

## Forest Carbon Partnership Facility (FCPF)

### Proposed Valuation and Pricing Approach for the Carbon Fund

DRAFT FOR DISCUSSION

August 31, 2011

*The objective of this note is to propose an approach for setting a price for Emission Reductions generated by REDD+ programs under the Carbon Fund of the FCPF. It is presented to the Carbon Fund Participants in order to get their inputs and guidance on the way forward in view of adoption by the Participants Committee of policy guidance on a valuation/pricing methodologies for Emission Reductions Payment Agreements, as provided for in Article 11.1 (f) of the FCPF Charter.*

*An initial valuation and pricing note was circulated and discussed in 2008 with a number of FCPF Participants and observers representing REDD Countries and potential Carbon Fund Participants. Progress made by the FMT was presented regularly at FCPF Participants Committee meetings as well as during the first organizational meeting of the Carbon Fund in May-June 2011. It was agreed during this organizational meeting that policy guidance on the valuation and pricing approach should be adopted by the Participants Committee by June 2012.*

*This note does not attempt to suggest what value, if any, the Emission Reductions from REDD+ Programs should have in respect of the present or future climate change regimes, let alone whether REDD+ should be linked to carbon markets.*

## **1. Background**

### **1.1 Update on Recent Regulatory Developments**

A historical development was achieved at the sixteen session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) (COP16). For the first time, the importance of stemming the loss of tropical forests for mitigating global climate change with financial support from the industrialized world was enshrined in an international agreement, which will eventually become part of a new climate regime starting in January 2013.

All developing country activities referred to as “REDD+” are now eligible for support. Emissions from forests will now have to be accounted at the national level, possibly starting at the sub-national level as an interim measure. However, the principles or objectives of the Cancun decision will still need to be operationalized.

With regard to financing, the Cancun CP.16 decision on REDD+ defines the sources of funding for the first two phases of REDD+: paragraph 76 “urges Parties, in particular developed country Parties, to support, through multilateral and bilateral channels, the development of national strategies or action plans, policies and measures and capacity-building, followed by the implementation of national policies and measures, and national strategies or action plans, that could involve further capacity building, technology development and transfer and results-based demonstration activities.”

Regarding the so-called ‘third phase’ of REDD+, paragraph 77 of the Cancun CP.16 decision on REDD+ “requests the Ad Hoc Working Group on Long-term Cooperative Action under the Convention to explore financing options for the full implementation of the results-based actions referred to in paragraph 73 above, and to report on progress made, including any recommendations for draft decisions on this matter, to the Conference of the Parties at its seventeenth session.” It is in this context that, under the UNFCCC, a role may be defined for the private sector, including through the carbon market.

Other regulatory frameworks are emerging. The most advanced one which could create demand for REDD+ is the California's cap-and-trade system, which is expected to become operational on January 1, 2013. The system, could be linked to other regional schemes within the USA and Canada, and would allow offsets equal to 8% of total volume. The most favored source of international offsets is REDD+. The eligibility criteria for REDD+ offsets to enter the California system (e.g., baseline, social and environmental safeguards, etc.) are still to be defined, but it is likely that preference will be given to offsets produced by states that have signed memoranda of understanding with California (so far, Acre from Brazil and Chiapas from Mexico).

### **1.2 Role and Positioning of the Carbon Fund**

The Carbon Fund’s strategic objective is to pilot performance-based payment systems for Emission Reductions generated from REDD+ activities, with a view to ensuring equitable benefit sharing and promoting future large scale positive incentives for REDD+. The Carbon Fund will also seek to disseminate broadly the knowledge gained in the development and implementation of Emission Reductions Programs (ER Programs).

The Carbon Fund will deliver Emission Reductions (ERs) from REDD+ activities to the Carbon Fund Participants. The ERs are all the rights, titles, and interests attached to a tonne of ER.

The Carbon Fund was declared operational on May 27, 2011. Its current capitalization amounts USD 215 million (commitments and pledges), including two participants from the private sector.

