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State of the Forest Carbon Markets 2011

From Canopy to Currency

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Executive Summary



The first seeds of the forest carbon markets were planted over thirty years ago... but it was not until 2010 that the marketplace's largest growth spurt came into view.

This year, a record number of project developers and secondary market suppliers from around the world shared data about their projects and transactions. The information they provided revealed a market that has both increased the volume of its transactions and matured in its structure. While the marketplace has taken root enough as to entice new developers and investors to participate, many observers still remain cautious amid significant uncertainties. Despite growing confidence around several nascent policies and compliance markets, the future shape, size, and scope of the global forest carbon marketplace remains highly uncertain.

This second annual *State of the Forest Carbon Markets* tracks, reports, and analyzes trends in global transactions of emissions reductions generated from forest carbon projects. The information in this report is primarily based on data collected from respondents to Ecosystem Marketplace's 2010 forest carbon project developer's survey, combined with data from the 2009 *State of the Forest Carbon Market Report* and the 2011 *State of the Voluntary Carbon Markets* report.

The data and analysis that follow cover forest carbon activity in compliance carbon markets—such as under the Kyoto Protocol's Clean Development Mechanism (CDM), the New Zealand Emissions Trading Scheme (NZ ETS), and the New South Wales Greenhouse Gas Reduction Scheme (NSW GGAS)—as well as voluntary carbon markets—such as the voluntary Over-the-Counter (OTC) market and the Chicago Climate Exchange (CCX). In total, we captured responses from 161 project developers or project proponents in the primary forest carbon market and 48 suppliers in the secondary market covering 412 individual forest carbon projects.

Don't Look Down – Volume and Value Climb to New Heights

In 2010, the global markets for forest carbon projects hosted the largest volume and value of credits contracted in history, dramatically outpacing the market activity we observed in our last *State of the Forest Carbon Markets* report that covered transactions up to mid-2009.

Growing from already record-breaking years in 2008 and 2009, respondents reported a total of 30.1 million metric tonnes of carbon dioxide equivalent (MtCO₂e) contracted across the primary and secondary¹ markets in 2010. The estimated total value of transactions in 2010 was \$178 million (see Table 1). The historical scale of the forest carbon markets climbed to 75 MtCO₂e, valued at an estimated \$432 million with projects impacting more than 7.9 million hectares in 49 countries from every region of the world. Consistent with previous years, the vast majority (>90%) of volumes reported in 2010 occurred in the voluntary OTC market, as the CCX trading program wound down to a close, and the interest in contracting temporary forest credits from the CDM shrank from a 2009 high. With 2010's growth, forest carbon transactions now represent more than 40% of the total voluntary OTC carbon market by volume.

The average price for offsets across the primary forest carbon markets rose from \$3.8/tCO₂e in 2008, to \$4.5/tCO₂e in 2009, and up to \$5.5/tCO₂e in 2010. Prices continue to vary widely across the regulated and voluntary markets, as each market transacts very different credits with unique supply- and demand-side drivers to go along with distinct project-level characteristics. The value of forest credits in the CCX remained at historical lows just above \$1.0/tCO₂e, while OTC credits jumped from \$4.2/tCO₂e in 2009 up to \$5.6/tCO₂e in 2010. Prices reported for CDM forest credits fell slightly from

¹ The primary market refers to original transactions of credits directly from a project; the secondary market refers to all ensuing transactions.

\$4.7/tCO₂e in 2009 to \$4.5/tCO₂e in 2010, combined with a dip in volumes from 2009, leaving the market smaller this year compared to last.

Table 1: Volume, Value, and Prices in the Forest Carbon Markets (Primary & Secondary Markets)

Market	Reported Volume (MtCO ₂ e)		Reported Value (million US\$)		Avg. Price (US\$/tCO ₂ e)	
	Historical Total	2010	Historical Total	2010	Historical	2010
Voluntary OTC	59.0	27.4	250.7	126.7	5.46	5.63
CCX	2.9	0.1	5.2	0.2	2.83	1.18
Total Voluntary Markets	61.9	27.6	256.0	126.9	5.36	5.60
CDM	9.0	1.4	37.6	6.3	4.28	4.49
NSW GGAS	3.1	1.1	11.8	0.0	12.26	*
NZ ETS	0.6	0.0	8.9	0.3	13.91	12.95
Total Regulated Markets	12.8	2.6	58.3	6.5	5.61	4.61
Total Global Markets	74.7	30.1	314.2	133.4	5.40	5.54
Total Primary Market	71.6	29.0	290.7	128.6	5.22	5.49
Total Secondary Market	3.2	1.2	23.5	4.8	9.69	7.56
Total Estimated Value			432.1	177.6		

Notes: Average prices include transactions from primary and secondary markets. These may differ from average prices reported later by standard, etc., which are based upon primary market transactions. All values and prices reported above except for "Total Estimated Value" include only those volumes with prices reported directly by survey respondents. Total Estimated Value calculated by applying median price in each year to volumes reported without price by survey respondents. For 2010 and historical data, 81% and 86% of the total volume reported included matching price points, respectively. The relatively small response from New Zealand projects likely under-represents the current and historical volumes and values of that marketplace.

* Too few data points to disclose average price for 2010.

Source: Ecosystem Marketplace

Riding the REDD Wave

The 2010 surge in the forest carbon market was fueled to a great extent by contracting from large Reduced Emissions from Deforestation and Forest Degradation (REDD)² projects. Following an early role kindling the carbon market, REDD re-emerged as a major source of credits in 2007 (see Figure 1). Since then, REDD has followed a dramatic growth trajectory, buoyed by strong international policy signals, emerging compliance markets, and several newly minted methodologies enabling verification. In 2010, REDD clearly surpassed the volume supplied by any other project type, supplying 19.5 MtCO₂e out of the total 29.0 MtCO₂e contracted in the primary market.

Looking beyond REDD, supply continued to emerge from both Afforestation/Reforestation (AR) and Improved Forest Management (IFM) projects. The storyline for AR, however, was one of retrenchment, as contracting for AR credits fell in every single market tracked from 2009 to 2010. The unique hurdles to financing and commercializing AR projects continue to persist and constrain the ability for the carbon markets to incentivize one of the oldest strategies for enhancing and restoring environmental health—planting trees. IFM activities continue to supply the markets with modest and steady growth driven largely by US-based projects. IFM is expected to build an increasingly global footprint in 2011 following the approval of the first internationally applicable IFM-specific methodologies by a third-party standard in 2010 and 2011 under the Verified Carbon Standard (VCS).

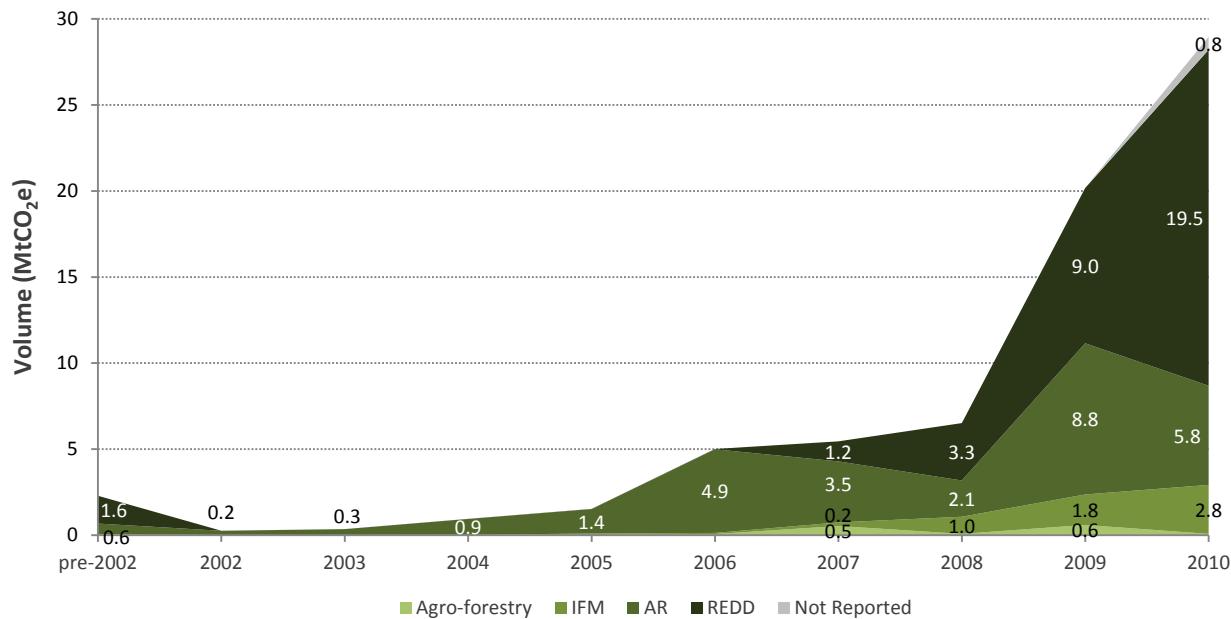
The Global Flow of Credits

Looking around the world, clear hotspots emerged in terms of the sources of credits and their destinations. Latin America provided the lion's share of supply, contributing more than half of the volume contracted in 2010 (see Figure 2), almost entirely from 28 projects in Peru and Brazil. European buyers stepped in as the largest source of demand, taking at least 10.6 MtCO₂e primarily from Latin America, Asia, and Africa. North America provided the second-largest sources of both

² For the distinction between REDD and REDD+, refer to Box 3 in the main report.

supply and demand in the market, with companies taking on 5.6 MtCO₂e, just over the 4.9 MtCO₂e supplied from projects in the region. North American buyers were the primary source of demand for credits from North American projects, but Europeans were also willing to take a substantial slice of the North American pie (0.5 MtCO₂e).

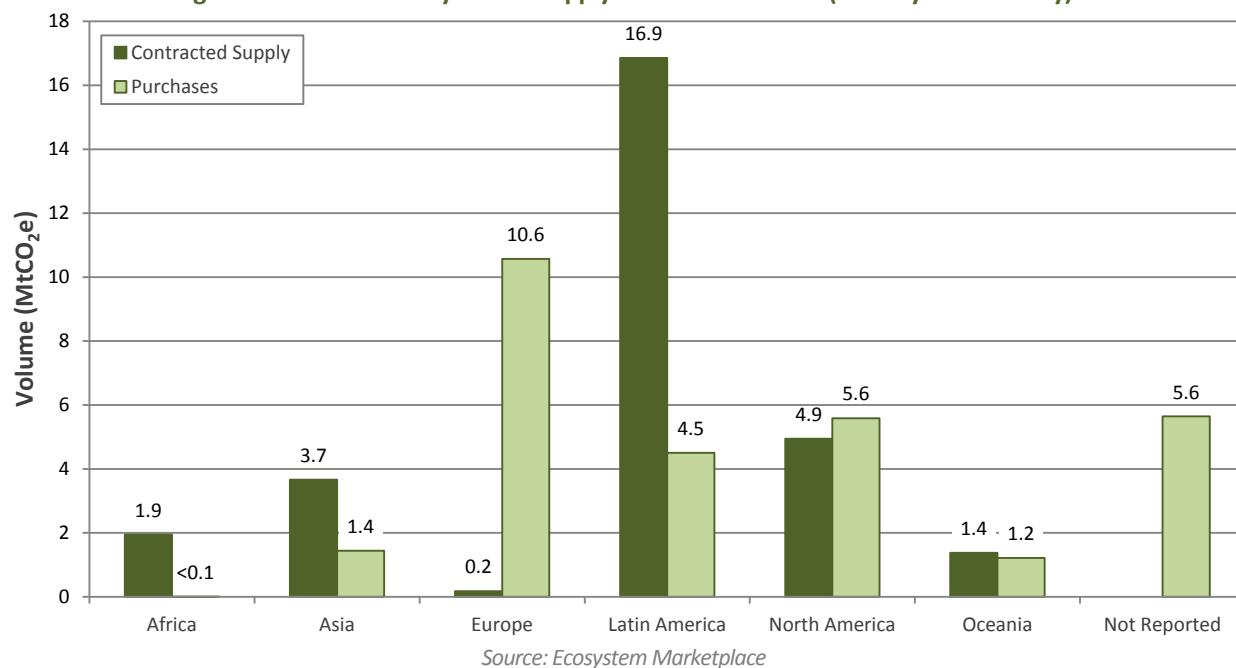
Figure 1: Historical Volumes by Project Activity Type (Primary Market Only)



Note: This graph shows volumes contracted by each project type in the primary market. Data labels are omitted in years where volume <0.1 MtCO₂e.

Source: Ecosystem Marketplace

Figure 2: Locations of Buyers and Supply Contracted in 2010 (Primary Market Only)



Source: Ecosystem Marketplace

Africa remains a relatively small player in terms of global supply, providing the fewest credits of any region with a voluntary OTC focus. African volumes were down from their peak at 5.1 MtCO₂e contracted in 2009, producing just 1.9 MtCO₂e contracted in 2010 from 14 projects. Nevertheless, the region is expected to follow its longer-term historical growth trend with a growing pipeline of large projects such as those begun by Wildlife Works in Kenya, and new deals, such as from ERA Ecosystem Restoration Associates in the Democratic Republic of Congo, which appear set to contribute a future boost in African supply beyond historical levels.

Last year also saw a trend towards regions buying credits from their own backyards. Exemplified by Oceania, where buyers exclusively buy locally, this same trend can also be found in Asia and Latin America where local purchasing by new buyers is a growing trend to watch. Although both Asia and Latin America continue to supply more credits into the market than they consume, many market players and observers view the uptick in localized demand for forest carbon credits as a critical component to sustaining the growth of the forest carbon sector into the future.

The Changing Face of Projects

The private sector has emerged as a new torchbearer for forest carbon projects. Taking cues from the early and persistent progress of non-profit conservation organizations, a host of new private sector players are entering the marketplace, from project development companies to major financial firms such as BNP Paribas and Gazprom Marketing & Trading.

On the ground, the impacts of this transition remain uncertain. The broad application of co-benefits certification under the Climate, Community & Biodiversity (CCB) Standards suggests that the market has set a key requirement that projects must deliver benefits to biodiversity and communities to find a broad appreciation among buyers, but the project-level approaches to doing so still vary widely. Projects continue to be developed using a variety of forest management strategies, species mixes, and across a broad spectrum of sizes.

One of the most persistent challenges in forest governance, from well before carbon markets entered the scene, has been the resolution of conflicts regarding the land rights of local peoples and ensuring that carbon projects benefit local peoples with the best track record of forest conservation. In terms of land tenure, the data for 2010 indicate that there is an increasing attraction to siting projects on privately owned and managed lands. This preference showed up for both non-profit and for-profit developers, who developed 62% and 77% of projects in areas including private landholding, respectively.

There has been less activity to date developing projects in areas with communal or customary ownership and tenure, and for-profit and non-profit developers showed different propensities for developing these projects. Although 30% of projects from non-profit developers included lands with communal or customary use or ownership rights within the project area, only 17% were exclusively on these types of lands; for for-profit developers, the contrast is more stark, with 25% of projects including communal or customary lands in the project area, but only 2% of projects developed exclusively on these lands.

In their current implementation, most successful forest carbon projects have focused on projects where legal environments are relatively stable and ownership and land tenure are clear. Encouraging the resolution and clarification of land rights in areas of conflict holds immediate potential for improving forest governance and conservation, as well as offering expanded opportunities in the forest carbon markets by creating a more stable legal environment that project developers and investors need to bring carbon finance to bear at greater scale.

From Trees to Tonnes

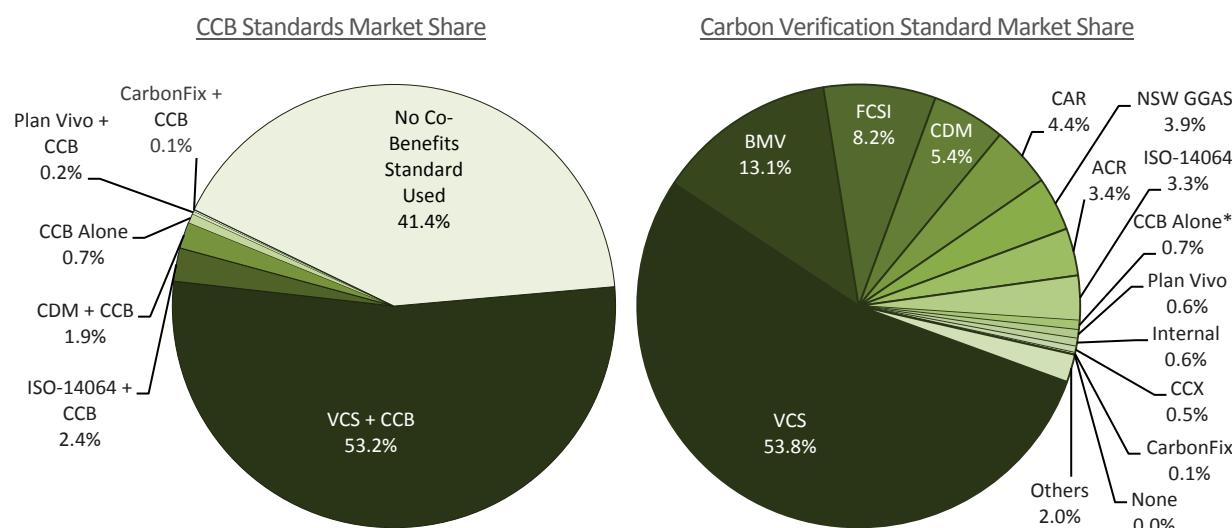
The year of 2010 was filled with many firsts in the forest carbon sector. The move towards standardization using third-party verification found throughout the broader carbon markets has taken a strong place at the center of forest carbon market activity. In particular, the continued emergence of REDD+ on the international policy stage was matched by the unveiling of several groundbreaking REDD methodologies for offset projects and the issuance of the first VCS REDD credits. But REDD was not alone. A trend towards consolidated or widely applicable methodologies from standards requiring third-party

verification is now apparent from all corners of the market, with an eye towards decreasing the burden on developers while maintaining rigor in the marketplace. It now seems buyers have responded to the greater clarity in the methodology landscape with an increased willingness to sign on the dotted line with new projects.

Among the highlights in 2010, the California Air Resources Board (ARB), charged with implementing the state's cap-and-trade scheme, gave the long-awaited blessing to forest protocols from the Climate Action Reserve (hereafter CAR or The Reserve) for acceptance in the future compliance scheme. The Verified (formerly "Voluntary") Carbon Standard released its first five forest carbon methodologies, including a long-awaited modular approach to REDD accounting. At the same time, the American Carbon Registry (ACR) released its first forest methodology and unveiled an innovative privately insured version of the buffer pool in partnership with Finite Carbon.

In 2010, two additional carbon standards (Brasil Mata Viva, or BMV, and Forest Carbon Standard International, or FCSI) popped on the radar for the first time with reports of substantial volumes contracted, but the dominance of market share by VCS was seemingly unaffected (see Figure 3). Across the primary market, VCS was the standard of choice for 16 projects with more than half of the volume project developers committed to deliver, covering 15.6 MtCO₂e contracted in 2010. The new standards BMV (with 9 new projects) and FCSI (with at least 2 new projects) took their first bold steps into the marketplace, taking the second- and third-place spots for market share by volume with reports of 3.8 MtCO₂e and 2.4 MtCO₂e contracted in 2010, respectively.

Figure 3: Carbon Standards and Layering with Co-Benefits Standards, 2010



Notes: Percentages are based on market share by volume of primary market transactions contracted in 2010 (29.0 MtCO₂e total). Projects must be verified under a carbon quantification standard in order to be issued verified offset credits.

*Several projects reported contracting offsets and only applying the CCB Standards. CCB certification alone will not result in credit issuance. The label "CCB Alone" is solely intended to distinguish these transactions from those that have applied no standards at all.

Source: Ecosystem Marketplace

In 2010, only 3 projects reported contracting credits without the use of any carbon accounting or other standards and 14 reported using only an internal standard. The total volume contracted from projects using an internal or no standard fell from 220,000 metric tonnes of carbon dioxide equivalent (tCO₂e) in 2009 to 170,000 tCO₂e in 2010, shrinking from 1.0% to 0.6% of the primary market. This decline suggests these projects may be having greater difficulty finding buyers as the application of third-party standards is increasingly demanded in the marketplace.

Many projects are also now following a demand for certification of an array of project benefits beyond carbon. In 2010, projects across the forest carbon sector reported applying only one supplementary "co-benefits" standard, that of the Climate, Community and Biodiversity Alliance (CCBA, see Figure 3). Twenty-five projects that contracted credits in 2010 reported using the CCB Standards, covering over half the year's total volume. Although there were at least 80 transactions

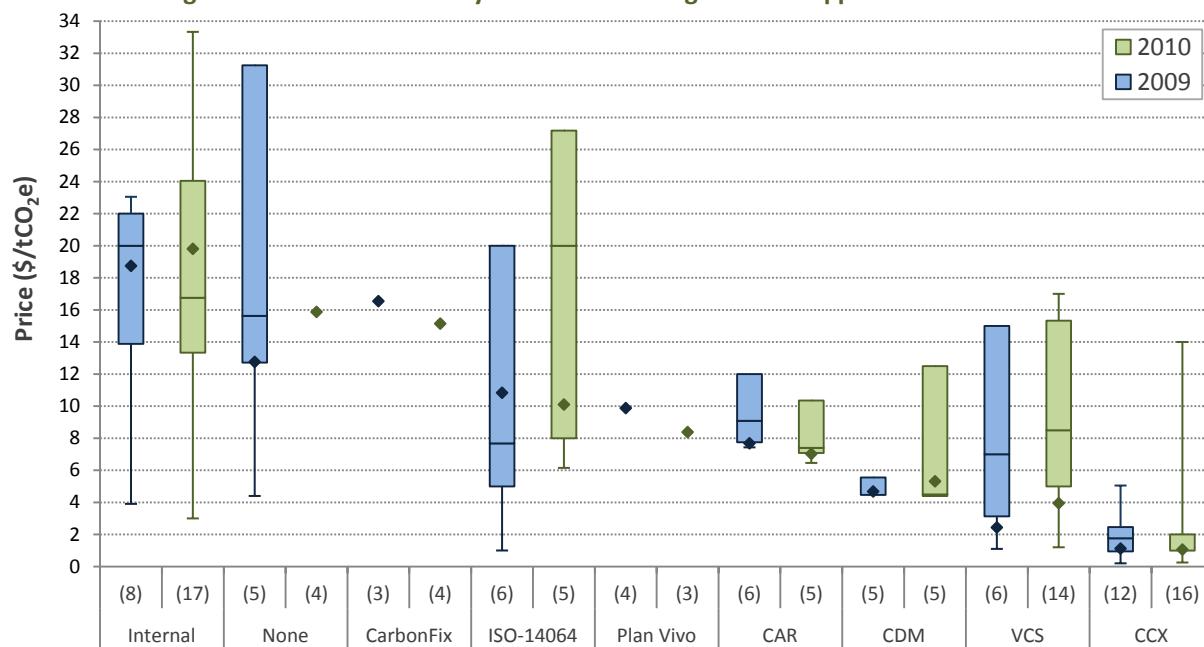
in 2010 from projects not reporting the use of the CCB Standards, the commitments from these projects represented less total volume than their CCB-applying counterparts.

The Value of a Standard

The diverse array of standards applied in the marketplace also coincides with a spectrum of prices for credits developed under each standard. Projects using no standard or only an internal standard were able to secure the highest prices, although—as reported above—they did not contract significant volumes. Credits committed in 2010 under the CAR standard were clustered fairly tightly in the range of \$7-10/tCO₂e, but were down slightly from prices reported in 2009. California market players indicated these prices have already risen following approval of The Reserve’s two forest protocols at the end of 2010 for use in the pending California cap-and-trade scheme.

Despite having the largest volumes contracted across the globe, VCS had the lowest average price per tonne, with the exception of CCX, whose trading program swiftly wound down in 2010 (see Figure 4). While large volumes from the VCS were contracted at across-market lows, however, many individual projects applying VCS reported contracting credits at prices substantially higher than the volume-weighted average. While VCS showed volume-weighted average prices of \$4.0/tCO₂e, the median price contracted in 2010 was much higher, bringing \$8.5/tCO₂e.

Figure 4: Price Distribution by Carbon Accounting Standard Applied in 2009 and 2010



Notes: For further explanation of the box-and-whisker format used in this graph, refer to Box 2 in the main text. The price distributions shown here incorporate contracts signed across a range of stages in the project cycle (e.g., pre- and post-validation and verification) and with different delivery terms. These values are also closely related to the size of the transactions, and the total volume contracted under each standard varies considerably.

Source: Ecosystem Marketplace

Projects applying the CarbonFix and Plan Vivo standards secured higher prices than many of their counterparts using other standards, but have contracted relatively limited volume in terms of global market share. This may stem in part from the narrower niche and smaller portfolio of projects focused on tree planting on the one hand (CarbonFix), and smallholder and community engagement on the other (Plan Vivo). For projects moving volumes at very large scales (i.e., hundreds of thousands of tonnes per year), these standards have found limited application to date. Nevertheless, the majority of projects contracting offsets do not fit this largest scale, and both CarbonFix and Plan Vivo have grown in recent years, attracting new projects that continue to successfully find buyers.

Despite the common discussion of price premiums related to perceived differences in offset quality among available standards, our analysis of the data and the consensus from project developers interviewed for this report support the conclusion that there is no apparent price premium based on the perceived stringency of an offset standard. Instead, the data we have collected, backed by market player interviews, support the assertion that many standards currently function as gatekeepers to particular buyer segments rather than as price-setters.

Standing on the Shoulders of Project Developers to Peer into the Future

The picture that emerges from deeper examination of the surge in contracted tonnes over 2009 and 2010 is fundamentally about a small—but growing—cadre of forward-looking buyers and investors making big bets on the future of the forest carbon markets. Of the 20.1 MtCO₂e for which project developers reported buyer motivations in 2010 (i.e., 69% of the total primary market volume setting aside the volumes without reported motivations), 45% was contracted to buyers who plan to resell the credits. Considering that 50% of the entire volume contracted in 2010 came from projects that have not yet been validated under a third-party standard, the buyers and investors in these projects are clearly convinced that the future of the forest carbon market is resolved enough to justify the calculated risk of upping financial support for these projects to historic levels.

At the same time, nearly every project developer who predicted the future size of the forest carbon markets this year envisioned growth. However, the overwhelming majority of these respondents this year failed to predict the scale of growth seen in 2009 and 2010, even with 2009 already in the rearview. The fact that most project developers dramatically underestimated the market activity in 2009 and 2010 suggests that fundamental data on the size and shape of the forest carbon market is still not widely known.

To gauge the amount of credits in the pipeline, Ecosystem Marketplace asked project developers to provide the number of credits they plan to generate from 2011 to 2015. Tallying up the five-year supply from a total of 287 projects, project developers reported a total of 373 MtCO₂e to be generated (see Table 2). The overwhelming source of anticipated supply over the next five years comes from 60 REDD projects. A total of 213 AR, 14 IFM, and 9 Agro-forestry projects were also planning to add to the mix, but collectively provide only 10% of the projected supply.

It is important to take both the current market volumes and these projected five-year supplies in context. Project developers and buyers—including several interviewed for this report—often readily admit they tend to have a rosy view of the credit volumes coming from their projects. In most circumstances, the volume eventually delivered to market is only a fraction of the grand vision originally conceived at the outset of a project. We would thus encourage readers to view these five-year volumes in this more conservative context. Nevertheless, several market players and project developers interviewed by Ecosystem Marketplace raised concerns regarding a potential oversupply of credits in the near future.

Table 2: Supply Estimated for 2011-2015 by Project Developers

Market	Volume by Project Type (MtCO ₂ e/5yr)				
	AR	IFM	REDD	Agro-forestry	TOTAL
Voluntary OTC	11.4	6.4	331.0	3.5	352.2
CCX	--	0.9	--	--	0.9
Total Voluntary Markets	11.4	7.3	331.0	3.5	353.1
Australia	2.0	1.2	--	--	3.4
California (ARB/CAR)	<0.1	0.6	4.3	--	4.8
CDM	11.7	--	--	--	11.7
NZ ETS	0.1	--	--	--	0.1
Total Regulated Markets	13.8	1.7	4.3	--	20.0
Total Global Markets	25.1	9.0	335.3	3.5	373.1

Notes: Based on 147 survey responses covering 287 projects. Values may not sum to totals due to rounding.

Source: Ecosystem Marketplace

What to Watch

The hard work of non-governmental organizations (NGOs) in the early days of the markets, followed more recently by standards organizations and the private sector, is now paying off through a dramatic uptick in supply coming from all over the world. Although it is impossible to tell how much of the volume contracted in 2010 and in the pipeline will actually make it to market, it is fairly certain that supply will continue to grow rapidly.

Currently, buyers purchase most credits voluntarily, but regulatory drivers hold a critical key to unlock larger climate impacts and market demand. Across the global markets, a number of influential political choices remain to be made, and a host of market drivers remain uncertain. The consensus among dozens of market players interviewed for this report, including leaders of standards organizations and major buyers and project developers, is that the forest carbon market is entering a phase where growth will be fundamentally tied to finding and creating new demand for forest carbon credits.

Many market players are keeping their eyes on international climate negotiations, looking to the upcoming United Nations Framework Convention on Climate Change (UNFCCC) meetings in Durban, South Africa for continued progress toward an international REDD+ mechanism and confirmation that it will be market-linked. Several buyers and project developers reported the billions of dollars in public pledges for building REDD+ readiness as a sign that forest carbon will ultimately be supported in whatever international market or incentive programs develop.

Many policymakers are already taking more concrete steps in their own countries and states. Although still in early stages, promising developments are surfacing in emerging marketplaces in China and Japan with a welcoming role for forests in the fight against climate change. California is poised to open market trading for its cap-and-trade scheme in 2012 and is cracking open the door to be the first compliance carbon market to welcome international REDD credits.

The technical capacity for accounting and delivering carbon reductions using a national or sub-national/jurisdictional accounting lens alongside project-level interventions (also known as “nesting”) is likely to be a critical dialogue to watch. Progress to deliver state-level forestry-based climate mitigation continues to be the order of the day for the Governors’ Climate and Forests Taskforce (GCF), which produced a groundbreaking commitment in November 2010 for the governments of California, Chiapas (Mexico), and Acre (Brazil) to work on establishing a framework for producing forest carbon credits. Both the GCF and VCS have working groups dedicated to the subject of jurisdictional accounting and project nesting that are populated with major decision-makers and movers in forest carbon policy and markets. In addition, The Reserve is preparing a protocol for forest carbon activities in Mexico utilizing a nested approach that is expected by the end of 2011.

Answers to some of the bigger questions informing the market outlook, however, still remain unclear. For example, will these new policies arrive in time to bring the additional demand many observers see as necessary to sustain the current portfolio of projects?

Policymakers are in the midst of developing funding for forest conservation at an unprecedented scale. A number of innovative solutions have evolved to both overcome many of the earlier hurdles facing market-based forest conservation efforts and attract private sector investment, but the scope of these markets is still relatively small in the face of global forest loss and a changing climate. The fate of these markets and projects will in large part rest in the hands of policymakers. 2010 was undoubtedly a critical year in the history of the forest carbon markets, but the most consequential chapters in this story still remain to be written.

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List of Acronyms



AAU	Assigned Amount Unit
ACR	American Carbon Registry
AFOLU	Agriculture, Forestry, and Other Land Use
AR	Afforestation/Reforestation
ARB	California Air Resources Board
BMV	Brasil Mata Viva
BOCM	Bilateral Offset Credit Mechanism (Japan)
CAR	Climate Action Reserve (also known as The Reserve)
CCBA	Climate, Community, and Biodiversity Alliance
CCB	Climate, Community, and Biodiversity (Standards)
CCX	Chicago Climate Exchange
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CFI	Carbon Farming Initiative (Australia) <u>or</u> Carbon Financial Instrument (used by the Chicago Climate Exchange)
CPRS	Carbon Pollution Reduction Scheme (Australia)
ERU	Emission Reduction Unit
EU ETS	European Union Emission Trading Scheme
FCSI	Forest Carbon Standard International
GCF	Governors' Climate and Forests Taskforce
GHG	Greenhouse Gas
ICE	IntercontinentalExchange
ICROA	International Carbon Reduction and Offsets Alliance
IFM	Improved Forest Management
ISO	International Organization for Standardization
JI	Joint Implementation
ICER	Long-term Certified Emission Reduction
MAF	Ministry of Agriculture and Forestry (New Zealand)
MOEJ	Ministry of Environment (Japan)
MtCO₂	Millions of metric tonnes of carbon dioxide equivalent
NCOS	National Carbon Offset Standard (Australia)
NDRC	National Development and Reform Commission (China)

NGAC	New South Wales Greenhouse Abatement Certificate
NGO	Non-Governmental Organization
NSW GGAS	New South Wales Greenhouse Gas Abatement Scheme
NZ ETS	New Zealand Emission Trading Scheme
OTC	Over-the-Counter (market)
PES	Payments for Ecosystem Services
POD	Pay-on-Delivery
REDD	Reduced Emissions from Deforestation and Forest Degradation
ROW	REDD Offset Working Group
SMF	Sustainably Managed Forests
tCER	Temporary Certified Emission Reduction
tCO₂e	Metric tonne(s) of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard (formerly Voluntary Carbon Standard)
VER	Verified Emission Reduction
WCI	Western Climate Initiative

Foreword



For most of our readers, the concept that forests should be valued beyond their ability to produce timber or other commodities is nothing new. For more than a decade, a variety of initiatives known as Payments for Ecosystem Services (PES) have been popping up around the world, intent upon bringing the numerous values that forests and other ecosystems provide (and the costs of losing them) onto the economic balance sheet.

