

FCPF Carbon Fund Methodological Framework Discussion Paper #4: Reference Levels

WORKING DRAFT SOLELY FOR INPUT INTO AND DISCUSSION BY CARBON FUND WORKING GROUP

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managed and revised by the FCPF Facility Management Team and World Bank staff, and does
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About this document: The FMT commissioned the development of this series of about a dozen topic-specific Discussion Papers (also known as “Issue Papers”) to serve as a common starting point for discussion on the Methodological Framework. The Papers were circulated January-April 2013 to Carbon Fund Participants and to over 100 experts who participated in REDD+ Design Forums which channeled input into the Methodological Framework. For each topic, the corresponding Issue Paper first presents background research and major approaches, and then suggests initial thinking on how to translate that topic into the context of the Methodological Framework of the Carbon Fund. (This paper is the original issue paper on reference levels; additional analyses from October 2013 are presented in Issue Papers #15 and #16.)

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Key Questions:

For each key question, it is worth considering the level of requirements and/or guidance that the Carbon Fund will want to provide. The desire to uphold a level of credibility and environmental integrity or to achieve a uniform approach to carbon accounting should be balanced with the experimental and

piloting nature of the CF, which might require flexibility. This overarching issue of specificity in rule-setting is linked to the discussion of a General Approach for the Carbon Fund found in Issue Paper #1.

Definitions used in this paper:

- **Reference emission level/reference level (REL/RL):** Levels developed for the UNFCCC that are “benchmarks for assessing each country’s performance.”
- **Reference level:** Levels developed by ER programs applying to the FCPF Carbon Fund relative to which emission reductions are monitored and reported.
- **Crediting baseline:** Baselines used to calculate the specific number of emission reductions that could be credited and financed, including through payments from the Carbon Fund. A crediting baseline may or may not be the same as the reference level or the REL/RL.

1. **Relationship to UNFCCC:** How should reference levels for the Carbon Fund (CF) relate to the Reference Emission Levels/Reference Levels (REL/RLs) being created by countries for the UNFCCC?
2. **Performance and crediting:** What should be the relationship between a country’s emission reductions relative to its reference level and the finance a country receives, e.g. should there be a separate crediting baseline and if so, how might it be constructed?
3. **Additionality:** How should additionality be addressed ?, Should a conservative approach to the reference level or additionality tests be used?
4. **Historical emissions:** What reference period, reference region, and forest definition should be used to determine historical emissions?
5. **Adjustments for national circumstances:** How should national circumstances be reflected in the relationship between historical emissions and the reference level?
6. **Transparency:** What standard of transparency regarding data and methods should be required for the approval of a reference level?
7. **Spatial resolution:** Can a reference level be based on the quantity of emissions within a jurisdiction, or is it also necessary to provide spatial resolution of where these emissions did or will occur?
8. **Scope:** Are separate reference levels necessary for different activities (e.g. deforestation, degradation, carbon stock enhancement...) or can these be integrated into a single reference level?
9. **Updating:** For how long should the reference level be valid?

10. **Multiple scales:** If a country's REDD+ system involves multiple scales (e.g. a "nested" system), should different approaches to reference levels and additionality be considered, or allowed, at different scales?

Introduction

Countries have been invited to submit REL/RLs to the UNFCCC for REDD+. But in many cases, the establishment of reference levels for the CF may precede a country proposing REL/RLs to the UNFCCC. Reference levels proposed to the Carbon Fund might or might not be the same as those that will be proposed and undergo review within the UNFCCC (Question 1). For example, a reference level could be used by a country as a stepwise approach to developing a UNFCCC REL/RL, or as a pilot at the subnational level prior to the development of a national REL/RL.

The establishment of reference levels first requires the estimation of *historical emissions*—the rate of emissions (and potentially removals) from forests from a specific country or jurisdiction over a specific recent historical time period. This is an objective, science-based estimate of an exact but uncertain quantity, requiring data on forest cover change, or "activity data," and emission factors¹. Technical decisions to be made include specifications related to historical time period, geographic boundaries, pools and definition of forest (Question 4), the necessary level of spatial resolution (Question 7), and the scope of included activities (Question 8).

Reference levels may then be adjusted for national circumstances (Question 5). Little guidance has been provided by the UNFCCC on when and how these adjustments may be conducted. Adjustments might include *projections* of the rate of emissions from forests from a specific country or jurisdiction predicted to occur in the near future under a business-as-usual (BAU) scenario. These are assumed, extrapolated or modeled predictions of changes in emissions in the absence of REDD+ interventions. Land-use change predictions present a tradeoff between simple, transparent techniques and more complex, sophisticated models, and involve questions of accuracy and validation.

The relationship between reference levels and finance for emission reductions has yet to be defined by the UNFCCC (Question 2). Crediting baselines, which could be set higher or lower than the reference level, would be one means of capturing a country or jurisdiction's "own effort" or for providing greater incentives for high-forest cover, low-deforestation (HFLD) or less-developed countries. Such decisions will affect countries' willingness to participate in REDD+ and the level of finance required to achieve emission reductions.

Reference levels may also be related to the concept of *additionality* (Question 3). Emission reductions from a program or project are considered additional if net emissions are reduced *below those that would have occurred in the absence of the activity.*² The need to demonstrate additionality is especially important if credits generated by activities in an uncapped sector are allowed to be used as offsets for emission reductions in a capped sector rather than retired. The counterfactual nature of additionality

¹ See for example Harris, N., Pearson, T., Brown, S., Andrasko, K., Lotsch, A., Kapp, G. (2012). Draft Methodological Framework for Developing Reference Levels for REDD+. Winrock International for Forest Carbon Partnership Facility. 26pp.

