



Covering New Ground

State of the Forest Carbon Markets 2013

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A Report by Forest Trends' Ecosystem Marketplace

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Executive Summary

Healthy forests are a key defense against the natural and socio-economic impacts of climate change. Recognizing this, businesses around the world financed the management, conservation or expansion of 26.5 million forested hectares by purchasing a near-record 28 million tonnes (MtCO₂e) of carbon offsets from forestry projects in 2012, valued at \$216 million.

In 2012, offset buyers from individuals to corporations reinforced the environmental, economic, and egalitarian benefits of sustainable forestry and land use as they injected millions of dollars into projects that improve forest management (IFM), afforest or reforest land (A/R), reduce emissions from deforestation and forest degradation (REDD), and introduce sustainable agricultural or agroforestry practices.

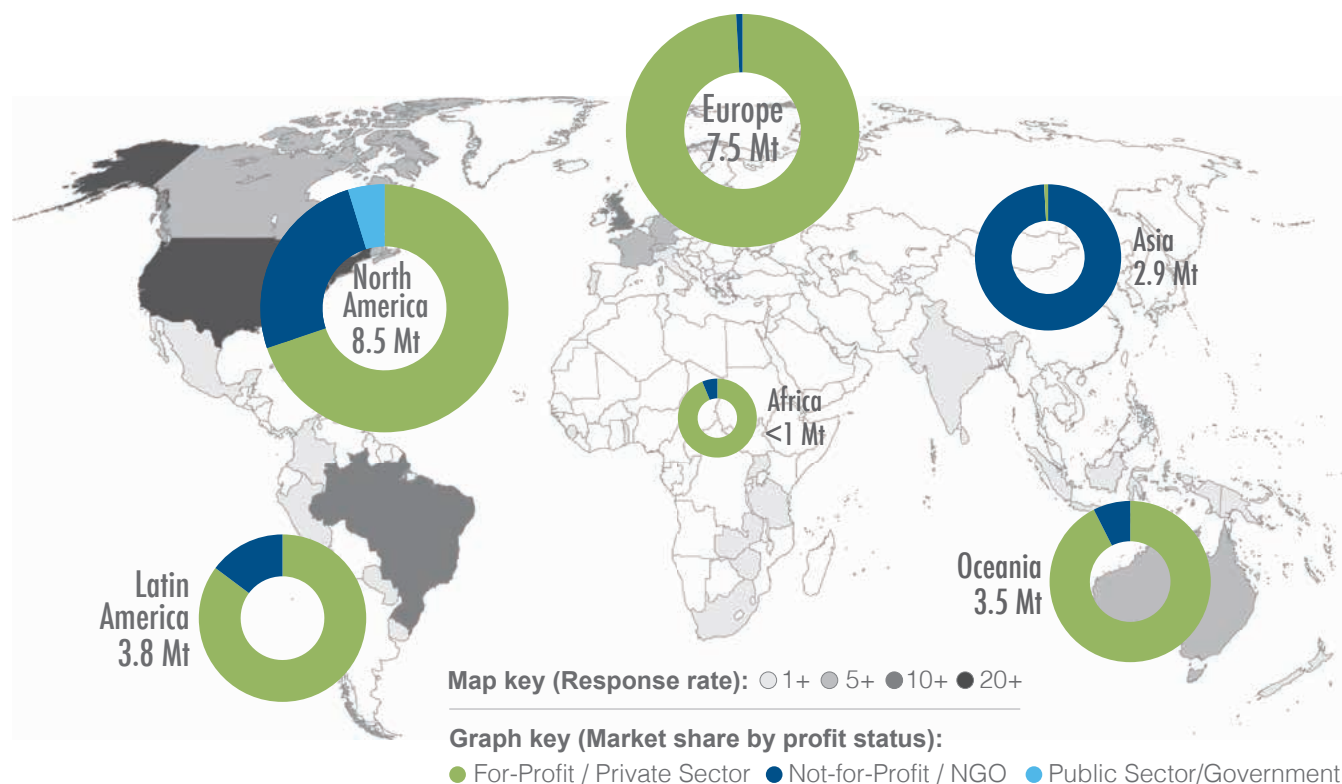
Early-stage activities, in particular, benefitted from resilient private support for carbon-managed forests, which speaks to mounting confidence in projects' ability to deliver verified carbon assets and incentivize behavior change among producers.

The second-highest demand ever attributed to forestry offsets came as public decision-makers weighed the inclusion of forestry offsets, domestic and international, in regulations in California, China, and Australia; as donor governments initiated support for regional REDD solutions; and as organizations like the Tropical Forest Alliance and the Carbon Disclosure Project began to shed new light on the private sector's land-use footprint and associated risks.

BOX 1: SUMMARY OF KEY REPORT FINDINGS, 2012

- Over time, this report series has tracked 513 forest and land-use carbon projects. Developers representing 162 projects responded in 2013, including 62 projects never before reported.
- The global markets for offsets from agriculture, forestry, and other land-use projects transacted 28 MtCO₂e, a 9% increase from 2011. Market value reached \$216 million in 2012, 8% shy of 2011's record \$237 million. Forestry offsets' average price fell slightly to \$7.8/tonne (tCO₂e).
- Voluntary offset buyers drove 95% of all market activity (27 MtCO₂e) and 92% of value (\$198 million), as corporate buyers renewed or pursued new climate targets, while buyers in California and Australia sought forestry offsets to prepare for compliance carbon markets.
- This report series has tracked a cumulative 134 MtCO₂e of offsets transacted from forest carbon projects, valued at an estimated \$0.9 billion over time from the carbon management of 26.5 million hectares.
- The private sector remained the largest source of demand, responsible for 19.7 MtCO₂e or 70% of market activity. Two out of every three offsets were sold to multinational corporations. Businesses were motivated by offset-inclusive corporate social responsibility (CSR) activities, or to "demonstrate climate leadership" in their industry or to send signals to regulators.
- Demand for offsets from A/R projects remained high (8.6 MtCO₂e) but fell from the prior year, while REDD offset demand grew for the first time since the project type's all-time high in 2010.
- The forest carbon markets extended project development to 58 countries, up from 54 locations in 2011. North American projects generated one quarter of all offsets transacted, while project developers in the Global South transacted half of overall market share.
- Projects seeking or achieving certification to the Verified Carbon Standard (VCS) transacted 15.7 MtCO₂e, or 57% of all market activity. Around 12.2 MtCO₂e of these sales were from projects seeking dual certification to VCS and the Climate, Community and Biodiversity Standards (CCB Standards).

Figure 1: Response Rate by Country, Transacted Volume by Developers' Headquarters Region, and Market Share by Developers' Profit Status



Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Behind the scenes, results-based carbon accounting standards continued to approve new approaches to land-based emissions reductions, opening doors for the technical evaluation of wetlands restoration, sustainable rice cultivation, and soil carbon sequestration, among other activities.

The same standards, alongside registries that facilitate offset ownership, furthered frameworks and methodologies to support jurisdictions pursuing regional REDD programs internationally. Some of these governments began to tap into bilateral finance for program development and emissions reductions as early as last year – but more so in 2013. The year was not without its challenges, however, as developers grappled with the decision of whether and how to integrate into government frameworks or markets, or to brave still-limited demand among voluntary offset buyers.

These and other findings are described in this fourth edition of the *State of the Forest Carbon Markets* report series, which demonstrates throughout how practitioners, offset buyers, and the projects they

support covered new ground in 2013 in the race to close the gap between what's available and what's required to keep economies and ecosystems in balance.

Methodology

A total of 162 agriculture, forest, or land-use (AFOLU) projects were reported via our global annual survey designed to track transactions of offsets generated from projects that sequester or avoid carbon emissions in the AFOLU sectors.

Analysis is also informed by project activities reported in previous years. Over time, Ecosystem Marketplace has tracked 513 unique AFOLU projects around the world, including 62 projects reported for the first time in this year's survey.

North American developers were most heavily represented in our survey (48), followed by 37 Europe-based respondents. Practitioners from developing countries contributed one-third (50) of survey responses, from organizations headquartered in Latin America (30),

Asia (12), and Africa (8). Figure 1 illustrates regional response rate distribution by country and profit status.

This report tracks compliance carbon markets (e.g., the Clean Development Mechanism – CDM) and voluntary demand for forest carbon offsets. We consider “transactions” to occur at the point that suppliers and buyers agree to the terms of offset delivery and payment, which may occur immediately or in the future.

Market overview: Demand for forest carbon offsets nears record highs

In 2012, the global markets for AFOLU offsets transacted 28 MtCO₂e, a 9% increase from 2011. Voluntary buyers drove 95% of all market activity (27 MtCO₂e), as corporate buyers sought offsets from forestry to renew or pursue new climate targets and buyers in California and Australia responded to positive regulatory signals by seeking AFOLU offsets to prepare for compliance. Demand for A/R offsets from the CDM (temporary certified emissions reductions, or tCERs) fell by 91%, as buyers preparing for the end of the Kyoto Protocol's first phase had secured their desired volumes by the start of 2012.

The overall market value of forest carbon offset demand reached \$216 million in 2012, 8% shy of 2011's record \$237 million. Most value was derived from voluntary offset markets, where value grew 7% to \$198 million. Forestry offsets' average price fell to \$7.8/tCO₂e from \$9.2/tCO₂e in 2011.

All told, this report series has tracked a cumulative 134 MtCO₂e in offsets contracted from forest carbon projects, valued at an estimated \$0.9 billion over time. Much of this value was contributed by hundreds of for-profit entities acting voluntarily in response to – or in spite of – weak or uncertain regulatory climates.

Buyers: Multinational corporations transacted two out of every three offsets

The majority (71%) of forestry offsets transacted in 2012 were sold to purely voluntary buyers, while the remainder were sought by businesses complying with or preparing for regulation. The private sector remained the largest pool of buyers, responsible for at least 19.7 MtCO₂e or 70% of offsets transacted in 2012, a significant increase from 12.3 MtCO₂e in 2011.¹

Table 1: Comparison of 2011 and 2012 Forest Carbon Markets' Transaction Volumes, Values, and Average Prices, All Markets

MARKET*	Volume		Value		Average Price	
	2011	2012	2011	2012	2011	2012
Voluntary OTC	16.7 M	22.3 M	\$172 M	\$148 M	\$10.3	\$7.6
California / WCI	1.6 M	1.5 M	\$13 M	\$12 M	\$8.1	\$8.2
Australia CFI	-	2.9 M	-	\$38 M	-	\$13.3
Voluntary Total	18.3 M	27 M	\$185 M	\$198 M	\$9.2	\$7.7
CDM / JI	5.9 M	0.5 M	\$23 M	\$0.6 M	\$3.9	\$1.1
NZ ETS	-	0.2 M	-	\$1.9 M	-	\$7.9
Other	1.5 M	0.6 M	\$29 M	\$15.6 M	\$19.7	\$25.3
Compliance Total	7.3 M	1 M	\$51.5 M	\$18.1 M	\$7.2	\$10.5
Grand Total	25.6 M	28 M	\$237 M	\$216 M	\$9.2	\$7.8
Primary Market	21 M	22 M	\$143 M	\$137 M	\$8.1 M	\$7.5
Secondary Market	4.9 M	6.3 M	\$54.7 M	\$57 M	\$12.1 M	\$9.8

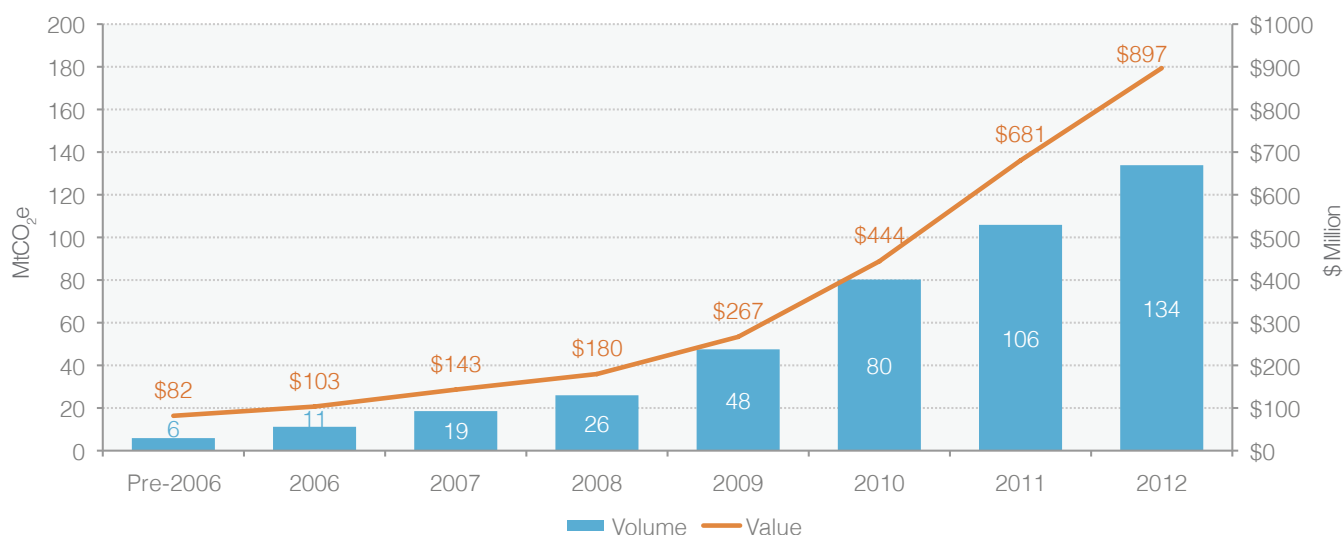
Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

*See Acronyms list for explanation of market abbreviations. Totals in this chart may not add up perfectly due to rounding.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

¹ Not all survey respondents reported a buyer. Thus, the private sector transacted 97% of offsets for which respondents reported a buyer, OR 70% of all offsets transacted in 2012 - including those for which the buyer is unknown.

Figure 2: Cumulative Forestry Offset Transaction Volume and Value, All Markets



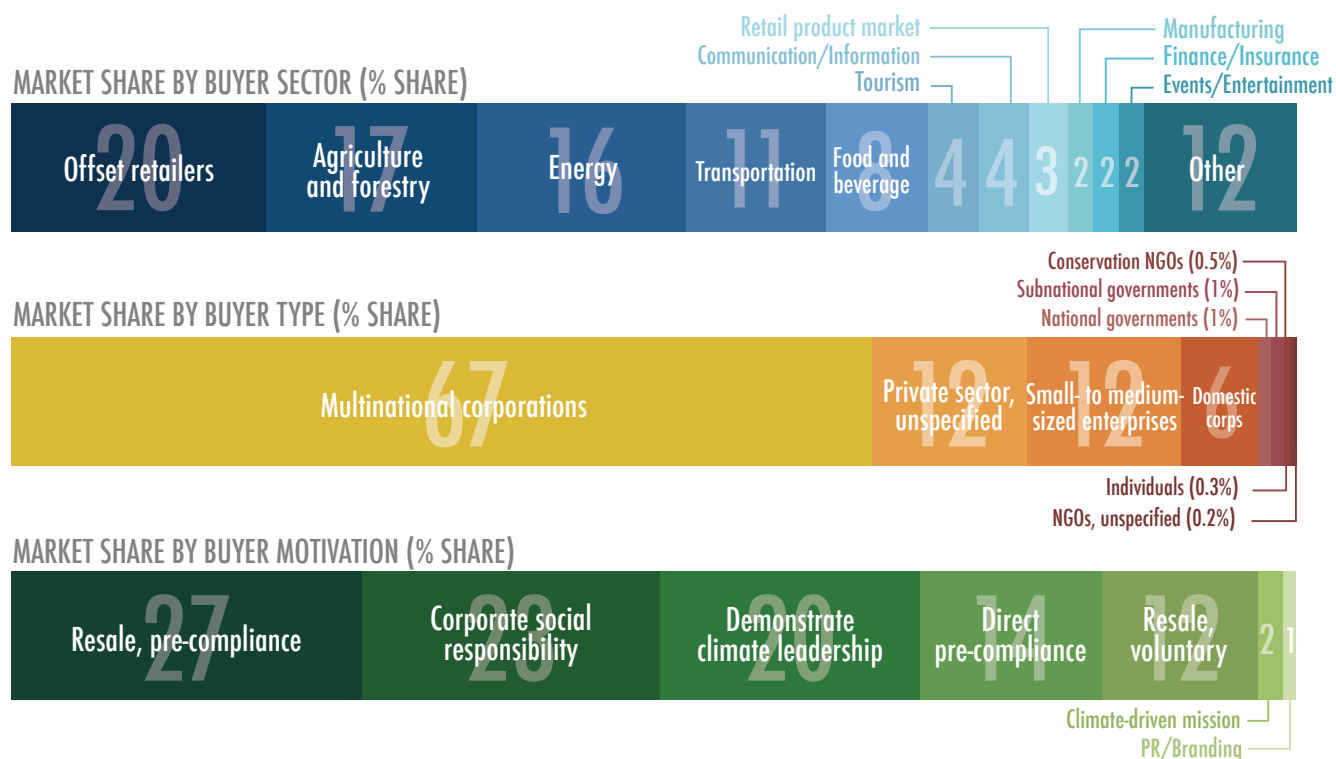
Notes: Based on data reported by 513 AFOLU projects and countless offset suppliers over eight years.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

The public sector – mainly national governments in Europe and state or provincial governments in North America, Latin America, and Oceania – purchased \$430,000 worth (or 2%) of offsets transacted in 2012,

down from 18% last year due to declining demand for tCERs and because fewer forestry offsets were sold into British Columbia's (BC) Carbon Neutral Government program.

Figure 3: Market Share by Buyer Sector, Type, and Motivation



Notes: Based on 213 buyer types as described by survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Private sector buyers represented an array of industries and interests. Carbon offset retailers were again the single largest source of demand, purchasing 7.2 MtCO₂e to resell to their clients.

The energy, agriculture/forestry, transportation, food and beverage, and tourism sectors collectively purchased another 9.7 MtCO₂e. These top buyer sectors depend on place-specific resources and forest-based ecosystem services (e.g., clean water) for their operations or products, thus some invested in forestry offsets out of recognition that their business models depend on healthy natural infrastructure.

The most common driver of offset purchases in 2012 was resale to voluntary or future compliance end-users. Businesses seeking offsets for purely voluntary end use were primarily motivated by offset-inclusive Corporate Social Responsibility (CSR) commitments. Another significant proportion of voluntary buyers chose forestry offsets to “demonstrate climate leadership” within their industry and/or in the absence of strong national climate policies.

The vast majority of tonnes (99%) were sold to buyers from developed regions, where EU-based corporates were the largest source of demand for forestry offsets in 2012, purchasing over half of all offsets associated with a buyer. EU buyers transacted the largest proportion of offsets developed from projects in Africa and Asia.

Project type: REDD rebounds while new markets drive interest in IFM, agriculture

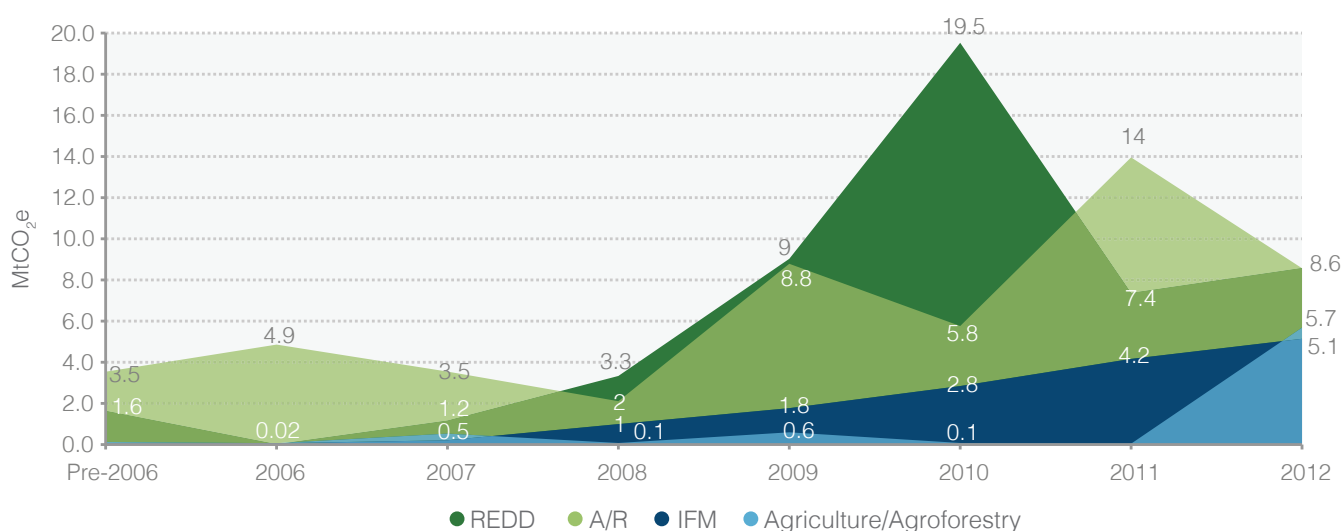
Markets for forest carbon offsets have evolved at breakneck speed. Again in 2012, new project types, methodologies, and locations emerged in response to buyer and policy-maker signals.

Historically, demand for offsets from A/R projects has outpaced market activity from other project activities, as the translation from philanthropic tree-planting to carbon offset projects is fairly straightforward. In 2012, transactions reported for A/R projects remained high (8.6 MtCO₂e) but fell from the prior year, as the sector did not see a repeat of the significant compliance demand from Kyoto member countries reported in 2011.

Sharing the stage with A/R projects, REDD offset demand grew slightly for the first time since the project type's all-time high in 2010, as projects matured and the volume of available offsets continued to grow. While 8.6 MtCO₂e of REDD offsets were transacted in 2012 (+16%), their value fell to \$70 million (-20%), as plentiful supplies and earlier-stage investments led to slightly lower average prices than the previous year (\$7.8/tCO₂e vs. \$8.5/tCO₂e).

REDD projects were the dominant activity tracked in both Latin America (80%) and Africa (70%), as large REDD projects came to market from both regions in

Figure 4: Transacted Offset Volumes by Project Type, All Markets, Historical



Notes: Based on data reported by 513 AFOLU projects and countless offset suppliers over eight years, including 180 observations in 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

recent years. All of these projects have achieved or will pursue certification to the VCS and CCB Standards that verify the delivery of additional project benefits (“co-benefits”). This combination saw unprecedented demand in 2012, underpinning 12.2 MtCO₂e.

Offsets from IFM activities have climbed in popularity, sought by both voluntary buyers and those positioning themselves to sell or surrender forestry offsets into compliance carbon markets. In 2012, IFM transactions increased 23% to 5.1 MtCO₂e.

Agroforestry and agri-sector offset projects have typically provided precious few offsets to the carbon markets. In 2013, offsets transacted in this category were mostly sourced from projects implementing no-till/low-till and other land management practices under the legacy Chicago Climate Exchange (CCX) offset program. A growing number of market participants

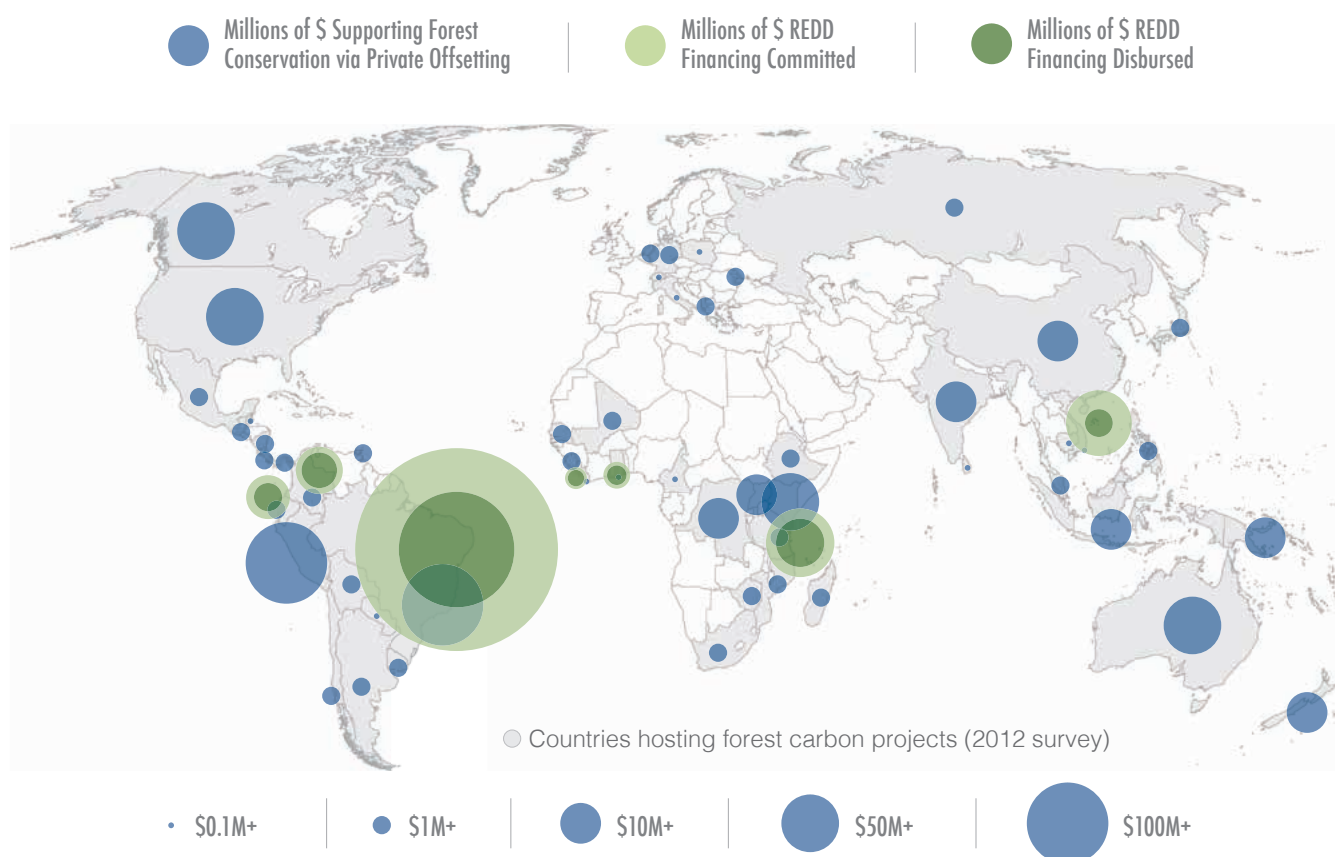
and investors are eyeing the sector for its strong business case and complementary ties to avoided deforestation.

REDD in depth: Donor engagement and “nesting” key themes in 2012

In recent years, market observers have predicted that funds flowing from donor country governments to support REDD strategies in developing countries would dwarf the millions of dollars that private actors have voluntarily channeled to forestry projects. They were right.

Compared to the \$0.9 billion in value attributed to forest carbon offset transactions over time, Forest Trends’ REDD Expenditures Tracking Project (REDDX) reports that over \$1 billion has been committed to seven countries alone in the last few years.²

Figure 5: Comparison of Project- and Country-level Forest Finance, All Years



Notes: Based on value associated with all years of “State of” forest carbon market tracking and REDD finance data sourced from reddx.forest-trends.org, as of October 2013.

Source: Forest Trends’ Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

² As of fall 2013, REDDX (reddx.forest-trends.org) has reported REDD finance committed and disbursed to Brazil, Colombia, Ecuador, Ghana, Liberia, Tanzania, and Vietnam.

Up to now, partners in REDD+ countries have described donor governments, rather than recipient countries or their forest communities, as REDD's primary agenda-setters. In 2012, public sector finance was limited to preparation for the next phase of REDD, meaning that major gaps exist in taking pilot projects to the next level.

Consistent but insufficient demand for REDD offsets already coming to market from projects – many of which are unaware of how to tap into bilateral REDD finance – raises doubts about carbon projects' ability to maintain their scale. The year 2013 may herald a new phase in REDD finance, however, seeing the Forest Carbon Partnership Facility (FCPF) agree to a \$63-million results-based purchase agreement for REDD in Costa Rica.

Many hope that such regional REDD programs, which are administered by the public sector but theoretically enable traditional projects, will be the tie that binds public and private interests in AFOLU. For example, some market participants theorize that future parties to the Tropical Forest Alliance could pursue sustainable

supply chains via jurisdictional results-based REDD payments.

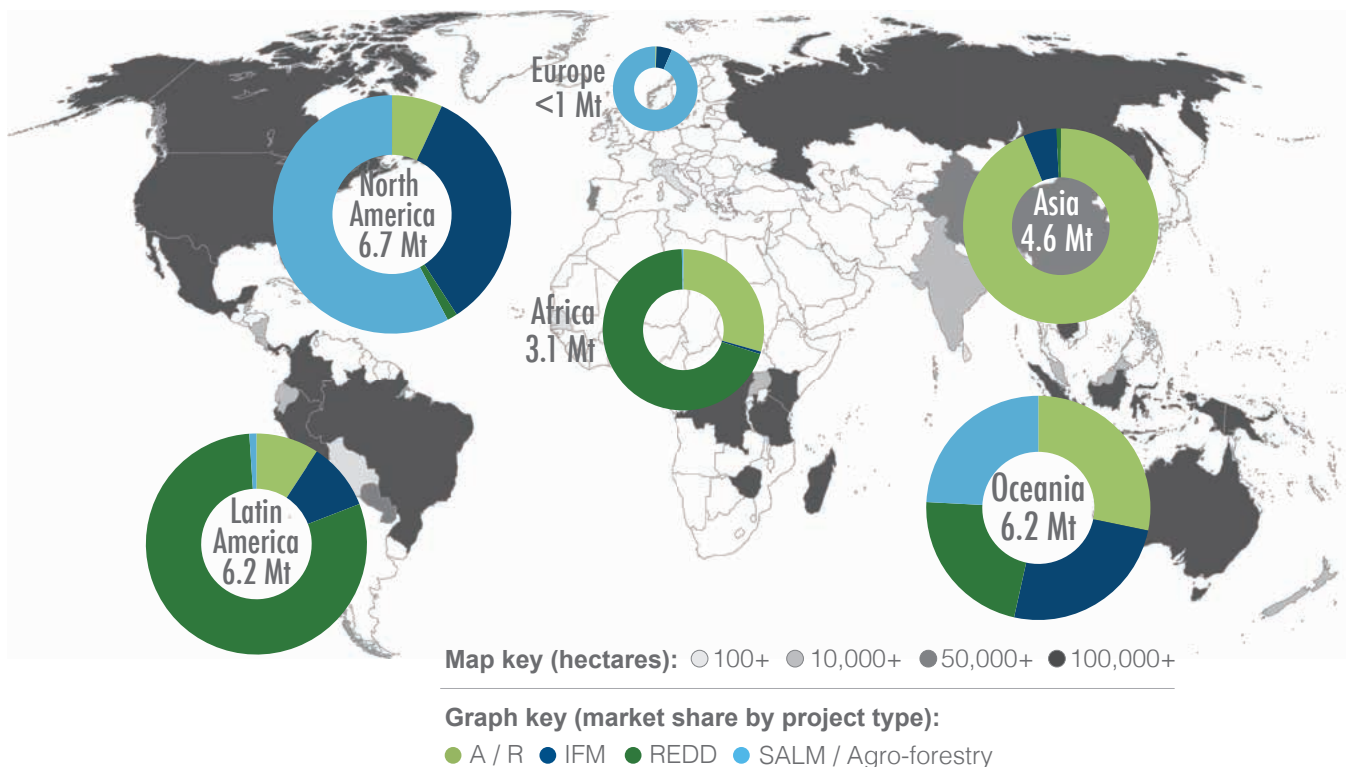
Thus, this year's survey respondents were more attentive to and engaged in talks about "nesting" their private projects within a regional program, recognizing that doing so might grant them access to larger pools of donor finance not available to stand-alone projects.

Locations and land area: Carbon finance supports management of 26.5 million ha

Carbon finance reached projects impacting 11.3 million hectares (ha) in 2012 – around 43% of the total 26.5 million ha that are currently under forest carbon development according to our survey. This land area is comparable to the entire forested area of the Democratic Republic of the Congo (DRC) or the total land area of Ecuador.

The majority of carbon-managed land area is associated with REDD projects that continue to have the largest impact on forested land, with 17 million ha

Figure 6: Hectares Impacted by Country Location; Total Regional Transaction Volume and Share by Project Type (Total Hectares by Country and % Share)



Notes: Based on responses associated with 26.5 million hectares of carbon project area and 27 MtCO₂e transacted.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

under management. A/R project developers tied with REDD projects to transact the market's largest volume of offsets – but from a significantly smaller project area overall. Even so, the 1.2 million ha impacted by afforestation or reforestation in 2012 is double the 0.6 million ha reported in previous years. Spanning another 8.2 million ha, IFM projects saw a >100% increase in land under management – owing largely to a few significantly sized IFM projects impacting several million hectares.

In 2012, the forest carbon markets extended project development to 58 countries, up from 54 locations in 2011. New projects were identified in both developing and developed regions.

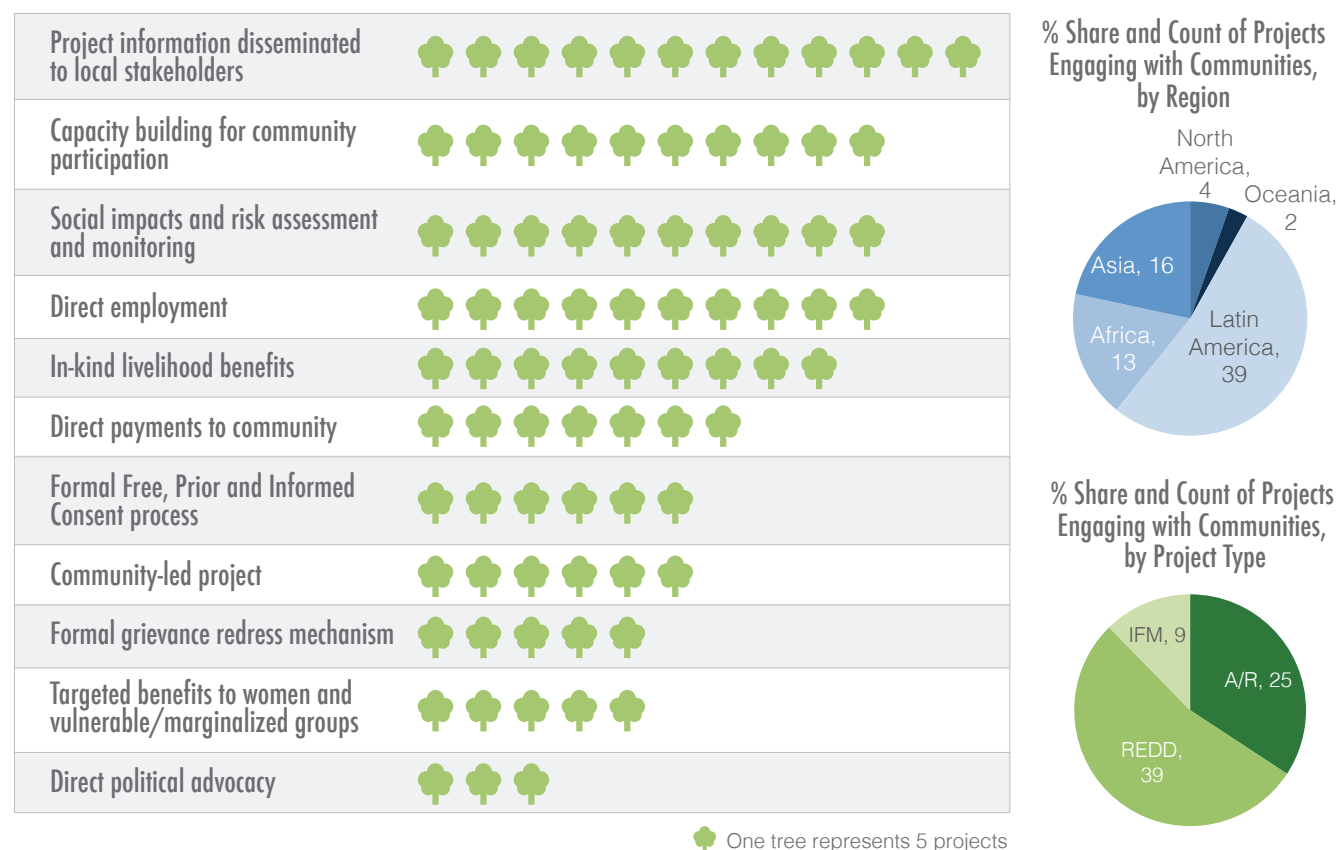
North American projects generated one quarter (6.7 MtCO₂e) of offsets transacted in 2012. Only 27% of this volume was sought by buyers preparing for or complying with a compliance carbon market in

California, British Columbia, or Alberta. The remainder was sold from a mix of all AFOLU project types to countless buyer types.

Quite the opposite was true for offsets from projects in New Zealand and Australia, where developers transacted the second-largest volume of AFOLU offsets. Despite the slow start and uncertain future of an Australian carbon price, pre-compliance dominated the regional market.

Forest carbon projects in the developing world weathered competitive pricing from non-AFOLU offset types to transact half of the overall market share in 2012. Performance in each region varied by the types of forestry offsets available to voluntary buyers – leaning toward support for smaller, earlier-stage projects with multiple revenue streams which were more abundant in Latin America and less so in Africa.

Figure 7: Project-level Community Engagement, by the Numbers, 2012



Notes: Based on responses representing 81 projects. Respondents were able to select multiple categories of engagement, and project counts are rounded to the nearest "5".

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Asia was the only region in the Global South where project developers reported market growth in 2012, tied to European buyers' greater comfort with Asian projects – a legacy of the CDM – and a few large-scale transactions.

Land tenure and communities: Forest carbon reaches age of consent

Resolving project-area issues around land tenure – the legal structure that determines how lands can be used by individuals and communities – can become a barrier to project certification, but is (typically) more easily determined on private land. Partly for this reason, more than 50% of forestry projects tracked in 2012 were developed on private lands.

Government or private land-use concessions were the least common arrangements in terms of the number of projects utilizing concessions, but these projects generated nearly \$53 million from the transaction of 7.3 MtCO₂e of offsets.

Projects with customary or collective land tenure arrangements reported the highest overall market value at nearly \$70 million, globally. The largest proportion of land area also falls under collective or customary ownership, where 9.2 MtCO₂e were transacted from 13.7 million ha under carbon management.

A total of 74 projects that transacted offsets in 2012 reported some level of engagement with forest

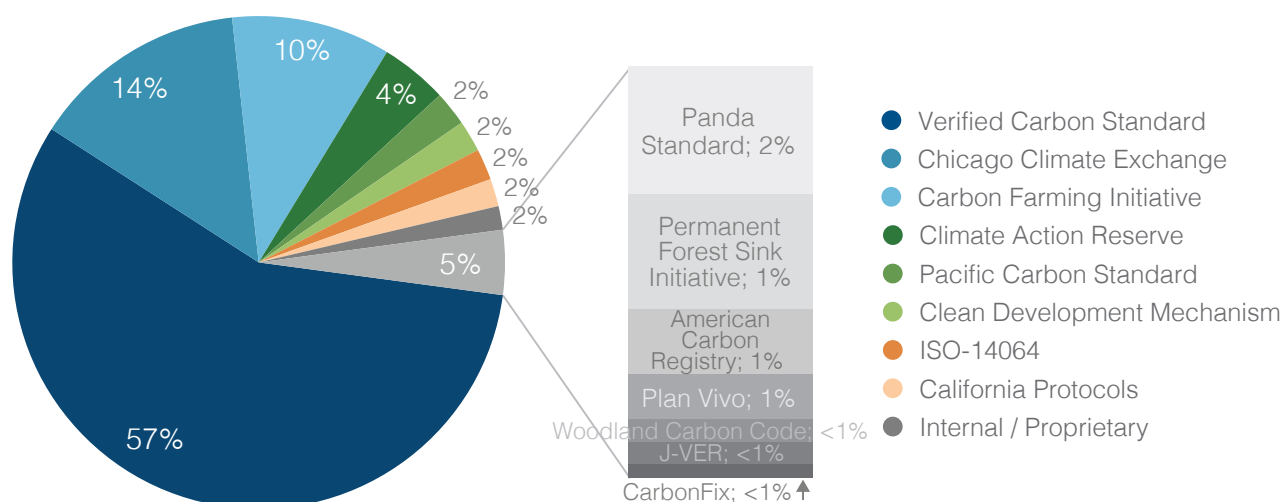
communities, ranging from disclosure of project information to community employment to identifying as community-led projects. Just over half of these projects (39) were based in Latin America, some of which made up the large number of community-facing REDD projects also tracked in this survey – also 39 projects. In 2013, Latin America's Paiter Suruí were the world's first indigenous community to develop a REDD project, and verify and transact offsets.

At least 32 projects managed a formal process to obtain Free, Prior and Informed Consent (FPIC) from relevant communities – 19 of which transacted 9.3 MtCO₂e in 2012. FPIC guidelines acknowledge communities' rights to grant or withhold consent to forestry and other development projects sited on collective or customary lands. The concept of FPIC was first outlined within the UN Declaration on the Rights of Indigenous Peoples, adopted in 2007, and has since been applied to major infrastructure development projects worldwide.

