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A FOREST TRENDS INITIATIVE

Turning over a New Leaf

State of the Forest Carbon Markets 2014

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Ecosystem Marketplace, an initiative of the non-profit organization Forest Trends, is a leading source of information on environmental markets and payments for ecosystem services. Our publicly available information sources include annual reports, quantitative market tracking, weekly articles, daily news, and news briefs designed for different payments for ecosystem services stakeholders. We believe that by providing solid and trustworthy information on prices, regulation, science, and other market-relevant issues, we can help payments for ecosystem services and incentives for reducing pollution become a fundamental part of our economic and environmental systems, helping make the priceless valuable.

Ecosystem Marketplace is financially supported by organizations such as the Skoll Foundation, the Swiss Agency for Development and Cooperation, the International Climate Initiative (Germany), the Gesellschaft für Internationale Zusammenarbeit/Federal Ministry of Economic Cooperation and Development (Germany), the Gordon and Betty Moore Foundation, PROFOR (the World Bank's Program on Forests), and the Climate and Land Use Alliance, as well as sponsors and supporters of our reports.

Forest Trends is a Washington, DC-based international non-profit organization whose mission is to maintain, restore, and enhance forests and connected natural ecosystems, which provide life-sustaining processes, by promoting incentives stemming from a broad range of ecosystem services and products. Specifically, Forest Trends seeks to catalyze the development of integrated carbon, water, and biodiversity incentives that deliver real conservation outcomes and benefits to local communities and other stewards of our natural resources.

Forest Trends analyzes strategic market and policy issues, catalyzes connections between producers, communities and investors, and develops new financial tools to help markets work for conservation and people.

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Turning over a New Leaf

State of the Forest Carbon Markets 2014

A Report by Forest Trends' Ecosystem Marketplace

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Edited by: Molly Peters-Stanley

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Acknowledgments:

This report is a compilation of the insights of a wide range of individuals across several continents. It would not be possible without the hundreds of individuals who shared critical information about their organizations.

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Executive Summary

Protecting the world's forests has gained greater visibility as countries battle the often deadly consequences of a warming climate. While some experts believe it may already be too late to prevent global temperature increases beyond 2 degrees Celsius, the more optimistic believe catastrophic climate shifts are preventable – and halting deforestation is key to these efforts. In service of that goal, last year stakeholders around the world purchased 32.7 million tonnes ($MtCO_2e$) of carbon offsets generated by forestry and land-use interventions at a combined value just shy of $200 million.

This level of investment matches 2010's record market activity, resulting in the most-ever annual emissions reductions financed through market-based mechanisms that pay for avoiding deforestation (REDD), planting trees, or adjusting forest management or agricultural practices to enhance carbon sequestration. These activities are beginning to scale up to the state and country level as jurisdictions gradually move from REDD "readiness" to "payment-for-performance". Even at the project level, REDD comprised two-thirds of forest carbon offset transactions last year as private sector buyers injected millions towards halting tropical deforestation.

Summary of Key Report Findings, 2013

- The global markets for offsets from agriculture, forestry, and other land-use projects transacted 32.7 $MtCO_2e$ in 2013, a 17% increase from 2012 and tying with 2010 for the highest demand tracked in this report series.
- Cumulative market value topped $1 billion last year, though 2013's value of $192 million represented an 11% drop from 2012 as average offset prices fell to $5.2/$tCO_2e$, down from $7.8/$tCO_2e$.
- Forest carbon projects provided many "beyond carbon" benefits in 2013, including 9,000 jobs; 13 million hectares of habitat for endangered species; and $41 million in education, health care, and infrastructure.
- Voluntary offset buyers purchased the majority (89%) of forest carbon offsets in 2013, led by energy utilities and food and beverage companies seeking to meet corporate social responsibility commitments or demonstrate industry leadership on climate change. Compliance buyers in California and Australia sought forestry offsets to meet carbon regulations.
- Demand for REDD offsets nearly tripled to 24.7 $MtCO_2e$, with Latin America-based projects behind 70% of these sales. A/R was the most popular project type by count (60 projects), though demand for these offsets continued to decline alongside CDM demand. IFM projects transacted just 2.7 $MtCO_2e$ as North American developers waited to transition into California's compliance market.
- An early example of public sector "payment-for-performance" for REDD was evidenced in the state of Acre, Brazil, which secured a $40 million agreement with German development bank KfW, for 8 $MtCO_2e$ in emissions reductions. Dozens of other jurisdictional REDD programs are under development.
- Projects developed according to VCS methodologies transacted 14.6 $MtCO_2e$, or 46% of all market activity. Another 12.6 $MtCO_2e$ used an internal or proprietary standard.
- Thirty-seven projects – the most ever recorded in this report series – were developed on land under collective management. Communities owned at least 3.8 $MtCO_2e$ of the offsets transacted in 2013, earning more than $8 million in new contracts.

Voluntary buyers purchased the largest share of transacted offsets in 2013 – most often to meet corporate social responsibility (CSR) commitments or to demonstrate leadership on climate change within their industry. However, compliance-driven purchases are set to gain an expanded foothold in the market due to expected increases in demand from new carbon markets such as California's cap-and-trade program or emerging carbon pricing regulations in South Africa and China.

Methodology

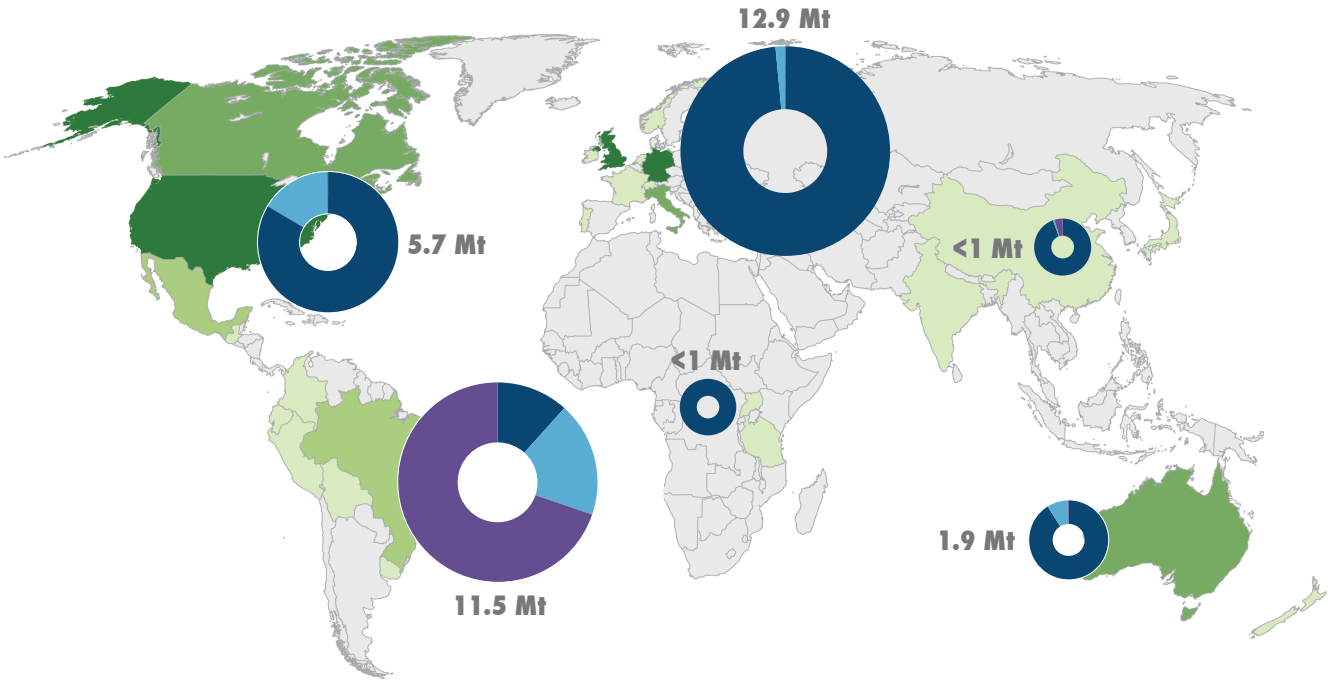
The forest carbon market is comprised of thousands of discrete interactions among buyers and sellers that collectively spend millions of dollars on reducing emissions from deforestation and sequestering carbon through changes in land-use activities. This report series aims to shed light on the nature and impact of these transactions by collecting quantitative data on offset volumes and prices.