² 3/CMP.1, Annex, paragraph 43

makes it impossible to prove with complete certainty.³ At the same time, overly stringent definitions of additionality can create burdensome and costly requirements that discourage actions to reduce emissions. Fortunately, national or jurisdiction-wide accounting may provide an effective means for addressing this issue through the conservative setting of RLs or crediting baselines. Higher scales of implementation (e.g. national) also tend to mitigate some concerns regarding additionality by averaging out over- and underestimates of local BAU emissions.⁴

In addition, there are questions related to ensuring transparency of data and methods (Question 6), updating reference levels (Question 9), and setting forth procedures for reconciling reference levels and additionality across initiatives at multiple scales (Question 10)

Relevant guidance from the Carbon Fund or UNFCCC:

Carbon Fund principle: The following was agreed at PC12...

ERs from an ER Program should be conservatively measured and reported relative to a transparently presented and clearly documented forest reference emission level (REL) or forest reference level (RL) for the ER Program area, following the guidance of the Carbon Fund Methodological Framework and informed by the emerging national REL/RL.

Rationale: (a) Per UNFCCC REDD+ texts and discussions internationally and the FCPF Charter, the performance of REDD+ activities (and ER Programs for the CF) would be measured against a pre-established forest reference emission level and/or forest reference level. (b) The CF should have flexibility to provide guidance on how ER Programs should set their own reference level, to meet its needs and to ensure environmental integrity. Detailed, operational methods have not yet been proposed by the UNFCCC, and may be proposed for the CF in its evolving Methodological Framework

UNFCCC agreements: COP-15 (Copenhagen) was the first UNFCCC decision to provide guidance to developing countries for establishing forest REL/RLs:

[from Decision 4/CP.15, paragraph 7] "Recognizes that developing country Parties in establishing forest reference emission levels and forest reference levels should do so transparently taking into account historic data, and adjust for national circumstances, in accordance with relevant decisions of the Conference of the Parties."⁵

COP-17 (Durban) provided further guidance on modalities relating to forest reference emission levels and forest reference levels⁶:

³ Streck, Charlotte: The Concept of Additionality under the UNFCCC and Kyoto Protocol: Implications for Environmental Integrity and Equity.

⁴ Busch, J., Lubowski, R., Godoy, F., Steininger, M., Yusuf, A., Austin, K., Hewson, J., Juhn, D., Farid, M. and Boltz, F. (2012). "Structuring economic incentives to reduce emissions from deforestation within Indonesia." *Proceedings of the National Academy of Sciences of the United States of America* 109(4):1062-1067.

⁵ <http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf#page=11>

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"

[Relevant preambular text] Being aware of the need for any modalities for the construction of forest reference levels and forest emission reference levels to be flexible so as to accommodate national circumstances and capabilities, while pursuing environmental integrity and avoiding perverse incentives,

Modalities for forest reference emission levels and forest reference levels

7. *Agrees* that, in accordance with decision 1/CP.16, paragraph 71(b), forest reference emission levels and/or forest reference levels expressed in tonnes of carbon dioxide equivalent per year are benchmarks for assessing each country's performance in implementing the activities referred to in decision 1/CP.16, paragraph 70;

8. *Decides* that forest reference emission levels and/or forest reference levels, in accordance with decision 1/CP.16, paragraph 71(b), shall be established taking into account decision 4/CP.15, paragraph 7, and maintaining consistency with anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks as contained in each country's greenhouse gas inventories;

9. *Invites* Parties to submit information and rationale on the development of their forest reference emission levels and/or forest reference levels, including details of national circumstances and if adjusted include details on how the national circumstances were considered, in accordance with the guidelines contained in the annex to this decision and any future decision by the Conference of the Parties;

10. *Agrees* that a step-wise approach to national forest reference emission level and/or forest reference level development may be useful, enabling Parties to improve the forest reference emission level and/or forest reference level by incorporating better data, improved methodologies and, where appropriate, additional pools, noting the importance of adequate and predictable support as referenced by decision 1/CP.16, paragraph 71;

11. *Acknowledges* that subnational forest reference emission levels and/or forest reference levels may be elaborated as an interim measure, while transitioning to a national forest reference emission level and/or forest reference level, and that interim forest reference emission levels and/or forest reference levels of a Party may cover less than its entire national territory of forest area;

12. *Agrees* that a developing country Party should update a forest reference emission level and/or forest reference level periodically as appropriate, taking into account new knowledge, new trends and any modification of scope and methodologies;

13. *Invites* developing country Parties, on a voluntary basis and when deemed appropriate, to submit proposed forest reference emission levels and/or forest reference levels, in accordance with decision 1/CP.16, paragraph 71(b), accompanied by the information referred to in paragraph 9 above;

14. *Requests* the secretariat to make available information on forest reference emission levels and/or forest reference levels on the UNFCCC REDD web platform,¹ including submissions with proposed forest reference emission levels and/or forest reference levels;

15. *Agrees* to establish a process that enables technical assessment of the proposed forest reference emission levels and/or forest reference levels when submitted or updated by Parties in accordance with paragraph 12 above and in accordance with guidance to be developed by the Subsidiary Body for Scientific and Technological Advice at its thirty-sixth session.