In 2005, Forest Trends launched the Ecosystem Marketplace program in response to a call from an emerging community of practice in the growing field of PES. Although an inspiring array of projects and programs were being implemented around the world, including the use of novel market mechanisms to finance them, basic information about these projects, and if and how the markets behind them were working remained fundamentally limited in many critical respects.

Markets depend on transparent and reliable information to function. What is true for investors on Wall Street is equally true for indigenous communities, non-governmental organizations (NGOs), government officials, and all environmental market players dealing with carbon, water, and biodiversity. Ecosystem Marketplace was thus created to offer transparent and reliable information on market mechanisms and initiatives that we now know are channeling billions of dollars to protect and enhance the value provided by many of the world's ecosystems.

Global climate change has quickly emerged as one of the largest international environmental and social challenges of our time. In response, a variety of strategies have now emerged for mitigating and adapting to a warming planet. Among these, efforts to channel market forces to address climate change have taken center stage, and an international carbon market rapidly transitioned from a curiosity for economists and valuation studies, to pilot projects by early conservationists and utility companies, to a booming marketplace moving billions of dollars around the world each year with the ultimate goal of reducing global greenhouse gas (GHG) emissions.

Forests served as the earliest examples of GHG emissions trading in the form of offsets, but were largely pushed aside in the rise of the world's first international and legally-binding carbon market under the Kyoto Protocol. Nevertheless, from their role as one of the largest sources of global carbon emissions to their potential for accelerating the removal of GHGs from the atmosphere, forests have moved in from the periphery to feature prominently in nearly every major contemporary national and international policy strategy for addressing climate change.

Building on our experience documenting voluntary markets for carbon reductions in the *State of the Voluntary Carbon Markets* reports, Ecosystem Marketplace responded to the growing interest in forestry by delivering our first *State of the Forest Carbon Markets* report in January 2010. This report uncovered basic market and project information for the first time on a global trade in forest-based emissions reductions stretching back more than 20 years.

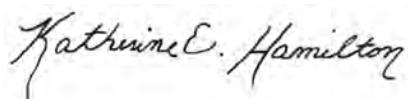
Even as the markets for forest carbon mature and become increasingly sophisticated, they continue to evolve rapidly and respond to a wide array of signals from international, regional, and domestic policies. The vast majority of forest carbon market activity still occurs in a world of unique contracts negotiated privately between project developers and several different types of buyers. The reality on the ground is that basic market information on the shape, size, and movements of the forest carbon markets remains largely anecdotal. By

engaging hundreds of organizations over the past five years to report on their projects and market activity, these reports help provide an unparalleled glimpse into the dynamic markets that are now attracting unprecedented attention from international policymakers and the private sector.

The growing chorus and momentum behind several international and domestic climate policies seem unlikely to leave forests out of bounds again. At this critical juncture, we hope the report that follows can give answers to many of the fundamental questions policymakers, project developers, investors, and stakeholders have about what we have to show after more than 20 years of forest carbon projects and markets.



Michael Jenkins,
President and CEO, Forest Trends



Katherine Hamilton,
Director, Ecosystem Marketplace

Methodology



This report is designed to track global transactions of emissions reductions from forest carbon projects. It is primarily based on data collected from forest carbon project developers. It covers both compliance carbon markets—such as the Kyoto Protocol-based markets, the New Zealand Emissions Trading Scheme (NZ ETS), and the New South Wales Greenhouse Gas Abatement Scheme (NSW GGAS)—in addition to voluntary carbon markets—such as the voluntary Over-the-Counter (OTC) market and the Chicago Climate Exchange (CCX).

Accounting Framework

For the purpose of this report, we define a transaction as a signed contract between a seller and a buyer to deliver carbon credits in exchange for funds. Respondents to the survey were asked to report market activity within the framework of contracted transactions. Annual market volumes and prices are reported according to the years in which each contract was signed. These volumes include contract types with future or optional delivery of credits and/or funds and thus are not synonymous with already-executed transactions of credits in exchange for funds. Due to the complex nature and timing of delivery under these contracts, we chose this accounting methodology as the most feasible for estimating aggregate market activity. We also present information about the contract types used to further indicate the nature of these transactions.

These marketplaces host transactions of a wide variety of products and services commonly referred to as “carbon credits” or “carbon offsets.” Although most projects in these markets now transact credits as financial instruments with specified units (e.g., Verified Emissions Reductions or VERs, temporary Certified Emissions Reductions or tCERs, etc.), we have not excluded projects or transactions where emission reduction benefits are conveyed to a buyer without the creation of credits in a technical sense. The use of the terms “offsets” and “credits” throughout this report incorporates this broader scope of emission reduction benefits being transacted in the marketplace.

This report provides analysis of forest carbon projects that are market-linked. It does not cover non-market-linked government PES programs in which forest carbon assets are valued or the numerous “demonstration” projects that have begun around the world that have no links to carbon markets.

Market participants, observers, and stakeholders will benefit from greater transparency and access to information about forest carbon projects in general. We have therefore not applied any subjective filtering to exclude data based on perceived quality of the offsets contracted, the type of contracts used, or of the projects themselves. Nevertheless, we did follow up with dozens of respondents to confirm and clarify problematic or inconsistent survey responses.

Except where noted otherwise, volumes and values described in this report refer to the primary forest carbon market.³ The volumes of transactions presented throughout this report are specified in units of metric tonnes of carbon dioxide equivalent (tCO₂e). Millions of metric tonnes of carbon dioxide equivalent are represented hereafter as MtCO₂e. All monetary values are reported in US Dollars unless otherwise noted. Conversion to US Dollars from other currencies was calculated using OANDA annualized exchange rates.

Data Sources

The principal source of data for this report is an online survey designed for developers of forest carbon projects. This was paired with the survey for the *State of the Voluntary Carbon Markets 2011* report, which is the source of secondary market data as well as some primary market data not provided through the forest carbon project developer’s survey. These

³ The primary market refers to original transactions of credits directly from a project; the secondary market refers to all ensuing transactions.

surveys were both available online between January 28 and April 15, 2011. Invitations were sent to roughly 1,200 organizations identified as potential carbon market suppliers, including participants from previous carbon market reports by Ecosystem Marketplace. Further notices were also advertised via electronic distribution lists and newsletters such as Forests-L, Climate-L, Ecosystem Marketplace's News Briefs, Carbon Monitor, CINCS Forestracker, and on Ecosystem Marketplace's Forest Carbon Portal website (www.forestcarbonportal.com).

Responses from project developers and other market players were complemented with data provided by structural market service providers such as standards organizations and registry operators, including information retrieved from public records as well as through direct communication with representatives at these organizations. These additional data sources are referenced throughout the report where appropriate.

Confidentiality

This report presents data in an aggregated manner to prevent attribution to individual respondents. Price points are presented only if more than three responses were available. Any data presented in this report that identifies specific organizations has been confirmed and approved by that organization or was publicly available.

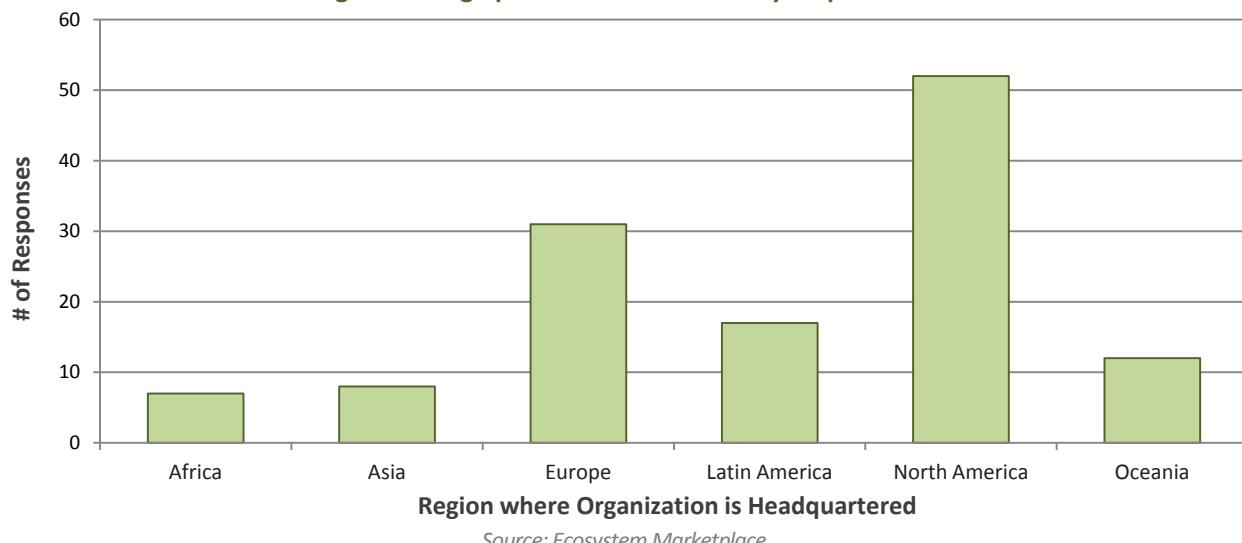
Many of the projects reported to the *State of the Forest Carbon Markets 2011* survey have chosen to be featured in the international Forest Carbon Project Inventory on Ecosystem Marketplace's Forest Carbon Portal website. Project-level details and contact information for each of these projects can be found at www.forestcarbonportal.com.

Survey Response Rates

The data presented in this report is built upon direct responses to the forest carbon project developers' survey in 2010 from 127 organizations. Combining the data collected this year from both the voluntary and forest carbon market reports as well as from previous years, this report captures a total set of responses from 161 project developers or project proponents in the primary forest carbon market and 48 suppliers in the secondary market. These respondents reported 412 individual forest carbon projects taking place in 49 countries around the world.

The largest number of responses was from organizations based in the United States (42), followed by the United Kingdom (11), Canada (10), Australia (9), Germany (7), Brazil (6), and Mexico (4). All other countries contained 3 or fewer organizations that responded to this survey. For the regional distribution of responding organizations, see Figure 5.

Figure 5: Geographic Distribution of Survey Respondents



The Global Overview



The earliest carbon offset transactions originated in the late 1980s and early 1990s with forest carbon projects. Over these past 30 years, the perception of land-based carbon projects has changed dramatically from earlier rocky terrain. In recent years, the growth of emissions trading schemes and voluntary purchases of carbon offsets have accelerated dramatically, and the interest in forest projects to deliver greenhouse gas (GHG) mitigation benefits has never been higher.

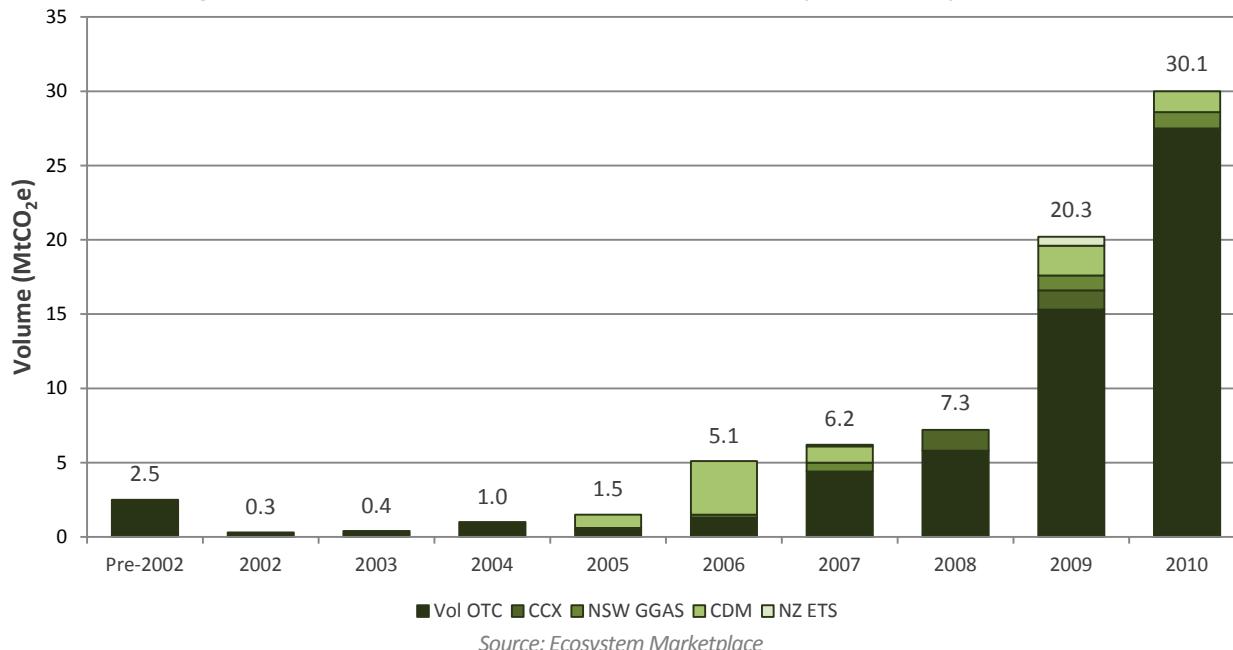
Most demand for forest offsets to date has occurred in the voluntary carbon markets. The international financial crisis in the fall of 2008 and the ensuing global recession placed dramatic constraints on a flourishing voluntary marketplace. At the same time discretionary budgets were being squeezed, US domestic and international climate policy signals offered occasional glimmers of hope, but little in the way of certainty for the future of market-based climate change policies. The prevailing haze over the broader compliance carbon markets took its toll last year, bringing a pause to a long-term growth trajectory; in 2010, the broader voluntary market emerged from a 2009 recessionary dip. Throughout these trials, however, the forest carbon sector has followed a decidedly different pattern.

Since 2005, the growth in forest carbon markets has been unambiguous. As the forestry sector, and Reduced Emissions from Deforestation and Forest Degradation (REDD) projects in particular, skyrocketed to the forefront of the voluntary carbon markets in 2010, the question is no longer if forest carbon is a viable source of GHG emissions reductions, but rather how much of the current growth can be sustained through further investment and demand for credits into the future.

A Birds' Eye View of Total Market Volumes

In 2010, the global markets for forest carbon projects hosted the largest volume of credits contracted in history. Growing from record-breaking years in 2008 and 2009, respondents reported 30.1 MtCO₂e contracted across the primary and secondary markets⁴ in 2010 (see Figure 6). The historical total from the forest carbon markets now climbs to 74.7 MtCO₂e.

Figure 6: Historical Forest Carbon Market Volume (Primary & Secondary Markets)



⁴ In this report, transactions are defined as contracted exchanges of credits. Many of these credits have not yet been issued or delivered. The primary market refers to original transactions of credits directly from a project; the secondary market refers to all ensuing transactions. Unless otherwise noted, volumes and values used in this report refer solely to transactions in the primary market.

Consistent with previous years, the vast majority (>90%) of volumes reported in 2010 occurred in the voluntary OTC market, as the CCX wound down to a close and the interest in contracting temporary forest credits from the Clean Development Mechanism (CDM) shrank from a 2009 high.

The brisk forest carbon business in 2010 earned the land-use sector the largest market share in the broader voluntary marketplace since Ecosystem Marketplace first began tracking market activity in 2006. In 2010, REDD emerged as the project type with the single largest volume in the entire voluntary marketplace, and the suite of land-based projects (primarily Afforestation/Reforestation, or AR, Improved Forest Management, or IFM, REDD, Agro-forestry, and Agricultural Soil) collectively sequestered more than 40% of the volume last year in the entire voluntary OTC market.

Recent years of market activity have outpaced the scale of earlier market years (see Table 3). 2010 alone is responsible for more than 40% of the total historical volume and value reported from these markets; considered together, 2009 and 2010 capture nearly 70% of the historical volume and value.

Table 3: Volume, Value, and Prices in the Forest Carbon Markets (Primary & Secondary Markets)

Market	Reported Volume (MtCO ₂ e)		Reported Value (million US\$)		Avg. Price (US\$/tCO ₂ e)	
	Historical Total	2010	Historical Total	2010	Historical	2010
Voluntary OTC	59.0	27.4	250.7	126.7	5.46	5.63
CCX	2.9	0.1	5.2	0.2	2.83	1.18
Total Voluntary Markets	61.9	27.6	256.0	126.9	5.36	5.60
CDM	9.0	1.4	37.6	6.3	4.28	4.49
NSW GGAS	3.1	1.1	11.8	0.0	12.26	*
NZ ETS	0.6	0.0	8.9	0.3	13.91	12.95
Total Regulated Markets	12.8	2.6	58.3	6.5	5.61	4.61
Total Global Markets	74.7	30.1	314.2	133.4	5.40	5.54
Total Primary Market	71.6	29.0	290.7	128.6	5.22	5.49
Total Secondary Market	3.2	1.2	23.5	4.8	9.69	7.56
Total Estimated Value			432.1	177.6		

Notes: Average prices include transactions from primary and secondary markets. These may differ from average prices reported later by standard, etc., which are based upon primary market transactions. All values and prices reported above except for "Total Estimated Value" include only those volumes with prices reported directly by survey respondents. Total Estimated Value calculated by applying median price in each year to volumes reported without price by survey respondents. For 2010 and historical data, 81% and 86% of the total volume reported included matching price points, respectively. The relatively small response from New Zealand projects likely under-represents the current and historical volumes and values of that marketplace.

* Too few data points to disclose average price for 2010.

Source: Ecosystem Marketplace

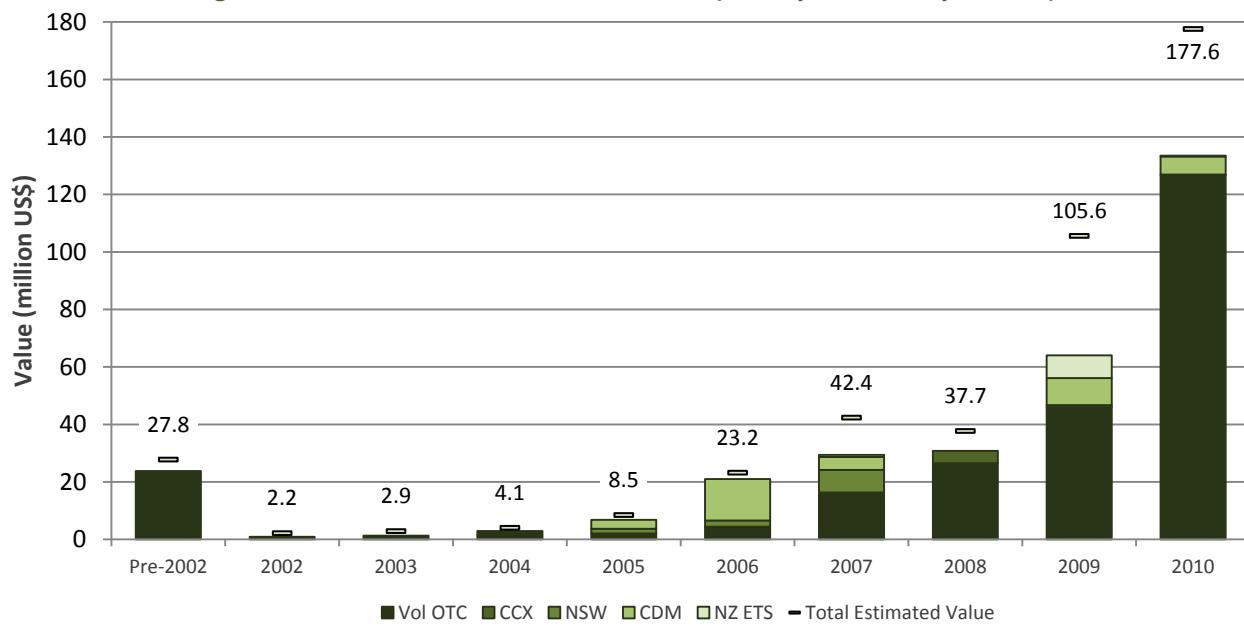
Among the more surprising findings, forest carbon volumes continued to grow through the course of the global recession in 2009 and at a much higher pace than indicated from data covering the first half of 2009 in our last *State of the Forest Carbon Markets* report. Forest carbon volumes in 2009 more than doubled from 2008 at the same time as the broader voluntary carbon market was shrinking.

The number of projects supplying credits into the marketplace has also continued to grow and spread into new countries. In 2010, 101 projects reported committed tonnes to buyers, with 53 projects signing contracts for the first time. This record-breaking year adds to a wide selection of forest projects, bringing the total number of projects that have contracted for offsets over the past three decades up to 312. This year, we also received survey responses regarding an additional 87 projects that had not contracted credits as of 2010, but planned to do so in the near future.

Values: Finance Flows

The value of the forest carbon market also continues to grow, largely in step with volume (see Figure 7). In 2010, project developers and secondary market suppliers generated an estimated value of contracted credits totaling \$178 million.⁵ This record-breaking year pushed the total estimated value of historical forest carbon offset transactions up to \$432 million.

Figure 7: Historical Forest Carbon Market Value (Primary & Secondary Markets)



Note: Values represented by bars in the chart above are based upon volumes reported along with prices. Total Estimated Value calculated by applying the median price in each year to remaining volumes reported without prices by survey respondents.

Source: Ecosystem Marketplace

The growth in total market value slightly outpaced the growth in volume, as the prices received in most markets edged up slightly from 2009. Across all markets and project types, the volume-weighted average price contracted for forest credits in the primary market was \$5.5/tCO₂e in 2010, up from \$4.5/tCO₂e in 2009 (see Figure 8). Although CCX experienced a dramatic price drop and CDM forest credits suffered a modest decline in 2010 contracts, the remaining markets all experienced price bumps up from 2009. More detailed treatment of the dynamics and drivers in these and other market segments can be found in the market-specific snapshots provided further on.

End of the Road: Retirement

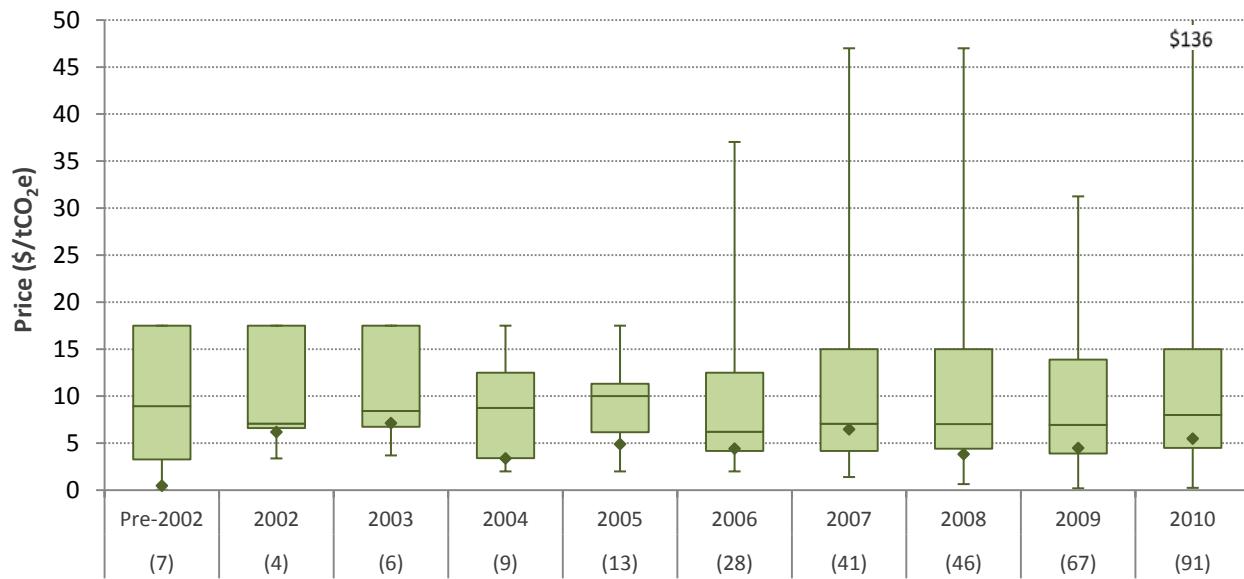
Although any additional emissions reductions achieved by forest carbon projects provide a benefit to the atmosphere whether or not they generate credits and are retired, these emissions reductions do not technically function as “offsets” until they are paired with and effectively neutralize the atmospheric impact of a corresponding volume of emissions through retirement. Each year, forest carbon projects supply emissions reductions into the marketplace, a proportion of which flow to end-users that retire them (i.e., remove them permanently from circulation).

In 2010, suppliers in both the primary and secondary markets for forest carbon offsets reported the retirement of a total of 6.3 MtCO₂e, or just over 20% of the total volume contracted in the same period (see Figure 9). Over time, a total of 25.8 MtCO₂e were reported as retired, just over 33% of the 74.7 MtCO₂e that had been contracted through 2010. Project developers and secondary market suppliers were also asked, in a separate survey question, to estimate the motivations of

⁵ The total annual value of the global markets was estimated by applying the median price reported in each year to the volume of credits without prices reported. The more conservative total value for each specific market, based only on reported prices and ignoring volumes without matching price points, is represented by the colored bars in Figure 7 and is also broken down in Table 3.

their buyers. Across the markets in 2010, suppliers reported contracting just over 34% of their volumes to buyers with a retirement motivation. Applying this proportion to the entire sales volume for 2010 yields a proxy estimate of total market retirement of 10.2 MtCO₂e.

Figure 8: Historical Price Distributions (Primary Market)

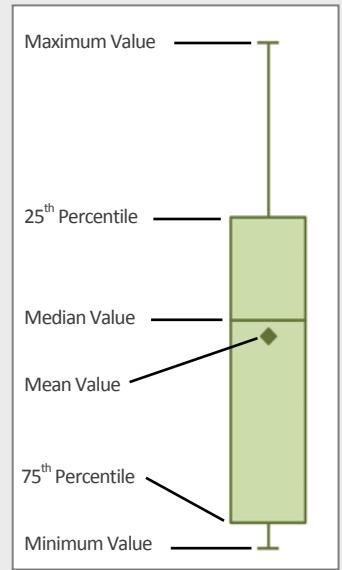


Notes: See Box 1 for description of the box-and-whisker format. Values in parentheses show the number of reported prices included in each year.

Source: Ecosystem Marketplace

Box 1: How to Read a Box-and-Whisker Plot

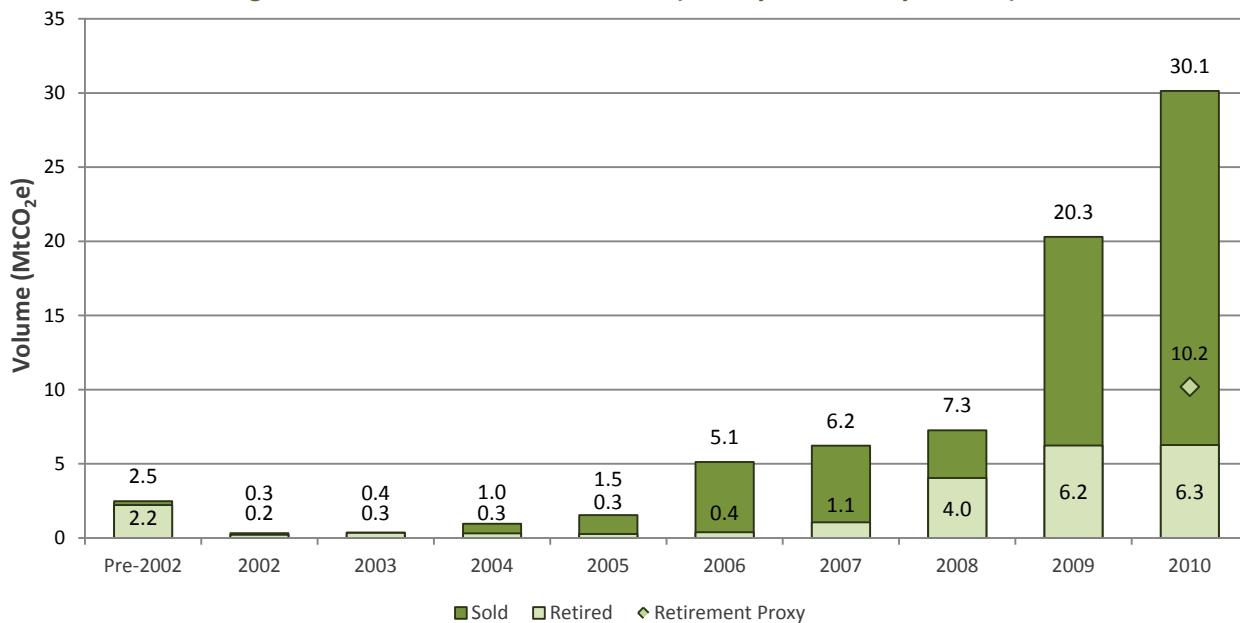
To enhance the quantitative insights available from data presented in this report, we have chosen to present price and some other data using both volume-weighted averages (means) as well as un-weighted distributions using a box-and-whisker format. The point (◆) shows the average reported value calculated as a mean. For average prices, this mean value is weighted according to the volume associated with each price. Behind this mean value, each value represented by the box-and-whisker is a real value reported by a survey respondent and is not weighted according to volumes. The whiskers above and below the box show the maximum and minimum reported values, respectively. The top and bottom edges of the box represent the 25th and 75th percentiles. This means, for example, that 25% of reported values fall between the top of the box and the top whisker, and 25% fall below the bottom of the box and the bottom whisker; 75% of responses fall between the bottom edge of the box and the top whisker. The horizontal line inside the box shows the median value reported. To avoid disclosing sensitive data, whenever the number of values reported by survey respondents is less than 5, no box-and-whisker diagram will be shown. Mean values are presented only when three or more responses are available.



The growth in volume being contracted over recent years has been moderately decoupled from growth in volumes retired. Particularly in 2009 and 2010, the total volume contracted has risen dramatically while the volume slated for retirement has not increased to the same degree. Part of this may be explained by the fact that many of these recent contracts precede credit issuance, and delivery may still be one or more years down the road. In addition, although many project developers have contracted directly to buyers with retirement interests, a significant and growing volume of credits are being further traded or retired from the secondary market without the direct knowledge of the project developer. The actual volume of

credits to be removed from circulation stemming from these contracts remains to be seen. The emergence and increasing use of registries to track the issuance and retirement of credits should lend greater transparency to this phenomenon as the number of credits tracked through them continues to grow.

Figure 9: Historical Sales and Retirement (Primary & Secondary Markets)



Note: Volumes sold and retired are based on direct reports on transactions by project developers and secondary market suppliers. Survey respondents were also asked, in a separate question, to specify the motivations of their credit buyers. The retirement proxy shown in 2010 is calculated by multiplying the proportion of credits with a reported buyer motivation of retirement applied to the total volume contracted (including volumes reported without any buyer motivations). 2010 was the first year respondents were asked to classify buyer motivations, and therefore the only year for which a retirement proxy is shown.

