

Global Forest Carbon Financial Risk Management Best Practices: Discussion Workshop Paper

Executive Summary: Develop Standardized Financial Risk Management Guidelines^{1, 2}

Reflecting upon the US \$ 4.5 billion commitment to fund global REDD+ readiness at UNFCCC COP 15,³ maximizing the efficiency of private sector investment is the greatest challenge going-forward in efforts to mitigate climate change. Given that appropriate finance tools can leverage three to 15 times as much private investment⁴ over a similar public sector commitment, it is essential to develop standardized financial risk management best management guidelines to grow private sector global forest carbon markets to meet 2020 +2°C climate stabilization target.

Global forest carbon offset transactions are “commodity” forward contract transactions with the underlying asset represented as a metric ton carbon dioxide equivalent sequestered. The underlying commodities, i.e. the carbon sequestration tons, are purchased on a forward basis either pre-validation, after validation, or after verification. Therefore, willing buyers are investing in and purchasing the right to receive global forest carbon assets and/or the other underlying co-benefits at a future point in time.⁵ Because these forward purchased environmental assets have unique underlying economic and ecological characteristics, they, in turn, have unique financial risk and return parameters.

After years of research, design, and implementation, 24 individuals from 18 institutions met on November 16, 2010 to kick-start publicly a robust discussion on global forest carbon financial risk management best practices resulting in global forest carbon offsets that are real, measurable, verifiable, additional, insurable, and secured resulting in institutional investor preference.⁶ In conclusion, participants suggest compartmentalizing and segmenting risks so as to properly assign and price risk leading to providing assurance of contract completion and a trustworthy market. If risks are defined and parameterized, with risks properly assigned and priced, resulting in market assurance of contract completion on behalf of all stakeholders throughout all phases of project development, implementation, monitoring, reporting, and verification. Implementing this proactively, possibly as *Risk Management Scorecard* by standards, market regulators, auditors, project proponents, and stakeholders may result in attracting significant private sector investment allowing for mitigating climate change so as to meet 2020 +2°C climate stabilization targets.

Kind regards,

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¹ This paper reflects the views of the authors listed, integrating input from participants. The paper does not reflect the views of any particular workshop attendee or an overall consensus of the workshop. Workshop participants and invitees were given ample opportunity to review the text. No endorsement of the opinions of the authors is implied by the workshop participants. Gabriel Thoumi (gabrielthoumi@forestcarbonoffsets.net) is a Project Developer for Forest Carbon Offsets LLC (www.forestcarbonoffsets.net). He has extensive experience within the forest carbon finance sector. Cameron Prell (cprell@mcguirewoods.com) is Senior Counsel at McGuireWoods LLP (www.mcguirewoods.com) and has extensive experience within the forest carbon finance sector. Gus Kent has worked for 22 years designing innovative financial risk management mechanisms.

² The authors wish to thank for excellent leadership Gary Kochubka, Standard & Poor’s for his excellent leadership (gary_kochubka@standardandpoors.com) and Gary Dunning (gary.dunning@yale.edu), The Forests Dialogue.

³ Report for the Conservation Finance Alliance: National REDD+ frameworks and achieving REDD+ readiness – findings from consultation, PriceWaterhouseCoopers, http://www.pwc.com/id/en/publications/national_redd_funding_frameworks.jhtml.

⁴ Catalysing Low Carbon Growth in developing economies: Public Scale Mechanisms to scale up private sector investment in climate solutions, UN Environment Programme, http://www.unep.org/PDF/PressReleases/Public_financing_mechanisms_report.pdf.

⁵ Forest carbon assets can alternately be purchased on a spot basis, wherein the buyer agrees to purchase carbon sequestration tons that have already been registered and verified in a compliant credit registry system. Spot transactions are not the focus of this workshop.

⁶ *Forest Carbon is in the Climate Bill, but How do we Insure it? With Trees!* By Gabriel Thoumi and Gus Kent. May 14, 2010, <http://www.ecosystemmarketplace.com/>.