COP-17 (Durban) also provided guidelines for submissions of information on reference levels.⁷

Each developing country Party aiming to undertake the actions listed in decision 1/CP.16, paragraph 70, should include in its submission transparent, complete,¹ consistent with guidance agreed by the Conference of the Parties (COP), and accurate information for the purpose of allowing a technical assessment of the data, methodologies and procedures used in the construction of a forest reference emission level and/or forest reference level. The information provided should be guided by the most recent Intergovernmental Panel on Climate Change guidance and guidelines, as adopted or encouraged by the COP, as appropriate, and include:

(a) Information that was used by Parties in constructing a forest reference emission level and/or forest reference level, including historical data, in a comprehensive and transparent way;

(b) Transparent, complete, consistent and accurate information, including methodological information, used at the time of construction of forest reference emission levels and/or forest reference levels, including, inter alia, as appropriate, a description of data sets, approaches, methods, models, if applicable and assumptions used, descriptions of relevant policies and plans, and description of changes from previously submitted information;

(c) Pools and gases, and activities listed in decision 1/CP.16, paragraph 70, which have been included in forest reference emission levels and/or forest reference levels and the reasons for omitting a pool and/or activity from the construction of forest reference emission levels and/or forest reference levels, noting that significant pools and/or activities should not be excluded;

(d) The definition of forest used in the construction of forest reference emission levels and/or forest reference levels and, if appropriate, in case there is a difference with the definition of forest used in the national greenhouse gas inventory or in reporting to other international organizations, an explanation of why and how the definition used in the construction of forest reference emission levels and/or forest reference levels was chosen.

Summary of Approaches of Various Initiatives

Relationship to UNFCCC: Some guidelines and methodologies for establishing baselines exist under the UNFCCC REDD+ decisions, as well as KP LULUCF and KP CDM A/R. Some bilateral agreements and voluntary standards have specified a relationship to the UNFCCC. For example, the reference level created under the **Guyana-Norway MOU** is provisional, pending the determination of a UNFCCC reference level methodology. The **Verified Carbon Standard Jurisdictional & Nested REDD+ (VCS JNR)** requirements state that where a baseline is approved under the UNFCCC, the jurisdictional baseline shall be updated (and harmonized) and revalidated within 18 months of such approval.

Performance and crediting: REDD+ REL/RLs have been defined by the **UNFCCC** at COP-17 as "*benchmarks for assessing each country's performance.*"⁸ It remains unclear how reference levels would relate to pay-for-performance financing for an offset-like mechanism. Some countries have considered defining a separate crediting baseline to use to provide pay-for-performance finance.⁹ Other countries have proposed including a "development adjustment factor;" this has included, for example, discussion among some of whether emerging economies should factor in domestic (self-finance) efforts to mitigate GHG emissions. Other types of crediting rules have been used. For example, under the **Guyana-Norway**

⁷ Annex to Decision 12/CP.17, "Guidelines for submissions of information on reference levels."

⁸ Decision 12/CP.17 *Modalities for forest reference emission levels and forest reference levels*. Paragraph 7.

⁹ Angelsen, A., D. Boucher, S. Brown, V. Merx, C. Streck, D. Zarin. (2011) *Guidelines for REDD+ Reference Levels: Principles and Recommendations*. Meridian institute.

MOU, bilateral payments are based on emission reductions below the reference level. In addition, payments are made on a sliding-scale basis; a reduction factor is applied to payments if emissions rise above certain levels, and are reduced to zero if the deforestation rate rises above a cut-off level of 0.1%/yr.¹⁰ Alternatively, under the **Amazon Fund, VCS JNR, Rainforest Standard (RFS™)** and American Carbon Registry (**ACR**), any emission reductions below the baseline (equivalent to an RL) may be used for generating offset credits.

Additionality: Additionality has its roots in Article 12.5(c) of the **Kyoto Protocol**, which states that emission reductions in the Clean Development Mechanism (CDM) shall be certified only if they are *additional to any that would occur in the absence of the certified project activity*. Establishing a workable way to judge whether reductions in emissions are additional to what would have happened in the absence of the activity is one of the most common reasons why CDM methodologies are rejected, i.e. project proponents often are unable to credibly demonstrate additionality.

The CDM Executive Board has adopted a tool for the demonstration and assessment of additionality in A/R activities as a general framework for establishing additionality. The additionality tool sets out a four-step process to demonstrate and assess additionality¹¹: preliminary screening based on the starting date of the A/R project activity; identification of realistic and credible alternatives to the project activity; investment analysis or barrier analysis; common practice analysis.

UNFCCC REDD+ decisions have not directly addressed additionality. However, some may interpret UNFCCC decisions that REDD+ activities should: (a) contribute to Article 2 of the Convention, and (b) be consistent with the objective of environmental integrity—as providing guidance relevant to additionality. In particular, that financial or regulatory incentives should create emission reductions that are additional to what would have occurred in the absence of such incentives.

All project-level offset initiatives to date have required that all approved projects be additional. The **CDM** and **VCS** relies upon investment analysis, barrier analysis, and common practice analysis, while other national and private initiatives (California’s **AB32**; Australia’s **Carbon Farming Initiative; RFS™**) have placed a greater emphasis on legal requirement tests, performance tests, and positive lists. In terms of higher-scale initiatives, the **KP LULUCF rules for Annex 1 countries** have not employed additionality tests to date. Under **VCS JNR**, the onus is on “rigorous baseline determination to provide a conservative benchmark for measuring reductions in GHG emissions such that any emission reductions relative to the baseline are considered additional.”

¹⁰ Gutman, P. and N. Aguilar-Amuchastegui (February 2012). Reference levels and payments for REDD+: Lessons from the recent Guyana-Norway agreement.

¹¹ Adapted from the “CDM Rulebook” (Baker & McKenzie), <http://cdmrulebook.org/86>.