Source: Ecosystem Marketplace

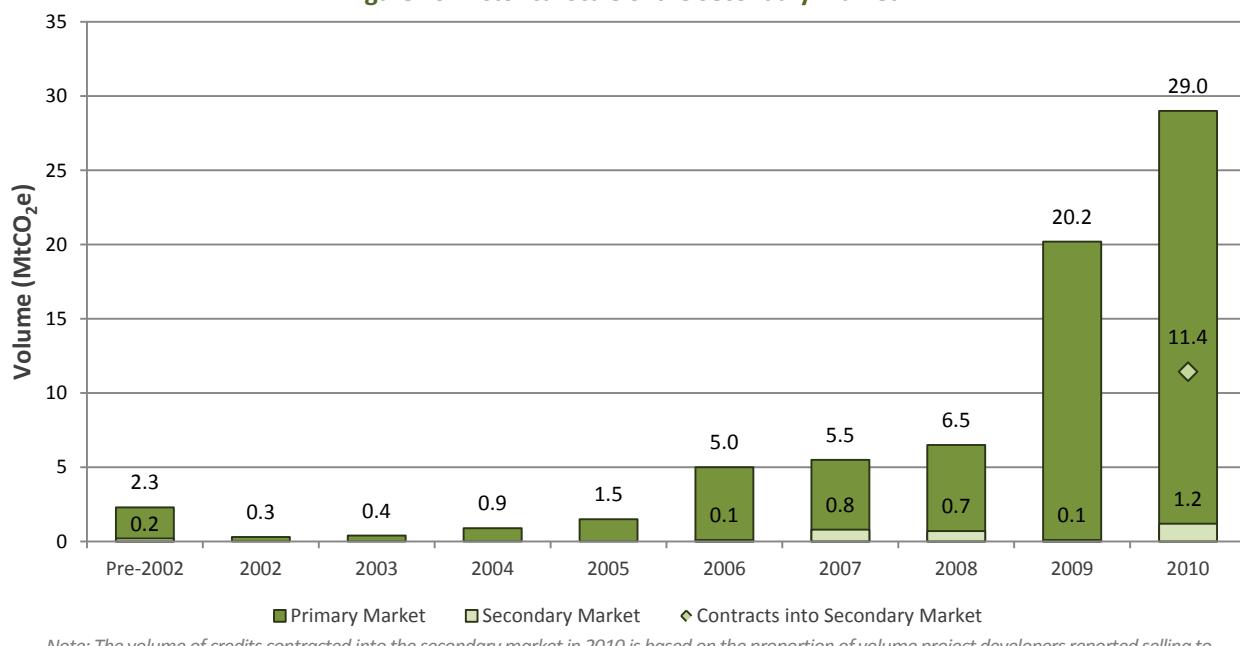
Secondary Market Activity

In the global carbon markets, which include many project types beyond forest carbon, a thriving secondary market has emerged where numerous buyers and sellers trade offset credits and other emissions units after the original transaction of credits from the project has been executed. The secondary market related to the Kyoto Protocol is an order of magnitude larger than the primary market and serves a critical function for end-users of these credits and other emissions units by providing liquidity and enhanced price discovery.

This report was designed to focus on forest carbon transactions in the primary market. However, when coupled with information collected from secondary market suppliers for the *State of the Voluntary Carbon Markets* report, the volumes contracted by primary and secondary market suppliers with reported buyer motivations help provide a glimpse of nascent secondary market activity (see Figure 10).

The direct responses from secondary market suppliers to the *State of the Voluntary Carbon Markets* report suggest the secondary market for forest carbon credits has historically been very small, ranging as high as 15% of the size of the primary market (2007). When considering the buyer motivations reported from survey respondents (only available for 2010 contracts), however, buyers in the secondary market appear to be contracting for a greater supply of credits than ever before. Of the volume that primary and secondary market respondents reported contracting in 2010, nearly 40% is destined for re-sale. This translates to a volume of 11.4 MtCO₂e contracted in 2010 for eventual delivery into the secondary market. Assuming a significant proportion of these credits contracted in 2010 are successfully delivered in the coming years, secondary market players appear to be preparing to take on larger volumes as intermediaries, belying a confidence that they can successfully find a home for the large volume of credits they have contracted down the pipeline.

Figure 10: Historical Scale of the Secondary Market



Note: The volume of credits contracted into the secondary market in 2010 is based on the proportion of volume project developers reported selling to buyers with a re-sale motivation. The bars showing the historical primary and secondary market volumes are based on direct reporting from suppliers in both of these markets to the forest project developer and voluntary carbon market surveys.

Source: Ecosystem Marketplace

Market Snapshot: Voluntary OTC



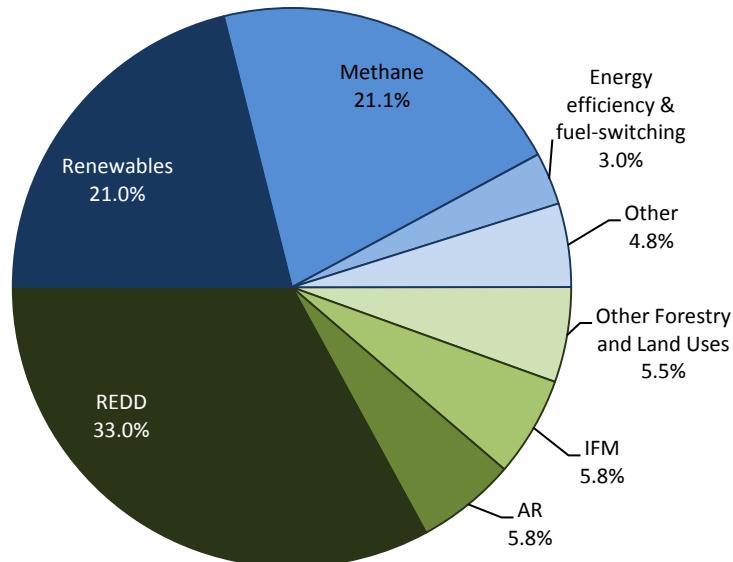
The forest carbon markets have historically been dominated by a wide range of transactions in a voluntary market driven without any sort of emissions cap. Because nearly all transactions in this marketplace to date have occurred without the use of a formal exchange, we have labeled this suite of market activity as occurring within the voluntary “Over-the-Counter” (OTC) market. Although the rise of registries and standards have brought a dramatic new shape, structure, and greater transparency to the marketplace, the overwhelming majority of transactions in the forest carbon markets continue to be conducted through customized and privately-negotiated contracts in the voluntary OTC market.

OTC Activity at a Glance

Prior to 2005, the OTC market was the exclusive home for forest carbon. Since then, the various other emerging market programs have made variable inroads in terms of global market share in the primary market for forest carbon, but OTC remains dominant. In 2006, a flush of contracting in the CDM led to an all-time global market share low of 25% by volume for the OTC, but falling contracting in the CDM and a resurgence of volume in the OTC pushed its global market share over 70% in 2007, up to 79% in 2008, 75% in 2009, and finally up to 91% in 2010.

Over time, the OTC market has seen more than 59.0 MtCO₂e of forest credits contracted. In 2010, forest carbon provided 46% of the total volume contracted across the broader voluntary OTC market covering all project types (primary and secondary market supply, see Figure 11). The OTC market boasts the deepest and most diverse portfolio of projects, with at least 273 distinct projects with credits contracted over more than 20 years (see Figure 12). The flurry of contracting for CDM forest credits in 2006 briefly eclipsed the OTC, but the market roared back and sprung from 1.3 MtCO₂e contracted in 2006 to 5.8 MtCO₂e in 2008. By 2009, the OTC market had clearly begun an unprecedented growth spurt. That year, the OTC market brought together buyers and sellers covering an unprecedented 15.3 MtCO₂e, and in 2010 delivered another record-breaking year with 27.4 MtCO₂e contracted.

**Figure 11: Forest Carbon Share of Voluntary OTC Market
(Primary & Secondary Markets)**



Note: Based on total voluntary OTC volume in 2010 of 59.7 MtCO₂e across primary and secondary markets. This total is slightly larger than that reported in the State of the Voluntary Carbon Markets 2011 report due to additional forest project data received following that report.

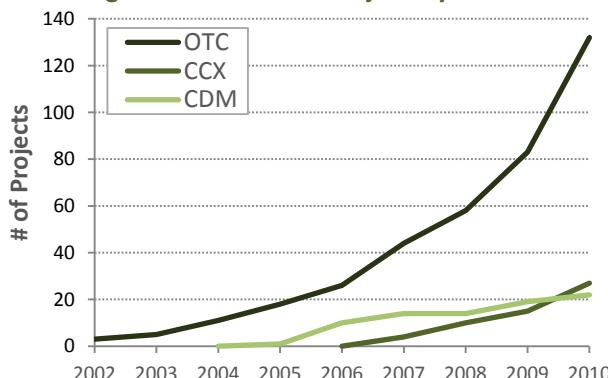
Source: Ecosystem Marketplace

The Reach of the OTC Market

Of the three forest offset markets with international scope (i.e., CCX, CDM, and OTC), project developers active in the OTC market have been able to transact credits from projects in more countries than their counterparts under CCX or CDM combined (see Figure 13). The flexible nature of the OTC market means that project development often does not require endorsement or involvement from government officials or bureaucratic institutions. Projects in the OTC market are free to

expand into countries with limited government capacity, while for CDM projects doing so may present a critical bottleneck due to CDM requirements for formal government approval before a project can be validated.

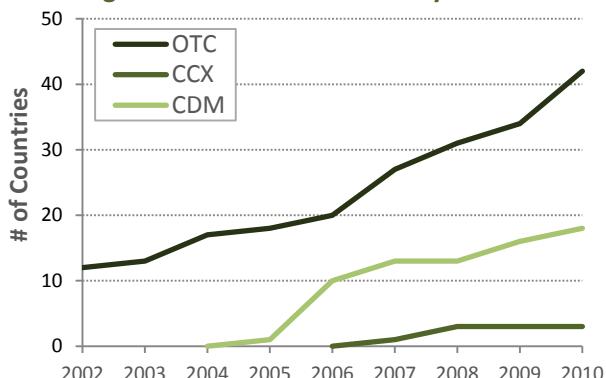
Figure 12: Cumulative Projects by Market



Note: The cumulative project count is based on the number of projects that have reported contracts to Ecosystem Marketplace. Prior to 2002, 141 projects in the OTC market had already contracted offsets. They have been left out of this graph to maintain a meaningful scale.

Source: Ecosystem Marketplace

Figure 13: International Reach by Market



Note: The count of countries with operational projects is based on the number of projects that have reported contracts to Ecosystem Marketplace. Prior to 2002, project in the OTC market had contracted credits in 11 different countries.

Source: Ecosystem Marketplace

A Buyer's Market

Because buyers are not compelled to participate in the voluntary OTC market as a result of any regulations, the volume of trades executed in any given year are closely tied to the level of demand. This demand emerged from a variety of buyer segments that cited a diverse set of reasons for engaging in the market, including:

- Offsetting individual or corporate GHG emissions;
- Retail sale of credits or bundled environmental products to individuals or companies;
- Supporting environmentally friendly projects for corporate social responsibility purposes;
- Interest in integrating the valuation of ecosystem services into environmental management systems;
- Building experience and fluency in carbon market dynamics in preparation for compliance programs;
- Investing directly into forest carbon projects for a return on investment;
- Purchasing voluntary offsets for end-use as a pre-compliance hedge against coming regulatory liabilities;
- Resale speculation on the future value of forest credits.

Each of these motivations brings different buyers to the market with different expectations. As a buyer's market where purchases are entirely voluntary, the nature of a buyer's interest can have a large impact on the eventual price point and volume negotiated. For large buyers in the marketplace moving greater volumes as resellers or with greater experience negotiating the carbon market, a variety of other variables beyond a credits end-use start to come into play, such as the standard used, the project type, and a variety of risks underlying the delivery of credits. As a large part of 2010 market activity comes from the commitment to deliver millions of credits that have yet to be verified or issued, the risk perception of buyers is a critical component to market access and has likely had a strong influence over the prices taken by project developers looking to move larger volumes.

REDD Fueling Growth and REDD+ on the Horizon

The OTC growth shown in 2009 and 2010 has been brought about in large part by the emergence of a new generation of REDD projects. With no existing compliance scheme yet to host transactions of REDD credits, the OTC market has been the sole home for these projects and led the development of a host of new methodologies for crediting them. As REDD rose from supplying less than 20,000 tCO₂e in 2006 (representing less than 2% of the OTC market), these projects rapidly picked

up speed, reaching 3.3 MtCO₂e supplied in 2008 (65% of the OTC), 9.0 MtCO₂e in 2009 (59% of the OTC), and a whopping 19.5 MtCO₂e in 2010 (71% of the OTC). Standing alone, REDD projects in the voluntary OTC have contracted for a greater volume of forest credits and a larger prospective value than any compliance market to date.

An Increasing Role for the Private Sector

Although the OTC market is decentralized and general trends are often hard to distill, it is clear that private sector stakeholders are coming to play a much larger role in the marketplace as investors and project developers, but also with increasing numbers stepping into the market as buyers and intermediaries. The escalating level of private sector engagement, including more mainstream financial institutions, indicates a growing confidence in the future of forest carbon investments.

For Steve Baczko, Director of Commercialization at ERA Ecosystem Restoration Associates, the private sector needs feedback from their public counterparts to make these new investments in REDD+ readiness work. “The important role of the private sector in stimulating REDD is taking a level of market risk to prove out the concept, both as traditional early movers, but also as necessary extensions of governments wishing to participate that do not yet have the full complement of tools, experience, or capacity to do so,” he said. “The private sector and market play an essential role that has yet to be defined, but the various governments and land ownership groups also need to support the capacity building through policy and contracts.”

As the billions of dollars start to make their way to the ground in countries around the world, it will be important to watch how investment and demand in the OTC market are integrated into these massive government down payments for REDD+. Much of this public-private engagement will be echoed in international climate policy debates coming in Durban, South Africa and beyond, as negotiators debate if and how market mechanisms may be brought to bear for forest conservation and other climate change mitigation strategies.

Standards as the Interface of OTC and Compliance Markets

Although most of the transactions in the OTC market have been negotiated behind closed doors, the evolution and experimentation in the market has been a compelling laboratory for innovative policies. In particular, the standardization in the OTC market has gained such credence and confidence that it is now leading directly into compliance rules. The adoption of The Reserve’s protocols by California’s Air Resources Board (ARB) is a clear example of OTC innovation finding a home in compliance markets. The recent decision by the ARB to also review several non-forest protocols developed by the American Carbon Registry (ACR) further demonstrates the value of the OTC methodology laboratory.

The accounting methodologies for REDD under any compliance regime still remain to be sorted out. The Verified Carbon Standard (VCS) has stepped out in front to begin operationalizing and scaling up REDD accounting for projects with a commitment for collaboration between VCS’s Advisory Committee on Jurisdictional and Nested REDD and the Governors’ Climate and Forests Taskforce (GCF) REDD+ Offset Working Group (ROW). This is likely to be another fruitful area where the OTC experience may illuminate options for moving forward within a compliance framework.

As other forest carbon markets struggled with finding the right balance between rigor and accessibility, the OTC marketplace dabbled across the board. Forest carbon policies are developing in novel directions compared to early contributions from the CCX and CDM. From the growing sophistication of the buffer pool approach for unexpected carbon losses, an expanded roster of project types, the development of social and biodiversity standards, to several new methodologies paving the way for REDD, the OTC market has been, and will likely continue to be, an indispensable proving ground.

Market Snapshot: Chicago Climate Exchange



The Chicago Climate Exchange launched North America's first emissions trading scheme for GHGs in 2003. Beginning with 13 members who voluntarily assumed legally binding commitments to reduce their emissions 4% from a 1998-2001 average by 2010, the program eventually grew to cover more than a hundred members with a total emissions scope of 700 MtCO₂e. From 2003 to 2010, the program completed two compliance periods (2003-2006 and 2007-2010), allowing new members to join in the second phase and take on the commitment to an accelerated 6% reduction by 2010. The system closed its trading doors at the end of 2010.

Revving Up the Assembly Line

Of 14 other eligible offset project types, the CCX included forest carbon offsets of two main varieties: AR and Sustainably Managed Forests (or SMF, similar to today's Improved Forest Management category). The CCX also pioneered the first aggregation schemes to bundle together numerous landowners and project areas into a single project to streamline development and reduce transaction costs, particularly for smaller landowners. The CCX forest protocols attracted interest from outside the US as well, with projects popping up in Brazil, Uruguay, Chile, Costa Rica, and Colombia. In addition, CCX served as a strong and early supporter for soil carbon projects. From 2003 to 2010, CCX issued 31.5 MtCO₂e to agricultural and rangeland soil projects in the USA and Canada, more than double the volume issued to forest projects.

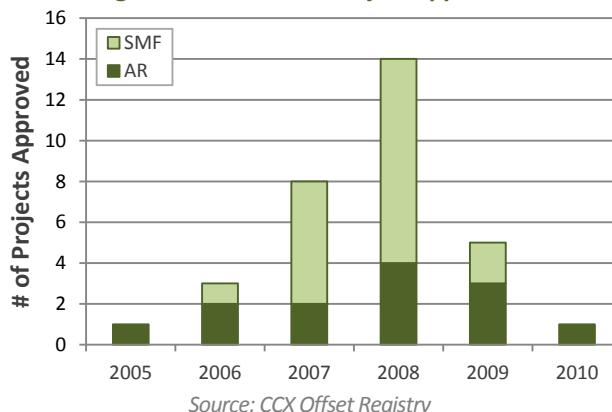
CCX's streamlined approaches to forest accounting and aggregation allowed for relatively rapid project development and approval, which were put to use by 14 different companies who developed a total of 32 forest projects from 2005 to 2010 (see Figure 14). For John Ramey, Manager at Valley Wood, Inc., the fourth-largest

recipient of CCX forest credits, building up enrollment was not the challenge. "It wasn't a difficult sell to suggest there was a market, because at the time there really was a market. The challenge was having to apologize for the price going down," he said.

Market Activity into the Fall of 2009

As the US Congress began to debate several iterations of legislation for a federal cap-and-trade program, CCX registration of forest projects was at an all-time high. Although national cap-and-trade ultimately crumbled, the legislative process fueled an intense amount of speculation in the voluntary carbon markets, which had by then seen many new faces enter since CCX had first opened its doors. Speculative purchasing in the voluntary carbon markets abounded over which voluntary standards were likely to be accepted into a federal scheme. But when the rules being considered by legislators left little room for hope that the CCX's Carbon Financial Instruments (CFIs) would make the cut, a swift and dramatic decline in demand followed for CCX credits, and the prices and market activity on the exchange rapidly hit the floor. After peaking at more than \$7.0/tCO₂e in May 2008, the price of CFIs trading on the exchange had plummeted to \$0.1/tCO₂e by October 2009. All transactions of forest CFIs within the cap-and-trade program had ended by 2010. Outside the program, the exchange was used to transact nearly 60,000 tCO₂e in 2010, and survey respondents reported selling more than 80,000 tCO₂e off the exchange. Both the on- and off-exchange transactions posted an average price of \$1.0/tCO₂e.

Figure 14: CCX Forest Project Approvals

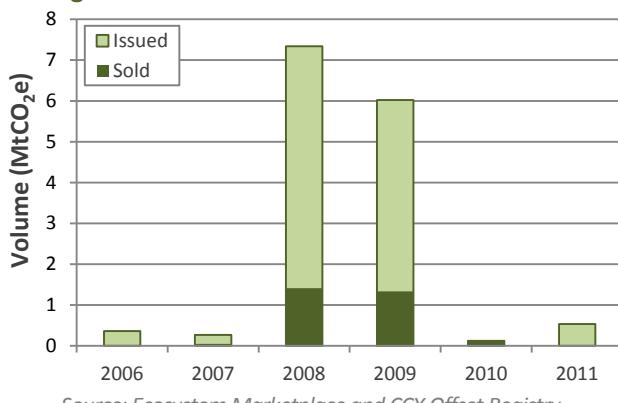


As the CCX concluded its final emissions trading scheme year, CCX's parent company was taken over by IntercontinentalExchange (ICE), an international trading infrastructure provider. In the takeover, CCX was not the main attraction. As part of the deal, ICE also acquired the Chicago Climate Futures Exchange and the European Climate Exchange, both of which host environmental futures trading well beyond the scope of the CCX. Nevertheless, some of the machinery governing the CCX offset program has been maintained despite the closure of the CCX cap-and-trade component, and an offset registry, which provides credit issuance and basic project-level data, is scheduled to run through 2012.

Left Holding the Bag

The decline in prices and trading at the CCX came just as interest from forest project developers was peaking. Through 2009 and 2010, Ecosystem Marketplace received responses from several CCX project developers to our voluntary and forest reports. As of 2010, our respondents had been issued a total of 10.7 MtCO₂e—or just over 75% of the total forest volume issued under the CCX program. To date, however, these respondents and the sales tracked on the exchange only cover 2.9 MtCO₂e (see Figure 15). A total of more than 14.6 MtCO₂e have now been issued to forest projects, meaning as many as 11.7 MtCO₂e may be left on the balance sheets of these 14 project developers. Many developers are now left wondering where these credits can find a home, and most likely still looking to recoup the costs of developing projects.

Figure 15: CCX Forest Credit Issuances and Sales



Source: Ecosystem Marketplace and CCX Offset Registry

A Mixed Legacy

Although the shuttering of CCX concludes a major chapter in the evolution of the carbon markets, some of its policies continue to be adapted and evolve with a life of their own. The transition away from the temporary crediting model of the CDM towards a buffer pool for mitigating unexpected carbon losses saw its first widespread application under the CCX, and every major standard apart from the CDM now utilizes the buffer approach (with some such as the ACR innovating even further on the concept).

What's more, the aggregation model pioneered by CCX to encourage the enrollment of numerous farmers, ranchers, and forest owners has also been picked up and restructured in exciting new ways. The VCS, Climate Action Reserve (CAR, or The Reserve), ACR, and CDM now all have guidance or formal rules for aggregating projects and most are in the process of rolling out the next evolution of aggregation where "programmes of activities" will allow project developers to group different types of complementary activities that earlier would have required separate project documentation and verification.

In the United States however, the fall of CCX still casts a long shadow. Numerous early landowners participated in CCX aggregation programs, and watched their project's value hit rock bottom for reasons completely beyond their control. In the wake of these events, new project developers reaching out to aggregate landowners into new ACR, CAR, or even VCS projects will no doubt have to convince some of these landowners that history won't repeat itself.

According to Chandler Van Voorhis of C2Invest, a project developer now aggregating landowners in the Mississippi Valley under ACR, "When CCX started taking off, there were a lot of aggregators promising money on trees," he said. "They overpromised and under delivered, leaving a major hurdle for convincing these landowners that carbon is viable."

For Ramey of Valley Wood Inc., newer standards from California and the ACR will be hard pressed to recapture the cohort of CCX landowners. "The price will have to match the obligation," he said. "They understand the implications of the longer term obligation and what that means for the next generation and they want to make sure that they are properly compensated for what they are doing."

Market Snapshot: California



In 2001, the state of California enacted legislation creating the California Climate Action Registry, a non-profit entity designed to encourage the voluntary reporting and registration of corporate GHG emissions. The first carbon offset protocols designed under this program were for carbon sequestration in forests. As the program and demand for a greater scope of services including nationally applicable offset standards grew, the California Registry initiated the Climate Action Reserve program and was eventually subsumed by it in 2009.

In 2006, California passed the Global Warming Solutions Act of 2006 (AB 32), the first economy-wide regulatory program in the US dedicated to addressing climate change. Since then, the California ARB, the regulatory agency responsible for implementing AB32, has been developing a cap-and-trade program that covers 85% of the state's GHG emissions and is open to offset credits. By the end of 2010, the ARB had adopted an initial set of regulations to implement the cap-and-trade program, including the authorization of The Reserve's two forestry protocols for use in the compliance market.

Over the course of 2011, the ARB has struggled under deadline to produce final rules and guidance for the implementation of the cap-and-trade program while battling several court cases challenging the policy. In the summer of 2011, ARB announced it would delay enforcement in the first compliance period, originally scheduled to begin in 2012, until 2013. This delay will not change the reduction of the cap, nor alter the 2020 emissions reductions goal.

The Intersection of Voluntary and Compliance Forestry

Until the approval of compliance offset protocols by the ARB in 2010, forest projects conducted using the CAR methodologies were technically early actors in the voluntary carbon market. The repackaged ARB forest protocols now pave the way for these early action projects in the US to transition into the compliance regime. Projects started before 2011 are eligible to transition⁷ CAR credits (Climate Reserve Tonnes, or CRTs) from vintages 2005-2014 on a one-to-one basis over to ARB compliance offset credits, with one major caveat that projects verified through an earlier version of the Forestry Protocol (v2.1) will need to conduct a risk assessment and contribute to the buffer pool (the buffer pool was not implemented in these earlier versions of the Protocol). In addition, when these projects transition to the compliance protocol in 2015, they will be required to recalculate their baseline.

An emerging picture of the California cap-and-trade scheme provides a glimpse of the potential marketplace dynamics into which forest projects will fit. Under current regulations, 8% of an emitter's compliance obligation under the cap-and-trade scheme can be met through the use of offsets. This translates roughly to 13 MtCO₂e in 2013, equivalent to 45% of the 2010 primary forest carbon market, and a total of 200 MtCO₂e from 2013-2020. For the first compliance period, up to 25% of these offsets may be supplied from international REDD activities, increasing to 50% after 2014. See Table 4 for the annual caps for allowances and offsets.

Table 4: California Allowance and Offset Levels

	Allowances (Cap)	Total Offsets	Sector-based Offsets
Year			
2012	--	--	--
2013	162.8	13.0	3.3
2014	159.7	12.8	3.2
2015	394.5	31.6	15.8
2016	382.4	30.6	15.3
2017	370.4	29.6	14.8
2018	358.3	28.7	14.3
2019	346.3	27.7	13.9
2020	334.2	26.7	13.4
Total	2,508.6	200.7	93.9

Note: All allowances and offset volumes reported in MtCO₂e.

Source: Calculations based on July 2011 ARB Discussion Draft⁶

⁶ Available at <http://arb.ca.gov/cc/capandtrade/meetings/072011/cap-and-trade-discussion-draft.pdf>.

⁷ The current ARB regulation indicates conversion into compliance credits shall require a one-time desk review of all previous project verifications, and not a complete re-verification including site visits, etc.

About the Eligible Protocols

The CAR Forestry Protocol includes Reforestation, Improved Forest Management, and Avoided Conversion (roughly equating to AR, IFM, and US-based REDD). The CAR and ARB Urban Forestry Protocols cover activities by municipalities, educational facilities, or utilities to plant trees along roadways, parks, parking lots, and other open spaces. All projects developed under the latest CAR and ARB Forest Project Protocols⁸ are required to contribute credits into a set-aside buffer pool to compensate for unintentional carbon losses from the project over time. The size of this pool is determined by a project-level risk assessment. In addition, all forest projects pursuing ARB offset credits commit to a crediting period of 25 years, plus 100 years of monitoring and verification following the last credit issuance. This is by far the longest specified monitoring period imposed by any forest carbon standard to date. Projects may renew for a second crediting period, but must apply the latest version of the relevant forest protocol (i.e., if ARB updates or revises the methodology, a project will be required to use that new methodology).

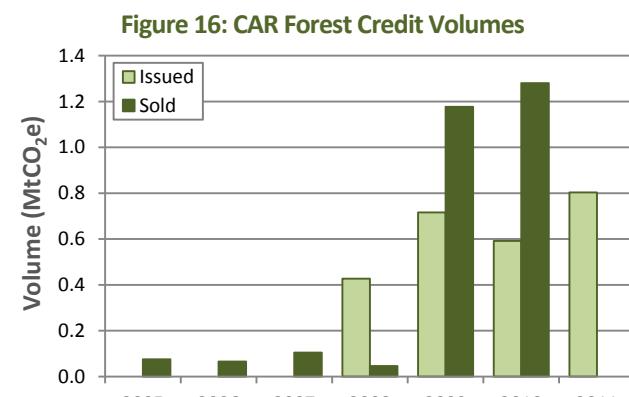
The California Market

As of August 2011, credits covering a total of 2.5 MtCO₂e have been issued as CRTs to five forest projects (see Figure 16). All five of these projects have contributed responses to this or the *State of the Voluntary Carbon Markets* report, although two did not update responses for 2010 transactions. Since 2005, when the first forest CRTs were contracted, more than 2.7 MtCO₂e have been committed by 15 different projects applying the CAR standard through 2010.⁹ Over 2009 and 2010, CAR forest contracts represented 5.8% and 4.4% of the global volume transacted and 36.1% and 30.4% of the total volume from US projects, respectively.

With the light extinguished for any US federal cap-and-trade program in the near term, California emerged as the single clearest home for pre-compliance offsets. Compared to the 2010 global market where the volume sold to buyers with pre-compliance¹⁰ motivations represented 24% of the total contracted in 2010, projects using the CAR standard reported a pre-compliance motivation for 52% of the volume sold.

Although we are unable to distinguish volumes and prices from before and after the ARB approval from our dataset, the impact of the ARB offset protocols on the offset market is now evident from prices being reported on the ground. In addition, an unexpected disincentive for credit issuance under The Reserve by early action projects may appear.

Sean Carney, VP of Carbon Finance for US-based project developer Finite Carbon explains why many projects currently listed on the CAR registry may not rush to have CRTs issued: “If you want to go through the CAR process to get to ARB, you have to go through three different verifications. 1) To get into the CAR program; 2) To grandfather your existing tons into the ARB program; and 3) To convert your entire project over to an ARB project. Each one of those steps has risk in it, and you might not get to the final step. The alternative is to just wait to go through the ARB process. CAR credits are worth \$8 right now, ARB [eligible] credits are worth \$11. Why get less money for more expense?”¹¹



Source: Ecosystem Marketplace and CAR Registry

⁸ Four projects currently registered under The Reserve used an earlier version of the protocol (v2.1) that did not require buffer pool contributions.

⁹ This includes projects planning to apply the ARB Compliance Offset Protocol for US Forest Projects.

¹⁰ This calculation includes compliance end-use and resale for projects applying the CAR standard in addition to pre-compliance end-use and pre-compliance re-sale for all projects.

¹¹ Projects with pre-2006 start dates can only participate in the ARB program if they were first registered as CAR projects.

Building Out for the Future

Forestry Outside the US

Although the current ARB-approved protocols are limited to forest projects in the US, ARB's draft update to the cap-and-trade regulations broadens the eligibility for offsets to the US, Canada, and Mexico, with an eye towards several ongoing processes for international REDD+ linkage in which California is participating.

California is a part of the Governors' Climate and Forests Task Force (GCF), a collaboration between fifteen states and provinces throughout the US, Mexico, Brazil, Indonesia, and Nigeria to foster the development of necessary rules and capacities for bringing REDD+ into GHG compliance schemes.

In late 2010, California signed agreements with the Mexican state of Chiapas and the Brazilian state of Acre to work towards enabling these states to generate REDD credits that could be used by compliance in California (i.e., as offsets). This agreement created the REDD Offset Working Group (ROW), which is currently developing recommendations to the ARB for the technical design of such REDD linkages and crediting pathways. In addition, the VCS is developing its own rules for Jurisdictional and Nested REDD to enable the crediting of REDD policies, programs, and nested projects, with an eye to enabling partner states to generate California compliance credits.

Meanwhile, The Reserve is also currently working on a protocol to enable forest carbon offsets from Mexico using a nested REDD+ framework. The protocol, scheduled for completion by the end of 2011, would apply to projects throughout Mexico. With the expansion of ARB language to include offsets from Canada and Mexico, the door seems open for California to turn to its neighbor to the south to look for additional offsets to feed into its cap-and-trade scheme.

These various initiatives strongly indicate that California is likely to be the first compliance emissions trading scheme to welcome international REDD+ offsets. "California has opened the door for that," said Gary Gero, President of The Reserve. "We are leading the effort to write a nested REDD+ protocol for use in Mexico. If you look at the draft regulation, it makes explicit that they are looking to include projects from Canada and also specifically from Mexico. So that immediately, as soon as California is prepared to accept projects from outside the US, a Mexico protocol could be adopted and could be used."

The CAR plans to dock the rules from its Mexico protocol firmly within the broader guidance set by the GCR and ROW. "The GCF and ROW are setting the framework, while our protocol provides the on-the-ground requirements within that frame that will allow us to quantify the carbon benefits of projects in Mexico so that they can be creditable," Gero said.

The Western Climate Initiative

While the California state-level process moves haltingly forward, the Western Climate Initiative (WCI) is also moving ahead with the groundwork for a regional emissions trading program. Formed in 2007, the WCI is a partnership of seven US states (Arizona, California, Montana, New Mexico, Oregon, Utah, and Washington) and four Canadian Provinces (British Columbia, Manitoba, Ontario, and Quebec) working together to coordinate climate change policies.¹² In July 2010, the WCI published a proposal for the design of a regional program to reduce GHG emissions to 15 percent below 1990 levels by 2020, including a regional cap-and-trade program. The first phase of the program is scheduled for launch in 2013 and would include offsets, although the specific usage limits and offset project types eligible are not yet clear. Nevertheless, all of the program design considerations explicitly address issues surrounding sequestration projects and have articulated a goal of welcoming offsets from member states' own programs.

¹² As of September 2011, the states and provinces of California, Quebec, and British Columbia are preparing for a 2013 launch target. All other states and provinces have not yet begun implementing policies targeting this start date.

Market Snapshot: Clean Development Mechanism



The Kyoto Protocol is an international agreement adopted in 1997 aimed at fighting global warming by reducing GHG concentrations in the atmosphere. The protocol entered into force in 2005 and required 37 industrialized countries—known as Annex I countries—to reduce their GHG emissions to five percent below 1990 levels over a five-year period, 2008–2012. With the protocol came a series of flexibility mechanisms that allowed developed countries to mitigate the cost of meeting GHG emissions targets by trading or purchasing emission reduction credits. These mechanisms spawned the largest carbon market the world has seen to date.