Under the Carbon Fund, about five forest countries participating in the FCPF, whose Readiness Package has been endorsed by the Participants Committee, will enter into an Emission Reductions Payment Agreement (ERPA) for an amount of USD 40 million on average, payable over several years. The programs selected by the Carbon Fund ought to be undertaken at a significant scale, e.g., at the level of an administrative jurisdiction within a country or at the national level, align with the proposed national REDD+ strategy and management framework, and be consistent with the emerging national REDD+ MRV system and national reference emission level.

As indicated in the Issues Note<sup>1</sup>, the Carbon Fund will target ER Programs that:

1. Are submitted by the governments or government-approved entities of countries that are FCPF REDD Country Participants;
2. Focus on performance and performance-based payments, i.e., payments for ERs relative to an agreed reference emission level (REL) and/or forest reference level (FRL);
3. Generate high-quality and sustainable ERs (including environmental and social benefits, and minimization of the risk of reversals);
4. Are consistent with emerging compliance standards under the UNFCCC and other regimes, as applicable;
5. Are based on transparent stakeholder consultations;
6. Use clear and transparent benefit-sharing mechanisms and enjoy broad community support; and
7. Generate learning value by testing and demonstrating different approaches that can inform the international community.

Sub-national ER Programs should also:

8. Be undertaken at a significant scale, e.g., at the level of an administrative jurisdiction within a country or at the national level, in line with the proposed national REDD+ management framework;
9. Be consistent with the (emerging) national REDD+ strategy and recognized as such by the appropriate national authority;
10. Demonstrate capacity to measure and report on ERs. The system should be consistent with the (emerging) national REDD+ MRV system;
11. Be consistent with the national REL/FRL, or with the national approach establishing the REL/FRL;
12. Be integrated in a national institutional framework that will manage and coordinate sub-national programs; and

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<sup>1</sup> The Issues Note is available at <http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/Mar2011/FCPF%20Carbon%20Fund%20Issues%20Note%2002-09-11.pdf>.

13. Provide for an assessment of and measures to minimize the risk of displacement of emissions, reversals and other relevant risks.

## 2. Price Formation

For the FCPF to meet its demonstration goal, it is important that the Carbon Fund's proceeds be used strategically. The payments by the Carbon Fund will have to be sufficient to provide comfort to REDD+ Countries that they can count on a certain financial incentive in the future subject to them generating the expected ERs. As well, the Carbon Fund Participants need to know what their maximum financial liability is, and if the prices they are expected to pay are competitive relative to other opportunities they have within and outside the carbon market.

The objectives of proposed pricing and valuation approach are to:

- Entice parties to transact ERs from REDD+ and protect their respective interests and rights in a reasonable manner;
- Propose transparent mechanisms that reflect the risk allocation between parties and allow for risk and benefit sharing;
- Reflect the quality of ERs generated by each ER Program, including non-carbon values as appropriate; and
- Leave room for adjustments to align with emerging guidelines under the UNFCCC and other regimes, as applicable, and as demand and supply for ERs from REDD+ activities evolve.

It is proposed that the price of a given ERPA reflect a combination of exogenous and endogenous factors. Specifically, the price of an ER would be based on a reference price that depends on external factors (e.g., market conditions) and on the quality of the ERs at hand.

In the formula below, the price paid for the ERs ( $Price_{ER}$ ) is a function of a reference or base price ( $Price_{base}$ ) adjusted upwards or downwards to take into account the quality of the expected ERs ( $Adjustment_{quality}$ ):

$$Price_{ER} = Price_{base} \pm Adjustment_{quality}$$

### 2.1 Base Price

A key determinant of the price of an ER to be generated from a given ERPA is the price that comparable or relevant ERs fetch in other circumstances. Three options are reviewed below.

#### 2.1.1 Transaction Benchmarks

The base price would be the price (or the average of prices) paid for similar ERs or services in other situations than the FCPF Carbon Fund. A survey would shed light on these this price or price average.

Such an approach presents the advantage of proposing a reference that is based on real transactions. However, available references might be very different with respect to type, size and design, and thus not relevant to REDD+ or the ER Program at hand.