Standard or Initiative	Scale	Additionality assessment required	Investment analysis	Barrier analysis	Common practice analysis	Legal requirement test	Performance test	Positive list
KP/LULUCF	National	NO						
KP/CDM	Project	YES	✓	✓	✓			
VCS-JNR	Jurisdiction	NO						
VCS	Project	YES	✓	✓	✓	✓	✓	✓
California's AB32	Project	YES				✓	✓	
Australia's Carbon Farming Initiative	Project	YES			✓	✓		✓
Rainforest Standard	Project	YES	✓			✓		

Historical emissions: Under the **Kyoto Protocol**, historical data—in particular, GHG emissions from the base year 1990—has historically been used to measure performance in all sectors. An exception is forest management activities, for which Kyoto Parties have recently agreed to use a more flexible measure, called a “forest management reference level” that allows the use of projected estimates as a baseline.

Very little guidance has been provided on how to construct reference levels for REDD+, although **UNFCCC REDD+** decisions suggest an approach that is flexible (allowing for some choice in pools, gases and activities), step-wise (allowing for improvements over time in data and methodologies), and transparent (countries submit information and a rationale). Existing guidance notes, *inter alia*, that the definition of forest chosen should be explained if it differs from that used in existing national greenhouse gas inventories, that the most recent IPCC guidance should be used for accounting, and that consistency should be maintained with countries’ greenhouse gas inventories.

Brazil uses a 10-year rolling average for its **Amazon Fund**. The initial base period is 1996-2005, updated every five years. The historical deforestation baseline for the **Guyana-Norway MOU** is the mean value for the 2000-2009 period. The **VCS JNR** specifies a base period of 8-10 years ending within two years of the start of the (current) jurisdictional baseline period. JNR requires that both the historical annual average and the historical trend be presented, with the baseline being established as the more plausible of these two alternatives.

Adjustments for national circumstances: Parties agreed at COP-15 in 2009 that REDD+ REL/RLs should “take into account historic data” but also “adjust for national circumstances in accordance with relevant decisions of the Conference of the Parties.” An impetus for this decision was that baselines that are purely historical averages have been seen as problematic for “high forest cover, low deforestation” countries that are under increasing pressure from economic growth or agricultural expansion and that, absent additional policies or measures, would expect deforestation to increase.

Brazil's **Amazon Fund** does not use adjustments. The reference level for the **Guyana-Norway MOU** uses a "combined reference level" methodology based on an equal weighting of Guyana's mean 2000 - 2009 deforestation rate and the mean 2005 – 2009 rate in developing countries with deforestation. For the **VCS JNR**, the jurisdictional baseline may include adjustments to reflect national circumstances such as a projection based on changes in variables that influence deforestation such as population estimates and economic factors (eg, GDP or commodity prices), committed government policies and development plans, and other variables for which credible projections are available. The jurisdictional baseline also takes into account any relevant commitments by the jurisdictional government that are not intended to be financed via market mechanisms, as well as significant committed future emissions from infrastructure projects.

Neither **ACR** nor **RFS™** cover jurisdictional baselines, however they do provide guidance on establishing project baselines. The baseline for projects under the **VCS** and **ACR** is based on a counterfactual scenario that forecasts the likely stream of emissions or removals to occur if the Project Proponent does not implement the project, i.e., the "business as usual" case. The **VCS** and **ACR** distinguish between project baselines for planned deforestation, which can be directly calculated, and baselines for unplanned deforestation, which must be modeled. The **RFS™** states that historical data alone are not sufficient; site-specific drivers of deforestation must be addressed. **RFS™** has created three possible projected baselines: "documented prospective removals" based on a permit, map and timeline of authorized concessions; a "governmental removals baseline" based on a model published by a duly authorized governmental unit encompassing the entire project area; or a "validated removals baseline" if no governmental removals baseline exists. Any modeling approach or methodology for assessing site-specific drivers of deforestation must have been published in peer-reviewed literature and found to be valid.

Transparency: The UNFCCC requires Parties in their REL/RLs to provide information that allows for the reconstruction of forest reference emission levels and/or forest reference levels. This information includes as appropriate, a description of data sets, approaches, methods, models, if applicable and assumptions used, descriptions of relevant policies and plans, and description of changes from previously submitted information. Such transparency is also generally required by the other private and national initiatives covering REDD+.

Spatial resolution: The **UNFCCC REDD+** negotiations have agreed that REL/RLs are to be expressed in tonnes of carbon dioxide equivalent per year. The **Amazon Fund** and **Guyana-Norway MOU** use spatial data to calculate the reference level, but express this reference level as a single rate. The **VCS JNR** provides flexibility as to whether or not baselines are spatially explicit, except under certain scenarios when locations must be defined for emissions from planned vs. unplanned deforestation, large infrastructure projects, and geological or weather related impacts.

Scope: The **UNFCCC** has noted that significant activities should not be excluded from a REL/RL. The **Amazon Fund** and **Guyana-Norway MOU** reference levels currently include only deforestation. **VCS JNR** requires inclusion of deforestation in the baseline (and MRV); degradation and carbon stock enhancement are optional as long as procedures are in place to account for possible leakage from deforestation to degradation. Project-level initiatives set reference levels on an activity-by-activity basis (e.g. avoided deforestation and A/R), generally without integration or hierarchy.

Updating: Baselines under Brazil’s **Amazon Fund** are updated every five years based on the average historic rate of the previous 10 years. For the **VCS JNR**, the jurisdictional baseline shall be fixed for a period of 5 to 10 years as defined upfront by the jurisdiction, and shall be updated with the same frequency.

Multiple scales: Brazil’s **Amazon Fund** created a reference level at the very large sub-national scale, encompassing all or part of nine Brazilian states that contain the legal Amazon. As said earlier the Amazon Fund does not use adjustments. At the same time, States and projects are creating baselines. The majority of state-level programmes use a historical reference level, however some of them use a development adjustment factor for subsequent periods. For example the states of Mato Grosso and Para State present a progressive decrease on the deforestation rate for each period of the plan.