Kyoto's Nuts and Bolts

Within the Kyoto Protocol, there are three key mechanisms enabling market activity: the Clean Development Mechanism (CDM), Joint Implementation (JI), and Emissions Trading. The CDM and JI are the offset credit arms of the Kyoto market, both of which allow for the generation of carbon credits from forest projects. The CDM is designed to encourage investment in sustainable development projects in developing (or non-Annex I) countries and allows Annex I countries to meet a portion of their emission reduction commitments by purchasing Certified Emission Reductions (CERs) generated from projects in those countries. The JI mechanism allows Annex I countries to meet a portion of their reduction commitments by investing in emission reduction projects in other Annex I countries.

While the JI allows for a broader scope of forestry activities, the only forest project type allowed by the CDM is Afforestation/Reforestation (AR). Developed countries are limited to using AR credits in the first compliance period (2008–2012) for up to 5% of their emissions obligations.¹³ To date, the use of the JI mechanism for forest projects has been very limited, and we will focus hereafter on forestry activities under the CDM.

A Temporary Fix

AR credits are not functionally equivalent to other CERs developed under the CDM. This distinction was a policy choice made to resolve a unique problem faced by forest (and other biological sequestration) projects: How can a buyer of credits be certain that the trees which sequestered the carbon and generated the reductions will still be standing in the future? As one of the first institutions to address this concern, the CDM developed two unique types of credits to ward against reversal, the *temporary CER* (tCER), and the *long-term CER* (lCER). tCERs are short-term in nature, expiring at the end of the commitment period following the one in which they are issued, while lCERs expire at the end of the project's crediting period(s). In terms of generating credits, project developers may choose between a 30-year capped crediting period or a 20-year, twice-renewable, crediting period.

The CDM State of Play

AR projects make up a very small portion of the total projects within the CDM pipeline. The CDM has registered 30 AR projects to date, equaling just 0.75% of the total number of registered projects as of September 2011. For context, however, just a few project types dominate the CDM, with more than 67% coming from energy industries and roughly 14% from waste handling and disposal projects. The first AR project was registered in the CDM in November 2006; the next was not registered until 26 months later, in January 2009. Since that time, however, there has been a small but steady stream of AR project registrations, with 10 in 2009 and seven in 2010. Showing promising growth, 10 new projects have already been

¹³ This amount corresponds to a cap on the use of AR credits from 2008–2012 of 799 MtCO₂e. This cap is astronomical compared to the 10.8 MtCO₂e (registered projects) and 20.5 MtCO₂e (registered and non-registered projects) that could be generated by CDM AR projects by 2012. See the UNEP Risø Centre's CDM pipeline for these and more data on CDM project registration at <http://cdmpipeline.org/>.

registered in the first six months of 2011,¹⁴ and there are currently 34 additional projects earlier along in the CDM pipeline.

No tCERs or ICERs have been issued to any forest project under the CDM to date. Projects are waiting until the end of 2012 to maximize the volume of credits usable in the first commitment period, as they would only be able to be issued credits once during this period. While there is uncertainty surrounding the post-2012 fate of the Kyoto Protocol and the relevance of its mechanisms, buyers continue to contract for future credit delivery. Since the first deals were reported in 2005, respondents have reported a total of 7.8 MtCO₂e contracted from CDM projects, with average prices floating in the range of \$4.5/tCO₂e (see Figure 17).

Respondents reported 1.4 MtCO₂e contracted in 2010, a 30% decrease from the 2.0 MtCO₂e in 2009. Average prices seen in the CDM forest market stepped down from \$4.7/tCO₂e in 2009 to \$4.5/tCO₂e in 2010. For comparison, the average price of credits in the voluntary OTC market in 2010 was \$5.6/tCO₂e.

When it comes to demand, one major buyer seems to take on the lion's share of the market. The World Bank's BioCarbon Fund was established in 2004 to encourage further development and innovation in the Land Use, Land-Use Change, and Forestry (LULUCF) sector by providing carbon finance to projects under both the CDM and voluntary OTC markets, and it has since taken an unparalleled role in the CDM market as the largest single buyer for CDM forest credits to date.

Beyond the BioCarbon Fund and several individual one-off agreements then, there appears to be no broad and consistent demand for CDM AR credits to date. Nevertheless, the CDM remains a critical market for AR projects globally, representing the largest single standard used for AR credits contracted in 2010 and 24% of the year's volume (see Figure 17 for the proportional contribution of the CDM to the AR market over time). However, within the CDM, a number of fundamental challenges continue to inhibit its expansion in the forest sector.

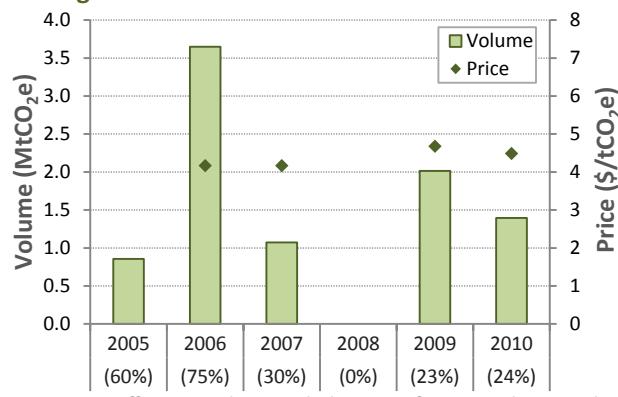
Charting a Path for Growth in the CDM

Despite the decline in volumes contracted from 2009 to 2010, methodologies for AR projects have been developed at a rapid clip since 2009. There are currently 20 AR methodologies approved for use under the CDM. The proliferation of complicated or narrowly construed methodologies under the CDM has been a cause of concern in the marketplace which led the CDM Executive Board to develop consolidated methodologies and simplify several rules. In 2010 the first AR methodology created from a top-down process (rather than the usual bottom-up method) was approved by the CDM Executive Board. Nevertheless, of the 20 currently available methodologies, only 8 have been used by registered projects so far; if projects undergoing validation are also considered, the total number of methodologies used rises to 12.

The task of setting up a methodology under the CDM led one downtrodden project developer responding this year to decry "the unbelievable delays and complication and costs for a methodology that in the end leads nowhere!"

Supply in the CDM has also historically been suppressed by the comparatively long validation periods for AR projects. Since the CDM began, the average time period from the opening of the public comment period (part of the project validation process) to eventual registration for all projects under the CDM was around 500 days; for the 27 registered forest projects,

Figure 17: CDM Volumes and Prices Contracted



Notes: Insufficient sample size to disclose prices for 2005 and 2008. Values in parentheses beneath each year indicate the proportion of the total AR volumes contracted that year comprised of CDM forest credits.

Source: Ecosystem Marketplace

¹⁴ <http://cdm.unfccc.int/Projects/projsearch.html>.

that average time was more than 600 days. This reflects the need to further simplify AR CDM rules and procedures to become more pragmatic and better accommodate realities on the ground.

On the demand side, two fundamental blocks continue to inhibit interest in CDM AR projects globally. Primary among these is the use of temporary credits. Although tCERs were an innovation at the time they were developed, less cumbersome ways for dealing with the permanence issue now see widespread adoption, primarily through “buffer pools.” Temporary credits expire, and when they do, they must be replaced with other units, representing an additional burden for the buyer, not to mention an accounting headache for national registries where entities surrendering credits in one year may cease to exist in the next. Nobody in the markets, it would seem, likes to play “hot potato” with their carbon credits.

For Ellysar Baroudy, Manager of the World Bank’s BioCarbon Fund, the CDM has come a long way, but still has room for improvement. “AR CDM projects in most developing countries face disproportionately large barriers to investment and the CDM could do more to overcome them,” she said.

According to Baroudy, “What currently hampers this potential is the temporary crediting approach to non-permanence; the mismatch between the rigor of the greenhouse gas accounting rules, and local capacity for project development and implementation; and the relative low volume of emissions reductions AR projects usually produce. While temporary crediting leads to low credit prices and limits their demand, complex rules result in high transaction costs and unpredictable carbon revenues.”

Stemming in part from the temporary nature of the credits, but also consistent with a prevailing earlier skepticism of forest-based credits, the European Union’s decision to exclude forestry credits from the EU Emissions Trading Scheme—currently the largest carbon trading scheme in the world—also placed a chilling effect on global demand. And even though Annex I countries to the Kyoto Protocol are allowed to use tCERs and ICERs for their own Kyoto commitments, there appears to be very limited interest in doing so to date. The uncertainty surrounding the future of the Kyoto Protocol and what the next compliance period might look like under any new agreement also contributes to a foggy market outlook.

Market Snapshot: New Zealand



New Zealand is the first and only country to date to regulate its forest sector within the cap of a national emissions trading scheme. Forestry was the only sector to be included under the policy from its initiation in 2008 until mid-2010 when the industrial, transport, and energy sectors entered as well. As an early mover, New Zealand has tested some of the first approaches for enabling the domestic forest sector to engage in national and international carbon markets, both as regulated emitters and as offsetters.

Forestry Leads the Way

30% of New Zealand's land area is forested. A large majority of this area is native forest, but is generally not managed for timber production or carbon offset projects, but rather as part of the "conservation estate." New Zealand's regulation and encouragement of forest carbon projects is primarily focused on the plantation forests that take up 1.8 million hectares (7% of the total national land area), although not exclusively. Roughly 90% of New Zealand's actively managed forest area is composed of radiata pine plantations, which typically apply short-rotation clear-felling.

The New Zealand Emissions Trading Scheme (NZ ETS) was created in 2008 as a least-cost means of achieving the country's Kyoto targets. The primary unit of trade in the NZ ETS is the New Zealand Unit (NZU), but regulated entities are also allowed to surrender some Kyoto-based units for compliance.¹⁵ Several amendments have been made since the scheme was first passed, including establishing a transitional period from July 2010 to December 2012 where NZUs are effectively capped at a price of NZ\$25 (US\$19) and a 2:1 rule where emitters need only surrender 1 NZU for every 2 tCO₂e emitted.

Different Roles for Different Forests

The NZ ETS separates and provides very different modes for engaging forests based on their year of establishment.

Land that has had continuous forest cover since 1989 or earlier (known as Pre-1990 forests) faces regulatory obligations for emissions if the land is converted to non-forest. For Pre-1990 forest owners, engagement with the ETS is solely an emissions liability. Pre-1990 forests cannot generate credits for increasing carbon sequestration, but also do not face penalties for harvesting or other activities that reduce carbon storage so long as the area remains forested. These landowners are being allocated NZUs from the government to offset the decrease in land value associated with the new regulations. A total of nearly 44 million NZUs are allocated for distribution to Pre-1990 forest owners based on the year of purchase and hectares of regulated forest. These allocations are split into two tranches, with roughly 40% to be transferred during the first compliance period and the remainder after 2012.¹⁶

In contrast to Pre-1990 forests, Post-1989 forests are those established after 1989, or, if forested before 1989, were subsequently deforested between 1990 and 2007. Post-1989 forests may enter the NZ ETS voluntarily and can be issued NZUs for increases in carbon stocks achieved after 2008, but are also liable for decreases from harvesting or other events.

As an alternative to entering the NZ ETS, landowners of Post-1989 forests may participate in the Permanent Forest Sink Initiative (PFSI). PFSI projects enter a covenant with the Crown registered against their land titles to guarantee forest cover in perpetuity. These projects have a right to terminate after 50 years, but must surrender the full volume of credits ever issued to the project. PFSI projects are not issued NZUs, but instead are allocated Kyoto-based Assigned Amount Units (AAUs) from New Zealand that can be used domestically or sold internationally through Kyoto-linked registries.

¹⁵ The use of Kyoto-based units for domestic compliance is restricted to New Zealand AAUs, and most international CERs, RMUs, and ERUs. Emitters may not surrender tCERs, ICERs, non-New Zealand AAUs, or nuclear-based CERs or ERUs for compliance within the NZ ETS.

¹⁶ <http://www.climatechange.govt.nz/emissions-trading-scheme/building/reports/ets-report/>.

The Numbers

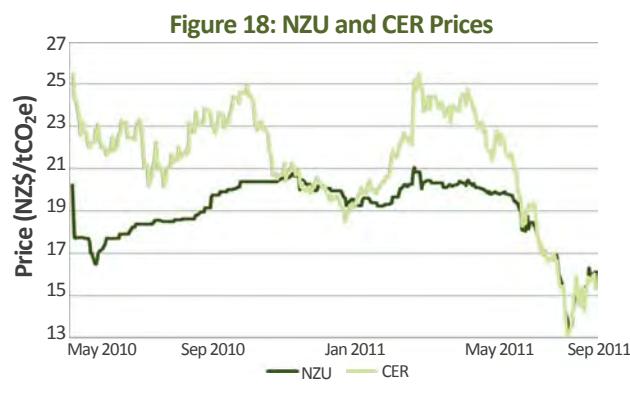
At least 31% of the 21.2 MtCO₂e that have been issued as NZUs to New Zealand pre-1990 and post-1989 foresters have been sold.¹⁷ For the most part, these credits stayed close to home. 5.3 MtCO₂e were surrendered for domestic compliance through 2010, and 1.2 MtCO₂e were converted to AAUs and sold overseas. According to the latest Ministry of Agriculture and Forestry (MAF) report of March 2011, just under 250,000 tCO₂e had been issued to PFSI projects as AAUs through the end of 2010. Project developers responding to Ecosystem Marketplace reported 230,000 PFSI credits had been contracted through 2010.

According to the Ministry of Environment (MOE), 1,215 participants have registered 200,000 hectares for Post-1989 projects, covering one third of the estimated eligible area. More than 1,000 applications have been received from Pre-1990 forest owners for their free NZU allocations (covering roughly half of the total 1.2-1.4 million hectares eligible), but since 2008 only 12 have had to surrender units for compliance obligations relating to 0.2 MtCO₂e of deforestation-related emissions. Under the PFSI, 31 projects had been registered as of March 2011 with an additional 22 still going through the registration process.¹⁸

What to Watch

Across the global markets for forest carbon credits, NZUs stand out with some of the highest prices consistently received. Moving in to 2011, however, the value of forest credits in New Zealand has become increasingly tied to the price of CERs generated under the Kyoto Protocol. Because emitters currently have the option of purchasing NZUs directly from the government for NZ\$25/tCO₂e (US\$19/tCO₂e) or unlimited use of international CERs for domestic compliance, domestic forest carbon prices are effectively capped by the lower of these two alternatives. CERs traded for NZ\$20-27/tCO₂e (US\$14.5-18.5/tCO₂e) across 2010, which, apart from a brief dip coming at the end of the year, was usually high enough above the going rate for NZUs such that emitters largely stuck with domestic units for compliance. Only 1.6% of the units surrendered in 2010 were CERs while at least 64% of the units surrendered were from forestry projects (the quantity of AAUs from PFSI projects that were surrendered has not been reported). In 2011, the prices for CERs slid from NZ\$25/tCO₂e (US\$19/tCO₂e) in April to NZ\$13.5/tCO₂e (US\$9.8/tCO₂e) in August.¹⁹ For the second time since late 2010, the falling price of the international CER has come into NZU price ranges and forced down prices in the domestic market (see Figure 18).

"At the moment, buyers are filling their compliance requirements with cheap CERs over forest credits," says Ollie Belton of Permanent Forests International. "The trading of carbon forestry units has come to a complete standstill because prices at this level do not support foresters selling their units." Belton expects that many forest industry players, who typically follow a long-term profit cycle, are likely to sit on their credits until prices reach an acceptable threshold.



¹⁷A June 2011 MOE report on the NZ ETS contains basic information on the overall issuance and surrendering of credits and can be found at <http://www.climatechange.govt.nz/emissions-trading-scheme/building/reports/ets-report>. The New Zealand Emissions Unit Register (NZEUR) provides a searchable database of credit holdings and transfers except for the current year. The Chief Executive publishes "Section 89" annual reports summarizing the data, available on the NZEUR website (<http://www.eur.govt.nz/>). According to the NZEUR annual reports, Post-1989 projects have generated 14.3 MtCO₂e through 2010; the MOE report indicates 6.9 MtCO₂e had been allocated as NZUs to Pre-1990 forest owners through 2010.

¹⁸Ministry of Agriculture and Forestry, 2011. *Review of MAF Afforestation Schemes*. This report provides data on the PFSI as of March 2011 and is available at <http://www.maf.govt.nz/Default.aspx?TabId=126&id=1124>.

¹⁹View CER prices from the IntercontinentalExchange at <https://www.theice.com/productguide/ProductDetails.shtml?specId=814666>.

New Zealand does not currently limit the use of CERs, but some market players like Belton and Mike Mitchell, Carbon Business Manager for IFS Growth, are hopeful the government will reconsider policy options such as a cap on CERs, a rule requiring a minimum percentage of surrendered units to be from domestic projects, or a price floor for NZUs.

Another change being considered for 2013 to undo the 2:1 rule would require emitters to surrender one credit for each tCO₂e emitted, essentially doubling the value of forest credits and demand in the market. Mitchell is looking forward to it. “I would expect some stabilization of price at a consistently higher level,” he said. “In theory, emitters would have to pursue sellers more aggressively to meet their obligations and sellers of forestry units would be more prepared to trade rather than hold units. Of course, this is contingent on a lift of the price of CERs.”

There are also new sectors coming under compliance over the next four years, which should increase demand for NZUs. Nevertheless, according to the NZ ETS Review Panel, the MOE and the MAF have estimated that the potential domestic supply of NZUs could be nearly double the demand, based largely on the allocation of free NZUs to Pre-1990 forest owners.²⁰ What these landowners decide to do with their credits (i.e., to hold, bank for future periods, or sell) will play a central role in market dynamics for several years.

In the longer term, New Zealand is also working to connect to Australia’s cap-and-trade program, which is planned to start in 2015, although many details are still hazy. As Belton—who works primarily on developing projects within the PFSI—sees it, however, because most forest credits in New Zealand would fail basic offset additionality tests, he believes the market for business-as-usual forest NZUs may remain largely sequestered in New Zealand.

²⁰Emissions Trading Scheme Review Panel, 2011. *Emissions Trading Scheme Review 2011: Issues statement and call for written submissions*. <http://climatechange.govt.nz/emissions-trading-scheme/ets-review-2011/issues-statement.pdf>.

Market Snapshot: Australia



Although responsible for only 1.3% of global GHG emissions, Australia has the highest per capita emissions of any nation in the world. Since 2001, Australia has hosted a variety of GHG programs at state and national levels, and forest offset projects have been in the mix since the very beginning.

National and State Experience with Carbon Markets

Australia signed on to the Kyoto protocol in 1998, eventually ratifying the treaty in 2007. During the interim period, a nationwide government-mediated voluntary scheme, known as Greenhouse Friendly, was launched in 2001. Greenhouse Friendly was phased out in June 2010 with the expectation of an upcoming national cap-and-trade program, called the Carbon Pollution Reduction Scheme (CPRS) and supplemented by a new and voluntary program called for non-covered sectors under the CPRS, the National Carbon Offset Scheme (NCOS). However, the CPRS failed to pass through the parliamentary process, leaving the NCOS regime to be finalized and with greater focus on international offsets.

Without federal regulation, the only compliance carbon trading occurs under the New South Wales Greenhouse Gas Abatement Scheme (NSW GGAS), a state-level regulatory emissions trading initiative established in 2003. The GGAS covers electricity retailers and other parties who buy or sell electricity in NSW and the Australian Capital Territory. The GGAS was a direct attempt by the NSW Government to actively engage the issue of climate change through concrete policy, but always recognized that, if a federal scheme were implemented, NSW's program would be transitioned into the national program. If a national program is not implemented the NSW GGAS will continue to run through 2020 and has targets set through 2021.

Energy retailers face obligations to purchase GGAS offsets for emissions above a set benchmark by either paying the market price (around AU\$6/tCO₂e) or surrendering offset credits known as New South Wales Greenhouse Abatement Certificates (NGACs). NGACs are generated by projects that reduce the GHG intensity of electricity supplied to the grid, reduce electricity consumption or on-site industrial GHG emissions, or through afforestation and reforestation. The initiative does not accept carbon units from outside Australia, such as international CERs, Emission Reduction Units (ERUs), or Verified Emission Reductions (VERs). The NSW Independent Pricing and Regulatory Tribunal (IPART) administers a registry to record the issuance and transfer of certificates from abatement projects.

Forest NGACs are accounted for under the Greenhouse Gas Benchmark Rule (Carbon Sequestration). To be eligible, projects must be located within New South Wales and meet the forest activity and land eligibility framework specified in the Kyoto Protocol (e.g., only AR projects are eligible, and the forest must have been planted on or after January 1, 1990). Forest NGAC providers commit to maintaining sequestered carbon for 100 years, and carbon stocks may be estimated using a variety of methodologies, including the National Carbon Accounting Toolbox. Liability for the faithful application and ongoing validity of forest NGACs lies with the forest manager (i.e., the seller), and not the buyer.

The Numbers: Issuing and Surrendering Sequestration Credits

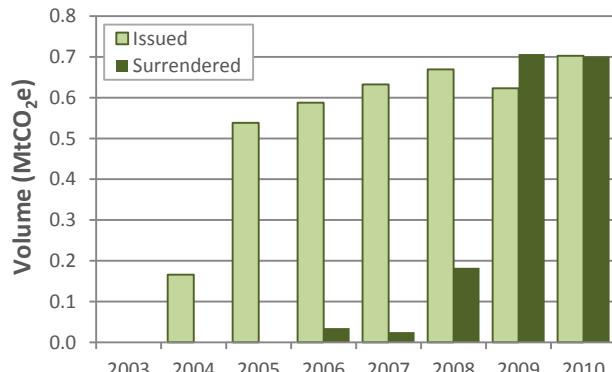
Over the life of the GGAS, credits generated from forest projects have totaled just under 3% of the GGAS total. Credit issuance to forest projects ramped up from 2004 (see Figure 19), but as of 2010, only five projects had been issued credits.

Although the overwhelming majority of GGAS transactions are compliance-driven, NGACs may also be voluntarily purchased and surrendered. In 2009, 3,801 forest NGACs were voluntarily surrendered, down from 31,920 in 2008.²¹ These voluntary deals correspond to 0.5% and 17% of total volume surrendered under the Carbon Sequestration Rule in 2009 and 2008, respectively. Official data is not yet available for voluntary surrenders in 2010.

²¹ <http://www.greenhousegas.nsw.gov.au/documents/SchRep09.pdf>.

In 2009, likely because of the anticipation of the CPRS, there were no new projects enrolled under the Carbon Sequestration Rule, and official data has not yet been released for 2010. The seven accredited project developers (only two active in forest projects) assumed a holding pattern as the national government began to rollout its CPRS. The GGAS has been readying for the transition, but previous experience with Greenhouse Friendly, which left several projects with nowhere to turn when the pilot program shuttered, has led many to take a cautious wait-and-see approach before starting more projects under the GGAS. Although it is unclear how GGAS projects will be grandfathered into the nationwide ETS, “the intent is that most people who have projects under the current schemes will attempt to transition them where possible into (the ETS),” says Martijn Wilder of Baker & McKenzie’s Global Environmental Markets and Climate Change practice; he also noted that most contracts are being positioned with that transition in mind.

Figure 19: Credits from NSW GGAS Carbon Sequestration Projects



Note: 2010 volumes were calculated by subtracting the annual volumes reported through 2009 in the most recent IPART NSW GGAS Report from the total issuances and surrenders listed through 2010 in the NSW GGAS Registry. Official 2010 statistics had not been published as of Sept. 2011.

Source: NSW GGAS Registry²² and July 2010 IPART NSW GGAS Report.²³

Recent Movements at the National Level

In July 2011, the Australian government announced the “Clean Energy Bill” including an ETS with an initial three-year fixed price period that applies to the 500 biggest emitters.²⁴ The price at the program’s launch in 2012 will be a fixed AU\$23/tCO₂e, increasing at 2.5% per year, until 2015, when an emissions trading program with no fixed price will be implemented and the price of compliance units will be allowed to float according to market dynamics.

The package also includes a separate, but directly linked, regime, the Carbon Farming Initiative (CFI), which was developed to encourage both compliance-based (for use in the proposed ETS) and voluntary emissions reductions in the agricultural and forestry sectors. The CFI program, like the NSW GGAS, will cover Kyoto-consistent activities. The projects will generate Australian Carbon Credit Units (ACCUs) that are either Kyoto or non-Kyoto consistent, with the former being used under the ETS and the latter in the voluntary market such as under NCOS. During the fixed price period of the ETS, emitters can meet up to 5% of their obligations using ACCUs, with the fixed-price mechanism applying to the other 95%. When the fixed-price period ends in 2015, the use of AACUs becomes unlimited and participants may also surrender up to 50% of their compliance target from approved Kyoto-compliant units.²⁵ At this point CERs will be subject to a price floor, but ACCUs will not. This policy is intended to prevent cheap international credits from discouraging investment in domestic projects (see the New Zealand Market Snapshot for how the absence of such a price floor has played out in that market).

²² <https://www.ggas-registry.nsw.gov.au/>.

²³ <http://www.greenhousegas.nsw.gov.au/documents/SchRep09.pdf>.

²⁴ Draft legislation available at <http://www.climatechange.gov.au/government/submissions/clean-energy-legislative-package.aspx>.

²⁵ The Australian National Registry of Emissions Units Bill 2011 lists tCERs and ICERs as ineligible offsets for domestic compliance. It is expected that other Kyoto-based units may also be ruled ineligible, but the details have not yet been officially published. The Administrator of the Australian National Registry of Emissions Units must publish a concise description of the characteristics of eligible international emissions units within thirty days of the bill’s commencement.

Market Snapshot: Emerging Asian Markets



Climate and market advocates in developing countries across Asia are faced with a distinctly bifurcated policy challenge—to alleviate rural poverty *and* manage the rapid industrial development that is now responsible for pumping daunting volumes of GHGs into the atmosphere.²⁶ China and India are uniquely positioned to generate market-swaying volumes of emissions reductions through offset projects in both compliance and voluntary markets, even as these two countries maintain top rankings among the world's heaviest emitters.

Meanwhile, the sun is rising further to the east as Japan forges ahead with new emission reduction initiatives, and forest carbon projects are taking a major role right from the start.

Green Shoots across China and India

The CDM has played a significant role in project and market development in Asia and the Pacific, which, according to United Nations Framework Convention on Climate Change (UNFCCC) records, is home to 81.5% of all registered projects.²⁷ Nowhere is the CDM's presence felt more strongly than in China, which has led the world in generating nearly 400 million CERs since 2005, garnering billions in foreign investment primarily from European companies. But as the European Union looks to limit the post-2012 eligibility of CERs into the European Union Emission Trading Scheme (EU ETS) down to least-developed countries, the more industrialized developing nations like China and India are adapting and implementing new measures to promote low-carbon development outside of the CDM.

China has primarily tested the carbon trading waters with provincial to local carbon trading schemes focused on energy intensity targets and centered on regional trading platforms. The most active of these platforms are the China Beijing Environmental Exchange (CBEEX), Tianjin Climate Exchange (TCX), and the Shanghai Environment and Energy Exchange (SEE). National Development and Reform Commission (NDRC) officials have stated that initial schemes will be piloted in Beijing, Chongqing, Shanghai, and Tianjin, as well as the provinces of Hubei and Guangdong—and scaled up into a national scheme by 2015.²⁸

In the world of forest carbon, both China and India have been front-runners with forest projects. Eight of the nine registered CDM forest projects from Asia and the Pacific come from China, home to three projects, and India, home to five projects (the ninth registered project is in Vietnam). Limited demand for credits under the CDM and access to motivated buyers prompted a couple of these Chinese projects to up the ante and seek greater appeal through certification using the Climate, Community & Biodiversity (CCB) Standards. The first CDM project ever registered, found in China, was also the first project ever validated under the CCB Standards. The route to the voluntary market through CCB has been a little more winding for India's forest projects, however, as two of the three Indian projects to apply for certification under CCB withdrew their applications in 2009 and 2010.

In the voluntary marketplace, China's Green Carbon Fund has continued to support numerous smaller projects to offset individual meetings for various forestry agency and other government bodies. Looking to further incentivize forestry on the voluntary market front, China now hosts a new set of domestic-facing standards—the Panda Standard—founded by CBEEX, BlueNext, Winrock, and the China Forestry Exchange. The Panda Standard has been tailored to address China's specific development and poverty alleviation goals. With a focus on land-use, specifications for an Agriculture, Forestry, and Other

²⁶ For a quick (and colorful) map of global CO₂ emissions, see <http://image.guardian.co.uk/system/Guardian/documents/2011/02/10/CarbonWeb.pdf>.

²⁷ <http://cdm.unfccc.int/Statistics/Registration/RegisteredProjByRegionPieChart.html>.

²⁸ "China planning emissions trading in 6 regions –Point Carbon." April 11, 2011. Thomson Reuters. <http://af.reuters.com/article/energyOilNews/idAFL3E7FB1Q320110411>.

Land Use (AFOLU) standard were released earlier this year. In March 2011, a Panda Standard pilot project forward-sold its first credits for bamboo reforestation to the domestic firm Franshion Properties.²⁹

Looking ahead, Panda Standard founders anticipate further demand for VERs from domestic firms—who are nonetheless likely to wait for regulatory signals before initiating big deals. “It’s really the beginning and so companies are not going to rush into the voluntary market,” says Pierre Guigon, Business Development Manager at BlueNext. “In China they tend to wait for some encouragement from the state.”

Guigon says much of the interest and investment in China’s non-CDM projects currently comes from development banks like the World Bank and Agence Française de Développement “that are taking risks and building readiness in a domestic market ahead of the others.”

Piloting REDD and Cap-and-Trade in Japan

To the east, other locations including Japan, South Korea, Taiwan, and Thailand have at least scoped, if not implemented, domestic emissions trading schemes. Japan has achieved the most substantial progress to date; in 2010 Tokyo kicked off its metropolitan scheme to place binding emissions caps on 1,400 entities.³⁰

At the national level, Japan has received significant attention over the last year for initiating a bilateral offset credit mechanism (BOCM) to explore and finance emission reduction/removal projects abroad, including a specific place for REDD projects. While the Japanese envision the BOCM as complementing the CDM, Dr. Yuji Mizuno, a Senior Planning Officer in the Ministry of the Environment’s (MOEJ) Office of Market Mechanisms says the two programs differ on the points of flexibility and governance.

“Japan would like to contribute to improving the CDM, but at the same time we think it may be appropriate to create another mechanism which may be similar to the CDM, but with the fundamental difference being governance,” Mizuno explains. “Our bilateral offset mechanism makes the rules differently, depending on the national circumstances.” According to Mizuno, this means engaging in separate bilateral talks with each country counterpart to identify appropriate methodologies, partners, and rules for cooperation.

Japan’s Ministry of Economy, Trade and Industry (METI)—and beginning this fiscal year also new partners MOEJ and Ministry of Foreign Affairs (MOFA)—supported 60 feasibility study projects from April 2011, which is a dramatic increase to the BOCM budget for Japan’s FY 2011. Eleven of the projects included a REDD+ component, financed ahead of any concrete decision on the part of the UN to utilize market mechanisms for preventing deforestation.

“Utilizing market mechanisms for REDD+ under the international rules will take time—and we cannot just wait for that,” Mizuno says. “We will work with partner countries to develop REDD+ projects under the BOCM, which we hope may one day be incorporated into international rules.”

Forestry is also the primary source of credits under Japan’s national J-VER voluntary carbon offset verification scheme. The scheme supports Japan’s “Green New Deal” with the intention of channeling domestic investment into domestic emissions reductions and removals through IFM and biomass projects, among other types.³¹

²⁹ “China Transacts First Panda Standard VERs.” March 30, 2011. Ecosystem Marketplace.

http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=8160§ion=home.

³⁰ “Tokyo kicks off carbon trading scheme.” April 8, 2010. BusinessGreen. <http://www.guardian.co.uk/environment/2010/apr/08/tokyo-carbon-trading-scheme>.

³¹ More information about the J-VER can be found on the J-VER homepage (<http://www.4cj.org/jver/>).

Supply: Project Types and Locations



The growth of forest carbon is not universally shared throughout the markets, and there are clear trends in the types of projects driving this burst of market activity and where they come from.

What's in a Name? Project Type Volumes and Values

Forest projects come in a variety of shapes and sizes. Despite the customized nature of these projects and their products, there has also been a significant shift towards standardization and the use of common typologies to describe major forestry strategies and accounting paradigms used to quantify their emissions reductions (see Box 2). Each project type carries unique biological, financial, geographic, political, and social implications that contribute to distinct capacities and opportunities for delivering emissions reductions and attracting investment.

Box 2: Forest Carbon Project Typology

Forest carbon offset projects are typically classified into basic project types based on the distinct approaches to reducing GHG emissions or increasing carbon sequestration:

Afforestation/Reforestation (AR): The establishment of forest on areas without forest cover, capturing additional carbon in new tree biomass and other carbon pools; emissions reductions occur primarily through additional sequestration.

