, Decision 12/CP.17, par. 11).

⁸ UNFCCC, Annex to Decision 12/CP.17

REPORT GOALS

fter ten years of international negotiations on REDD+, and after the adoption of the REDD+ rule book (th e Warsaw Framework for REDD+) in 2013, six countries (Brazil, Colombia, Ecuador, Guyana, Malaysia, and Mexico) have submitted FRLs under the UNFCCC. Their efforts deserve praise, they were the first countries to take this important step, and they demonstrated the feasibility of FRL construction for countries with a range of capacity levels. Reflecting the "learning-by-doing" nature of these early FRLs, these efforts also reveal different interpretations of the UNFCCC's technical guidelines and offer lessons about ways to improve future submissions. The goals of this report are three-fold:

- Provide an overview of countries' approaches to FRL construction.
- 2. Examine cross-cutting trends related to countries' FRL construction in order to identify key lessons-learned and leading practices demonstrated thus far.
- 3. Discuss the submissions as they pertain to the context of REDD+ incentives, with a focus on their ability to generate emission reductions and promote climate integrity.

THE ROLE OF FRLS IN ADVANCING CLIMATE INTEGRITY UNDER REDD+

n order for REDD+ to achieve its emission reduction goals, the concept of climate integrity must underpin and inform the incentives that are delivered for REDD+ activities (though, it need not be the only criterion).

Climate integrity, as defined in this report, includes two elements:

- Equivalence: Every tonne (t) of carbon dioxide equivalent (CO2e) of documented emissions reductions has equal impact on reducing the concentration of atmospheric GHGs.

 The idea of equivalence sets a standard for what is measured.
- *IPCC Good Practice:* The system of documenting emissions (and reductions) meets the principles of good practice as defined the Intergovernmental Panel on Climate Change (IPCC) guidance (see text box). This element sets a standard for the system of measurement.

Countries that uphold the two elements of climate integrity in their FRL submissions are laying the foundation for effective mitigation from forests and land use, and thus taking a critical step toward proving the value and efficacy of the REDD+ mechanism, and they deserve to be recognized for such contributions.

IPCC GOOD PRACTICE GUIDANCE

The IPCC adopted the following good practices for reporting of national GHG inventories:

- Transparency: The principle that all assumptions and methodologies are explained and allow for external replication and assessment.
- Accuracy: The principle that estimates are systematically neither over nor under true emissions or removals and that uncertainties are reduced to the extent practical.
- Consistency: The principle that an inventory should be internally consistent in all elements over time. Different methodologies may be used over time if recalculations occur in a transparent manner and incorporate good practices.
- Comparability: The principle that emission and removal estimates reported by Parties should be comparable among Parties.
- Completeness: The principle that an inventory should cover all sources and sinks for the specified geographic area.*

*IPCC, 2006. Guidelines for National Greenhouse Gas Inventories



The six countries that have submitted FRLs to the UNFCCC have unique ecological, political, and economic development contexts. As expected, the countries interpreted elements of FRL construction in different ways based on their national circumstances. This section highlights the factors potentially influencing their construction approaches and features key elements of their technical approach, in line with the UNFCCC guidelines.



BRAZIL¹⁰

Reference Level:

1,106,027,618 t CO₂-eq /year

Reference Period: 1996-2005 to assess performance between 2006 and 2010; 1996-2010 to assess performance between 2011 and 2015

Historical vs. Adjusted: Historical

Scale: Sub-national (Amazon biome)

Activities Included: Deforestation

Pools: Above ground biomass (AGB) and below ground biomass (BGB) and litter

Gases: Carbon dioxide (CO₂)

Included a Forest Definition: Yes

razil was the first country to submit its FRL and the first to have gone through the technical assessment (TA). Brazil provided a sub-national FRL (the Brazilian Amazon Biome). This region represents about 48% of the country's total area.

Key drivers of deforestation in the region are trade and global consumption of Brazilian beef and soybeans. Brazil's FRL was initially developed under the Amazon Fund and then refined for submission to the UNFCCC. After its first submission, Brazil modified its FRL.





¹⁰ Brazil's reference level available at http://redd.unfccc.int/submissions.html?country=bra

¹¹ Centre for International Climate and Environmental Research (CICERO), 2013. Centre for International Climate and Environmental Research (CICERO), 2013.