Section 1: 21st Century Secure and Sustainable Financial Services Framework

Global institutions need to focus immediate attention on innovative and workable financial mechanisms to stimulate stable, long-term financial flows into scaled-up low/no-carbon developed and developing country investments, while ensuring that public contributions maximize the leverage of the private sector. This requires a results-oriented process focusing on developing a secure and sustainable financial services framework for the 21st Century. This process to implement a secure and sustainable 21st Century financial framework best practices is presented and demonstrated in Table 1. Specifically, through financial insurance, market regulation, and compliance structures, risks can be parameterized, with risks properly assigned and priced, resulting in market assurance of contract completion. Table 1 demonstrates that by applying appropriate financial risk management tools, institutional investor funding can be secured for private sector global forest carbon offsets projects approaching the 1 gigaton of carbon sequestered annually needed to mitigate climate change.⁷

Table 1: Process to implement a secure and sustainable 21st Century financial framework while mitigating climate change risks

Financial process	21st Century financial framework requirements	Activities today that result in...	...outputs that result in...	...outcomes that result in...	...impacts that secure a sustainable 21st Century financial framework.
Financial accounting	Financial accounting and tax framework	Determine frameworks	Revenues and taxes accrue accurately	Trustworthy marketplace	Capital invests
Risk management	Financial insurance, market regulation, and compliance	Risk parameters described	Risks properly assigned and priced	Financial risk management products are available	Assurance of contract completion
Valuation	Financial analysis framework established	Establish financial analysis framework	Financial valuation capacity developed	Increased liquidity	Investments valued and transacted
Integration	Scientific and financial information integration	Data integration tools and networks implemented	Independent verification	Increased transparency	Investments monitored, reported and verified

To implement Table 1, workshop attendees discussed:

- What is an effective process for identifying, measuring, and managing risk?
- How can risks be parameterized, reported, aligned and priced throughout global forest carbon value chains?
- Which risks are barriers to entry for private sector institutional investors?
- Which risk management products and strategies can be implemented immediately?

⁷ Carbon Mitigation Institute, Princeton University, <http://cmi.princeton.edu/wedges/forestation.php>.

Section 2: Private Sector and Private-Public Sector Funding Sources

Table 2: Mitigating climate change financing estimates

Climate Financing Figures and Estimates		
Amount (US\$)	Purpose	Source
\$10.5 trillion	Total estimated additional investment (beyond BAU, redirecting capital from conventional to low-carbon technologies) required internationally in the energy sector in the period 2010-2030, consistent with +2°C climate stabilization target.	IEA
\$200 billion	Approximate additional energy sector investment required in developing countries in 2020, consistent with +2°C climate stabilization target.	IEA
\$139-175 billion	Annual mitigation costs in developing countries by 2030, consistent with a +2°C climate stabilization target.	World Bank
\$265-565 billion	Associated annual climate financing requirements by 2030 in developing countries, consistent with a +2°C climate stabilization target.	World Bank
\$75-100 billion	Estimated costs over the next forty years to support climate adaptation in developing countries consistent with a +2°C climate stabilization target.	World Bank
\$9 billion	Approximate amount of existing public contributions to climate change investments in developing world climate.	WEF
\$110 billion	Total sum of climate-related public sector commitment underway.	WEF
\$350 billion	Annual potential climate change financing shortfall.	WEF
\$12 trillion	Estimated amount of institutional pension funds AUM in 2010.	SWF Review
\$3.5 trillion	Estimated amount of sovereign wealth funds AUM in 2010.	SWF Review
\$100 billion	Under the non-binding Copenhagen Accord, the annual amount of climate financing committed by developed countries by 2020. Shared vision is +2°C climate stabilization goal.	UNFCCC
\$4.5 billion	2010-12 fast start funding directed at global forest carbon emissions.	PwC
\$1 billion	2010-12 US government funding directed at global forest carbon emissions.	US Government
\$15 trillion	2010 Global Investor Statement on Climate Change signed by 259 institutional investors and asset managers.	CERES

Table 2 illustrates that capital expenditures required to decarbonize the global economy must be jointly mobilized by public and private sectors, and that the vast majority of these resource requirements will have to come from the private sector institutional investment community which will require appropriately parametized, aligned, and priced risk metrics to engage the institutional investment community participation in global forest carbon finance.

Recent research with 259 institutional investors has found an immediate desire for appropriately assigning and pricing risk within climate change investments.⁸ These 259 institutional investors and asset managers represent US\$ 15 trillion in assets-under-management (AUM) who desire to participate in the large economic opportunities present as the global economy transitions into a low-carbon economy as long as risks are properly parametized, assigned and priced.

Section 3: Global Forest Carbon Financial Risk Management Best Practices

Table 3 describes proposed best practices for global forest carbon financial risk management best practices at the scale of the market, the project proponent, the project, and the credit.