Improved Forest Management (IFM): Existing forest areas are managed to increase carbon storage and/or to reduce carbon losses from harvesting or other silvicultural treatments; emissions reductions may occur through additional sequestration and/or avoided emissions.

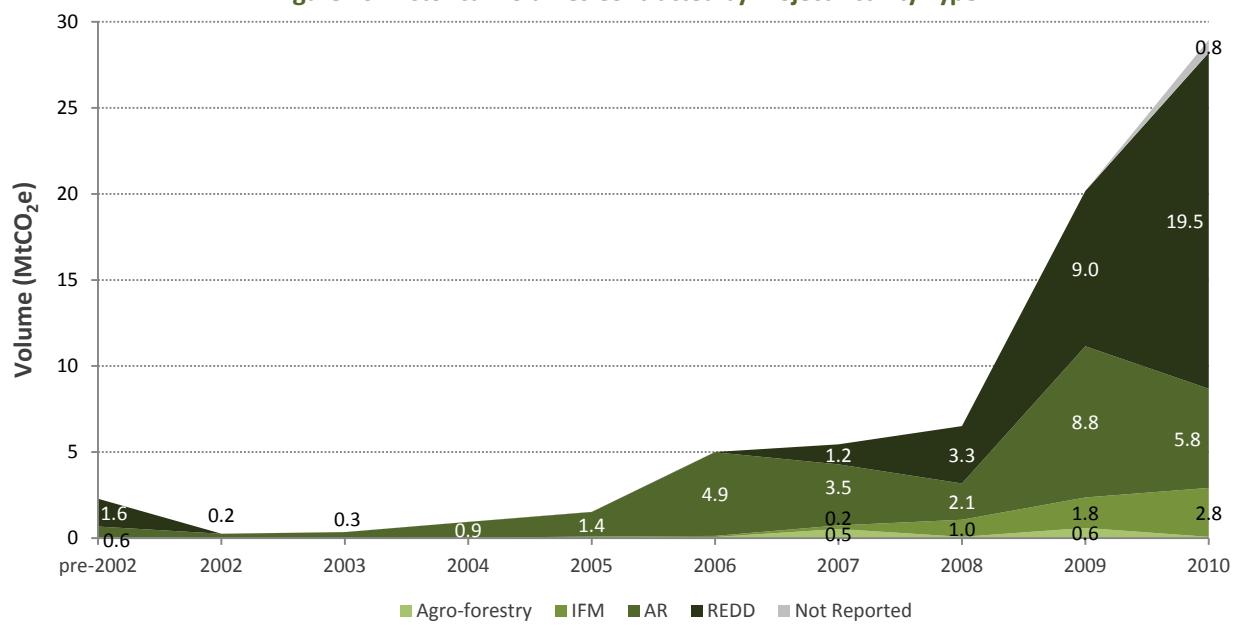
Reduced Emissions from Deforestation and Forest Degradation (REDD): Existing forest areas with demonstrable risk of land-use change or reduced carbon storage are conserved, resulting in the avoidance of a business-as-usual scenario that would have produced higher emissions; emissions reductions occur primarily through avoided emissions.

Agro-forestry: Land is managed using intermingled agricultural and forestry strategies, sequestering additional carbon in trees and/or soil and reducing carbon emissions compared to business-as-usual agricultural practices; emissions reductions may occur through additional sequestration and/or avoided emissions.

Prior to 2002, the first generation of forest carbon projects delivered offsets from both AR and REDD-type activities (see Figure 20). As the market evolved and standards began to emerge, the early activity of the CDM helped boost AR projects as the only major source of offsets from 2002 until 2006, and REDD dropped into the background. After 2006, REDD projects returned to the market with renewed supply, and IFM popped on the radar for the first time with major volumes as the CCX and CAR opened up for US projects. Since 2006, these three project types have all seen a general upward trend in volume contracted per year while Agro-forestry has seen a much more limited and variable supply to date.

The total number of new projects entering the market with first-time contracts has grown since 2003, with the only exception being a brief lull in new projects entering the market in 2008 (see Figure 21).

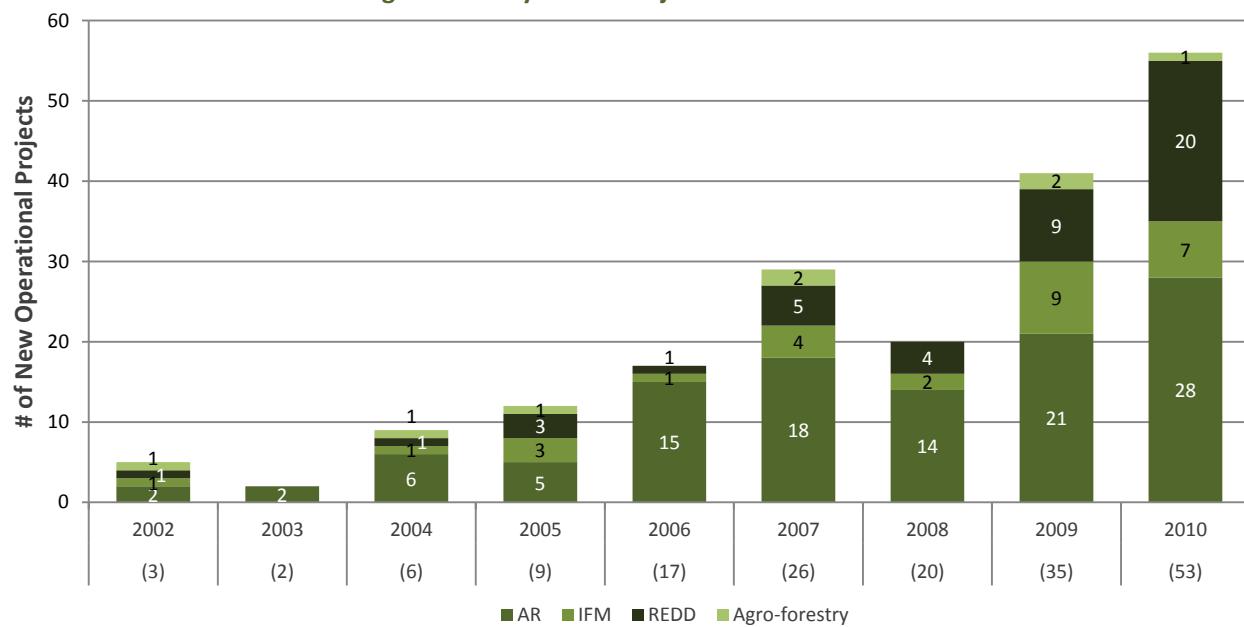
Figure 20: Historical Volumes Contracted by Project Activity Type



Notes: In the 2010 survey, project developers that specified "Mixed" project types were required to disaggregate emissions reductions from their project based on the activity types of AR, IFM, REDD, and Agro-forestry. Because other fields covering project area, tenure, species mix, etc. did not ask for a similar breakdown, other presentations of responses by project type do not disaggregate "Mixed" project responses into component project types. Data labels in this graph show the annual volume contracted from each project type, and are omitted in years where this volume was <0.1 MtCO₂e.

Source: Ecosystem Marketplace

Figure 21: Entry of New Projects into the Market



Notes: This graph shows the number of projects that contracted for credits for the first time each year. Projects that specified a "Mixed" project type are represented in all project types under which they generate emissions reductions. The total number projects by project type in any given year may thus be slightly larger than the total number of unique projects signing contracts for the first time (represented in parenthesis beneath each year).

Source: Ecosystem Marketplace

The Return of REDD

The most striking trend underlying recent market activity is the dramatically increasing volume coming from REDD projects. Since 2007 when REDD+ began making international climate policy headlines, the volume contracted by REDD projects has skyrocketed thousand-fold, from less than 20 thousand tCO₂e in 2006 to nearly 20 million tCO₂e in 2010. In 2008, REDD eclipsed AR as the leading supplier of credits, but it wasn't until 2010, when AR supply slowed, that REDD clearly emerged as the dominant source of credits to the market.

When asked what was buoying much of the market confidence supporting this growth, market players reported several factors contributing to a growing interest in REDD. The rapid ascent of REDD+³² in international climate policy has helped build confidence, but the pledges of more than \$7 billion from public coffers to build REDD+ readiness in developing countries have instilled even greater optimism. At least \$35 million has already been disbursed³³ through public mechanisms to build capacity and help establish demonstration projects for REDD+. The commitment from the public sector has convinced some market players that investments in forest carbon projects preventing deforestation or degradation are now more likely to find returns in whatever market and policy mechanisms eventually emerge, but others remain skeptical that the public REDD+ readiness funds will meaningfully encourage or engage with private sector investment. The openness of the emerging California cap-and-trade market to domestic and international REDD is also encouraging these investments.

Steve Bacisko of ERA Ecosystem Restoration Associates still doesn't see a clear game plan for the partnership between public financing and private investments. "Fundamentally, there is a big gap and level of uncertainty on the demand side for REDD which translates to a very speculative market at the moment. In order for REDD to be truly sustainable in the long term the donor groups and policy makers need to align with the private sector to ensure that the demand and returns are in place," he said.

More tangible encouragement for the recent uptick in volumes from REDD projects can be found in the approval of several new REDD methodologies. If emerging climate policy and public sector funding gave the motivating spirit behind REDD investments, it was surely the development of forest carbon standards and methodologies that gave the spirit shape. These new standards provided the validity and flexibility many in the private sector needed to see a clear pathway for creating value through REDD projects. The result has been unprecedented investment into the forest carbon sector.

"I really think this is a watershed year for REDD," says Toby Janson-Smith of Conservation International. "With the approval this past year of a suite of VCS forest methodologies, we are starting to see a lot of market activity around REDD. I think it's the tip of the iceberg in terms of the potential, and bodes well for robust investment activity over the next few years."

The picture that emerges from deeper examination of the REDD surge over 2009 and 2010 is fundamentally about a small—but growing—cadre of forward-looking buyers and investors making big bets on the future of REDD. Despite the REDD+ momentum in public policy circles, private sector engagement is still tenuous. Several questions remain regarding the veracity of and capacity for monitoring, reporting, and verifying emissions reductions beyond the project-level; the eventual linkage with current and future market mechanisms is also still unclear. Nevertheless, the prevailing attitude among current market players appears to be that the vision of REDD in the future is resolved enough to justify the calculated risk of upping financial support for these projects to historic levels.

"Just looking purely at the appetite for investment into forest carbon sector," Zubair Zakir of Carbon Neutral Company sees reason for continued investment in REDD. "Firstly, the architecture is moving along in the marketplace such that you can now implement projects and verify emission reductions in a manner not possible before; clearly that's going to attract more liquidity because you have an instrument which can be assigned market value and traded. Secondly, there is still some anticipation of compliance demand in the future and third, the momentum of initiatives such as the UN-REDD Programme and the Forest Carbon Partnership Facility are beginning to take shape," he said.

³² See Box 3 for the discussion of the differences between REDD and REDD+.

³³ Data from www.climatefundsupdate.org.

Zakir clearly sees a likely outcome. “Just based on those few indicators, you are going to continue to see investment occurring from the private sector in REDD in the short term at least,” he said.

Box 3: So What About the “+” in REDD+?

Throughout this report, we typically refer to REDD projects (without the “+”). REDD+ is a term that has grown within international climate negotiations to describe a suite of activities beyond project-level interventions. REDD+ was first introduced in the Bali Action Plan in 2007 and was most recently defined in the 2010 UNFCCC Cancun Agreements to cover forest sector climate mitigation through five activities: “a) reducing emissions from deforestation; b) reducing emissions from forest degradation; c) conservation of forest carbon stocks; d) sustainable management of forests; and e) enhancement of forest carbon stocks” (Paragraph 70, Decision 1/CP.16).³⁴ In terms of the forest carbon project typology we have described (see Box 2), the current definition of REDD+ is expected to include at least AR, IFM, and REDD project types; the inclusion of Agro-forestry may depend upon the definition of “forest” used in terms of canopy criteria, etc.

REDD+ is currently being pursued in international policy primarily with a goal of national or sub-national/jurisdictional levels of accounting. This is in contrast to the prevailing project-level model currently in use across the forest carbon markets. With many market actors convinced that the project-level model is indispensable for attracting private sector investment, an increasing interest has emerged in aligning the move towards national and jurisdictional accounting with a system that still encourages the development of individual projects. This concept is commonly referred to as “nesting” and is receiving strong and growing interest among standards organizations, policymakers, and project developers.

Green Shoots for AR Despite Serious Financial and Policy Constraints

AR projects bucked the overall growth trend in forest carbon volumes, posting a modest decrease in tonnes contracted, down to 5.8 MtCO₂e, following a 2009 peak of 8.8 MtCO₂e. Despite the decrease in volume, however, the number of AR projects contracting credits continued its historical upward trend, growing from 21 new projects contracting in 2009 to 28 in 2010 (see Figure 21). AR projects have consistently represented the majority of projects supplying credits to the market, even as their market share by volume has fallen with the return of REDD and increasing interest in IFM. For many buyers, particularly those looking to voluntarily offset their own emissions or demonstrate corporate social responsibility, AR remains the most intuitive forest climate mitigation activity, and the ease of communicating the climate benefits of planting new forests to consumers and shareholders suggests that this buyer segment is likely to maintain a preference for AR projects into the near future. The strong tradition of tree planting even prior to relatively recent carbon considerations suggests AR projects are unlikely to completely fade away even as other project types pick up steam.

The persistent historical growth in the number of projects and supply coming from AR projects has been achieved despite unique intrinsic and external constraints compared to IFM and REDD projects. AR projects have a large suite of upfront costs related to site preparation, tree planting, and successfully establishing a growing forest. In addition, the emissions reductions from AR activities are slower to emerge because of the natural growth cycle of trees, which may take a decade or more to enter their period of most rapid growth and carbon sequestration. Particularly when native and non-timber species are planted, this growth spurt will typically require a longer wait than in projects following a timber plantation approach. This means substantial carbon credit delivery is often several years further along the project cycle compared to other project types and has created problematic disconnects between the project development cycle, capital requirements, and current policies supporting tree planting.

To help cover the financing gap, some standards (e.g., CarbonFix) have utilized an ex-ante crediting model where credits can be issued, transacted, and retired even before the emissions reductions have actually occurred. Although this approach can provide much-needed upfront financing, it has been met with skepticism among some market players and observers; it has yet to find broad uptake among buyers, and volumes contracted through ex-ante crediting schemes remain limited. The

³⁴ Available online at <http://unfccc.int/documentation/decisions/items/3597.php?such=j&volltext=/CP.16#beg>.

endorsement of CarbonFix in January 2011 by the International Carbon Reduction and Offsets Alliance (ICROA) may encourage greater uptake.³⁵

Much of the formalized carbon credit activity for AR projects has been through the CDM. Unfortunately, the CDM policies have themselves provided an additional hurdle for AR projects that has severely limited their attractiveness to investors and project developers. Unlike other compliance credits within the CDM, AR credits are issued temporarily and must be replaced upon expiration. Due in part to this non-fungibility, the EU ETS completely shunned these projects and even the potential for using these credits by other countries for national compliance obligations under the Kyoto Protocol has been starkly unfulfilled (see the CDM Market Snapshot for more discussion).

Despite all of these snags, AR projects continue to spring up, seemingly undaunted, but no doubt to a lesser extent than would have been possible with a more conducive policy and financial environment.

IFM Taking Root

IFM projects have experienced modest but steady growth since first emerging as a substantial credit supplier in 2007 and 2008 (see Figure 20). Through 2010 they have largely been a North American—or Californian, to be precise—phenomenon. This North American origin for most IFM credits is consistent with the fact that the only IFM methodologies available from 2005 until 2010 were for US-projects under the CAR and CCX standards. It was not until mid-2010 that VCS approved its first IFM methodology, and VCS remains the only standard to provide an internationally applicable IFM methodology to date.

IFM projects may follow a variety of strategies for achieving emissions reductions. For example, the first IFM methodology for VCS, developed by Ecotrust, encourages extending harvest rotations to achieve larger carbon stores in standing trees. Other methodologies have also been approved under VCS to encourage a shift to “reduced impact logging,” for avoiding emissions from planned harvesting activities, and for silvicultural treatments to increase forest productivity. To date, relatively few IFM projects have yet had a chance to take up these methodologies and begin marketing credits, but that is likely to change in the future, and we expect a growing supply of credits from IFM credits to be available in the OTC market in coming years.

As more IFM projects are developed internationally, a diverse set of projects are likely to emerge with unique challenges. One project developer reported a rising conflict driven by recent shifts by some countries, such as Germany and Japan, away from nuclear power and a growing movement to co-fire power generators with renewable biomass. Forest owners considering IFM projects may very well begin to face dueling demand signals to manage for carbon sequestration or biomass.

From Apples and Oranges to Dollars and Cents

Over time, AR projects have supplied a roughly comparable volume to the newcomer REDD projects, but have produced an unsurpassed number of projects than has been seen under any other project type (see Table 5). And though REDD projects surpassed the volume supplied from all other project types in 2010, taking the all-time historical lead, they did so at a price.

All forest carbon project types saw an upward movement in prices relative to historical averages. Despite the lower volumes reported from both AR and IFM projects this year, both yielded higher prices than credits from REDD projects. There are several factors at play considering the prices by project type, most notably the distinct standards and buyer segments that contribute to market activity for each project type.³⁶ AR has primarily occurred through both the voluntary OTC and CDM markets to date, while IFM has been pursued primarily in the California-oriented market, and REDD credits have solely been emerging into the voluntary OTC market. Each of these markets, and the buyers they cater to, make for very different market dynamics. Nevertheless, it is still worth noting that the fact that AR and IFM projects are relatively less feasible for generating rapid and prolific credit flows, compared to large REDD projects, means that individual REDD projects

³⁵ In addition to CarbonFix, ICROA also endorses ACR, CAR, Gold Standard, and VCS.

³⁶ See the chapter on Standards for more discussion of the standard-related trends by project type.

will commonly be supplying much larger volumes into the market and consequently be forced to take a lower price based solely on the size of their transactions. Additionally, as experience with REDD projects expands, project development and management expenses for these projects should continue going down, yielding credits at a lower per-unit cost than is the case for AR and IFM projects.

Table 5: Historical Project Counts and Contracted Volumes and Values by Project Type

Project Type	Operational Projects (count)		Volume Reported (MtCO ₂ e)		Value Reported (million US\$)		Avg. Price (US\$/tCO ₂ e)	
	Historical Total	2010	Historical Total	2010	Historical Total	2010	Historical	2010
AR	241	44	27.7	5.5	117.0	20.8	5.6	7.1
IFM	21	14	5.5	2.4	21.5	12.2	4.9	6.0
REDD	40	26	33.3	18.7	124.0	85.0	4.7	4.9
Agro-forestry	1	0	1.0	0.0	5.0	0.0	5.3	*
Mixed	9	5	3.3	1.6	17.5	5.0	9.0	17.7
Total	329	101	118.8	28.2	287.1	122.9	2.8	5.4

Notes: Values, volumes, and prices only include contracts from the primary market for forest carbon (i.e., original sales from projects). Historical totals and averages cover all years for which data is available.

* Too few data points to disclose average price for 2010.

Source: Ecosystem Marketplace

Location, Location, Location

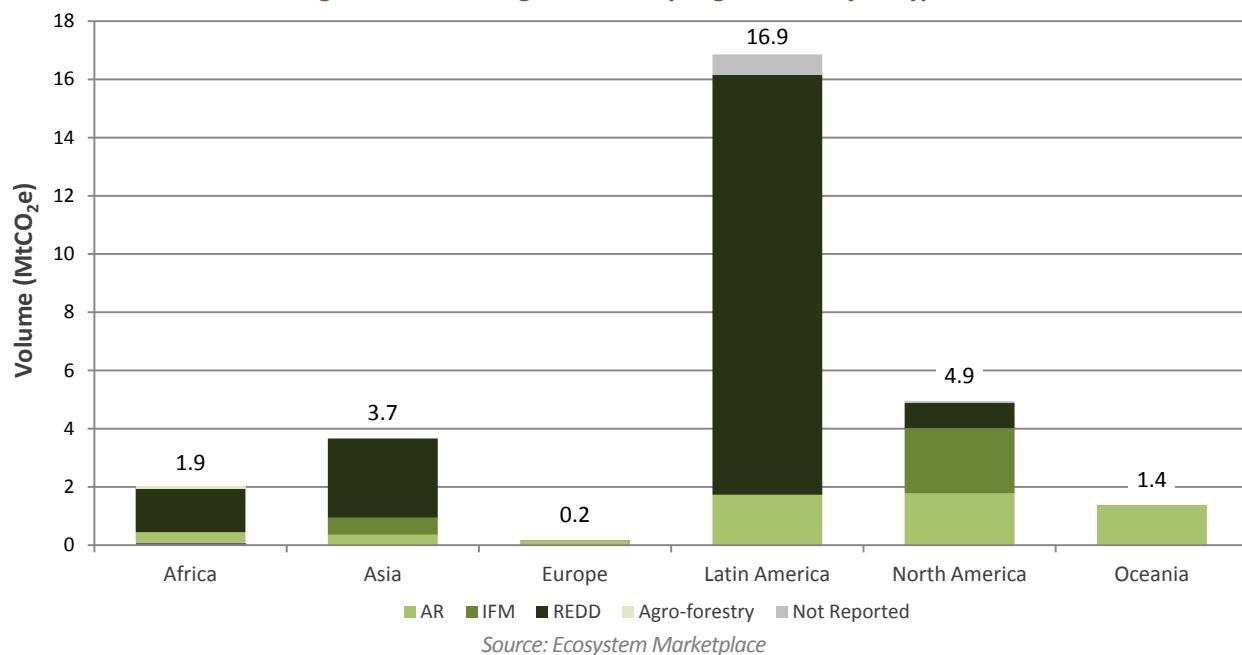
The natural landscape supporting forest projects varies widely across geographic regions. For example, despite the fact that Latin America, Africa, and Asia all support massive rainforests and hold great potential for other project types as well, Latin America has overwhelmingly dominated the forest carbon supply, primarily due to its conducive environment for REDD projects (see Figure 22). In 2010, Latin America, served up 16.9 MtCO₂e, yielding nearly 60% of the total 2010 global primary market volume, with more than 85% of the volume from the region coming from REDD. North America took a distant second place as a supplier of credits, producing just under 5.0 MtCO₂e in 2010 from a mix primarily of AR and IFM projects. Asia and Africa followed, supplying 15% and 8% of 2010 global volumes, both primarily from new REDD projects. Oceania and Europe provided the lowest regional volumes in 2010 and have almost entirely relied upon the AR model for generating credits to date.

The presence of the world's three major forest basins (Amazon, Congo, and Mekong) in Latin America, Africa, and Asia help explain why REDD finds such a strong foothold there and suggests that it is likely to continue dominating the supply of credits from these locations into the near future. But looking a bit more closely, it is apparent the volume does not spring evenly from countries across each region.

In addition to the obvious need for a conducive forest setting, the siting of projects is closely tied to the political and social landscape in each country. Market players interviewed this year confirmed that confidence in rule of law and ease of doing business are key criteria for siting projects, particularly if private sector funders are sought and expect returns.³⁷

³⁷ Terra Global Capital achieved a major step forward on this front in July 2011 when the firm announced a sovereign risk insurance agreement with the Overseas Private Investment Corporation. This is the first reported private insurance contract covering a REDD project, but likely won't be the last. Read more at <http://www.terraglobalcapital.com/News.htm>.

Figure 22: Offset Origins in 2010 by Region and Project Type



For Africa, Kenya, the Democratic Republic of Congo supplied nearly 90% of the region's credits (64%, 14%, and 11%, respectively), and in Asia the story revolves around Indonesia, which supplied more than 85% of the region's 2010 contracted credits.³⁸ See Table 6 for data on the top 10 countries supplying forest carbon credits in 2010.

In Latin America, Peru and Brazil dominate, providing over 89% of the volume supplied in 2010 (63% and 26%, respectively). “In Latin America, there are only two places where the ownership [of carbon] is crystal clear,” says Christian Dannecker of South Pole Carbon Asset Management. “They are Brazil and Peru, and that is why we are active there.”

Table 6: The Top 10 Country Suppliers in 2010

Country	Volume Contracted (MtCO ₂ e)		Projects (count) Historical
	2010	Historical	
Peru	10.6	17.2	9
Brazil	4.4	7.3	19
USA	4.2	11.7	49
Indonesia	3.1	3.1	5
Kenya	1.3	5.6	6
Australia	1.2	4.3	8
Chile	0.9	0.9	1
Canada	0.7	1.5	6
Costa Rica	0.7	0.8	4
DRC	0.3	1.0	4
Top 10 Total*	27.3	53.4	111

*These totals reflect primary market volumes and operational project counts that were reported with a single country of origin. The actual total volumes and project count may be higher than shown here due to some respondents providing data by combining responses across projects in more than one country.

Source: Ecosystem Marketplace

³⁸ Recent developments in Indonesia are likely to reduce this volume substantially. Following years of project development and consultation, the Ministry of Forestry opted to carve out roughly half the planned project area for the country's pioneering Rimba Raya forest carbon project to a palm oil developer. The ripple effects of this decision on REDD projects and investments in Indonesia remain to be seen. Read more at <http://www.forestcarbonportal.com/content/rimba-ray-a-debacle-casts-pall-over-indonesian-redd>.

Infrastructure: Standards & Registries



Looking back at the market activity of 2007, the authors of the *State of the Voluntary Carbon Markets 2008* dubbed 2007 “the year of the standard.” The broad shift towards third-party standards seen across the voluntary carbon marketplace has been mirrored in the forest carbon market, albeit with a modest time lag.

From Trees to Tonnes in 2010

2010 was perhaps the most momentous year for standards and methodologies in the forest carbon sector. The continued emergence of REDD+ on the international policy stage was matched by the unveiling of several groundbreaking REDD methodologies for offset projects, but REDD was not alone. A trend towards widely applicable methodologies is now apparent from all corners of the market.

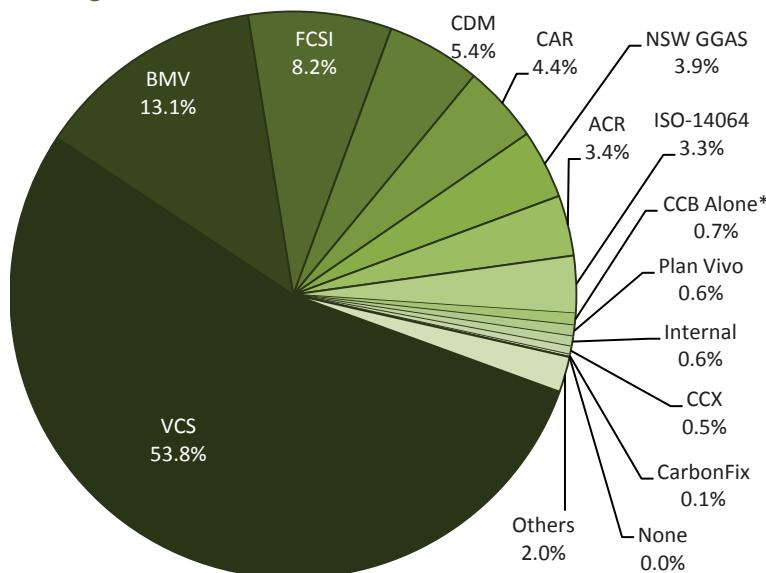
Among the highlights in 2010, following a lawsuit brought in 2009 by an environmental group and the withdrawal of the California ARB’s early action endorsement of several of The Reserve’s protocols, October 2010 saw the ARB circle back to give the long-awaited blessing to The Reserve’s forest protocols for acceptance in the future compliance. The Verified (formerly “Voluntary”) Carbon Standard, having issued its AFOLU guidance in August 2008, released its first five forest carbon methodologies in 2010, including a long-awaited modular approach to REDD accounting. In addition, the ACR released its first forest carbon methodology, paving the way for its own IFM projects, and then unveiled an innovative privately insured version of the buffer pool in partnership with Finite Carbon.³⁹

With the rules of the road no longer such a fuzzy or moving target for forest carbon project accounting, it’s no surprise that projects are seemingly emerging from the woodwork to put these new methodologies to use.

Standards Taking Shape: Carbon and Co-Benefits⁴⁰

This year, forest carbon project developers were asked not only to specify the carbon and co-benefits standards they apply to their projects, but also to specify their validation and verification status under each standard. This has enabled a more reliable tabulation of standards being applied with the intent to achieve validation, verification, and issuance of credits. This also helped resolve some instances where projects reported applying multiple carbon accounting standards.

Figure 23: Carbon Verification Standard Market Share, 2010



Note: Projects must be verified under a carbon quantification standard in order to be issued verified offset credits.

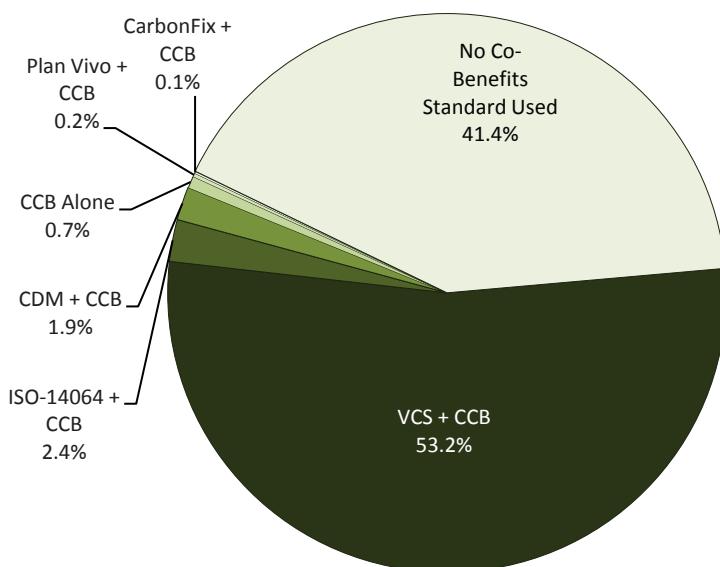
*Several projects reported contracting offsets and only applying the CCB Standards. CCB certification alone will not result in credit issuance. The label “CCB Alone” is solely intended to distinguish these transactions from those that have applied no standards at all.

Source: Ecosystem Marketplace

³⁹ Read more about this new buffer pool option at <http://www森林碳门户网站.com/content/moving-beyond-buffer-pool>

⁴⁰ See Appendix II for more information about several standards used in the voluntary OTC market.

Figure 24: CCB Standards Market Share, 2010



Note: Projects must be verified under a carbon quantification standard in order to be issued verified offset credits.

Source: Ecosystem Marketplace

credits without the use of any carbon accounting or other standards, down from 6 in 2009. A total of 14 projects reported using only an internal standard in 2010. The total volume contracted from projects using only internal or no standards fell from 220,000 tCO₂e in 2009 to 170,000 tCO₂e in 2010. This decline suggests these projects may be having greater difficulty finding buyers as the application of third-party standards becomes more established and expected in the marketplace.

Beyond the standards projects have been using to account for the carbon stored in their trees and away from the atmosphere, many projects are now following a demand for certification of an array of benefits beyond carbon. To certify these benefits in 2010, projects across the forest carbon sector reported applying only one supplementary “co-benefits” standard, that of the Climate, Community & Biodiversity Alliance (CCBA) (see Figure 24). The CCB Standards are applied for project-level certification of co-benefits which, in isolation, does not result in the verification or issuance of offset credits. Projects seeking verified offset credits must apply a separate carbon accounting standard (such as identified above in Figure 23).

25 projects that contracted credits in 2010 reported using the CCB Standards, covering well more than half of the year’s total volume. Although there were 80 observations of volume contracted in 2010 from projects not reporting the use of CCB, the commitments from these projects represented less total volume than their CCB-applying

In 2010, two additional carbon standards (Brasil Mata Viva, or BMV, and Forest Carbon Standard International, or FCSI) popped on the radar for the first time with reports of substantial volumes contracted, but the dominance of market share by VCS was seemingly unaffected (see Figure 23). Across the primary market, VCS was the standard of choice for 16 projects with more than half of the volume project developers committed to deliver, covering 15.6 MtCO₂e contracted in 2010. Two new standards, BMV and FCSI, took their first bold steps into the marketplace with just 9 and at least 2 new projects, respectively, taking the second- and third-place spots for market share by volume with reports of 3.8 MtCO₂e and 2.4 MtCO₂e contracted in 2010, respectively.