Project standards: VCS and CCB Standards – and standards overall – report record use

In both voluntary and compliance markets for forest carbon offsets, project standards raised the bar in 2012, when 98% of transacted offsets were (or aimed to be) certified to a project standard. Only 0.4 MtCO₂e was transacted from projects using an internal standard, making 2012 a watershed year

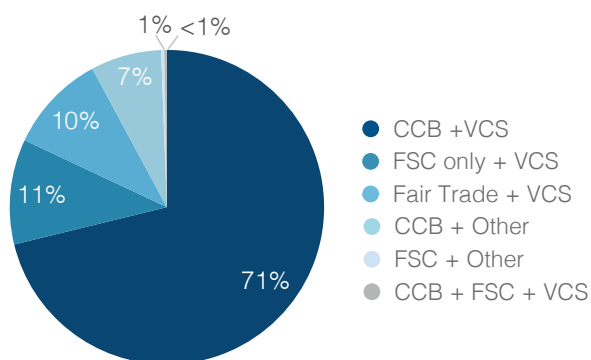
Figure 8: Market Share by Standard/Certification Type, All Markets, 2012 (% Share)



Notes: Based on 628 observations from 357 reported projects or secondary transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Figure 9: Market Share by Co-benefits or Project Area Certification, 2012



Notes: Based on 628 observations from 357 reported projects or secondary transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

for measuring, reporting, and verifying (MRV) forest carbon projects' climate and community impacts.

Projects achieving or seeking VCS approval experienced a boost in market share, transacting 15.7 MtCO₂e, or 57% of all market activity. Around 12.2 MtCO₂e of this volume was from projects pursuing dual certification to both VCS and the CCB Standards.

Overall, 17.1 MtCO₂e was transacted from projects that certified their additional environmental and/or socio-economic benefits to the CCB Standards or to a certification program like the Forest Stewardship

Council (FSC) or Fairtrade label. Land area certifications like FSC, Fairtrade, and Rainforest Alliance programs are not formally "linked" to a carbon project but can indicate financial sustainability due to the complementary revenues derived from other eco-certified forest products. These offsets received a slightly higher price as a result. The once energy-oriented Gold Standard acquired the CarbonFix Standard and partnered with both FSC and Fairtrade in 2012.

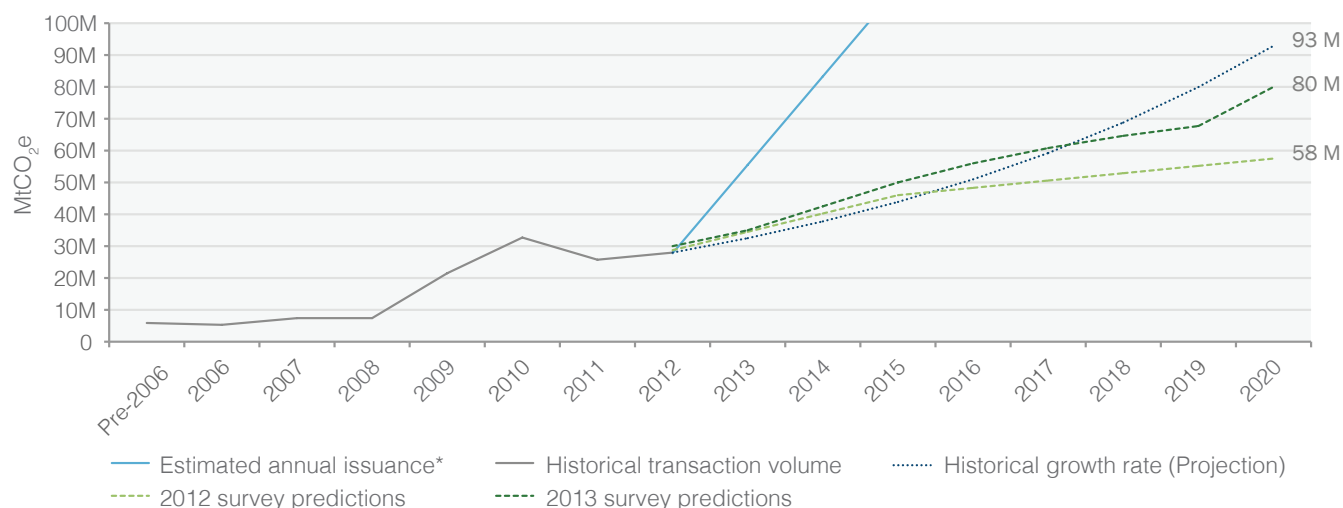
Primarily (but not entirely) North America-facing standards, the Climate Action Reserve (CAR) and American Carbon Registry (ACR), combined captured just 5% of the market, as the California carbon market awaited clear guidelines for the state's treatment of compliance offsets. Both were dubbed offset project registries for the state's program in late 2012. Only 2% of transacted offsets used California's regulation-based forestry protocols. These and other place-specific methodologies represented 28% of transactions, valued at \$60 million.

Registries, meanwhile, reported the largest-ever volume of forest carbon offsets issued (8 MtCO₂e) and/or retired (2.6 MtCO₂e) in 2012.

Developer predictions: New ground, new challenges

With the benefit of hindsight and already some insight into 2013's performance, we asked suppliers to "guesstimate" market size for 2012 and future years. Figure 10 shows that, at least for the previous and

Figure 10: Project Developer Predictions, All Markets, 2011-2012



Notes: Based on predictions provided by 97 survey respondents. *Estimated annual issuance based on developer-reported ranges.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Table 2: Various Estimates of Market Value and Future Needs, 2013 and Beyond

\$ 216 M	\$ 236 M	\$ 280 M	\$ 1.1 - 2.3 B	\$ 10.7 B
2012 market value: ACTUAL	Value of unsold offset portfolio	2012 value if developers had received desired price	Developer estimates to fully support existing projects	Value of developers' 5-year pipeline

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

current years, both 2012 and 2013 survey respondents anticipated last year's market size within 1 MtCO₂e of our actual findings. Respondents in both years also project that the market will transact 35 MtCO₂e in 2013.

Beyond 2013, this year's survey respondents predict an average annual growth rate of 13%, while 2012 respondents predicted 9% growth. Both estimates are slightly to significantly smaller than if the market continued to grow according to its historical rate (reaching 93 MtCO₂e by 2020).

Developers were unable to find a buyer for 30 MtCO₂e in 2012 – worth an additional \$236 million if they had been successful. They also expect to reduce another 1.4 billion tonnes over the next five years – 93% of which is from REDD projects.

Overall, estimates of market need range widely, from millions to billions of dollars in this decade. Up to the challenge, 2012's forestry practitioners tipped corpo-

rate offset portfolios in their favor, courting brands like eBay, PUMA, and Microsoft. Last year, the forestry offset market was largely stable as a result. To *grow* their share, developers are positioning incentive payments to AFOLU projects to enhance supply-chain security and producer relationships.

But as market participants will admit, significant market growth ultimately hinges on regulatory drivers. Thus, developers are integrating project plans with emerging regional frameworks; experimenting with "stacking" forest carbon assets onto other certified commodities; and formalizing community participation – many in hopes of tapping into bilateral funds for forest carbon management.

In the quest to remain relevant to funders of all kinds, forest project standards, developers, registries, analysts, consultants, and community stakeholders continue to break new ground in 2013 – cultivating resilience and innovation that is already seeding tomorrow's markets.

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Acronyms and Glossary

A/R	Afforestation/Reforestation
AAU	Assigned Amount Unit
AB32	California's Assembly Bill 32
ACR	American Carbon Registry
AFOLU	Agriculture, Forestry and Other Land Use
AG	Auditor General
ARB	California Air Resources Board
BC	British Columbia
BMV	Brazil Mata Viva
CAR	Climate Action Reserve
CCB	Climate, Community and Biodiversity Standard
CCX	Chicago Climate Exchange
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CFI	Carbon Farming Initiative
CSR	Corporate Social Responsibility
DRC	Democratic Republic of Congo
ETS	Emissions Trading Scheme
EU ETS	European Union Emissions Trading Scheme
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program
FPIC	Free, Prior and Informed Consent
FSC	Forest Stewardship Council
GHG	Greenhouse Gas Emissions
Ha	Hectares
IFM	Improved Forest Management

J-VER	Japan's Verified Emissions Reduction Program
JI	Joint Implementation
JNR	Jurisdictional and Nested REDD
K-VER	South Korea's Verified Emissions Reduction Program
MOEJ	Japan's Ministry of the Environment
MOU	Memorandum of Understanding
MRV	Measuring Reporting and Verifying
MtCO ₂ e	Units of million metric tonnes of carbon dioxide equivalent
NAMA	Nationally Appropriate Mitigation Action
NCOS	Australian National Carbon Offset Standard
NDRC	National Development and Reform Commission
NZ ETS	New Zealand Emissions Trading Scheme
NZU	New Zealand ETS Units
OPR	Offset Project Registry
OTC	Over-the-Counter
PCS	Pacific Carbon Standard
PCT	Pacific Carbon Trust
PEFC	Programme for the Endorsement of Forest Certification
PFSI	Permanent Forest Sink Initiative
POD	Pay Upon Offset Delivery
PPD	Project Design Document
PFSI	Permanent Forest Sink Initiative
PRM	World Bank Partnership for Market Readiness
REDD	Reducing Emission from Deforestation and Forest Degradation

REDDX	Forest Trends' REDD+ Expenditures Tracking Initiative
ROW	REDD Offsets Working Group
SALM	Sustainable Agricultural Land Management
T-VER	Thailand's Verified Emissions Reduction Program
tCER	Temporary Certified Emission Reductions
tCO ₂	One tonne of carbon dioxide equivalent
VCS	Verified Carbon Standard
VCU	Voluntary Carbon Unit
VER	Verified Emissions Reductions
WCC	Woodland Carbon Code
WCI	Western Climate Initiative
WCS	Wildlife Conservation Society

Afforestation/Reforestation (A/R): 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.

Agroforestry: 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.

Baseline: The estimate of greenhouse gas (GHG) emissions, population, gross domestic product, common practice, and other factors that would have occurred without undertaking any action to mitigate carbon emissions.

Carbon offset: In this report series, a carbon offset is defined as an instrument representing the reduction, avoidance, or sequestration of one tonne of CO₂ or GHG equivalent.

Co-benefits: Additional environmental, social, or other benefits arising from a carbon project that are quantified based on metrics or indicators defined by the project developer, a co-benefits certification program, or a third-party carbon project standard that accounts for

both climate and co-benefits. Some registries and standards enable co-benefits certification to be “tagged” onto issued carbon offsets, if quantification and verification of co-benefits are not already embedded in a carbon project standard.

Compliance markets: Marketplaces through which regulated entities obtain and surrender emissions permits (allowances) or offsets in order to meet pre-determined regulatory targets. In the case of cap-and-trade programs, participants – often including both emitters and financial intermediaries – are allowed to trade allowances in order to make a profit from unused allowances or to meet regulatory requirements.

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.

Issuance/issued offsets: Once a carbon offset project has been validated, verified, and undergone other required processes, an offset registry can issue carbon offsets to the project owner with a unique identifier, after which ownership can be tracked and transferred, and offsets are eligible for retirement.

Reduced Emissions from Deforestation and Forest Degradation (REDD and 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. In 2010, negotiators in Cancun defined the “plus” as traditional REDD activities, plus additional efforts to sustainably manage forests, and conserve and enhance carbon stocks.

Registry: A registry issues, holds, and transfers carbon offsets, which are given unique serial numbers to track them throughout their lifetime and can also retire offsets. Compliance carbon markets each typically utilize their own proprietary registry system. In the voluntary offset market, there are independent registries available.

Retirement: The point at which a carbon offset that is purchased voluntarily is permanently set aside by its owner in a designated registry – effectively taking the offset's unique serial number out of circulation. Retiring offsets through a registry ensures that offsets cannot

be re-sold, of particular importance if the buyer's intent is to claim the offsets' emissions reductions against a carbon reduction or neutrality target.

Sequestration: The long-term storage of carbon in the biosphere or subsurface terrestrial features in order to reduce its concentration in the atmosphere.

Standard: A set of project design, monitoring, and reporting criteria to which carbon offsetting activities and/or projects' environmental, social, and other co-benefits can be certified or verified. In the voluntary offset markets, many competing standards have emerged with the intent to increase credibility in the marketplace. More recently, national and sub-national regulated markets have also designed standards specific to regional needs, for use within voluntary and/or compliance offset markets.

Sustainable Agricultural Land Management (SALM): Land is managed to increase carbon stocks in the agricultural landscape. Project activities may include use of cover crops, improved tillage practices, and agroforestry, among other practices.

Transaction ("transacted" or "contracted"): We consider "transactions" to occur at the point that offsets are contracted or suppliers otherwise agree to deliver offsets immediately or in the future. Payment and delivery of issued offsets can occur simultaneously

("spot" transaction); payment can occur immediately ("pre-pay") or upon delivery ("pay on delivery") for offsets expected to be issued in the future; and contracts can specify a firm volume of offsets to deliver ("firm" or "fixed" delivery) or specify that delivery and payment are based on the volume of offsets actually issued to the project in the future ("unit contingent"). This report tracks all of the above contract types and some options contracts, as "transactions."

Validation: The approval of carbon offset projects in their planning stages, when projects must submit for approval information on project design, including information on baseline scenarios, monitoring schemes, and methodologies for calculating emission reductions.

Voluntary (or Verified) Emissions Reductions (VERs): General term for offsets generated and transacted in the voluntary carbon offset markets.

Verification: The process by which an auditor verifies the volume of emissions reductions for which carbon projects are eligible to receive carbon offsets; and/or verifies the delivery of projects' stated environmental, social, and other co-benefits.

Voluntary carbon offset markets: Markets through which firms, individuals, and organizations voluntarily buy carbon offsets to counterbalance their net carbon emissions.

Introduction

Business and community resilience to climate change. Ecosystem-based adaptation. Supply chain material risk mitigation. Inclusive business. This report's headline finding – that carbon-financed forest protection, expansion, and management are having a greater impact on land use and carbon emissions than ever before – mirrors businesses' widening embrace of these concepts. It is increasingly an integral part of these concepts.

In 2012, a growing number of businesses, particularly those with a global environmental footprint, bought carbon offsets that support sustainable forestry and land use. They did so in recognition of the potential efficiencies achieved by putting forest carbon solutions in the hands of its direct beneficiaries – communities and practitioners. They did so to demonstrate climate leadership within their industries and in public policy. They did so regardless of a general absence of regulations that reward their investments. And they did so despite a common assumption that carbon offsetting was a corporate fad that has been eclipsed by more cost- and results-oriented solutions.

This report's findings are based on survey responses from 162 forest carbon projects in 58 countries. The results, colored with dozens of expert interviews, point to an almost comprehensive uptake of third-party certification and use of offset registries. Project developers were also increasingly engaged with governments and communities pursuing avoided deforestation to supply emerging or existing carbon markets that recognize forestry offsets. Several of these governments and markets feature technical requirements first trialed by voluntary offset projects at their core.

All told, the forest carbon markets have covered significant ground since the first carbon-driven investments in forestry began over two decades ago. So much so that project developers say they're prepared to implement 1.4 billion tonnes of emissions reductions over the next five years. But this new level of climate action will require business uptake of carbon offsetting as best (and common) practice; a migration of existing projects toward new frameworks favored by donor governments; and deployment of market policies that work for forest projects. All at an unprecedented scale.

Covering New Ground: State of the Forest Carbon Markets 2013 – the fourth edition in an annual series from Forest Trends' Ecosystem Marketplace – itself covers new ground as we explore projects' development, drivers, disconnects, and future direction. Eight years ago, Ecosystem Marketplace launched its "State of" series in response to a call from a growing community of practice in the field of payments for ecosystem services. At the time, and even still, an inspiring array of activities was being implemented around the world, but basic information about transactions and impacts was limited.

Transparent and reliable information is critical in any marketplace. We believe it is particularly important to this multi-faceted market for forest carbon offsets – for empowering stakeholders from indigenous communities to climate policy negotiators, to private sector offset buyers and investors. We hope this report will continue to inspire project developers to share data and thank those that contributed data for fostering a more transparent and effective marketplace.



Michael Jenkins

Founding President and CEO
Forest Trends



Molly Peters-Stanley

Associate Director
Forest Trends' Ecosystem Marketplace

Methodology: Frequently Asked Questions

This report is designed to track global transactions of offsets generated from the sequestration or avoidance of carbon emissions from forest carbon projects. It is primarily based on data collected from forest carbon project developers. It investigates both compliance carbon markets – such as the Kyoto Protocol-based markets and the New Zealand Emissions Trading Scheme (NZ ETS) – and voluntary transactions of forest carbon offsets that occur “over the counter” (the “Voluntary OTC Market”).

Where does Ecosystem Marketplace’s market data come from?

Information presented here is based on data collected from offset project developers, brokers, and retailers, as well as carbon offset-accounting registries, and exchanges that track and facilitate offset ownership.

The bulk of data was collected via an online survey designed for organizations developing forest carbon offset projects or supplying forest carbon offsets both over the counter to voluntary buyers and to buyers with a compliance obligation in regions that permit the surrender of forestry offsets for compliance.

The survey was available between January 21 and July 31, 2013. It was sent to approximately 800 organizations identified as possible forest offset suppliers and distributed through the Ecosystem Marketplace news briefs and Climate-L and Forest-L listserves.

We complemented the survey with data and insights provided by major brokerage firms such as Evolution Markets, Armajaro, Amerex, Karbone, and TFS Energy LLC, as well as registries and exchanges, including: APX, Inc., Australia’s Clean Energy Regulator Registry of Offsets Projects, BlueRegistry, BTAAB Registry, Canadian Standards Association GHG CleanProjects™ Registry, CDC Climat, Japan Verified Emission Reduction (J-VER) Registry, Korea GHG Reduction Registry Center, Markit Environmental Registry, Carbon Trade Exchange, the Chicago Climate Exchange (CCX) Offsets Registry Program, Climex, Tianjin Climate Exchange, and the Santiago Climate Exchange.

To minimize the occurrence of “double-counting” volumes reported by offset suppliers and brokers, we

asked respondents to specify the volume of credits transacted through a broker or exchange. When we identified an overlap, the transaction was counted only once.

How do you protect the confidentiality of survey responses?

This report presents only aggregate data. All supplier-specific information is treated as confidential. Any supplier-specific transaction data mentioned in the text was already public information or approved by the supplier. Additionally, we do not identify prices or volumes from any country, project type, standard, or vintage for which we had fewer than three data points, in order to protect the confidentiality of the supplier’s transaction information. We do not share supplier information with third parties without prior permission from the survey respondent.

Does Ecosystem Marketplace screen the quality of offsets reported in this survey?

Because the aim of this report is to account for all payments for emissions reductions, we do not apply any quality criteria screens for offsets included in calculations. However, we did follow up with dozens of respondents to confirm or clarify survey responses that were incomplete or raised a red flag. This included any responses that varied significantly from “typical” market behaviors and thus would also significantly influence market trends. In a few cases where we were unable to confirm that transactions occurred, these responses were omitted.

Does this report track environmental impact?

Our analysis examines the volume of carbon offsets transacted in order to chart the size of the global marketplace in terms of carbon offsetting and future project investment. We do not track the individual “lives” of offsets as they pass through the value chain. For example, if a project developer sold an offset to an offset retailer and then the retailer sold the same offset to a final buyer, we count each transaction separately in order to derive the volume and value of transactions in the overall market. This methodology is consistent with most other marketplace analysis,

such as the World Bank's annual reports on carbon pricing mechanisms.³

We do collect data on the volume of offsets retired. This volume, along with origination numbers, represents the market's ultimate environmental impact – retired offsets can no longer be resold and so represent the amount of carbon emissions that were confirmed as being offset in each year.

How does this report calculate market share and aggregate volumes?

All of the calculations in this report are weighted by respondents' transaction volumes to determine the significance of their response. Responses from suppliers who did not disclose 2012 transaction volumes were not included in many figures, as it could not be ascertained how significant their answers were to the offset market. Market share is thus calculated based only on the transaction volume associated with each question. We do not extrapolate market share findings to all volumes reported in our survey, as the marketplace is too differentiated to make such assumptions.

How does this report calculate average prices and market value?

All offset prices reported in this series are volume-weighted to determine their significance. We prioritize pricing that was reported at the project/transaction level as it is more granular than organization-wide pricing. For organizations that disclosed volume data but not price data, we used the market-wide average price as a proxy in our monetary valuation of the overall market and any variables for which we present market value.

All financial figures presented are reported in US Dollars unless otherwise noted. The numbers presented throughout this survey are measured in tonnes of carbon dioxide equivalent (tCO₂e) or million tonnes of carbon dioxide equivalent (MtCO₂e).

How does this report define “voluntary” offsetting?

In this report, the phrase “voluntary carbon markets” refers to all purchases of carbon offsets not driven by an existing regulatory compliance obligation. This includes transactions of offsets created specifically for voluntary buyers (Verified Emission Reductions – VERs),

as well as regulatory market offsets or allowances that buyers voluntarily purchase to offset their emissions. It also includes preemptive transactions of offsets to prepare for future compliance obligations (“pre-compliance”).

How does this report define a transaction?

We consider “transactions” to occur at the point that offsets are contracted; or suppliers otherwise agree to deliver offsets immediately or in the future; or when suppliers agree to retire an offset on someone's behalf based on a donation model. Payment and delivery of offsets can occur simultaneously (“spot” transaction); payment can occur immediately (“pre-pay”) or upon delivery (“pay on delivery”) of offsets that will be generated from future emissions reductions; contracts can define a specific volume of offsets to deliver (“firm” or “fixed” delivery) or specify that delivery and payment are based on the volume of offsets that are actually generated by the project in the future (“unit contingent”).

What was this report's survey response rate in 2013?

Each year, our goal is to identify and collect information from as many active forest carbon project developers and forestry offset suppliers as possible. It is critical to note that, because of the fragmented nature of the market and confidentiality issues surrounding transaction data, it is impossible to capture all projects and transactions.

This year, we received survey information from 162 forest carbon offset project developers that were active in project development or monetized carbon offsets in 2012. Another 38 offset retailers reported supplying forest carbon offsets to voluntary or pre-compliance buyers in 2012. This report is also informed by historical responses from projects that may have continued project activities but did not transact offsets in 2012. Including these projects and over time, Ecosystem Marketplace has tracked information from 513 unique forestry projects around the world, including 62 projects reported for the first time in this year's survey.

What was the regional survey response distribution?

The largest proportion of survey respondents was based in the US (25% of all respondents). After the US, suppliers based in Brazil and the United Kingdom

³ <http://documents.worldbank.org/curated/en/2013/05/17751166/mapping-carbon-pricing-initiatives-developments-prospects>

were the second-largest proportion of respondents (9% each), followed by Canada and Australia.

Taken as a whole, we received the largest number of responses from North American suppliers (48) – in line with the large volume of offsets supplied and transacted in the region. The response rate from

Europe-based offset suppliers was close behind (37). Offset suppliers from emerging markets in developing countries contributed one-third (50) of survey responses, from organizations headquartered in Latin America (29), Asia (12), and Africa (8). Figure 1 (page vi) illustrates regional response rate distribution by country.

1. Overview: Forest Carbon Offset Markets in 2013

1.1. Market volumes: Forestry offset demand up 9% in 2012

In 2012, the global markets for forest carbon offsets contracted 28 MtCO₂e for immediate or future delivery, representing an overall 9% increase from 2011. Demand and prices were again highly stratified according to buyer motivations, suppliers' market roles, and type of forest carbon project.

Offsets sold to voluntary buyers contributed most to this increase, responsible for 27 MtCO₂e, or 95% of all forest carbon offsets transacted in 2012, as forestry and land-use projects became available to buyers preparing for compliance, while some noteworthy corporate buyers renewed or pursued new climate targets with forestry offsets. CDM projects, conversely, contracted 91% less volume than in 2011, as many compliance buyers preparing for the end of the Kyoto Protocol's first compliance period had secured their desired volumes by the start of 2012.

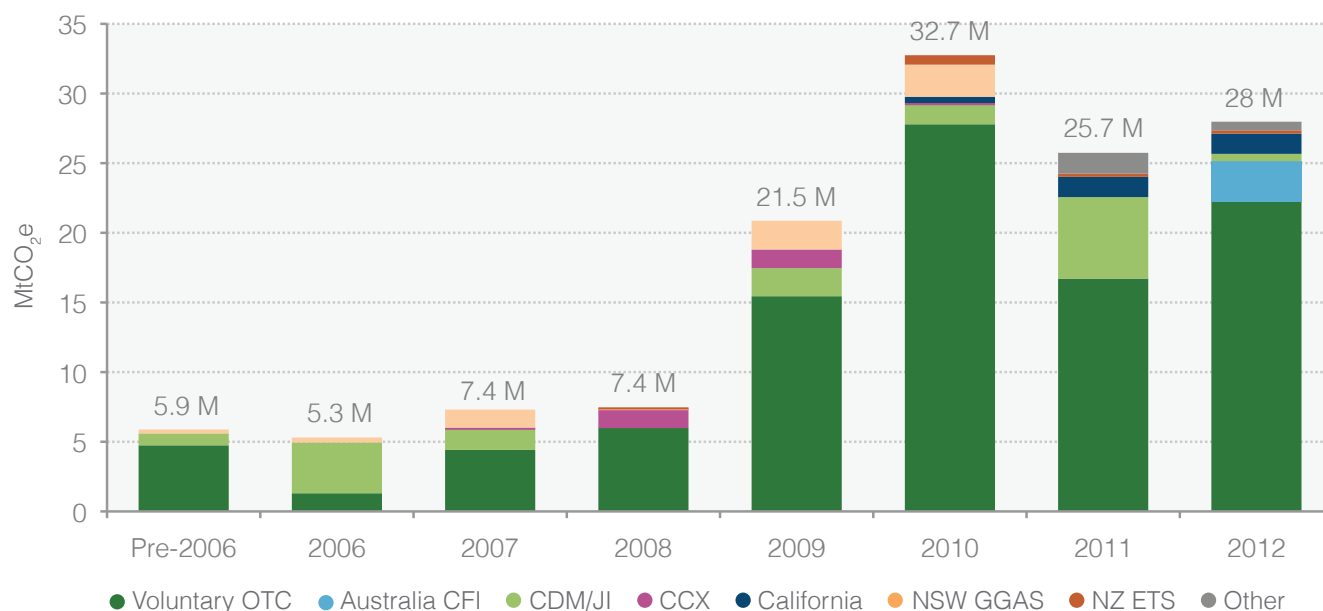
Challenged by plummeting prices in the European Emissions Trading System (EU ETS), New Zealand's

price-linked forestry offsets saw little activity, while across the Tasman Sea, offset buyers and suppliers transacted a record volume of offsets under Australia's emerging Carbon Farming Initiative (CFI), which is tied to a market that now faces an uncertain post-election fate.

Less volume was reported as sold to buyers participating in British Columbia's (BC) Carbon Neutral Government directive or the Alberta Carbon Market, while activity remained largely unchanged for project developers eying demand from fellow Western Climate Initiative (WCI)-member state California.

To demonstrate their market size, volumes contracted in California's and Australia's pre-compliance markets are presented separately in Figures 11 and 13, but are included in voluntary OTC market analysis throughout this report, as their compliance offset markets were not yet active until 2013 and mid-2012, respectively. Alberta and BC forest carbon offsets are captured in the "other" category due to the small number of transactions reported from these marketplaces.

Figure 11: Historical Forest Carbon Offset Transaction Volumes, All Markets



Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

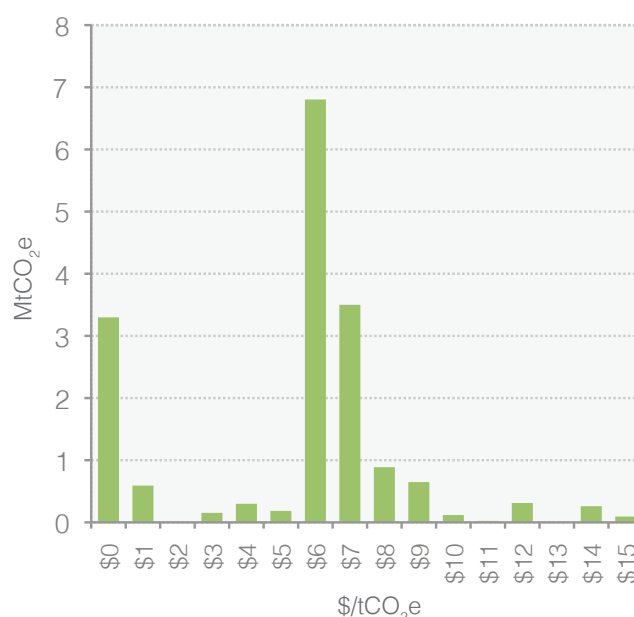
1.2. Market value: Value and price decline, less extreme than in other offset markets

Forest carbon markets saw a decline in overall value (down 8%) – slight, compared to the decrease in market value of voluntary demand for offsets across all project types (down 11% in 2012) and the plunging value of Europe's carbon market. Survey respondents reported that the overall market value of forest carbon offset transactions reached \$216 million in 2012, just shy of 2011's \$237-million market.

As in previous years, most of this value was derived from contracts to voluntary buyers. Here, volumes increased 45% while market value grew 7% to \$198 million, buoyed primarily by pre-compliance activities in California and Australia. On the other hand, the value of purely voluntary offset transactions *not* associated with pre-compliance fell by 14%, in line with their lower average price.

The global average forest carbon price – in 2012, \$7.8/tCO₂e – marks the starting point for a discussion of market price dynamics, but is the aggregation of hundreds of reported price points that vary greatly by project standard, location, and other environmental and social co-benefits. Figure 12 illustrates the volume of forestry offsets transacted

Figure 12: Volume Transacted by Offset Price

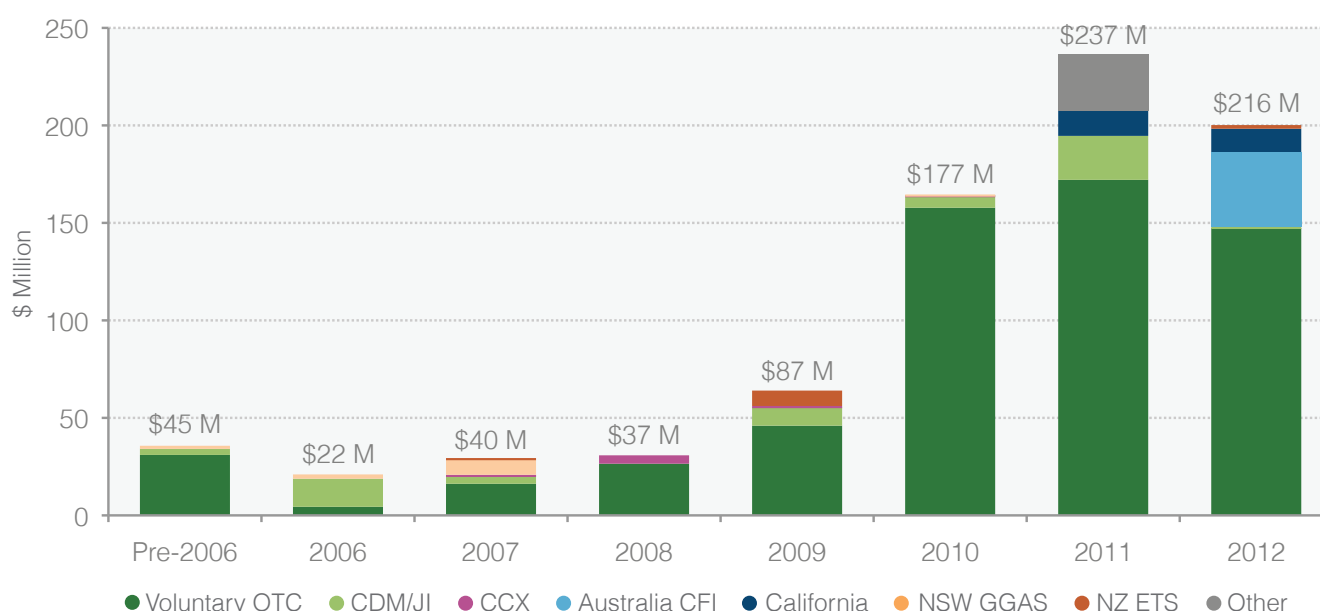


Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

at each dollar point. Here, one can see that the vast majority of offsets were transacted at a volume-weighted average price between \$6-7/tCO₂e, with

Figure 13: Historical Forest Carbon Offset Transaction Values, All Markets



Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. State of the Forest Carbon Markets 2013.

Table 3: Comparison of 2011 and 2012 Forest Carbon Markets' Transaction Volumes, Values, and Average Prices, All Markets

MARKET*	Volume		Value		Average Price	
	2011	2012	2011	2012	2011	2012
Voluntary OTC	16.7 M	22.3 M	\$172 M	\$148 M	\$10.3	\$7.6
California / WCI	1.6 M	1.5 M	\$13 M	\$12 M	\$8.1	\$8.2
Australia CFI	-	2.9 M	-	\$38 M	-	\$13.3
Voluntary Total	18.3 M	27 M	\$185 M	\$198 M	\$9.2	\$7.7
CDM / JI	5.9 M	0.5 M	\$23 M	\$0.6 M	\$3.9	\$1.1
NZ ETS	-	0.2 M	-	\$1.9 M	-	\$7.9
Other	1.5 M	0.6 M	\$29 M	\$15.6 M	\$19.7	\$25.3
Compliance Total	7.3 M	1 M	\$51.5 M	\$18.1 M	\$7.2	\$10.5
Grand Total	25.6 M	28 M	\$237 M	\$216 M	\$9.2	\$7.8
Primary Market	21 M	22 M	\$143 M	\$137 M	\$8.1 M	\$7.5
Secondary Market	4.9 M	6.3 M	\$54.7 M	\$57 M	\$12.1 M	\$9.8

Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

*See Acronyms list for explanation of market abbreviations. Totals in this chart may not add up perfectly due to rounding.

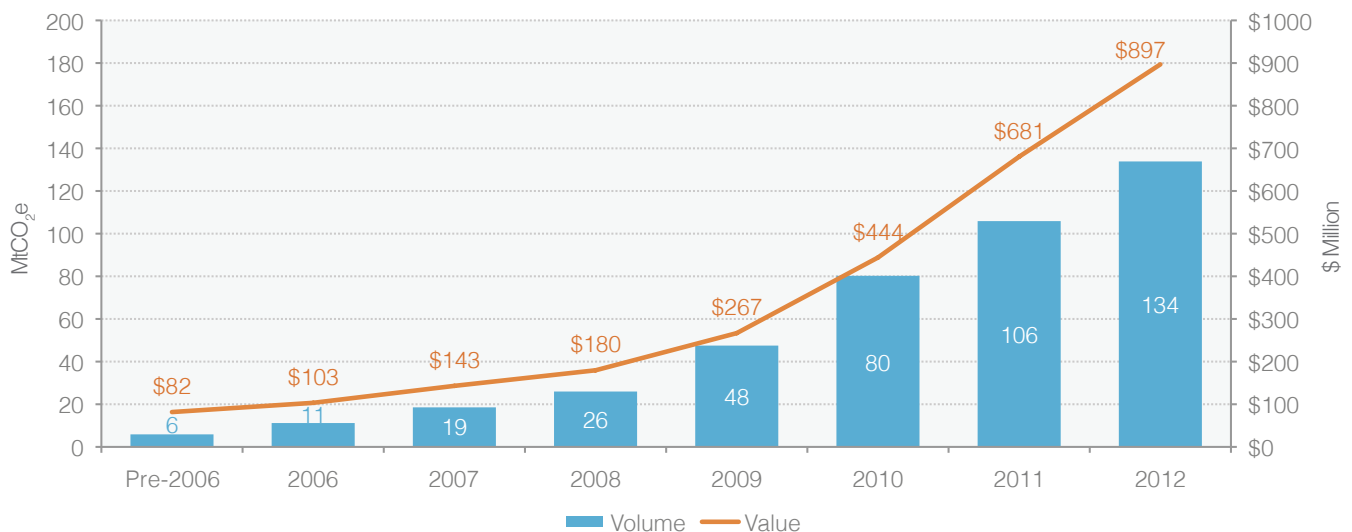
Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

considerably fewer volumes contracted above or below this price range.

From pre-2006 to 2012, this report series has tracked a cumulative 134 MtCO₂e in offsets contracted from

forest carbon projects, valued at an estimated \$879 million. As seen throughout this report, much of this value was contributed by hundreds of for-profit entities acting on a voluntary basis in response to – or in spite of – relatively weak or uncertain regulatory

Figure 14: Cumulative Forestry Offset Transaction Volume and Value, All Markets



Notes: Based on data reported by 513 AFOLU projects and countless offset suppliers over eight years.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

environments, and in many cases represents direct support for project-level activities.

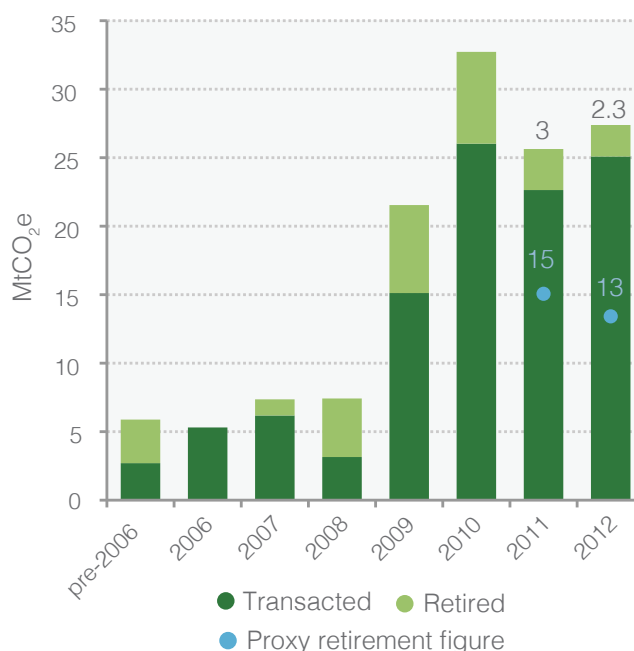
1.3. Offset stage and retirement: Almost two-thirds of offsets transacted pre-verification; one in every ten transacted tonnes retired

Whether they involve planting, protecting, or better managing forests, forest carbon projects generate environmental benefits even in their early stages of implementation. Much the opposite of the 2011 market, the largest volumes of offsets (62% or 16 MtCO₂e) transacted in 2012 were from projects that had not yet achieved verification. At least half of this pre-verification volume occurred while projects were in the process of developing their project design document (PDD). Most early investments occur with the expectation that the project will verify and issue through a registry – and in some cases retire – carbon offsets when they reach an appropriate stage.

Verifying emissions reductions and issuing offsets is the end goal of most forest carbon projects. It is at that point that offsets can be traded and surrendered in a compliance marketplace – and many voluntary corporate buyers feel more comfortable making carbon neutrality claims based on their purchase and retirement of offsets. In cases such as the New Zealand Commerce Commission's Guidelines for Carbon Claims, buyers are even obligated to disclose to consumers when their carbon neutral claims involve offsets that have been forward sold and not yet issued.

Resulting from the verification of emissions reductions from some large agriculture, forestry, and other land use (AFOLU) projects in in 2011-2012, last year saw

Figure 15: Historical Transaction and Retirement Volumes, All Markets

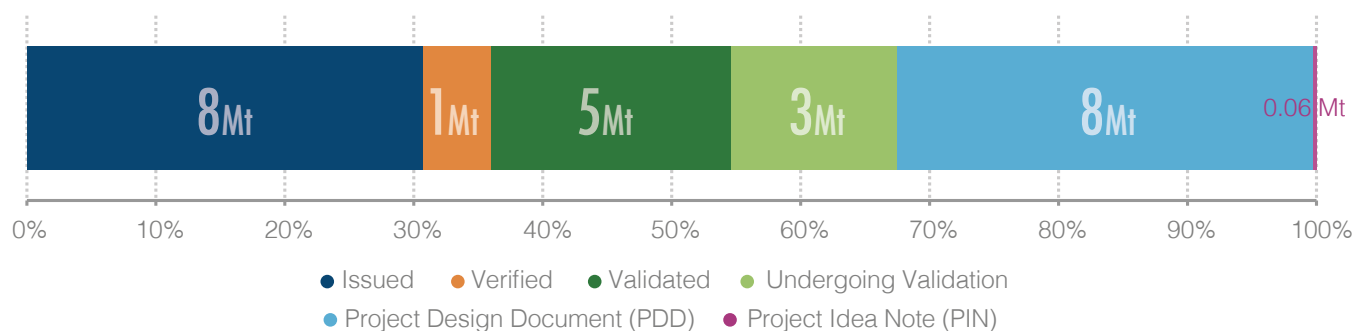


Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

an unprecedented volume of offsets issued by major registries – and retired as a result. In 2012, 8 MtCO₂e in forestry offsets were issued, while 2.6 MtCO₂e were reported by registries as retired. Only these issued volumes are eligible for retirement, hence forestry offset retirement as a proportion of transacted offsets has been low, historically. For more information on registry activity in 2012, see Section 6.

Figure 16: Market Share by Project Stage at Time of Transaction (Labeled by Transacted Offset Volume)



Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. State of the Forest Carbon Markets 2013.