⁸ [2010 Global Investor Statement on Climate Change](http://www.ceres.org/Document.Doc?id=648) signed by 259 institutional investors and asset managers asking for policies and tools optimize private investment in the low-carbon economy. <http://www.ceres.org/Document.Doc?id=648>.

Table 3: Proposed global forest carbon financial risk management best practices

Risks	Proposed Best Practices
Financial Accounting	Develop and institute financial accounting guidelines by Financial Accounting Standards Board (FASB) Emerging Issues Taskforce ⁹ and International Accounting Standards Board (IASB) ¹⁰ .
Taxes	(See financial accounting risk proposed best practices).
Legal	Develop standardized contracts, possible provided by the International Swap Dealers Association ¹¹ , for all over-the-counter futures / swap transactions with standardized claims adjustment written into the contract that provide for recourse for all stakeholders.
Regulatory	Mandate all project proponents have errors and omissions insurance, professional liability insurance, and if needed, directors and officers insurance, as audited regulators.
Settlement	Apply independent third-party escrow agreements for all registry participants, develop consistent settlements dates across sector, apply general business best practices with oversight by the Commodity Futures Trading Commission.
Operations	Implement standardized, best practices that demonstrate an explicit pathway to recourse. Appropriate insurance contracts should be available and competitively priced allowing for scalability within the developed and developing world. Project developers who work internationally should be insured for workers compensation claims. Policies need to be renewed periodically. Errors and omissions insurance should be set at least at US\$ 1,000,000. Foreign package policy add-ons should include foreign commercial liability, foreign commercial auto liability, foreign voluntary compensation and employers' liability, corporate kidnap and ransom / extortion insurance. Policies should include capacity to add subcontractors and independent contractors. Firms need professional liability insurance to list projects on standards and registries.
Liquidity	Engage Commodity Futures Trading Commission for oversight, and apply business best practices.
Credit	For debt issuance, require that the project proponent obtain a credit rating focusing on business line assessment risk, structural assessment, and sovereign interference assessment. ¹²
Exchange Rates	Institute risk management tools at the national agency level, such as Overseas Private Investment Corporation, ¹³ that leverage public-private partnerships so as to appropriately price and align political, sovereign, default, and currency convertibility risks. Apply business best practices.
Interest Rates	Provide preferred lending rates mitigated through various multilateral institutions. Apply business best practices.
Intentional Reversal	Define intentional reversal risks and clarify recourse paths for all stakeholders. Design public-private partnerships that could assign and price risk accurately resulting in risk management.
Sovereign	Institute risk management tools at the national agency level, such as Overseas Private Investment Corporation, that leverage public-private partnerships so as to appropriately price and align political, sovereign, default, and currency convertibility risks.
Political	Institute risk management tools at the national agency level, such as Overseas Private Investment Corporation, that leverage public-private partnerships so as to appropriately price

⁹ FASB Emerging Issues Taskforce, <http://www.fasb.org/jsp/FASB/Page/SectionPage&cid=1218220137512>.

¹⁰ *Accounting for Carbon*, Dr. Lovell, Dr. Aguiar, Dr. Bebbington and Dr. Larringa-Gonzalez, ACCA research report no. 122. www.accaglobal.com/research.

¹¹ Global trade association for OTC derivatives, and maintainers of the industry-standard ISDA documentation, www.isda.org.

¹² *The Three Building Blocks of an Emerging Markets Future Flow Transaction Rating*, Gary Kochubka et al, Standard & Poor's, http://www.securitization.net/pdf/sp_ThreeBuildingBlocks_16Nov04.pdf.

¹³ <http://www.opic.gov/>.