At the project level a variety of reference levels including both projected and historical baselines are used. The **Guyana-Norway MOU** reference level covers the entire nation with no nested jurisdictional or project baselines. The **VCS JNR** supports MRV and crediting at multiple scales, e.g. national-subnational; jurisdictional- project. Lower level programs or activities are required to harmonize and integrate (“nest”) their accounting frameworks, including baselines, with those of the higher scale; grandfathering periods apply to the frameworks established and registered first. **ACR’s** nested REDD+ framework provides guidance to projects on how they should fit within jurisdictional accounting regimes. The **RFS™** does not involve multiple scales

Standard or Initiative	Scale	Basic Approach	Reference period
UNFCCC REDD+	National, with interim sub-national option	“Based on historical data, adjusted for national circumstances”	
UNFCCC KP/CDM	Project (A/R only)		
UNFCCC KP QELROs	National	Projected for forest management, base year for other forest activities/categories	Commitment period
Brazil’s Amazon Fund	Very large sub-national	Historical with updates (10-year moving average)	10 yrs
Guyana-Norway MOU	National	Average of historical + global, with no payments if deforestation rises above a cut-off level	2000-2009
VCS-JNR	Jurisdiction (national or subnational)	Most demonstrably credible/robust option among historical, trend or modeled	5-10 yrs
RFS™	Project	Historical or projected allowed	
DRC proposed	Large area (2 million ha)	3 possible methods proposed: historical (10 year average), trend over 10 years, modeled based on drivers	
Costa Rica proposed	National		
Vietnam proposed	Subnational		

Options for the Carbon Fund, Including Advantages, Disadvantages and Considerations

1) Relationship to UNFCCC: How should reference levels for the Carbon Fund (CF) relate to the Reference Emission Levels/Reference Levels (REL/RLs) being created by countries for the UNFCCC?

Approach	Advantages	Disadvantages
Use same RL for CF as REL/RL for UNFCCC	<ul style="list-style-type: none"> • Avoids duplication of effort • Avoids risk of incompatibility between CF and UNFCCC 	<ul style="list-style-type: none"> • Available guidance from UNFCCC may not yet be sufficiently detailed • UNFCCC may require greater detail or larger scope, scale •
RL for CF is stepwise component of REL/RL for UNFCCC	<ul style="list-style-type: none"> • Avoids duplication of effort • Can allow for more limited scope, scale, data • Reduces risk of incompatibility between CF and UNFCCC 	<ul style="list-style-type: none"> • Available guidance from UNFCCC may not yet be sufficiently detailed
Different RL for CF than REL/RL for UNFCCC	<ul style="list-style-type: none"> • Provides more flexibility for operationalizing CF • Can use most appropriate data, methods for each • Data and methods will still inform UNFCCC 	<ul style="list-style-type: none"> • Duplication of effort • Risk of incompatibility between CF and UNFCCC may be viewed by some as the CF usurping UNFCCC/SBSTA processes and overstepping its mandate

2) Performance and crediting: What should be the relationship between a country's emission reductions relative to its reference level and the finance a country receives, e.g. should there be a separate crediting baseline and if so, how might it be constructed?

Approach	Description	Advantages	Disadvantages
Full crediting for emission reductions below RL	All reductions below the RL may be credited	<ul style="list-style-type: none"> • Simple; no negotiation • Provides greatest finance to REDD+ countries or jurisdictions, so likely to be widely supported by them 	<ul style="list-style-type: none"> • Does not leverage or recognize countries' "own effort"
Partial crediting for emission reductions below RL	Crediting baseline below RL: Reductions below the RL down to the crediting baseline reflect a country's own effort. Reductions below the crediting baseline are credited.	<ul style="list-style-type: none"> • Allows some REDD+ countries to be recognized for "own-effort" reductions • Conservative approach to addressing additionality • For CF, allows available funds to be shared more broadly across countries while leveraging ER contributions 	<ul style="list-style-type: none"> • Lowers the level of finance received by REDD+ country • Setting crediting baseline requires separate negotiation, potentially difficult decisions around "own effort" • Places all responsibility for first reductions on REDD+ country • May shut out countries or jurisdictions unable to

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			advance their REDD+ programs without compensation for initial reductions
	<p>Effort-sharing ratio: Reductions below the RL are shared between own effort and credits according to a pre-determined ratio (e.g. 1:1—half the reductions below the RL may be credited).</p> <p>Sliding scale approach: Credits based on a sliding scale of reductions: greater own-effort for initial reductions below the RL or crediting baseline than for deeper reductions (e.g. Guyana-Norway MOU)</p>	<ul style="list-style-type: none"> • Allows some REDD+ countries to be recognized for “own-effort” reductions • Conservative approach to addressing additionality • For CF, allows available funds to be shared more broadly across countries while leveraging ER contributions • Shares risk/financial responsibility for initial reductions between REDD+ countries and buying countries 	<ul style="list-style-type: none"> • Lowers the level of finance received by REDD+ country • Setting effort-sharing ratio requires separate negotiation • May shut out countries or jurisdictions unable to advance their REDD+ programs without compensation for all reductions
Cut-off level	<p>All reductions below the RL are paid for, but if and only if emissions remain below the cut-off level (e.g. Guyana-Norway MOU)</p> <p>Alternatively, excess emissions from one period could be deducted from crediting in the subsequent period (e.g. Amazon Fund)</p>	<ul style="list-style-type: none"> • For countries with “high forest cover, low deforestation emissions” (HFLD), rewards performance in maintaining low emissions rates without rewarding emissions increases 	<ul style="list-style-type: none"> •

3) Additionality: Should additionality be addressed and if so, should a conservative approach to the reference level or additionality tests be used?