¹² http://www.unredd.net/index.php?option=com_docman&Itemid=134&view=download&al ias=13469-emerging-approaches-to-forest-reference-emission-levels-and-or-forest-reference-levels-for-redd-13469&category_slug=mrv-and-monitoring-296

COLOMBIA¹³

Reference Level:

51,599,618.7 t CO₂-eq /year

Reference Period: 2000-2012

 $\textbf{Historical vs. Adjusted:} \ \textbf{Adjusted:} \ \textbf{Adjusted}, \ \textbf{based}$

on 10% over Historical

Scale: Sub-national (Amazon

Biome Region)

Activities Included: Deforestation

Pools: AGB, BGB

Gases: CO₂

Included a Forest Definition: Yes

olombia's FRL, like Brazil's, was sub-national (focused on the Amazon Biome) and included only the deforestation activity. Key drivers of deforestation in Colombia include legal agriculture and livestock expansion, illegal agriculture expansion (particularly for coca), infrastructure, legal and illegal logging, and wildfires.¹⁴

For over five decades, there has been conflict between the government and insurgent groups, notably the Revolutionary Armed Forces of Colombia (FARC). The conflicting parties are planning to sign a peace agreement that Colombia predicts will lead to increased deforestation as conflict areas become accessible to development. Its FRL included a 10% adjustment over historical emission levels.





¹³ Colombia's reference level available at http://redd.unfccc.int/submissions.html?country=col

14 REDD Desk, available at: http://theredddesk.org/.

ECUADOR¹⁵

Reference Level:

3,418,126 t CO₂-eq/year

Reference Period: 2000-2008

Historical vs. Adjusted: Historical

Scale: National

Activities Included: Deforestation

Pools: AGB, BGB, litter, and deadwood

Gases: CO.

Included a Forest Definition: Yes

n 2008, Ecuador released the twentieth edition of its constitution, which connects to several new REDD+ policies and programs.¹⁶

Across Ecuador, agriculture is a primary driver of deforestation; regional drivers include oil extraction, palm oil plantations, and mining. ¹⁷ Starting in 2009, programs such as Socio Bosque have helped reverse deforestation rates. ¹⁸ Ecuador utilized 2000-2008, the years before major reforms that had significant impact in its deforestation rate, for its FRL reference period.





¹⁵ Ecuador's reference level available at http://redd.unfccc.int/submissions.html?country=ecu

¹⁸ Republic of Ecuador, 2014

¹⁶ REDD Desk, available at: http://theredddesk.org/

¹⁷ REDD Desk, available at: http://theredddesk.org/

GUYANA¹⁹

Reference Level:

46,301,251 t CO₂-eq/year

Reference Period: 2000-2012

Historical vs. Adjusted: Adjusted

Scale: National

Activities Included: Deforestation, and degradation linked to forest management

Pools: AGB, BGB, deadwood

Gases: CO

Included a Forest Definition: Yes

uyana submitted its FRL building on the one used for the 2009 Guyana-Norway agreement when Norway agreed to pay Guyana up to \$250 million in performance-based payments for REDD.20

Historically, Guyana has had very low deforestation rates but now experiences pressure from gold mining. In order to incorporate the likelihood of increased deforestation with its historically low deforestation rates, Guyana proposed a combined reference level.21 The combined FRL is based on Guyana's historical emissions rate and on the global average emissions rate from tropical deforestation, as estimated by Baccini et al.22 Guyana was one of two countries to report on degradation.





¹⁹ Guyana's reference level available at http://redd.unfccc.int/submissions.html?country=guy

²⁰ https://www.regjeringen.no/globalassets/upload/md/vedlegg/klima/klima_skogprosjektet/the-memorandum-of-understanding-guyana-norway-on-redd-081109-signed-091109.pdf

²¹ http://www.sciencedirect.com/science/article/pii/S0959378008001180

²² Baccini et al., 2012.

MALAYSIA²³

Reference Level:

- 205,700,000 t CO₂-eq/year

Reference Period: 1990-2011

Historical vs. Adjusted: Historical

Scale: National

Activities Included: Sustainable Forest

Management (SFM)

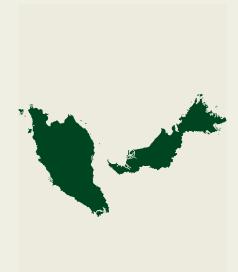
Pools: AGB, BGB, litter

Gases: CO

Included a Forest Definition: No

istorically, Malaysia had significant forest cover, but forests now span only 59.5%²⁴ of the country, and deforestation rates there are among the highest in the world.²⁵

Key drivers of deforestation and degradation in Malaysia include legal logging (an important activity for the national economy) and illegal logging, as well as the expansion of palm oil plantations. ²⁶ Malaysia's REDD+ FRL submission was unique in omitting deforestation as an activity; instead, Malaysia included only SFM. Malaysia presented the country as a net sink.