Based on what is currently observed, it would be difficult to determine a value based on a transaction benchmark given that there are few relevant precedents to draw from. Most REDD+ initiatives are undertaken at the project level for the voluntary market. Those projects often have very different characteristics than, and are therefore difficult to compare with, large-scale national or sub-national ER Programs. In addition, the voluntary market for land-based carbon, including REDD+, is characterized by:

- A large number of transactions but fairly small volumes;
- Pre-compliance speculation;
- Voluntary commitments and philanthropy;
- Various certification standards in existence or in preparation; and
- Prices that vary widely as a function of the motivations of buyers and sellers.

These characteristics limit the usefulness of the voluntary market price observations for price setting under the FCPF's Carbon Fund, but the voluntary market remains a good indicator of the nature and characteristics of forest carbon transactions. In 2010 land-based carbon transactions occupied the largest share of the voluntary carbon market, making up 46% (28 Mt CO<sub>2</sub>e) of the total voluntary ("over-the-counter") market by volume. Transactions categorized as REDD projects by themselves made up 29% of the total voluntary carbon market by volume.<sup>2</sup> This was helped by REDD methodologies being finally approved the first REDD project issuing credits in early 2011.<sup>3</sup>

The findings of the *State of the Forest Carbon Markets 2011* report, to be published late September 2011, will provide a useful reference in terms of volumes and prices on the voluntary markets. Initiatives such as Norway's International Climate and Forest Initiative (USD 5 per ER for Brazil and Guyana) also provide useful references for price being paid under large-scale operations.

### 2.1.2 Market Quotations

Instead of a survey, price quotations could be requested from independent third parties based on one or more real or hypothetical REDD+ transactions that are relevant to the FCPF Carbon Fund. These quotations would identify the willingness to pay or sell at the present stage and thus the base price. Independent think tanks, carbon brokers and financial intermediaries would

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<sup>2</sup> *State of the Voluntary Carbon Markets 2011*, Ecosystem Marketplace and Bloomberg, available at [http://www.forest-trends.org/documents/files/doc\\_2828.pdf](http://www.forest-trends.org/documents/files/doc_2828.pdf).

<sup>3</sup> For example, in February 2011, the Kasigau Corridor REDD project in Kenya, developed by Wildlife Works, issued the first REDD Carbon credits under the VCS. The project issued 1.16 million credits for the initial six-year monitoring period of its 30-year project life, representing 80 percent of the total 1.45 million tons of GHG emissions avoided during the period. The project deposited 290,066 'buffer credits' – or 20 percent of the net GHG benefit – to the VCS pooled buffer account, where they will be held to insure against the potential loss of credits across all projects in the VCS AFOLU portfolio. Prior to this issuance, Wildlife Works had successfully developed its own REDD+ methodology and had it approved by the VCS Program. Pursuant to a financing agreement between BNP Paribas and Wildlife Works for this project, BNP Paribas has the option to purchase 1.25 million tons of these emission reductions over five years.

be asked to provide quotations to the FCPF to arrive at the base price. The base price may be determined to be the average of the various quotations received.

In case the quotations are limited to buyers' prices, in other words willing to pay, such an approach would favor the Carbon Fund Participants, as it would not reflect willingness to sell. It may also be difficult to identify the independent third parties and find relevant transactions.

### 2.1.3 Auctions

In lieu of a survey or independent price quotations, an auction mechanism, whereby a certain quantity of ERs are offered for sale and buyers compete for these ERs, may be an efficient way to discover the buyers' true willingness to pay. Auctions may provide an interesting option for price discovery when large quantities are put for sale and when there is enough competition from interested buyers.

The exact conditions under which an auction could prove efficient for REDD+ ERs still need to be assessed. Also, the modalities of an auction, if any, have to be precisely determined. Appendix 1 contains some of the questions that would need to be addressed.:

The FMT proposes to further explore the feasibility of an auction mechanism in the context of REDD+ ERs and to elaborate on the modalities under which an auction might be considered as a valuation option under the Carbon Fund.

## 2.2 Base Price: Fixed and/or Floating?

The base price (or reference price) could be fixed or vary over time. The proposal is to create flexibility so that the base price can be one of the following: (i) a fixed value such as the value agreed at the time of signing the ERPA; (ii) a floating value depending on future, uncertain, conditions; or (iii) a combination of fixed and floating value.