In comparison to registry data, “State of” survey respondents reported that 2.3 MtCO₂e of offsets transacted in 2012 were issued and retired. Representing 88% of all retirements reported by a registry, this finding gives us some insight into the broad market coverage of this survey and report (Figure 15).

Because some suppliers cannot confirm the fate of their offsets once they change hands, we also ask another question in our survey regarding buyer motivations. Also seen in Figure 15, this “proxy” retirement figure denotes the volume of offsets that were contracted to purely voluntary buyers and so may be voluntarily retired in the future.

1.4. Supply chain: Secondary market grows again, but still a developer’s world

Almost two decades ago, foresters generated and sold some of the earliest carbon offset products. Since then, however, the global carbon markets matured around a host of other project types that fed into and helped to develop sizeable secondary markets for both compliance and voluntary offset use. Compared to the broader voluntary offset markets – where offset retailers or wholesalers supplied 56% of all offsets transacted in 2012 – primary transactions (where offsets are supplied by the project developer directly) are more common in the forest carbon markets.

Project developers transacted 21.7 MtCO₂e or 78% of overall market share – while offset retailers were responsible for the remaining 6.3 MtCO₂e. Even so, this represents a 29% increase in forestry offset volumes supplied by retailers. This increase is not surprising, given that 2011 saw an unprecedented volume of offsets sold to retailers – some of which were among their reported transactions in 2012. Again in 2012, volumes sold from project developers to retailers increased to 7.2 MtCO₂e, from 4.6 MtCO₂e in 2011 (Figure 17). As a result, the community of offset retailers that together make up the secondary offset market was the largest single source of offset demand in 2012.

Nonetheless, the secondary market for forest carbon offsets continues to encounter barriers to achieving the scale of transactions attributed to energy and other project type alternatives. This is related to project developers’ competitive pricing. For example, offset retailers reported an average price of \$9.8/

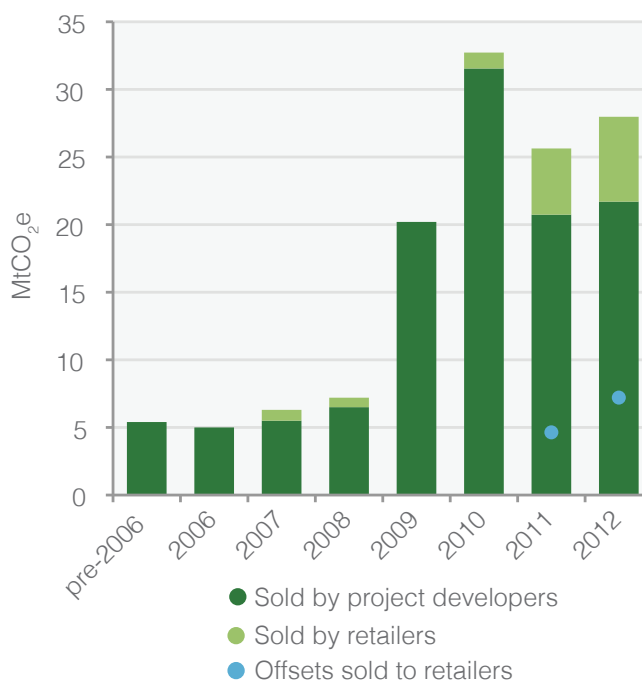
tCO₂e for offsets sold to their end user clients. Project developers reported an overall average price of \$7.5/tCO₂e. In some cases, however, both project developer and retailer attempt to sell the same offsets to the same end user – and project developers sold to end users at an average price of \$2/tCO₂e less than retail price. Thus, they supplied significantly more volume to end users (10.8 MtCO₂e) than did offset retailers.

The secondary market for forest carbon offsets is nonetheless a significant contributor to market size. Combining both offsets transacted from project developers to retailers with offsets then sold from retailers to end users, the retail market was worth \$107 million in 2012 – or half of all market value.

1.5. Supplier profit status: Governments’ share shrinks as private sector steps up

Project developers’ profit status varies widely, ranging from well-established non-profits executing large multi-

Figure 17: Historical Transaction Volumes, Primary and Secondary Markets



Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

Source: Forest Trends’ Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

year contracts to government agencies facilitating transactions from domestic projects, to traditional private sector actors.

In 2012, transaction volumes associated with public sector offset programs shrank, while private sector entities held fast to their position as the market's dominant source of forest carbon offset supply, partly as a result of the emerging secondary market for forestry offsets and also of market players shifting their attention to emerging and future compliance markets that have indicated an interest in forestry offsets.

Non-profits' market share remained stable in 2012. As some of the earliest actors in the forest carbon space, non-profits play a critical role in facilitating finance for project-level activities, with contributions from a variety of actors. In 2012, as in previous years, large conservation NGOs served as gatekeepers to the

market for significantly sized buyers with household names, some of which tend to fall back on existing NGO relationships rather than enter the offset market unaided. NGOs also continue to play a large role in the disbursement of REDD funds from large bilateral and multilateral donors, with which organizations like the Wildlife Conservation Society and the Zoological Society of London have historically strong working and/or financial relationships.

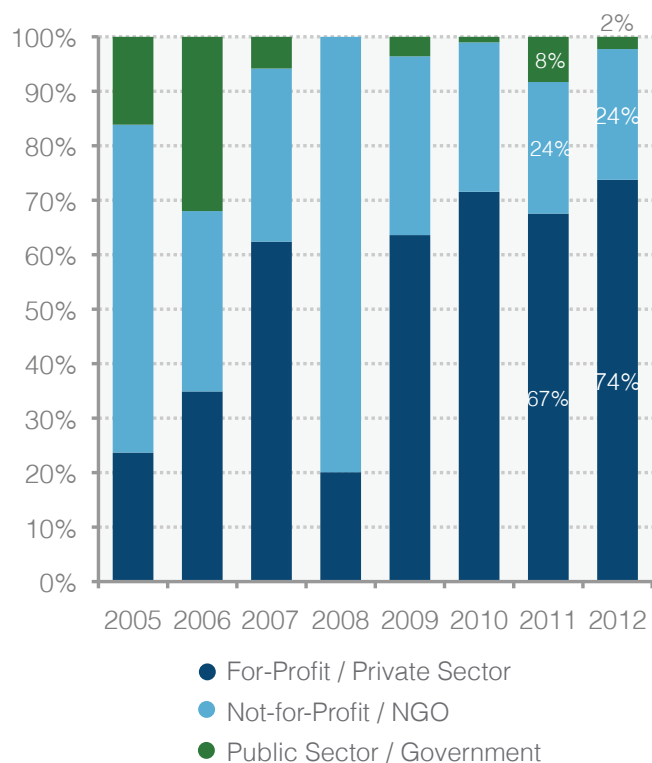
The volume of offsets transacted by public sector agencies fell to less than 1 MtCO₂e last year as some programs turned to internal restructuring (as with J-VER), focused on project development (as with the China Green Carbon Foundation), or simply varied the mix of forestry and other offsets supplied by their programs (as with British Columbia's Carbon Neutral Government program). This share may be expected to increase in 2014, given the Australian government's fall 2013 announcement that its proposed Emissions Reduction Fund may buy offsets from projects developed under the government-run CFI on an auction basis.

This report did not track a sizable difference in the average price of offsets supplied by non-profits (\$7.9/tCO₂e) versus for-profit entities (\$7.3/tCO₂e). Public sector programs, on the other hand, reported an average \$19.2/tCO₂e, with premiums associated with British Columbia's high fixed offset price (\$25/tCO₂e) and significantly above-average prices for domestic offsets developed to and sold through the J-VER program (typically >\$100/tCO₂e). (See also Figure 19.)

Globally, the largest volume of offsets supplied by the public sector was transacted by agencies based in North America. Overall, North American suppliers represented a variety of organization types, together supplying the largest share of offsets from any region. Yet, European companies made up the largest share of private sector transactions (7.4 MtCO₂e) while Asia-based NGOs supplied a slightly larger volume of forestry offsets than did North America-based NGOs (3 MtCO₂e versus 2.6 MtCO₂e).

Globally, not only did developing country-based project developers make up one-third of all survey respondents – NGOs based in the Global South transacted greater volumes than did those in developed countries.

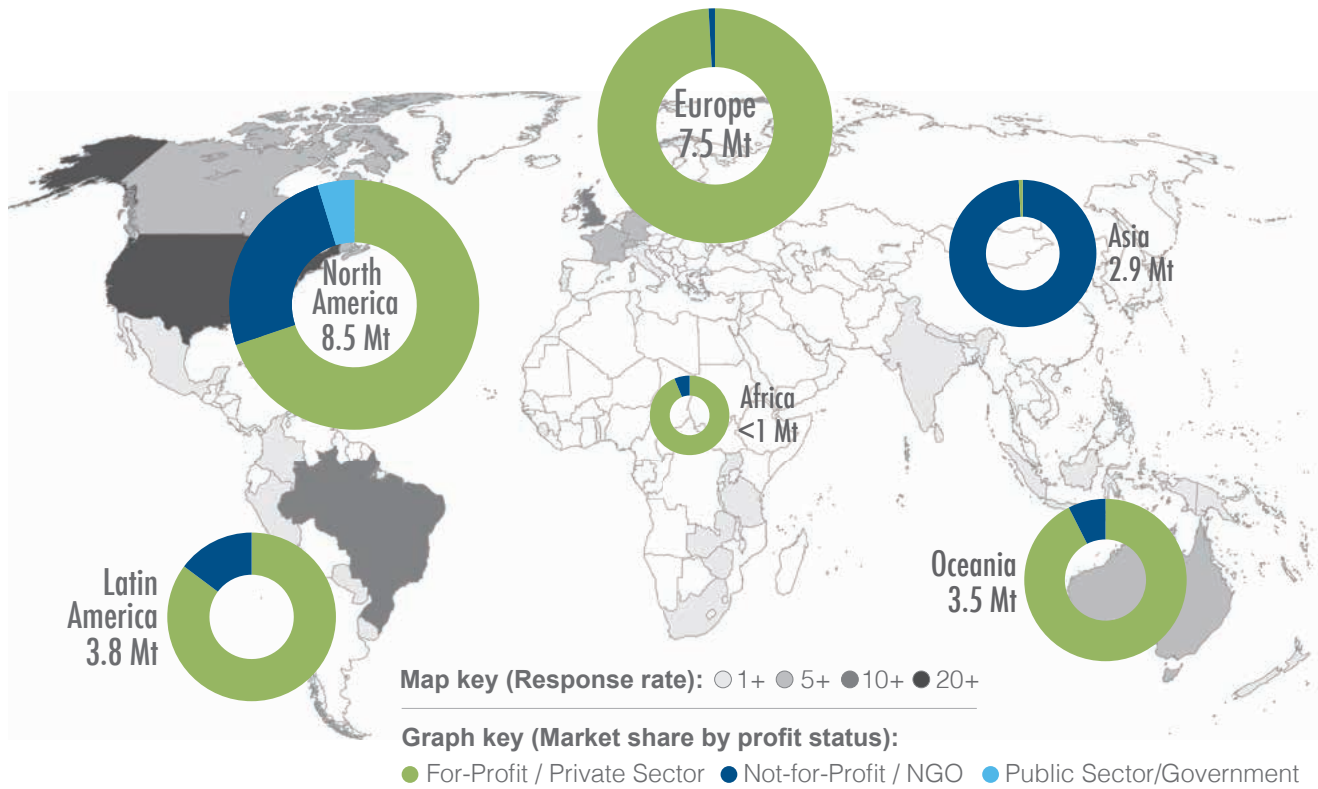
Figure 18: Historical Market Share by Offset Suppliers' Profit Status, All Markets



Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

Figure 19: Response Rate by Country, Transacted Volume by Developers' Headquarters Region, and Market Share by Developers' Profit Status



Notes: Based on 28 MtCO₂e in transactions reported by 165 forest carbon offsets project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

2. Forest Carbon Offset Markets in Context

2.1. Introduction: Forest carbon market landscape in transition

For decades, the voluntary carbon markets were the only source of carbon finance for forest conservation – and then only impacted a fraction of the world's critical threatened forest areas. The last decade has brought many new developments in forest carbon finance, however, seeing voluntary demand for forestry offsets drive almost a billion dollars to private forest projects and supporting activities on upwards of 26 million hectares.

The United Nations recognized A/R activities as eligible for compliance use in an international emissions trading program – albeit on a temporary basis (Section 2.4) – and emerging compliance carbon markets worldwide have considered or enabled the inclusion of forestry in emitters' portfolios.

While forestry gains a foothold in the regulatory debate, progressive countries like Norway, Germany, and the United States have taken early steps to channel bilateral finance to those countries in the process of developing national REDD strategies. Sources of conservation finance such as these hold the promise of a new scale of forest carbon mitigation financed by “performance-based payments” for REDD.

None of these developments occurred in a vacuum, but are instead built on the foundation laid by early actors in the sector – including infrastructure providers like standards and registries, project developers working at an increasingly large scale, and private funds that have placed their faith in the future of a price on forest carbon and premium for products from sustainable forestry and land use.

Thus, the state of the forest carbon markets must be understood in the context of these divergent but increasingly interconnected efforts. This report section provides an overview of both market- and non-market-based mechanisms for financing forest carbon mitigation.

2.2. Trends in REDD finance

In recent years, market observers have predicted that funds flowing from donor country governments to support REDD strategies in developing countries would dwarf the millions of dollars that private actors have voluntarily channeled to REDD projects. And they were right. Compared to the \$0.9 billion in value attributed to forest carbon offset transactions over time, Forest Trends' REDD Expenditures Tracking Project (REDDX) reports that **more than \$1 billion has been committed to seven countries alone** in the last few years.⁴

The public sector has invested significant amounts of money in several countries with potential for REDD development. In Tanzania, for example, nearly \$94 million in REDD financing has been committed to the country between 2009 and 2012 – about \$46 million of which has already been disbursed – with the Government of Norway being the primary benefactor with \$84.4 million in funding, according to REDDX. The money is financing the country's development of a REDD strategy, a national registry, research, capacity building, and pilot projects, of which there are nine in Tanzania.

Across all REDDX partner countries, government donor agencies, rather than individual countries or the owners of the forests in Africa and Latin America, are driving the REDD agenda by pouring money into REDD readiness and jurisdictional efforts, stakeholders say. **But public sector finance has so far been limited to preparation for the next phase of REDD**, meaning that major gaps exist in taking pilot projects to the next level. And consistent but insufficient demand for REDD offsets already coming to market from projects – many of which are unsure of whether or how they can tap into bilateral REDD finance – raises major questions about the ability of carbon projects to continue to expand in scale.

Donor efforts to finance REDD readiness could all be for naught if the world cannot make a case for private

⁴ As of fall 2013, REDDX has publicly reported commitments and disbursements of REDD finance to Brazil, Colombia, Ecuador, Ghana, Liberia, Tanzania, and Vietnam, based on in-country partners' survey-based research. Visit reddx.forest-trends.org for more on the project results and methodology.

sector investment in REDD, says Duncan Abel, Senior Transactor of Forestry Carbon at Nedbank Capital in Johannesburg. Abel points out that the volume of REDD offsets has skyrocketed in only two years, while private finance has not kept pace.

“We’ve got access to a whole load of really good potential projects, but it just doesn’t make sense to develop any of them,” Abel explains. “Until there’s a commercial rationale, it’s probably not going to happen.”

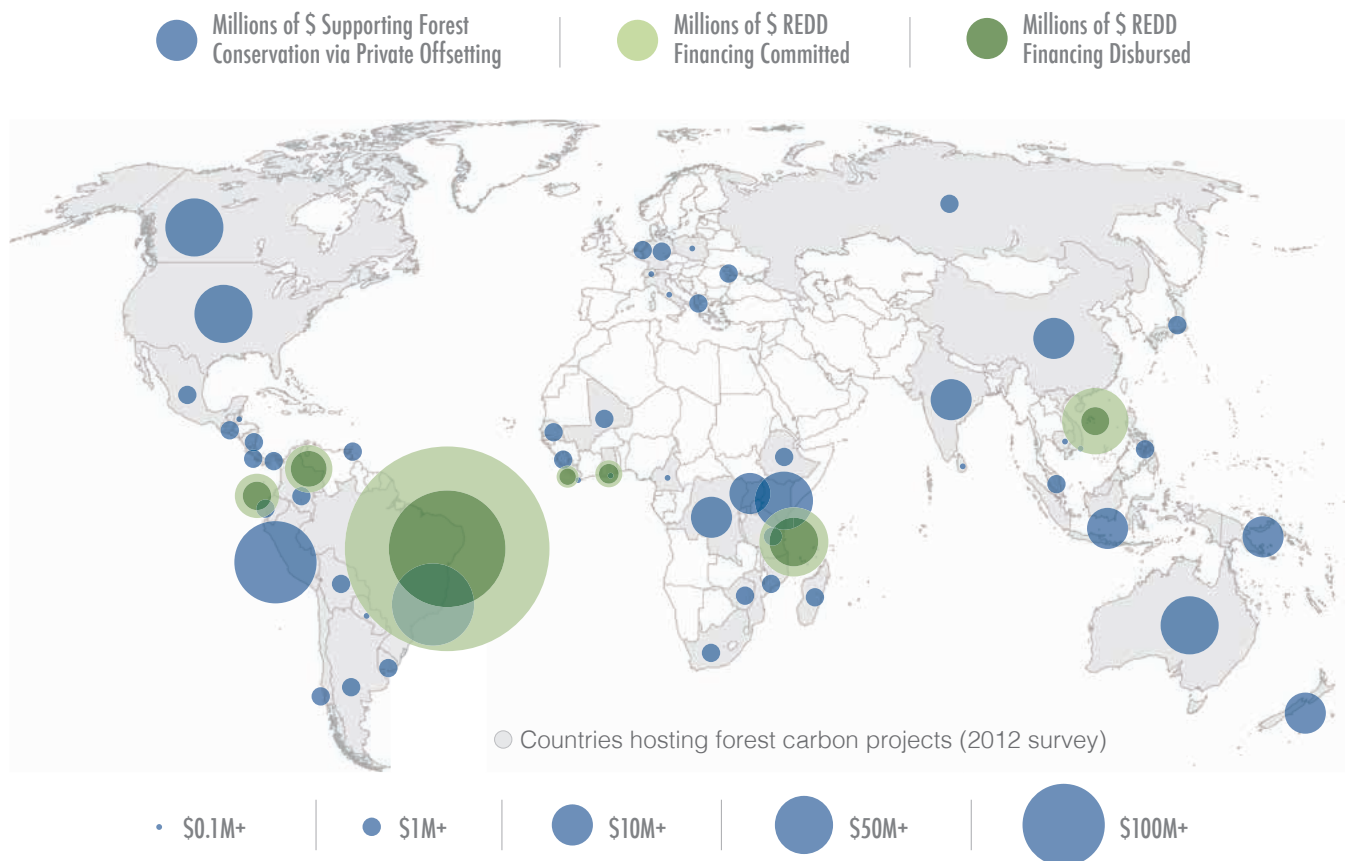
Many hope that jurisdiction-scale REDD programs, which are administered by the public sector but theoretically carve out room for traditional projects, will be the tie that binds public and private interests in the AFOLU sector. For example, some market participants theorize that Consumer Goods Forum members to the Tropical Forest Alliance could pursue sustainable supply chains through jurisdiction-scale results-based payments for REDD.

More than in our 2011 results, 2012 survey respondents were attentive to and engaged in talks about “nesting” their private projects within a jurisdictional program, recognizing that doing so might grant them access to larger pools of donor finance not available to stand-alone private projects.

“There are a number of activities designed to be driven predominately by carbon finance at the project level, and many small to mid-sized initiatives can sustain their activities with carbon revenues arising from the voluntary markets fueled by a growing number of CSR buyers,” explains Christian del Valle, head of the recently-closed \$80 million Althelia Climate Fund.

“But larger scale ‘landscape-level’ activities require the availability of longer term, scaled-up financing,” he explains, “and in the absence of compliance markets this means looking to emerging government-led

Figure 20: Comparison of Project- and Country-level Forest Finance, All Years



Notes: Based on value associated with all years of “State of” forest carbon market tracking and REDD finance data sourced from reddx.forest-trends.org, as of October 2013.

Source: Forest Trends’ Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

structures that will require a migration to jurisdiction-level emissions reductions and carbon accounting.”

To this end, the Norwegian government made a \$1.4 million grant to the VCS to support the development of jurisdictional nested REDD programs in several regions. In 2013, the FCPF also aims to finalize its methodological framework for jurisdictional programs that will be eligible to receive performance-based payments from its \$390-million Carbon Fund – sized to support around five programs that have yet to be identified.

2.3. Trends in voluntary carbon offsetting

Historically and in the present day, transactions in the forest carbon marketplace are primarily driven by buyers that voluntarily pursue emissions reduction targets or are preparing for potential regulation. Because there is no formal regulatory driver or exchange mechanism underpinning these transactions, most of them materialize as privately negotiated contracts in the voluntary OTC market.

Following the phase-out of the CCX at the end of 2010, the voluntary OTC market is one of only two active marketplaces with an international scope – the other being the CDM, which currently offers forestry offsets only from A/R projects approved by the CDM Executive Board that are primarily designed for compliance use against commitments made to the international Kyoto Protocol.

The market for voluntary offsetting was home to the vast majority of forestry offsets transacted in 2012 (27 MtCO₂e), seeing a significant recovery in demand from 2011 (up 45%). While voluntary demand for forest offsets remains vulnerable to the whims of consumer preference, global economic conditions and competing offset products, at least some of this growth owes to corporate actors' increasing receptiveness to forest carbon offsets. This was seen in both purely voluntary transactions among industry leaders, as well as pre-compliance demand by emitters in emerging compliance markets.

Forestry and land-use offsets made up 34% of the overall 101 MtCO₂e of offsets that voluntary buyers transacted across all project types – making forestry the most popular offset category. While Californian and Australian buyers tapped into a collective 4.4 MtCO₂e of forestry offsets in preparation for compliance, purely voluntary demand from multinational corporations and small- to medium-sized enterprises saw the most

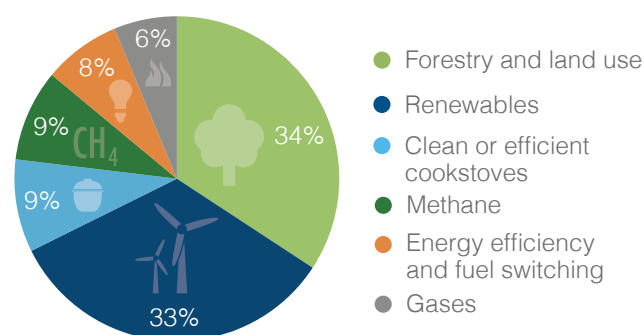
growth, jumping by 33% to 22.3 MtCO₂e. The greatest percent increase in forestry offset volumes came from Asia, where developers more than doubled offsets transacted from A/R projects.

As in the carbon markets as a whole, **the average price paid by voluntary buyers for forestry offsets fell in 2012, to \$7.6/tCO₂e from \$10.3/tCO₂e**. The price nonetheless remained higher than the average price across all voluntary offset transactions (\$5.9/tCO₂e). This is partly owed to offset retailers that take a “portfolio approach” to offset pricing by buying and selling high-priced offsets from forestry at cost (or even at a loss), while recovering their margins by marking up abundant, inexpensive offsets from renewable energy projects.

Demand for offsets certified to both the VCS and CCB Standards more than doubled to over 12 MtCO₂e, representing a new height for both programs. Another 3.6 MtCO₂e of transacted offsets were or will be certified to VCS without additional CCB Standards certification of the delivery of project co-benefits. VCS offsets tracked in 2012 were sourced from a variety of project types, dominated by but not limited to REDD.

VCS, along with several other voluntary project standards, approved landmark methodologies for project types on the fringes of traditional forestry, reflecting a growing interest in support of blue carbon, soil carbon, and agriculture. VCS, the American Carbon Registry (ACR), and the Climate Action Reserve (CAR) significantly expanded their AFOLU programs, including methodology and/or pilot project development in the fields of wetland restoration (ACR and VCS), rice cultivation (ACR and CAR), soil carbon

Figure 21: Market Share by Project Category, Voluntary Carbon Offset Markets, 2012



Source: Forest Trends' Ecosystem Marketplace. *State of the Voluntary Carbon Markets 2013*.
www.forest-trends.org/vcm2013.php

management, and sustainable agricultural land management (VCS).

Registries and standards reported new highs in verified offset issuances and retirements from the AFOLU sector. Registries also lent a hand to capacity-building in the forestry space through emerging alliances with forestry-specific programs, such as Markit's new partnership with the Brazilian state of Acre to develop a REDD registry (see Section 6 for more details on standard and registry activity).

Although some proliferation of standards and methodologies continued in 2012, major voluntary standards began, for the first time, to consolidate process and expertise. VCS and the Climate, Community and Biodiversity Alliance (CCBA) launched a joint approval process for dual certification designed to lower AFOLU projects' audit costs. Meanwhile, the traditionally energy-oriented Gold Standard acquired the forest-facing CarbonFix standard and partnered with the Forest Stewardship Council (FSC) and Fairtrade consumer label in its efforts to expand into forestry and land use.

Governments also adapted forestry and land-use project methodologies from the voluntary space into emerging compliance offset markets. California's Air Resources Board (ARB) borrowed forestry methodologies from CAR and continues to consider new offset protocols developed in the voluntary market for use in its budding compliance program. In Oceania, project developers submitted methodologies for use under Australia's CFI program that adapted elements of existing VCS methodologies to suit the Australian context.

The Panda Standard submitted its methodologies for use under China's emerging cap-and-trade pilots. Methodologies developed in the voluntary space also see continued support in government-backed offset programs in Oregon, Oklahoma, BC, Colombia, Costa Rica, Italy, Japan, the Netherlands, Thailand, and the UK.

Voluntary offset end users showed a resurgence of support for forestry and land-use projects in their early stages, seeking greater volumes from projects in pre-verification stages (62% or 16 MtCO₂e) than they did from more mature projects – albeit at a slightly lower price. The total value of investments in early-stage forest carbon activities reached \$104 million, or half of all forest carbon market value in 2012.

2.4. Trends in compliance forest carbon offset markets

California's newly launched cap-and-trade program has generated significant interest and conversation in the forest carbon world, if not yet much in the way of transaction activity.

The slow publication of guidelines governing California's offset program was a source of anxiety for market participants last year, but most understood that regulators had to proceed with caution to ensure a smooth rollout of the offsets program. "Our experience is that they're working really hard, they're probably understaffed and they've got a lot of smart people that are working hard to get there," says Harold Buchanan, CEO of California-facing CE2 Carbon Capital. "They've been very good at working with us on projects we're associated with and getting things through this system for the first time."

Australia saw an influx of activity around the launch of its carbon pricing mechanism, although the status of the country's program is in flux now that its newly elected leadership has pledged to abolish the initial carbon tax. **New Zealand**, meanwhile, opted out of participating in the second commitment period of the Kyoto Protocol, a decision that has implications for domestic forest carbon accounting.

The **Clean Development Mechanism (CDM)** has traditionally been the world's largest compliance offset program but faces an uncertain future, with allowance prices driven down to unsustainable lows by an oversupply in the primary market. The CDM was initiated under the Kyoto Protocol, an international agreement adopted in 1997, aimed at fighting global warming by reducing greenhouse gas (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 5% below 1990 levels between 2008 and 2012. It established "flexibility mechanisms", including the CDM, Joint Implementation (JI), and the EU ETS, which enable the trade of offsets (most often the CDM's certified emissions reductions or "CERs") from Executive Board-approved projects.

The Executive Board has so far only admitted for use methodologies pertaining to A/R projects, and those projects are granted temporary CERs that expire and must be replaced with permanent offsets at the end of the compliance period.

The CDM market plummeted both in terms of volume and value in 2012, with only 0.5 MtCO₂e of

tCERs transacted last year compared to 2011's all-time peak of 5.9 MtCO₂e. Value similarly fell from \$23 million in 2011 to less than \$1 million in 2012. CDM market participants explain that most tCER contracts were negotiated prior to the last year of the compliance period – to provide “room for error” in case the project under-delivered or didn't achieve issuance before the end of 2012.

The World Bank BioCarbon Fund, the major buyer of CDM A/R credits, did not engage in any new transactions in 2012, instead focusing on guiding current projects to issuance, explains Mirko Serkovic, Fund Manager.

Serkovic also notes that many project developers and sponsors waited until the end of 2012 to begin the verification process in order to maximize the volume of tCERs to be issued, since forestry projects can only issue once per commitment period of the Kyoto Protocol. In 2012, 5.6 MtCO₂e of CDM forestry offsets were issued, with another 4.7 MtCO₂e issued so far in 2013. Serkovic wonders how many of these projects will actually identify buyers given the historic low demand for tCERs and current market conditions.

“When it comes to CDM A/R projects, we're not really looking for new deals,” he says. “We committed the majority of our capital years ago. Now it's more about the management of the portfolio, getting the projects through issuance and entering into new deals only if we are experiencing last-minute delivery shortfalls. In terms of the overall market, though there's a second commitment period, there's not a real demand for credits. We would expect to see activity leveling out.”

While some market participants are predicting a bleak future for the CDM program, others remain hopeful that the mechanism can rebound and remain relevant. Sweden is a party to the Kyoto Protocol, but has established a target that goes well beyond its commitment under the EU burden-sharing agreement, aiming for a 40% reduction in its GHG emissions from 1990 levels by 2020. CDM offset purchasing has been a major component of its strategy, with the Swedish Energy Agency – its national authority for the CDM and JI mechanisms – having been active in the CDM since before its formal launch.

“Sweden is still very much in support of the CDM even though the market is obviously in the doldrums right

now,” says the Swedish Energy Agency's Christopher Zink. “Based upon the merits of individual cases, we are able to pay above the current secondary market price for CERs. We're actively participating in the market, trying to support it as much as we can with a relatively limited budget.”

A major evolution for the CDM could also be on the horizon, as stakeholders discuss the potential **interplay between the CER market and the development of Nationally Appropriate Mitigation Action (NAMA) plans** that aim to support a broader range of activities and ensure that developing countries can benefit from the opportunities for low-cost emission reduction projects within their borders.

“Even in a new world of NAMAs and new market mechanisms, which we are exploring, a lot of the tools and lessons from the CDM, and possibly UNFCCC institutions, are likely to be carried over, partly as a result of the vast wealth of institutional and professional expertise that has been built up over the years,” Zink says. According to the online NAMA Database, 6% of reported NAMAs are developed in the AFOLU sector.⁵

Figure 22: Historical Transacted and Issued Volume, and Average Price, tCERs



Source: Forest Trends' Ecosystem Marketplace and the CDM/JI Database. Last accessed October 2013.

⁵ Visit www.nama-database.org for more information. Last accessed October 2013.

In light of the difficulties in the tCER market, however, the major buyer of CDM A/R offsets is looking ahead to innovative approaches that build from its past experiences. After committing about \$90 million to more than 20 projects in Tranches 1 and 2, the BioCF is developing a third Tranche that will evolve away from small A/R projects – which encompassed about 80% of the fund's initial resources.

The fund now hopes to incentivize better land management at the landscape level, combining reforestation, REDD+, agriculture, and biomass energy activities into an integrated approach to mitigate climate change, enhance food security, and increase the resilience of local communities and environments at a much larger scale, says Ellysar Baroudy, BioCarbon Fund Coordinator and Fund Manager for Tranche 3.

The BioCarbon Fund recognizes the current difficulty in gaining significant interest from private sector investors to support these kind of activities through the purchase of carbon offsets. Many private firms are less interested in buying carbon offsets given market conditions, but are interested to look for synergies in their business models that simultaneously support AFOLU activities.

Thus, the fund hopes to appeal to the private sector's desire to "green" or secure their supply chains from climate change and has seen some expressions of interest. "They're interested in our model in which we use carbon as an indicator of results," Baroudy says, "We always valued the public-private partnership that we had in the Fund, and we have been thinking of ways to continue involving the private sector."

3. Overview: Forest Carbon Project Types

Markets for forest carbon offsets have evolved at breakneck speed, with new project types, methodologies, and locations ever-emerging in response to buyer and policy-maker signals.

Across all report years, voluntary demand for offsets from A/R projects has outpaced volumes transacted from other forest project activities, as the translation from philanthropic tree-planting to carbon mitigation projects is fairly straightforward. In 2012, transacted volumes from A/R projects remained high but fell significantly from 2011, as the sector did not see a repeat of the significant compliance demand from Kyoto member countries reported in 2011.

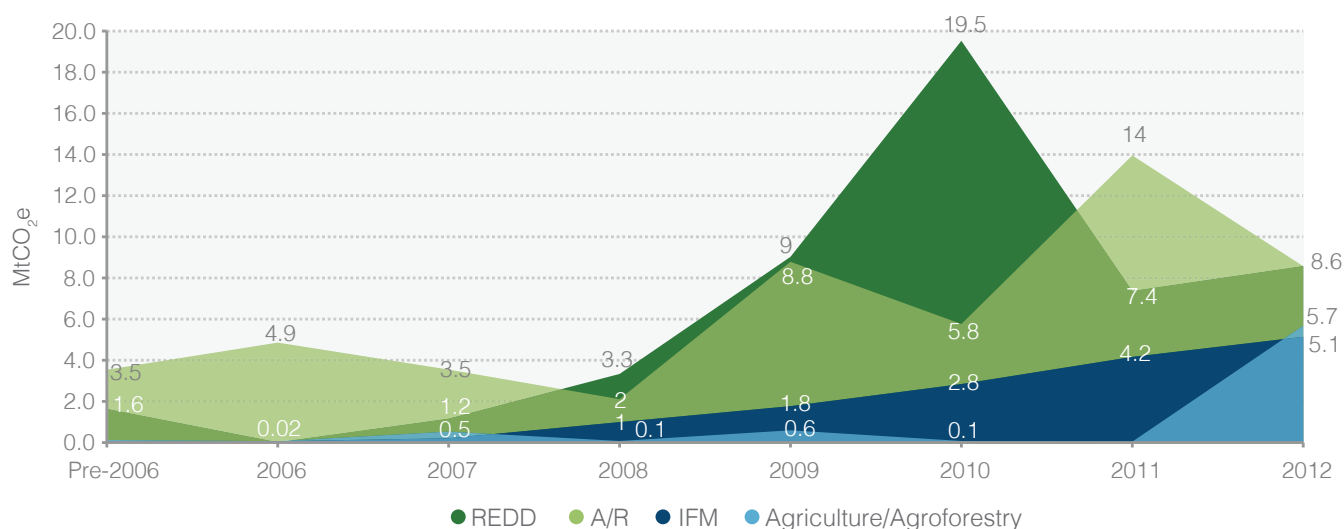
Sharing the stage with A/R projects last year, REDD projects saw volumes spike in 2010 as new methodologies became available and both international and domestic carbon policy-makers acknowledged the sector's potential. Last year, REDD offset demand grew slightly for the first time since 2010, as projects matured and the volume of issued offset supply continued to grow.

Offsets from improved forest management (IFM) activities have climbed in popularity, year-on-year, from both voluntary buyers and those positioning to sell or surrender forestry offsets into compliance carbon markets. In 2012, IFM transactions increased 23%.

These multi-year trends point to the direct link between demand for forestry offsets and policy-maker preferences, which can ultimately make or break even voluntary demand. Will California legislators allow state regulators to take the leap in becoming the first compliance market to welcome REDD offsets, even in the face of a potentially over-supplied market? Will Australian lawmakers opposed to carbon pricing successfully reverse the country's program, making Oceania's strengthening activities in 2012 a temporary blip on the screen?

Purely voluntary market dynamics were no less complex in 2012, as corporate buyers were increasingly pressured by economic forces to seek projects that confer a maximum number of social and environmental benefits – beyond carbon – and to remain attuned to shifting dynamics in the realm of public forest finance.

Figure 23: Transacted Offset Volumes by Project Type, All Markets, Historical



Notes: Based on data reported by 513 AFOLU projects and countless offset suppliers over eight years, including 180 observations in 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Table 4: Project Types by the Numbers, 2012

TYPE	Volume	Average Price	Value	Total Number of Projects*	Total Project Hectares	Potential Annual Reductions	
	MtCO ₂ e	\$/tCO ₂ e (Primary/Secondary)	\$ Millions	Count Respondents	Million ha	Low Estimate (MtCO ₂ e)	High Estimate (MtCO ₂ e)
A/R	8.6	7.3/5.7	61	49	1.2	5.1	13.7
REDD	8.6	7.8/8.7	70	45	16.8	21.9	34.6
IFM	5.1	10.4/7.3	49	27	8.2	7.1	12
Ag/Agro-forestry	5.7	6.5/0.1	0.5	8	0.3	2.5	4.1
Other/ Unknown	<1	52/n.a.	40	17	<0.1	N/A	N/A
TOTAL	28	7.8	216	146	\$26.5	36.7	64.4

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Notes: Potential annual reductions are based on supplier-reported ranges and include both early- (i.e., pipeline) and late-stage projects. *Project count only includes projects that transacted offsets in 2012 (of a total 162 projects that were reported in the survey).

3.1. A/R projects: Voluntary buyers pick up CDM market slack

Although A/R projects' market share dropped significantly compared to 2011 activity, these offsets still managed to tie with REDD activities as the most widely transacted forest offset type.

A/R projects soared to an all-time peak of 14 MtCO₂e of offsets transacted in 2011, but declined to a still-strong volume of 8.6 MtCO₂e of offsets (Table 4) in 2012. Compared to 2011, compliance buyers seeking A/R offsets through the CDM played a less significant market role in 2012 as the Kyoto Protocol neared the end of its first compliance period. The overall value of A/R credits also fell 30% to \$61 million, from \$88 million reported in the prior year.

Across regions, Asia experienced the most pronounced growth in A/R transactions, more than doubling volumes reported in 2011 through programs like China's Panda Standard for A/R projects. Asian project developers, primarily in China and India, have historically been active in CDM A/R activities, but major buyers of their offsets, like the BioCarbon Fund, intend to shift their attention to a broader landscape of land-based mitigation opportunities in coming years.

Oceania also experienced a nearly two-thirds increase in A/R transactions, in response to the launch of

Table 5: A/R Projects Unpacked

	Volume (MtCO ₂ e)	Average Price (US\$)
I. Contract Type		
Pre-Pay	5	7.6
Pay-on-Delivery	1	6.7
Spot	<1	7.6
II. Project Stages		
PDD	6	7.4
Issued	1	6.7
Verified	1	2
Validated	<1	25
Undergoing Validation	<1	8
III. Credit Vintage		
Pre-'06 => '08	<1	4
'09 => '12	1	11.4
'13 => Post-'16	6	7.9

Notes: Based on responses from 49 project developers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Australia's federal carbon price in 2012 and despite a flagging in demand for offsets under the NZ ETS and the Permanent Forest Sink Initiative (PFSI) that complements the NZ ETS.

On the flip side, Latin America experienced a dramatic decline in transaction volumes, from the 3.5 MtCO₂e transacted in 2011 to under 1 MtCO₂e in 2012. However, this may not remain so given the relative scarcity of A/R projects compared to the region's REDD activities.

The same could be said for North America, where volumes dropped to below 1 MtCO₂e from 2.2 MtCO₂e reported in 2011. Project developers reported growing interest in A/R offsets of late, which could pave the way for a rebound in transaction activity for the project type. Reforestation projects, alongside IFM and urban forestry, are eligible for California's compliance program.

Across all regions, the largest volume of A/R offsets were contracted to buyers while in the early stages of PDD development, and most of these contracts were pre-paid to account for A/R's higher up-front implementation costs. Around 4 MtCO₂e of A/R offsets contracted in 2012 will not be verified until or after the year 2016, illustrating the long-term commitment required of both developers and investors.

3.2. REDD projects: The great migration

REDD offsets continued to flow into the forest carbon market in 2012 when a total of 8.6 MtCO₂e of REDD offsets were transacted, up from 7.4 MtCO₂e in 2011. Yet, REDD offsets' overall value fell to \$70 million from \$88 million, amid a plentiful supply of REDD offsets that were priced slightly lower on average than during the previous year (\$7.8/tCO₂e vs. \$8.5/tCO₂e).

REDD projects were the dominant forestry project type in both Latin America (80%) and Africa (70%) as significantly sized REDD projects came to market from both regions in recent years. In 2012, ERA Carbon Offsets Ltd (now Offsetters) and Wildlife Works completed validation and verification of the first REDD project in the DRC, the Mai Ndombe REDD project. The previous year, Wildlife Works' Kasigau Corridor REDD project in Kenya became the first project to be issued Voluntary Carbon Units (VCUs) for REDD under VCS. In Latin America, Peru's Alto Mayo REDD Project, which secured \$3.5 million in financing from The Walt Disney Company in 2008, gained VCS and CCB validation in 2012. The vast majority of issued VCS+CCB REDD offsets transacted in 2012 were

Table 6: REDD Projects Unpacked

	Volume (MtCO ₂ e)	Average Price (US\$)
I. Contract Type		
Pre-Pay	1	7.6
Spot	1	8
Pay-on-Delivery	<1	7.2
II. Project Stages		
Validated	4.4	7.7
Issued	2	7.7
Undergoing Validation	1.5	7.7
Verified	<1	8
PDD/PIN	<1	16
III. Credit Vintage		
Pre-'06 => '08	<1	6
'09 => '12	7.9	7.5
'13 => Post-'16	<1	7.6

Notes: Based on responses from 45 project developers.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

sourced from these projects, which alone are an unprecedented source of VCS offsets.