Our global annual survey goes out to hundreds of forest carbon project developers and offset retailers active in the market. A total of 159 agriculture, forest, or land-use (AFOLU) projects reported detailed data on 2013 project activities. Historical analysis is also informed by another 258 projects that provided data in previous years.

Suppliers from 39 countries transacted offsets in 2013. Project developers and retailers were headquartered on six continents: 36 in North America, 34 in Europe, 33 in Latin America, 16 in Oceania, 12 in Asia, and 5 in Africa. Figure 1 illustrates regional response rate by country and profit status.

This report tracks both compliance carbon markets that include forest carbon offsets and voluntary demand for forest carbon offsets. We consider "transactions" to occur at the point of contract when suppliers and buyers agree to the terms of offset delivery and payment, which may occur immediately on the spot market, or in future years.

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



Map key: Response Rate by Country: 1+ 5+ 10+ 20+

Chart key: Market Share by Developers' Profit Status: For-Profit / Private Sector; Not-for-Profit / NGO; Public Sector / Government

Notes: Based on 32.7 $MtCO_2e$ in transactions reported by 136 forest carbon offset project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Market 2014.*

Table 1: Comparison of 2012 and 2013 Forest Carbon Markets' Transactions Volumes, Values, and Average Prices, All Markets

MARKET*	Volume		Value		Average Price	
	2012	2013	2012	2013	2012	2013
Voluntary	22.3 M	29.0 M	$147 M	$140 M	$7.6	$4.8
California**	1.5 M	1.7 M	$12 M	$16 M	$8.2	$9.4
Australia CFI**	2.9 M	1.5 M	$38 M	$32 M	$13.3	$20.8
CDM/JI	0.5 M	0.0 M	$0.6 M	$0.2 M	$1.1	$6.0
NZ ETS	0.2 M	0.0 M	$1.9 M	-	$7.9	-
Other	0.6 M	0.4 M	$15.6 M	$3.9 M	$25.3	$9.8
Voluntary Total	27 M	29 M	$198 M	$140 M	$7.7	$4.8
Compliance Total	1 M	4 M	$18.1 M	$52.4 M	$10.5	$9.7
Grand Total	28 M	32.7 M	$215.8 M	$192.1 M	$7.8	$5.2
Primary Market	22 M	30 M	$137 M	$153 M	$7.5	$5.0
Secondary Market	6.3 M	2.2 M	$57 M	$16 M	$9.8	$6.9

Notes: Based on 32.7 $MtCO_2e$ in transactions reported by 136 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.
**The California and Australia markets were pre-compliance in 2012 but transitioned to compliance in 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Market Overview: 17% Increase in Demand, but Offset Prices Decline

The global markets for AFOLU offsets transacted 32.7 $MtCO_2e$ in 2013, representing a 17% increase in demand for forest-based emissions reductions over 2012 and tying with 2010 for the highest transaction volumes tracked in this report series. More than 80% of offsets transacted from projects that reduce emissions from deforestation (REDD), and the majority of those were sourced from Latin America, which tripled from 2012 activity and held almost half of overall market share last year.

Cumulative market value topped $1 billion, comprised of both payments for existing offsets and early-stage project investments over time. However, despite notable growth in the demand for forest carbon offsets, global market value totaled $192 million last year, the lowest value tracked since 2010, as average global prices fell by more than two dollars per tonne, to $5.2/$tCO_2e$ in 2013 from $7.8/$tCO_2e$ in 2012.

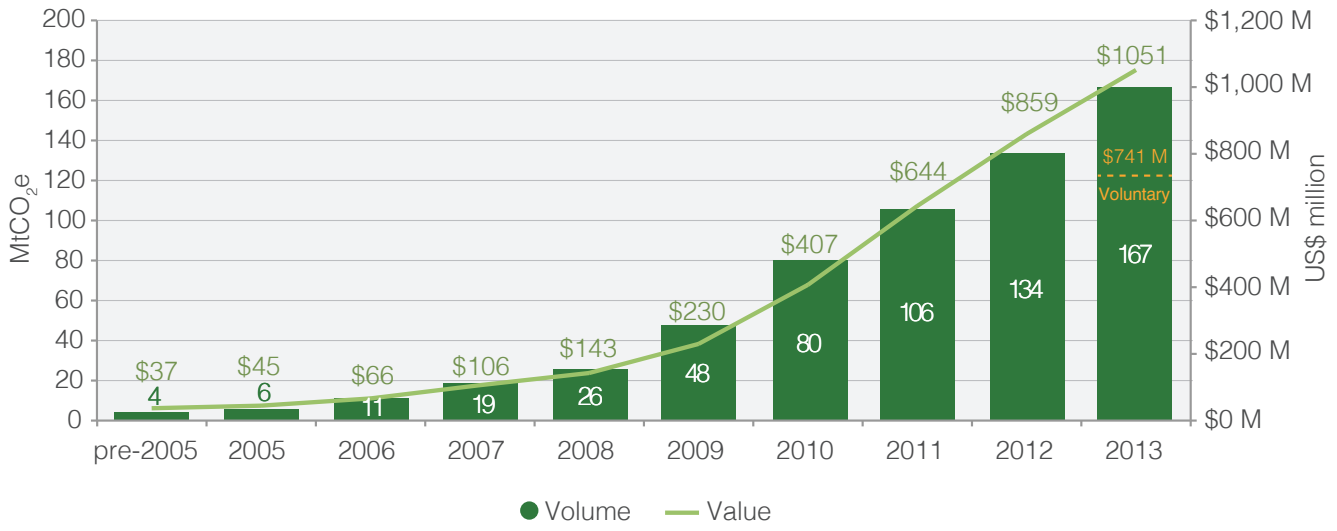
Prices for forest carbon offsets ranged from less than $1/$tCO_2e$ for "legacy" offsets sold on the Chicago

Figure 2: Relationship Between Volume and Price in Forest Carbon Markets, 2010-2013

Notes: Based on responses associated with 119.2 $MtCO_2e$ from the State of the Forest Carbon Markets reports 2011-2014.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Figure 3: Cumulative Forestry Offset Transaction Volume and Value, All Markets



Notes: Based on data reported by 418 forest carbon and land-use project developers and countless suppliers over nine years.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Climate Exchange (CCX) to over $100/tCO$_2$e for improved forest management (IFM) offsets sold to Japanese buyers purchasing domestic offsets as part of the country's proprietary J-Credit Scheme.