Appendix 2 contains a comparative analysis of the pros and cons of each option. The combination allows the REDD Country Participant or its approved ER Program entity (referred to below as "seller") and the Carbon Fund Participants (referred to below as "buyer") to benefit (partially) from the relative advantages of fixed and variable pricing, while limiting (though not eliminating) the disadvantages.<sup>4</sup>

The base price would be determined as a function of a fixed proportion/value and a floating proportion/value according to the following formulae:

$$\begin{aligned}P_{base} &= P_{fixed} + P_{floating} \\P_{base} &= P_{fixed} + x(P_{deliv} - P_{fixed}) \\P_{base} &= P_{fixed} + xP_{deliv} - xP_{fixed} \\P_{base} &= (1 - x)P_{fixed} + xP_{deliv}\end{aligned}$$

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<sup>4</sup> The terms "buyer" and "seller" are short-hand for the REDD Country Participant or its approved ER Program entity and the Carbon Fund Participants, respectively. These terms do not imply the existence or creatino of a market and apply equally to Tranche A and Tranche B transactions, regardless of the clear legal distinctions between the two Tranches with respect to the use of the generated ERs.

The floating value/portion is the difference between the reference price observed at the time of ER delivery ( $P_{deliv}$ ) and the fixed price guaranteed at the time of ERPA signature ( $P_{fixed}$ ). This difference is weighted by a factor  $x$ , which represents the preference (between 0 and 100%) for taking advantage of price fluctuations in the future.

The fixed value/portion ( $(1-x)P_{fixed}$  in the formula) would be set at the time of signing the ERPA and would be constant for the duration of the ERPA. It would guarantee a minimum flow of carbon revenues as long as the ERs are delivered.

The floating value/portion ( $xP_{deliv}$ ), which would be determined based on observed conditions at the time of the payment for the ERs, would enable the seller and buyer to adjust to price fluctuations. The seller and buyer would be able to respond to potential price rises by sharing the corresponding upside, i.e., the difference between the price agreed at the time of ERPA signature and the value observed at the time of the ER payment. Alternatively, they would be able to respond to potential price reductions by sharing the corresponding downside, i.e., the difference between the ERPA price and the value observed at the time of the ER payment.

The relative weights of the Fixed and Floating Values (depending on the level of  $x$  in the above formulae) could either be fixed at the same level for all ERPAs or left open for negotiation between seller and buyer for each ERPA. For example,

- $x$  could be set at 100%, which would be equivalent to a fully fixed price;
- Vice versa,  $x$  could be set at 0%, which would be equivalent to a fully floating price;
- In all cases in-between, a minimum price is guaranteed and the upside or downside is shared between the seller and buyer. For illustration purposes, a 50/50 share would mean that 50% of the Fixed Value is the guaranteed minimum price (even if the ERs value at the time of ER delivery is zero) and that upside or downside is shared equally between the seller and buyer. The share will therefore depend on the extent to which the seller and buyer are willing to take a price risk, with potential downside or upside.

It is possible to limit the price upsides and downsides to levels that are comfortable for the seller and buyer by setting a floor below which the price is not allowed to drop and/or a ceiling above which the price is not allowed to rise. In this case, the ER price would fluctuate above a price floor, below a price ceiling, or within a band bound by the floor price and the price ceiling.

### **2.3 Price Adjustments**

The ER Programs to be selected under the Carbon Fund will have to meet minimum quality standards and have adequate risk mitigation measures put in place. However, the quality of the ERs delivered will likely differ from one ER Program to another. Except if an auction mechanism is applied<sup>5</sup>, this difference in quality is not reflected in the price. The base price arrived at using the formulae described in Section 2.2 could therefore be adjusted, upwards in the form of a price premium or downwards in the form of a price discount, based on the quality of the ERs from the respective ER Program.

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<sup>5</sup> An auction mechanism would lead to a price that already reflects the perceived inherent characteristics of the ER Programs, including its additional benefits and the quality of the ERs. The price obtained through auctioning would therefore not need to be adjusted for quality.