Gerald S. Cubitt

²³ Malaysia's reference level available at http://redd.unfccc.int/submissions.html?country=mys

²⁴ Malaysia's official figure is for forest cover is 50%

²⁵ http://UN-redd.org

²⁶ http://earthobservatory.nasa.gov

MEXICO²⁷

Reference Level:

44,388,620 t CO₂-eq/year

Reference Period: 2000-2010

Historical vs. Adjusted: Historical

Scale: National

Activities Included: Deforestation, and

degradation from fires

Pools: AGB, BGB, litter, and deadwood considered for degradation from fires

Gases: CO_2

Included a Forest Definition: Yes

n order to reduce deforestation from agriculture and livestock expansion, Mexico has implemented several policies and programs over the past decade, including the National Forestry Program, PRONAFOR. The country's FRL was based on Land Use/Land Cover (LULC) data, produced consistently in the country since 1996.







This section examines the trends that emerged with countries' initial FRL submissions in order to glean lessons from and to identify leading practices in countries' interpretations of the UNFCCC guidelines. These trends are organized around the UNFCCC guidelines for submissions and also include scale.

A. SCALE

Why It Is Important: Scale refers to the geographic area included in a country's FRL submission. The UNFCCC guidance requires FRLs to be national, but allows sub-national FRL submissions as an interim measure. Scale should be considered in a way that will avoid leakage and fully represent key sources of emissions in the country. The IPCC principle of completeness cannot be fully met until all geographic areas are included; incomplete geographic coverage also can make it more difficult for a country to maintain consistency of reporting in the future.

Submission Trends: In the first round of submissions, the majority of countries developed national FRLs, with the exception of Brazil and Colombia which submitted sub-national FRLs for the

Amazon Biome regions. Brazil indicated how it will integrate its sub-national FRL into a national one.

Commentary: As countries implement FRLs, more information will be desirable, particularly about how they intend to integrate sub-national FRLs into national ones

B. INFORMATION USED, INCLUDING HISTORICAL DATA AND DETAILS ON NATIONAL CIRCUMSTANCES

HISTORICAL REFERENCE PERIODS

Why They Are Important: A reference period is the range of years selected by a country to calculate its historical emissions. Since the period is used to create a realistic benchmark by which to evaluate a country's future emissions, it should include years that reflect the typical environmental and economic circumstances of the country.

Submission Trends: Countries adopted reference periods ranging from 9 to 19 years.

Commentary: Countries used historical averages to determine their historical emission patterns. No models or trends were used for adjustments. In constructing historical averages, several countries chose reference periods that would benefit them. Brazil and Ecuador, for instance, reported significant emission reductions in recent years and seek to be recognized for related efforts in their selection of time periods.

HISTORICAL DATA LEADING PRACTICE: REPRESENTATIVE REFERENCE PERIODS

Colombia demonstrated a leading practice in using a 12-year average for its reference period. It ensured a sufficient length of time to show the country's historical emission patterns, but without being too long and without years with atypical deforestation rates or emission patterns that may have changed dramatically.

NATIONAL CIRCUMSTANCE ADJUSTMENTS

Why They Are Important: Historical levels of deforestation often are the best predictors of future deforestation.²⁸ However, in some circumstances, historical emission patterns may not provide a good indication of a country's future emissions. The UNFCCC guidance permits adjustments to historical emissions based on national circumstances.

Submission Trends: Only two countries proposed adjustments to their historical averages. Colombia submitted a 10% upward adjustment based on potential circumstances resulting from positive peace talks with FARC. Guyana utilized a combined reference level approach (see Guyana country profile).

Commentary: When adjustments are proposed, they should be based on a country's historical emissions and include a quantified and realistic magnitude of change and a justification for doing so. Colombia argued for an adjustment based on the possibility of reaching a peace agreement after years of internal conflict as well as deforestation risk modeling presented in Annex C of their submission. Additionally, it committed to a goal of zero net deforestation by 2020 under a multilateral agreement (REDD Early Movers Program).