Forest carbon offsets transacted for compliance garner higher prices compared to voluntary offsets largely because offsets are used as a cost-containment mechanism on compliance markets. While voluntary buyers paid an average of $4.8/tCO$_2$e for forest-based emissions reductions, compliance buyers paid an average of $9.7/tCO$_2$e.

As Figure 2 illustrates, volume and price in the forest carbon market have been inversely related over the past four years, reflecting classic supply-and-demand dynamics in a market that has a stable but currently limited buyer base.

Project Types: REDD Volumes Triple While A/R, IFM Bide Their Time

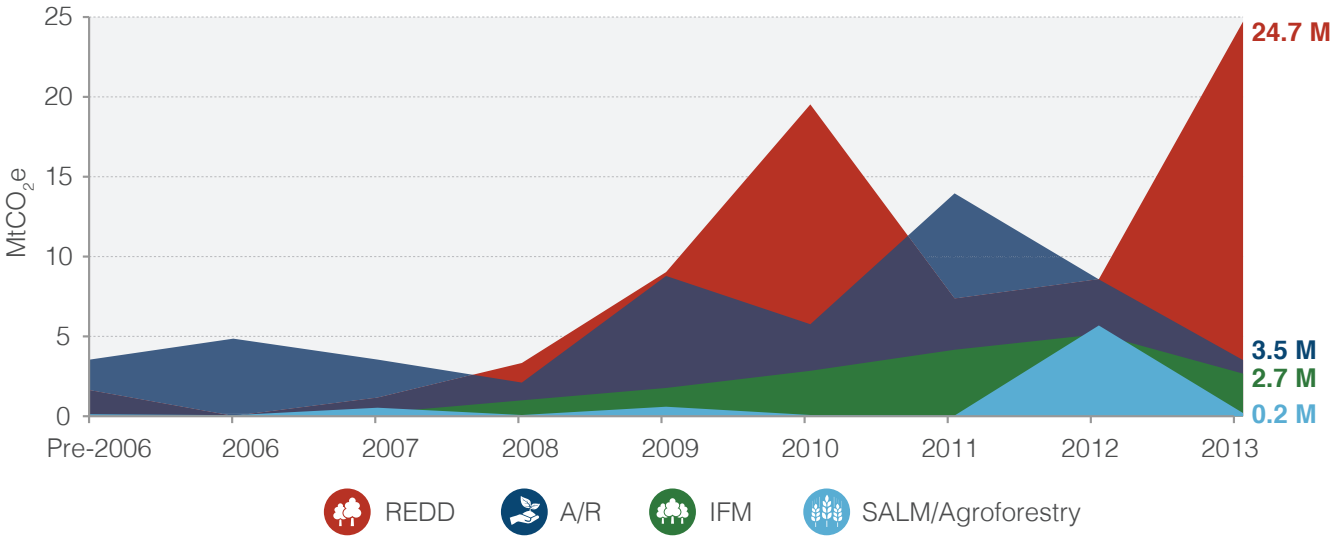
REDD project developers and retailers transacted a record 24.7 MtCO$_2$e REDD offsets last year, accounting for more than half of total market value and tripling volumes from 2012. Avoided deforestation projects now cover almost 20 million hectares, about the size of the forest area of Malaysia.

The higher transactions volume, however, occurred at lower prices, with the average REDD offset selling for $4.9/tCO$_2$e in 2013 versus $7.8/tCO$_2$e the previous year. Only one in 10 REDD offsets transacted at a price point above $7/tCO$_2$e last year, while roughly one in four tonnes sold at less than $3/tCO$_2$e. No REDD project sold offsets at under a dollar in 2013. REDD prices were lower this year partly because many of the world's largest REDD projects verified sizeable volumes of offsets in 2013, leading to ample supply.

Afforestation/Reforestation was the most popular project type according to the number of transactions reported, with 60 active A/R projects tracked that planted trees across 1.6 million hectares on six continents. However, transaction ***volumes*** from tree-planting projects were a far-off second from REDD at 3.5 MtCO$_2$e and continued to decline from A/R's peak transaction volume of 14 MtCO$_2$e in 2011. This is partly due to a drop-off in compliance demand from Kyoto Protocol signatories that used A/R CDM offsets to meet emissions reductions goals ahead of the end of 2012 deadline.

A/R offsets transacted at the highest prices of any project type, selling at an average of $9.5/tCO$_2$e. As a result, these projects contributed disproportionately (20%) to market value as buyers spent $31.3 million on tree-planting efforts last year.

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



Notes: Based on data reported by 159 projects and 50 additional offset suppliers in 2014, as well as more than 500 projects reported historically.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

After years of steady growth, IFM projects saw their first dip in transaction volumes last year amid lengthy approval processes for these projects in the California cap-and-trade market. Across all regions, buyers contracted 2.7 $MtCO_2e$ of IFM offsets at a total value of $19.9 million, a decrease from the 5.1 $MtCO_2e$ transacted in 2012.

Market experts attributed the lower transaction volume to the fact that many North America-based IFM projects were holding onto tonnes as they transitioned to sell into the California cap-and-trade market. Early-action IFM projects began listing on California Air Resources Board's (ARB) registry in March 2013, and regulators issued the first compliance IFM tonnes more than a year later. The average IFM offset sold for $7.6/$tCO_2e$ in 2013, boosted by California's higher compliance prices.

After a bumper year in 2012, SALM projects – which included agroforestry and grasslands management – transacted just 0.4 $MtCO_2e$ last year from developed-country projects located in Europe, North America, and Oceania. The decline is directly attributed to the delayed winding down of offset transactions from agricultural and land-based projects originally developed for sale on the now-legacy CCX. But more projects in developing countries may be on the horizon as emerging project types are expanding the definition of "forests" to include mosaics of crops and trees, coastal and savannah ecosystems, and other landscapes.

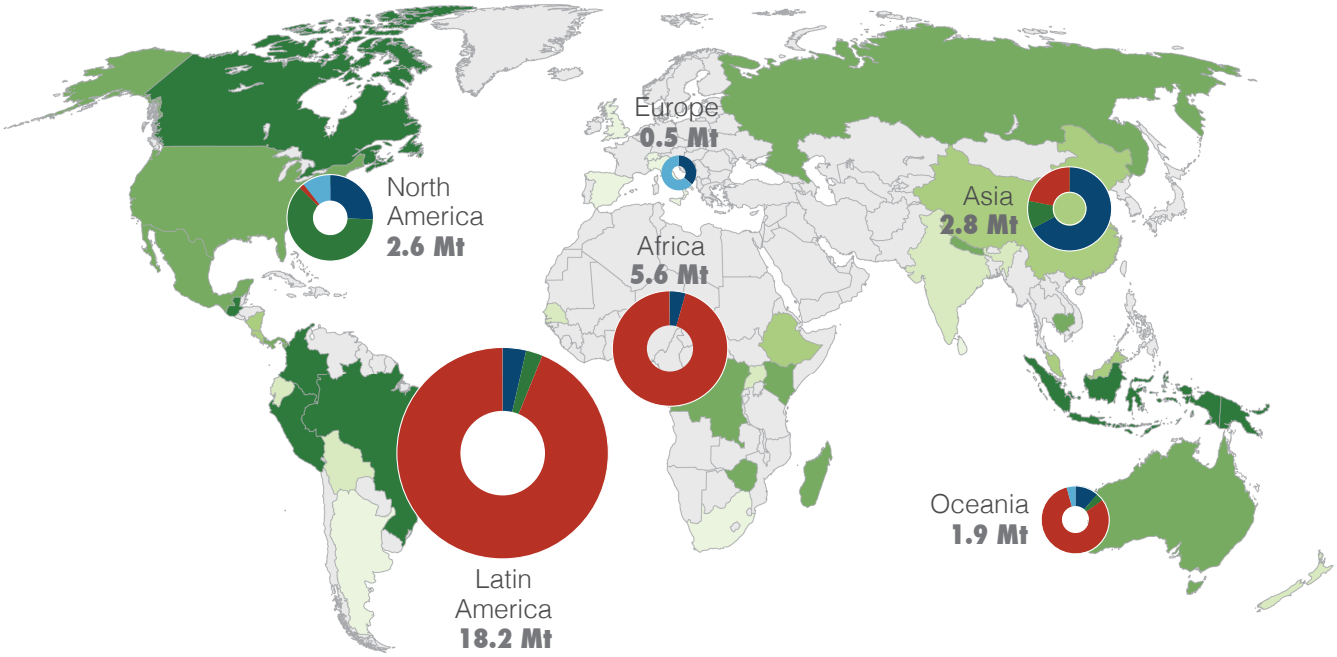
Project Locations: Latin America, Africa Set New Records