In 2010, only 3 projects reported contracting

Table 7: Standard Trends, 2009 to 2010

Standard	Volume (MtCO ₂ e)		Project Count	
	2009	2010	2009	2010
ACR	<0.1	1.0	1	1
BMV	0.0	3.8	0	9
CAR	1.2	1.3	9	8
CarbonFix + CCB	<0.1	<0.1	3	4
CCX	1.3	0.1	13	16
CDM + CCB	2.0	1.6	5	5
FCSI	<0.1	2.4	1	2+
ISO-14064 + CCB	0.8	0.9	7	6
NSW GGAS	1.0	1.1	3	2
NZ ETS	0.6	<0.1	1	1
NZ PFSI	--	0.2	0	4
Plan Vivo + CCB	<0.1	0.2	4	4
VCS + CCB	9.1	18.2	8	17
VER+	3.3	--	4	0
CCB Total*	10.2	17.0	15	24
Internal	<0.1	0.2	7	14
None	0.2	<0.1	6	3

**Projects must be verified under a carbon quantification standard in addition to CCB (e.g., VCS) in order to be issued offset credits. CCB certification alone will not result in credit issuance.*

Source: Ecosystem Marketplace

counterparts. Nevertheless, the quantity of projects operating without a co-benefits standard still represent a large minority in terms of volume in the marketplace and the majority of the market in terms of project count. And even though CCB, which lacks quantitative carbon accounting, is typically applied to forest carbon projects in addition to an underlying carbon accounting standard, 4 projects reported applying CCB as their only standard without the use of a separate carbon accounting standard.

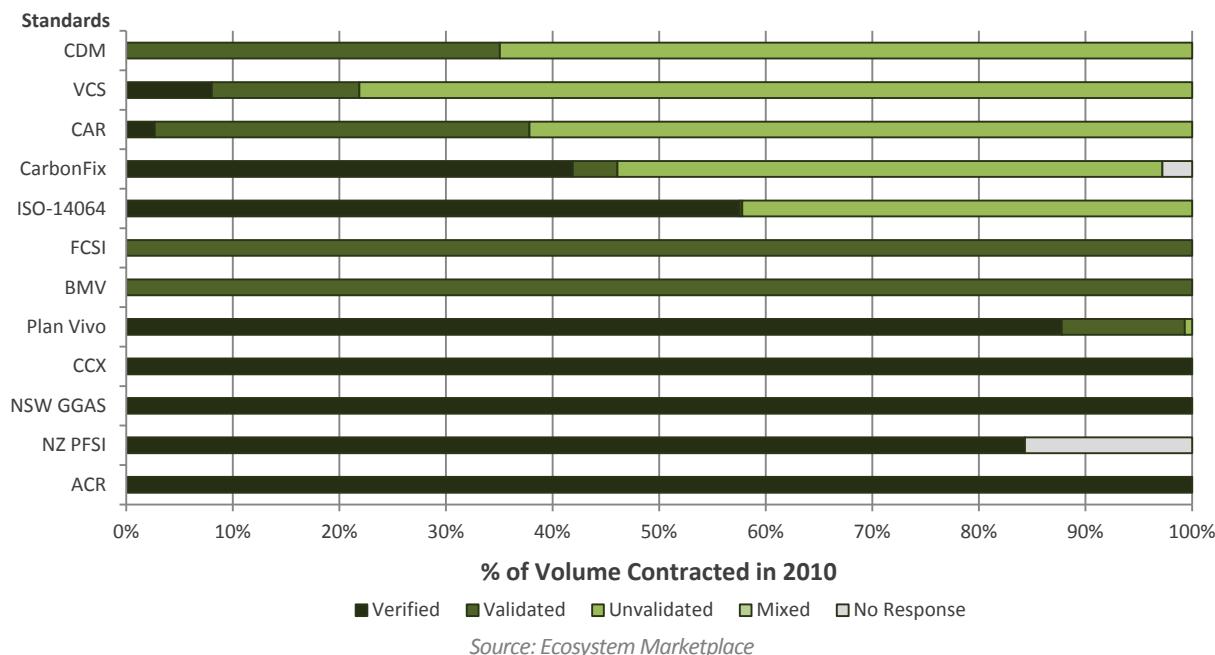
The most common application of CCB in 2010 was in addition to VCS, though 2 projects from each of CarbonFix and the International Organization for Standardization's (ISO) standard framework ISO-14064, and 1 from Plan Vivo also reported doing so. For forest projects under the CDM, at least 7 have applied CCB, 2 of which contracted credits in 2010.⁴¹

For most standards, 2010 was a major growth year. Only the CDM, CCX, VER+ and New Zealand's ETS saw shrinkage from the volume reported by survey respondents in 2009 (see Table 7).⁴²

With 2010 as the first year respondents were asked to report the validation and verification status for projects, the forward-looking expectations of many buyers and project developers now start to come into focus. Across all standards, very little volume (17%) came from projects that had completed their first verification, while 33% came from projects that had completed validation (see Figure 25). Across the marketplace, 50% of the volume in 2010 was contracted from projects that had not even completed validation.

For CAR and VCS, two standards where pre-compliance was a major source for speculative contracting in 2010, the overwhelming majority of volume contracted stems from projects that have not yet been validated. Both CarbonFix and ISO-14064 also showed a large proportion of credits contracted from a pipeline of unvalidated projects, but with a nearly comparable volume coming from fully verified projects.

Figure 25: Project Verification Status for Credits Contracted in 2010



⁴¹ Due to the limited data available from CDM forest project developers, we are unable to provide a confident estimate of the volumes contracted directly from these CDM + CCB projects, and the volume reported in Figure 24 and Table 7 should be considered a low estimate, as it is based on direct reporting from only 2 of the 7 or more CDM projects applying CCB.

⁴² The relatively limited reporting directly from CDM and NZ ETS project developers may contradict the actual volumes contracted, as substantial volumes may have been contracted but not reported to Ecosystem Marketplace. However, while this may be likely for the NZ ETS (see New Zealand Market Snapshot for more discussion), it seems unlikely for the CDM based on interviews with several project developers and buyers.

There are many factors contributing to the proportions displayed in Figure 25. The fact that most VCS forest carbon methodologies were not approved until late in the year and that the procedures for transitioning CAR credits (CRTs) over to ARB offsets were still being ironed out mean that much of the interest in credits under these standards could not be supplied from fully verified projects. For the CDM, the domination of the contracted volume by projects that have not been verified speaks to the waiting game many projects are playing to try in order to maximize the number of credits they may be issued under the first commitment period. Looking over to standards such as Plan Vivo, ACR, CCX, New Zealand's PFSI, and NSW GGAS, the lack of credits contracted from projects in the pipeline suggests that 2010 was a period of limited forward-looking interest for or development of credits by new projects under these standards.

Standard Usage by Project Type

Standards have been applied to varying degrees for different project types. Some have been limited by design (e.g., CDM, CarbonFix, and NSW GGAS only accept AR projects) while others that allow multiple project types may still be dominated by just one or two types. See Table 8 for a breakdown of the standards being used most heavily for contracting from the different project types.

Table 8: Top Carbon Standards by Project Type, 2010

Rank	Project Type					
	AR		IFM		REDD	
	Standard	2010 Vol	Standard	2010 Vol	Standard	2010 Vol
1	CDM	1.6	FCSI	1.7	VCS	14.1
2	NSW GGAS	1.1	CAR	0.6	BMV	3.8
3	ACR	1.0	VCS	0.1	CAR	0.5
4	VCS	0.5	Internal	0.1	ISO-14064	0.5
5	ISO-14064	0.4	Plan Vivo	0.1	Internal	0.1

Note: All Volumes reported in MtCO₂e.

Source: Ecosystem Marketplace

Although CDM emerged as the single largest standard being used for AR credits contracted in 2010, AR projects showed several standards earning major market shares. In contrast, REDD was almost exclusively dominated by VCS, and IFM was led by newcomer FCSI, although the absolute volumes from IFM's leading standards were dwarfed by their REDD counterparts.

Price Setting or Price Taking?

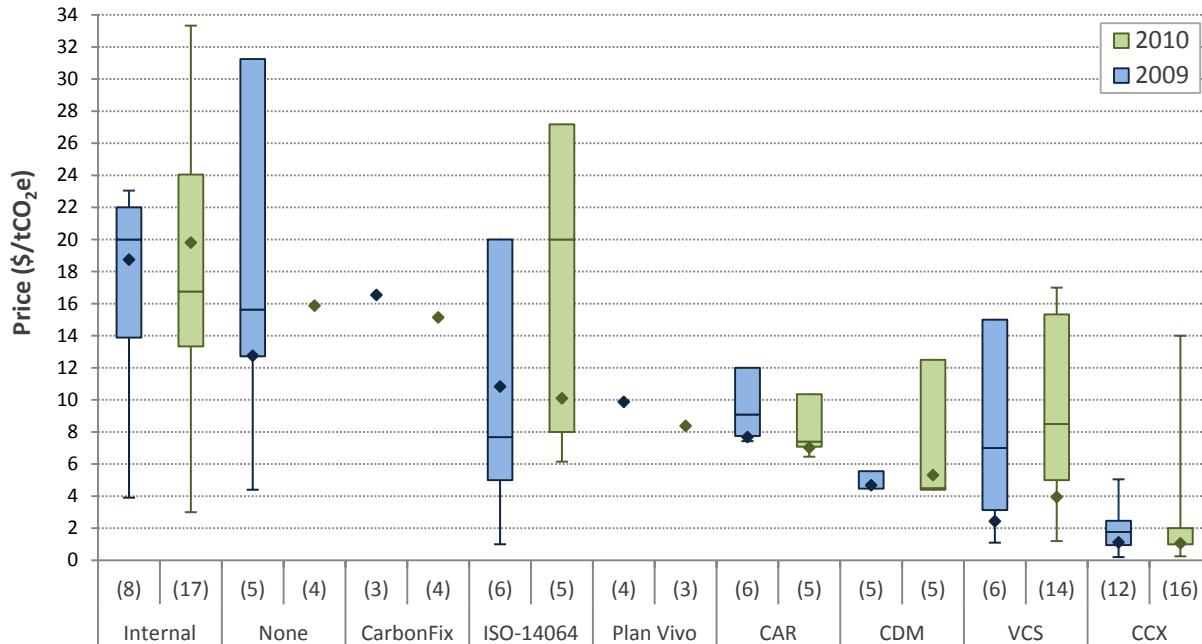
Fortunately, this year a higher level of survey responses has allowed not only for the representation of average prices according to the standard used, but also the distribution of prices negotiated by the diverse array of projects for several standards (see Figure 26). The picture that emerges shows that volume-weighted averages are often poor indicators of the spectrum of prices negotiated by individual projects applying any single standard. The typical pattern for most standards shows volume-weighted average prices at the lower end of the price distribution, consistent with the expectation that larger volumes are generally contracted at lower prices. We will look at each standard in turn.

Despite having the largest volumes contracted across the globe, VCS also had the lowest average prices, with the exception of CCX, whose trading program swiftly wound down in 2010. For VCS, however, the fact that the large volumes were contracted at across-market lows (i.e., as seen in volume-weighted average prices) should be contrasted with the fact that many individual projects applying VCS reported contracting credits at prices substantially higher than the volume-weighted average. While VCS showed a volume-weighted average price per tCO₂e of \$4.0, the median price contracted in 2010 was much higher, bringing \$8.5.

At the pricier end of the spectrum, projects using no standards or only an internal standard were able to secure the highest prices, though—as reported above—did not contract significant volumes. In a counter-intuitive twist, credits committed in 2010 under the CAR standard were clustered fairly tightly in the range of \$7-10/tCO₂e, but were down slightly from prices reported in 2009. This is despite the fact that in 2010 all of The Reserve's active forest protocols were effectively authorized for use in the coming California cap-and-trade program. Projects applying the CarbonFix and Plan Vivo standards secured higher prices than many of their counterparts using other standards, but have contracted relatively limited volume in terms of global market share. This may stem in part from the narrower niche and smaller portfolio of projects focused on tree

planting on the one hand (CarbonFix), and smallholder and community engagement on the other (Plan Vivo). For projects moving volumes at very large scales (i.e., hundreds of thousands of tonnes per year), these standards have found limited application to date. Nevertheless, the majority of projects contracting offsets do not fit this largest-scale, and both CarbonFix and Plan Vivo have grown in recent years attracting new projects with most successfully finding buyers.

Figure 26: Price Distribution by Carbon Accounting Standard Applied, 2009 and 2010



Notes: The price distributions shown here incorporate contracts signed across a range of stages in the project cycle (e.g., pre- and post-validation and verification) and with different delivery terms. These values are also closely related to the size of the transactions, and the total volume contracted under each standard varies considerably.

Source: Ecosystem Marketplace

The expectation of a price premium has been particularly common surrounding the application of the co-benefits standards such as the CCB Standards. Because CCB is an optional supplemental certification in addition to a carbon accounting standard, the reasoning goes that projects completing the extra certification hurdle to demonstrate benefits to communities and biodiversity should command higher prices. To date, however, we have been unable to discern a price premium from the data reported. To the contrary, for each standard where CCB was layered in in addition to a carbon standard (i.e., VCS, CarbonFix, ISO-14064, Plan Vivo, and CDM), the average prices for credits contracted by projects using CCB were lower than credits sold under the same carbon standard without using CCB. Due to the scarcity of data and the multiple factors affecting prices received for individual projects, we would caution strongly against the generalization of these observations.

Few empirical examples exist to directly view this price premium. One such offering, however, can be found in Envirotrade's Sofala Community Carbon Project, originally verified under the Plan Vivo Standard and subsequently under the CCB Standards. According to Envirotrade's Charles Hall, "Despite having achieved CCB 'Gold' status for the project in all three CCB evaluation areas of climate, community, and biodiversity, we have seen some increase in demand for our Plan Vivo VERs since adding CCB validation, but no demonstrable price premium. It seems to us that the market has absorbed CCB as a new norm, rather than something extra."

Considering the insights provided by project developers looking to source credits to the voluntary market, the data we have collected supports the assertion that many standards currently function as gatekeepers to particular buyer segments rather than price-setters. In particular, for the largest tranche of credits transacted in the marketplace, buyers and project developers interviewed confirmed that VCS and CCB (particularly in combination) provide a market access premium rather than a price premium, especially for projects looking to move large volumes.

Much More than a Shopping List: Registries

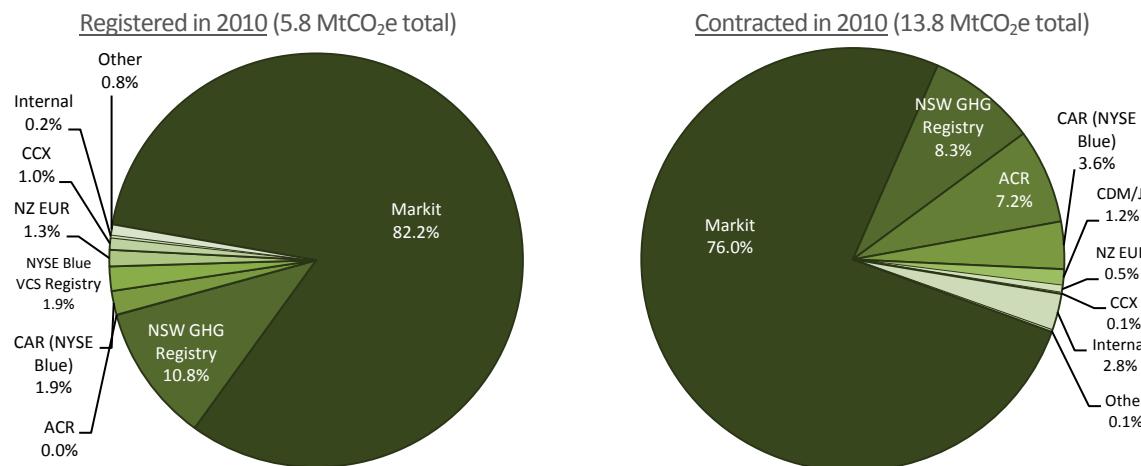
In recent years, the increasing usage of standards has coincided with a rapid build-up in the issuance and listing of credits using registries. Credits issued from nearly all of the third-party standards covered in this report are listed in one or more online registries provided by the standard organization themselves or a third-party registry provider.

Of the 5.8 MtCO₂e respondents reported registering in 2010, the most common registry reported was the Markit Environmental Registry, covering the vast majority (>80%) of credit registration (see Figure 27). Similarly, of the 13.8 MtCO₂e that sellers reported contracting in 2010 that would be issued through the various registries, Markit again topped the list.

Markit's coverage of the majority of volumes in the space is directly related, but not due solely, to its hosting of credits from VCS. Of the projects reporting the use of VCS, which also employs registries operated by NYSE Blue and Caisse de Dépôts, Markit Environmental Registry was the only registry respondents reported planning to use for the issuance of these tonnes. All other registries survey respondents reported (except for internal) are required by the standards each project applies and thus leave no choice for these suppliers to utilize different registries.

Although these data surely indicate a growing familiarity with and usage of registries among projects now emerging from the pipeline, the disconnect between the total volume reported under standards where registry usage is required (in particular for VCS) and the reporting of expected registry use suggests that several project developers responding to this survey did not recognize or accurately report the required delivery of contracted credits through a registry for some of the carbon accounting standards.⁴³ For example, as the host for credits from BMV, CarbonFix, FCSI, Plan Vivo, and VCS, we would have expected a total of 22 MtCO₂e to be reported among Markit and the VCS registries operated by NYSE Blue or Caisse de Dépôts. Across these specific registries, however, respondents only reported contracting a total of 10.5 MtCO₂e to be issued through them. From the raw data, we can observe at least 7 MtCO₂e of this discrepancy attributable to incomplete survey responses, but still show a 4 MtCO₂e discrepancy that we would have expected reported for future issuance through these registries.

Figure 27: Volumes Reported Registered and Contracted Involving Registries in 2010



Note: Respondents were asked to "specify the volume of credits registered and sold that were tracked in registries" and to "include forward sales that will be transferred via the registry upon issuance/delivery." Because no registries comprehensively track forward sales of credits, the volume reported contracted involving registries will be different from volumes currently listed in these registries

Source: Ecosystem Marketplace

⁴³ It is also worth noting that in some circumstances (such as with VCS), project developers may not be able to choose a registry until the project has been validated. Thus, some projects may have contracted credits in 2010 with no registry yet chosen.

The Projects: Impact on the Land



The striking growth and other trends across the forest carbon markets stem from real projects doing the business of reducing emissions on the ground. This section is devoted to characterizing the diverse array of active projects, exploring several of their qualitative (and a few quantitative) traits that may inform a deeper understanding of how the forest carbon market has evolved and delivered emissions reductions over time.

The Growing Project Footprint

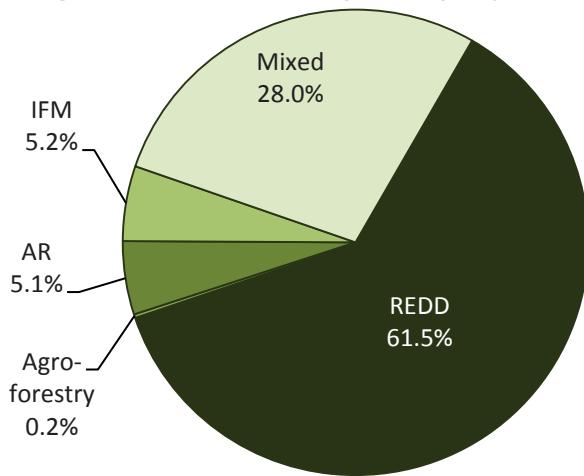
Despite their relatively smaller numbers, the recent class of REDD projects are swiftly making a big impact. 40 operational REDD projects are responsible for the large majority of the 7.9 million hectares supplying carbon offsets into the market over time (see Figure 28). In contrast, while the 241 AR projects (more than 100 of which were reported by a single developer) surely outnumber their REDD cousins, they cover just 5% of the total area impacted. The 21 IFM projects that have reported contracting credits over time also hold a larger project-level footprint, covering a total of more than 400,000 hectares. In 2010, project contracted credits from a total of 5.3 million hectares.

Tipping the Scale by Volume

Just as the size of the market (by volume) began to grow noticeably in 2006, the scale of projects recruited into the marketplace has climbed in tandem (see Figure 29). The relatively modest growth in the marketplace in 2007 and 2008 can be partly explained by a comparably slow growth in the volume contracted by most projects, while the dramatic rise in volumes in 2009 and 2010 owes much of its origin to the emergence of projects on a much larger scale.

Nevertheless, while the volume from the largest projects in the marketplace has grown dramatically in recent years, a steady bloc of projects continues to contract smaller volumes. Fairly consistently since 2007, each year half of the projects with reported sales had committed fewer than 25,000 tCO₂e to their buyers. In 2010, the five largest contracted volumes captured 17.0 MtCO₂e; the top 10 claimed a whopping 22.4 MtCO₂e, or roughly 77% of the global primary market volume reported for the year. This type of marketplace dominance by a few outsized contracts is not particularly new, however (see Box 4).

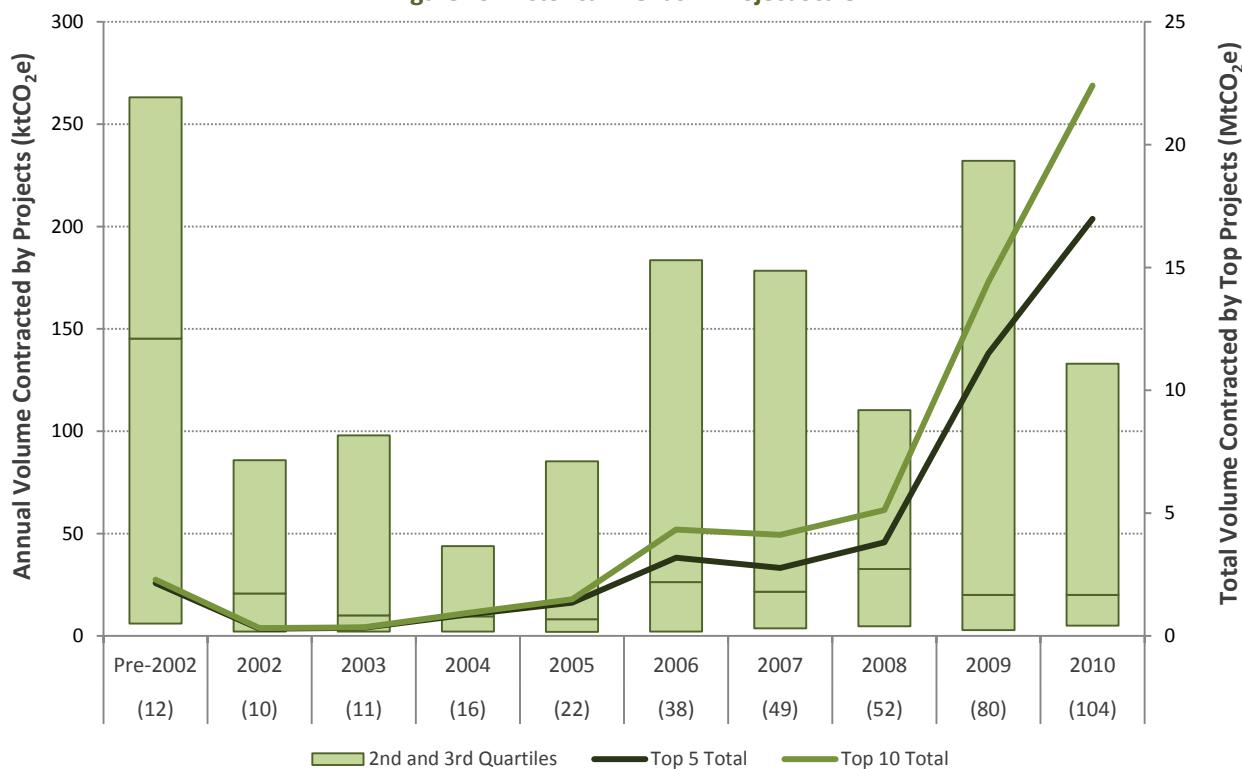
Figure 28: Historical Area Impacted by Projects



Note: This graph shows the total project areas for any projects that had ever contracted credits. The total land area across all project types is 7.9 million ha.

Source: Ecosystem Marketplace

Figure 29: Historical Trends in Project Scale



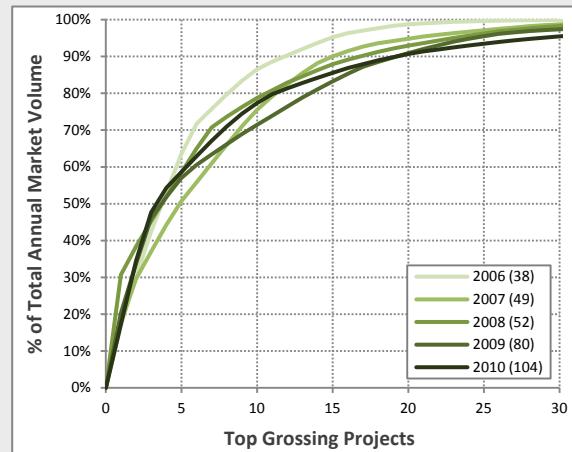
Notes: Bars show distribution of second and third quartile of volume contracted by projects each year and are graphed using the left y-axis with units of thousands of tCO₂e (ktCO₂e). The two lines crossing the chart show the total volumes of the largest projects reported each year and are graphed using the right y-axis with units of MtCO₂e. Over time, five respondents have aggregated volumes from multiple projects into a single response (including two of 2010's top volumes). The values in parentheses beneath each year denote the number of observations of volume contracted.

Source: Ecosystem Marketplace

Box 4: It's a Small World After All

Today's projects are fast outstripping volumes supplied in earlier years. But while the growing roster of projects has clearly expanded the total volume contracted each year, the shadow cast from a handful of projects at the top end of the scale has remained relatively consistent through the market's recent growth years.

From 2007 onward, the top five projects typically captured 60% of the market activity, with the top ten taking 70% to 80% and the top 20 consistently more than 90%. In this light, the rapidly expanding project roster seems to play a relatively small role shaping overall market size, except for those new projects entering on the heavy end of the scale.



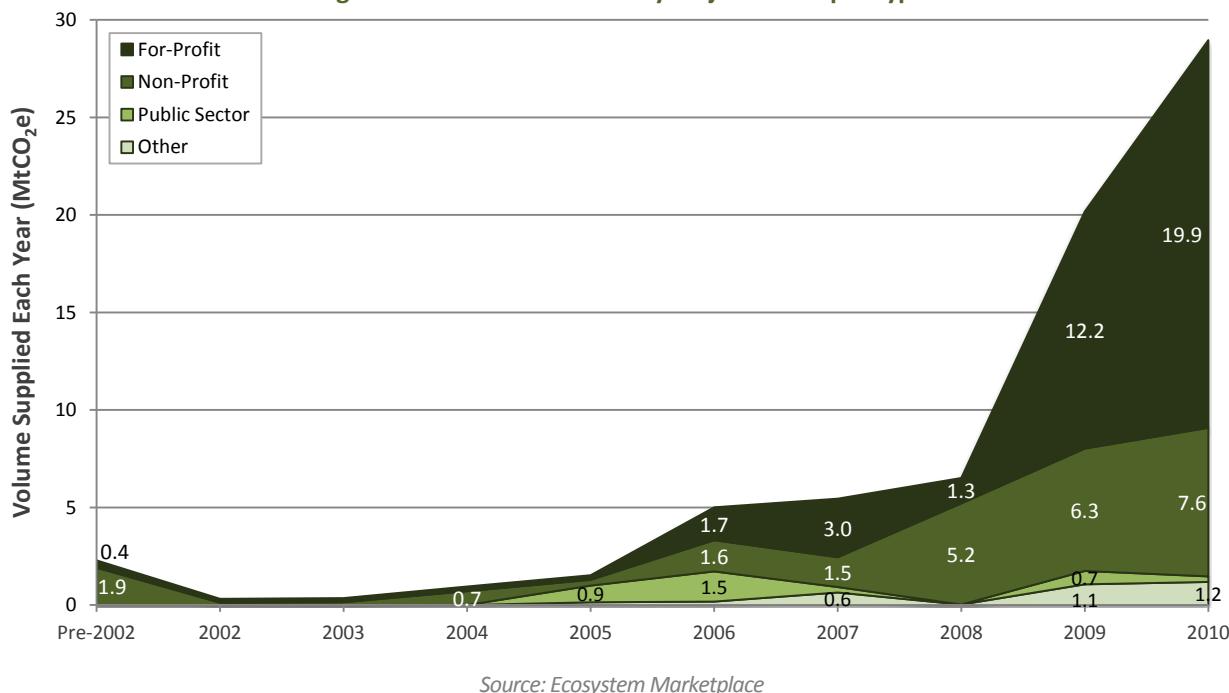
Notes: Each line in this graph represents the cumulative market share captured by the largest annual volumes reported in a single year. The values in parentheses indicate the number of observations in that year. As mentioned above in Figure 29, respondents have occasionally aggregated multiple projects into individual responses. This is unlikely to substantially alter the view of volumes concentrated among a minority of projects.

Source: Ecosystem Marketplace

The Changing Face of Project Development

In the earliest days of forest carbon offsetting, most projects and the offsets they sold were steered by non-profit conservation organizations (see Figure 30). Non-profits also led the charge as market's volumes and the number of projects began to climb in 2006. But as for-profit developers found their footing and began to attract new and larger investors, the long-standing preeminence of non-profit forest conservation groups was finally eclipsed. As the non-profit supply of credits into the market held steady in 2010, for-profit developers tested the upper bounds of the marketplace and found prospective buyers for an unprecedented volume of credits.

Figure 30: Historical Volumes by Project Developer Type



Many non-profit organizations have kept with the forest carbon market across the years and are unlikely to abandon it. Toby Janson-Smith of Conservation International believes non-profits play a critical leading role in the maturing marketplace. "As for-profit developers and investors move into the mainstream REDD space, NGOs like ours can tackle the next wave of emerging market building opportunities, such as demonstrating project models that maximize social and environmental co-benefits, or piloting new jurisdictional and nested REDD approaches," he said.

Nevertheless, the private sector is clearly emerging as a new torchbearer in the forest carbon market, and several market players suggested 2010 was the first glimpse of a coming wave of projects and credits developed and financed by the private sector. For Mike Korchinsky, Founder and CEO Wildlife Works, the success and scaling up of REDD in developing countries will require a new cast of characters. "The NGOs are obviously trying to [scale up], but they're not sure whether commercializing REDD is the right emphasis for their organizations," he said. "I think it will take a new class of private sector players to enter the market. There are going to be early actors like us, and once we prove that it can be done and create a roadmap, then there will definitely be a lot more players coming into the space."

The full implications of the growing involvement of the private sector remain to be seen. But as REDD builds steam in the voluntary markets, the discourse around the broader international development of REDD+ strategies (and the pressure to shift from public to private financing) will no doubt be shaped in large part by the experiences and perceptions of the private sector participants in today's forest carbon market.

Putting Rights on the Map: Trends in Tenure and Ownership

One of the most contentious issues confronting policymakers in the move towards an international REDD+ mechanism has been whether and how unresolved land ownership and tenure should be addressed preceding the implementation of forest carbon activities on the ground.

For Andy White, Coordinator of the Rights and Resource Initiative, carbon markets have been an international distraction from tenure reform and more substantive steps to stop deforestation. In a recent op-ed in the journal *Nature*, White argued, “The focus of REDD on finance has blinded us to other approaches to reducing forest emissions.” Believing governments are the primary drivers of deforestation and degradation, White contended the most direct and cost-effective approach to reducing deforestation and degradation would be to suspend policies that encourage industrial logging and clearing for agriculture, and then prioritizing investments that secure land rights for indigenous people and forest communities. He cited recent research showing national-scale protection and restoration had been achieved in many countries where there was government will, and that most of these cases involved strengthening local people’s rights to land and forests. He also contends that it makes most sense to influence the markets that exist rather than trying to create new markets.⁴⁴

While the policy choices to establish a structured international marketplace for forest carbon and REDD+ remain to be decided, on the ground, land tenure and rights have been a critical area for assessing the risk and uncertainty for developing forest carbon projects. In circumstances where tenure or land rights remain unclear, project developers are likely to run into serious or insurmountable challenges to sustainably securing and marketing carbon offsets. Project developers have therefore confronted tenure and ownership conflicts to a relatively limited extent to date, often preferring to set up shop in locations where land tenure and ownership, and often-corresponding carbon rights, are unambiguous.

Of the 151 projects with tenure and ownership survey responses, only 38 reported having more than one tenure or ownership type in the project area. Even from the early days of offsetting, most of the projects that made it through to selling credits have done so from areas that were privately owned and managed (see Figure 31). An increasing trend toward the siting of projects on private lands can be observed as the number of projects selling credits has expanded over time. As the market began to accelerate in 2006 through to the present, the number of projects covering private lands built greater distance from the number developed in other areas with collective or customary ownership or land-use rights.