In addition to the massive project scale inherent to REDD projects in the world's critical forest basins, some project developers are also seeking scale for small, disparate activities through other means, including VCS and Plan Vivo provisions for project grouping. Within these programs, discrete project activities that meet pre-established criteria may be added to existing project areas following project validation, as long as the additionality of the project is not impacted. Currently, a grouped project is underway spanning the Solomon Islands and Vanuatu in the Pacific Islands, using the Plan Vivo Standard.

"These are small countries, where a single project might be too small if it didn't link up with other projects in the region to aggregate units into a single grouped project or programme of activities," says Sean Weaver, Principal at Carbon Partnership, a partner in the project. "Plugging into a single project might satisfy a very big proportion of the nation's need to protect

forest, without needing to invest in a lot of top-heavy policy and REDD readiness building, particularly for countries with smaller government capacity.”

However, many market participants question the ability of voluntary offset buyers alone to absorb the influx of REDD offsets – from projects large and small. Exploring other sources of demand, California’s cap-and-trade program is seen as a beacon of hope by those who support the inclusion of REDD in compliance offset markets.

But it is not yet clear if the state program will incorporate international offsets of any kind, let alone REDD. Uncertainty emanates from long-standing opposition to REDD offsets due to concerns about international safeguards, as well as a new push to bar the use of offsets from outside of California amid fears of diluting the at-home economic benefits of implementing the nation’s first comprehensive cap-and-trade program. The state’s potential over-allocation of allowances also furthers these concerns.

A legislative effort to ban international offsets in California could be renewed in 2014 and, if so, proponents will have to make the case that safeguards proposed by the REDD Offsets Working (ROW) Group are more than adequate. Those safeguards limit accepted offsets to those from “jurisdictional REDD” programs, which means they must come from states that are reducing GHG emissions within their boundaries and have established protocols accepted by California regulators.

In October 2013, CAR approved a Mexico Forest Protocol providing guidance to account for afforestation, reforestation, revegetation, and IFM projects within jurisdictional carbon accounting. CAR is now eyeing the development of three pilot projects to test and refine the protocol which, if successful, could smooth the path for REDD offsets from Chiapas, Mexico, to feed into the California program. Both Chiapas and the Brazilian state of Acre are party to a memorandum of understanding (MoU) with California, though Acre is currently seen to be further along in the quest to become the first jurisdiction-scale program to deliver REDD compliance offsets based on its use of VCS jurisdictional nested REDD (JNR) guidance.

Given uncertainties associated with integrating project-level REDD offsets within any compliance carbon market that may emerge in coming years, large-scale project developers in particular are currently weighing options associated with both fostering

greater voluntary offset demand and migrating to jurisdiction-scale accounting. On the voluntary side, Wildlife Works launched the Code REDD campaign in 2012, in an effort to encourage corporate buyers to purchase REDD offsets. The campaign aims to bring public attention to REDD projects while encouraging project stakeholders to engage in best practices.

Other report sections on project finance (Section 5) and nesting (Section 4.5) describe project developers’ efforts to migrate to jurisdictional programs and tap into other sources of finance for REDD interventions – market-based and not.

3.3. IFM projects: Onward and upward

IFM project offset transactions continued on their steady upward trend and could be poised for significant growth again in 2013 if the anticipated demand from the California compliance carbon market comes to pass.

Table 7: IFM Projects Unpacked

	Volume (MtCO ₂ e)	Average Price (US\$)
I. Contract Type		
Pay-on-Delivery	1	16
Spot	<1	6.5
Pre-Pay	<1	9.6
II. Project Stages		
Undergoing Validation	1.6	7.6
Issued	1.3	15.6
PDD	<1	5
Verified	<1	12
PDD/PIN	<1	16
III. Credit Vintage		
Pre-'06 => '08	<1	8.3
'09 => '12	1.2	9.3
'13 => Post-'16	<1	8.4

Notes: Based on responses from 27 project developers.

Source: Forest Trends’ Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

On a global level, a record 5.1 MtCO₂e of IFM offsets were transacted in 2012, an increase from the 4.2 MtCO₂e reported in 2011 (Table 4). Forest management was also the most oft-reported activity utilized within REDD projects to avoid deforestation associated with unsustainable forest use (Section 4.4).

Though traditionally a popular pre-compliance offset project type in North America, 56% or 2.9 MtCO₂e of transacted IFM offsets were from projects located elsewhere—particularly Oceania (1.7 MtCO₂e or 30% of transacted IFM offsets). Most projects that transacted offsets in the region were certified to the VCS+CCB, New Zealand's Permanent Forest Sink Initiative (PFSI) or the NZ ETS. See also Section 7, which describes Oceania's regional development in greater depth.

Responsible for the remaining 44% of all transacted IFM volumes, North America was again the markets' major source of both supply of and demand for IFM offsets in 2012, owing to the project type's inclusion in California's cap-and-trade program.

Pre-compliance offset purchases associated with the California/WCI program dipped slightly to 1.5 MtCO₂e in 2012 from the 1.6 MtCO₂e reported in last year's survey. Overall value also declined slightly from \$13 million in 2011 to \$12 million in 2012, but the average price inched upward to \$8.2/tCO₂e from \$8.1/tCO₂e.

IFM projects are seen by analysts as eventually becoming the largest source of offsets supply for the California offset market. However, project developers acknowledge delays in compliance forestry offset development in 2012, attributed in part to the slow release of critical guidelines on the state's offset program from its primary regulator, the ARB.

The ARB, for example, did not designate offset project registries (OPRs) until December 2012 (see also Section 6). Once the ARB released its guidelines, forestry projects began to move through the pipeline, but the process once again stalled at the regulatory level as developers waited for the ARB to review offset issuance requests. The ARB has yet to issue forestry offsets, with all issued compliance offsets so far utilizing its ozone-depleting substances protocol—although forestry offset issuances are expected to happen before the end of 2013.

Landowners are also markedly skeptical about having to sign long-term contracts for forestry projects to deal with the program's 100-year permanence requirements, particularly if the ARB is able to pursue

them for failing to deliver offsets and force them to submit offsets for avoided reversals. ARB regulators have created a buffer pool to address such risks. This is complicated by the fact that the California program is only scheduled to run through 2020.

North of the border, the Pacific Carbon Trust continues to include IFM offsets within its portfolio of offerings to British Columbia's (BC) public sector entities pursuing mandatory carbon neutrality. The Trust has three validated IFM projects in its portfolio, with more than 1.8 million issued offsets, and has retired more than 2.3 MtCO₂e on behalf of BC's 128 public sector organizations to date.

3.4. Agroforestry and Sustainable Agricultural Land Management: Till we meet again

Agroforestry and agri-sector offset projects have typically provided precious few offsets to the forest carbon market. Again in 2013, the largest volume of offsets transacted in this category was sourced from projects implementing no-till/low-till, and grassland or rangeland management practices under the now-legacy CCX offset program. But a growing number of market participants and investors are eyeing the sector for its strong business case and complementary benefit of avoided deforestation.

In 2012, 5.7 MtCO₂e of offsets were transacted in this category, only 0.1 MtCO₂e of which was sourced from agroforestry projects. Given the common use of agroforestry activities to provide alternative community livelihoods within many REDD projects, however, this is likely a gross underestimate of the relevance of agroforestry to forest carbon mitigation overall. However, most of these activities, and their associated climate benefits, are accounted for under a broader REDD methodology.

Market developments could bode well for additional market activity under these project types. In December 2011, the VCS approved a methodology to quantify and credit the GHG benefits of sustainable agricultural land management (SALM) practices, developed by the World Bank's BioCarbon Fund. The methodology was initially applied to the Kenya Sustainable Agriculture Land Management Project, which supports groups of smallholder farmers to employ cover crops, agroforestry, residue management, composting, mulching, and other practices. It has thus far resulted in increased crop yields, farm productivity, and soil carbon sequestration on about 20,000 hectares (out of a target of 45,000 ha). The now-verified project is expected to issue offsets in 2013.

Partly as a result of lessons learned through this and similar projects, the BioCarbon Fund is now embarking on landscape-scale integration of agricultural and forest land-management and -accounting which creates a stronger business case for drawing private-sector collaboration into the programs of the Fund's third tranche. The Fund's coordinator Ellysar Baroudy says that carbon mitigation and accounting will remain a centerpiece of its programs, but also that the resulting sustainable commodities will play an increasingly important role in attracting and leveraging private capital.

In related developments, the Tropical Forest Alliance 2020 recently emerged as a public-private partnership with the goal of reducing tropical deforestation

associated with the sourcing of commodities such as palm oil, soy, beef, and paper and pulp. The partnership is the brainchild of the US government, led by US Agency for International Development and the Consumer Goods Forum, a network of more than 400 companies with annual sales topping \$3 trillion.

The aim of the Alliance will be to improve planning and management related to tropical forest conservation, agricultural land use, and land tenure. Members will also share best practices for tropical forest and ecosystem conservation and commodity production, including working with smallholder farmers and other producers on sustainable agricultural intensification, promoting the use of degraded lands and reforestation.

4. Forest Carbon Projects in Depth

4.1. Introduction: What lies beneath

For the sake of simplicity, forest carbon mitigation projects are often grouped into neat categories describing their obvious features – e.g., “improved forest management” or “reduced deforestation.” But beneath the surface, project developers must account for and manage a multitude of variables, such as land tenure reform, species protection, planting cycles, community stakeholder interactions, economic development policy influence, project risks, market competition, and buyer relationships.

This section explores a few of the many considerations on this list as defining features of projects that successfully transacted forestry offsets in 2012.

4.2. Project land area: Double the impact

The forest carbon markets channeled carbon finance to projects impacting 11.3 million ha in 2012 –

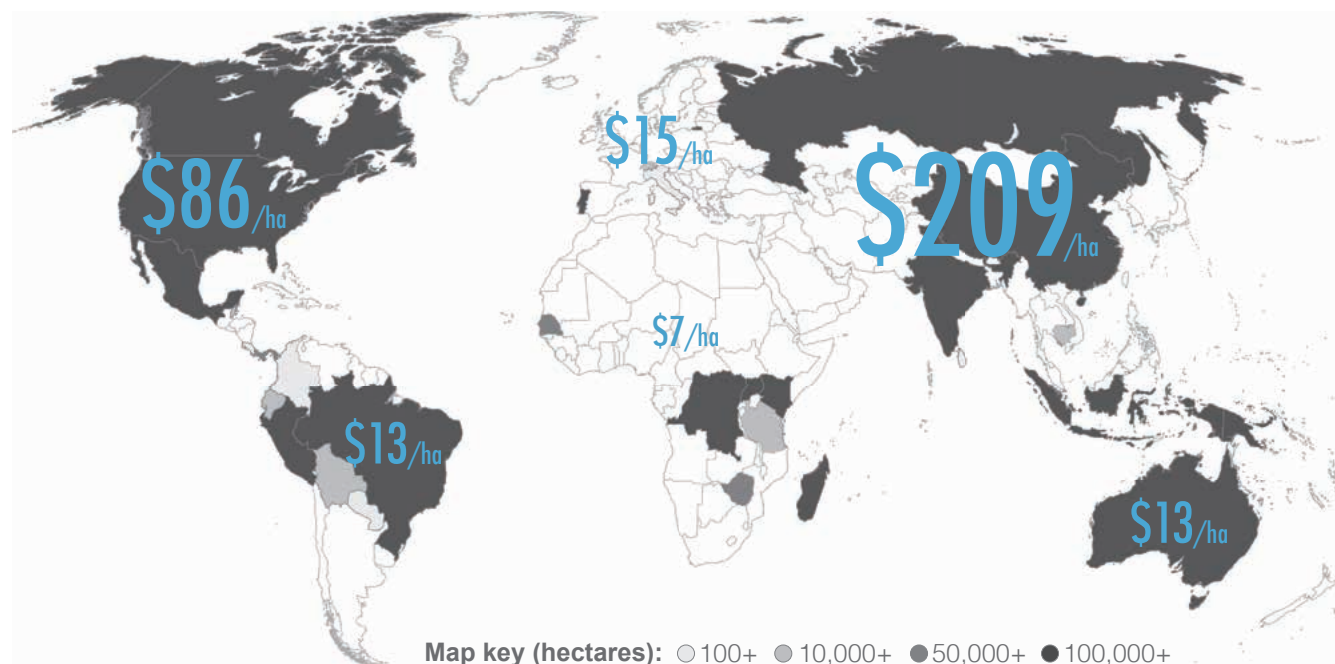
representing a 142% increase in the area of land under forest carbon management since 2011 (4.7 million ha). This represents 43% of the total 26.5 million hectares that are currently under forest carbon development according to our survey.

This land area is comparable to the entire forested area of the DRC or the total land area of Ecuador.

The majority of carbon-managed land area is associated with a growing number of REDD projects. REDD projects continue to have the largest impact on forested land, with 17 million ha under management. Spanning another 8.2 million ha, IFM projects saw a >100% increase in hectares under management – owing largely to a few significantly sized IFM projects spanning several million hectares like BC’s coastal Great Bear Rainforest Carbon Project.

A/R project developers, in contrast, tied with REDD projects to transact the market’s largest volume of

Figure 24: Hectares Under Management by Project Country Location; Average Price Per Hectare* (MtCO₂e [by country] and \$/ha)



Notes: Based on responses associated with 26.5 million hectares of carbon project area and 27 MtCO₂e transacted.

*Average price per hectare based on value associated with volume transacted from one year of emissions reductions (averaged across vintages).

Source: Forest Trends’ Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

offsets – but from a significantly smaller project area overall. Even so, the 1.2 million ha impacted by afforestation or reforestation in 2012 is double the 0.6 million ha area reported in 2011.

4.3. Project location: Compliance compels market movement in developed world

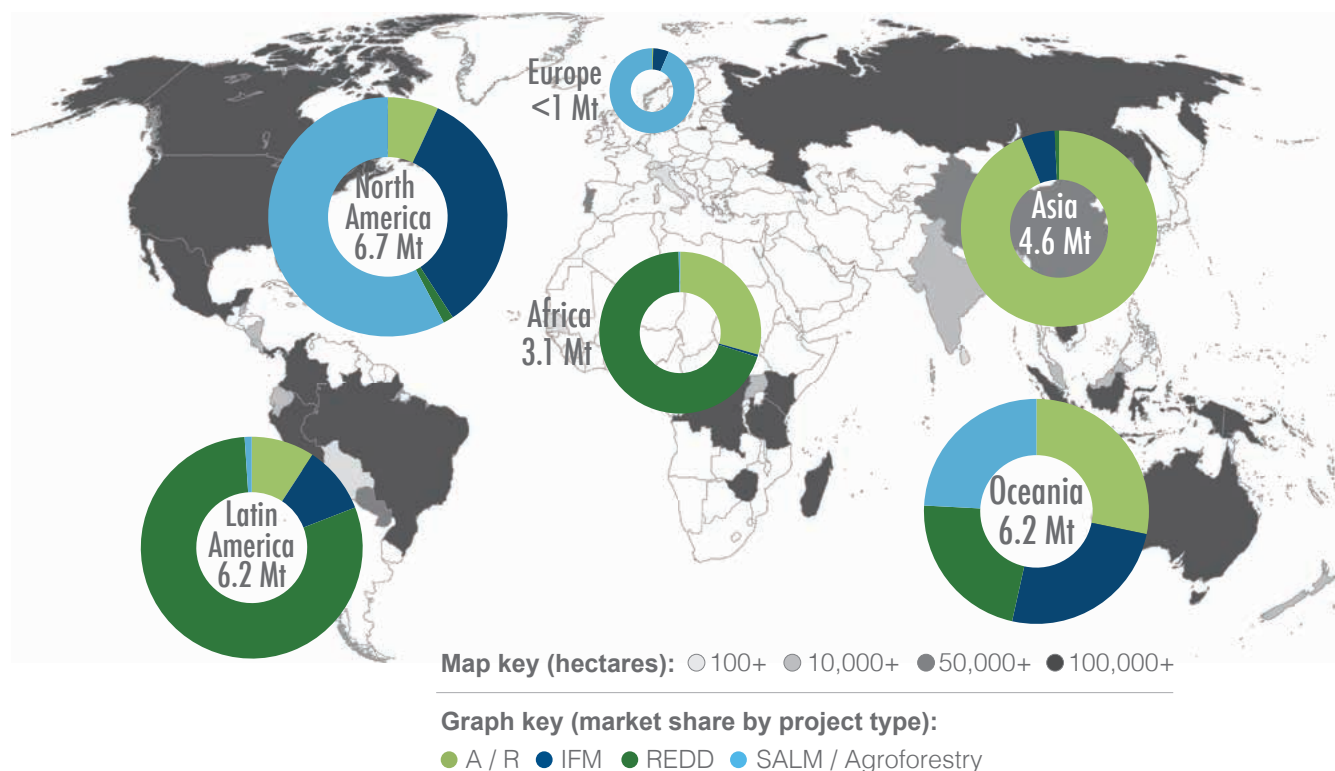
In 2012, the forest carbon markets extended project development to 58 country locations, up from 54 country locations in 2011. New projects were identified in both developing and developed regions. Due to the unique location-based considerations within each country or region, the trends introduced in this section are discussed in greater detail in this report's Regional Deep Dive (Section 8).

As seen in Figure 25, projects based in North America were responsible for generating one quarter (6.7 MtCO₂e) of all offsets transacted in 2012. Only 27% of this volume was contracted to buyers preparing for or already complying with a compliance carbon market in California, BC, or Alberta. The remainder was sold

from a mix of all AFOLU project types to countless buyer types. At least 25% of North American offsets were sold to European buyers. The drivers of offset demand were quite different in New Zealand and Australia where, despite the slow start and uncertain future of an Australian carbon price, demand was dominated by pre-compliance (82%).

Forest carbon projects in the developing world weathered competitive pressures from non-AFOLU inexpensive offset types to generate half of all offsets transacted in 2012. Performance in each region differed according to the variety of offset projects and types available to voluntary buyers. Generally buyers leaned toward support for smaller, earlier-stage projects with multiple revenue streams – which were more abundant in Latin America and less so in Africa. Asia was the only region in the Global South where project developers reported market growth in 2012, tied to European buyers' greater comfort with Asian projects – a legacy of the CDM – and a couple of large-scale (>1 MtCO₂e) transactions.

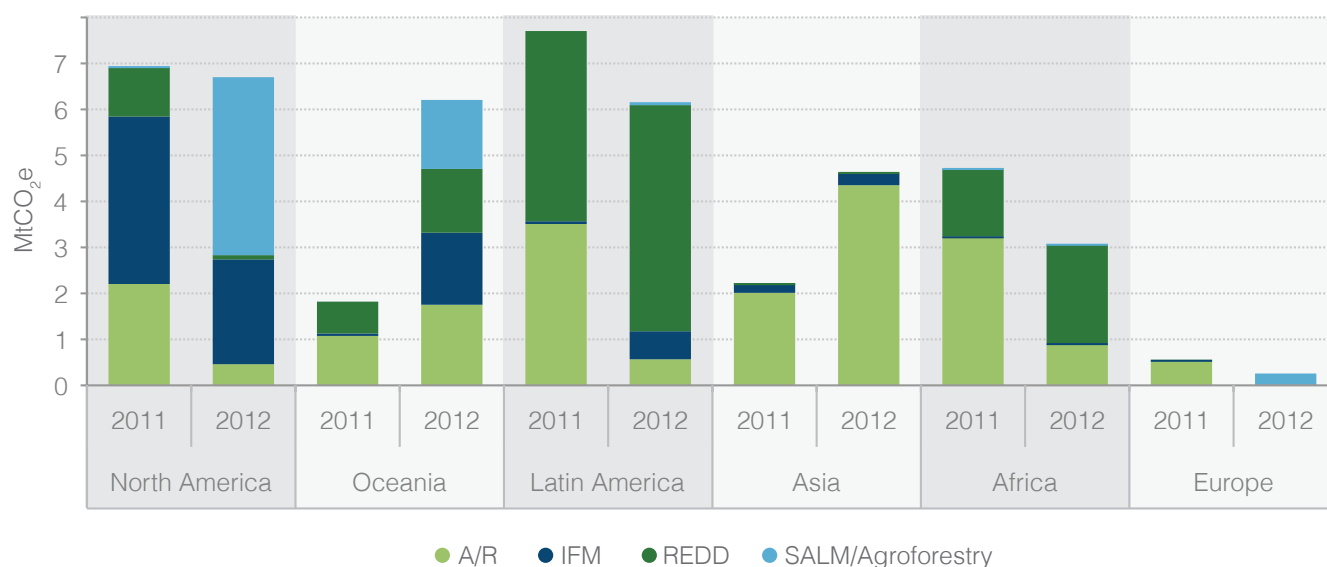
Figure 25: Hectares Impacted by Country Location; Total Regional Transaction Volume and Share by Project Type (Total Hectares by Country and % Share)



Notes: Based on responses associated with 26.5 million hectares of carbon project area and 27 MtCO₂e transacted.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Figure 26: Transacted Volume by Region and Project Type, 2011-2012



Notes: Based on responses associated with 28 MtCO₂e of forest carbon offset transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

While 3.5 million ha are under carbon management in Asia, only 0.1 million ha were associated with this sizable transaction volume. Thus the average value per hectare is greater here than in any other region (\$209/ha), calculated according to the average value of offsets sold from a single vintage year and divided by the hectares associated with the transaction. By contrast, most estimates of cash rents for Asia's other agricultural land uses are >\$100/ha, which puts this value in perspective.

Similarly in North America, where developers also reported a high average per-hectare carbon value, the average agricultural land cash rent was >\$250 in 2012, across all state-wide estimates. In Latin America, on the other hand, estimates for cash rent for soy production on recently deforested land ranges anywhere from \$15/ha to \$60/ha in Brazil – to >\$150/ha in Argentina.

Agricultural cash rents are based on many factors, including land productivity and availability, commodity prices, historical rents. Landowners are incentivized to pursue activities that are most profitable (i.e., maximize rent), thus looking at per-hectare revenue from other potential land uses provides a useful comparison to carbon payments as an alternative or complementary revenue source. Bear in mind, though, that this survey does not differentiate between the transactional value that represents profit versus that which covers capital or operating expenses.

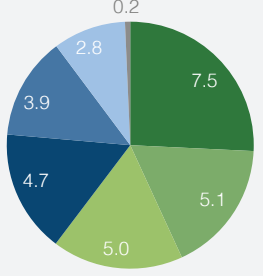
4.4. REDD activities: Sustainable land use key to avoided deforestation across regions

Per the name, REDD reduces or avoids emissions from deforestation and forest degradation – but the activities that occur beneath the canopy are what truly define REDD projects' effectiveness and longevity.

Around half of all transacted REDD offsets were sourced from projects that engage in sustainable forest management to avoid unsustainable forest harvest as a driver of deforestation. The most common REDD activity in 2012, offsets associated with projects that employed forest management within their boundary were priced slightly above others (\$7.9/tCO₂e), compared to a range of \$4.3-7.6/tCO₂e for projects reporting other approaches. The highest average price was seen from projects reporting commercial sustainable agriculture activities – priced at an average \$8.8/tCO₂e for a total 0.7 MtCO₂e, but only impacting 0.2 million ha (Table 8).

Smallholder-led sustainable agriculture and sustainably-managed energy production (e.g., charcoal production) that reduce pressure to forested areas were also priced slightly higher than other activities. Another section of this report finds that offsets transacted from project areas that are certified to FSC guidelines similarly obtained a higher average price (\$8.1/tCO₂e) than those that were strictly VCS+CCB certified (\$7.7/tCO₂e). Project developers say these

Table 8: North America: Transacted Forest Carbon Credit Types and Buyers, All Markets, 2012

REDD Activity	Associated Transaction Vol. (MtCO ₂ e)	% of all REDD Transacted (% Share)	Average Price (\$/tCO ₂ e)	Hectares Impacted (Million ha)	Hectares Impacted, by REDD Activity (million ha)
Forest management	4.6	53%	7.9	7.5	 <ul style="list-style-type: none"> Sustainable forestry Ecotourism A/R activities Sustainable energy Smallholder agriculture Other Commercial agriculture
Smallholder ag	3.6	42%	7.6	3.9	
Ecotourism	3.5	40%	7.4	5	
A/R activities	1.5	18%	7.5	5	
Sustainable energy	1.2	13%	7.6	4.7	
Commercial ag	0.7	9%	8.8	0.2	
Other	<0.1	1%	4.3	3	

Notes: Based on responses associated with 8.6 MtCO₂e of REDD offsets. *Survey respondents were allowed to report an unlimited number of project activities – thus some land area and offset volumes are aggregated under multiple categories.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

findings together exemplify a looming shift in REDD to focus on the critical interplay between sustainably sourced commodities, forest carbon mitigation, and forest protection.

While projects in every region reported a roughly similar breakdown of REDD activities, the volume of offsets produced and transacted varied highly by project location. As seen in Figure 27, sustainable forestry and agriculture at various scales was behind 64% of transacted offsets from Latin America.

Conversely, the largest proportions of offsets transacted from Asia and Oceania were from projects supporting ecotourism and smallholder agriculture. Offsets sold from Africa-based projects avoided deforestation by a variety of means – and here is where we find the largest influence from sustainable energy and A/R activities, since deforestation often occurs as a result of unsustainable harvest/clearing for charcoal production and subsistence agriculture.

4.5. REDD project “nesting”: JNR advances through progressing pilots

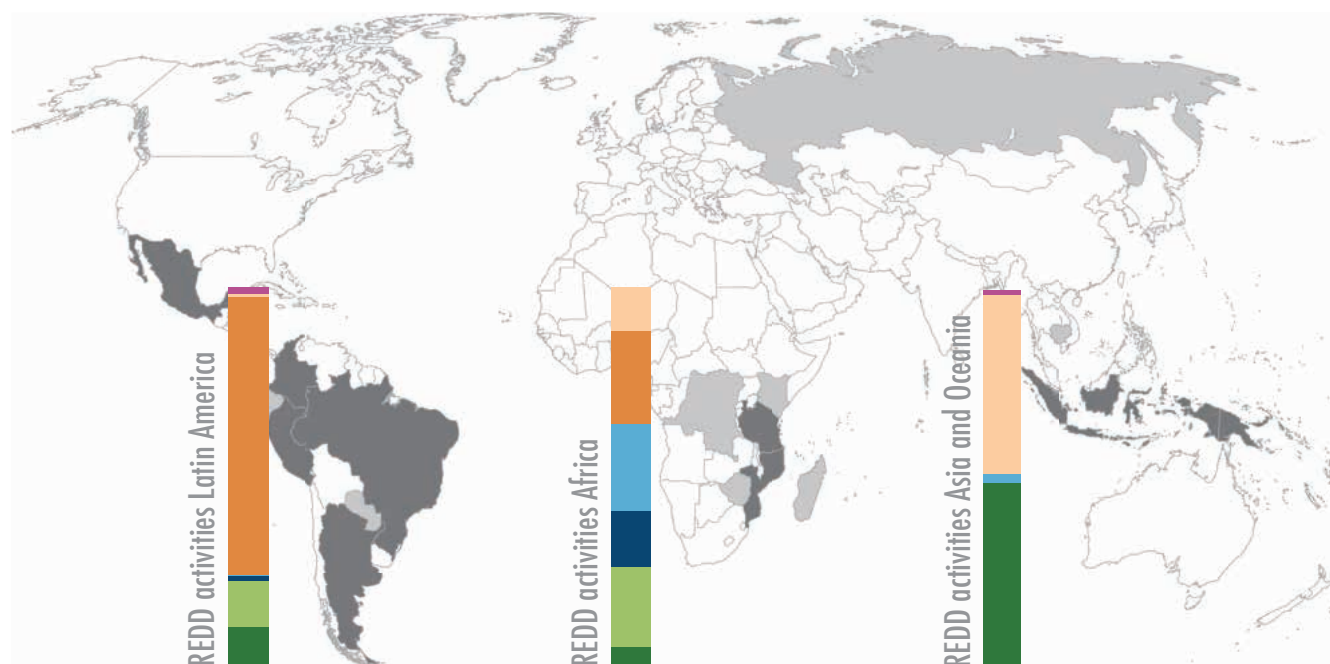
As bilateral funding for REDD begins to flow, market practitioners are recognizing that donor country governments are gravitating toward larger-scale (i.e.,

jurisdictional or regional) activities. REDD projects that are already in their later stages – as well as those under development – thus have an interest in synchronizing their project-level emissions reductions within regions' broader policy and program frameworks in order to access deeper pockets of demand.

“A lot of bilaterals and multilaterals on the donor side are uncomfortable with having a direct relationship with projects, so we need to define structures that can reward emissions reductions at different scales within that type of relationship,” says Naomi Swickard, AFOLU Manager at VCS, noting that many buyers have a desire to see projects as part of broader jurisdictional frameworks. “Nesting can create new opportunities for projects to access different types of finance from different sources of demand.”

Easier said than done, however, as little guidance has yet been made available to projects from donor or recipient governments themselves, outlining the process by which projects would make the transition. Scant clarity has been offered regarding how transactions would be facilitated, how any offsets or financial benefits would be distributed, what organization would evaluate and issue offsets (if any) – and, most importantly, where demand would come from in the case that governments are forced to

Figure 27: REDD Project Country Locations; Regional Distribution of REDD Activities



Map key: ● REDD countries ● REDD countries with projects actively engaged in nesting

Graph key (% transactions tied to these activities):

● Smallholder agriculture ● Afforestation / Reforestation ● Commercial agriculture
● Sustainable energy ● Sustainable forest management ● Ecotourism ● Other

Notes: Based on responses associated with 8.6 MtCO₂e of REDD offset transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

scale back REDD offset payments due to weakened political will or economic constraints.

As one example of how demand could shift, if California were to accept international REDD offsets into its cap-and-trade program and follow the REDD Offsets Working Group's final recommendations released in June 2013, only offsets from nested projects would be eligible to access the state's compliance market. But international REDD offsets face an uphill battle in California due to fierce opposition from certain environmental and indigenous groups, as well as resistance to the notion of spending money on offset projects outside of the state.

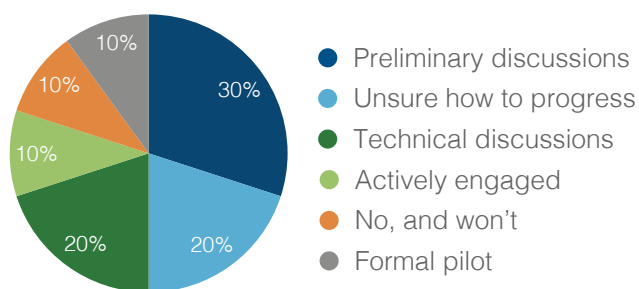
Voluntary offset standards like the VCS, ACR, CAR, and CCB Standards have been leading the charge to address technical issues as they provide guidance to emerging frameworks. For example, the CCB Alliance offers the REDD Social and Environmental Standard

– the jurisdictional equivalent of their certification program for projects' co-benefits.

ACR, too, released a nested REDD+ standard in 2012 outlining registration requirements for project-level REDD+ activities, while CAR has received board approval for its Mexico Forest Protocol in fall 2013, which guides nesting of afforestation, reforestation, re-vegetation, and IFM projects at a jurisdictional level for potential linkage with California's cap-and-trade program. Protocol revisions previously lagged following a public consultation last year that took into account new developments with Mexico's climate law and development of a Mexican carbon standard, the Norma Mexicana.

The JNR guidelines released by VCS in fall 2012 so far offer the only outline of a comprehensive framework for jurisdictional accounting and verification. Projects following other standards are technically eligible to be

Figure 28: Proportion of REDD Projects by Project Nesting Progress



Notes: Based on responses representing 45 projects, associated with 8.6 MtCO₂e of REDD offset transactions.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

nested under a VCS framework, though there is not yet explicit guidance for how such projects would go about adopting a jurisdictional baseline.

In early 2013, VCS received \$1.4 million from the Norwegian Agency for Development Cooperation to develop and pilot JNR frameworks at the national level in Costa Rica and at subnational levels in Acre (Brazil), San Martin and Madre de Dios (Peru), and Mai Ndombe province (DRC).

Brazil's Acre and Amazonas states are at the forefront of development, and Acre is expected to become the first jurisdiction-wide program to deliver REDD offsets through JNR by the end of 2013. VCS has also been working with Peru, Costa Rica, and Chile to explore the possibility of nation-wide JNR schemes. If these efforts move forward, these national governments would become the first to address forest carbon emissions by partnering with an international carbon standard.

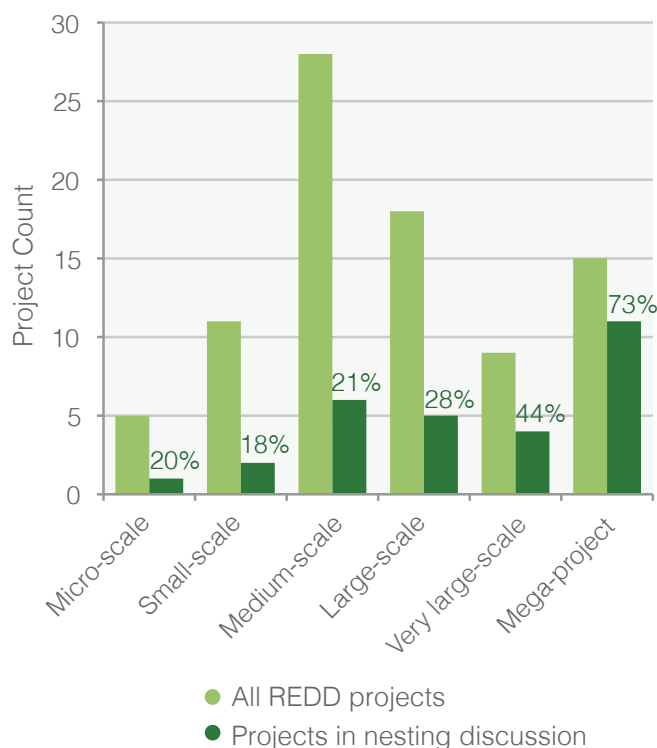
In Asia, Laos has been preparing to pilot VCS's JNR framework in two provinces at the jurisdictional level, while Vietnam is slated to conduct a provincial GHG gap assessment to see if JNR is a good fit. In the meantime, the World Wildlife Fund has been developing a system for measuring, reporting, and verifying (MRV) REDD to apply to a project that would transcend borders to include both Laos and Vietnam.

Still absent from JNR frameworks for the time being is accounting for agriculture and soil carbon activities, largely due to challenges related to the current lack of technological capacity to establish and monitor agricultural emissions baselines across a jurisdiction.

Across all REDD activities, a growing proportion of projects (44%, up from 35% in 2011) described themselves as actively engaged with the relevant government entities to develop and/or utilize regional baselines; or were seeking regulatory approval or already developing a formal jurisdiction-scale pilot. Another 29% of REDD projects were engaged in early policy or technical discussions, compared to 33% in 2011 – as several projects previously in this category shifted from passive to active engagement in nesting in 2012. A smaller proportion of project developers said they were uncertain of where to start, while only 5 reported that nesting is not relevant to their project area or that they don't intend to pursue it – compared to 20 projects in 2011.

Of course, report interviewees note that nesting is not relevant to all projects, particularly smaller-scale projects that can be sustained primarily with carbon offset revenues. Indeed, Figure 29 illustrates that projects operating at the large- to mega-scale were more likely to define themselves as “actively engaged” in nesting discussions, versus those managing smaller-scale activities.

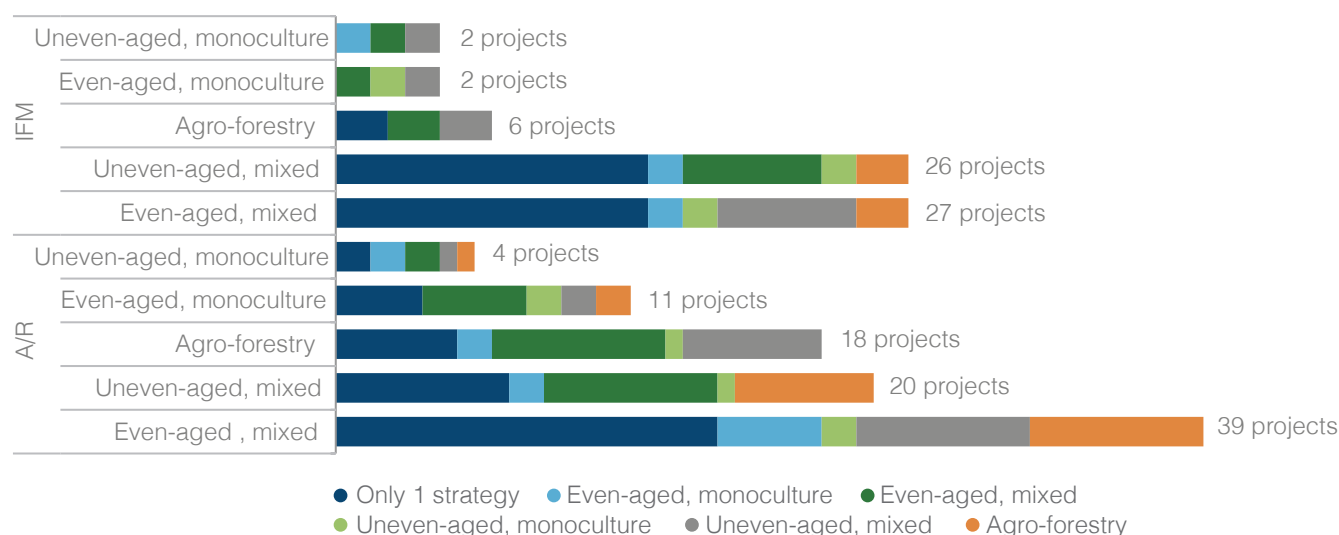
Figure 29: Count, All REDD Projects vs. Projects “Actively Engaged” in Nesting, by Project Size



Notes: Based on responses representing 45 projects.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

Figure 30: Project Count: Forest Type by Project Type, Primary and Other Planting Approaches



Notes: Based on responses representing 76 projects.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

4.6. Tree planting and forest management activities: Going native

Although one project area is often home to several different techniques for silviculture and conservation, the largest proportion of projects pursued only one management strategy in 2012 (Figure 30).

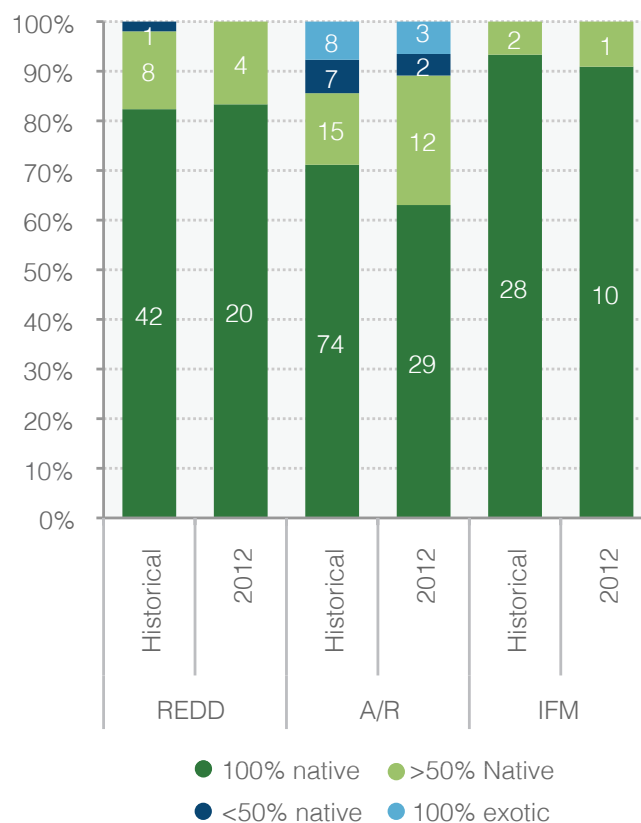
Project developers outlined their forest management strategies across five options:

- 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

Of the A/R projects that reported using only one strategy, almost half planted a mix of species in even-aged stands in 2012 (Figure 30). IFM projects that only utilized one strategy were roughly divided between those working with even-aged and uneven-aged mixed species forest areas.

One-third of projects reported utilizing agro-forestry practices within their project boundaries. These activities were accounted for under an A/R methodology (18 projects) or IFM methodology (6

Figure 31: Project Count by Species Type, Historical and 2012 Only (% Share of Reported Projects)



Notes: Based on responses representing 76 projects.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

projects) rather than as strictly agro-forestry. Hence, while the market share associated with agro-forestry (Figure 30) is significantly lower than for REDD, IFM or A/R (Section 3), it is a popular project activity within these categories that addresses the need to offer livelihoods and food security to surrounding communities.

Recognizing that wildlife and native plant species may struggle to adapt to the introduction of exotic tree species, standards and programs in the carbon markets have evolved to account for that challenge, with Plan Vivo and other frameworks limiting or outright banning the use of non-native species in tree planting. These efforts appear to be having the desired effect of steering forestry projects away from plantings of exotic species.

In 2012, tree planting activities within IFM and REDD projects primarily involved 100% native or mostly native species, with one exception in the REDD category. Only five projects were associated with 100% exotic or mostly exotic planting activities within A/R projects, which have historically seen the largest number of projects planting exotic species (Figure 31), as well as plantation forestry (Figure 30).