Project developers revealed that 30 million hectares were under forest carbon management in 2013, a 13% expansion from the 26.5 million hectares tracked in 2012. REDD, IFM, and A/R projects covered nearly the land area of Vietnam. Of that area, 11.9 million hectares (about 40% of the total) were associated with projects that completed transactions last year.

Projects based in Latin America transacted three times the forest carbon offsets of any other region as projects that reduce Amazonian deforestation captured buyers' attention. Brazil supplied the most offsets of any country, transacting 11.8 $MtCO_2e$ from 13 projects. At 5.1 $MtCO_2e$, Peru supplied the second-largest volume worldwide, with 14 projects transacting tonnes last year. Projects in Mexico, Guatemala, Argentina, Colombia, Bolivia, and other countries also contributed to Latin America's breakout volume in 2013.

At 5.6 $MtCO_2e$, Africa also set a new record for forest carbon transactions as countries such as Zimbabwe, the Democratic Republic of Congo (DRC), Kenya, and

Figure 5: Hectares Impacted by Country Location, Total Regional Transaction Volume and Share by Project Type (Total Hectares by Country and % Share)



Map key: Hectares Impacted: 100+ 10,000+ 50,000+ 100,000+ 1,000,000+

Chart key: Transaction Volume and Share by Project Type: A/R IFM REDD SALM/Agroforestry

Notes: Based on responses associated with 30.1 million hectares of carbon project area and 29.4 $MtCO_2e$ transacted.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

Uganda committed to major initiatives to conserve their tropical forests.

A growing focus on addressing deforestation in Asian countries has not yet translated into increased transactions, which fell by nearly 40% in the region last year. However, Indonesia and other Asian countries accelerated their REDD+ readiness efforts in an attempt to access the millions of dollars earmarked by Norway and multilateral funds to stop deforestation.

While the United States hosted the most forest carbon projects of any country (24), North American projects transacted 2.6 $MtCO_2e$ in 2013, a more than 60% decline from the previous year. However, compliance buyers in California bought 1.7 $MtCO_2e$ – a slight increase from pre-compliance demand in 2012 – so the smaller transaction volume from North American projects is entirely due to a decline in voluntary demand for offsets sourced in the region.

Transaction volumes from Oceania-based projects dropped back to the level of 2011 volumes, before the (brief) implementation of Australia's carbon tax drove up 2012 demand.

Project Co-Benefits: Jobs, Jaguars, and More

Ecosystem Marketplace explicitly tracked forest carbon projects' co-benefits – those benefits that go beyond the mitigation of GHG emissions – including jobs, women's empowerment, climate change adaptation, and more. Project developers are increasingly measuring and monitoring these benefits as buyers demand to know the "story" behind the offset.

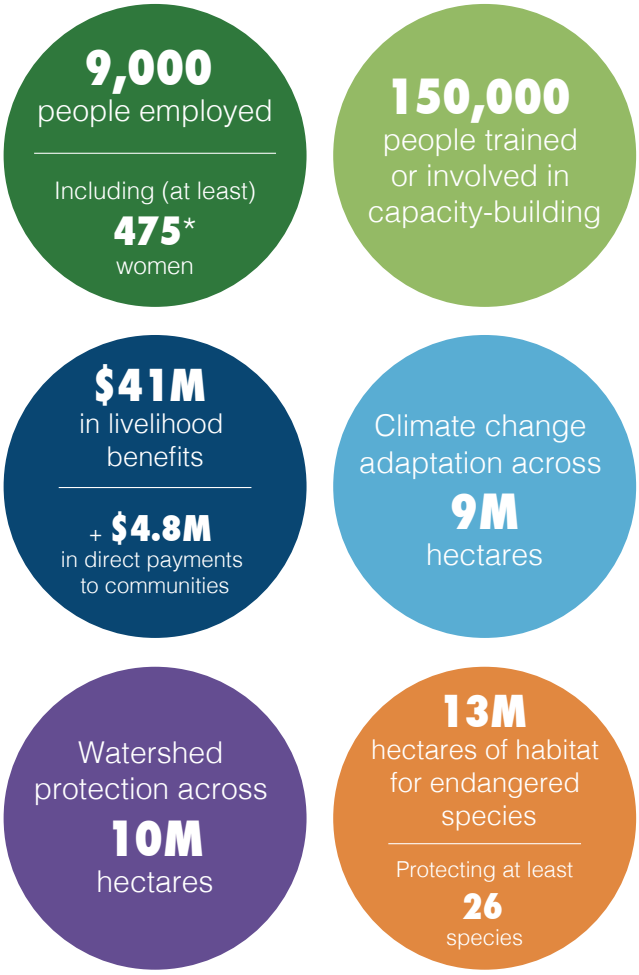
Direct employment and training and capacity-building were the most commonly-reported co-benefits of forest carbon projects. Nearly half of all projects tracked last year employed local community members, providing jobs to more than 9,000 people. Another 150,000 people were trained in new skills or participated in capacity building activities, often around REDD readiness.

Projects that reforest degraded areas or keep tropical forests standing also provide benefits to biodiversity.

Developers reported their project areas protected habitat for dozens of endangered species, including charismatic mega-fauna such as orangutans, koalas, African elephants, cheetahs, jaguars, giant armadillos, and bonobos. Project developers also reported on a myriad of watershed protection benefits such as decreased erosion and flood protection.

Thirty-six projects provided direct payments to communities totaling at least $4.8 million last year; another 35 projects offered in-kind livelihood benefits such as education, infrastructure, and health care services worth at least $41 million.

Figure 6: Project Co-benefits: Key Impacts, 2013



Notes: Based on responses representing at least 75 projects. *The number of women employed is out of 2,000 jobs that specified gender, not the 9,000 total jobs.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Land Tenure and Communities: Getting It Right

Debate surrounding land tenure – the legal structure that determines how lands can be used by individuals and communities – has continued to heat up as the development of UN-REDD creates the potential for large-scale financing to flow to tropical forest countries, many of which have undefined or unclear land tenure spanning millions of hectares.