Approach	Description	Advantages	Disadvantages
Separate Additionality tests	<p>Used to ensure that inputs to REDD+ programs (actions) wouldn't have occurred in the absence of the REDD+ program:</p> <ul style="list-style-type: none"> • Legal tests • Financial tests 	<ul style="list-style-type: none"> • Precedent exists 	<ul style="list-style-type: none"> • Participants in CDM, VCS have found such approaches cumbersome • May not be appropriate at higher scales where there is not one entity having control over the

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	<ul style="list-style-type: none"> • Common practices tests • Positive lists 		<p>activities and determining additionality of multiple inputs, actions is more complex</p> <ul style="list-style-type: none"> • Requires separate deliberations of what tests to be used, how, and by whom
Reference level at or below BAU	Used to ensure that outputs from REDD+ programs (emission reductions) wouldn't have occurred in the absence of the REDD+ program	<ul style="list-style-type: none"> • Straightforward approach • No additional tests required 	<ul style="list-style-type: none"> • Predicting BAU may be complex, inherently unverifiable (see above)
Conservative approaches to crediting relative to reference level	Used to ensure that fewer emission reductions are paid for than occurred relative to the absence of the program <ul style="list-style-type: none"> • Crediting baseline • Effort-sharing ratio • Sliding-scale basis 	<ul style="list-style-type: none"> • Straightforward approach • Simple calculations • Promotes “net positive” climate impact of offsetting 	<ul style="list-style-type: none"> • “Those particular” emission reductions may not be additional • Could penalize to jurisdictions unable to advance their REDD+ programs without full compensation •

4) Historical emissions: What reference period, reference region, and forest definition should be used to determine historical emissions?

Issue	Considerations
Reference period	<ul style="list-style-type: none"> • the period should be long enough to account for interannual variability in deforestation; • the period should be flexible enough to allow use of highest-quality data; • allowable dates should be specified enough to prevent cherry-picking of most-favorable dates; • the most recent date should be recent enough to plausibly capture ongoing trends; • the most recent date should be old enough to avoid perverse incentive of rewarding recent increases in deforestation for the purpose of raising the baseline • if the historic period goes to far back it might not capture recent trends that reduce deforestation (i.e recent lowering in deforestation rate in countries like Brazil)
Reference region	<ul style="list-style-type: none"> • it should be ensured that that reference region is actually a good representation of the project area in terms of drivers and actors as not to overestimate • the region should be specified enough to prevent cherry-picking of most-favorable borders (“gerrymandering”); • the region should maintain jurisdictional or ecosystem integrity; • the region should be large enough to address leakage; • the region should be large enough to allow for implementation of systemic public-sector interventions; • if the implementation region is different from the reference region, the reference region should be at a scales that captures trends occurring in area of implementation

5) Adjustments for national circumstances: How should national circumstances be reflected in the relationship between historical emissions and the reference level?

Approach	Advantages	Disadvantages
Historical reference level only (no adjustments)	<ul style="list-style-type: none"> • Simple • Transparent • There exists a true amount of historical emissions, though determining it accurately is a technical issue • May also be a reasonable estimate of BAU emissions for some countries 	<ul style="list-style-type: none"> • Likely to overestimate BAU for countries further along their forest transition curve and underestimate BAU for countries early in their forest transition curve • For countries with “high forest cover, low deforestation emissions” (HFLD), does not reward performance in maintaining low emissions rates; • Conversely, may direct the majority of finance to countries that have historically had high deforestation rates
Allow future projections	<ul style="list-style-type: none"> • May provide more realistic accurate (although subjective) estimate of BAU emissions for some countries • Flexibility would allow CF to work with wider range of countries • Could provide useful lessons for the development of UNFCCC REL/RLs 	<ul style="list-style-type: none"> • Technical sophistication • Future projections may be complex, non-transparent • Accuracy may be difficult to validate • Inherently unverifiable • Depending on how performance is linked to finance, countries more likely to project upward than downward • Requires separate negotiations on whether the CF should prescribe allowable approaches used to project future deforestation, or whether countries should be free to use their own approach (e.g. economic modeling; consideration of planned policies)
Allow development adjustment factor	<ul style="list-style-type: none"> • For countries with “high forest cover, low deforestation emissions” (HFLD), rewards performance in maintaining low emissions rates • For countries with low levels of development, doesn’t penalize allowable levels of deforestation 	<ul style="list-style-type: none"> • If adjustment factor exceeds BAU growth, national additionality will be compromised • Unless other countries’ RLs are adjusted downward, performance relative to aggregate historical levels will be compromised

6) Transparency: What standard of transparency regarding data and methods should be required for the approval of a reference level?

Approach	Advantages	Disadvantages
All information is made publicly available (e.g. on a Carbon Fund website; on a country website; upon request)	<ul style="list-style-type: none"> • Consistent with UNFCCC and CF standards of transparency 	<ul style="list-style-type: none"> • Some information could be sensitive

All information is made available to designated persons (e.g. Carbon Fund, expert reviewers, etc) , subject to confidentiality restrictions	<ul style="list-style-type: none"> Allows for validation of the credibility of the reference level, while protecting sensitive information 	<ul style="list-style-type: none"> Could be viewed as inconsistent with UNFCCC and CF standards of transparency Could be viewed as undermining the credibility of the reference level
Countries may withhold some or all information	<ul style="list-style-type: none"> Protects sensitive information 	<ul style="list-style-type: none"> Not consistent with UNFCCC and CF standards of transparency Undermines the credibility of the reference level

7) Spatial resolution: Can a reference level be based on the quantity of emissions within a jurisdiction, or is it also necessary to provide spatial resolution of where these emissions did or will occur?