4.7. Land tenure and communities: Forest carbon reaches age of consent

Resolving project-area issues around land tenure – the legal structure that determines how lands can be used by individuals and communities – may not be a new challenge, but remains an obstacle for project developers working across regions. A broader global examination of land tenure challenges is fast emerging, while throughout 2012, several developers made progress toward resolving land tenure issues for specific projects.

More than 50% of all forestry projects tracked in 2012 were developed on privately owned land (Table 9). Out of 38 A/R projects, for example, 22 were developed on privately owned land. Pieter van Midwoud of The Gold Standard – which last year acquired the A/R-facing CarbonFix Standard – explains that prior to A/R project implementation, it's important that land ownership is clear. Otherwise, tenure becomes a significant barrier to project certification. Ownership is more easily determined on private land and forestry projects reflect this.

Meanwhile, government or private land use concessions were the least common land tenure arrange-

ments in terms of the overall project count, but generated nearly \$53 million from the transaction of 7.3 MtCO₂e of offsets.

These types of concession arrangements create, in essence, a partnership between project developers or proponents and the government. In the DRC, the Mai Ndombe project – the Congo Basin's first REDD project – is assembled from two former logging concessions that were suspended in 2008 following a governmental review of the DRC National Forest Code. In 2011, the Ministry of Environment, Conservation of Nature and Tourism and ERA Carbon Offsets Ltd. (now Offsetters) signed a Carbon Rights Agreement – a first for the DRC – followed by the assignment of two Forest Conservation Concession contracts to ERA, which reported the project's first verified offsets in 2012.

Another project utilizing forestry concessions, Infinite-Earth's Rimba Raya project, obtained verification in mid-2013, following government approval delays. Developers say that the time-cost of these delays cannot be overestimated in the process of planning a project that requires sign-off. Section 5 evaluates project timelines in greater depth.

Projects with customary or collective land tenure arrangements generated the highest overall market value at nearly \$70 million globally. The largest proportion of land area reportedly also falls under collective or customary ownership, where 9.2 MtCO₂e were transacted from 13.7 million ha under carbon management.

In Africa, illegal logging is a primary source of communities' livelihoods and biomass energy in regions too remote for basic infrastructure to penetrate, explains Marie-Claude Bourgie, Climate Change and Finance Expert for Quebec City-based ÉcoRessources: "When you have a lot of small villages that live off the forest, it is really difficult and expensive to mobilize so many people to stop clearing the forests."

This experience illustrates the importance of community involvement in project design and implementation – which is why 83% of primary market value went to projects that reported some level of community interaction.

A total of 32 projects reported managing a formal process to obtain Free, Prior and Informed Consent (FPIC) from relevant communities – 19 of which transacted 9.3 MtCO₂e in 2012. FPIC guidelines

acknowledge communities' rights to grant or withhold consent to forestry and other development projects sited on collective or customary lands.

The concept of FPIC was first outlined within the UN Declaration on the Rights of Indigenous Peoples, adopted in 2007 and has since been applied to major infrastructure development projects worldwide. Like other development activities, carbon projects occupy a growing swath of indigenous land area and are feeling pressure from project stakeholders to obtain community consent prior to project start.

The UN REDD Programme launched its working final version of FPIC guidelines after two years of consultation, analysis, pilot testing, consensus building, and refinement. The guidelines describe a policy and operational framework for seeking and obtaining FPIC in the context of REDD, recognizing the critical role of indigenous peoples and other forest-dependent communities to the long-term sustainability and effectiveness of REDD and thus prioritizing stakeholder engagement from project inception.

A new version of FSC's Principle and Criteria for Forest Stewardship was approved in March 2012, broadening the scope of community rights to FPIC and acknowledging the need to obtain community consent prior to the implementation of activities.

"For us, this is maybe the most important starting point for every project," van Midwoud says on behalf of the FSC-linked Gold Standard. Surveyed projects implemented across several certification programs reported that community consent obtained via formal FPIC procedures was most prevalent in Latin America (14 projects), followed by Asia (9 projects).

Implementation of FPIC in forestry projects is dependent on national laws, rules, and regulations. Tanzania, for example, was a socialist country until the mid-1980's, when the country became a multi-party democracy. But due in part to its socialist legacy, village and community rights are either well or at least partly understood.

The country's forestry legislation grants communities and villages full user rights to forest resources. Carbon Tanzania has partnered with Ujamaa Community Resource Trust to create a community forest reserve under participatory forest management by the Hadzabe, a hunter-gatherer group.

The project area, Mongo Wa Mono, has been legally designated as protected area for natural resource use by the Hadzabe, who use a form of land-use planning that preceded Carbon Tanzania's involvement. The project is reducing the current rate of deforestation by supporting their legal rights and facilitating carbon finance for the Hadzabe to implement conservation measures.

FPIC implementation presents a unique set of challenges, including creating a comprehensive list of stakeholders who should be consulted and ensuring that mechanisms are in place to guarantee that those stakeholders are reached. Finding auditors who speak the local dialect and understand the legal framework ensures that the project is asking the right questions. Developers may partner with community rights organizations to guarantee that the FPIC principles underpin contract designs.

In Latin America, a historic transaction occurred in 2013, when Brazil's Paiter Suruí community sold 120,000 tonnes of carbon offsets from its REDD project to Brazilian cosmetics giant Natura Cosméticos. The

Table 9: Project Count by Tenure Arrangement, 2012

	Privately owned	Collective or customary	Government-owned and/or -managed	Land-use concession
A/R	22	8	4	5
REDD	13	7	5	5
IFM	7	4	5	2

Notes: Based on responses representing 86 projects.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Figure 32: Project Count by Tenure Arrangement, 2012



Notes: Based on responses representing 81 projects. Respondents were able to select multiple categories of engagement.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

carbon revenues generated from the project will help finance a 50-year life plan developed by the Suroi people to address various challenges that were being faced by the community, including a declining population, territorial issues, deforestation, and a devaluing of the indigenous culture.

While the supporters and partners of the project provided tools to help develop the strategy, the Suroi people themselves remain ultimately responsible for the land, explains says Chief Almir Narayamoga Suroi, who facilitated the community's FPIC process and translation of related documents to their native language.

But the Suroi project notwithstanding, indigenous and community projects remain a challenge in Latin America, where two out of every three projects continue to be sited on privately owned land. Even UN projects have been put on hold in Peru, Panama, and Honduras due to land tenure disputes.

BOX 2: FPIC Defined

Free: Should be free of coercion, corruption, interference, and external pressure;

Prior: Mutually agreed period of time in advance of an activity or process when consent should be sought;

Informed: The type of information that should be provided prior to seeking consent and also as part of the ongoing consent process;

Consent: Customary decisions made by indigenous peoples and other forest-dependent communities reached through their socio-cultural decision-making process."

5. Project Finance

Because the forest carbon markets behave more like differentiated product markets than like commodity markets, their price is often determined by dozens of factors – some of which are apparent in our data, and others which are known only to the buyer and seller.

This section explores what information is available about transactions/contracts themselves, as well as developers' use of non-offset-based revenue sources, the time required to transact offsets according to one's approach to market, and the resources project developers say they *need*, compared to what they *got* in 2012.

This discussion comes as market value fell for all project types in 2012, with the exception of small-scale agroforestry activities (Figure 34). Rarely in this report series has pricing for an offset category (in this case, "forestry") seen the level of consistency in pricing across project types (i.e., REDD, IFM, etc.) as in 2012. What might be termed a "regression to the mean," IFM transactions propelled by pre-compliance were

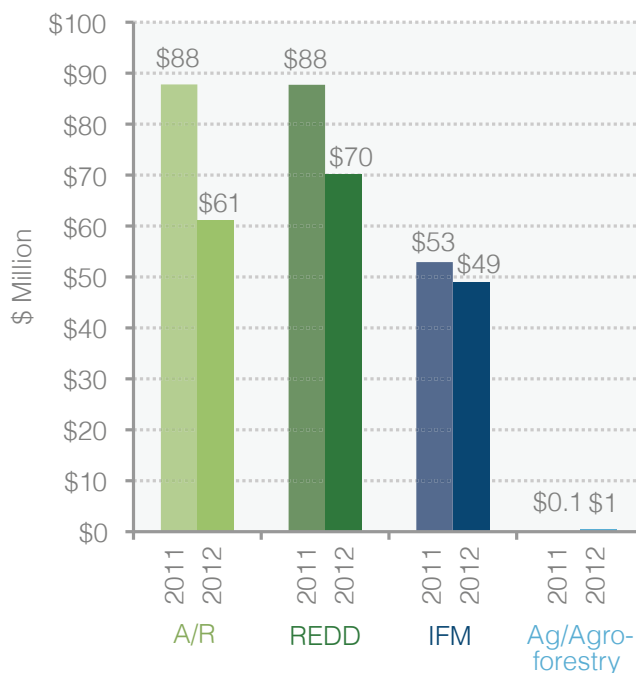
Figure 33: Transacted Volume and Average Price by Type



Notes: Based on 28 MtCO₂e transacted.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

Figure 34: Value by Project Type, 2011 & 2012



Notes: Based on 28 MtCO₂e transacted.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

the single exception to average prices that varied by \$1.3/tCO₂e from low (agroforestry at \$6.5/tCO₂e) to high end (REDD at \$7.8/tCO₂e). This consistency is also evidenced in Figure 33.

Pricing may be increasingly consistent, but nonetheless represents a compromise between buyer and seller – the results of which saw prices fall for all but one project type last year (A/R). Against this backdrop, how does last year's market performance compare to what developers need or hope to happen in the carbon marketplace in order to sustain existing projects – projects that are already delivering offsets or that are in their early stages?

5.1. Project needs: Pricing the last resort

The global carbon price crash has brought new project development and contracts to a screeching halt in most sectors engaged in the CDM. Likewise, inexpensive offsets from renewable energy projects

Table 10: Comparison of Actual and Desired Price and Volume, and Estimated Annual Reductions

Prices and volumes projects contracted in 2011, versus what developers desire or need:						
2012 Average price (actual)	A / R		REDD		IFM	
	\$7.3		\$7.8		\$10.4	
Desired price*	\$10		\$10		\$15	
2012 Value (actual)	\$61 M		\$70 M		\$49 M	
2012 Value with desired price*	\$86 M		\$86 M		\$77 M	
Project start date 2011 respondents (median)	2007		2010		2010	
Estimated annual reductions: Volumes contracted versus volumes developers need to sell:						
Supplier-estimated annual reductions	Low	High	Low	High	Low	High
	5 Mt	14 Mt	22 Mt	35 Mt	7 Mt	12 Mt
2012 Volume contracted (actual)	8.6 Mt		8.6 Mt		5.1 Mt	
Years' worth of expected annual issuance sold in 2012	1.7	0.6	0.4	0.3	0.7	0.4
Years' worth of expected annual issuance developers need to sell*	11.5 years		5 years		5 years	
Values if developers contracted credits at the volumes and prices needed or desired to support projects:						
Total value required to support existing projects (supplier estimated, no timeframe)*	Low	High	Low	High	Low	High
	\$219	\$743	\$742	\$1,307	\$165	\$216

Notes: Based on responses from 111 active project developers.*Because a large number of respondents reported on project needs but did not transact offsets in 2012, we analyzed this data using the median desired price and years reported rather than volume-weighted responses. These median variables were then applied to all respondents' data according to project type, for rows marked with "*".

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

continued to enter the voluntary offset market as CDM project developers looked to offload some of their unsold volumes – though not to the flooding effect that some market players expected.

On the contrary, and in many ways, the availability of the low-priced offsets did not collapse the carbon price across project types, but did enable some retailers to include both inexpensive offsets (where they often recovered margins) and pricier types like forestry in the same portfolio in a way that satisfied client price requirements and still paid above-average prices to forestry offset developers.

Developers nonetheless began to feel the heat of falling prices in 2012-2013, expressing concerns that the lesser-felt impact of the CDM market crash among forest carbon projects may simply be a delayed reaction. At the same time, supply continues to grow, and the market may eventually face the risk of stranded assets and disenchanted stakeholders – communities, project investors, and developers included.

Thus, some have made the case for REDD offset "bailouts", or government- or development bank-managed funds that employ auction or bidding processes to purchase REDD offsets that meet predetermined criteria. Others have suggested that jurisdictional governments act as a "buyer of last resort," allowing REDD projects to develop privately and sell to private buyers – but with the option to instead sell to the government at a predetermined price if they're unsuccessful in the marketplace.

In the case that any of these policies are considered, policy-makers and forest carbon market participants will no doubt engage in a dialogue regarding optimal pricing. To understand what developers regard as an acceptable price – as well as to understand the full value of existing project requirements – we asked:

- What developers think the price of carbon should be to support their existing and future activities;
- How many years' worth of anticipated offsets they need to sell to cover upfront capital and ongoing project costs;

- And their projects' expected range of annual reductions, in tCO₂e.

Our survey findings are presented in Table 10, which reveals that across all 2012 survey responses, developers reportedly require between \$1.1 and \$2.3 billion to support existing and future activities from surveyed projects. This is roughly half the value of developers' 2011 estimates, due in part to market exit by a few large REDD projects and also skepticism regarding the direction of forest carbon offset prices. Given that this range represents developers' back-of-the-envelope survey estimates, and each according to their projects' unique timelines, this account is best considered a starting point for understanding and addressing shortfalls in demand.

The first tier of data in Table 10 shows that developers need or desire to contract offsets at a median price of \$10/tCO₂e across all project types – \$2/tCO₂e more than the reported actual market-wide average in 2012 (\$7.9/tCO₂e), and \$2/tCO₂e less than 2011 estimates.

This varies by project type, where IFM project developers reported requiring, and in 2012 receiving, the highest price per tonne (\$15/tCO₂e desired, \$10.4/tCO₂e actual). This estimate is no doubt influenced by the higher per-tonne prices expected of compliance buyers in California. A/R and REDD project developers, on the other hand, said their ideal price is \$10/tCO₂e – which is between \$2.2 and \$2.7/tCO₂e less than they reported receiving in 2012.

Had projects contracted offsets at these desired prices, 2012's market value would be 29% higher – at \$280 million versus \$216 million.

Moving down a tier, developers reported that projects captured in this report survey are expected to generate an estimated 37-73 MtCO₂e in emissions reductions annually, across all project types. Within this category, REDD projects are responsible for approximately three times the CO₂e reductions of other project types, speaking to REDD's potential scale for climate and other environmental impacts under a scenario of adequate financing.

Based on these estimates, however, REDD projects contracted only 25-29% of their potential reported reductions in 2012. A/R projects, on the other hand, contracted almost two years' worth of possible reductions based on low estimates, or not quite one year's worth according to a high estimate. This is measured across all surveyed projects, of course, where individual project performance varies.

A/R project developers also reported needing to sell more years' worth of expected annual issuance than any other project type, by 6.5 years. Based on both this and their desired price, A/R projects in this survey are estimated to require between \$0.2 and \$0.7 billion to support existing activities, or \$19-65 million/annual issuance over 11.5 years.

This is attributed to the projects' high upfront costs that include not only measurement and planting but also project monitoring and additional plantings in the case of natural or human-induced destruction to any project area over its lifetime.

While IFM project developers' desired price is \$5/tCO₂e more than that of A/R project developers, IFM projects reportedly require a fraction of the sales volume (5 years median). This is most likely due to the nature of IFM project activities which include optimizing timber harvest for carbon sequestration – deriving complementary revenue from timber or other wood product sales.

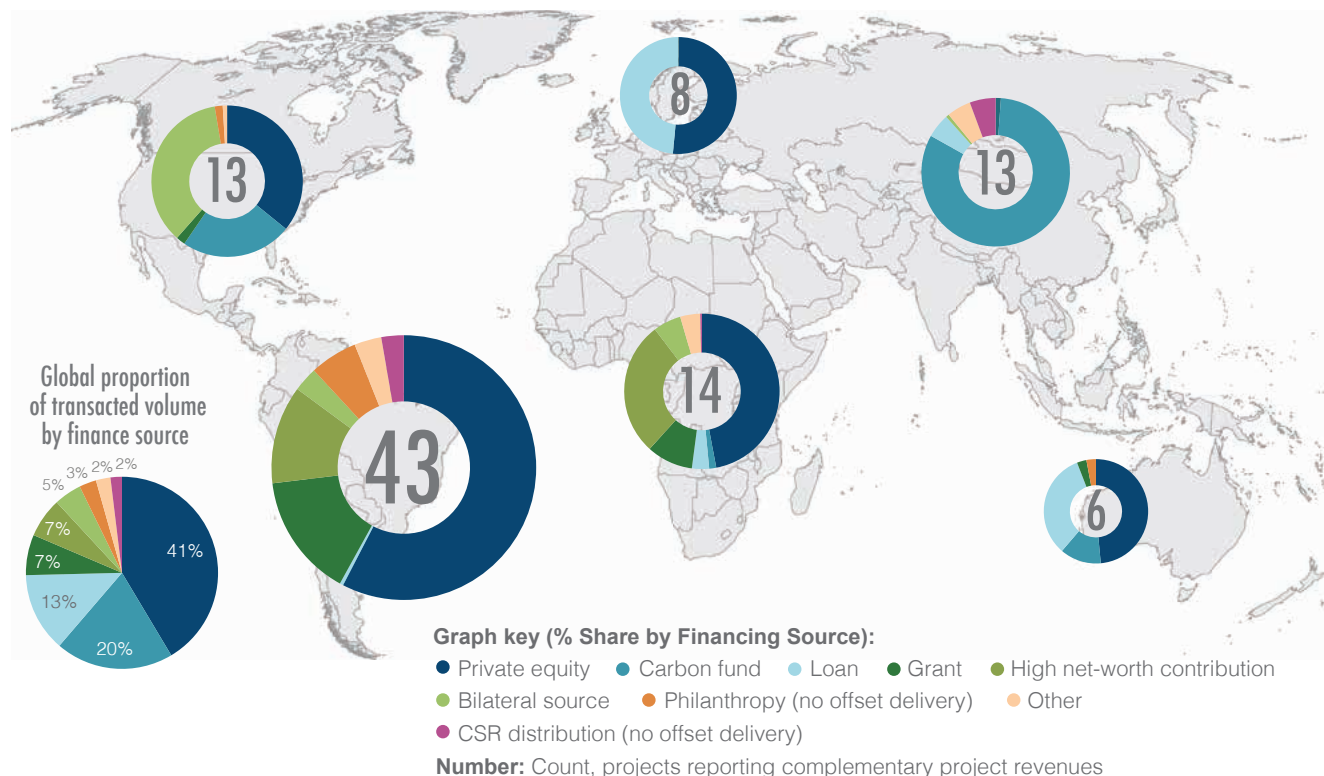
As REDD projects begin to incorporate similar activities to avoid deforestation drivers within their project areas (Section 4) and thus integrate alternative revenue streams – and as ongoing project management is not as intensive as for A/R projects, for example – their overall estimated needs for carbon revenues has similarly fallen from between \$1.1 and \$2.1 billion in 2011, to between \$0.7 and \$1.3 billion according to developer estimates.

5.2. Sources of project finance: The equity foundation

Section 5.4 demonstrates that developers received immediate payment for two-thirds of offsets contracted in 2012 – up from less than half in 2011. Yet we also know from the previous section that existing market activity alone may not sustain current activities for long. This begs the questions, *what source of financing are supporting over half of all market volumes before they generate carbon revenues? What other revenue streams can projects harvest to account for shortfalls in carbon finance in coming years?*

We put this question to developers to determine how projects are financed beyond the direct sale of carbon offsets. It's important to bear in mind that “complementary” revenue streams and alternative investment sources do not imply a lack of project additionality. In the case of the most popular forms of project finance, private equity investments were made

Figure 35: Proportion of Transacted Volume and Count of Projects Utilizing Other Finance Sources, by Project Region and Globally



Notes: Based on responses from 111 active project developers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

with the expectation of offset delivery or a return on investment from revenues generated partly from offset sales. In other cases, carbon finance alone may not fully cover project costs, but does tip the balance in favor of carbon management.

Table 11 shows that the largest number of projects and transacted offsets represented in this question were supported by private equity, either from investors seeking a share of offset revenues or the developers themselves fronting project costs with company or personal capital. The majority of project developers tapping into private equity were also private-sector entities.

Private loans that might require financial repayment or offset delivery were next in line by project count, but a larger market value was associated with projects that received financial support from carbon-facing private funds like the Danone Livelihoods Fund. The year 2013 saw the close of one such fund – the Althelia Climate Fund which raised \$80 million to channel resources to jurisdiction-scale activities, some of which will address the agricultural drivers of deforestation.

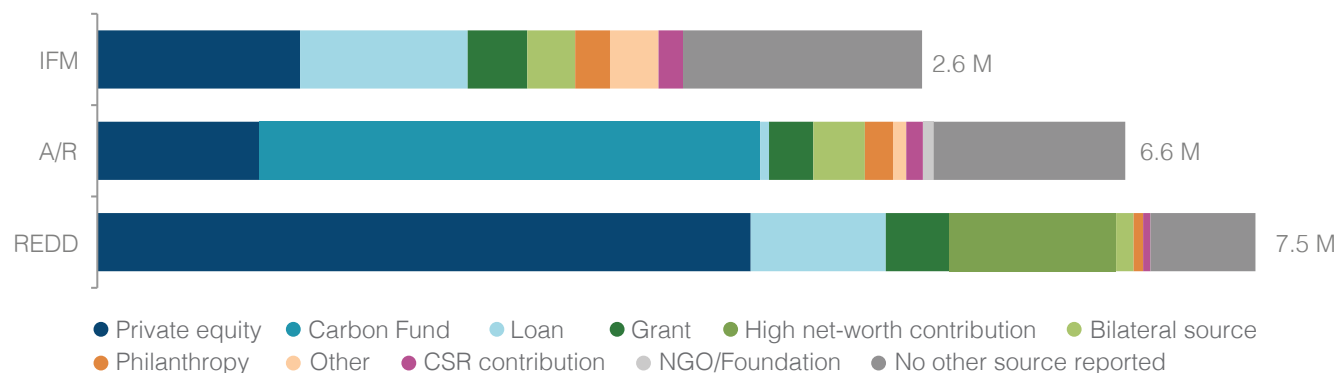
Table 11: Other Project Finance, by the Numbers

Source*	Associated Transactions (MtCO ₂ e)	Value (\$ M)	Project Count**
Private equity	10.9	89	38
Carbon fund	5.2	35	7
Loan	3.5	26	9
Grant	1.8	14	16
High net-worth individual(s)	1.8	13	8
CSR (no offset delivery)	1.3	13	15
Bilateral source	1.2	10	6
Other	0.6	5	5

Notes: *Survey respondents were allowed to select multiple project financing sources. **"Project count" only pertains to projects that transacted offsets in 2012.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

Figure 36: Proportion of Transacted Volume, Projects Utilizing Other Finance Sources: By Project Type
(MtCO₂e ["M"] = total transacted volume associated with other financing sources, by project type)



Notes: Based on responses from 111 active project developers.

.Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

For the first time this year, we asked respondents if they obtained project support from public sector or NGO-managed grants. We found that in 2012, grant-supported projects transacted the second-largest volumes and value in the marketplace. Grant support came from a variety of levels within the public sector, as well as private foundations. While a significant source of project finance, some market participants express concern that reliance on grant funding creates market distortions that mask projects' true price requirements and inhibit market development.

A number of projects received financing from bilateral donors, over half of which were private project developers. This represents a shift from 2011, when public donors primarily relied on long-standing relationships with conservation NGOs to channel funding to REDD pilot projects.

This year, no project finance was reported from multilateral donors, while only four projects obtained additional revenues from the sale of sustainable commodities. This is likely an underestimate given the growing transaction volumes associated with IFM projects and REDD projects with agricultural or IFM components.

An increasingly common component of REDD projects, the promotion of alternative livelihoods aims to compensate communities for the opportunity cost of abandoning unsustainable forest use and is critical to avoiding their reversion to forest destruction. While forward-thinking initiatives like the Roundtable and REDD Consortium and Tropical Forest Alliance

are exploring the reciprocal relationship between commodities and REDD, little information is currently available describing the scale, land area impacts, or premiums associated with sustainable commodity certification by way of vehicles like FSC, Fairtrade, or the Programme for the Endorsement of Forest Certification.

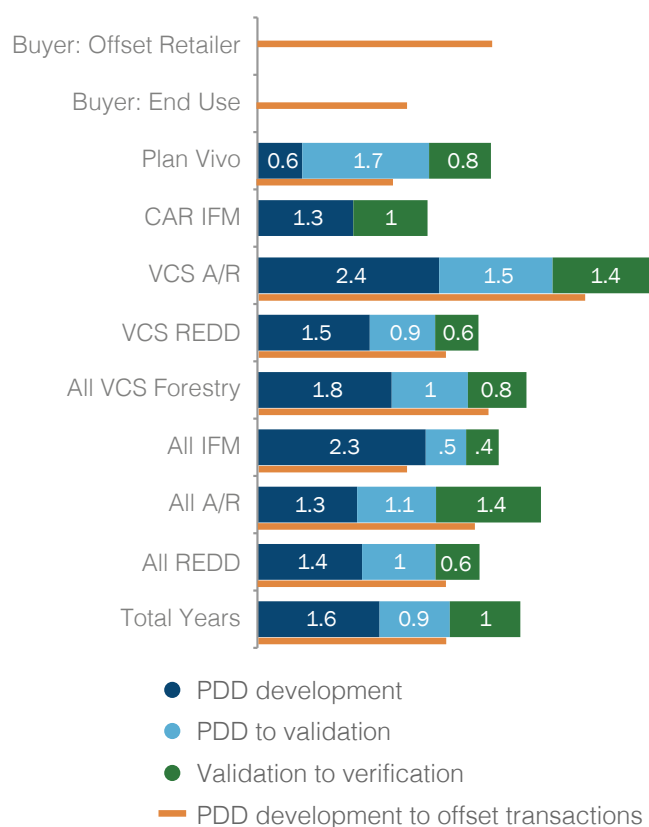
5.3. Time to market: Thinking in years

Project developers bemoan the time required to navigate the project cycle – and any changes to third-party standard requirements that occur along the way – as one of the most significant and unpredictable contributors to project cost. This year's survey captures high-level estimates of the time that was required of projects to surpass major project milestones, aiming to inform expectations about the typical time required to participate in a market where such information is often closely held.

We found that across all project types and standards, the average time required from PDD development to offset verification was 3.5 years. Project developers report that, on average, their first contract for offset delivery was signed around 2½ years into this process.

As seen in Figure 37, these estimates vary according to a multitude of project variables. For example, A/R project developers reported that longest timelines of any project type, end-to-end, given the greater amount of time required for projects to "ramp up" sequestration. On average, this added an additional year's time between validation and verification, compared to REDD projects (7 months) or IFM projects (5 months).

Figure 37: Supplier-Estimated Average Years to Achieve Project Milestones, by Project Type, Standard, and Buyer Type, 2012 (Years)



Notes: Based on responses from 89 projects that achieved relevant milestones.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

VCS A/R projects required the greatest up-front time commitment reported of any project type and did not see their first transaction until over four years into the >5-year average timeline. These projects also reported some of the earliest start dates among survey respondents and so did not have the benefit of market efficiencies that have been achieved in recent years. Likewise, newer A/R projects reported shorter timelines.

Projects based in developing countries saw a longer time lag before an initial transaction than did projects in North America and Oceania (3.1 years versus 2.4 years, on average), despite the fact that project timelines otherwise did not vary significantly. Suppliers say this may be related to developed country projects' greater degree of access to end buyers than those in remote regions – and that the emergence of South-

South offset transactions and emerging markets may help to close this gap.

One of the widest gaps among market actors is the difference in time to market for projects that sold directly to end users (2 years) versus those that sold to retailers (3 years). Retailers explain this as a remnant indicator of their early and ongoing support to some of the market's first projects – but also as project developers' tendency to first try their hand at direct marketing and to turn to retailers some time later if they're unable to identify buyers themselves.

5.4. Contract type: Two-thirds of payments occurred up-front in 2012

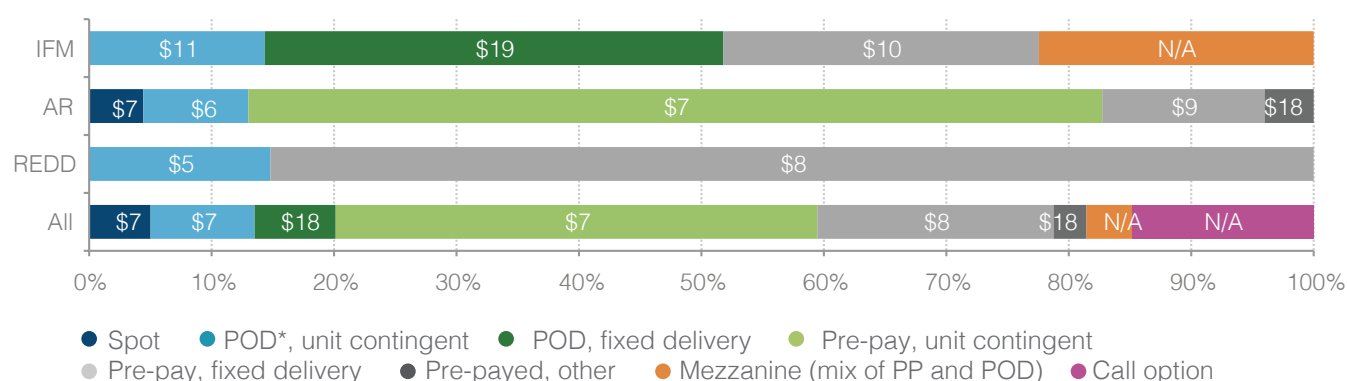
Contractual agreements between buyers and sellers create the structure by which offsets change hands – they're the "how" of the transactions. Contract terms can directly influence offset price, and different project types often lend themselves to different terms. We asked project developers to specify the contract structure by which they transacted offsets in 2012 (Figure 38).

Developers indicated that a reported 6.7 MtCO₂e of forest carbon offsets transacted in 2012 received immediate payment (via spot transactions or pre-payment for future offset delivery) worth \$53 million. Another \$40 million was associated with transactions for which developers will be paid upon delivery or on a call option basis – while remaining market value is associated with unknown contract types.

Since the price at which offsets are sold depends on many interacting factors, it is difficult to extrapolate the particular influence that contract terms have on price. However, in contrast to 2011, when a large volume of forestry offsets were issued for the first time and buyers paid the highest prices (an average of \$12/tCO₂e) through spot transactions, 2012 saw a drop in spot transaction prices (to an average of \$7/tCO₂e) as buyers sought out offsets from new, unique projects that were at earlier stages of project development.

Sometimes, the nature of a project makes a particular contract type more amenable. For example, A/R and REDD projects tend to need upfront financing for planting or technical costs, so most volumes transacted from these project types were associated with pre-payments.

Figure 38 shows that most IFM tonnes were transacted to buyers that will pay upon offset delivery (POD), via

Figure 38: Contract Type Market Share and Average Price by Project Type (Share and \$/tCO₂e)

Notes: Based on responses tied to 11 MtCO₂e of transacted forest carbon offsets. *POD stands for “payment on delivery”.

. Source: Forest Trends’ Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

contracts that allowed payment and delivery of credits to take place at a later date. Typically, this project type incurs fewer up-front costs and buyers sought to minimize risks associated with compliance carbon offset markets that were not yet in full swing.

Still, IFM offset buyers were willing to pay almost \$9/tCO₂e more when the POD contract specified a guaranteed offset delivery, rather than “unit contingent” delivery that hinges on the quantity of offsets projects are able to produce – mitigating uncertainty as to how many offsets the buyer will ultimately receive.

In the case of the 2.6 MtCO₂e contracted for fixed or “firm” delivery, contracts often define what happens in the case of project under-delivery. Though we did not survey project developers regarding delivery guarantees in 2012, typical options include: replacing the offsets with others from the marketplace; refunding the buyer; meeting delivery with offsets from future issuances; or using a third-party insurance mechanism. These guarantees mitigate risk for the buyer, in most cases locking in a specified volume for delivery – whether the tonnes are sourced from the project under contract or not.

6. Offset Buyers

Carbon offset buyers are incredibly diverse in their motivations and preferences, with each buyer bringing to the market a unique set of reasons for offsetting and different criteria that guide their purchases.

This report engages in an in-depth examination of buyer attitudes toward forest carbon offset purchasing. It dives into the types of buyers interested in forestry offsets, their motivations, and their locales, based on information provided by offset suppliers and through conversations with private-sector offset purchasers.

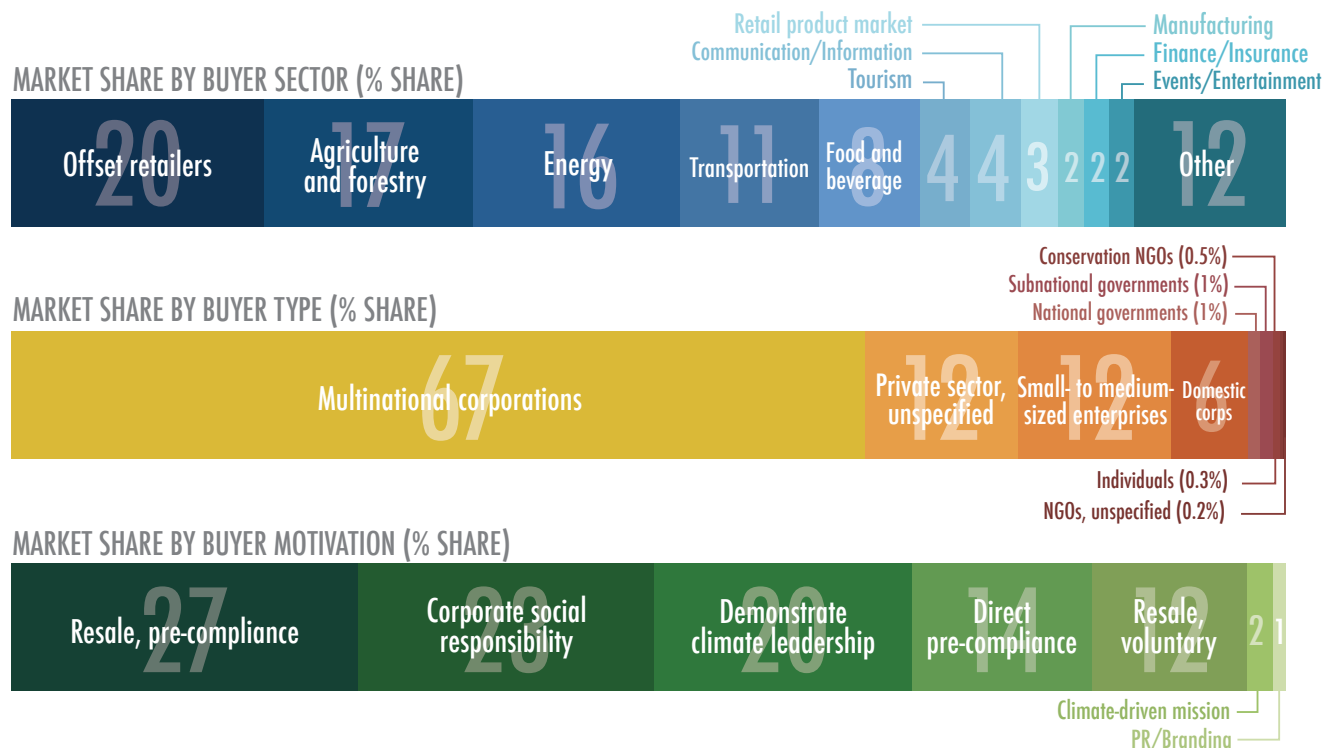
6.1. Buyer types: Landscape connections

Amid upheaval in compliance markets and the exclusion of forestry offsets from use within the EU ETS, the majority (71%) of forest carbon offsets transacted in 2012 were sold to purely voluntary buyers without compliance or pre-compliance motives. The private sector remained the largest pool of buyers, contracting 19.7 MtCO₂e from project developers and retailers in 2012, a significant increase from the 12.3 MtCO₂e

transacted in 2011. A full 67% of forestry offsets were contracted to multinational corporations (Figure 39). Private sector buyers included not only firms purchasing offsets for corporate social responsibility (CSR) purposes or preparing for compliance, but also those offsetting entertainment and sporting events or offering customers the option to offset emissions from their flights or shipments.

The public sector – mainly national governments in Europe and state or provincial governments in North America, Latin America, and Oceania – purchased \$430,000 worth of offsets in 2012, making up about 2% of the marketplace, down from 18% last year. This decrease relates to a drop in public sector demand for tCERs as the first compliance period of the Kyoto Protocol came to a close at the end of 2012 and because fewer forestry offsets were sold into BC's Carbon Neutral Government program. NGO and individual buyers just barely made the map, transacting 0.2 MtCO₂e of offsets in 2012.

Figure 39: Market Share by Buyer Sector, Type, and Motivation



Notes: Based on 213 buyer types as described by survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Private sector buyers represented a broad array of industries and interests in 2012. Carbon offset retailers and other intermediaries purchasing offsets to resell to their clients were again the largest source of demand, purchasing 7.2 MtCO₂e. The energy, agriculture/forestry, transportation, food and beverage, and tourism sectors composed a majority of the remaining demand, purchasing a collective 9.7 MtCO₂e.

These top buyer sectors depend on place-specific natural resources and forest-based ecosystem services (e.g., clean water) for their operations or products and may invest in forest carbon offsets as a way to protect the natural infrastructure their businesses depend on. The agriculture/forestry sector, for instance, purchased only a small portion (4%) of offsets transacted in the overall voluntary offset market, but represented 17% of demand for forest carbon offsets – indicating that this land-based sector has a preference for land-based offsets. They bought mainly from projects in North America and Oceania.

On the other side of the coin, the manufacturing industry dominated demand in the voluntary carbon market in 2012, purchasing 8 MtCO₂e, but only 0.4 MtCO₂e of that was forest carbon. In combination,

sectors with less-straightforward connections to land use, food security, and physical infrastructure – like communications and information; the retail product market; manufacturing; finance and insurance; and events and entertainment – contracted 2.1 MtCO₂e of forest carbon offsets.

The retail product market's small share (3%) of market demand represents a drop from 2011, when they transacted 14% of the forest carbon sold to the private sector. Still, product retailers such as UK-based Marks & Spencer, which invested in forest carbon to meet its carbon neutrality goal for FY2012, remain visibly active.

6.2. Buyer Motivations: Why forests?

Led by demand from carbon market players, the most common motivation for forest carbon offset purchases in 2012 was resale to voluntary buyers (2.3 MtCO₂e) or future compliance end-users (5.4 MtCO₂e). On the pre-compliance side, a total of 4.3 MtCO₂e were transacted by companies that anticipate regulation either under Australia's carbon tax or California's cap-and-trade program – the two newest compliance markets that intend to allow offsets from forest projects.

Among private sector actors seeking offsets for purely voluntary end use, the primary motivation for buying forest carbon offsets was to pursue GHG targets established within companies' broader commitments. Companies often set GHG reduction targets as a part of a larger sustainability plan that includes energy efficiency improvements, "greening" supply chains, and other efforts, with carbon offsetting intended to close the gap between the emissions target and any in-house emissions reductions.

Sensitive to media attention and customer opinion, many corporate buyers prefer to communicate off-setting activities as part of a larger sustainability strategy and not simply "to buy their way out of the problem."

For example, Macmillan, a US publishing company that spent \$200,000 on offsets (many of them forest-sourced) in 2012, uses offsetting as a "last resort" after they have taken all reasonable measures to reduce emissions from their buildings and within their supply chain.

Voluntary corporate buyers often say that they support offset projects in order to "demonstrate climate leadership" within their industry and/or in the absence of strong national climate policies. Some

Table 12: Notable Private Sector Forest Carbon Offset Buyers and Project Investors, 2012-2013

Walt Disney Company	Crédit Agricole
eBay Inc.	Natura Cosméticos
National Geographic	Nedbank
Interface, Inc.	ARP Integra
SK Telecom	BNP Paribas
PUMA AG	SK Telecom
TUI AG & TUI Travel	UPS
DHL	PG&E
Arval	PPR
Motorola Mobility	Microsoft
Peugeot	Kent
Eneco	Entega
Bain & Co.	Marks & Spencer
Qantas	Shiseido Co.
Allianz	Obayashi Corporation

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

Table 13: Market Share by Buyer Motivation

Motivation	Ranking by % Share
Resale to pre-compliance buyers	27%
Corporate social responsibility	23%
Demonstrate climate leadership in industry	20%
Pre-compliance	14%
Resale to purely voluntary buyers	12%
Climate-driven mission	2%
PR/branding	1%

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

companies – most notably The Walt Disney Company and Microsoft – have imposed an internal carbon price on select business divisions in the absence of a domestic carbon price mechanism. Following their lead, US-based offsets suppliers say that several other corporate buyers have since expressed interest in following their lead.

Climate leadership reportedly also motivated the five corporations that supported the launch of the Code REDD campaign in June 2012, including insurance giant Allianz, French retail conglomerate Kering (previously PPR Group), energy companies Eneco and Entega, and South African bank Nedbank. Code REDD operates with the goal of securing private-sector pledges to secure contracts for millions of offsets from high-quality REDD projects.