Last year, Ecosystem Marketplace tracked 37 projects situated on land under collective or customary ownership by communities – the most-ever recorded in this report series. The majority of these projects are located in Latin America (16 projects) and Africa (10 projects). Ten projects were implemented on government-owned land or concessions as well as community-owned hectares. Amid uncertainties among private sector project developers and a growing emphasis on public finance and bilateral agreements, only 18 forest carbon projects reported private land ownership in 2013.

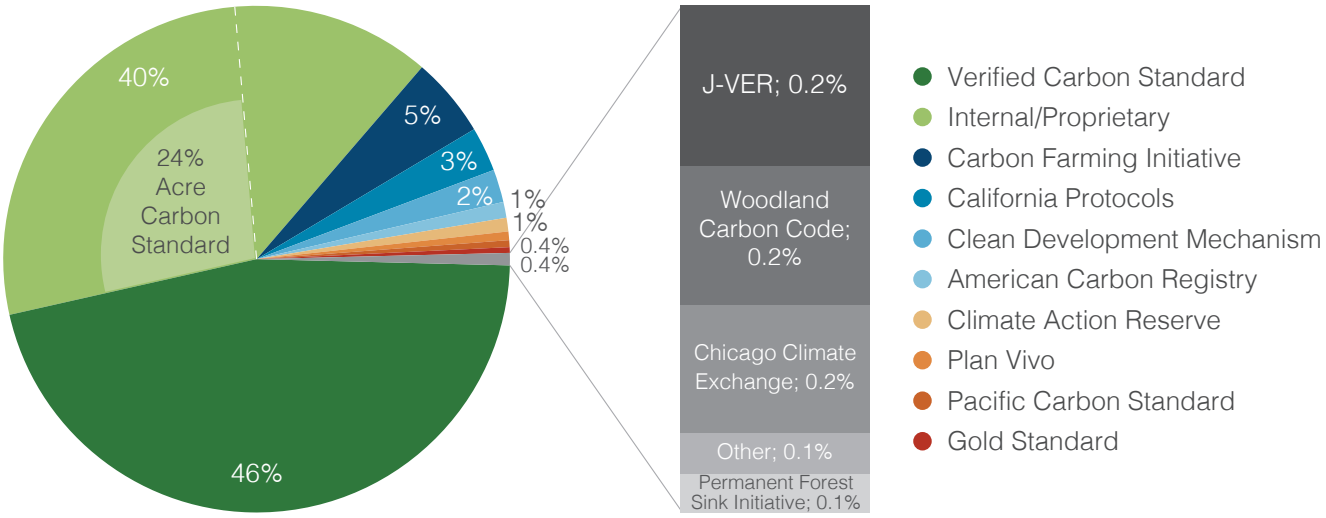
Overall, this report survey reveals that communities owned at least 3.8 $MtCO_2e$ of the offsets transacted last year and earned more than $8 million from new contracts. The majority of these tonnes transacted from projects in Africa, where communities sold 3.1 $MtCO_2e$ for almost $5 million, or 25% of market share in the region.

Standards: Old Favorites, with a New Independent Streak

Over the years, leading independent third-party standards in the voluntary market have jostled for market share – in the process refining their guidelines to facilitate methodologies that enable new AFOLU project types. Governments around the world continue to look to and even borrow best practices from these voluntary standards in devising their compliance offset markets.

Verified Carbon Standard (VCS) was again the most popular standard for AFOLU projects last year. Ecosystem Marketplace tracked 93 projects developed under, about two-thirds of which transacted offsets in 2013 – a total of 14.6 $MtCO_2e$. VCS's 46% market share represents about a 10% decline from 2012 as internal and proprietary standards made a surprising comeback after years of consolidation. These "internal" standards are each used in only one or two projects

Figure 7: Market Share by Standard/Certification Type, All Markets 2013



Notes: Based on the 32.2 $MtCO_2e$ transacted under a standard in 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

or by a single project developer. The largest internal standard is the Acre Carbon Standard, used by the Brazilian state to track performance against emissions reductions targets as Acre continues its pilot under VCS JNR.

Australia's quasi-compliance-driven Carbon Farming Initiative (CFI) was again the third-most used standard in 2013, though market share dropped from 10% to 5% following the repeal of Australia's carbon tax. Conversely, the volume of forestry offsets developed according to California's Compliance Protocol nearly doubled in transaction volumes from 2012 as the state's cap-and-trade program officially launched in 2013.

Use of co-benefits and land area certifications was prevalent in 2013 as buyers sought out forest projects that provided livelihood and ecosystem benefits alongside carbon sequestration. Of the 16.3 $MtCO_2e$ transacted under an independent standard, 81% also verified the delivery of co-benefits under CCB (11.8 $MtCO_2e$) or certified sustainable land area attributes under FSC (3.2 $MtCO_2e$) or Rainforest Alliance (0.5 $MtCO_2e$) within the same area that houses forest carbon projects.

Buyers: Private Sector Feels the Heat

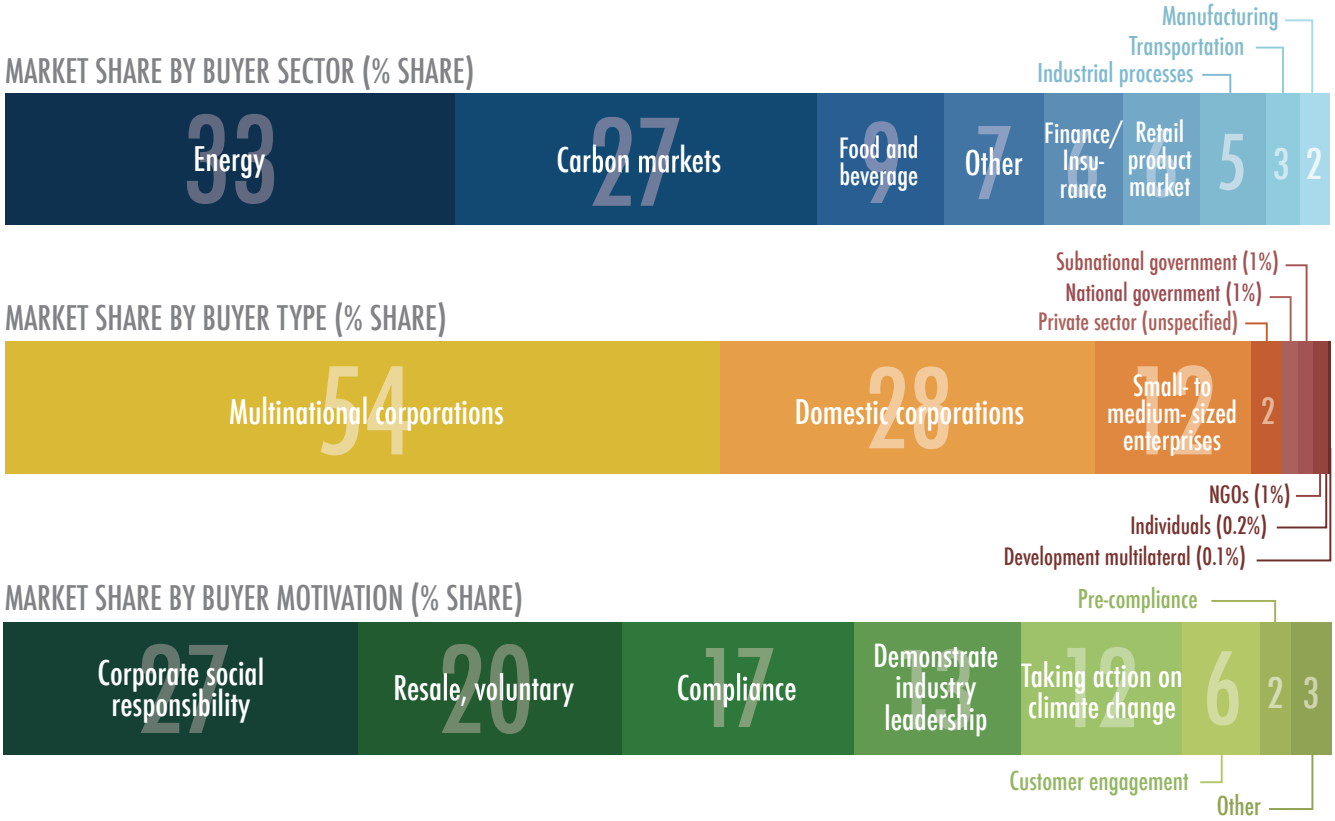
The majority of forestry tonnes – a total of 29 $MtCO_2e$ – were transacted to voluntary buyers using offsets to meet corporate social responsibility (CSR) commitments or to demonstrate leadership on climate change within their industry. Compliance buyers also purchased forest carbon offsets in 2013 to meet mandated caps on their industries' emissions or as a less expensive mitigation option in jurisdictions with a carbon tax. Reflecting a market still geared towards voluntary buyers, CSR was the most common buyer motivation last year, behind 27% of transactions. Another 25% of buyers invested in forest carbon projects to "demonstrate industry leadership" (13%) or "take action on climate change" (12%).