For the purpose of this pricing adjustment, the quality of an ER Program would be assessed with regard to the following six elements:

1. Data quality;
2. Methodological aspects;
3. Consistency with national REL and MRV system;
4. Measures to address the risk of reversibility;
5. Measures to address the risk of displacement; and
6. Social and environmental benefits.<sup>6</sup>

These elements are the same as those proposed to make up the ER quality profile in the Carbon Fund's methodological approach. Other characteristics (such as social risk, political risk and overall delivery risk) will have an impact on the actual ER volumes generated by the ER Program and are not proposed to be included in the ER quality assessment.

The proposal consists of assigning a price premium or discount depending on the quality of the ER Program (what is referred to as "stage" in the methodological approach). The principle would simply be that an ER Program the quality of which is scored higher would obtain a higher price than an ER Program with a quality that scored lower.

The proposal would be as follows. ER Programs assessed to be at stage 2 quality (medium) would receive the base price. ER Programs assessed to be at stage 3 quality (high) would receive the base price plus a premium. ER Programs assessed to be at stage 1 quality (low) would receive the base price minus a discount. To keep things simple to start with, the premium and discount would be a percentage of the fixed portion of the base price namely the fixed price agreed at the time of delivery. However, the premium could also be applied to the sum of the fixed portion and the floating portion.

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<sup>6</sup> ERs from REDD+ will not be created equal. In most cases they will feature, in addition to climate change mitigation benefits, a range of additional benefits, in particular for local people and the local environment. For example, REDD+ activities could enhance biological diversity by protecting and restoring natural habitat by concentrating ER Programs on biodiversity hot spots, or preserve or improve livelihoods for local communities by securing customary property or user rights to their forest land and the land's timber and non-timber forest products. REDD+ may also create synergy between the climate change mitigation and adaptation agendas by improving the resilience of communities and ecosystems to climate change.

## APPENDIX 1

### Questions on Auctions

- Who is participating in the auction?
  - If the participants in the auction are the Carbon Fund Participants, the auction result would be the price paid for the ERs (and not a parameter of the pricing formula above);
  - If the auction participants are external buyers, the auction result would be an input to the formula.
  - What would happen if the auction included both Carbon Fund Participants and external buyers?
- What is auctioned?
  - If the auctioned ERs are part of those contracted under the Carbon Fund, the Carbon Fund Participants would need to transfer part of the ERs delivered to them against payment by the participants in the auction. This represents a risk to the Carbon Fund Participants in case of pricing with a fixed and a variable component with a market downside: they would be paying to the ER Program a value above the auction price (in the spirit of downside sharing) but would only receive the auction price from the auction participants the.<sup>7</sup>
  - If the ERs proposed are amongst those generated by the ER Program but not contracted under the Carbon Fund, there is always a risk that the auction cannot happen due to non-delivery or under-delivery. Even when the ER volume allows for the auction to happen, this implies there is no seniority (no priority in the pecking order among buyers) and no sweeping clause (i.e., no possibility to acquire quantities of ERs larger than provided for in the ERPA earlier to take advantage of faster delivery by the ER Program), leading to additional risk to the Carbon Fund Participants. It is also up to the REDD+ host country to decide whether or not it wishes to auction these additional ERs.
- When would the auction happen?
  - If an auction occurs at ERPA signing, the participants in the auction are offered future ERs. For an auction for future ERs to happen, there needs to be an expected demand exceeding the volume guaranteed by the Carbon Fund and a low delivery risk or very large expected volume. Whether or not these minimal conditions will be met when the first ERPA will be signed is unclear.
  - If an auction happens at the time of ER delivery, there is no advantage for the Carbon Fund Participants relative to any external buyers who could simply participate in the auction. Hence this would deter participating in the Carbon Fund. This disadvantage can be mitigated by offering the Carbon Fund Participants a right of first refusal for a given quantity of ERs on the auctioned volume and/or a price discount relative to the auction clearing price.

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<sup>7</sup> For example: If there is a 50/50 upside and downside sharing, with the value at ERPA signing being USD5 and the value at ER delivery (auction price) being USD3, the Carbon Fund would pay  $5/2 + 3/2 = \text{USD}4$  per ER, and they would be paid only USD3 from the auction participants.