Approach	Advantages	Disadvantages
RL is a single number of emissions expressed in tCO ₂ e/yr. Spatial resolution is a recommended step toward producing the number.	<ul style="list-style-type: none"> Simple Consistent with UNFCCC Aggregate deforestation estimates are generally more accurate than their component spatial distribution of deforestation emissions 	<ul style="list-style-type: none"> Non-spatial methods for projecting future emissions could be less accurate
RL is a single number of emissions expressed in tCO ₂ e/yr. Spatial resolution of deforestation and emissions is a required step toward producing the number and should be presented transparently .	<ul style="list-style-type: none"> Aggregate deforestation estimates are generally more accurate than their component spatial distribution of deforestation emissions Transparently shows component data and methods used to produce overall number 	<ul style="list-style-type: none"> Could be burdensome on countries with poor data availability or low capacity
Reference level includes both a number of emissions expressed in tCO ₂ e/yr and a spatially resolved map of where those emissions occur within the country.	<ul style="list-style-type: none"> Transparently shows component data and methods used to produce overall number Including spatial estimations in the required submission could hold spatial estimation techniques to higher standard than if information is merely provided transparently Facilitates integration (nesting) with lower level programs or projects 	<ul style="list-style-type: none"> Burdensome on countries with poor data availability or low capacity Techniques for projecting maps of future deforestation may be complicated, untransparent, difficult to verify Requiring maps may be seen as beyond the UNFCCC definition of reference level (expressed as tCO₂e/yr)

8) Scope: Are separate reference levels necessary for different activities (e.g. deforestation, degradation, carbon stock enhancement...) or can these be integrated into a single reference level?

Approach	Advantages	Disadvantages
Integrated RL for all activities	<ul style="list-style-type: none"> • Straightforward • What the atmosphere sees 	<ul style="list-style-type: none"> • Some activities may have better data or greater capacity than others
Hierarchy of activities: allows RL for some activities only if also RL for other activities (e.g. reforestation only if deforestation)	<ul style="list-style-type: none"> • Prevents a situation where a country's performance is measured as positive even as it is increasing emissions (e.g. if performance in reforestation is measured but not performance in reducing deforestation) 	<ul style="list-style-type: none"> • Some activities may have better data or greater capacity than others
Separate RLs for each activity	<ul style="list-style-type: none"> • Allows measurement of performance of higher-data or higher capacity activities to move forward more quickly 	<ul style="list-style-type: none"> • Could allow a situation where a country's performance is measured as positive even as it is increasing emissions (e.g. if performance in reforestation is measured but not performance in reducing deforestation)

9) Updating: For how long should the reference level be valid?

Approach	Advantages	Disadvantages
No updating necessary during CF program ERPA contract (e.g. to 2020)	<ul style="list-style-type: none"> • Simple • CF program is short (approximately five years) so single reference level may be considered adequate 	<ul style="list-style-type: none"> • Does not account for a variety of changes in conditions
Updating allowed or required	<ul style="list-style-type: none"> • Can more accurately account for a variety of changes (e.g. improved data, changes in key driver assumptions) – beneficial if RL is the primary tool by which additionality is addressed 	<ul style="list-style-type: none"> • Burdensome • Requires separate discussion of who is responsible for updating and when (e.g. after a fixed time period or on an <i>ad hoc</i> basis) • Creates additional uncertainties
Updating based on performance (i.e. rolling baseline)	<ul style="list-style-type: none"> • May be more reflective of BAU emission pathway – beneficial if RL is the primary tool by which additionality is addressed 	<ul style="list-style-type: none"> • Dilutes incentive to perform well in earlier periods since this will diminish measured performance in later periods

10) Multiple scales: If a country's REDD+ system involves multiple scales (e.g. a "nested" system), should different approaches to reference levels and additionality be considered at different scales?

Approach	Advantages	Disadvantages
Address RLs and additionality only at highest scale	<ul style="list-style-type: none"> • Country has internal flexibility to determine benefit sharing and crediting arrangements (e.g. how to consider RLs of any existing projects within the ER program boundary? Grandfathering, phase-out, etc) 	<ul style="list-style-type: none"> • Could result in individual projects that are not verified as additional

Address RLS and additionality in the same way at higher and lower scales	<ul style="list-style-type: none"> • Consistency across scales 	<ul style="list-style-type: none"> • Additionality tests at project-scale may not be feasible at national or jurisdictional scale • Reference level methods that are accurate at national or jurisdiction scale may be less accurate at site-scale • May not be consistent with RLS of existing projects
Address RLS and additionality differently at different scales	<ul style="list-style-type: none"> • Could use more appropriate/easier approach at either scale (e.g through reference level or conservative approaches to crediting at the higher scale, and through additionality tests at the sub-national scale) • Could more flexibly consider RLS of existing projects 	<ul style="list-style-type: none"> • Inconsistency across scales • Complicated

Potential Candidate Approaches for the Carbon Fund and Rationale

1. **The Carbon Fund should not require reference levels in ER programs to be the same as the REL/RLs that may be proposed under the UNFCCC. Rather, since in some cases reference levels for ER programs may be at the subnational or large-project/programmatic scale, reference levels should strive to be a stepwise component of the UNFCCC REL/RLs. Reference levels should be consistent with and inform the development of REL/RLs.**

2. **Flexibility on the use of reference levels and/or separate crediting baselines will best reflect the demonstration and piloting mandate of the Carbon Fund. The Fund should, however, ensure that environmental integrity is maintained. Piloting a diversity of approaches will allow for greater learning, both in operationalizing various methods for crediting, but also a sense of value and price discovery. The Carbon Fund may want to create voluntary guidelines that recommend when it is appropriate for a country to undertake its own effort, or suggested methods for effort sharing such as crediting baselines or effort-sharing ratios. Finally, the Carbon Fund should consider instruments such as “cut off levels” above which no finance is provided, to incentivize higher performance.**

3. **Additionality should be addressed through conservative approaches to setting reference levels or crediting baselines, rather than through additionality tests employed by project-level initiatives.**

4. **Rules for reference period and reference region should contain as much specificity as possible to avoid cherry-picking of most favorable dates or boundaries.¹² The reference region should**

¹² The following text provides an example of the level of specificity that should be required: “The end-date for the reference period should be the most recent date for which high-quality forest cover data is available prior to the start of the Carbon Fund.

not be smaller than the program region, and should be larger only with convincing justification. Forest definition should follow available guidance from UNFCCC decision 12/CP.17. Emissions should be calculated and expressed in tons (tCO₂e/yr).