For the first time in this report series, offset retailers were ***not*** the largest source of forest carbon offset demand as the secondary market conceded market share to project developers selling directly to end-users. Energy companies stepped up as the top buyer sector, purchasing more than 5 $MtCO_2e$, or one third of the offsets associated with a buyer last year. Food and beverage companies were also a prominent buyer sector last year, purchasing at least 1.3 $MtCO_2e$.

European buyers were again the largest source of demand for forestry emissions reductions in 2013, purchasing two-thirds of tonnes associated with a buyer and comprising the largest source of demand for projects based in Latin America, Asia, and Africa. Europeans buyers also purchased half a million tonnes of forestry offsets within insular domestic markets including the UK's Woodland Carbon Code (WCC) and Italy's "zero emissions" provinces.

Compliance-motivated purchasing rose in North America after California officially launched its cap-and-

Figure 8: Market Share by Buyer Sector, Type, and Motivation



Notes: Based on 212 buyer types as described by survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

trade program in January 2013. Overall, North American projects transacted approximately 60% fewer offsets than the previous year, owing to a decline in voluntary demand for offsets as CSR budgets in the region tightened or transitioned toward other environmental initiatives such as energy efficiency projects.

As proponents of Australia's CFI feared, 2012's $40-million influx of carbon payments was not repeated in 2013 because of the anticipated repeal of the country's carbon tax. Oceania was nevertheless the fifth-largest source of demand for forest carbon offsets in 2013, transacting 1.5 $MtCO_2e$ – roughly half of previous volumes. New Zealand, home of the world's second-oldest Emissions Trading System (ETS), chose not to participate in the second phase of the Kyoto Protocol, and forestry project transactions nearly ground to a halt due to competition from less expensive international offsets.

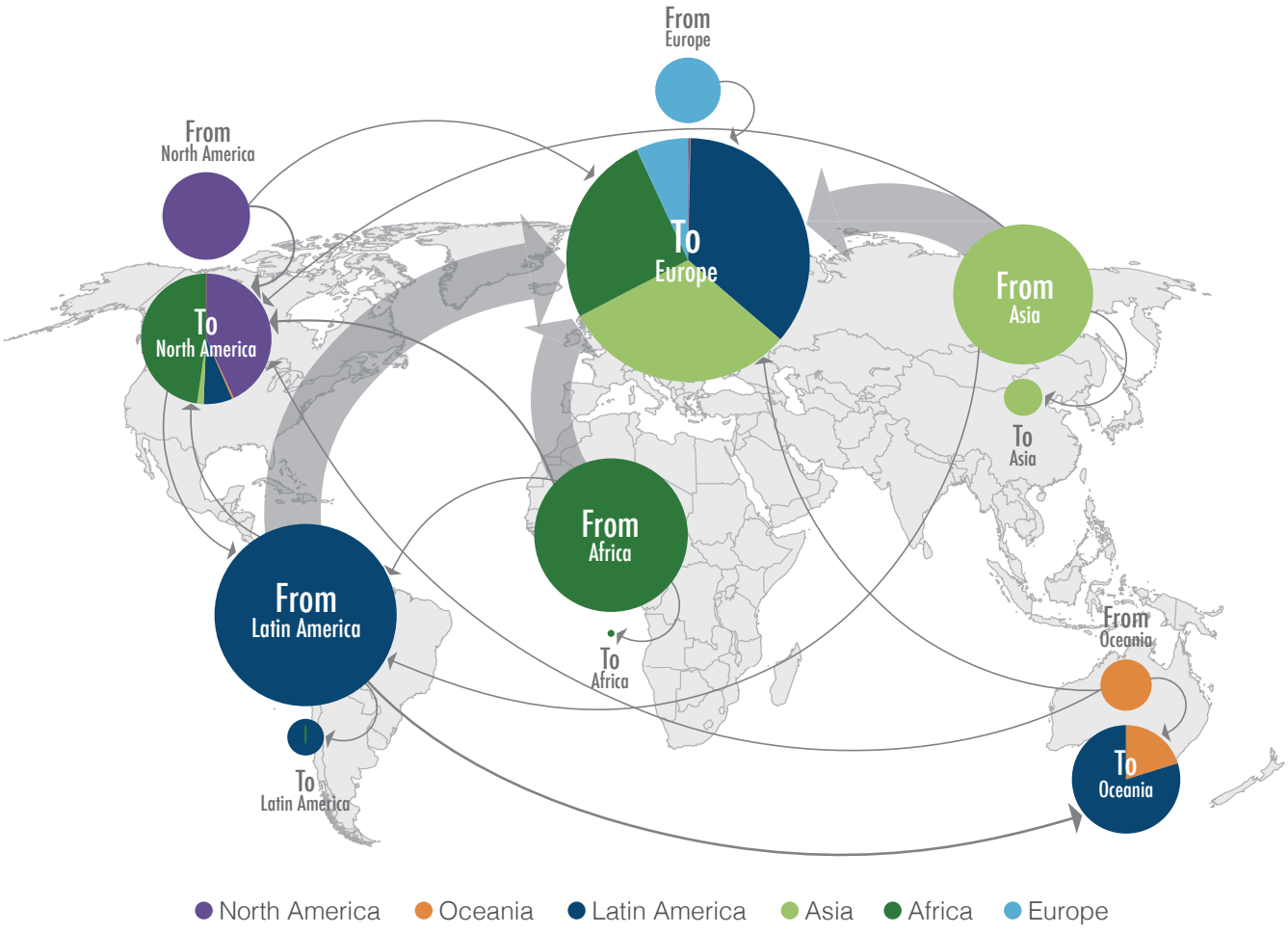
Buyers in developing countries contracted just 0.3 $MtCO_2e$ last year, though this demand was spread across six countries, including 15 transactions with Mexican companies and six with buyers in Peru. This demand was mostly contained within the continent: Latin American buyers purchasing offsets from Latin American projects and Africa-based companies buying from African-based projects.