## APPENDIX 2

### Comparative Analysis of Options for Setting the Base Price: Fixed, Floating and Fixed/Floating

Pricing Option	Pros	Cons
<p><b>Fixed price:</b> The base price is set at the time of ERPA signature and remains unchanged until the end of the ERPA</p>	<ul style="list-style-type: none"> <li>• Protects seller and buyer against uncertainty due to price fluctuations: guarantees seller against price drops and buyer against price increases</li> <li>• Simplicity, especially in the early years of REDD+ ER transactions, for which there is no clear price benchmark</li> </ul>	<ul style="list-style-type: none"> <li>• Fixed-price contracts may cause the base price to be out of synch with developments (e.g., market trends) and thus lead to perceptions of unfairness from the disadvantaged party over time (seller being paid too low a price, or buyer paying too high a price)</li> </ul>
<p><b>Floating price:</b> The base price is allowed to fluctuate over time. The level is determined at the time of ER delivery through indexation to a benchmark. The benchmark would be the price/value of a relevant ER or an other value deemed appropriate</p>	<ul style="list-style-type: none"> <li>• Ensures that the base price remains in synch developments (e.g., market trends) throughout the life of the ERPA</li> <li>• Allows the seller to benefit from potential upsides</li> <li>• Allows seller to benefit from potential upsides</li> <li>• Allows the sharing of upsides and downsides between seller and buyer</li> </ul>	<ul style="list-style-type: none"> <li>• Both parties are fully exposed to price fluctuations (no one knows for sure if and when there will be upsides or downsides)</li> <li>• Identifying the right index and/or benchmark can be challenging in the context of REDD+: ERs that will be generated by REDD+ programs are in many ways different from the current voluntary and compliance ERs and it is unlikely that a single benchmark will develop due to the heterogeneity of REDD+ transactions, risks and other attributes</li> <li>• If sellers and buyers prefer to take on the uncertainty inherent in floating prices, why would they agree to signing an ERPA, which is a forward contract? Other than securing a minimum</li> </ul>

Pricing Option	Pros	Cons
		<p>contract volume and/or value, they may be better off waiting for the right time and engage in spot transactions</p> <ul style="list-style-type: none"> <li>• Unless the fluctuations are bound (e.g., by a floor price and ceiling price), fund management is hard (fund capital is limited, while fluctuations are not)</li> </ul>
<p><b>Combination of fixed and floating price:</b> The base price is composed of a fixed portion and a floating portion. The fixed portion is set at the signature and for the term of the ERPA. The floating portion reflects the conditions at the time of ER delivery and is determined through indexation or by other means</p>	<ul style="list-style-type: none"> <li>• Partially guarantees the seller a minimum carbon revenue (through the fixed portion)</li> <li>• Partially allows seller to benefit from potential upsides</li> <li>• Partially protects the buyer against potential upsides</li> <li>• Allows the sharing of upsides and downsides between seller and buyer</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying the right index and/or benchmark for the floating portion can be challenging</li> <li>• Fund management for the floating portion is hard</li> </ul>

## Notes

<i>Adjustment</i>	Premium or discount applied to the base price
<i>Benef</i>	Social and environmental benefits (as quality factor)
<i>CER</i>	Certified emission reduction (in the Clean Development Mechanism)
<i>Consist</i>	Consistency with national REL and MRV system (as quality factor)
<i>Data</i>	Data quality (as quality factor)
<i>Leak</i>	Leakage (displacement) (as quality factor)
<i>Method</i>	Methodological aspects (as quality factor)
<i>NICFI</i>	Norway's International Climate and Forest Initiative
$P_{base}$	Base price resulting from the setting of a fixed portion and/or floating portion
$P_{deliv}$	Reference price at time of delivery, which derives the floating portion
$P_{ERPA}$	Price finally agreed in the ERPA
$P_{fixed}$	Fixed portion in base price
$P_{floating}$	Floating portion in base price
$P_{paid}$	Price paid at time of delivery
$P_{proposed}$	Price proposed after computation of base price and application of premium or discount