Guyana's proposal is also context-based on the provisions of the Guyana-Norway Agreement, whereby a specified level of increase in deforestation relative to historical levels is accommodated within the calculation payment for results. In this case, the choice of adjustment – based on an international average deforestation rate – has been criticized as it has allowed some payments to continue while emissions during the agreement period (2010-2015) have doubled. As such, it highlights a concern with the practice of making adjustments to historical

emissions averages, where some adjustments may have the aim of increasing compensation rather than recognizing valid trends in deforestation and degradation. Possible solutions to this problem need to be discussed among the Parties.

degradation, or another activity may have implications for compensation. Emissions should be identified and accounted for under the five REDD+ mitigation activities. Not all countries provided a justification for excluding degradation and other activities.

C. POOLS, GASES, AND ACTIVITIES

ACTIVITIES INCLUDED

Why They Are Important: In determining the scope of activities included for their FRL construction, countries can include any of the five activities under REDD+, as long as significant activities are not excluded.²⁹ Completeness of the reporting occurs when the FRL includes all potentially major sources of emissions, as well as all gases.

Submission Trends: Most countries reported on deforestation based on their specific definitions and technical capabilities. Guyana included degradation; Brazil, Mexico and Colombia showed forest degradation as a preliminary component. Malaysia reported only on SFM. The countries that provided a rationale for the exclusion of specific activities usually cited a lack of data as the reason for omission.

Commentary: Countries reported on a variety of REDD+ activities, demonstrating the wide latitude they received in the FRL guidance. Malaysia decided to include logging as part of the SFM activity, while Guyana included at least some specific elements of forest management in the degradation and deforestation components. Different interpretations of scope or whether emissions are placed under deforestation,

HISTORICAL DATA: PROGRESS TOWARDS CLIMATE INTEGRITY

The use of historical data is critical for defining success in the context of emission reductions. Given that incentives are based on this accounting, the choice of how to measure trends is important for both payments for performance and real emission reductions. As a means of measuring success, REDD+ FRLs are important for incentivizing donor involvement not only in REDD+, but also at a national climate planning level, notably the process of submitting Nationally Determined Contributions to the UNFCCC.

ACTIVITIES LEADING PRACTICES: REPORTING ON DEGRADATION & DATA TRANSPARENCY

Mexico and Guyana were the only two countries to report on forest degradation: from fires and forest management, respectively. In doing so, they facilitated a more comprehensive view of carbon emissions in their countries. Although Mexico's approach is hard to follow, the transparency of data and methods allows for an external assessment and the possibility of direct, constructive feedback

²⁸ Arild Angelsen et al., 2013.

²⁹ Annex to Decision 12/CP.17

POOLS AND GASES INCLUDED

Why They Are Important: A complete and comparable estimate of GHG emissions depends on information on pools (above ground biomass [AGB], below ground biomass [BGB], soil carbon, litter, and deadwood) and gases $(CO_2, methane [CH_4], and nitrous oxide [N_2O])$ in order to provide a complete picture of what the sources are.

Submission Trends: All countries reported on AGB, which usually represents the largest pool and the one on which countries often have the best data. Many countries also included data on BGB and deadwood. Only a few presented data on litter. None of the countries reported on soil carbon in their final submissions. All countries included CO₂ emissions, and none of the countries reported on N₂O or CH₄. Most countries did not include justifications for excluding specific gases.

Commentary: Data limitations were a major challenge faced by countries in identifying emissions from pools and gases. Many countries relied on plot data that were built for different purposes (e.g., forestry and ecology) and/or were outdated (more than 10 years old), resulting in a lack of robust information on some pools. The challenges faced by countries in collecting gases and pools data highlight the need to enhance countries' internal capacities to conduct National Forest Inventories (NFI). Such inventories could allow for carbon stock change modeling, using the integration of ground-based measurements and remote sensing. From a climate integrity standpoint, the omission of CH, is concerning given its potency as a greenhouse gas.

ACTIVITY DATA

Why They Are important: Activity data quantify the extent of REDD+ activities in a country and are a key part of

determining a country's emission estimates. Categories of activities can include those that change the land use of an area (e.g., deforestation) or those that affect the carbon stocks of an area without changing its overall use (e.g., degradation). Accuracy and uncertainty of activity data are often linked to the methodology used for monitoring (e.g., limitations in sensors used for satellite remote sensing). Changes in methodologies can affect the consistency of estimated emissions. The UNFCCC allows for a stepwise approach that encourages improvement of FRLs as better data and methodologies become possible, while the IPCC guidance can be used to maintain consistency.