Forest Carbon Finance: The Big Picture

The cumulative value of payments for emissions reductions from forest carbon projects over the years topped $1 billion this year, with a record $100 million flowing to REDD projects in 2013 alone. However, market observers frequently considered project-level funding, which is mostly coming from the private sector, to be a "drop in the bucket" compared to the many billions that developed-country governments are expected to commit to reducing deforestation in developing countries.

Forest Trends' REDD Expenditures Tracking Project (REDD*X*) tracked $4.5 billion in REDD commitments to 14 tropical forest countries in the last few years – a figure that indeed dwarfs project-level finance. However, less than $0.6 billion has so far been disbursed to recipient governments, according to REDD*X*. An even smaller figure is likely to reach pilot project-level activities – at least in the short term.

Figure 9: Flow of Transacted Volume from Project Region to Buyer Region, 2013 (% Share)



Notes: Based on 212 buyer types as described by survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

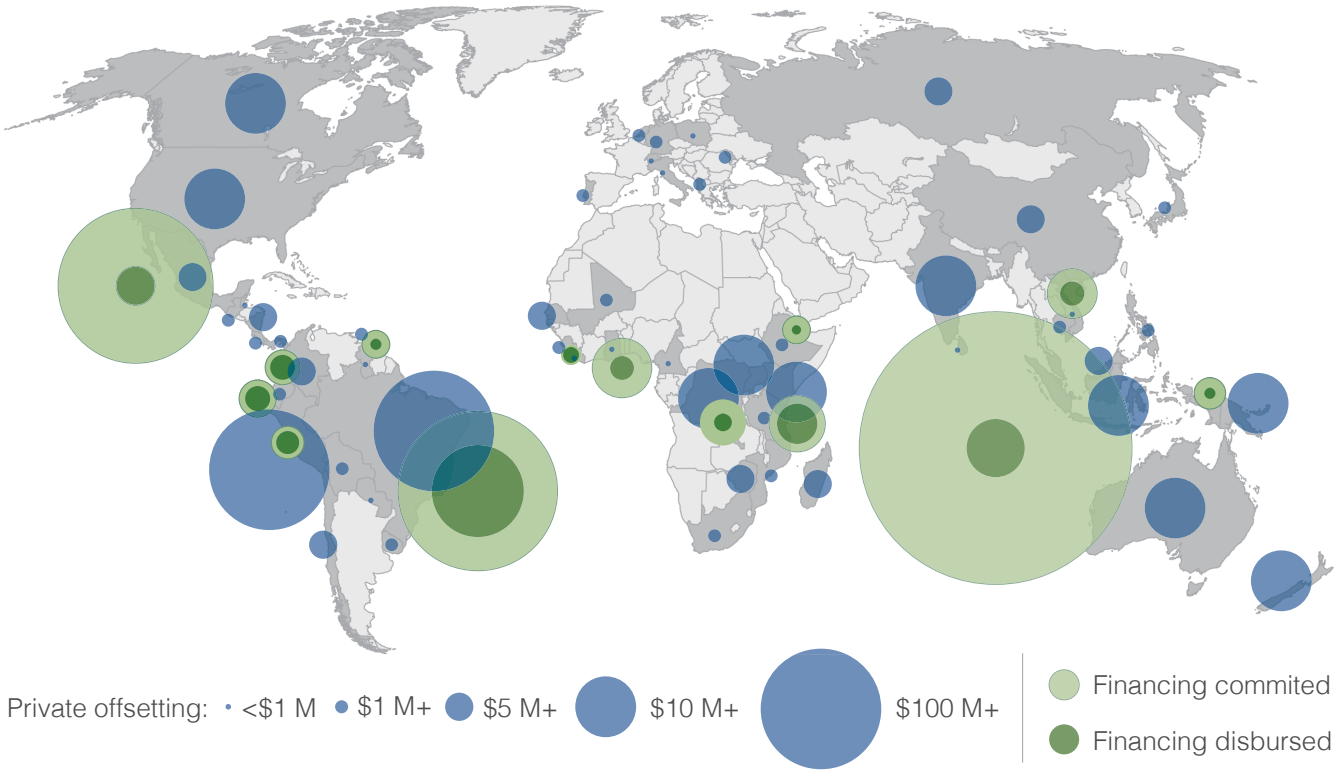
REDD*X* findings show that multilateral institutions such as the World Bank's Forest Carbon Partnership Facility (FCPF) have ramped up funding for REDD over the past few years, overshadowing the bilateral and private foundation funding supplying the bulk of funds in the "early" years of 2009 and 2010. In 2013, Finland, Germany, and Norway made new financial pledges totaling $180 million to the FCPF, which has now committed $825 million to 47 countries getting ready for or developing programs.

The majority of this funding has been disbursed through FCPF's Readiness Fund, but the institution reached a significant milestone in December 2013 when it approved the Methodological Framework for its Carbon Fund, unlocking a potential $465 million in payments for emissions reductions. There are currently 11 countries in the Carbon Fund pipeline.

It is important to note that almost all of the commitments tracked by REDD*X* are grants to help countries develop and implement a REDD strategy, not payments-for-performance in the actual reduction of forest carbon emissions, which Ecosystem Marketplace tracks in this report series. Payments for verified emissions reductions occur in the third and final phase of the UN-REDD program, and no national government has reached that stage yet.

However, select jurisdictions (e.g., states, provinces, regions) are leading the way for payment-for-performance REDD at a scale larger than the project level. In 2013, the German development bank KfW agreed to finance the reduction of at least 8 $MtCO_2e$ of emissions reductions from the Brazilian state of Acre in a $40-million agreement spanning the next four years. This agreement builds on similar financial contributions

Figure 10: Comparison of Project- and Country-Level Finance, All Years



Notes: Based on value associated with all years of tracking for the State of the Forest Carbon Markets reports and REDD*X* finance data, as of October 2014.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

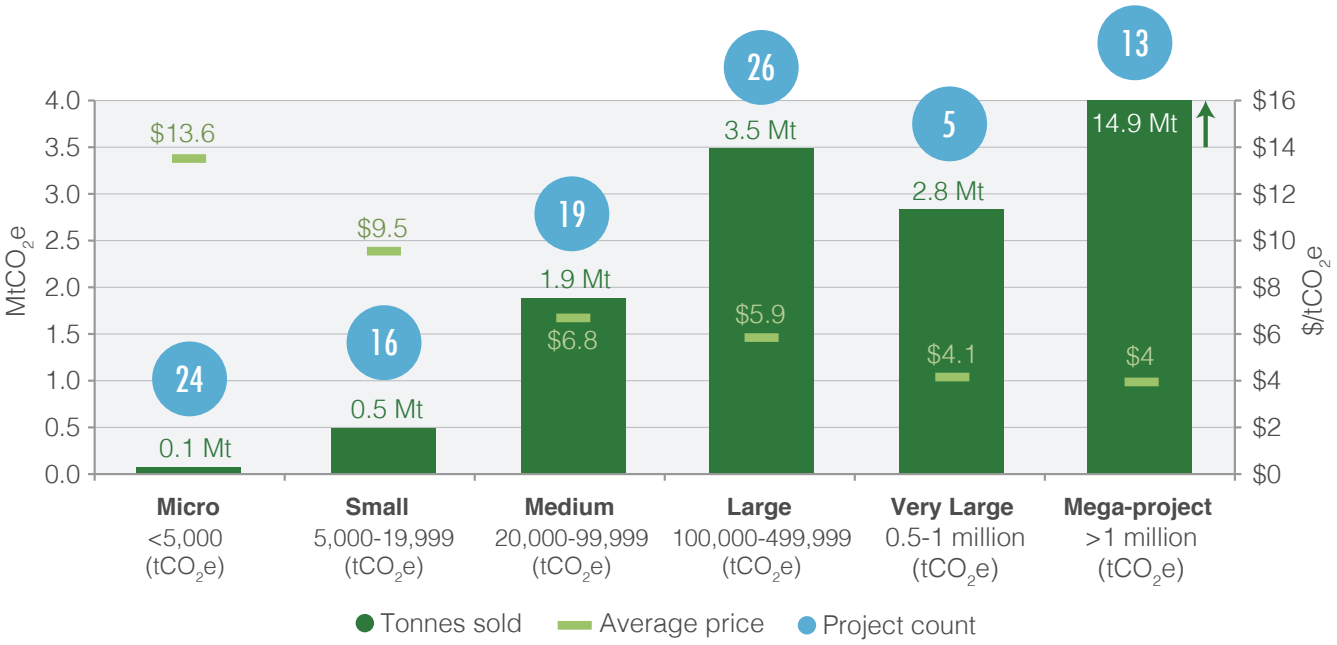
between the two governments in 2012. Dozens of other jurisdictions are developing similar programs.