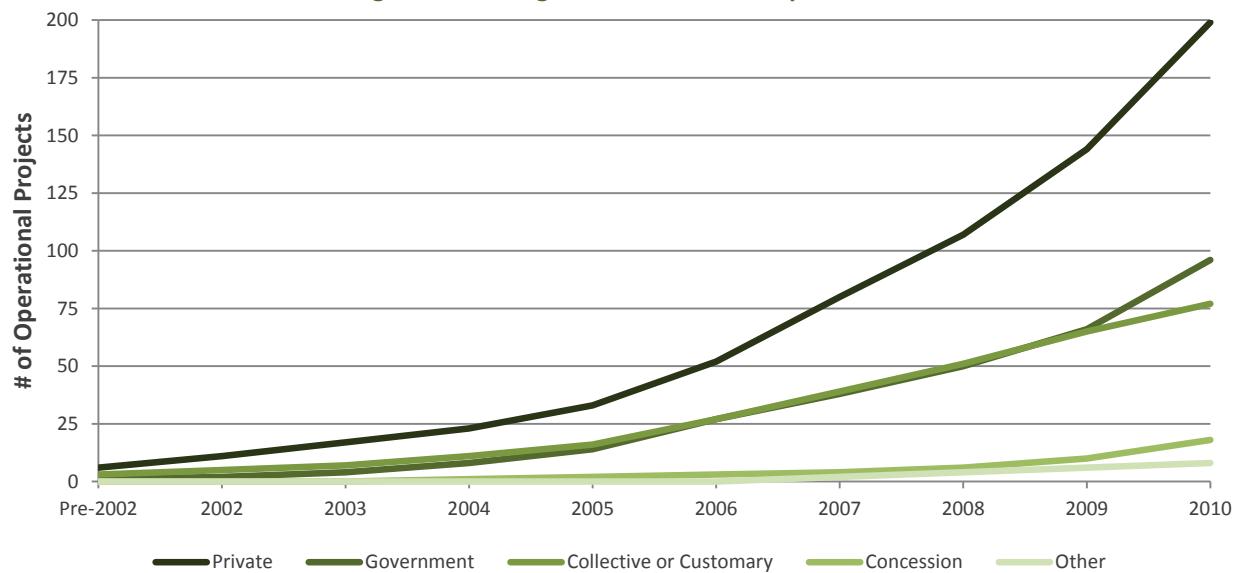
Among project developers, for-profits have been the most strongly attracted to private lands and least attracted to lands with collective or customary rights (see Figure 32). This is apparently the result of a need for firm assurances on land rights (and, likely, implicit or explicit carbon rights as well). Although non-profit and for-profit organizations showed a comparable likelihood for developing projects including lands with collective or customary land-use rights, for-profits rarely developed projects where collective or customary tenure or ownership was the only type in the project area. For both non-profit and for-profit developers, privately held land was the most attractive choice for developing projects. Public sector project developers preferred to set up shop on government-owned and -managed land.

The apparent prioritization from both non-profit and for-profit developers for siting projects on privately owned land will likely continue to expand the gap between projects on private lands and those with other tenure and ownership types unless and until there is greater certainty surrounding local access to or use of project lands.

Carbon finance may hold promise for encouraging the resolution of unclear tenure and ownership. Triggered by the need to clarify carbon ownership, Elly Baroudy, Manager of the World Bank’s BioCarbon Fund, described four projects from the Fund’s portfolio in Ethiopia, Kenya, Niger, and the Democratic Republic of Congo that exemplify this outcome. “Individuals and communities traditionally used the project area for years without ever being formally recognized,” she said. “The prospect of developing a forest carbon project brought about new incentives and resources for the formal recognition of the customary user rights.”

⁴⁴ Available at http://www.rightsandresources.org/publication_details.php?publicationID=2178.

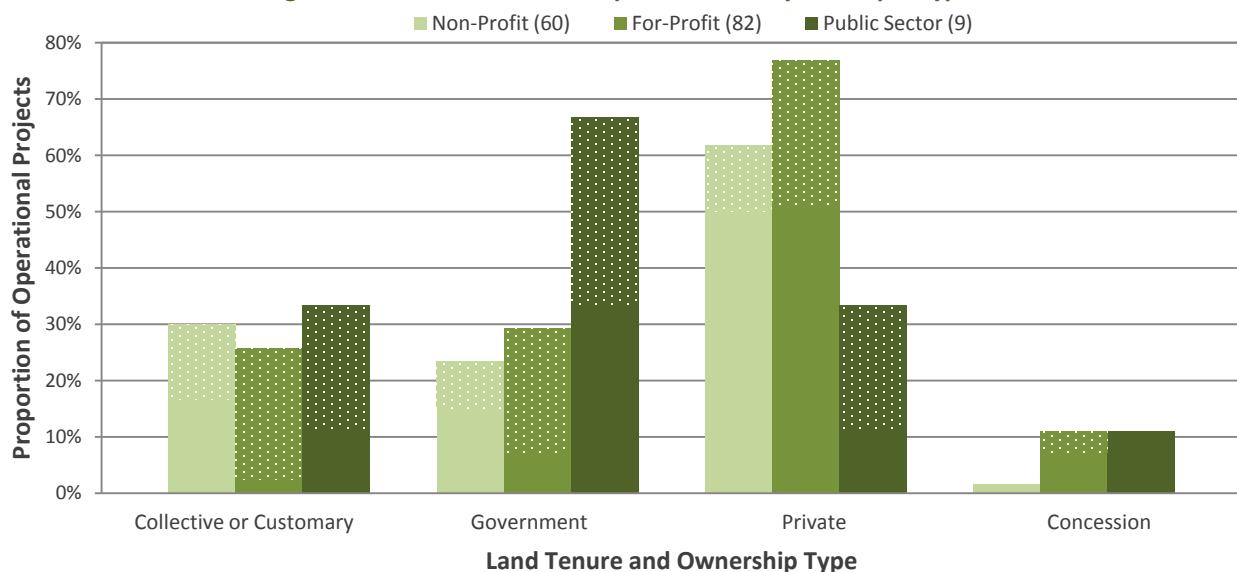
Figure 31: Shifting Tenure and Ownership Trends



Notes: The values charted above reflect the cumulative number of projects that include each tenure and ownership type within the project area. Respondents were allowed to select multiple types per project, so the total number of projects across tenure and ownership types above in any given year may be larger than the number of unique operational projects in that year.

Source: Ecosystem Marketplace

Figure 32: Tenure and Ownership Preferences by Developer Type



Notes: This graph shows the proportion of all projects that have ever contracted credits over time with selected land tenure and ownership types within the project area. Respondents had the option of selecting multiple tenure and ownership categories. The solid segment for each bar indicates those projects that reported only that tenure and ownership type; the dotted segment of each bar indicates projects that reported another ownership and tenure category as well. Percentages are based upon the proportion of projects within a single project developer type. The total number of projects with responses for each project developer type is in parentheses next to each legend entry.

Source: Ecosystem Marketplace

The quest for clarity regarding tenure and carbon rights is not free of potentially problematic outcomes, however. For Plan Vivo's Alexa Morrison, the tenure and rights for projects on the ground must be monitored closely to avoid a potential perverse incentive regarding tenure issues. "There is a clear risk of land tenure of communities being undermined if the drive for lower risk (or perceived lower risk) projects means a 'land acquisition' model is allowed to prevail without the

necessary safeguards,” Morrison said. “It is crucial that value is attached to community-owned projects and that they are not treated as niche.” From available data, it remains unclear whether this perverse incentive has affected projects on the ground.

Managing the Forest: Strategies and Species

For many projects, the day-to-day operation of a forest carbon project will involve active forest management or conservation practices, including the application of silvicultural and, sometimes, agricultural practices in the project area. A major concern among some market observers has been whether forest carbon incentives were myopically focused on carbon alone and could discourage the conservation of natural forests in favor of fast-growing plantations. This year, project developers were asked to specify the forest management strategies applied in the project area, given six options:

- Even-aged, Monoculture—all trees are the same species and age
- Even-aged, Mixed Species—all trees are the same age, but include multiple species
- Uneven-aged, Monoculture—all trees from the same species, but with multiple age classes
- Uneven-aged, Mixed Species—trees from multiple species and age classes
- Agro-forestry—mixed forestry and agricultural land use
- Not Actively Managed—no planned silvicultural activities

The responses from project developers describing the forest management strategies applied are shown in Figure 33. Of the 59 projects that gave responses, 21 reported applying more than one management strategy in the project area. The majority of projects reported using even-aged management, most commonly with mixed species, although this is largely due to the high number of AR projects. For every project type except AR, even-aged management was less common than other management strategies. This is to be expected for planted forests where stands are typically established with plantings in a single year followed by additional management or planting as the stand ages to compensate for mortality. Of the 27 AR projects that provided responses, 6 reported applying even-aged monoculture management, while just 3 indicated that even-aged monoculture was the only strategy applied in the project area. It is also important to note, however, that we did not receive responses from many projects on this question.

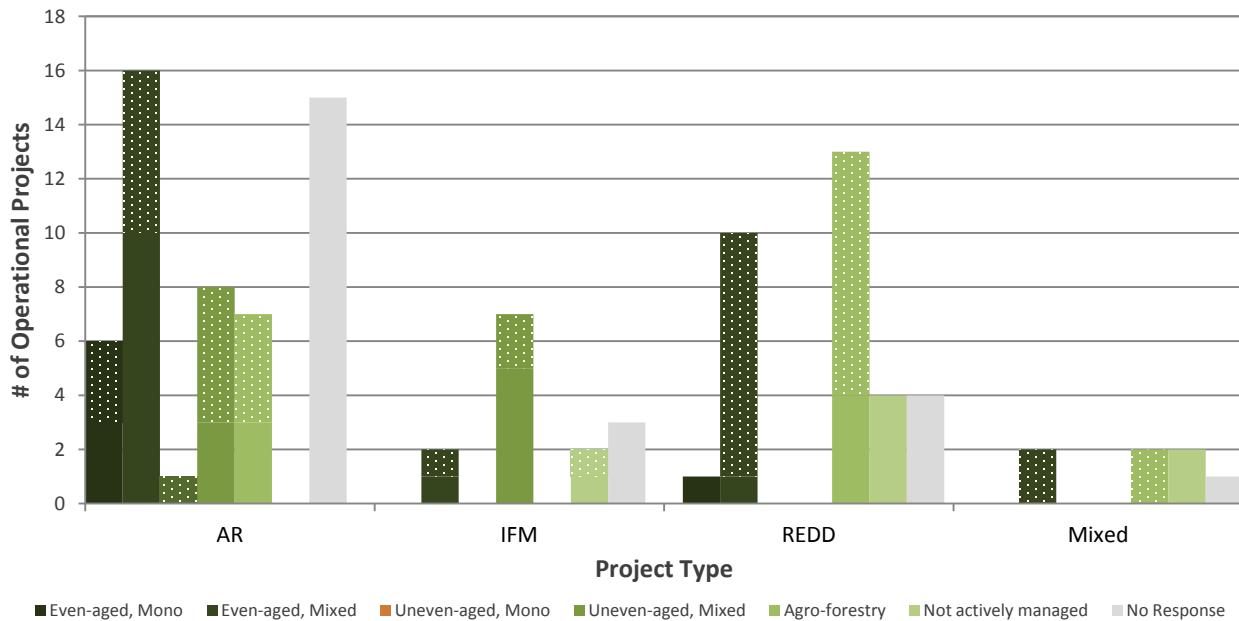
Apart from the management strategy applied, the use of exotic species has also been a prominent concern among market players and observers. Combined with the management strategy above, the strawman of an even-aged monoculture of non-native species is occasionally cited as the least desirable environmental outcome for carbon-based incentives, particularly where it results in conversion of or pressure on natural forests. Several standards limit the use of non-native species (e.g., Plan Vivo requires native species use). In addition, supplementary co-benefits standards, such as the CCB Standards, have arisen and found widespread use to document net benefits to local biodiversity and the conservation of native and threatened species. Project developers were asked to specify the proportion of native and exotic species being planted in the project area.⁴⁵ The results are presented in Figure 34.

Of the 312 projects with responses on native/exotic species use that had ever contracted credits, the most common planting strategy (used by 160 projects) was a mixture including a greater proportion of native than exotic species. A total of 5 reported using only exotic species, all of which were AR projects, while nearly one third (78) of projects reported planting 100% native species. Of the 72 IFM, REDD, Agro-forestry, and Mixed projects that provided a response, none reported planting fewer than 50% native species.

These results suggest that concerns over the encouragement of exotic tree plantations by carbon markets may now be narrowly confined to a very small subset of AR projects. Out of 259 projects across all project types, only 21 reported using more exotic than native species, most of which (16) also planted native species. In addition, due in no small part to common eligibility criteria for standards and the carbon accounting methods, we are unable to identify a single forest carbon project in the dataset that has ever contracted offsets following the clearance or conversion of a native forest.

⁴⁵ The survey did not define “native” or “exotic” species. The data presented here reflect respondents’ own interpretation of these terms.

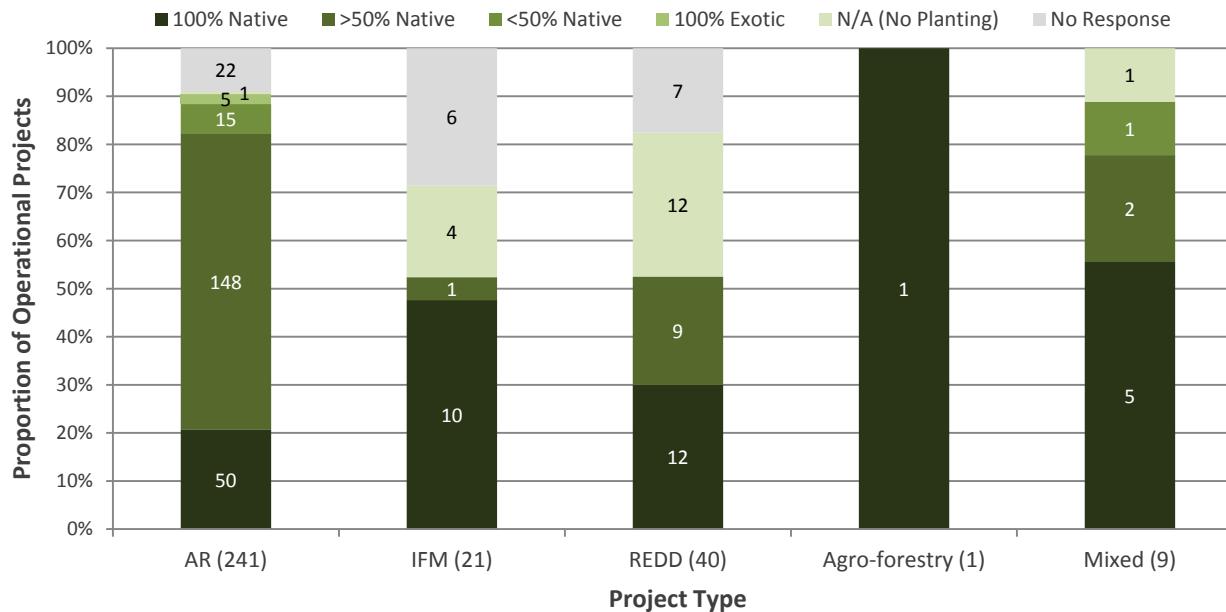
Figure 33: Forest Management Strategies by Project Type



Notes: This graph shows the number of projects that contracted credits in 2010 that apply selected forest management strategies within the project area. Respondents had the option of selecting multiple management strategies. The solid segment for each bar indicates the number of projects that reported only that management strategy; the dotted segment of each bar indicates the number that reported another management strategy as well within the project area. Because projects were able to choose multiple management strategies, the total number of projects represented in bars above may total more than the number of unique operational projects in 2010 that specified management strategies (59).

Source: Ecosystem Marketplace

Figure 34: Use of Native Species in Tree Planting Activities



Notes: This graph shows the number of projects that have ever reported contracting credits, categorized by project type and use of native and/or exotic species for tree planting. The values in parentheses next to each project type indicate the total number of projects that have contracted credits for that project type, and the values within the bars in the graph show the number of projects applying each native/exotic species option.

Source: Ecosystem Marketplace

Demand: Catering to the Buyer



The record-breaking growth seen in the market relies upon not just projects being able to generate supply, but also on a diverse array of buyers, brokers, and resellers to connect this supply to a real demand. Even for seasoned professionals in the market, the question of who is buying these credits remains as pressing as ever. Perhaps even more important than knowing where demand currently comes from, however, is figuring out whether buyers, new or old, are likely to be around into the future. Finding a home for the dramatically expanding supply means forest carbon project developers must find new and deeper sources for demand, if the growth trend of the past two years is to be sustained.

Looking into the future, it is apparent that many market players are likely to continue in the same directions with renewed optimism, but also that the view from the ground is anything but comprehensive.

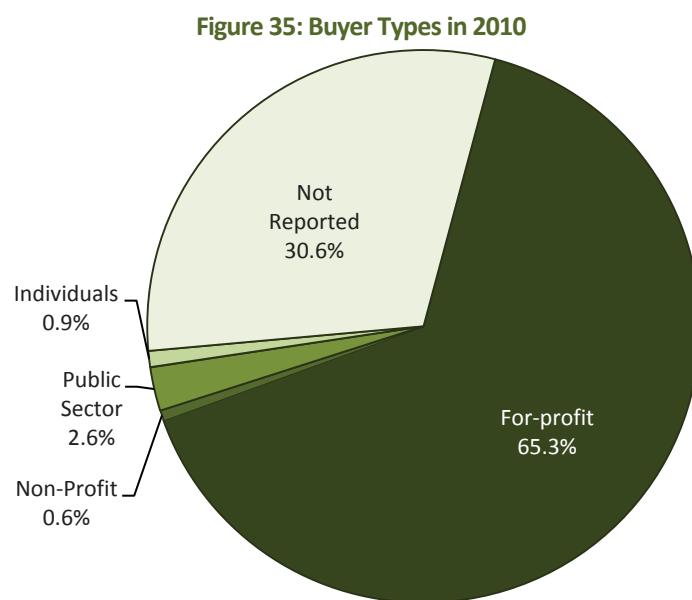
Demand in the Marketplace

Who Is Buying?

Project developers managed to find buyers across the spectrum of for-profit, non-profit, public sector, and individual consumers in 2010. Respondents were asked to break down the volume they sold across these buyer types including their motivations (see further below for data on motivations). Most respondents obliged, and nearly 70% of the total reported volume in 2010 (20.1 out of 29.0 MtCO₂e) came with associated buyer types (see Figure 35). Of these reported volumes (i.e., setting aside the non-reported proportion), nearly 95% (18.9 MtCO₂e) were contracted to for-profit buyers. Non-profit buyers took off nearly 0.2 MtCO₂e in 2010, while individual consumers purchased 0.3 MtCO₂e, and public sector buyers took 0.7 MtCO₂e. For the vast majority of project developers then, finding a home for their projects credits is virtually synonymous with wooing a private sector buyer.

In recent years, several major financial institutions and investors have started moving into the marketplace and are providing support for the market in both traditional and innovative ways. For example, major private sector firms like BNP Paribas, Nedbank Group, Gazprom Marketing & Trading (GM&T), the Macquarie Group, and others have all taken stakes in emerging forest carbon projects and programs. Some of these deals take the form of direct investments, others as major purchase agreements, and in several circumstances these financial firms are stepping in on both sides of the supply-and-demand equation, providing direct investment as well as serving as the road to market by securing purchase agreements for project credits.

In July 2011, Australia's Macquarie Group announced a joint fund with the International Finance Corporation and Global Forest Partners



Note: Percentages based on total primary market volume of 29.0 MtCO₂e.

Source: Ecosystem Marketplace

LP to channel \$25 million in equity financing directly into forest carbon projects, likely starting in Indonesia where Macquarie has already had experience working with Fauna and Flora International.

It's now plain to see that the supply-side and investment interest in forest carbon is booming, buoyed by several pioneering firms and reinforced by the delivery of the first tonnes coming from a new generation of REDD projects. What remains untold however, is the story of how these re-sellers will find a home for the millions of credits they seem to be planning to take on over the coming few years.

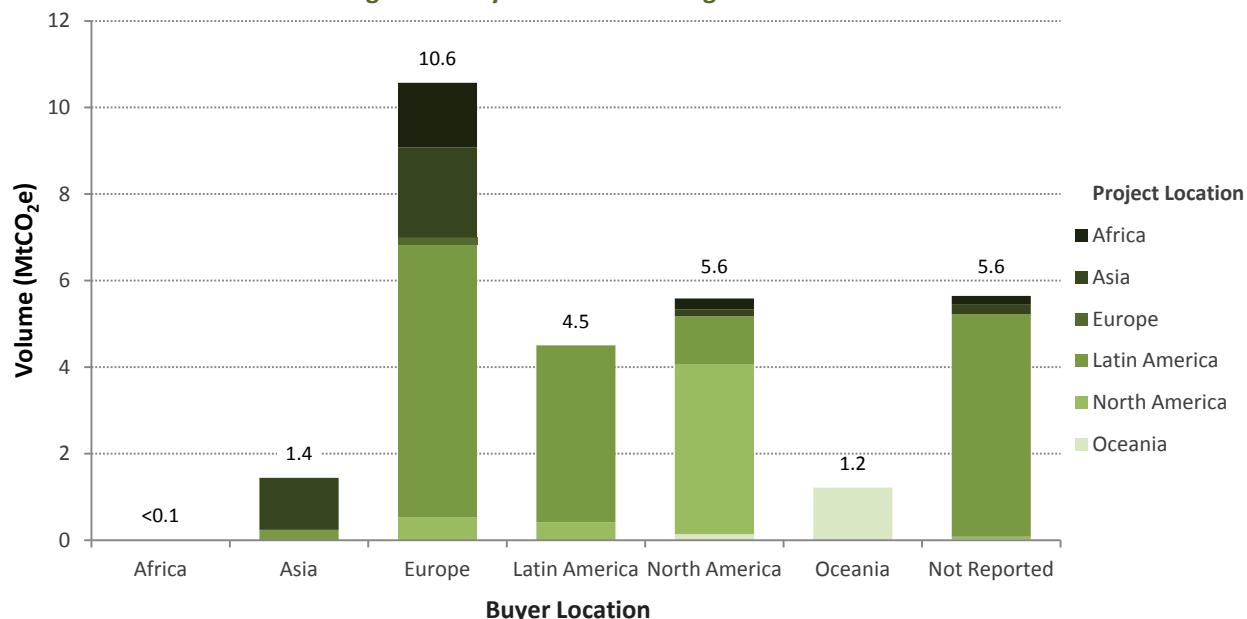
Where Can I Find Them?

Apart from the type and motivations of their buyers, project developers were also asked to break down their volumes contracted in 2010 by buyer locations.

The bulk of credits sold in 2010 will find their way over to Europe, where buyers offered to take on 10.6 MtCO₂e, followed by North American buyers who signed up for 5.6 MtCO₂e (see Figure 36). Both Asia and Latin America showed unexpectedly strong regional demand, but African buyers remained few and far between.

Consistent with expectations of preferences reported by buyers in Ecossecurities' *Forest Carbon Offsetting 2010 Report*,⁴⁶ Europeans showed a priority for credits sourced from Latin America, Asia, and Africa, but still were willing to take on more than 0.5 MtCO₂e from North American projects. Outside Europe, buyers in each of the other regions seemed primarily interested in supporting projects happening in their own backyard. Buyers in Latin America, Asia, and Oceania all showed very strong preferences for locally grown credits. North American buyers did not limit their appetite to local credits, taking a substantial cut from Latin America, but it is nevertheless worth noting that North American buyers remain the primary target for North American projects, taking 80% of the volume supplied from US and Canadian projects in 2010. Focusing more directly on the US, that percentage bumps up slightly as US buyers were responsible for taking 86% of the 4.2 MtCO₂e credits contracted from US projects in 2010.

Figure 36: Buyer Location and Regional Preferences



Source: Ecosystem Marketplace

⁴⁶ Available at <http://www.ecosecurities.com/Registered/ForestCarbonOffsettingReport2010.pdf>.

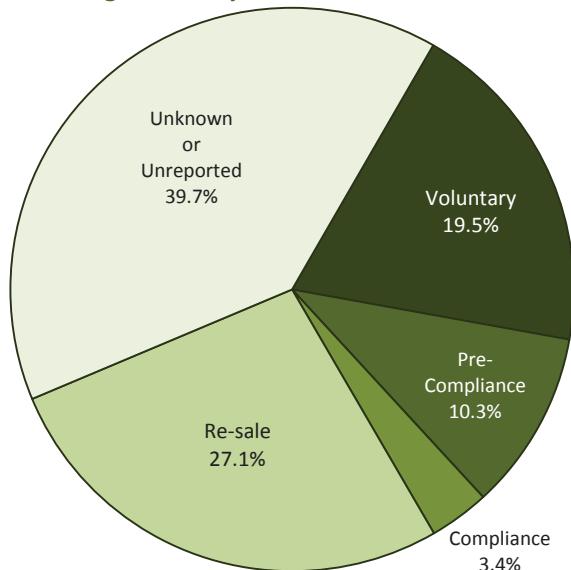
Why Are They Buying?

For the purposes of this report, we categorized demand in the forest carbon markets into four main categories:

- Pure voluntary (end-use)—Buyers purchase credits to offset their own GHG emissions on a voluntary basis
- Pre-compliance (end-use)—Buyers purchase credits expecting to use them in a future compliance scheme
- Compliance (end-use)—Buyers purchase credits for surrender under a regulatory emissions trading scheme
- Secondary market—Buyers purchase credits as intermediaries, with the intent to re-sell them for higher prices in the future

Despite the fact that the overwhelming majority of forest carbon contracting occurs in the voluntary OTC market among buyers with no current regulatory obligations, pure voluntary end-users are not the single largest buyer type in the primary market (see Figure 37). In 2010, pure voluntary purchases accounted for at least 5.7 MtCO₂e while re-sale was the clear leading motivation reported, bringing in at least 7.8 MtCO₂e from 2010 contracts.⁴⁷ Pre-compliance interests remained strong, generating a pull for 3.0 MtCO₂e in 2010 as California moved ever closer to its cap-and-trade scheme and the UNFCCC parties indicated further interest in using REDD in a post-Kyoto compliance scheme. When considered as a proportion of the 17.5 MtCO₂e for which motivations were reported in 2010 (i.e., setting aside the 39.7% of 2010 volumes that were reported without buyer motivations), pure voluntary purchasing accounts for more than 32% of sales, while pre-compliance interests took 17%, and re-sale the lion's share with more than 45%. Compliance end-use remains a relatively small driver in the global marketplace, as most companies still have limited need or interest for forest carbon credits among current compliance schemes.⁴⁸

Figure 37: Buyer Motivations in 2010



Note: Percentages based on the 29.0 MtCO₂e contracted in the primary market

Source: Ecosystem Marketplace

in exchange for funding without having to take on the risk of finding an end-user themselves. The rise of re-sale contracting in 2010 provides a glimpse of a nascent secondary market for forest carbon, and the entry of many new firms into this space suggest 2010 won't be the end of the road.

How Are They Buying?

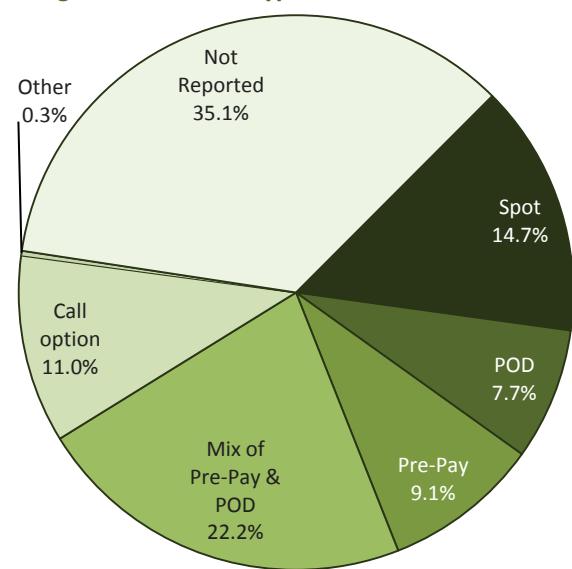
With such a large increase in the volume of credits destined for the secondary market, buyers taking on these credits have a variety of tools to mitigate their exposure to risks that projects are unable to deliver on their expected credits. By and large, however, buyers were willing to put cash on the table, signing contracts that include upfront or immediate payments, such as Spot, Pre-Pay, or a mixture of Pre-Pay and Pay-on-Delivery (POD), for contracts covering 46% of the volume in 2010. The choice by buyers to defer payments into the future was a less common model, with project developers reporting 19% of

⁴⁷ Of the 7.4 MtCO₂e that project developers contracted in 2010 to for-profit buyers for re-sale, 82% went for anticipated re-sale to intermediaries targeting buyers with voluntary retirement motivations; 17% were for anticipated re-sale to buyers with pre-compliance motivations; and 1% was contracted to intermediaries with an anticipated compliance buyer.

⁴⁸ See the Market Snapshots of the CDM, NZ ETS, and Australia for a deeper look at compliance market dynamics, and the California Market Snapshot for more details on the pre-compliance landscape.

volumes to be conveyed under POD or Call Option contracts (see Figure 38). Unfortunately, the largest share of 2010 volume reported in the survey was reported without any contract type, and without comparable data from previous years, it is not possible to confidently generalize these proportions across the market. In addition to the 4.3 MtCO₂e that were sold in spot trades, at least 3.0 MtCO₂e were contracted with POD or Pre-Pay contracts in 2010 for firm delivery (i.e., the seller shall deliver an explicitly enumerated volume of credits that is not contingent upon project performance).

Figure 38: Contract Types for 2010 Transactions



Note: Percentages based on the 29.0 MtCO₂e contracted in the primary market

Source: Ecosystem Marketplace

The Future: Developers' Outlook



Looking to the Road Ahead

Forest carbon suppliers this year were asked to gaze into the crystal ball and predict the future of the forest carbon market and the volumes they expect from their own projects. While these predictions are clearly subjective, they provide helpful insight into the current temperament of the market and indications of where it might be headed.

Mind the Gap

For the first time, suppliers were asked to predict the annual volume of forest carbon transactions into the future. Thirty-one respondents ventured their best guesses for the years 2010, 2011, 2012, 2015, and 2020. Except for one bearish respondent, every project developer predicted growth in coming years (see Figure 39). As an interesting addition to this question, we also took the opportunity to gauge the sensitivity of our forest carbon fortune-tellers to the recent past.

In the last *State of the Forest Carbon Markets* report, Ecosystem Marketplace provided all the data we had gathered on market activity through the first half of 2009. Survey respondents this year were prompted with the question:

In the last full year of data collected (2008), we tracked 5.3 million metric tCO₂e across global voluntary and compliance forest carbon markets. In the first half of 2009, we tracked 3.7 million metric tCO₂e. What total global forest carbon volumes do you expect for the following years (in millions of metric tCO₂e)?

The results, as shown in Figure 39, were quite surprising. Only one respondent was remotely close to estimating the 20.2 MtCO₂e now measured from the 2009 primary market, offering a guess of 20 MtCO₂e. All other respondents reported values in the range of 4-9 MtCO₂e. In 2010, the predictions remained just as far off. Only four respondents predicted 2010 volumes greater than 20 MtCO₂e; all others predicted values in the range of 4-15 MtCO₂e.

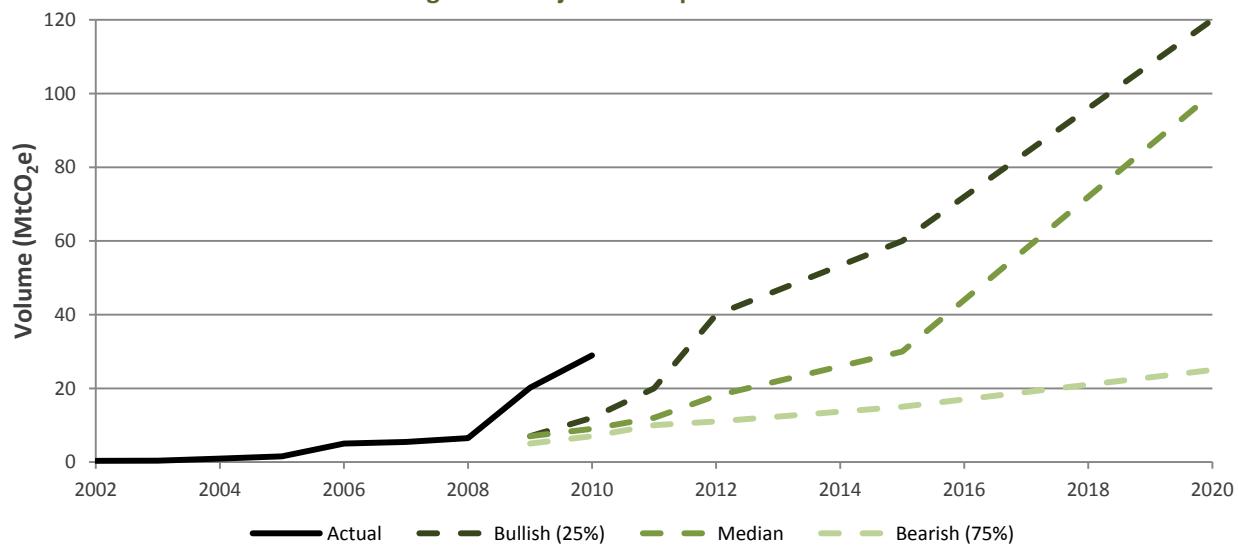
These predictive questions are not intended—nor do we believe they have been interpreted—as a rigorous quantitative benchmark for charting market growth. However, the sheer distance between market predictions and reported volumes for both 2009 and 2010 highlights the opacity of the forest carbon market even to those directly involved in it.