5. Downward adjustments should be eligible under either Tranche A or Tranche B. Clear rules would need to be defined as to if and how upward adjustments may be permitted, particularly if such adjustments are to be eligible under Tranche A.
6. Information relating to the construction of the RL (data, methods, assumptions...) that is sufficient to enable the reconstruction of the RL should be made publicly available online.
7. Any spatial information used to construct the reference level should be made transparently available, but the reference level itself should be only the final number expressed in tons (tCO₂e/yr).
8. A RL that fully integrates data from all activities may not be practical for the CF, so a RL for ~~only one or more~~ the main activities included in the ER Program should be acceptable. However, deforestation should be included in the RL. [we need to discuss this – Ken]
9. The RL should remain valid for the lifetime of the ERPA (i.e. until 2020) without updating. However, voluntary updating to meet any new or revised standard or guidance should be encouraged, if it would be relatively cost effective and provide the country with advantages. [Ken edit to seek parallel to Approach paper handling of this issue]
10. If a program is operating at multiple scales, the CF rules for RL and additionality should apply at the highest scale only (e.g., the national scale), maintaining environmental integrity at this scale while providing countries with the flexibility to determine RL and additionality in the context of national benefit sharing arrangements.

Annex : Useful Further Reading

Amazon Fund Project Document. <http://ebookbrowse.com/amazon-fund-pdf-d190992019>

American Carbon Registry. Methodology for REDD—Avoiding Planned Deforestation. v1.0, April 2011.
<http://americancarbonregistry.org/carbon-accounting/redd-2013-avoiding-planned-deforestation/ACR%20Methodology%20for%20REDD%20-%20Avoiding%20Planned%20Deforestation%20v1.0%20April%202011.pdf>

American Carbon Registry. REDD Methodology Modules. <http://americancarbonregistry.org/carbon-accounting/carbon-accounting/redd-methodology-modules-1>

Angelsen, A., D. Boucher, S. Brown, V. Merx, C. Streck, D. Zarin. (2011) *Guidelines for REDD+ Reference Levels: Principles and Recommendations*. Meridian institute.

The start-date for the reference period should be the most recent date for which comparable forest cover data is available that is at least ten years before the end-date.”

**FCPF Carbon Fund Methodological Framework Issue Paper #4:
Reference Levels**

- Busch, J., Lubowski, R., Godoy, F., Steininger, M., Yusuf, A., Austin, K., Hewson, J., Juhn, D., Farid, M. and Boltz, F. (2012). "Structuring economic incentives to reduce emissions from deforestation within Indonesia." *Proceedings of the National Academy of Sciences of the United States of America* 109(4):1062-1067.
- Busch, J., Strassburg, B., Cattaneo, A., Lubowski, R., Bruner, A., Rice, R., Creed, A., Ashton, R. and Boltz, F. (2009). "Comparing climate and cost impacts of reference levels for reducing emissions from deforestation." *Environmental Research Letters* 4:044006.
- The "CDM Rulebook" (Baker & McKenzie), <http://cdmrulebook.org/86>
- Climate Action Reserve. Forest Project Protocol Development, v3.2.
<http://www.climateactionreserve.org/how/protocols/forest/dev/>
- Government of Guyana and Government of Norway. Joint Concept Note. http://www.regjeringen.no/upload/MD/2011/vedlegg/klima/klima_skogprosjektet/Guyana/JointConceptNote_31mars2011.pdf
- Griscom, B., Shoch D., Stanley B., Cortez R., Virgilio N. (2009) Sensitivity of amounts of distribution of tropical forest carbon credits depending on baseline rules. *Environmental Science and Policy* 12(7), 897–911.
- Gutman, P. and N. Aguilar-Amuchastegui (February 2012). Reference levels and payments for REDD+: Lessons from the recent Guyana-Norway agreement.
- Harris, N., Pearson, T., Brown, S., Andrasko, K., Lotsch, A., Kapp, G. (2012). Draft Methodological Framework for Developing Reference Levels for REDD+. Winrock International for Forest Carbon Partnership Facility. 26pp.
- Martin Herold, Louis Verchot, Arild Angelsen, Danae Manlatis and Simone Bauch, "A step-wise framework for setting REDD+ forest reference emission levels and forest reference levels", CIFOR info brief, April 2012.
- Martin Herold, Arild Angelsen, Louis Verchot, Arief Wijaya and John Herbert Ainembabazi, "A stepwise framework for developing REDD+ reference levels", (2012). Ch. 16 in *Analyzing REDD+: Challenges and Choices*, Edited by Arild Angelsen, Maria Brockhaus, William Sunderlin and Louis Verchot. CIFOR, Bogor, Indonesia. 426pp.
- Streck, C.: The Concept of Additionality under the UNFCCC and Kyoto Protocol: Implications for Environmental Integrity and Equity.
- UNFCCC SBSTA Decision 4/CP.15. "Methodological guidance for activities relating to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
- UNFCCC SBSTA 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"