Overall, the motivations of forest carbon offset buyers are very similar to those of carbon offset buyers in general. So why do voluntary buyers choose to support forest carbon projects out of the suite of project types available to them, especially when forestry offsets typically transact at above-average prices?

Often, buyers say that it's because forest carbon projects are among the easiest stories to tell from a CSR perspective. International shipping company DHL offers customers a carbon-neutral option for sending parcels, and marketers find that forest carbon projects are straightforward to explain to those unfamiliar with emissions reduction projects, explains Daniela Spießmann of DHL's Corporate Social Responsibility team. Moving companies U-Haul and Kent also offer

opt-in offset programs to customers, focusing on forestry projects.

Many companies also lean toward forestry offsets because they offer social and environmental benefits beyond carbon sequestration. Forestry offsets certified by both the VCS and CCB Standards more than tripled their transaction volume in 2012, indicating growing private-sector interest in “charismatic” projects. The Gold Standard's Land-Use and Forestry Protocol, newly available in June 2012 following a decade-long focus on energy, targets efficiencies available to small-holders seeking certification of both carbon mitigation and the delivery of co-benefits.

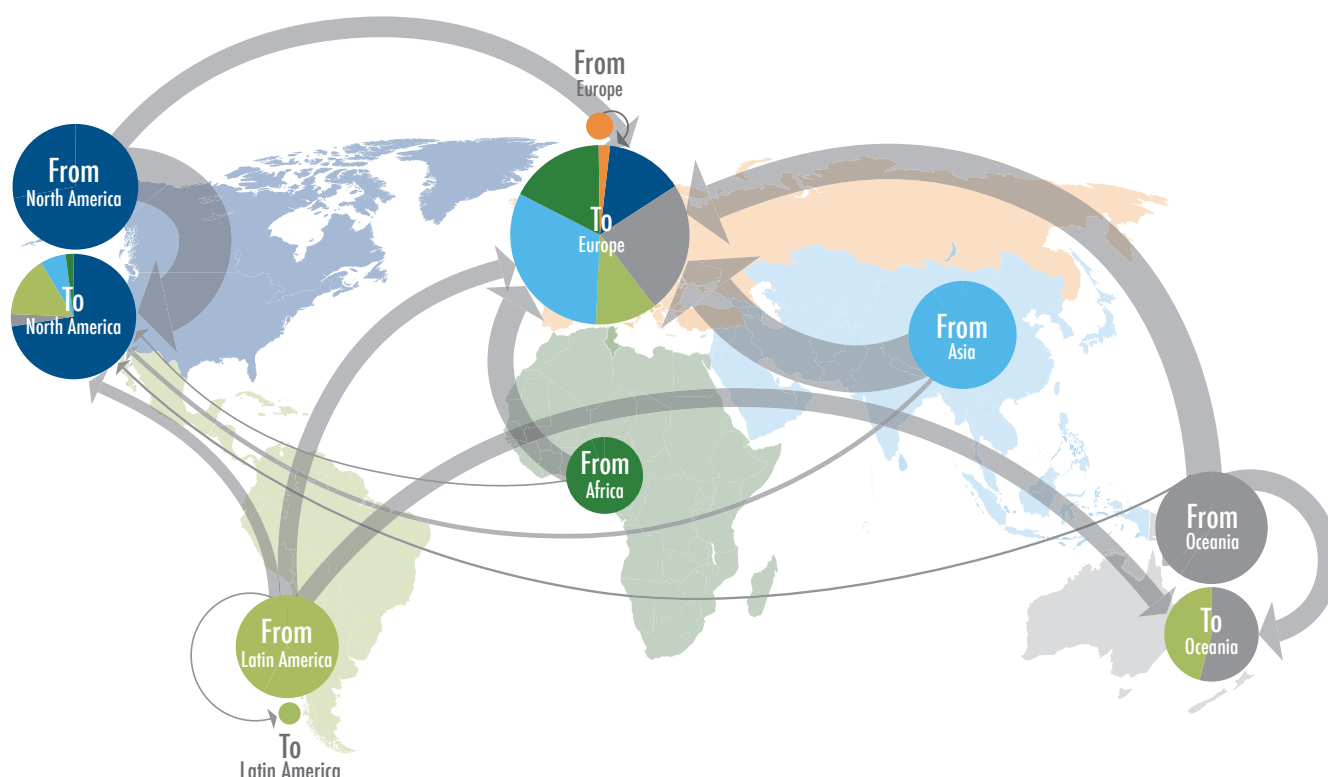
With an eye to these charismatic co-benefits, buyers are often willing to pay slightly more for forestry offsets. Buyers like the National Geographic Society, which supported a reforestation project in Kenya to offset the use of natural gas in their buildings and a REDD project in Brazil to offset the emissions from their 2012 business travel, explicitly look for projects with co-benefits. They have bought offsets at above-average prices but Hans Wegner, the Chief Sustainability Officer at National Geographic, says that the high quality of the forestry offsets and the fact that they protect or expand habitat for threatened species of flora and fauna can make it worth their while: “I'm looking for projects that restore the forest while also expanding habitat for species. Projects that protect threatened or endangered species are especially attractive because they address multiple issues simultaneously.”

The Walt Disney Company, which spent \$3.5 million to support the Alto Mayo REDD project in Peru and purchased 0.4 MtCO₂e of offsets – more than half of its corporate emissions – in 2012, also has a particular affinity for the co-benefits of forest projects. “We're really drawn to forestry projects and we're really drawn to reforestation projects in particular that have watershed protection, habitat rehabilitation as well as a GHG component,” said Bob Antonopolis, assistant general counsel for The Walt Disney Company. “A bulk of our money is spent on forestry projects.”

6.3. Buyer locations: EU rules

Buyers from 20 different country locations transacted forest carbon offsets in 2012. The vast majority of these tonnes (99%) were sold to buyers based in developed regions, while buyers in emerging economies like Brazil and China purchased an insignificant volume of offsets from forestry activities.

Figure 40: Flow of Transacted Volume from Project Region to Buyer Region, 2012 (% Share)



Notes: Based on 213 buyer types as described by survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

EU-based buyers were again the largest source of demand for forestry offsets in 2012, purchasing more than half of all offsets for which project developers reported a buyer and representing the largest source of demand for forest carbon offsets from Asia and Africa. Forestry offsets are excluded from the EU ETS, thus buyers based in this region have traditionally sought land-based offsets from abroad. However, a few countries in the EU have developed domestic forestry programs to incentivize local woodland creation, and in the UK and Portugal, these credits are acknowledged within national emissions report frameworks and other national mitigation efforts (see Section 8.7 for details). Together, buyers based in the UK, France, and Germany dominated European forestry offset demand.

North American buyers transacted more than one-quarter of forestry offsets worldwide and exhibited their characteristic appetite to support domestic projects, consuming almost three-quarters of the offsets transacted by North American projects. Within

the region, US buyers from the tourism, manufacturing, and events and entertainment sectors were key sources of demand. However, 36% of offset transactions were motivated by pre-compliance in California, and most survey responses associated with this motivation did not specify a buyer sector.

Australian carbon market players and private companies were behind \$40.4 million in offset purchases – the highest value attributed to buyers in any country and linked to 15% of global transaction volumes. Most of these offsets were contracted for pre-compliance purposes, as the country's carbon tax took effect on July 1, 2012. Australian buyers preferred to support projects close to home, such as those developed under the country's Carbon Farming Initiative, though some volume was also sourced from Latin America-based projects. It is unclear whether the high volume of activity in the region will be repeated in 2013, given tremendous uncertainty over the future shape of the Australian carbon price.

7. Market Infrastructure: Standards and Registries

7.1. Standards: Consolidation and proliferation

In both voluntary and compliance markets for forest carbon offsets, project standards raised the bar in 2012, providing guidance for forestry and land-use activities across 26.5 million hectares, doubling the land area impacted by carbon finance in 2011. While the most dominant combination of project certifications, VCS+CCB, more than doubled its share of transaction volume, new methodologies from other standards – each with their own unique selling points, some internationally flexible, some locally attuned – also gained traction. Alongside the growing gamut of certifications available for forestry and land-use activities, registries backed record levels of offset issuance and retirement.

Overview of standard use in 2012

While forest carbon projects' characteristic proliferation of standards and methodologies continued in 2012, the market also saw the first signs of significant consolidation of market share and expertise among standards. For example, VCS and the CCB Standards introduced a process for simultaneous certification designed to lower audit costs for projects seeking credit for both emissions reductions and co-benefits.

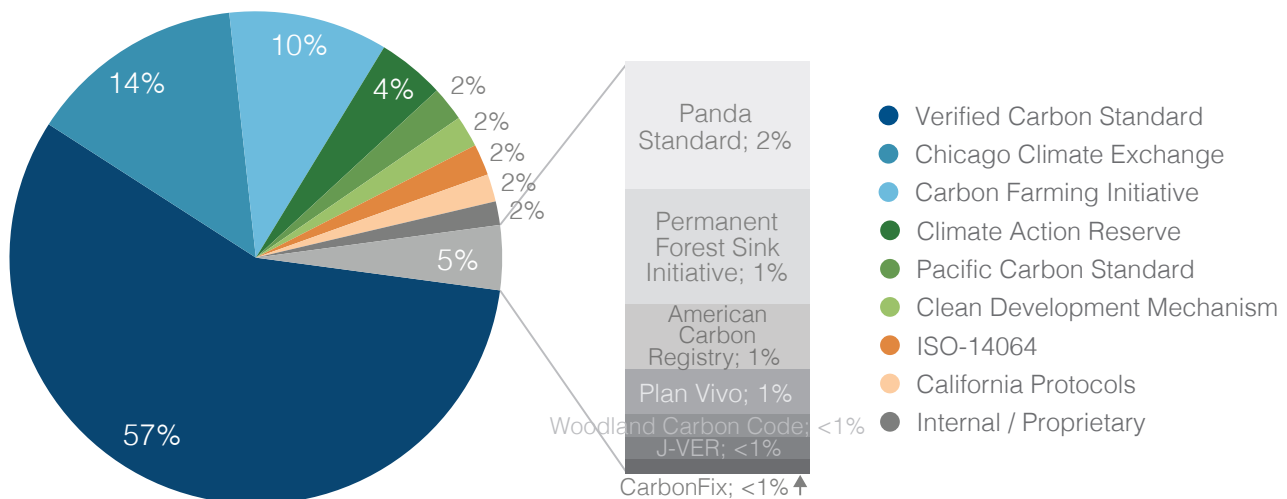
Meanwhile, the traditionally energy-oriented Gold Standard partnered with the FSC and the Fairtrade consumer label and acquired the forest-facing CarbonFix standard in its efforts to expand into forestry and land use and leverage existing certification networks.

Among new players to emerge on the scene in 2012, the Rainforest Standard and the Peru Carbon Fund's Forestry Standard focus on forest carbon opportunities specific to Latin America. China's Panda Standard continued to pilot projects in 2012 while exploring fungibility with emerging domestic carbon markets. In late 2013, Thailand's Voluntary Emission Reduction (T-VER) standard is slated to go into force, with forest carbon and other offsets available for domestic transactions as early as 2014.

Independent forest offset standards: VCS share more than doubles, CDM slows

As in previous years, independent standards – standards applicable to multiple project types and country locations – retained the bulk of market share in 2012, behind 24.5 MtCO₂e of transacted offsets. Projects that have achieved or are seeking VCS approval experienced a boost in market share, capturing 71% of transaction volumes among independent standards,

Figure 41: Market Share by Standard/Certification Type, All Markets, 2012 (% Share)



Notes: Based on 628 observations from 357 reported projects or secondary transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

or 57% of all transactions, market-wide. While not yet reflected in 2012 findings, VCS's recent milestones included the release of its JNR framework, a new soil carbon methodology, and a new category for blue carbon methodologies.

Offsets from A/R projects developed according to CDM methodologies and for CDM buyers fell dramatically to represent only 2% of forestry offsets transacted in 2012 – slowing after 2011's rush to contract, register, and issue volumes ahead of the end of the Kyoto Protocol's first compliance period (see Section 2.4 for more on compliance market trends).

Primarily (but not entirely) North America-facing standards CAR and ACR lost half their combined transaction volume from the previous year to capture just 5% of the market. The standards attribute this to a "wait-and-see" environment as market players found themselves awaiting clear guidelines for project development, issuance, and registry treatment of compliance offsets in the California cap-and-trade program.

The list of AFOLU project types accepted for use in California includes improved forest management, avoided conversion, and urban forestry, drawing from CAR's protocols for voluntary projects. It may soon also include a protocol for rice management, drawing expertise from both ACR and CAR. ACR, which released a methodology for deltaic wetlands restoration in 2012, will also lobby regulators to adapt its approach for a protocol for deltaic restoration in

California. In the meantime, CAR also finalized its Mexico Forest Protocol, released in October 2013.

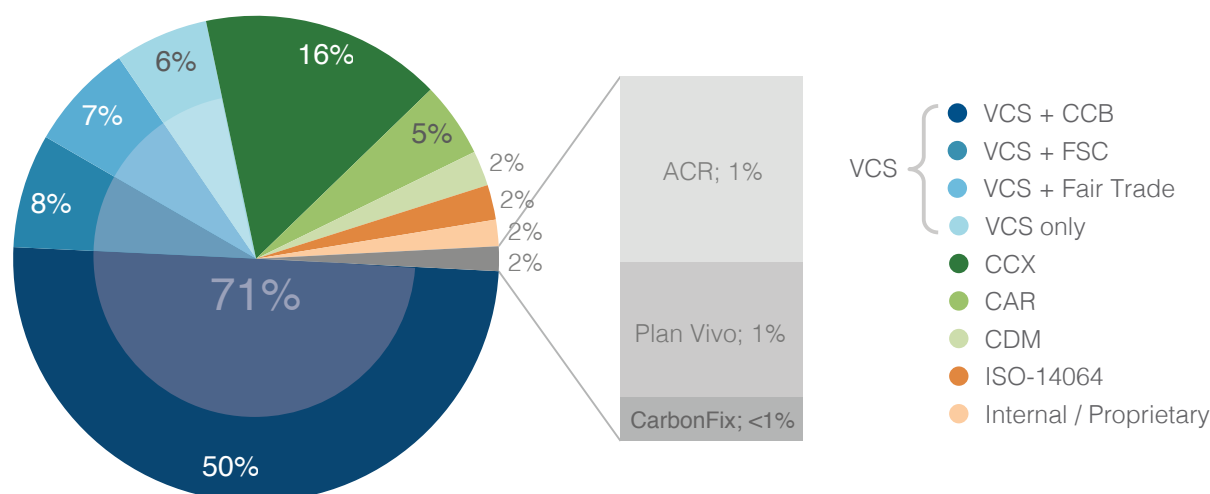
Within the forest carbon markets, there remains a place for isolated project activities, but an increasing number of standards like VCS, ACR, and CAR are exploring means to scale projects by providing guidance to jurisdictions that wish to "nest" projects within their broader conservation frameworks.

"Moving forward, it's incumbent that all proponents of forest conservation find ways to allow the projects of today to plug into the jurisdictional programs of tomorrow," says VCS CEO David Antonioli. "This is why programs like JNR have become so important, as they create the vehicle for public-private partnerships that allow for scaled-up emission reductions."

Meanwhile, programs such as the CDM, Gold Standard, VCS, Plan Vivo, and CCB Standards seek to offer mechanisms for grouping small-scale activities into larger accounting areas to improve ease of access for smallholders.

Aside from progress in jurisdictions where carbon finance has already made an early mark, independent third-party standards also continued to extend offset project development to new locations. Plan Vivo, while still small in market share, expanded its reach to support communities in Sri Lanka and the Solomon Islands, countries where no projects have yet been registered under other independent third-party standards. Plan Vivo maintains a unique "ex-

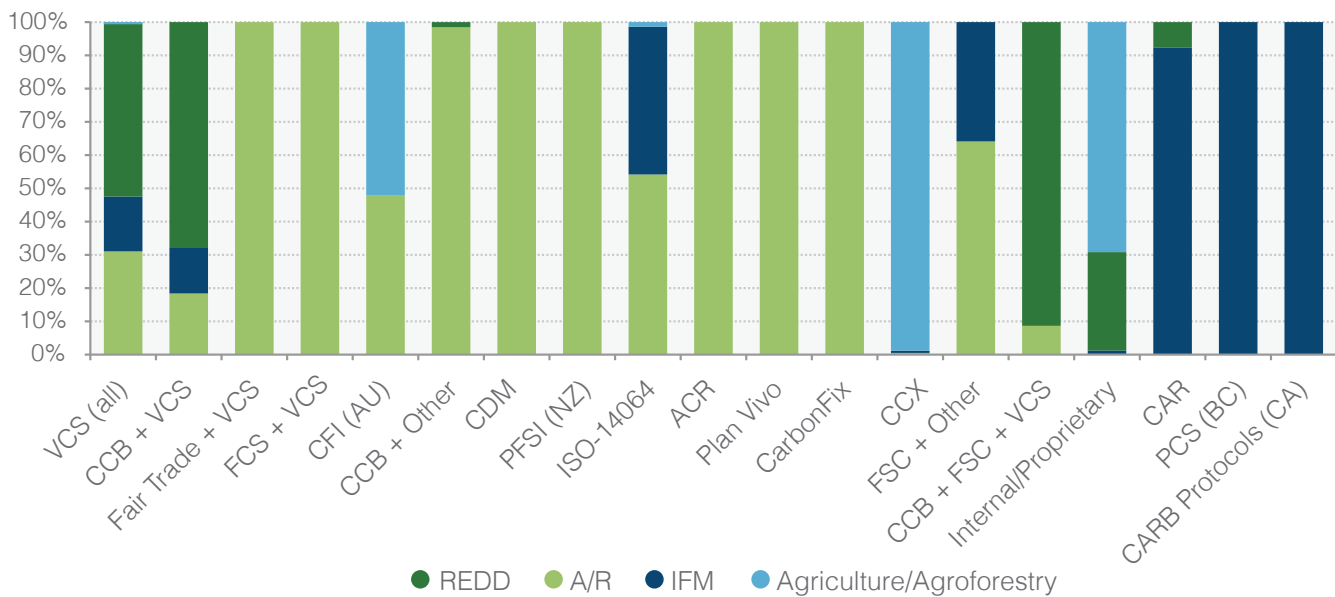
Figure 42: Market Share by Independent Standard, All Markets 2012, (% Share)



Notes: Based on 628 observations from 357 reported projects or secondary transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Figure 43: Market Share of Standard Use by Project Type Certified, 2012 (% Share)



Notes: Based on 2,813 observations from 357 reported projects or secondary transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

ante" approach to project crediting, allowing projects to issue and retire credits for reductions before they occur, and is expected to release a new version of its standard in late 2013.

As can be seen in Figure 43, VCS remained the only independent third-party standard with transacted REDD volumes, though CAR accounted for some avoided conversion volume. A/R was the most commonly transacted project type across standards. IFM volumes drew primarily from standards servicing the North American market, including CAR, the Pacific Carbon Standard, the ARB Protocols, and ISO-14064. While the CCX offset program transacted the bulk of agricultural offsets, most of the value for this project type came from emerging activities under Australia's CFI.

Co-benefits and other land area certifications: A two-thirds majority

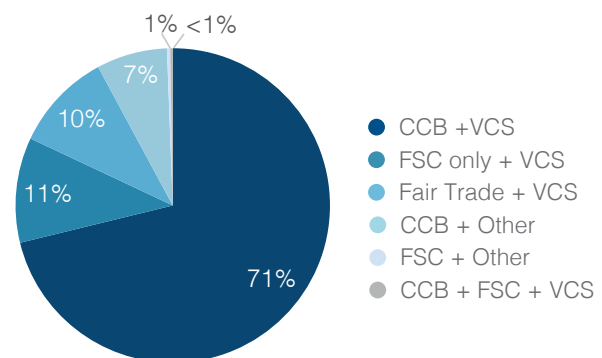
Forestry and land-use carbon offset projects are, at their core, designed to reduce or remove carbon emissions from the atmosphere. Due to their inextricable link with the communities and biodiversity that inhabit them, however, a tonne of carbon is often viewed as a proxy for the myriad other benefits conferred by forestry offset projects.

Carbon offset standards like The Gold Standard or Plan Vivo embed sustainability and other

environmental criteria within their carbon certification process, while others such as VCS or ACR apply strictly to carbon accounting, but can be tagged with an additional layer of co-benefits certification, like the CCB Standards.

Combined, these different types of carbon and co-benefits certifications were behind roughly 17.1 MtCO₂e or two-thirds of all transacted offsets tied to a standard.

Figure 44: Market Share by Co-benefits or Project Area Certification, 2012



Notes: Based on 628 observations from 357 reported projects or secondary transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Often, forest projects will also pursue additional non-carbon certification of products generated within their project areas, like FSC (for sustainable forest management or planting) or the Rainforest Alliance's sustainable agriculture certification. The Gold Standard's partnership with FSC will produce the first offset product that is also formally bundled with "non-carbon" eco-certifications. This report nonetheless tracks these other project-area certifications alongside traditional carbon standards as their presence indicates other revenues conferred to project owners. A full 13% of offsets transacted in 2012 that reported a primary carbon standard also reported other project-area eco-certifications.

Figures 42 and 44 show that projects certified to the CCB Standards were the most prevalent among 2012's offset transactions. The largest volume of these offsets was attributed to projects developed under a VCS methodology that were tagged with additional co-benefits certification. Around 12.2 MtCO₂e transacted in 2012 pursued dual certification to VCS+CCB Standards, which may further increase with the programs' newly launched joint approval process.

Later this year, the CCB Standards are set to launch their third edition. New features include a programmatic approach intended to optimize smallholder activities. In addition, CCB Standards will simplify requirements in order to support projects that want to use its standard to demonstrate net-positive benefits without quantifying net-positive climate benefits.

"The main use of CCB Standards at the moment is in combination with VCS, but with the revisions, we are laying out the options and seeing if there might be additional interest from projects interested in performance-related funding without being linked necessarily to offsets," explains Joanna Durbin, CCB Alliance Director.

"Imagine a situation where a land management conservation project or a smallholder agricultural project might want to demonstrate net-positive climate, community, and biodiversity benefits but not want to go through the expense of the full carbon accounting standard," she adds.

While the CCB Standards can apply to any land-use project type, the FSC Forest Management certification was applied mostly to project areas hosting A/R activities with a silviculture regime. The volume of offsets reported from areas under Fairtrade and FSC management could also increase in coming years, given the

new alliance between The Gold Standard and both programs. The alliance aims to tackle climate-smart agriculture and other activities relevant to smallholders.

Domestic-only standards: No place like home

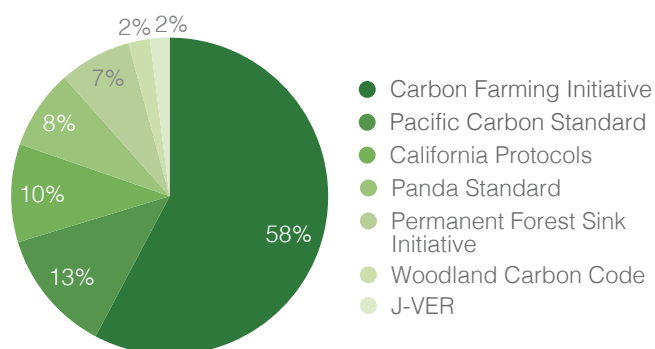
While internationally flexible standards enable a variety of countries to access carbon finance, the audiences for domestically tailored standards remain strong, particularly as carbon markets worldwide remain fragmented and often highly customized to local circumstances. Domestic standards commanded 28% of market share in 2012, valued at a total of \$60 million.

Ramping up for their respective compliance markets, projects in Oceania and North America reported that some buyers in Australia and California were buying forestry offsets to prepare for compliance, though Australia's lead in market share could be challenged going forward given the new Australian leadership's intention to dismantle the supporting carbon price.

New Zealand's Kyoto-dependent Permanent Forest Sink Initiative fell in market share and is likewise looking at a potential transition. The PFSI is currently under review for improvements following the government's decision to opt out of Kyoto's second commitment period.

Offsets generated for BC's Pacific Carbon Standard (PCS) captured 2% of overall market share and a 13% share among domestic programs. "Not reflected in Figure 45 but also active in 2012 was Canada's Alberta Offset Protocol.

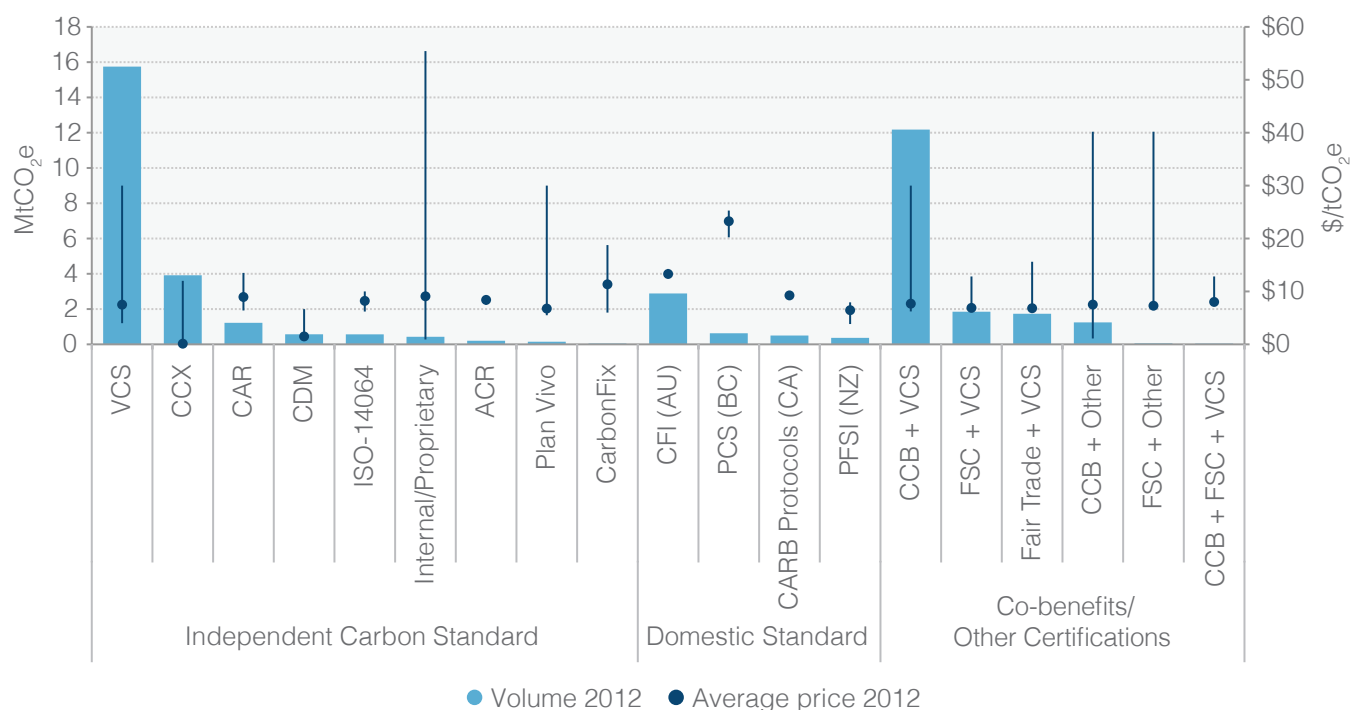
Figure 45: Market Share by Domestic Standard, All Markets, 2012



Notes: Based on 628 observations from 357 reported projects or secondary transactions.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

Figure 46: Transacted Volume and Average Price by Standard and Other Certifications Types, 2012



Notes: Based on 27 MtCO₂e associated with the use an independent third-party project standard.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

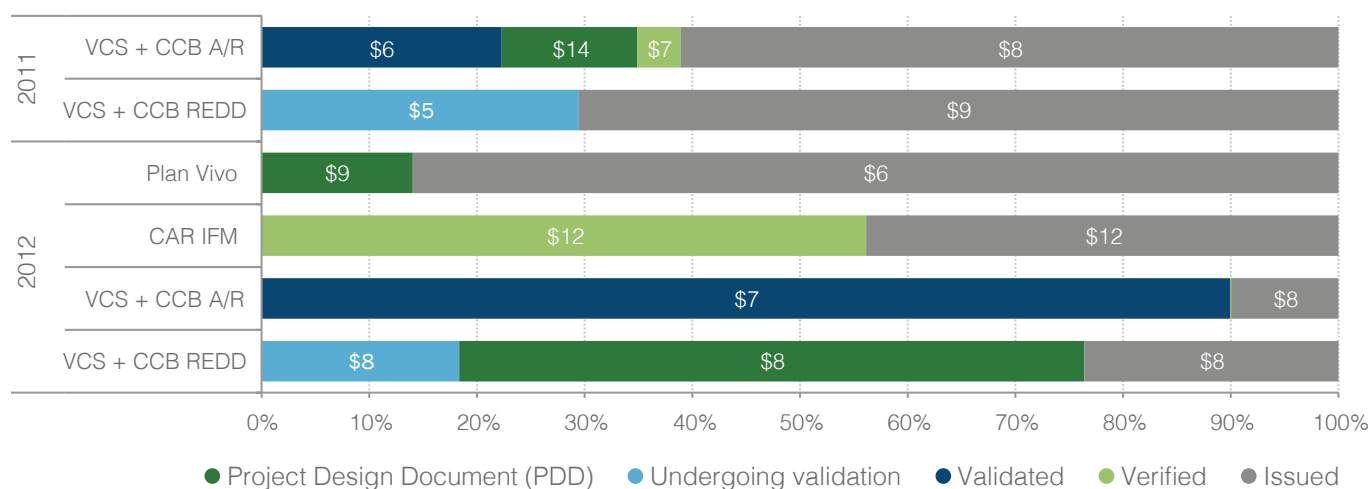
Price by forest carbon and co-benefits standards

When considered individually, no project variable – from project location to type to size – has a statistically significant impact on forest carbon credit price. The same is true of the choice of carbon and co-benefits

standard use, due to the forest carbon market's small size and lack of intra-year price transparency.

Figure 46 shows that while CarbonFix project developers reported small transaction volumes, they obtained significantly above-average pricing. So too

Figure 47: Market Share, Average Price, and Stage by Popular Forestry Offset Types, 2011 & 2012



Notes: Based on 628 observations from 357 reported projects or secondary transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

did projects using internally developed or domestic standards, particularly in developed countries such as Japan, Canada, and the United States where the cost of land and project inputs tends to be higher. One exception was New Zealand, where a linkage to the Kyoto markets has driven down domestic prices.

In terms of additional co-benefits and other certification, VCS offsets generally brought in a higher average price when combined with CCB Standards (\$7.7/tCO₂e on average, compared to \$7.5/tCO₂e without), especially when based in an FSC-certified forest area (\$8/tCO₂e). This kind of demonstrable price premium remained less developed for other combinations as reflected in lower average prices – though spreads indicate that buyers have paid a premium in select cases.

Apparent from Figure 47, early-stage activities were not as disadvantaged in terms of price as they were in 2011, back when there was a clear pricing pattern rewarding lower delivery risk associated with issued tonnes. While transaction volumes still demonstrate relatively greater support for offsets contracted from projects that are further along in the project cycle, some buyers paid more per tonne to support early-stage activities than they did for mature projects. These higher average prices were obtained primarily by project developers that established direct relationships with offset end buyers without the use of a middle party.

7.2. Registry Use: Record offset volumes issues and retired

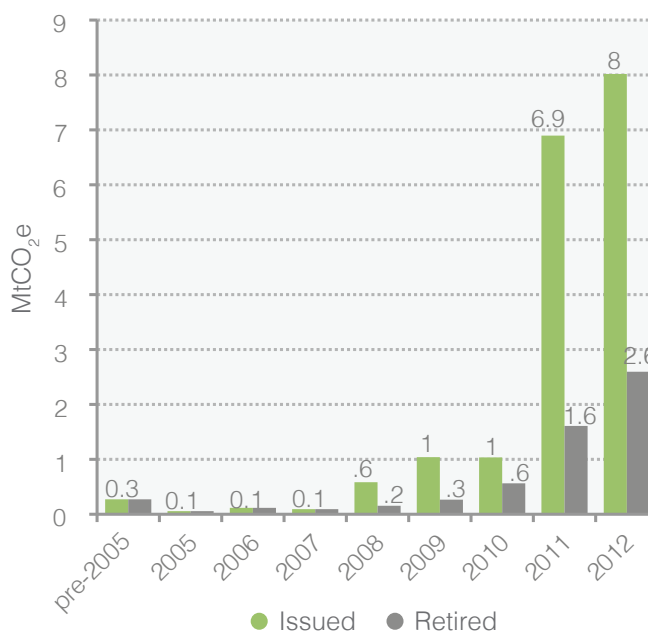
To support decision-makers' growing interest and activity in the forestry and land-use space, registries have continued to aid standards and jurisdictions in tracking and providing an extra layer of due diligence for carbon offsets. Registries reported the largest-ever volume of offsets issued (8 MtCO₂e) and/or retired (2.6 MtCO₂e) in 2012. While CDM activity slowed, forestry offset issuance was a key achievement in the program, which saw the first-ever issuance of tCERs from A/R projects in Ethiopia and Brazil last year.

With the emergence of domestic carbon programs, major registries fine-tuned their support for jurisdiction-scale programs. In the United States, the approval of ACR and CAR as offset project registries for California's cap-and-trade program in late 2012 provided the supporting infrastructure necessary for projects to list and bring offsets online using state-approved Early Action Quantification Methodologies and compliance offset protocols.

In Latin America, Markit signed a memorandum of understanding (MoU) with the Brazilian state of Acre to develop a registry for the state's voluntary Program of Incentives for Environmental Services, becoming the first registry to establish a program to issue and track REDD offsets at the state level that will facilitate linkages with Acre's partners in Brazil. In July 2013, the UK's Woodland Carbon Code registry also went live on Markit, enhancing the transparency of ownership of Woodland Carbon Units based on domestic afforestation activities.

As other emerging markets like Ghana, Kenya, Uganda, Chile, and Thailand consider obtaining registry infrastructure to support emerging capacity for REDD and other forest carbon project development, major registries are looking to provide customizable options to develop jurisdictional registries at reasonable cost, providing flexibility in determining the right

Figure 48: Historical Issued and Retired Credit Volumes



Notes: Tracks land-use project registry data reported for VCS, CAR, ACR, ISO 14064/65, Plan Vivo, CarbonFix, PFSI, Pacific Carbon Standard, CarbonFix, and J-VER.

Does not include issued or retired volumes from CCX, Canadian Standards Association's Clean Projects Registry, or Alberta Offsets Registry due to unavailable yearly breakdown.

Source: Forest Trends' Ecosystem Marketplace.
State of the Forest Carbon Markets 2013.

level of registry automation. While there are inevitably costs associated with setting up a registry, market players note the importance of registries in providing standardization and transparency in the project approval process, which is particularly valuable in jurisdictions that currently lack data.

“Registries can become an enabler of policies in support of REDD,” says Rebecca Asare, West Africa Coordinator of Forest Trends’ Katoomba Incubator. She stresses that any country going through a REDD readiness process will most likely develop a registry – noting the DRC as a leading example.

8. Regional Market Deep Dive

8.1. Introduction: Parsing a product market

In most markets, forest carbon offsets are not a standardized commodity, but are instead a product market where preferences, prices, and projects vary greatly by region. While analyzing project location is just one of many ways to “cut the cake,” where a supplier and/or their credits call home is an important starting point to understand the markets’ varying contributions to volume and value. This section explores regional trends through the lens of findings that have been presented in previous sections – examining regions by both the volumes of credits supplied from that region and the buyers who transacted them. A global summary of offsets supplied by country and regional location can be found in Section 4.3, while buyer information by region is summarized in Section 6.

The following sections detail regional forestry trends not only as reported by project developers themselves, but also within the broader context of multilateral and bilateral funding and initiatives that promote national capacity and concerted strategies around REDD and other forest actions. To date, most of this funding has been targeted toward national “REDD readiness” but also includes funding for project-level activities and pilot projects that is currently being raised and, in some cases, activated and disbursed. Here one finds a great deal of overlap between these “top-down” programs and the “bottom-up” work of forest carbon project developers and market infrastructure providers as tracked throughout this report. See Section 4.5. for an introduction to these developments.

8.2. North America: Taking the lead

Climate action leadership was a key theme in North America in 2012, seeing companies step up to obtain forest offsets in the name of influencing industry practices and policy – and seeing California consider the title of hosting the first regulatory offset program to admit international REDD offsets.

Last year, North American project developers transacted 6.7 MtCO₂e from domestic projects, a 3% decline from the 6.9 MtCO₂e reported for the region in 2011 (Table 14). The overall value of North American offset transactions similarly fell by 43% to \$39 million, down from \$70 million in 2011.

The prospect of national carbon regulations for existing power plants continues to loom ahead for US-based emitters, but it is unclear, and some would say doubtful, that those rules can carve out a place for carbon offsetting. Therefore, transactional activity in North America focused on buyers preparing for compliance with state or provincial mandates, alongside voluntary purchases by companies seeking to demonstrate climate leadership or to improve their CSR credentials.

Overall, resale to purely voluntary end users was the most prominent driver of transactions in the region, associated with 37% of all offsets sold. Meanwhile, the overall volume of California/WCI offset purchases dipped slightly to 1.5 million in 2012. The value of these transactions also declined slightly – by 8%, from \$12.9 million to \$11.9 million – but the average price inched upward to \$8.2/tCO₂e.

“Voluntary buyers certainly see the benefits in forest carbon because of the co-benefits and all the other attributes that come along with improved forest management,” says Gary Gero, CAR president.

Table 14: North America by the Numbers, All Markets, 2012

Land and Project Area		
Total forest area ¹	614 million ha	
Carbon project area	7 million ha	
# projects represented	42	
Market Snapshot		
	\$ million or MtCO ₂ e	% change from 2011
Volume supplied	6.7 Mt	-3%
Average price	\$9.8/t	-5%
Value	\$39 m	-43%
Volume purchased domestically	5.7 Mt	+19%

¹Source: FAO 2010; All other: Forest Trends’ Ecosystem Marketplace.

"But also, of course," he adds, "we did see activity resulting from California's adoption of a forest carbon protocol. There is the elevation of forest carbon now into a carbon market, a regulatory regime, and that certainly got a lot of people's attention. We saw a lot more of that on-the-ground activity among forest owners. This is critical because the more activity we have – whether for voluntary or regulatory purposes – the more support we have in protecting forests, which is what forest offset projects were designed to achieve."

The official launch of California's cap-and-trade program in January 2013 instigated growing interest in forestry offsets, with project developers fielding questions from landowners about the state program and the types of forest activities they could implement. But actual transactions were slow to materialize in 2012 with market participants eagerly awaiting critical guidelines on the offset program from the ARB.

That guidance did not emerge until December 2012, when the ARB designated both ACR and CAR as offset project registries (OPRs) and early-action programs, which allows the two organizations to issue offsets generated according to the ARB compliance and early-action quantification methodologies.

Registry offset credits and early-action offsets must still pass through several additional hurdles post-issuance before becoming valid compliance instruments, but the OPR designation was a critical first step in submitting projects for compliance. "The ARB Offset Project Registry and Verifier approvals came much later in the year than anticipated," says Mary Grady, ACR's Director of Business Development. "Nevertheless, there was a lot of activity by ARB, the registries, and project developers leading up to the approvals to prepare for the first compliance offset projects. Once we were approved as an OPR, we immediately began receiving compliance offset project listings."

The project types eligible for California's program are reforestation, IFM, and Urban Forestry. IFM constituted more than half of North American volumes in 2011, but agriculture-based projects also comprised a large proportion of the region's markets share. Most of these 3.9 MtCO₂e, tied to grassland management and no-till or low-till agriculture, were certified under the legacy CCX offset program and priced at an average \$0.1/tCO₂e – thus contributing little to overall market value.

Quebec is mere months away from its linkage with California's trading system, which is likely to result in regulated entities in the Canadian province looking to California to provide any needed offsets. The offset

system in Quebec is still quite new and remains in what has essentially been a pilot phase with not much in the way of concrete project development based on its three approved protocols. This report survey found no reported offset projects developed out of the Canadian province to date.

British Columbia maintained its steady pace of offset purchasing in service of the province's public sector carbon neutrality goal. The Greenhouse Gas Reduction Targets Act of 2007 set legislated GHG targets and established a regulation that laid out the requirements for emissions reductions to satisfy this goal. Under the policy, covered public sector entities can achieve carbon neutrality through internal savings and efficiency, as well as through the acquisition of carbon offsets – including forest offsets – from Crown corporation Pacific Carbon Trust (PCT) at a set price of CAD\$25/tCO₂e. PCT reports three IFM projects that are validated according to its Pacific Carbon Standard, with more than 1.8 MtCO₂e of issued offsets. PCT has retired more than 2.3 MtCO₂e on behalf of BC's 128 public sector organizations.

The program has not escaped controversy in recent months, when the BC Office of the Auditor General released a report in March 2013 that questioned the provincial government's carbon neutrality claims. The report specifically criticized The Nature Conservancy of Canada's Darkwoods Forest Carbon Project from which PCT purchased 450,000 tCO₂e of offsets from 2008 to 2010.