Planting Seeds

The predictions of the future from these project developers graphed in Figure 39 would correspond to a global market size ranging from 50 MtCO₂e up to 180 MtCO₂e across 2011-2015, with the middle-of-the-road estimate at 90 MtCO₂e. If the market simply returned to contract the same total volume as it did in 2010 (i.e., no growth) in each of the coming years, we would expect a total falling towards the upper end of this spectrum at 158 MtCO₂e.

This year, project developers were also asked to specify the five-year expected volume from their projects. After tallying up these expected credits, a stark contrast emerges between developer's expectations for market transactions indicated in their overall market predictions and the ballooning supply they report entering the pipeline. The project developers responding to the survey this year reported five-year projections for 87 new projects and 200 projects that have already contracted credits. The volume these respondents estimate from 2011-2016 totals 373 MtCO₂e (see Table 9), more than double the most bullish view of market growth shown in Figure 39. If we limit these five-year predictions only to the 200 projects that reported projected volumes and have already contracted for credits, the total comes down to 273 MtCO₂e, but again still far outstrips the predicted market sizes.

Figure 39: Project Developer Predictions



Notes: Based on 31 survey responses. The top, middle, and bottom dashed lines show the predictions of the 7th, 15th, and 23rd highest responses for each year, respectively. These are equivalent to the 25th, 50th and 75th percentiles and are intended to highlight the variable outlook from respondents.

Source: Ecosystem Marketplace

The overwhelming source of anticipated supply over the next five years comes from 60 REDD projects. A total of 213 AR, 14 IFM, and 10 Agro-forestry projects were also planning to add to the mix, but collectively provide less than 10% of the projected supply.

Most market players will note that it is important to take both the current market volumes and these projected five-year supplies with a healthy dose of skepticism. Project developers and buyers—including several interviewed for this report—readily admit they often have a rosy view of the credit volumes coming from their projects. In most circumstances, the volume eventually delivered to market is only a fraction of the grand vision originally conceived for a project. The most recent round of forest carbon methodologies that have enabled much of this uptick in supply, particularly for REDD projects, are still relatively new and only a select few projects have completed successful validation. Moreover, recent examples of delays, such as those encountered by the Rimba Raya project in Indonesia,⁴⁹ highlight that projects may take much longer to come to market than anticipated, if in fact they ever do. We would thus encourage readers to view these five-year volumes in this more conservative context. Nevertheless, several market players and project developers interviewed raised concerns regarding a potential oversupply of credits in the near future.

For Christian Dannecker of South Pole Carbon Asset Management, the prospect of oversupply is already affecting his current marketing strategy. “If you have issued credits or advanced projects in the pipeline, there might be more people buying, but nowhere close to absorb all those credits,” he said. “I think this will definitely lower the prices and we therefore hope to sell credits from our few advanced projects quickly.”

Table 9: Supply Estimated for 2011-2015 by Project Developers

Market	Volume by Project Type (MtCO ₂ e/5yr)				
	AR	IFM	REDD	Agro-forestry	TOTAL
Voluntary OTC	11.4	6.4	331.0	3.5	352.2
CCX	--	0.9	--	--	0.9
Total Voluntary Markets	11.4	7.3	331.0	3.5	353.1
Australia	2.0	1.2	--	--	3.4
California (ARB/CAR)	0.0	0.6	4.3	--	4.8
CDM	11.7	--	--	--	11.7
NZ ETS	0.1	--	--	--	0.1
Total Regulated Markets	13.8	1.7	4.3	<0.1	20.0
Total Global Markets	25.1	9.0	335.3	3.5	373.1

Notes: Based on 147 survey responses. Values may not sum to totals due to rounding.

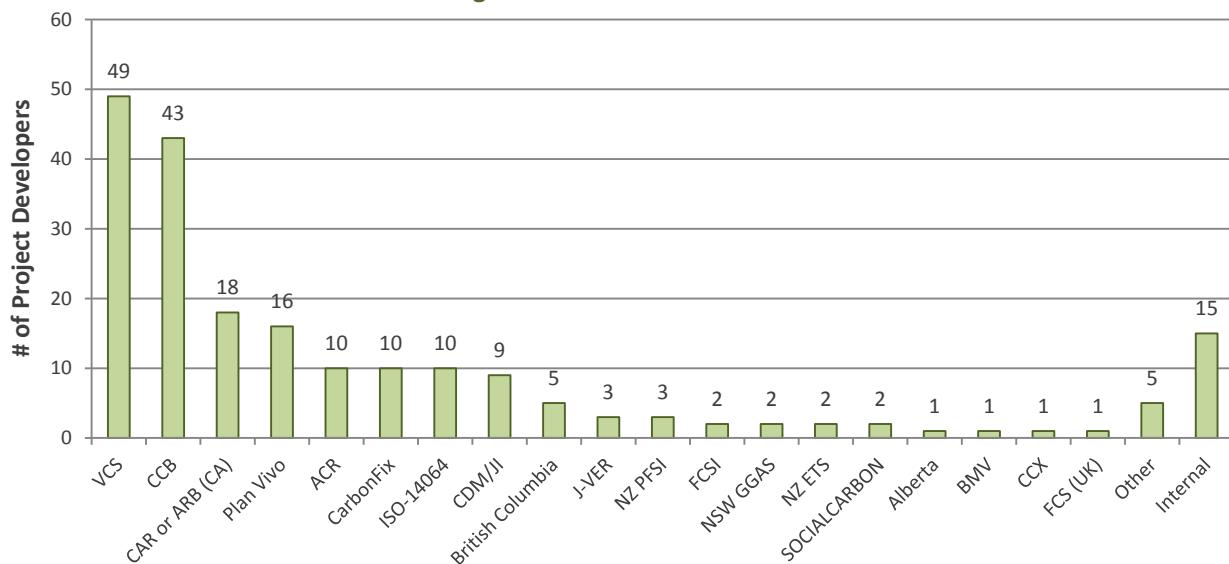
Source: Ecosystem Marketplace

⁴⁹ Read about Rimba Raya’s struggles in Ecosystem Marketplace’s “Rimba Raya Debacle Casts Pall Over Indonesian REDD,” available at http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=8540§ion=news_articles&eod=1.

Standards of the Future

Setting our sights a bit closer to the present, project developers reported a variety of standards they intended to use in 2011 (see Figure 40). VCS and CCB are poised to continue their front-runner status with the largest group of project developers following both VCS and CCB rules to work new credits into the pipeline. The interest in developing projects in the California cap-and-trade market is picking up as well, with ARB/CAR standards poised to remain the most commonly applied in the US. Several project developers reported developing projects in the ACR pipeline, and the “boutique” voluntary standards of Plan Vivo and CarbonFix are still attracting a healthy number of project developers into the fold.

Figure 40: 2011 Standard Plans



Note: Based on 102 survey respondents, limited to project developers (i.e., no secondary market responses included). Respondents were allowed to select as many standards as they planned to formally apply in 2011.

Source: Ecosystem Marketplace

Turning to Demand as the New Bottleneck

The hard work of NGOs and for-profit pioneers in the early days of the markets have been followed more recently by standards organizations and the private sector and is now paying off with a dramatic uptick in supply coming from projects all over the world. Although it is impossible to tell how much of the volume contracted in 2010 and reported in the pipeline through 2015 will actually make it to market, the recent market trends and the pipeline volumes indicate that supply will continue to grow rapidly in the near term.

On the demand side, we have not yet seen the forest carbon markets hit a wall in terms of buyers willing to contract for more credits, but the dramatic growth we've seen over 2009 and 2010, particularly when coupled with this overwhelming pipeline, begs the question. How far can the voluntary market go in providing sustainable demand for these credits?

Many project developers, buyers, and standards organizations are keenly aware of the limitations of a carbon market driven by purely voluntary demand. For most, the next major shift in the carbon markets must be finding a way to connect the rapidly expanding REDD supply with new demand. This strategy is likely to play out in the development of new regional and compliance markets, jurisdictional accounting, and “nesting” schemes, but can these new policies arrive in time to avert major disruptions to current growth trends? The forest carbon market appears to have emerged from “The Great Recession” largely unscathed, but the prevailing policy uncertainties ahead in 2011 and 2012 may continue to foster market instability and test the resolve of those seeking innovative ways of financing forest conservation.

Conclusion



With forests left behind to date in (most of) the large compliance markets steering billions of dollars in carbon finance, the voluntary carbon market continued to tinker with earlier hurdles to forest carbon projects in the hope of unlocking the great potential of forests in the fight against climate change. In this context, 2010 proved to be a watershed year. The variety of approaches found in the voluntary markets to address earlier problems plaguing forest projects, though not free of criticism, have now achieved a level of acceptance such that a new wave of major private sector buyers and investors have come off the sidelines to breathe new life into the market and the projects themselves. This confidence is reflected in record-breaking volumes transacted in 2009 and 2010, and the growth of a secondary market that is expected to bring greater liquidity and price stability in years to come.

This surge in market activity owes much to timing and circumstance: a number of new standards for verifying REDD projects became available in 2010, and a bullish policy landscape where billions of dollars in public funding have been promised to support REDD+ give long-term hope, while California's cap-and-trade program gives concrete signs for medium-term demand. As we move through 2011, the international climate negotiations—and a handful of other major political fora—hold unprecedented promise, but also potentially peril, for the future of these markets and the sustainable financing of forestry for climate change purposes. The forest carbon markets continue to anticipate evolving policy needs, but for many market players and observers, the critical next step in this marketplace is no longer stirring up a reliable supply of emissions reductions, but finding a sustainable demand for them, something primarily reliant upon strong policy decisions.

Despite several early predictions of perverse incentives, land grabs, and environmental decline, the growth of the forest carbon markets has coincided with an unambiguous demand across the marketplace for high-quality projects that deliver real, measurable, and verifiable emissions reductions including a broader scope of quality beyond carbon alone. Although vocal critics of the principle behind markets and forest-based offsets remain, and are unlikely to disappear, the faces of the current generation of forest carbon projects are no longer of the monolithic "carbon cowboy." Instead, the forest carbon market is represented by hundreds of organizations, non-profit and for-profit alike, working with indigenous communities, governments, and private landowners to connect companies with an interest in supporting climate-friendly forestry with reliable ways to do so. Specific conflicts do and will persist, but the market has now established clear ways to ferret out unscrupulous actors and projects, rewarding those who deliver on their commitments and limiting the "cowboy's" reach.

The growth of the forest carbon market in recent years has been driven primarily by a new generation of REDD projects concentrated in Latin America, but no region of the globe or project type—at least not yet—has been left behind. What awaits the forest carbon markets is now largely a question of political will. Will policymakers build on and learn from the progress that has been made in the markets and projects around the globe? Or will they continue to leave the great potential of forests underfunded and reliant upon businesses with a voluntary interest in financing what their governments have been unwilling to? 2010 was undoubtedly a critical year in the history of the forest carbon markets, but the most consequential chapters in this story still remain to be written.

Appendix 1: Forest Carbon Offset Supplier List



Note: This table features those respondents that shared volume data for our 2010 survey and elected to be listed.

3Degrees	http://www.3degreesinc.com
AgraGate Climate Credits	http://www.agragate.com
AusCarbon Pty Ltd	http://www.auscarbongroup.com.au
Balance Carbon Pty Ltd	http://www.balancecarbon.com
Bio Assets Ativos Ambientais Ltda.	http://www.bioassets.com.br
Bioforest Peru	http://www.bioforestperu.com
Blue Source, LLC	http://www.bluesource.com
Borealis Carbon Offsets Ltd.	http://www.borealisoffsets.com
Brasil Mata Viva (BMV) Standard	http://www.brasilmataviva.com.br
Brighter Planet	http://brighterplanet.com
California Department of Parks and Recreation	http://www.parks.ca.gov
Camco	http://www.camcglobal.com
CantorCO ₂ e	http://www.cantorcO2e.com
Carbon Friendly Solutions Inc.	http://www.carbonfriendly.com
Carbonica	http://www.carbonica.org
Carbon Tanzania	http://www.carbontanzania.com
CarbonBrake Limited	http://www.carbonbrake.com
Carbonfund.org Foundation, Inc.	http://www.carbonfund.org
Chaire eco-conseil, Universite du Quebec; Chicoutimi	http://carboneboreal.uqac.ca
China Green Carbon Foundation	http://www.thjj.org
ClearSky Climate Solutions	http://www.clearskyclimatesolutions.com
ClimateCare	http://www.jpmorganclimatecare.com
Conservation International	http://www.conservation.org
Conservation International Brazil	
Degree Celsius	http://www.degrecelsius.com.au
Delta Institute	http://www.delta-institute.org
Dep. Land, Environment, Agriculture & Forestry, University of Padova	http://www.tesaf.unipd.it/en/
Eco-Carbone	http://www.eco-carbone.com
Ecological Restoration Capital	http://www.ercap.co.za
ecosur America	http://www.ecosur-america.com
Ecosystem Services LLC	http://www.ecosystemservicesllc.com
Ecotrust	http://www.ecotrust.or.us
Ecotrust Forest Management, Inc.	http://www.ecotrustforests.com
The Eco Products Fund, LP	
Emission Securities LLC	http://www.emissionsecurities.com
Emiti Nibwo Burola	
Environmental Services of Oaxaca	http://www.sao.org.mx
Envirotrade	http://www.envirotrade.co.uk
Equator	http://www.equatorllc.com
ERA Carbon Offsets	http://www.eraecosystems.com
E.Value - Estudos e Projectos de Ambiente e Economia, S.A.	http://www.evalue.pt
Evolution Markets	http://www.evomarkets.com
Face the Future	http://www.face-thefuture.com
Finite Carbon Corporation	http://wwwFINITECARBON.COM
Forest Carbon Offsets LLC	http://www.forestcarbonoffsets.net
Forest Trends/Katoomba Incubator	http://www.katoombagroup.org/Incubator
ForestFinance Service GmbH	http://www.forestfinance.de
Forests NSW	http://www.dpi.nsw.gov.au

ForestSense - JustGreen	http://www.forestsense.nl
Fundacao Amazonas Sustentavel - FAS	http://www.fas-amazonas.org
GET-Carbon	http://www.get-carbon.com
GFA ENVEST	http://www.gfa-envest.com
Green Markets	http://www.greenmarkets.com.br
Green Resources AS	http://www.greenresources.no
Greenfleet	http://www.greenfleet.com.au
Greenhouse Balanced	http://www.greenhousebalanced.com
Greenoxx	http://www.greenoxx.com
GreenTrees	http://www.green-trees.com
The Green Ticket	http://www.thegreenticket.org
IFS Growth	http://www.ifsgrowth.co.nz
Jain Plantation	
Kinome	http://www.kinome.fr
Landcare Research, carboNZero programme,	http://www.carbonzero.co.nz
MF Global	http://www.mfglobal.com
MGM Innova, LLC	http://www.mgminnova.com
Mountain Association for Community Economic Development	http://www.appalachiancarbonpartnership.org
Mpingo Conservation Development Initiative	http://www.mpingoconservation.org/
The Nature Conservancy	http://www.nature.org
The Nature Conservancy Brazil	
Northwest Natural Resource Group	http://www.nwneutral.org
NTFP-PFM	http://forests.hud.ac.uk
Oberallmeindkorporation Schwyz	http://www.oak-schwyz.ch
ONF International	http://www.onfinternational.org/
Pacific Forest Trust, The	http://www.pacificforest.org
Pax Natura Foundation	http://www.paxnatur.org
Permanent Forests International Ltd	http://www permanentforests.com
PrimaKlima -weltweit- e.V.	http://www.prima-klima-weltweit.de
PT Rimba Makmur Utama	
Pure Interactions UK	http://www.pureinteractions.com
Rainforest Alliance Inc.	http://www.guatecarbon.org
Redd Forests	http://www.reddforests.com
Reforest the Tropics, Inc.	http://www.reforestthetropics.org
River Forest Carbon Inc.	http://www.riverforestcarbon.com
Sempervirens Fund	http://www.sempervirens.org
Shift2Neutral	http://www.shift2neutral.com
Sierra Gorda Alliance for Conservation	http://www.sierragorda.net
Silva Tree Panama	http://www.silvatree.com
Socio-eCO ₂ nomix-Global	http://www.vccslindia.org
South East Carbon Management LLC	http://www.southeastcarbon.com
South Pole Carbon Asset Management Ltd.	http://www.southpolecarbon.com
Taking Root	http://www.TakingRoot.org
Terra Global Capital, LLC	http://www.terraglobalcapital.com
Treedom srl	http://www.CO2neutral.it
Treeflights	http://www.treeflights.com
The Trust for Public Land	http://www.tpl.org
VEDA Climate Change Solutions Ltd	http://www.vccslindia.org
Verus Carbon Neutral	http://www.verus-CO2.com
Viridor Carbon Services	http://www.viridor.net
Wildlife Conservation Society (WCS)	http://www.wcs.org
Wildlife Works Carbon	http://www.wildlifeworkscarbon.com
World Land Trust	http://www.carbonbalanced.org

Appendix 2: Overview of Forest Carbon Standards⁵⁰



American Carbon Registry (ACR) Standards⁵¹

The American Carbon Registry (ACR) is a non-profit enterprise of Winrock International, founded in 1996 as the GHG Registry by the Environmental Resources Trust (ERT). ACR currently has three published standards, the ACR Standard v2.1, Forest Carbon Project Standard v2.1, and three published forest carbon methodologies for AR on degraded lands, REDD for avoiding planned deforestation, and the first IFM methodology specifically for US timberlands. ACR also has several methodologies in the approval process for 2011 including REDD methodology modules, IFM on non-federal US forestlands, IFM for conventional to reduced impact logging, and AR and revegetation of degraded deltaic wetlands. ACR also accepts offsets verified to its own standards that use CDM methodologies and other select ACR-approved methodologies from EPA Climate Leaders. In 2010, ACR approved a third-party risk mitigation product for forest carbon projects, the Carbon Reduction Guarantee, which is an alternative to the ACR forest project buffer pool.

Brasil Mata Viva (BMV) Standard⁵²

The Brasil Mata Viva (BMV) Standard is a methodology of payment for environmental services, using an innovative environmental credit system paradigm known as "UCS - Unidade de Crédito de Sustentabilidade" (Sustainability Credit Unit). The BMV Methodology provides resources for the introduction of new sustainable land use technologies and for the establishment of processing units that will add value to rural production, recomposition and recovery of degraded areas, respecting the local communities and cultural issues. These activities are monitored and will be quantified according to UCS_{ASE} (A - Environmental, S - Social and E - Economic aspects). The goal is to create solutions for sustainable development focused on curbing deforestation and reducing emissions. BMV projects are supervised and supported by the local government, the University of the State of São Paulo (UNESP), and the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA).

The CarbonFix Standard⁵³

The CarbonFix Standard was developed in 2007 by CarbonFix, an independent non-profit organization. The CarbonFix Standard applies to projects related to afforestation, reforestation, natural regeneration and agro-forestry that have a demonstrated commitment to socio-economic and ecological responsibility. Project developers using the standard manage their certification processes over the ClimateProjects platform, which also allows them to issue their carbon credits in Markit – CarbonFix's official credit registry. In January 2011, the International Carbon Reduction and Offsets Alliance (ICROA) recognized CarbonFix Standard as suitable for use under its Code of Best Practice.

⁵⁰ These descriptions cover standards active in the Voluntary OTC market and were provided by the standards organizations. A summary of registries can be found in Annex B of Ecosystem Marketplace's *State of the Voluntary Carbon Markets 2011* report.

⁵¹ <http://www.americancarbonregistry.org>.

⁵² <http://www.brasilmataviva.com.br>.

⁵³ <http://www.carbonfix.info>.

Chicago Climate Exchange (CCX) Offsets Program⁵⁴

The Chicago Climate Exchange (CCX) operated a voluntary and legally binding cap-and-trade program with an offsets component from 2003 through 2010. The final year of compliance under the CCX cap-and-trade program was 2010 and all verification and compliance activities will be complete by the fall of 2011. In 2011, the CCX launched the distinct Chicago Climate Exchange Offsets Registry Program for voluntary emission reductions (VERs) that is set to run for an initial period of 2011 and 2012. The Offsets Registry Program leverages the CCX protocols and procedures, including the operation of technical expert committees on forestry and non-forestry offsets. All projects that deviate from CCX's ten standardized protocols must be validated by one of these committees. The CCX will maintain a registry for offsets similar to the one developed for the cap-and-trade program.

The Climate Action Reserve Protocols⁵⁵

The Climate Action Reserve (the Reserve) is a non-profit carbon offset registry and standards-setting body. In 2008, the Reserve was established by (and is now the parent organization of) the California Climate Action Registry – a greenhouse gas emissions-tracking (as opposed to an offset-tracking) registry created to protect and promote early actions to reduce GHG emissions. The Reserve has so far developed offset protocols for forestry, landfill methane (US and Mexico), livestock methane (US and Mexico), coal mine methane, nitric acid, organic waste composing and digestion, and destruction of ozone-depleting substances. It is currently exploring or developing many others, including protocols for cropland management and reforestation projects in Mexico, and protocols for use in Canada.

Climate, Community, and Biodiversity (CCB) Standards⁵⁶

The CCB Standards are a set of project-design criteria for evaluating the social and environmental aspects of land-based carbon mitigation projects and their community and biodiversity co-benefits against which projects are assessed by an approved third party auditor. The Standards are managed by the Climate, Community and Biodiversity Alliance (CCBA), a consortium of international non-governmental organizations. The CCB Standards are used first for validation to demonstrate good project design and then later for verification to demonstrate the quality of project implementation and the delivery of multiple benefits. The CCB Standards do not generate tradable offset certificates but are frequently applied with a carbon-accounting standard like the CDM or VCS and successful verification enables the addition of a 'CCB label' to verified emissions reductions, such as VCUs. In 2009, the CCBA and CARE facilitated development of the REDD+ Social and Environmental Standards (REDD+ SES) to assess the social and environmental performance of government-led REDD+ programs. Version 1 of the REDD+ SES was released in June 2010 and is being applied in pilot countries including Ecuador, State of Acre in Brazil, Nepal, Province of Central Kalimantan in Indonesia and Tanzania.

Japan Verified Emissions Reduction (J-VER) Scheme⁵⁷

The Japan Verified Emissions Reduction (J-VER) Scheme, launched in 2008 by Japan's Ministry of the Environment, is a verification scheme for VERs designed to support the development of Japan's domestic carbon market. Credits must be generated through the reduction or removal of atmospheric GHGs by Japanese projects. There are currently 28 applicable methodologies, three of which are for forest management. In order to meet international standards, the Scheme is designed to comply with ISO 14064-2, 14064-3 and ISO 14065 standards. Credits are issued in 4CJ-managed registry, and may be used for carbon offsetting and other purposes by individuals, businesses and governmental institutions.

⁵⁴ <http://www.chicagoclimatex.com>.

⁵⁵ <http://www.climateactionreserve.org>.

⁵⁶ <http://www.climate-standards.org>.

⁵⁷ <http://www.4cj.org/jver>.

The Panda Standard⁵⁸

The Panda Standard is the first standard tailored to the Chinese market and focused on Agriculture, Forestry and Other Land Use (AFOLU). Founded by The China Beijing Environment Exchange (CBEEX) and BlueNext, and co-founded by the China Forestry Exchange and Winrock, the Standard requires that all projects must be located within the People's Republic of China. Aimed at developing China's market readiness and providing an investment vehicle to early domestic movers, the Panda Standard selected two pilot projects in order to inform its development with field inputs and domestic data collection. At the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Cancun, the Panda Standard partners released its draft AFOLU specifications.

Plan Vivo⁵⁹

Plan Vivo is a program designed for community-based forest management and agroforestry payments for ecosystem services projects. The system was created over a decade ago by the Edinburgh Center for Carbon Management and is now developed and overseen by a Scottish charity, the Plan Vivo Foundation. There are currently five fully operational Plan Vivo projects in Mexico, Uganda, Mozambique, Tanzania and Nicaragua and several upcoming projects in developing countries including Malawi, Cameroon, Ethiopia, and Nepal. Plan Vivo maintains a listing of projects on its website and lists credits (Plan Vivo Certificates) on the Markit Environmental Registry.

The Verified Carbon Standard (VCS)⁶⁰

The Verified Carbon Standard was founded in 2005 (as the Voluntary Carbon Standard) by The Climate Group, the International Emissions Trading Association, the World Economic Forum and the World Business Council for Sustainable Development to bring standardization to the voluntary offset market. The current version of the standard is VCS Version 3, released in March of 2011. VCS projects can use methodologies approved under the CDM and most approved under the Climate Action Reserve, as well as methodologies developed and approved through the VCS methodology approval process. The VCS infrastructure includes a Project Database that provides public access to information on all validated projects and Verified Carbon Units (VCUs). Three independent, approved registries - Markit, Caisse des Dépôts and NYSE Blue - connect directly to the project database to obtain unique serial numbers for all VCUs.

⁵⁸ <http://www.pandastandard.org>.

⁵⁹ <http://www.planvivo.org>.

⁶⁰ <http://www.v-c-s.org>.

Premium Sponsors



Wildlife Works is the world's leading REDD project development and management company with a unique approach to applying innovative market-based solutions to biodiversity conservation and helping local landowners in the developing world monetize their forest and biodiversity assets whether they are governments, communities, ownership groups, or private individuals. In 2011, Wildlife Works' flagship Kasigau Corridor REDD Project was the first in the world to achieve validation, verification and issuance of REDD carbon credits under the VCS and CCB standards. The Wildlife Works Kasigau Corridor REDD Project protects over 500,000 acres of forest and brings the benefits of direct carbon financing to Kenyan communities while also securing the entire wildlife migration corridor between Tsavo East and Tsavo West National Parks. Wildlife Works is actively developing a portfolio of REDD projects with an aim to protect five million hectares of native forest, mitigating 25 million tons of CO₂ emissions per year, and creating thousands of sustainable jobs in rural communities.



ERA Ecosystem Restoration Associates Inc. (www.eraecosystems.com) is a Canadian based pioneer in forest restoration and conservation carbon offset projects. ERA has delivered over one million tonnes of carbon offsets to the voluntary market. Beginning with our British Columbia based Community Ecosystem Restoration Program (CERP) in 2005, our portfolio of project activities has grown to include forest carbon projects in Canada, Africa, New Zealand and the United States. We currently work in the voluntary markets, developing compliant markets in North America, and international REDD markets. ERA's clients and product users include Air Canada, Catalyst Paper, Rolling Stone Magazine, HSE – Entega, The Forest Carbon Group AG, the Globe Foundation and Shell Canada Limited. ERA's carbon offset products are validated and verified to ISO-14064, CCBA, PFSI-VER, VCS and CAR standards.



The World Bank BioCarbon Fund (www.wbcarbonfinance.org) has mobilized a fund to demonstrate projects that sequester or conserve carbon in forest and agro-ecosystems. The Fund, a public/private initiative administered by the World Bank, aims to deliver cost-effective emission reductions, while promoting biodiversity conservation and poverty alleviation. The Fund is composed of two Tranches: Tranche One started operations in May 2004, has a total capital of \$53.8 million; Tranche Two was operationalized in March 2007 and has a total capital of \$36.6 million. Both Tranches are closed to new fund participation.



The BioCarbon Fund considers purchasing carbon from a variety of land use and forestry projects; the portfolio includes Afforestation and Reforestation under the Clean Development Mechanism (CDM), and Reducing Emissions from Deforestation and Degradation (REDD) and sustainable land management/agricultural soil carbon in the voluntary market.

Sponsors



Our mission is to inspire fresh thinking that creates economic opportunity, social equity and environmental well-being. Ecotrust (www.ecotrust.org) is headquartered in Portland Oregon and is a unique organization; it integrates public and private purpose and for-profit and non-profit structures. Ecotrust's many innovations include co-founding the world's first environmental bank and starting the world's first ecosystem investment fund. For the past several years, we have been a pioneer in the development of forest carbon policy and offset projects in the Pacific Northwest. We created the first Agriculture, Forestry, and Other Land Use (AFOLU) methodology to complete the Verified Carbon Standard double approval process (VM0003 v1.0), and have served on climate change working groups that established the Climate Action Reserve's *Guidelines for Aggregating Forest Projects* and produced recommendations for the Oregon Global Warming Commission's *Forestry Roadmap to 2020*. Our for-profit partner Ecotrust Forest Management, Inc. owns and manages over 13,000 acres of timberland in Oregon and Washington to generate revenue streams from timber sales, carbon credits, and other ecosystem services.



Face the Future (www.face-thefuture.com), is a pioneering forest carbon project developer based in the Netherlands with over 20 years of international forestry experience in the context of carbon markets. Face the Future designs and implements forestry projects worldwide that aim to mitigate and adapt to climate change and provide measurable social and biodiversity benefits to local communities. In addition to project development, Face the Future also offers a range of consultancy services including project feasibility assessments, PDD writing, project implementation, project marketing and the design of national and sub-national REDD+ readiness strategies. To date, Face the Future has established over 50.000 hectares of new forests and sustainably manages over 100.000 hectares of existing natural forests across 4 continents. As a result of these initiatives, over 2,3 million tons of CO₂ have been sequestered, verified and transacted in the voluntary carbon market.



The Forest Carbon Group (www.forestcarbongroup.de) works to protect and restore forests and their manifold ecosystem services. It offers companies tailor-made solutions for becoming more sustainable and carbon neutral using the mechanisms of the voluntary carbon market. The full service approach includes identifying, developing and financing forestry projects worldwide, and providing guidance in marketing and communications to leverage the potential of companies' sustainable investment. Founded in 2009, the Forest Carbon Group consists of specialists with experience in carbon markets, forestry, project development, marketing, communications and financing. The company's headquarters is in Frankfurt, Germany.

BAKER & MCKENZIE

Baker & McKenzie (www.bakermckenzie.com) was the first law firm to recognize the importance of global efforts to address climate change and the importance of such legal developments to our clients. For more than fourteen years, our dedicated team of more than 60 lawyers has worked on numerous pioneering deals, including writing the first carbon contracts, setting up the first carbon funds and advising on the first structured carbon derivative transactions. We continue to be the adviser of choice on market developments, advising on the first REDD project, post-2012 carbon funds and legal regimes around carbon capture and storage. Our team advised on the first carbon forest transactions, the establishment of the BioCarbon Fund and more recently a range of REDD transactions and REDD Funds. Our leadership and depth are represented in the market-leading publications we have been asked to draft, including the CDM and JI Rulebooks www.cdmrulebook.org and www.jirulebook.org respectively, as well as the Emissions Trading & New Energy Global Law Guide, the world's first online subscription service on climate change law. Since 2008, leading legal directory Chambers & Partners Global ranked our practice as number one.



Det Norske Veritas (<http://www.dnv.com>) is a global provider of services for managing risk, helping customers to safely and responsibly improve their business performance. Established in 1864, the company has a global presence with a network of 300 offices in 100 countries, and is headquartered in Oslo, Norway. DNV has continually been at the forefront of the climate change response, starting in 2004 with its recognition as the first Designated Operational Entity to be accredited under the Kyoto Protocol by the UNFCCC. DNV is accredited by ANSI to perform validation and verification services for the validation/verification of project level GHG assertions. Our core climate change services include validation and verification of GHG offset projects and verification of GHG inventories. DNV is the global market leader in the validation and verification of CDM projects and is fully accredited to provide the complete range of validation and verification services under requirements established by UNFCCC, the Verified Carbon Standard Association, Gold Standard, the California Air Resources Board, the Climate Action Reserve, the American Carbon Registry and the governments of British Columbia and Alberta, Canada.



The Family of Forest Trends Initiatives



Using innovative financing to promote the conservation of coastal and marine ecosystem services

Ecosystem Marketplace

A global platform for transparent information on ecosystem service payments and markets

Forest Trade & Finance

Bringing sustainability to trade and financial investments in the global market for forest products



Building capacity for local communities and governments to engage in emerging environmental markets



Business and Biodiversity Offsets Program, developing, testing and supporting best practice in biodiversity offsets



Building a market-based program to address water-quality (nitrogen) problems in the Chesapeake Bay and beyond



Linking local producers and communities to ecosystem service markets

Learn more about our programs at
www.forest-trends.org