Submission Trends: All countries are following a stepwise approach based on data availability, as well as national capacities. Most countries used Approach 3³⁰ (i.e., spatially explicit observations of land-use categories and conversions) for the collection of land activity data under the IPCC. Most countries did not use emergent technologies, relying instead on well-established data sets and approaches, notably Landsat data in combination with plot data for activity data and the construction of emission factors.

Commentary: The type of data and data quality varied among the countries, even those that took Approach 3. Mexico benefited from having years of survey data and a land cover series, which allowed it to present robust emissions factors supported by the NFI data. Other countries simply presented deforestation data without details on the specific land cover transition (e.g., forest to pastureland or agricultural land). No country reported uncertainty levels for activity data, even though the capacities for doing so should be readily available to all countries. Fortunately, REDD+ accommodates a stepwise approach and includes funds for countries to increase their technical capacities. While countries had data limitations, their rationales for the data presented were well-explained based on

DETECTING LAND USE CHANGE: PROGRESS TOWARDS CLIMATE INTEGRITY

The way deforestation is defined has important implications for emission estimates. If a country uses a large reference area (minimum mapping units, or MMUs) and reports only on areas with 100% clear cuts as deforested, then emissions from areas with some clear cuts (e.g., 90%) are not included in a deforestation activity. Presumably, these emissions would be included in forest degradation activities, but many countries (even those where degradation constitutes over 50% of emissions) did not report on emissions from degradation. As a result, this approach undermines a clear understanding of emission levels and may impede progress towards climate integrity.

national capacities; this transparency facilitates external assessments of their approaches and helps build trust among donors and the global community.

D. DEFINITION OF FOREST

Why It Is important: The IPCC identifies three components of a definition of forest lands: 1) vegetation height; 2) percent tree cover; and 3) minimum area referenced. The ranges specified for these thresholds in the Marrakesh Accords do not necessarily apply to developing countries.³¹ As forests change over time, the forest definition is important to ensure consistency and accuracy in the reported changes, as well as to facilitate clarity among those designing and implementing

³⁰ The IPCC outlines different approaches for the collection of activity data: Approach 1, in which data only include changes in land-use areas tracked and lack spatially explicit information; Approach 2, in which data include details about net losses and gains in land-use categories but lack spatially explicit location data; and Approach 3, in which data include spatially explicit information about land-use categories and conversions.

³¹ FAO. 2015.

a monitoring, reporting, and verifying system (MRV).

Submission Trends: Most countries reported with consistency between their forest definition and those used in their national GHG inventories; however, Malaysia referred to its National Forest Act but failed to provide a forest definition. Guyana used a different definition from the one used in its GHG inventories (30% tree cover threshold vs 10%) based on thresholds provided by the Marrakesh accords. Most countries relied on an aggregation of satellite remote sensing pixel data to estimate forest cover but failed to explain how the spatial resolution of such data related to the tree cover and area components of their forest definition. As a result, it could be difficult to interpret the transparency, accuracy, comparability, and consistency of the FRLs.

Commentary: The use of forest definition is an area for improvement; countries need to explicitly link their forest definition with the way they use data to inform forest cover estimates with the methods they are using for MRV. This need is especially true for the percent tree cover threshold and its area parameter. Countries should take care to maintain

consistency in the use of these components in every reporting period, and should give forethought to their approaches in order to establish a clear usage of the forest definition for future periods. In doing so, they also would help to facilitate the reporting of new activities, such as degradation, in future periods.

E. TRANSPARENT, COMPLETE, CONSISTENT, AND ACCURATE INFORMATION

TRANSPARENCY AND COMPLETENESS

Why They Are Important:

Transparency is the foundation of international cooperation for addressing climate change and a cornerstone of the FRL process. By providing transparent and complete information, developing countries ensure that their FRL construction approach and conclusions

can be understood and assessed. This fact helps build trust between donors or funders and developing countries, and it establishes confidence in the FRL process.

Submission Trends: Most countries included information on their FRL construction approach, assumptions, and data sets. However, while countries were transparent about the references used to construct their FRLs, they did not always provide easy access to the information. Copyright and payment for journal access impeded external review in some cases. One country provided limited support for calculations and even omitted the reasons for its scope.