PCT engaged in a broad re-evaluation of the Darkwoods project, with input from several third parties recruited to make independent reviews in light of the auditor general's report, all of which served to reaffirm the high quality of the Darkwoods project, says Acting CEO David Muter. But while disagreeing with the report's overall conclusions, the PCT has already implemented some of the Auditor General's recommendations, namely in the area of transparency, by releasing pricing information on an annual basis.

In February, the provincial government announced it would examine PCT's pricing model and make any necessary changes. The government will evaluate the CAD\$25/tCO₂e paid for carbon offsets to PCT by the public sector organizations and re-evaluate what the PCT retains as a surplus from buying and selling offsets and how the money is spent.

North American buyers continue to be motivated to purchase offsets on a strictly voluntary basis for a

Table 15: North America: Transacted Forest Carbon Credit Types and Buyers, All Markets, 2012

Top Transacted Forest Carbon Offset Types, 2012					
Project Type		Project Stage		Standard Use	
Agriculture	58%	Issued	89%	CCX	61%
IFM	34%	Project Design Doc	5%	CAR	13%
A/R	7%	Verified	3%	Pacific Carbon Standard	10%
Top Forest Carbon Offset Buyer Types, 2012					
Buyer Locations		Buyer Sectors		Buyer Motivations	
North America	72%	Agriculture/Forestry	54%	Resale	47%
Europe	28%	Energy	26%	Climate leadership	20%
		Manufacturing	10%	Pre-compliance	18%

Notes: Based on responses from 52 suppliers. Percent values are based on the volumes associated with individual questions, not including an “other” response.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

number of reasons, including demonstrating climate leadership within their industries and the pursuit of GHG targets for CSR reasons (Table 15). Public companies are also looking to improve their rankings in sustainability or disclosure indices to enhance their attractiveness to the various pension funds looking for greener companies to invest in, says Chandler Van Voorhis, Managing Partner with project developer C2Invest. “There is a lot of pension money now,” he says. “One of the motivations for voluntary buyers is to get a better ranking in sustainability. What that means is that some of the pension funds can cover that stock because it’s got a good ranking. It’s motivated by driving shareholder value.”

8.3. Latin America: REDD rules, but challenges ahead

Latin America has historically been a key leader in developing forest carbon offsets, but the market struggled in 2012 amid issues around unsettled land tenure, unclear REDD policies, and a decline in A/R project development, despite attractive pricing for these offsets.

In 2011, the region maintained above-average pricing in spite of decreased volumes. However, 2012 findings reveal declines across the board, with volume, value, and price all dropping by 20% or more.

The Latin American forest carbon market remains highly fragmented, resulting in many different policies

across state and sub-national lines. However, the region has also solidified its reputation as a REDD pioneer. More than half of REDD offsets transacted globally originated in Latin America, and Brazil and Peru led the way in receiving some of the largest sums of committed and dispersed REDD funds. Overall, 80% of the region’s offsets in 2012 were from REDD.

However, as with most regions, suppliers express mounting concerns about a mismatch in supply and demand. Several Latin America-based project developers describe a market “swamped with REDD offsets.” Project developers are closely watching California as a potential international compliance market, where the Brazilian state of Acre and the Mexican state of Chiapas are part of the REDD Offsets Working Group (ROW) after signing a 2010 MOU with California to cooperate on climate change issues. ROW released its recommendations in a July 2013 report that called for the acceptance of jurisdictional REDD offsets. Whether or not California will ultimately decide to accept international REDD offsets remains uncertain amid fierce opposition from some stakeholders, but project developers speak of a “huge setback” if the offsets from these projects are rejected.

While some indigenous stakeholders are skeptical of the ROW recommendations, REDD projects in the region recently made significant strides with

Table 16: Latin America by the Numbers,
All Markets, 2012

Land and Project Area		
Total forest area ¹	956 million ha	
Carbon project area	11.3 million ha	
Annual land use emissions ² (MtCO ₂ e)	2,450 Mt	
# Projects represented	62	
Market Snapshot		
	\$ million or MtCO ₂ e	% change from 2011
Volume supplied	6.2 Mt	-20%
Average price	\$8.1/t	-22%
Value	\$50 m	-32%
Volume purchased domestically	0.2 Mt	-90%

¹Source: FAO 2010; ²Source: WRI CAIT database. All other: Forest Trends' Ecosystem Marketplace

indigenous and community groups. The Paiter Suruí indigenous people of Brazil received dual VCS+CCB verification in 2013 for their Suruí REDD Forest Carbon Project and sold 120,000 tonnes of carbon offsets to a Brazilian cosmetics company, becoming the first indigenous-led project to generate offsets by saving endangered rainforest. Also noteworthy is Colombia's Chocó-Darién Conservation Corridor REDD Project, launched in late 2012, the first community-owned, collectively titled land project and first VCS REDD project certified in Colombia. It is now VCS-verified and CCB Gold Standard-validated. Lastly, Peru's Alto Mayo REDD Project gained VCS+CCB validation last year. Involving 419 farmers and their families, the project got a strong start and attracted policy-makers' attention when The Walt Disney Company donated \$3.5 million for Conservation International to implement the project in 2008.

Indigenous and community projects remain a minority, however, as many project developers in Latin America remain wary of unclear land tenure laws and prefer developing on privately owned land (see Section 4.7. for a discussion of land tenure issues).

Contrasted with Latin America's continued increase in REDD projects, A/R projects experienced a marked

decline in 2012 – an 83% decrease from 2011 figures (Table 17). Despite the data's stark review of A/R performance in 2012, project developers spoke highly of the benefits of such projects, which saw above-average pricing due to Fundación Natura their relative scarcity compared to REDD.

With Latin American project developers ever conscious of prices, there is a recurring complaint about the scarcity of local auditors for international standard verification. Many auditors for VCS, CCB Standards, and other standards are based in Europe or the US and are more expensive to hire while less in tune with the local business climate and ecology. Currently, only one approved auditor for the CCB Standards and VCS resides in the region, in Colombia.

While most suppliers continue to work with foreign standards and auditors, a number of standards have emerged to cater specifically to domestic markets in Latin America, including Peru Carbon Fund's Forest Standard, which works exclusively with small and medium landowners and provides free validation services if landowners meet their minimum commitments. Other regional standards include Costa Rica's National C-Neutral Standard and the Rainforest Standard, both of which emerged in 2012, and Brazil Mata Viva from earlier years.

Instead of creating its own standards, the Colombian-based Fundación Natura is taking the opposite approach. They are working with existing international standards to raise awareness and train local auditors in Colombia. An MoU has already been signed with VCS, and the foundation plans to bring the CCB Alliance and Gold Standard on board soon, as greater participation is better for Colombians, says Fundación Natura's Roberto Gomez.

"We are not married to any of these standards," he explains. "We think that project developers are the ones who should decide what standard to use. We want people to know what all the voluntary carbon market options are so they can make the best decisions."

Costa Rica recently took that a step further by becoming the first developing country to introduce a domestic voluntary carbon market. The Costa Rican Voluntary Domestic Carbon Market (MDVCCR) was signed into being in September 2013 with a Letter of Intent between the Government of Costa Rica and the World Bank's FCPF. The FCPF will provide emissions reductions payments up to \$63 million, which will

Table 17: Latin America: Transacted Forest Carbon Credit Types and Buyers, All Markets, 2012

Top Transacted Forest Carbon Offset Types, 2012					
Project Type		Project Stage		Standard Use	
REDD	80%	Validated	80%	VCS	90%
IFM	10%	Verified	8%	ISO-14064	4%
A/R	9%	Project Design Doc	7%	Internal/proprietary	3%
Top Forest Carbon Offset Buyer Types, 2012					
Buyer Locations		Buyer Sectors		Buyer Motivations	
Europe	38%	Carbon markets	66%	Resale	64%
Oceania	35%	Tourism	15%	Climate leadership	18%
North America	23%	Energy	6%	CSR	13%

Notes: Based on responses from 52 suppliers. Percent values are based on the volumes associated with individual questions, not including an “other” response.

Source: Forest Trends’ Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

expand Costa Rica’s payments for ecosystem services program and support REDD activities at a quasi-national level. Chile and Mexico could launch their own emissions trading schemes (ETS), as both explored the possibility in their final proposals to the World Bank’s Partnership for Market Readiness (PMR) in 2013, though Mexico is reportedly leaning toward other Nationally Appropriate Mitigation Actions (NAMAs) as its preferred climate response.

Brazil’s federalist government has not taken a top-down approach. Instead, forest carbon activities range across all levels of government. In addition to Brazil’s National Climate Change Policy law, a total of 19 Brazilian states currently have their own climate change laws. In 2012, the Brazilian state of Rio almost made carbon markets a reality in the country with its planned ETS. However, the state governor did not sign off on the ETS and the government has now retreated into talks with the private sector with no future deadline in sight.

Co-created around this time was BVRio, an environmental exchange created to facilitate compliance with a range of domestic environmental laws, including ETS allowances from a compliance carbon market in Rio de Janeiro. However, while the Rio compliance market has been delayed, BVRio is already operating other markets, including Brazil’s mandatory Forest Code. Farms in Brazil that don’t meet their native forest cover

obligations can trade or buy offsets from another who has exceeded the requirement.

The code indirectly compensates farmers for maintaining forest carbon stock, providing a domestic alternative source of funding to REDD+ voluntary credits. Once REDD+ becomes a compliance product, BVRio will adapt its trading platform, BVTrade, to support this market.

BVRio’s Pedro Moura Costa says that the supply of REDD credits in Brazil would vastly surpass the demand of the proposed Rio industrial cap-and-trade limits. “We need to go back to a global agreement that is stringent enough to create enough demand for what forestry can potentially supply. Otherwise, you’re back to a buyers’ market.”

Unlike Brazil’s rocky start with carbon trading, its Amazon states are among the world’s most sophisticated regarding forest carbon markets. Acre, Amapa, Amazonas, Mato Grosso, Para, and Tocantins are all members of the Governor’s Climate and Forests Task Force, which seeks to advance jurisdictional REDD activities and link them with compliance schemes. Acre in particular has been noted for its progressive legislation and research, building its State System of Incentives for Environmental Services, which established a framework in 2010 to recognize ecosystem services with an emphasis on REDD activities.

8.4. Oceania: Transactions surge, policy puzzles remain

In 2012, Australia experienced a surge of transactions in response to the launch of its federal carbon price. Amid significant uncertainty over the fate of the carbon price, however, it is unclear if this high level of activity will be repeated in 2013 or merely be a temporary blip on the carbon market radar.

Nearly 3 MtCO₂e of forestry and land-use offsets were transacted from Australia-based projects, up significantly from the year prior, at an average price of \$8/tCO₂e. A full 36% of offsets transacted by Oceania-based buyers were pre-compliance purchases for the future delivery of offsets accredited under the Carbon Farming Initiative (CFI), the country's main outlet for domestic AFOLU carbon abatement activities. Actual project development based on CFI-approved AFOLU methodologies like avoided deforestation, regeneration of native forest, and savannah burning was comparatively slow. Market players attributed this to the longer-than-anticipated wait time for methodology approval and a lack of clarity on the rules.

To date, most CFI uptake has been for landfill gas projects, while just around 25 carbon sequestration projects have registered to cover A/R and savannah-burning activities.

“The CFI scheme is designed to manage integrity and can be difficult for some to enter,” says a participant in the initiative, who adds that there are opportunities for small players like mom-and-pop farmers to overcome barriers to entry by working through aggregators or brokers.

The first CFI contract was signed in July 2012, when Australian airline Qantas agreed to buy up to 1.5 MtCO₂e of offsets from RM Williams' revegetation project, mostly to comply with the carbon tax, with a small proportion set aside for voluntary use. However, the agreement fell through in early 2013 and the project collapsed, having relied on a rangeland methodology that had not yet received CFI approval. The failed agreement served as one example of how long-term commitments have been challenged in the face of legislative uncertainty.

Following his landslide victory, Prime Minister Tony Abbott is working to rescind the carbon price amidst some opposition. If he proceeds based on his original plans, the government would eventually invite bids for emissions reductions from project developers, using a policy with a limited budget that prioritizes least-cost emissions reductions. Beyond that, grant funding for projects is available through the CFI Non-Kyoto Carbon Fund, Biodiversity Fund, and Indigenous Carbon Farming Fund.

Facing the prospect of limited market access, suppliers are grappling with the lack of long-term price signal. “I’ve been told that the average piece of carbon legislation in Australia has a lifetime of 248 days,” says Justin Glass, Executive Manager of Carbon at Greenfleet. “Imagine what that does for any form of investment. We need long-term signals for reforesting the planet and also need to be able to act in a global marketplace where we can hedge bets.”

Landowners such as the Tipperary Group, the first beef producer in Australia to earn offsets under the savannah-burning methodology, say that their projects will not be financially viable in a future without a carbon tax.

Suppliers say that another constraint on project development has been that the CFI reports a conservative 40% of the carbon that is actually sequestered, which ultimately means less carbon that can be claimed and monetized. The 40% is due for reform later this year.

Outside of the CFI, a few players have been using independent third-party standards. Notwithstanding,

Table 18: Oceania by the Numbers, All Markets, 2012

Land and Project Area		
Total forest area ¹	191 million ha	
Carbon project area	1.4 million ha	
# Projects represented	11	
Market Snapshot		
	\$ million or MtCO ₂ e	% change from 2011
Volume supplied	6.2 Mt	+ >100%
Average price	\$8/t	-36%
Value	\$49 m	+ >100%
Volume purchased domestically	5.7 Mt	+19%

¹Source: FAO 2010; All other: Forest Trends' Ecosystem Marketplace

there is a limited potential to develop projects domestically to voluntary offset standards due to Australia's restrictions regarding double-counting on Kyoto-compliant land. Forests Alive (formerly REDD Forests) remains the only project developer with a project accredited domestically using an independent third-party standard for an IFM project in Tasmania. Such restrictions have not stopped Australian players from overseas project development, particularly in Southeast Asia, with an eye to generating larger volumes of offsets at lower costs.

As in previous years, voluntary Australian buyers took a portfolio approach in 2012, drawing 63% of offsets from international forestry and 37% from domestic projects, with some limited carbon neutrality claims. The bulk of these offsets are recognized under the government-administered National Carbon Offset Standard (NCOS), which outlines guidance for Australian organizations on what constitutes quality offsets (both domestically and internationally sourced), in early 2013 adding VCS REDD to the list of eligible offset types.

Voluntary or compliance, forest carbon markets face an uphill battle in Australia. "Avoided deforestation requires low upfront capital and comparatively low measurement costs as opposed to forest you've grown over time, but Australia doesn't have much of that," says an Australia-based forest carbon project developer. "The type of activity that can be done at scale here typically involves on-ground implementation and technology and higher labor costs that don't lend themselves to low up-front costs."

Faced with uncertainty, a number of suppliers have faded out of the market in the past year. Those who remain are working to better differentiate their offset products in order to secure the highest prices possible in the voluntary market space. One supplier anticipates the soonest the country may be able to get back on an ETS track would be 2020, based on election cycle trends.

Given New Zealand's position as the first and only country to-date to partially regulate its forest sector under a national emissions trading scheme, the country faces a unique struggle on how to recover its domestic market for forest carbon offsets. Transaction volume for forest carbon offsets dropped drastically in New Zealand in 2012 (to 0.3 MtCO₂e) as inexpensive foreign Kyoto offsets continued to flood the domestic emissions trading scheme (NZ ETS) and drive down New Zealand Unit (NZU) prices. Going forward, New Zealand has opted out of participating in the second

commitment period of the Kyoto Protocol. The country will still be following the UNFCCC track, but without a binding obligation. In practice, the opt-out has made NZUs less relevant in the global market for forest credits, adversely impacting the domestic forestry sector.

Just 16% of New Zealand-based offsets were sold to domestic buyers in 2012, including both Kyoto units and VERs generated through the country's government-administered PFSI. Suppliers were lucky if they closed deals at higher prices from forward-purchase contracts signed during better years, but otherwise faced low prices. The remainder of transacted offsets went to a limited number of offset voluntary buyers in Canada, Germany, and Japan.

In terms of project upkeep, anyone who owns more than 50 hectares of post-'89 forest is obligated to run sampling plots and measure them – once every five years at minimum, but annually if forest owners want to claim credits every year. Under the ETS, measurement costs are more manageable for the handful of large-scale forestry companies with significant old-growth forests that engage in selective logging, according to Peter Weir, Environmental Manager at Ernslaw One. The situation is more difficult for ETS foresters with smaller plots or who cannot log due to the lack of old-growth forests.

The situation is similarly, if not more, difficult, for PFSI project developers who choose not to log, having bought existing forests or planted new forests exclusively for the carbon without the timber element. While the PFSI relies on Kyoto units, due to New Zealand's opting out of the Kyoto Protocol, the Ministry of Primary Industries has been discussing how to restructure the PFSI such that it can generate units independent of the Kyoto framework.

Apart from forest carbon activities recognized under the ETS and PFSI, there is the still-nascent third category of tall indigenous forests. Article 3.4 forests, those forests established pre-1990, are now within the scope of the Kyoto Protocol, owing to new rules that came into force starting 2013. However, since New Zealand has opted out of the rules, it still remains unclear whether tall indigenous forests, still operating within the voluntary space, will at some point become eligible for compliance use.

The region's remaining transaction volume in 2012 was dominated by a few sizable offset transactions from projects located in Oceania's island countries.

8.5. Asia: Planting seeds for compliance

Courtesy of significant transactions in India, Indonesia, and China, Asia-based forestry and land-use project developers doubled their transaction volume in 2012, to 4.2 MtCO₂e. Forest carbon projects not only sustained popularity in Asia against the larger supply of inexpensive renewable energy offsets, but saw an increase in average price that enabled overall market value to jump fivefold.

Project developers in Asia, primarily in China and India, have historically actively pursued CDM A/R project development. However, in conjunction with the global slowdown in CDM A/R project development – reportedly because buyers were not fond of the temporary nature of tCERs – a few have recertified or are considering recertifying their projects using voluntary offset standards. But making the switch can be costly, and under primary contender VCS project costs remain high, particularly for small community-based projects.

Expensive to develop or not, the lion's share of Asia's transacted offsets (93% or 4.3 MtCO₂e) ultimately came from A/R projects using three voluntary standards – VCS, Plan Vivo, and the China-specific Panda Standard. In India, suppliers transacted 2.7

MtCO₂e at an average price of \$6.7/tCO₂e, all from A/R activities.

To India's north and south, Nepal and Sri Lanka remained untouched by the VCS or CDM forestry powerhouses, but did see their first projects registered under Plan Vivo in 2013, spanning a combination of A/R and IFM activities.

China-based projects saw slight growth in demand from 2011, which might be amplified in years to come, given new opportunities for forest carbon that are imminent in the region's emerging pilot carbon trading programs. Beijing, Chongqing, Guangdong, and Hubei (among seven jurisdictions launching emissions trading schemes in 2013 and beyond) intend to accept forest carbon offsets into their schemes.

Of the methodologies approved by China's National Development and Reform Commission (NDRC) to generate offsets for domestic emissions trading, none yet address forestry and land use, which the NDRC is still vetting. Domestic initiatives like the Panda Standard, China's first voluntary carbon standard, are seeking approval of their A/R methodologies. Other relevant domestic methodologies are being piloted via the China Green Carbon Foundation and Environmental Defense Fund.

The percentage of forest carbon offsets that emitters will be allowed to surrender against emissions reduction obligations is unclear.

Aside from the CDM, international offset standards have thus far had little to no presence in China. A representative from one standard says this could change, noting that insofar as there is interest to use a standard that would allow projects to access markets both in China and externally, homegrown standards could face competition.

Forest carbon offsets remained the most popular project type in Japan's J-VER program in 2012, which has historically reported the world's highest voluntary carbon offset prices. To date, Japanese buyers have been primarily motivated by CSR and philanthropy, though forest carbon is also fungible into Saitama Prefecture's compliance emissions trading scheme. In early 2013, J-VER merged with J-CDM, another domestic voluntary offset scheme administered within a different ministry – to form the J-Credit Scheme. Project developers await more information from the government on what changes the merger could entail. Meanwhile, Japan has continued to buck the trend of inward-facing Asian markets by investing in projects

Table 19: Asia by the Numbers, All Markets, 2012

Land and Project Area		
Total forest area ¹	547 million ha	
Carbon project area	3.5 million ha	
Annual land use emissions ² (MtCO ₂ e)	1,808 Mt	
# projects represented	20	
Market Snapshot		
	\$ million or MtCO ₂ e	% change from 2011
Volume supplied	4.6 Mt	+ >100%
Average price	\$7/t	+4%
Value	\$32 m	+ >100%
Volume purchased domestically	0.3 Mt	NO CHANGE

¹Source: FAO 2010; ²Source: WRI CAIT database. All other: Forest Trends' Ecosystem Marketplace

Table 20: Asia: Transacted Forest Carbon Credit Types and Buyers, All Markets, 2012

Top Transacted Forest Carbon Offset Types, 2012					
Project Type		Project Stage		Standard Use	
A/R	94%	Project design doc	93%	VCS	91%
IFM	6%	Issued	6%	Panda Standard	9%
REDD	<1%	Validated	1%	J-VER	<1%
Top Forest Carbon Offset Buyer Types, 2012					
Buyer Locations		Buyer Sectors		Buyer Motivations	
Europe	91%	Food and beverage	33%	CSR	58%
North America	9%	Communications/ information	12%	Climate leadership	38%
Asia	<1%	Carbon markets	1%	Resale	4%

Notes: Based on responses from 52 suppliers. Percent values are based on the volumes associated with individual questions, not including an “other” response.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

abroad, including REDD in Acre, Brazil, through its Bilateral Offset Credit Mechanism.

Adapting elements from J-VER and K-VER (South Korea's equivalent), the Thailand Greenhouse Gas Management Organization has been getting ready to introduce the long-anticipated Thailand Voluntary Emission Reduction (T-VER) program in 2013 to support forestry projects at home alongside other project types.

Capacity building continues to dominate efforts in timber-exporting countries in Southeast Asia, with most project development still in early stages and operating largely off of bilateral REDD funds versus market-based financing. However, a few projects in the region managed to land significant corporate support in 2012, transacting 1.5 MtCO₂e in offsets collectively across Indonesia, Malaysia, and Cambodia.

In Indonesia, InfiniteEARTH's Rimba Raya REDD Project, the world's first project to develop and navigate a REDD methodology through the VCS process, was verified in May 2013, confirming 2.1 MtCO₂e worth of VCU's for a single-year reporting period. Insurance giant Allianz picked up offsets from the project.

Earlier this year, the Oddar Meanchey REDD Project in Cambodia became the world's first project to earn “Triple Gold” CCB designation in recognition of

community, biodiversity, and adaptation benefits on top of VCS accounting for emissions reductions.

At the jurisdictional scale, Laos has been preparing to pilot VCS's JNR framework in two provinces, while Vietnam has been working on a provincial greenhouse gas assessment of its own to test JNR's compatibility with the local context. Meanwhile, the World Wildlife Fund has been pulling together an MRV system to apply to a REDD project that would transcend borders to include both Laos and Vietnam.

8.6. Africa: How to sync supply and demand?

The African continent offers significant potential for forest carbon mitigation stemming from its extensive forest land mass and tropical rainforest. Even so, Africa-based forest carbon projects face the consistent challenges of land tenure disputes, challenges to government capacity, and civil unrest. New activity in 2012 was limited by a lack of demand that has some stakeholders questioning the degree to which market-based carbon finance can realistically support the region's forestry projects as a stand-alone source of project revenues.

In 2012, 3.1 MtCO₂e of offsets were transacted from projects in the region, a significant decline from the 4.7 MtCO₂e reported in 2011 (Table 21). Kenya remains Africa's top source of offsets and market activity, with

project developers and offset retailers reporting nearly 1.6 MtCO₂e transacted from Kenya-based projects, at a total value of \$11.9 million. But stakeholders also see potential in countries such as the Democratic Republic of Congo (DRC) due to its sprawling forest lands.

“DRC is one of the most important countries in Africa for the tropical forests,” says Baudouin Michel, Director of the University of Kinshasa’s ERAIFT (a postgraduate tropical forest management program launched by UNESCO). But the ongoing impact related to the country’s civil wars, namely the lack of security and the inability to access forested areas, remains problematic, while poverty rates continue to rise, he notes. **“I’m afraid that situation is not getting better,”** he says.

The average price of Africa-based forest carbon offsets remained strong in 2012, rising 18% to \$7.2/tCO₂e, as buyers continued to show interest in projects that can successfully establish their co-benefit credentials. Marketing the co-benefits of forestry projects has become a top priority for developers, as voluntary buyers like the charismatic elements of these projects, namely the interaction and impact they have on local and indigenous communities in providing alternative

livelihoods or the biodiversity features of the projects.

Co-benefits – perhaps even more than forest preservation – are likely to be a primary driver of buyer attention to these projects in the future, says Duncan Abel, Senior Transactor of Forestry Carbon at Nedbank Capital in Johannesburg. “Carbon as a funding mechanism is going to be limited,” he notes.

As the volume of offsets issued from the region’s REDD projects climbs, market participants are increasingly emphasizing other sources of project revenues that stem from project-level interventions. Across all projects, REDD was by far the most popular forestry project type on the continent, behind 70% of all transacted offsets (Table 22).

Beneath the surface, sustainable forest management and sustainable energy – which primarily involves sustainable charcoal production for regional distribution – were the most common activities that project developers leveraged to avoid deforestation drivers. (See Section 4.4. for more on REDD activities.)

For many African project locations, the prospect of REDD finance from bilateral donors looms on the horizon, with countries including Ghana, Liberia, and Tanzania reporting an initial \$117 million committed by foreign governments (mainly Norway) to support a broad range of REDD readiness and implementation efforts.⁶ Funding committed from Norway to Tanzania makes up the largest proportion of these contributions and potentially includes financing for project-level activities. Coincidentally, Tanzania is the only one of the three where project developers have reported transacting offsets, to the tune of \$3.7 million over time.

Here, Carbon Tanzania completed Plan Vivo certifications of its Yaeda REDD project in the northern part of the country, where Director Marc Baker says public sector signals have been slow to materialize. **“As of now, all the interest in the credits generated by the Yaeda project is being driven by voluntary reasons,”** he explains. **“If the compliance market ever does come online, we would hope they would accept our project as valid because of it being certified, but I don’t see any compliance market interest at all.”**

In the DRC, offset supplier Offsetters’ Mai Ndombe project was the first REDD project originating in the

Table 21: Africa by the Numbers, All Markets, 2012

Land and Project Area		
Total forest area ¹	674 million ha	
Carbon project area	2.5 million ha	
Annual land use emissions ² (MtCO ₂ e)	600 Mt	
# Projects represented	36	
Market Snapshot		
	\$ million or MtCO ₂ e	% change from 2011
Volume supplied	3.1 Mt	-35%
Average price	\$7.2/t	+18%
Value	\$22 m	-8%
Volume purchased domestically	NA	NA

¹Source: FAO 2010; ²Source: WRI CAIT database. All other: Forest Trends’ Ecosystem Marketplace

⁶ These figures are derived from a mix of 2011 and 2012 results report from the reddx.forest-trends.org REDD expenditures inventory. Last accessed October 2013, updates anticipated November 2013.

Table 22: Africa: Transacted Forest Carbon Credit Types and Buyers, All Markets, 2012

Top Transacted Forest Carbon Offset Types, 2012					
Project Type		Project Stage		Standard Use	
REDD	70%	Issued	82%	VCS	95%
A/R	29%	Verified	6%	ISO-14064	3%
IFM	1%	Project Design Doc	5%	CDM	1%
Top Forest Carbon Offset Buyer Types, 2012					
Buyer Locations		Buyer Sectors		Buyer Motivations	
Europe	94%	Energy	25%	Resale	42%
North America	6%	Carbon markets	25%	Climate leadership	34%
		Transportation	16%	CSR	18%

Notes: Based on responses from 52 suppliers. Percent values are based on the volumes associated with individual questions, not including an “other” response.

Source: Forest Trends’ Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

country to be fully validated and verified, and the first REDD project in the Congo Basin. The project – supported by the Congolese government and the UN REDD Programme and recognized within the DRC’s national REDD registry – protects 300,000 hectares of tropical rainforest from complete loss of forest cover.

The Mai Ndombe project, which like many REDD projects is also tapping into the trend of verifying the delivery of multiple co-benefits, reports the largest expected annual emissions reductions of any project in the VCS system – over 100 MtCO₂e cumulatively spanning a 30-period. A similarly large project in Zimbabwe, Carbon Green Africa’s Kariba REDD project, is expected to reduce 52 MtCO₂e over the same time period.

Such mega-scale projects are a boon to the forests and the climate, but a growing burden to those tasked with managing the massive project area. Says Steve Baczko, Vice-President of Business Development for ERA Ecosystem Services and Offsetters, “It’s quite an undertaking to develop one of these projects,” he says. “It’s a very capital-intensive undertaking and requires in-country technical, operational, and socio-economic expertise to ensure the carbon program is managed appropriately and the co-benefits are delivered.”

Suppliers say that some of the ongoing challenges to bringing forest carbon projects to market are magnified in Africa, particularly the land tenure issue (See Section 4.7. for more). Project certification is

difficult to achieve if the land tenure is in dispute or unclear. In addition, establishing reliable structures that ensure that the majority of cash generated by these projects goes to the communities being impacted remains a tricky endeavor. To attract foreign capital, reliable democratic governments must also be in place, without the danger of the money ending up in the wrong hands. Corruption remains a major obstacle, with even director-level civil servants in some countries making monthly salaries of sub-\$100 and thus seeking supplemental income.

Despite these challenges, a significant proportion of VCS REDD offsets transacted over time have been sourced from African projects, as buyers remain motivated to support a relatively steady proportion of the region’s carbon-financed forest conservation. Market participants are now turning their attention to the integration of project-level activities within the Norway-backed VCS JNR pilot in Mai Ndombe, which many hope will begin to fill the gap between existing finance and future needs.

8.7. Europe: Still a buyer’s market

In 2012, European buyers were once again the major purchasers of voluntary forest carbon offsets from projects around the world, purchasing half of all offsets transacted in 2012 – the same proportion as in 2011. But the region’s share of the global market on the supply side remains small.

The European compliance offset market struggled in 2012, with the collapse of CDM prices forcing market participants to evolve within what has historically been the world's largest market for carbon offsets. Forestry carbon projects have not played a significant role in the regional program, as certain stakeholders, particularly environmental NGOs, have historically raised issues about the rigor of MRV and social safeguards in the context of forestry project implementation. REDD and IFM projects have been excluded from the CDM program, leaving only A/R projects as eligible.

Voluntary purchases of forest carbon offsets produced within the region have been extremely limited due to complications regarding land-use accounting and reporting for countries that are parties to the Kyoto Protocol. Small transaction volumes were reported under the UK's Woodland Carbon Code (WCC), Italy's Carbomark program, and the Portuguese Carbon Fund, with less than 300,000 offsets reported as transacted from the entire region in 2012 – or about half the market size reported in 2011 (Table 23).

Carbomark was launched as a pilot action aimed at creating a local voluntary carbon market in the land-use sector. Under the program, both private and public forest owners are given the opportunity to sell carbon offsets received by developing a carbon management land-use plan that employs sustainable forest management practices.

The market started in September 2010, when local small- and medium-sized enterprises had the opportunity to buy local carbon credits to offset their emissions. It focuses on local mitigation activities in two regions in northeast Italy, does not include activities taking place in other countries, and favors offsets from agroforestry activities. In 2012, several municipalities in the Vicenza province sold offsets into the market.

The Portuguese Carbon Fund was created in 2006 to acquire GHG emissions reductions using the flexibility mechanisms established by the Kyoto Protocol – the EU ETS, CDM, and JI – as well as investing in domestic emissions reductions. The fund supports agriculture and forestry efforts that promote better country-side management, reduce fertilizer use, protect and enhance forests, and encourage biomass energy use. It also supports measures to prevent forest fires, promote the carbon sink capacity of the forests, and

Table 23: Europe by the Numbers, All Markets, 2012

Land and Project Area		
Total forest area ¹	196 million ha	
Carbon project area	0.1 million ha	
# rojects represented	10	
Market Snapshot		
	\$ million or MtCO ₂ e	% change from 2011
Volume supplied	0.3 Mt	-54%
Average price	\$41/t	+ >100%
Value	\$11 m	+ >100%
Volume purchased domestically	11.4 Mt	+21%

¹Source: FAO 2010 – excludes Russian Federation; All other: Forest Trends' Ecosystem Marketplace

evaluate and promote agricultural land-based carbon sequestration.

The UK's Woodland Carbon Code – administered by the UK Forestry Commission to incentivize woodland creation – supports the creation of a per-tonne unit that UK-based companies can purchase as an environmental credit.

The UK Department for Environment, Food and Rural Affairs allows UK companies to claim any support for WCC projects against their annual emissions reporting – one of only two cases of a national government allowing voluntary offsetting claims against mandatory emissions reporting (the other being Japan).

A total of 133 projects covering 14,200 hectares (35,000 acres) have been registered under the WCC, signaling their intent to seek validation. Of these 133 registered projects, 42 have completed audits and been independently validated. In addition, a scheme to allow groups of woodland projects to come together for validation has been successfully piloted and is now open to applicants, making the process more cost-effective for smaller projects.

In July 2013, the WCC was launched on the Markit Environmental Registry.

9. Looking Ahead: Market Projections

9.1. Developer predictions: New ground, new challenges

In a market where participants are separated by thousands of miles and transactions don't occur on an exchange – or even become public knowledge in many cases – future projections for market performance based on “real time” forest carbon offset pricing are impossible. Backward-looking reports such as this and practitioners, too, must rely purely on historical data, which is best viewed as an indicator of recent activity.

In reality, forest carbon project policies and technical requirements have already changed significantly from the time that developers responded to its survey – and from 2012.

With the benefit of hindsight and already some insight into 2013's performance, we asked suppliers to “guesstimate” market size for 2012, for the current year and the years ahead. While these predictions are subjective, they provide useful insight into the current temperament of the market and indications of where it might be headed.

Figure 49 shows that, at least for the previous and current years, project developers have an unprecedentedly

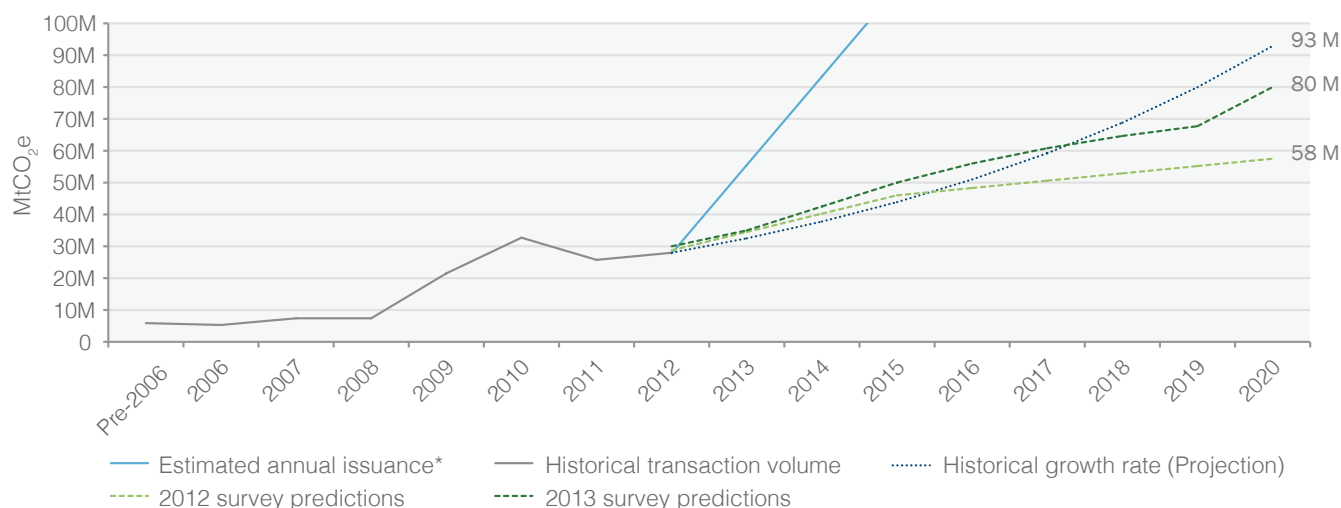
realistic view of market activity. Even in the absence of intra-year market analysis, both 2012 and 2013 survey respondents' estimates for 2012 market size were within 1 MtCO₂e of actual market performance. Respondents from both years also project that the market will transact 35 MtCO₂e in 2013.

Looking ahead, the gap between last year's and this year's survey respondent estimates widens. Beyond 2013, this year's survey respondents predict an average annual growth rate of 13%, while developers reporting in 2012 predicted a 9% growth rate. This equates to a 23 MtCO₂e difference in market size by 2020.

Both years' survey-based projections also foresee a marketplace that in 2020 is slightly to significantly smaller than if the market continued to grow according to its historical rate (reaching 93 MtCO₂e by 2020).

Survey respondents in 2013 were nonetheless more optimistic about future market outlook, pointing to promising early signals for future forest offset demand from markets like California and China; the near-finalization of the FCPF's Carbon Fund and the Althelia Climate Fund; and progress toward jurisdiction-scale programs that will accommodate bilateral finance as indicative of long-term opportunities.

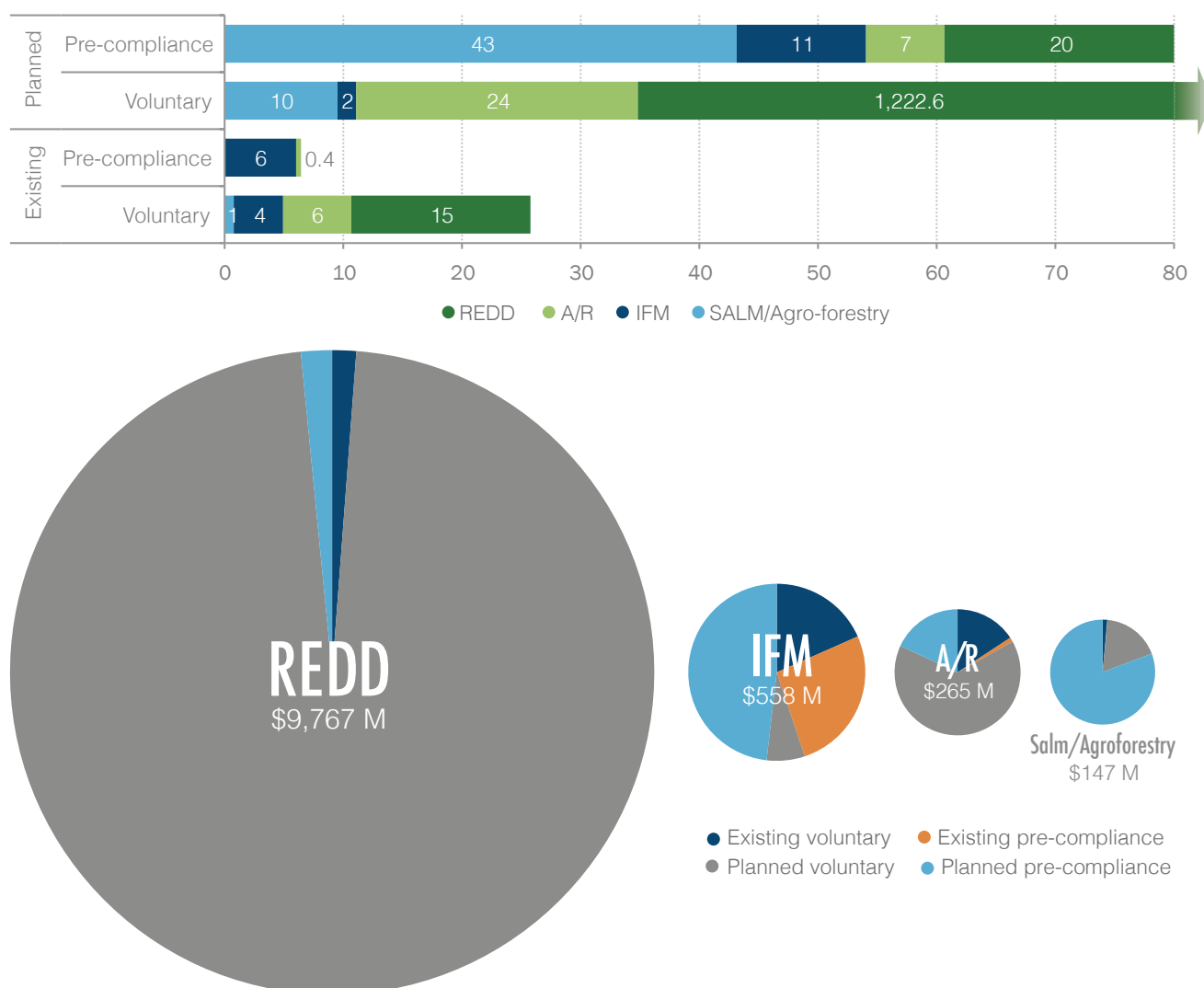
Figure 49: Project Developer Predictions, All Markets, 2011-2012



Notes: Based on predictions provided by 97 survey respondents. Estimated annual issuance based on developer-reported ranges.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

Figure 50: Developer Estimated Portfolio and Pipeline, All Markets



Notes: Based on predictions provided by 97 survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

9.2. Remaining portfolios and pipeline: REDD ready for ramp-up

Also in the survey, we asked developers about the volume of offsets that remained in their portfolios unsold as of the end of 2012 (Figure 50). Their response – a total of 30 MtCO₂e – would have been worth an additional \$236 million if it had been transacted at 2012 prices. In reality, the market achieved 48% of its potential value of \$453 million if all supply had been transacted.