	and align political, sovereign, default, and currency convertibility risks.
Currency Convertibility	Institute risk management tools at the national agency level, such as Overseas Private Investment Corporation, that leverage public-private partnerships so as to appropriately price and align political, sovereign, default, and currency convertibility risks.
Price	Market price needs to trade at a discount to penalty / non-compliance price within regulatory mechanism so as to promote both institutional compliance and investment.
Off-Take Agreement	Develop standardized contracts within third-party escrow agreement structure allowing for effective and efficient payment and performance upon completion of off-take agreement.
Intergenerational	Require independent protocols to address intergenerational conflicts of private real property across generations as private sector properties are transacted. Provide mechanism that creates global forest carbon offset as first lien on private property if transaction is occurring.
Monitoring, Reporting, and Verification (MRV)	Develop ISO 14064 standardized monitoring, reporting, and verification protocols focusing on prescriptive rules allowing for interchangeable MRV between standards and registries allowing for probabilities of loss generated by registries with these probabilities insured by a third-party. Develop third-party investment trust structure to guarantee availability of funds for MRV throughout the lifespan of the project.
Unintentional Reversal	Underwrite on a periodic basis fire, lightening, insect, wind, infestation, water, and ice policies consistent with the global forest carbon offset crediting term allowing for financial reimbursement if loss occurs. Written policies need to be clearly understood by all parties with policy following serialized offset concurrent as transactions occur. Develop performance guarantees if unintentional reversal event occurs ensuring carbon sequestration permanence.
Documentation	Standardize all project design documentation, baseline, allometric data, digital boundary data and global positioning system waypoints, biodiversity and community information with information uploading capacity for standards, registries, and international transaction logs allowing for the development of actuarial data analysis resulting in system-wide fungibility and comparability of each global forest carbon offset. Standardized information should present an opportunity to build historical baseline and data. Define procedures to input information. Baseline graphs could be drawn per format shown on application site. All carbon calculation information inputted online using standardized forms and processes. All risk data and calculations, loss data, and audit information inputted online using standardized forms and processes. Require annual independent financial audit of each project. Project proponents need to sign legal contract with standard as part of project application process.
Transfer	Consistency with buyer and seller sovereign regime requirements regarding transparency at the sub-national and project level with capacity to take financial flows offshore so as to avoid rent seekers.
Model	Standardize web-portal for all data transfer amongst all dual-validated global forest carbon methodologies regarding approach to carbon pools measured, confidence intervals, and mean allowing for actuarial tables to develop.
Audit	Require proof of errors and omissions insurance for the auditors conducting the validation and verification of all climate, community, biodiversity and financial aspects of each project with a minimum line of US\$ 1,000,000 confirmed annually by the third-party carbon standard. Require ANSI certification for all auditors and auditing organizations. Require independent certified public accountant audit of all projects and all of its associated commercial activities at time of forest carbon project validation and verification. Require independent title search plus letter from independent land registry to accompany all projects applying to list on all respective carbon standard websites.
Claims Adjustment	Require consistent claims adjustment with independent claims adjustment protocol that is transferable between registries, buffer pools, and standards.

Registries	Develop buffer pool capacity to eliminate global forest carbon offset comingling risk. Prevent offsets from becoming degraded or trapped within a buffer pool by appropriately applying actuarial standards and models to buffer pool development and maintenance. Separate claims adjustment capacity from registry business into independent third-party function. Reduce any possibility of misinterpretation at each step of process of validation, verification, issuance, and audit of the registry itself. Apply ISO 14064 to registries. Develop transparent information so as to provide historical data for actuarial rating reviews and/or amendments. Develop International Transaction Log (ITL) that eliminates double-counting while ensuring financial risk management best practices are engaged. Registries need to require documentation of errors and omissions and professional liability insurance for participation within the registry by all third-party project proponents. Require financial audit of registries and projects on an annual basis.
Standards	Create contingent capital structure to separate buffer pools from standards and registries with separate buffer administration with appropriate financial, actuarial, subrogation, mediation, and claims adjustment professionals. Develop capacity for buffer pool to function as a stand-alone entity for the crediting period as described by each methodologies permanence requirements. Allow standards to substitute buffer pool requirement with appropriate financial risk management tools. Require buffer pool itself to insure itself with a separate errors and omissions insurance policy including lines for catastrophic loss, defense costs, unforeseen administration costs, and frivolous lawsuits. Apply ISO 14064 process to buffer pool development.

Section 4: Attending Institutions

Table 4 lists institutions attending the workshop. Also, many other private sector, public sector, multilateral, scientific, and stakeholder institutions participated in developing these ideas since inception over the past decade.

Table 4: Workshop Attending Institutions, November 16, 2010

American Carbon Registry
Andrews Kurth
BioCarbon Fund
Bunge
Butzel Long
C.D. Rigdon & Associates
C2I
Carbon War Room
CO2RS
Commodity Futures Trading Commission
Finite Carbon
Forest Carbon Offsets LLC
International Emissions Trading Association
Kresge Business Administration Library, University of Michigan
McGuire Woods
Overseas Private Investment Corporation
Standard & Poor's
Streamline LLC