Commentary: Overall, the countries' submissions allow for external assessments of what was proposed, which should help the Technical Assessment teams and other interested entities judge the extent to which the countries met the goals of the FRL guidance and the standards required to facilitate compensation of REDD+ activities. In providing this transparency, the countries helped build trust in the FRL submissions.

FOREST DEFINITION: PROGRESS TOWARD CLIMATE INTEGRITY

From a climate integrity perspective, countries' choice of forest definition could be a cause for concern in the context of results-based payments for REDD+. A country, for instance, could choose a higher canopy cover (e.g., 30%) threshold to define forests in order to avoid accounting the emissions from conversion of 'treed' land below that threshold. While this is not likely the main factor influencing a country's forest definition, it highlights the need to consider REDD+ incentives within a broader, holistic accounting of emissions and removals in land sector.

TRANSPARENCY AND COMPLETENESS INFORMATION LEADING PRACTICE: ACCESSIBLE DATA

Ecuador showed a high standard of transparency and complete data. It provided full external access to all relevant documentation, manuals, data, protocols, and layers. Not only did Ecuador provide transparency about the data, it also gave justifications for its approach, making it easier for external parties to evaluate. Likewise, Brazil acknowledged areas it could improve in a stepwise approach and also provided access to data.

ACCURACY LEADING PRACTICE: CONSERVATIVE USE OF DATA

Countries need to analyze accuracy and uncertainty together to determine whether they are in the right ballpark of emissions and how precise their emission estimates are. **Mexico** exhibited a leading practice by presenting in detail how it estimated the uncertainties associated with emissions factors reported in the FRL. It also proposed a precautionary use of data when the uncertainties were not available. Accuracy and uncertainties of both activity data and emissions factors carbon data are necessary for overall estimation for the FRL.

CONSISTENCY

Why It Is Important: Consistency with national GHG inventories is necessary to ensure comparison of reference levels with results and to understand the changes in emissions over time. Maintaining consistency in methodology, definitions, and comprehensiveness is also necessary for assessment of countries' performance.32 The IPCC does offer guidance³³ on several techniques that can help countries maintain consistency in their reporting, even as their methodologies and sources of data change.

Submission Trends: Both forward- and backward-looking consistencies with GHG inventories submissions were observed. Some countries, namely Mexico and Brazil, decided to maintain data analysis and approaches in order to ensure consistency with past GHG inventory submissions. Other countries, specifically Colombia and Ecuador, decided that they will update past GHG inventory submissions by incorporating the new, better data in the future.

Commentary: For many countries, the data available and used for the FRL construction were the result of major leaps forward in technical capacities achieved in the last 5 years. Countries deserve praise for making this progress, as do donor countries and support organizations that contributed to such processes. As a result of enhanced technical capacities, countries' use of the data outputs will likely result in better quality estimates and at least cover the last decade or so. A forward-looking approach to consistency, then, is preferable to a backward-looking one.

ACCURACY

Why It is Important: Accurate data, with declared levels of uncertainty, are critical for establishing trust, as well as for achieving emission reductions. For a FRL to achieve accuracy, it should be unbiased, representing the most likely future emissions without any additional interventions. Furthermore, the FRL estimate should follow the IPCC good practice principles of neither over nor under estimating the expected emissions or removals, as far as can be judged, and reducing the uncertainties as much as possible.34

Submission Trends: Most countries endeavored to assess the accuracy and uncertainty of their FRLs based on available data. The most progress can be seen in relation to the carbon content estimates; most countries used plot data that were collected purposefully or had been assembled based on previous efforts, and several acknowledged the uncertainties associated with their data. Activity data were not assessed, even though countries had data and the access to methods.

Commentary: The submitted FRLs have partial accuracy and uncertainty estimates; only Mexico presented overall uncertainty estimates. Thus, accuracy is an area for improvement. Developing countries need a clear understanding of the ways different uncertainty levels will affect their recognized emissions reductions under the REDD+ mechanism, as is the case under the Clean Development Mechanism (CDM).35 With such a framework, countries would have greater clarity about how to handle uncertainty.

TRANSPARENCY, COMPLETENESS, CONSISTENCY, AND ACCURACY: PROGRESS TOWARDS **CLIMATE INTEGRITY**

The FRLs submitted raise a question about what categorical assertions about data quality, without supporting evidence, mean for the accuracy of the FRLs and for climate integrity. While a common issue pertaining to climate data, the lack of clear and transparent recognition of data limitations and uncertainties means that neither the individual country nor the global community can take a precautionary, conservative approach to the estimates that could be discussed for a compromise around climate integrity.