“Leftover” portfolio findings vary by project type. For example, IFM project developers contracted 87% of available volumes in 2012, while REDD and SALM/ agroforestry developers only placed 36% over their

available offsets with a buyer. A/R projects fell out somewhere in the middle – contracting 58% of available offset portfolios.

Looking ahead, project developers report that they intend to bring another 1.4 billion offsets to market over the next five years – 93% of which would be sourced from REDD projects. Respondents also report that the vast majority of these REDD offsets are intended for voluntary buyers (1,223 MtCO₂e). Conversely, IFM project developers expect to transact 82% of their anticipated 53 MtCO₂e offset pipeline in the compliance markets.

As seen in Figure 50, the market requires significant growth in order to accommodate suppliers' anticipated

portfolios – or, as some have suggested – downsized expectations and plans to avoid oversupply. For context, REDD offsets contracted in 2012 represent 1% of this pipeline. Based on current pricing, this pipeline equates to a market value of \$10.7 billion, or roughly \$2 billion/year required to support a project pipeline of this size over five years.

9.3. Looking ahead: 2013 and beyond...

As seen in Table 24 and throughout this report, estimates of existing and future market needs abound, ranging from millions to billions of dollars in this decade.

Beyond the forest carbon markets, cost estimates to slow or halt deforestation, or at least to protect the world's most critical forests, are comparable to or greater than these figures, with some approaching trillions of dollars.

These figures raise questions that are already at the forefront of market discussions – *How can the public and private sectors together achieve these necessary goals? How can the two establish mutual confidence that investments and actions both will be lasting? What are the economic (and socio-economic), policy, and other levers that can be pulled to push both sides to act together?*

These are big questions for a small market, where practitioners often encounter the belief – from the media, consumers, and policy-makers, in particular – that some other large-scale solution to forest finance is just around the corner. In reality, many of the international conservation NGOs, governments, indigenous communities, and private actors in this space are currently the world's first and only line of defense against misuse and/or overuse of scarce natural resources. And they have been for years.

Developers that continue to manage forestry projects through both the markets' good and more challenging years say this reality is what keeps them in the game

and consistently acting ahead of government to rapidly implement forestry and land-use solutions. This forward momentum continues in the current year, seeing forestry offsets make the agenda of household brands like eBay, PUMA, UPS, Microsoft, Peugeot, and others. Corporate-facing program Code REDD is driving awareness to the sector through high-level events and promotion of industry best practice. And industry associations like the International Emissions Trading Association are stepping up market discourse about forestry and land-use market opportunities.

As a result of ongoing efforts such as these and the continued presence of offset retailers that have traditionally managed some of the market's most high-profile relationships, the market for forestry-based voluntary offsetting has largely stabilized. To grow the private offset market's share, developers are increasingly making the case for enhanced security of supply and improved producer relationships as co-benefits of projects that directly target buyers' land-based supply chain emissions.

But as market participants will admit, significant market growth ultimately hinges on regulatory drivers. To meet these opportunities head-on, developers aiming to tap into public sector support for forest conservation are beginning to pilot programs integrated with emerging regional accounting frameworks; to experiment with "stacking" forest carbon assets onto other certified forest and agricultural commodities; and to formalize community stakeholder participation – many with the intention of marrying public and private priorities.

In the quest to remain relevant to funders of all kinds, the market's project standards, developers, registries, analysts, consultants, and community stakeholders continue to break new ground – cultivating a resilient source of innovation and experimentation that is already seeding tomorrow's markets.

Table 24: Various Estimates of Market Reality and Future Needs, 2013 and Beyond

\$ 216 M	\$ 236 M	\$ 280 M	\$ 1.1 - 2.3 B	\$ 10.7 B
2012 market value: ACTUAL	Value of unsold offset portfolio	2012 value if developers had received desired price	Developer estimates to fully support existing projects	Value of developers' 5-year pipeline

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2013*.

ANNEX

Annex A: Standard Profiles

Throughout summer 2013, we surveyed standards and registries to explore the volume and types of credits – including forestry and land-use offsets – that have been tracked through their systems, as well as how each standard's structure and scope impacts uptake. Tracked information varied slightly by each infrastructure provider, but what we were able to obtain is reported in the following section, along with six years' worth of historical survey data.

At the top of each standard's profile – created for any standard that has more than one year's worth of transaction data and that guides forest carbon project development – we present a summary of the standard and basic price and volume information for transacted forest carbon credits. The bottom half of each profile is dedicated to basic information about the standard's geographic and technical scope; use of third-party verification for various project activities; the number of projects validated by project category through the end of 2012; and the market share for different types of credits that were transacted under each standard in 2012 only.

In between these quantitative and qualitative sections, a series of ratios explore the relationships between available, transacted, and retired offset volumes.

Issued to Transacted Ratio: This ratio compares the volume of credits issued by a registry according to the featured standard against volume of credits that suppliers have reported transacting, for all years and in 2012. In some cases, transaction volumes are higher than issuance volumes – this captures both market turnover and forward sales.

Issued to Retired Ratio: This ratio compares the volume of credits issued by a registry according to the featured standard against the volume of credits that registries have reported retiring from that standard, for all years and in 2012.

Buffer Volumes: This column captures the total volume of credits contributed to each standard's buffer pool mechanism. Volumes are calculated from the start date of the buffer policy until the end of 2012. Thus, volumes will vary by standard – not only according to buffer start date but also based on how standards manage intentional versus unintentional reversals, whether or not they accept additional “donations” to the buffer, and what reversals are compensated for by the buffer pool versus the project owners themselves.

Average Expected Annual Issuance from Projects that Have Issued Credits: For the first time, this year's annex reports on expected annual issuance from projects that have already issued credits in order to provide a better sense of future offset supply. These expected annual issuance figures should be taken with a grain of salt, however, given that they are simple averages taken without regard to nuanced differences in crediting period and project type. Actual annual issuance going forward will also depend greatly on whether a project finds a solid prospective buyer; many projects will not go through the trouble of issuing credits until they have assurance from buyers.

A note on our methods: Most standards do not have a clear picture of the volume of credits verified to their standard until a verification report is submitted to a registry. We have therefore omitted verification figures, focusing instead on tracking issued, transacted, retired, and buffer pool volumes. In this section, we rely exclusively on registries' retirement data and not the retired volumes we track in our survey, as registries' retired volumes are slightly more comprehensive. Retirement volumes tracked from the CarbonFix Standard reflect publicly available data. The proportion of market supply that represents unreported, private activities remains unknown. Finally, we include a universal legend for the “Validated and Transacted Projects by Type” charts for the first time breaking it out by specific AFOLU project types.

A.1 Forest Carbon Accounting Standards

American Carbon Registry (ACR)

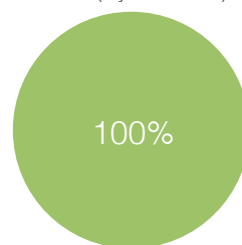
ACR, founded in 1996, is a nonprofit enterprise of Winrock International with three published standards, all of which have undergone scientific peer review. In 2012, ACR was approved as an Offset Project Registry for California's cap-and-trade program, under which it now helps oversee the listing, verification and, issuance of offsets being developed using the California Air Resources Board's compliance or early-action offset protocols. Guidelines ACR released in 2012 include the first methodology for deltaic wetland restoration, a nested REDD standard, and a methodology for agricultural N₂O.

Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$7.4	3.2	7	0.003	1.3
2012	\$8.4	0.2	4	0.003	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	8 to 10		930 to 1	0.2	
2012	13 to 1		915 to 1		

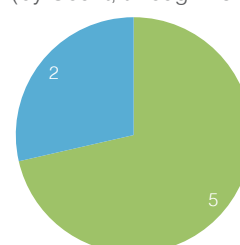
Standard Scope

Standard Type	Carbon accounting + tagged co-benefits
Asset Generated	Carbon credit
Eligible Countries	All
Verification Required for:	
Projects	√
Methodologies	√
Emissions Reductions	√
Co-benefits	Tagged
MAX. time b/w verifications (years):	5

Transacted Project Types, 2012 (by % Share)



Validated Projects by Type (by Count, through 2012)



- Afforestation/reforestation
- Improved forest management
- All ag (SALM/agroforestry)
- Mixed forestry
- REDD/avoided conversion

CarbonFix Standard (CarbonFix)

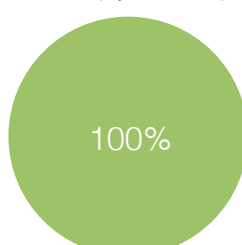
The CarbonFix Standard applies to afforestation, reforestation, natural regeneration, and agroforestry projects that demonstrate a commitment to socio-economic and ecological responsibility. In September 2012, The Gold Standard Foundation acquired CarbonFix in order to support its expansion into land use and forests. Existing CarbonFix projects are being hosted by The Gold Standard and may transition into Gold Standard projects if they meet the rules under the newly established Gold Standard Land Use & Forests Framework and Requirements.

Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$13.3	0.5	9	0.1	0.3
2012	\$11.4	0.05	2	0.04	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits* (Mt)	
All Years	3 to 2		6 to 1	0.04	
2012	7 to 1		9 to 1		

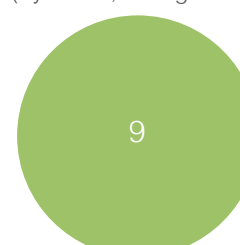
Standard Scope

Standard Type	Carbon accounting + embedded co-benefits
Asset Generated	Carbon offset
Eligible Countries	All
Verification Required for:	
Projects	√
Methodologies	√
Emissions Reductions	√
Co-benefits	√
MAX. time between verifications (years)	5

Transacted Project Types, 2012 (by % Share)



Validated Projects by Type (by Count, through 2012)

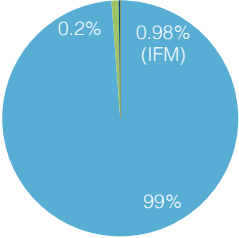



- Afforestation/reforestation
- Improved forest management
- All ag (SALM/agroforestry)
- Mixed forestry
- REDD/avoided conversion

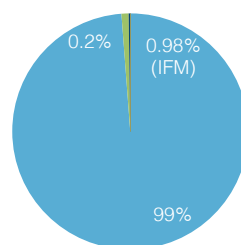
*Would apply to any CarbonFix projects transferred to The Gold Standard.

Chicago Climate Exchange (CCX) Offset Standard

After retiring its voluntary cap-and-trade scheme in 2010, CCX launched the Chicago Climate Exchange Offsets Registry Program in 2011 to register verified emissions reductions based on a comprehensive set of established protocols that builds off of ISO-14064 procedures. Participants interested in acquiring registered offsets may apply to become a CCX Registry Account Holder.

Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$1.1	7.7	36	Unknown	Unknown
2012	\$0.1	3.9	0	Unknown	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	6 to 1		16 to 1	Unknown	
2012	N/A		Unknown		
Standard Scope			<div>Transacted Project Types, 2012 (by % Share)</div>  <div>Validated Projects by Type (by Count, through 2012)</div>  <div><div><div></div>Afforestation/ reforestation</div><div><div></div>Improved forest management</div><div><div></div>REDD/avoided conversion</div><div><div></div>All ag (SALM/ agroforestry)</div><div><div></div>Mixed forestry</div></div>		
Standard Type	Carbon accounting only				
Asset Generated	Carbon credit				
Eligible Countries	All				
Verification Required for:					
Projects	√				
Methodologies	√				
Emissions Reductions	√				
Co-benefits					
MAX. time between verifications (years)	5				

Transacted Project Types, 2012 (by % Share)



Validated Projects by Type (by Count, through 2012)

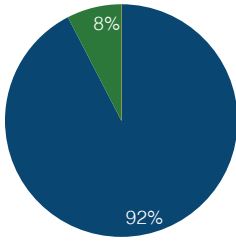
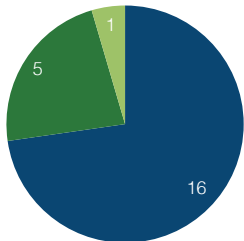


Legend for Transacted Project Types:

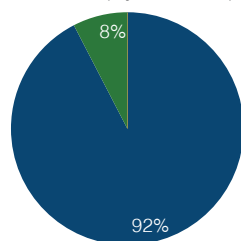
- Afforestation/ reforestation (light green)
- All ag (SALM/ agroforestry) (blue)
- Improved forest management (dark blue)
- Mixed forestry (grey)
- REDD/avoided conversion (dark green)

Climate Action Reserve (CAR or "The Reserve")

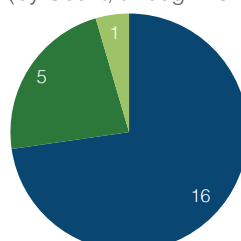
The Reserve is an environmental non-profit that serves as a carbon offset registry and standards-setting body. The Reserve has so far developed several carbon offset protocols for use in the US and in some cases Mexico. In 2012, the Reserve became an Offset Project Registry and Early Action Offset Program for California's cap-and-trade program. Through these roles, it helps oversee the registration and issuance of offsets being developed using the California Air Resources Board's compliance and early-action offset protocols. Its Forest Project Protocol is one of four Reserve protocols approved for use in the new compliance market.

Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$7.7	4.2	22	1.1	0.5
2012	\$8.9	1.2	16	0.4	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	1 to 1		4 to 1	0.04	
2012	1.1 to 1		3.5 to 1		
Standard Scope			<div>Transacted Project Types, 2012 (by % Share)</div>  <div>Validated Projects by Type (by Count, through 2012)</div>  <div><div><div></div>Afforestation/ reforestation</div><div><div></div>Improved forest management</div><div><div></div>REDD/avoided conversion</div><div><div></div>All ag (SALM/ agroforestry)</div><div><div></div>Mixed forestry</div></div>		
Standard Type	Carbon accounting only				
Asset Generated	Carbon credit				
Eligible Countries:	US & Mexico				
Verification Required for:					
Projects	√				
Methodologies	√				
Emissions Reductions	√				
Co-benefits					
MAX. time between verifications (years):	6*				

Transacted Project Types, 2012 (by % Share)



Validated Projects by Type (by Count, through 2012)



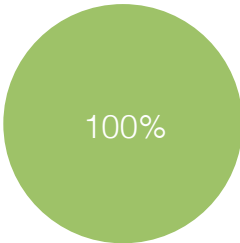
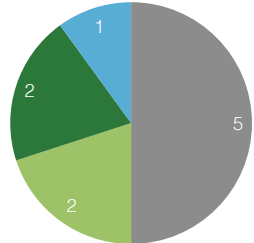
Legend for Transacted Project Types:

- Afforestation/ reforestation (light green)
- All ag (SALM/ agroforestry) (blue)
- Improved forest management (dark blue)
- Mixed forestry (grey)
- REDD/avoided conversion (dark green)

*Timing of the second verification for a reforestation project is at the forest owner's discretion. After the second verification, the standard 6-year cycle applies again.

Plan Vivo Standard (Plan Vivo)

Plan Vivo certifies forestry offset programs, ensuring that livelihood needs are considered and built into project design and local income sources are diversified to reduce poverty and tackle the root causes of deforestation and land degradation. The Plan Vivo Foundation monitors and publishes operational costs (including distribution of payments to communities) in order to create financial transparency and learn lessons on cost-effectiveness over time. In 2012, Plan Vivo undertook a public consultation process on an updated set of standard guidelines, which it plans to release soon.

Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$7.5	1.4	10	1.6	Unknown
2012	\$7.0	0.3	1	0.3	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	0.9 to 1		1.1 to 1	Unknown	
2012:	1.2 to 1		1.1 to 1		
Standard Scope			<div>Transacted Project Types, 2012 (by % Share)</div>  <div>Validated Projects by Type (by Count, through 2012)</div>  <div><div>Afforestation/ reforestation</div><div>Improved forest management</div><div>All ag (SALM/ agroforestry)</div><div>REDD/avoided conversion</div><div>Mixed forestry</div></div>		
Standard Type	Carbon accounting + embedded co-benefits				
Asset Generated	Carbon offset				
Eligible Countries:	Developing countries				
Verification Required for:					
Projects	✓				
Methodologies	✓				
Emissions Reductions	✓				
Co-benefits	✓				
MAX. time between verifications (years):	5				

Verified Carbon Standard (VCS)

VCS was founded in 2005 by The Climate Group, the International Emissions Trading Association, World Economic Forum, and the WBCSD. In early 2012, VCS released new guidance on standardized methods for additionality and crediting, and technical guidance for nesting REDD projects. Toward the end of the year, VCS released the world's first jurisdictional nested REDD requirements, as well as requirements for wetland restoration, and soil carbon.

Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$6.5	43	54	2.5	1.8
2012:	\$7.5	16	29	1.4	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	2 to 10		3 to 1	9.7	
2012	2 to 10		2 to 1		
Standard Scope					
Standard Type	Carbon accounting + tagged co-benefits				
Asset Generated	Carbon offset (VCUs)				
Eligible Countries	All				
Verification Required for:					
Projects	√				
Methodologies	√				
Emissions Reductions	√				
Co-benefits	√				
MAX. time between verifications (years):	None				

Transacted Project Types, 2012 (by % Share)

Project Type	Share (%)
REDD/avoided conversion	62%
Afforestation/reforestation	25%
Improved forest management	13%
All ag (SALM/agroforestry)	0.1%

Validated Projects by Type (by Count, through 2012)

Project Type	Count
Afforestation/reforestation	34
REDD/avoided conversion	21
Improved forest management	6

Afforestation/reforestation

All ag (SALM/agroforestry)

Improved forest management

Mixed forestry

REDD/avoided conversion

*For the VCS program, the registration date is more relevant than the validation date, since projects often experience a gap from when they are validated to when they are registered.

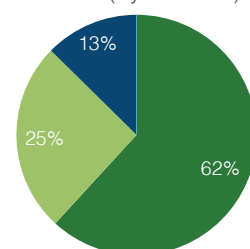
A.2 Project Co-Benefits Programs

Climate, Community & Biodiversity Standards (CCB Standards)

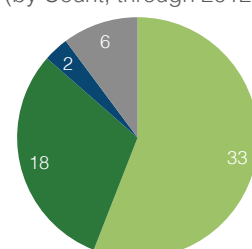
The CCB Standards are project-design criteria for evaluating land-based carbon mitigation projects' community and biodiversity co-benefits. As a co-benefits-only standard, GHG reductions must be verified against another underlying carbon standard. Transaction volumes below are from carbon projects tagged with CCB certification. In 2012, CCBS and VCS introduced a joint project approval and offset issuance process. Comments on the 3rd Edition of the CCBS are under review, which include a programmatic approach similar to the VCS grouped project, simplified requirements for the climate section, and a cover sheet for co-benefits.

Utilization	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$9.5	36	59	1.2	N/A
2012	\$7.7	13	15	0.7	
Standard Scope			<div>Transacted Project Types, 2012 (by % Share)</div> <div>Validated Projects by Type* (by Count, through 2012)</div> <div><div><div>Afforestation/reforestation</div><div>25%</div></div><div><div>Improved forest management</div><div>13%</div></div><div><div>REDD/avoided conversion</div><div>62%</div></div></div> <div><div><div>All ag (SALM/agroforestry)</div><div>6</div></div><div><div>Mixed forestry</div><div>2</div></div><div><div>Improved forest management</div><div>18</div></div><div><div>REDD/avoided conversion</div><div>33</div></div></div>		
Standard Type	Co-benefits only				
Asset Generated	Certificate				
Eligible Countries	All				
Verification Required for:					
Projects	√				
Methodologies	√				
Emissions Reductions					
Co-benefits	√				
MAX. time between verifications (years):	5				

Transacted Project Types, 2012 (by % Share)



Validated Projects by Type* (by Count, through 2012)



● Afforestation/reforestation
● All ag (SALM/agroforestry)
● REDD/avoided conversion
● Improved forest management
● Mixed forestry

*Mixed forestry projects here combine REDD and A/R, and A/R and agricultural land management.

A.3 Domestic (Country- or Region-Specific Programs)

Brasil Mata Viva (BMV)					
BMV is a payment-for-environmental-services standard with a forest carbon accounting component. Through its application, the BMV methodology aims to generate resources for the introduction of new sustainable technologies for land use and the establishment of production units to add value to areas' rural production, re-composition, and recovery. Projects generate Sustainability Credit Units following validation by the Instituto de Desenvolvimento Econômico e Socioambiental (IDESA), verification by UNESP University, and certification of the whole process by TÜV Rheinland.					
Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$12	5	28	4	Unknown
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	3 to 1		4 to 1	Unknown	
Standard Scope			<div>Transacted Project Types, 2012 (by % Share)</div> <div><div>100%</div></div> <div><div>● Afforestation/reforestation</div><div>● Improved forest management</div><div>● REDD/avoided conversion</div><div>● All ag (SALM/agroforestry)</div><div>● Mixed forestry</div></div> <div>Validated Projects by Type (by Count, through 2012)</div> <div><div>28</div></div>		
Standard Type	Carbon accounting + embedded co-benefits				
Asset Generated	Sustainability Credits				
Eligible Countries	Multiple				
Verification Required for:					
Projects	√				
Methodologies	√				
Emissions Reductions	√				
Co-benefits	√				
MAX. time b/w verifications (years):	5				
Carbon Farming Initiative (CFI)					
Enabled by the Carbon Credits (CC) Act 2011 as a part of the Australian Government's Clean Energy Future Plan, the CFI is the first national scheme to regulate the creation and trade of carbon offsets from farming, landfill, and forestry. The CFI uses legislation- and methodology-specific requirements along with positive and negative lists to determine project additionality. An independent expert committee, the Domestic Offsets Integrity Committee, assesses offset methodologies and advises the Minister for the Environment on their approval. The Clean Energy Regulator is responsible for administering the CFI.					
Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$13.5*	3.1	3	None	0.02
2012	\$13.3	2.9	3	None	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	No AFOLU issuance yet in 2012		N/A	N/A	
2012					
Standard Scope			<div>Transacted Project Types, 2012 (by % Share)</div> <div><div>48%</div><div>52%</div></div> <div><div>● Afforestation/reforestation</div><div>● Improved forest management</div><div>● REDD/avoided conversion</div><div>● All ag (SALM/agroforestry)</div><div>● Mixed forestry</div></div> <div>Validated Projects by Type (by Count, through 2012)</div> <div><div>1</div><div>2</div></div>		
Standard Type	Carbon accounting only				
Asset Generated	Carbon offset				
Eligible Countries	Australia				
Verification Required for:					
Projects	N/A				
Methodologies	√				
Emissions Reductions	√				
Co-benefits					
MAX. time between verifications (years):	6				

* Draws from pre-compliance transactions in the voluntary market, which diverge from the fixed compliance price of \$23/tCO₂e.

Japan Verified Emissions Reduction Scheme (J-VER)

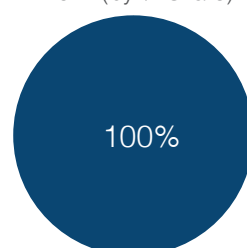
Japan's Ministry of the Environment (MOEJ) launched the J-VER voluntary offsetting scheme as an effort "by and for Japan," with Japan-only internal methodologies (based on ISO 14064), internal registry, and complementary Voluntary Carbon Offsetting Activities including Japan Carbon Offset Scheme that together comprise a purely domestic scheme. J-VER and J-CDM – the other part of Japan's domestic voluntary offset scheme – merged into the J-Credit Scheme in 2013 and began accepting applications for projects in August.

Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$115	0.3	138	0.05	0.009
2012	\$105	0.1	36	0.02	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	1 to 1		6 to 1	0.2	
2012	1 to 1		7 to 1		

Standard Scope

Standard Type	Carbon accounting only
Asset Generated	Carbon credit
Eligible Countries	Japan
Verification Required for:	
Projects	√
Methodologies	√
Emissions Reductions	√
Co-benefits	
MAX. time b/w verifications (years):	N/A

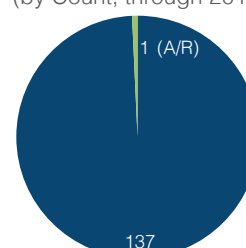
Transacted Project Types, 2012 (by % Share)



● Afforestation/ reforestation
● All ag (SALM/ agroforestry)

● Improved forest management
● Mixed forestry

Validated Projects by Type* (by Count, through 2012)



● REDD/avoided conversion

NZ Permanent Forest Sink Initiative (PFSI)

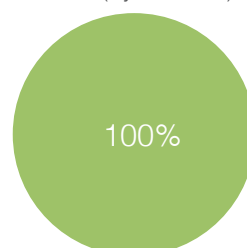
New Zealand's PFSI offers landowners of permanent forests established after 1 January 1990 the opportunity to earn Kyoto Protocol Assigned Amount Units (AAUs) for the carbon sequestered by their forests since 1 January 2008. Because New Zealand's government has opted not to participate in the Kyoto Protocol's second commitment period, domestic emitters will no longer be able to access Kyoto units starting 2015. The PFSI is complementary to the New Zealand Emissions Trading Scheme (ETS) and is currently under review for improvements by the New Zealand government.

Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$10.6	1.5	43	0.05	*
2012	\$4.3	0.5	Unknown	0.004	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	1 to 5		4 to 1	Unknown	
2012	None issued		None issued		

Standard Scope

Standard Type	Carbon accounting + embedded co-benefits
Asset Generated	Allowances (AAUs)**, VERs
Eligible Countries	New Zealand
Verification Required for:	
Projects	√
Methodologies	√
Emissions Reductions	√
Co-benefits	
MAX. time between verifications (years):	N/A

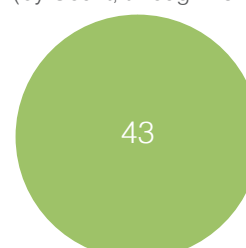
Transacted Project Types, 2012 (by % Share)



● Afforestation/ reforestation
● All ag (SALM/ agroforestry)

● Improved forest management
● Mixed forestry

Validated Projects by Type* (by Count, through 2012)



● REDD/avoided conversion

*While there is no regulated buffer pool, individual participants may choose to hold a portion of the units they receive as a buffer.

**While AAUs are issued for NZ's first commitment period (2008–2012), another unit type yet to be determined may be issued for its second commitment period (2013–2017).

Pacific Carbon Standard (PCS)

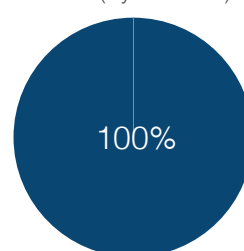
The Pacific Carbon Standard defines the requirements for developing offsets to be recognized as Pacific Carbon Units (PCU). This standard was developed by Pacific Carbon Trust, a British Columbia Crown corporation tasked with sourcing offsets to meet the provincial government's carbon neutrality commitment. Originally exclusively owned and transacted by Pacific Carbon Trust, PCUs are now transacted by other parties for the voluntary market.

Usage	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	\$25	1.2	3	0.8	0.4
2012	\$25	0.6	1	0.5	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
All Years	1 to 1		3 to 2	0.7	
2012	1 to 2		7 to 10		

Standard Scope

Standard Type	Carbon accounting only
Asset Generated	Carbon offset
Eligible Countries	British Columbia
Verification Required for:	
Projects	√
Methodologies	√
Emissions Reductions	√
Co-benefits	
MAX. time between verifications (years):	N/A

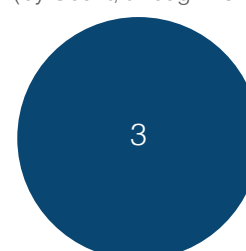
Transacted Project Types, 2012 (by % Share)



● Afforestation/ reforestation
● All ag (SALM/ agroforestry)

● Improved forest management
● Mixed forestry

Validated Projects by Type (by Count, through 2012)



● REDD/avoided conversion

Woodland Carbon Code (WCC)

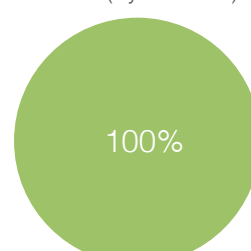
The Forestry Commission launched the WCC in 2011 as a domestic voluntary mechanism to incentivize local action on forestry. The WCC credits domestic forestry projects using certificates. The WCC uses the project-based method to test additionality and requires projects to meet the UK Forestry Standard's environmental/social criteria. While projects cannot generate offsets due to the double-monetization issue, the WCC shares features with international standards like a buffer pool, project-grouping mechanism, and independent certification. The WCC went live on Markit in July 2013, and the first verifications will occur in 2016, when Woodland Carbon Units will be issued for verified sequestered carbon.

Utilization	Average Price	Transacted (Mt)	# Projects Validated	Volume Retired (Mt)	Buffer Pool (Mt)
All Years	Unknown	0.6	22	N/A	N/A*
2012	Unknown	0.1	19	N/A	
Ratios	Issued : Transacted		Issued : Retired	Avg. Expected Annual Issuance from Projects that Have Issued Credits (Mt)	
2012	N/A		N/A	N/A	

Standard Scope

Standard Type	Carbon accounting + embedded co-benefits
Asset Generated	Certificate
Eligible Countries	United Kingdom
Verification Required for:	
Projects	√
Methodologies	√
Emissions Reductions	√
Co-benefits	√
MAX. time between verifications (years):	10**

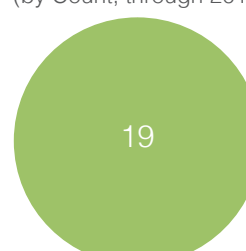
Transacted Project Types, 2012 (by % Share)



● Afforestation/ reforestation
● All ag (SALM/ agroforestry)

● Improved forest management
● Mixed forestry

Validated Projects by Type (by Count, through 2012)



● REDD/avoided conversion

*WCC has 119,000 Pending Issuance Units, to be converted into Buffer Units from 2016 onward.

**Verification is required at Year 5, then every 10 years.

A.1.4 Standards to Watch

California Air Resources Board Protocols – ARB Protocols (2011)

The California Air Resources Board (ARB) within California's Environmental Protection Agency developed a cap-and-trade program under California's Assembly Bill 32 ("AB32") that draws from existing voluntary carbon market infrastructure. Approved in 2011, the ARB Protocols were adapted from existing protocols developed by California's Climate Action Reserve (CAR). So far, they consist of four protocols: livestock manure, ozone-depleting substances, urban forestry, and forestry – including improved forest management and avoided conversion. Other protocols under consideration include rice cultivation, coal mine methane, and REDD. The REDD Offset Working Group (ROW), established in 2011, examined what legal, technical, and institutional mechanisms would be required to link compliance buyers in California with REDD offset projects developed in the states of Chiapas, Mexico, and Acre, Brazil. The ROW released its final recommendations in July 2013. Under AB32, forest offsets must persist for 100 years and – unlike ARB's other offset types – the liability for ensuring forest carbon offsets lies with the project developer rather than the buyer (though a proposal under consideration in October 2013 may shift liability to buyers). The first compliance period in California began on January 1, 2013, covering over 350 businesses.

Global Conservation Standard – GCS (Version 1.2, 2011)

Launched in March 2011, the GCS is a not-for-profit registered in Offenburg, Germany, designed to make conservation pay for landowners and local populations worldwide based on the stock volume (not the flow) of measurable ecosystem service benefits. It does this through the issuance and sale of Conservation Credit Units (CCUs). GCS's first methodology quantifies CCUs based on carbon stocks in vegetation; CCUs are third-party verified and valid for one year. On additionality, the GCS does not issue or generate offsets that compensate emissions. Thus, additionality as defined under ISO 14064-2, the Kyoto Protocol, and other emerging standards is not applicable to the GCS. Conservation Areas are monetized based on accounting for the existing ecosystem services. Revenue from the sale of CCUs is distributed as follows: 20% to the government or legal landowner, 40% to the in-country Stakeholder Foundation that reinvests in indigenous and rural communities in the "Commercial

Buffer Zone", and 40% to the Conservation Area for project implementation and monitoring. The GCS encourages the use of additional certification schemes like VCS, FSC, or organic farming in project areas. The standard's GCS Registry will record CCU issuance, ownership, retirement, and project details.

The Gold Standard – Forestry and Land Use Programme (2013)

The Gold Standard, historically focused on renewable energy and energy efficiency, acquired the CarbonFix standard and signed Memorandums of Understanding with the Forest Stewardship Council (FSC) and Fairtrade in late 2012 in order to support its expansion into land use and forestry. Existing CarbonFix projects have been transitioned into Gold Standard projects if they meet the rules under Gold Standard version 3.0. In parallel with the integration of CarbonFix, The Gold Standard will also begin developing a governance framework and suitable methodologies for other areas of land use, including sustainable agriculture and improved forest management. As of August 2013, The Gold Standard had released the requirements for afforestation/reforestation (A/R) projects. A methodology for climate-smart agriculture is currently being developed, and the methodology for improved forest management will be developed "in due course." Collaboration will see The Gold Standard incorporate and build upon elements of FSC's safeguarding and resource management requirements and would enable FSC to rely on The Gold Standard's approach to carbon accounting and benefit sharing when FSC certified forest operations seek carbon finance. In addition, The Gold Standard is incorporating Fairtrade principles into Gold Standard carbon projects across all project types, whether energy or land-based.

The Natural Forest Standard (Version 1.1, April 2013)

The Natural Forest Standard (NFS), developed by Ecosystem Certification Organization (ECO) and Ecometrica, is intended for use by developers of medium- and large-scale projects (projects must exceed 20,000 ha to be eligible) who wish to conserve and restore natural forests at risk from deforestation and degradation in areas that are not under community or smallholder control or management. The NFS is specifically designed for REDD projects in natural forests that exclude commercial resource extraction. The Standard aims to optimize the time requirements for bringing projects from initial implementation to credit issuance. The NFS uses a buffer reserve to cover against the risk of potential future losses and requires a minimum project period of 20 years. On additionality,

NFS projects must demonstrate additionality relative to existing policies. Any restoration activities that are legal requirements shall not be eligible for crediting. As of September 2013, one project in Brazil had been validated under NFS.

Panda Standard (Version 1, 2009)

Partners China Beijing Environment Exchange and BlueNext, with the support of Winrock International, founded the Panda Standard as the first voluntary carbon standard designed specifically for China, in order to support the nascent Chinese carbon market and encourage investment into the domestic rural economy. Governed by the Panda Standard Association, the Panda Standard focuses on promoting Agriculture, Forestry, and Other Land-Use offset projects with poverty alleviation benefits. The standard determines additionality using both standardized and project-based methods. Launched at COP 15 in Copenhagen in 2009, Panda Standard Version 1.0 describes the core procedures of its project certification scheme. At COP 16 in Cancun in 2010, BlueNext, the Agence Française de Développement, and CBEEEX signed a Memorandum of Understanding to support a 15000-ha bamboo plantation as the first pilot project for the Panda Standard. The first Panda Standard offsets were transacted in 2011. A second methodology developed by Winrock and released in July 2012, supports revegetation of degraded land. An initial project is piloting the methodology on degraded grassland in Sichuan province. To boost fungibility of its credits, the Panda Standard has applied to have its methodologies eligible to issue CCERs under China's emerging cap-and-trade pilots set to launch over the course of 2013.

Peru Carbon Fund's Forestry Standard (Estandar Forestal Version 1.0, 2013)

With over ten years of afforestation experience in the Peruvian Amazon, the Peru Carbon Fund used their local knowledge to produce a voluntary offset standard focused on small and medium landowners in Peru who otherwise might not have access to a carbon market. To be eligible, landowners must possess a title given by the government for agriculture or livestock purposes and commit to use native species tree plantations for sawn wood. If these requirements are met, the Peru Carbon Fund will then certify and issue Carbon Capture Certificates (CCC) free of charge. The costs are borne through CCC sales to an investor, with 60% to 70% of the profits returned to the landowners to cover plantation maintenance costs. The main purpose of the PCF Forestry Standard is to promote

employment in the jungle as a way to end deforestation caused by migratory agriculture and cattle-raising. Investors, both corporate and individual, receive carbon-neutral certification in turn for their support. Intended to promote a unique link between companies and farmers, the certificates are not resalable to other companies. Last year, PCF provided the first carbon neutral certification for a Peruvian plastics company, Packing and Plastics, using CCCs.

The Rainforest Standard (Version 2.0, June 2012)

Launched at Rio+20 in June 2012 by five leading environmental trust funds based in five Amazon Basin countries (Bolivia, Brazil, Colombia, Ecuador, and Peru) and Columbia University's Center for Environment, Economy, and Society, The Rainforest Standard (RFS) aims to integrate requirements and protocols for carbon accounting, socio-cultural/socio-economic impacts, and biodiversity outcomes. Designed specifically for REDD, RFS is intended to accommodate the ecological conditions and social realities of the Amazon region and create long-term economic incentives from the sale of carbon offsets. On additionality, the standard uses a legal additionality test, economic incentives test, and existing incentives test.

SOCIALCARBON Standard (Version 5.0, 2013)

The SOCIALCARBON Standard, developed by the Ecologica Institute (Brazil) in 1998, is a certification program based on the sustainable livelihoods approach that requires project developers to apply Standard indicators that correlate with six aspects of the project: social, human, financial, natural, biodiversity, and carbon. SOCIALCARBON is another "stacking" standard to be paired with a carbon accounting standard. Indicators have been developed under the standard covering afforestation/reforestation projects alongside non-forest carbon project types. Because the standard is usually used in conjunction with an offset-verifying program, it does not set its own additionality criteria. The fifth version of the standard was released in July 2013, featuring simplified templates and improved metrics with a "temporary nature rule" that streamlines processes with VCS by mandating an overlap of at least 50% of the VCS accounting monitoring period with the SOCIALCARBON monitoring period. While historically focused on renewable energy and energy efficiency, the Standard has newly released Amazon REDD indicators. The Standard will continue to accept Version 4.0 guidelines for all reports certified until December 31, 2013.

Three Rivers Standard – Three Rivers (Version 0.1, 2011)

The Three Rivers Standard is the first voluntary standard based in western China, located in an area that includes the headwaters of the Yellow, Yangtze, and Mekong Rivers. Initiated by the Qinghai Environment and Energy Exchange (QHEX) in collaboration with other Chinese and international partners, the standard applies to mitigation activities conducted in China and will cover a range of sectors. Standard documents were released in 2012 following a public consultation process based on the ISEAL Code of Good Practice for standard setting and in

compliance with relevant ISO standards. Three Rivers allows for both project-based, performance-based and/or technology-standard additionality tests. Specifications for agriculture, forestry, grassland, and livestock projects are under development, but no projects have been registered as of September 2013. AFOLU project methodologies that have been approved by the CDM and VCS may be automatically approved by Three Rivers, but may also be subject to a review and revision process to account for China-specific conditions. Requirements for social and environmental impacts of projects are based on national laws and supplemented by guidance from other domestic and international initiatives.

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The Program on Forests (PROFOR) (www.profor.info) is a multi-donor partnership managed by a core team at the World Bank. PROFOR finances forest-related analysis and processes that support the following goals: improving people's livelihoods through better management of forests and trees; enhancing forest governance and law enforcement; financing sustainable forest management; and coordinating forest policy across sectors. In 2013, PROFOR's donors included the European Commission, Finland, Germany, Italy, Japan, the Netherlands, Switzerland, the United Kingdom and the World Bank.



The World Bank BioCarbon Fund (www.biocarbonfund.org) has allocated resources to projects that transform landscapes and directly benefit poor farmers since its creation in 2004. It was the first carbon fund established in the world to focus on land use. Housed within the Carbon Finance Unit of the World Bank, the BioCarbon Fund is a public-private sector initiative mobilizing financing to help develop projects that sequester or conserve carbon in forest and agro-ecosystems. It has been a pioneer in this sector, developing the infrastructure needed to pilot transactions in a growing land-use carbon market.

Tranches One and Two of the BioCarbon Fund committed about \$90 million to more than 20 projects around the world. The large majority are Afforestation and Reforestation (A/R) Clean Development Mechanism (CDM) projects, though a small portion of funds support REDD+ and Sustainable Agricultural Land Management (SALM) projects under the voluntary carbon market. A third tranche is currently being established to incentivize better land management at the landscape level, combining afforestation/reforestation, REDD+, agriculture, and biomass energy activities into an integrated and scaled-up approach.



New Forests (www.newforests.com.au) manages investments in sustainable forestry and associated environmental markets for institutional and other qualified wholesale investors. New Forests executes three investment strategies that provide clients with diversity and choice around risk-adjusted returns, geography, and market exposure: sustainable timberland investment in Australia and New Zealand; forestry investment in high-growth markets of the Asia Pacific region; and conservation forestry and environmental markets investment in the United States. The company has offices in Sydney, Singapore, and San Francisco and as at October 31, 2013 manages over AU\$1.9 in funds and assets and over 415,000 hectares of land in Australia, the United States, and Asia.

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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. Our dedicated team 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.

Our team has worked extensively in the voluntary carbon market over the past fifteen years, beginning with early forestry transactions between Australia and Japan in the late 1990s. Our team is involved in the development of market standards and infrastructure and has represented clients on many early voluntary market transactions and deals under the Voluntary Carbon Standard, including a number of REDD transactions. We have worked closely with marketmakers such as Markit and the Voluntary Carbon Standard.



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