³² UNFCCC, Decision 14/CP.19, par. 11(a)

³⁵ Decision 20/CMP1. Good practice guidance and adjustments under Article 5, paragraph 2, of the Kyoto Protocol, available on page 39 of http://unfccc.int/resource/docs/2005/cmp1/eng/08a03. pdf#page=21

TABLE 1: SNAPSHOT OF CROSS-CUTTING TRENDS AND AREAS FOR IMPROVEMENT. BELOW ARE AGGREGATED TRENDS FOR HOW KEY ELEMENTS OF REDD+ FRL DESIGN WERE ADDRESSED BY THE SIX SUBMISSIONS TO THE UNFCCC.

ELEMENT	TREND SNAPSHOT	AREAS FOR IMPROVEMENT		
SCALE				
National or Sub-National	Mostly national with two sub-national	Provide information on how to integrate sub-national FRL with national one.		
INFORMATION USED, HISTORICAL DATA AND DETAILS ON NATIONAL CIRCUMSTANCES				
Reference Period	Historical Averages	Present representative and relatively recent years as the reference period and commit to updates, including an "average moving window" with more recent years.		
Adjustments	Two adjustments	Demonstrate the need for adjustment, choose a realistic magnitude for change, and justify the adjustment number.		
POOLS, GASES, AND ACTIVITIES				
Activities Included	Deforestation was the main activity included, with two inclusions of degradation and one of SFM	Broaden the activities included; ensure that major sources of emissions (i.e., emissions from forest degradation) are included as data become available; justify activities that were not included (less than 15% of overall emissions).		
Pools	AGB was the main pool included	Bolster countries' internal capacities to collect quality, purpose-built data through investment in NFIs.		
Gases	CO ₂ was the only gas included	Include CH ₄ given its implications for climate change.		
Activity Data	Mostly Approach 3	Determine and articulate the uncertainties in activity data, particularly change data.		
DEFINITION OF FOREST				
Definition	A range of definitions that were mostly consistent with GHG inventories	Establish a clear national usage of the forest definition; define an MMU and assess the entire country using the MMU; then use the available data to inform such status.		
TRANSPARENT, COMPLETE, CONSISTENT, AND ACCURATE INFORMATION				
Transparent, Complete	Overall, strong levels of transparency	Follow the model of providing full transparency as well as easy access to datasets, methods, GIS layers, and rationales.		
Consistent	Overall, strong consistency with GHG inventories	Consider updating national GHG inventories as better data become available.		
Accurate	Solid accuracy, but limited discussion of uncertainties, especially with activity data	Calculate and declare uncertainties in data and how the uncertainties are integrated into the FRL; take a conservative approach to FRL construction.		



The six countries' FRL submissions to the UNFCCC have notable strengths. As a whole, countries showed strong levels of transparency and data consistency in their FRL construction and included activities and utilized data in line with their national capacities. These FRLS are part of the first round of submissions, and countries should be commended for taking the lead and engaging in this new process. Given that these submissions are the initial round, it is not surprising that there are areas for improvement (see Table 1). REDD+ implementation is an iterative process which entails learning by doing; with time, participating countries can improve their technical approach through step-wise progression.

hen looking at the climate goals of REDD+, the submissions could raise concerns about the degree to which the FRLs uphold climate integrity. FRLs should be the first step toward achieving emission reductions under REDD+. Real reductions also depend on how countries and the Parties propose to use them, and on whether countries demonstrate the political will to undertake mitigation activities and to integrate REDD+ activities into other national commitments, notably Intended Nationally Determined Contributions (INDCs).

National REDD+ plans, when submitted, could help address climate integrity concerns by indicating how countries will improve their practices, expand their scope of activities, pools, and gases, and deliver additional reductions. Donor countries and international organizations also can play a positive role in supporting climate integrity by providing support to improve FRLs over time, and by using FRLs as a basis for negotiating REDD+ payment levels. Ultimately, both countries and the international community need to look to climate integrity, to ensure that the goal of REDD+, to slow, halt and reverse forest cover and carbon loss, is achieved.



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FOR FURTHER INFORMATION, PLEASE CONTACT:

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Why we are her

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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