Project Needs: Seeking Financial Pacesetters

Offset suppliers report struggling to identify new sources of demand that can keep pace with the growing number of forest carbon projects reaching maturity and supplying more tonnes. A record 29.5 $MtCO_2e$ of forestry offsets were issued in 2013, more than tripling available supplies from 2012. Meanwhile, project developers and retailers reported that only 11% of offsets sold last year were contracted to "new" buyers; the other 89% were sold to buyers already active in the voluntary carbon market, meaning sellers often compete for the same clients. Though voluntary offset prices vary widely, competition drove at least some sellers to accept less cash per tonne. For projects that generate and issue tens or hundreds of thousands of emissions reductions annually, developers say the volume of offsets sold – rather than the price per tonne – is more important for cash flow. As illustrated in Figure 11, project size and offset price are inversely related: the greater the project's estimated annual emissions reductions, the lower the price per offset in 2013. While there were more micro, small, and medium projects by count, projects that reduced 100,000 tCO_2e or more annually contributed 90% of the transacted volume last year – pulling down average prices. Voluntary buyers paid an average of $\$4.8/tCO_2e$ for forest carbon offsets in 2013, the lowest prices since 2009.

Across project types, developers say 2013 sales resulted in overall values far below what is needed to sustain these projects. Survey respondents reported needing between $249 million and $450 million per year to maintain currently active forest carbon projects, which have the potential to reduce between 20 $MtCO_2e$ and 36 $MtCO_2e$ annually. Clearly, this need was not entirely met by the $192 million in carbon finance that supported these projects last year.

Figure 11: Volume and Price by Project Size, 2013



Notes: Based on responses associated with 23.7 $MtCO_2e$ transacted from 103 projects that reported project size in estimated annual emissions reductions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Developer Predictions: Realism Reigns

In 2013, the forest carbon markets were in the midst of several shifts: the scaling up and "nesting" of avoided deforestation projects within jurisdictions; the transition from pre-compliance to compliance demand in California; buyers' evolving preferences for project types, standards, and locations; carbon pricing policies fading out in a few states and countries while new ones emerged elsewhere.

Given this state of turnover, predicting the future state of the market is no easy task. Nevertheless, Ecosystem Marketplace once again asked suppliers to "guesstimate" market size for the current and future years. Their views provide valuable insight into how suppliers of forest carbon offsets intend to navigate challenges in the voluntary and compliance-driven offset markets.

Figure 12 shows that project developers' predictions of transaction activity become more conservative in the face of policy challenges and somewhat fickle voluntary demand. This year's survey respondents estimated that the market would transact 30 $MtCO_2e$ in 2013 – a bit under the actual volume of 32.7 $MtCO_2e$.

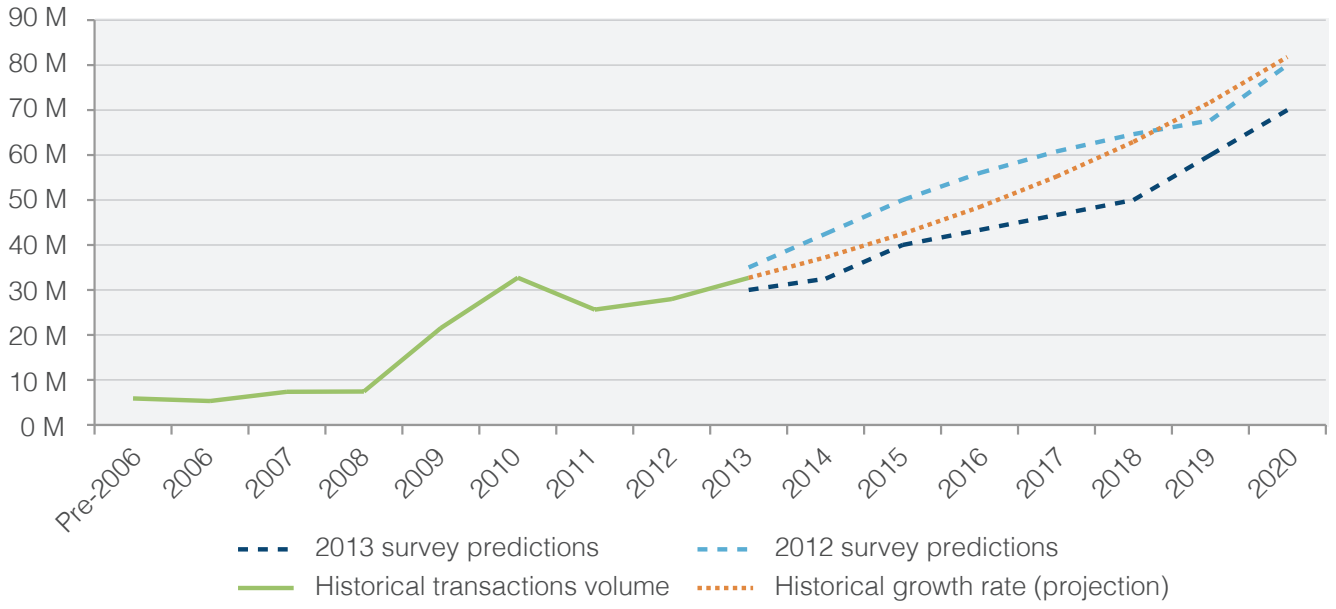
On a long-term basis, they foresee a marketplace in 2020 that is significantly smaller than was predicted by prior years' respondents. While two years ago market participants projected 93 $MtCO_2e$ of forest carbon transactions in 2020, that projection has since tempered: 2012's respondents predicted an 80 $MtCO_2e$ forest carbon market by the end of the decade, and 2013 respondents lowered their expectations even further, to 70 $MtCO_2e$ by 2020, across all market and project types.

Market participants' projections are now actually more conservative than the historical market growth rate of 14% – the year-on-year average growth between 2010 and 2013. A continuation of this historical growth rate would result in a market size of 82 $MtCO_2e$ in 2020.

While estimates of existing and future market needs abound, ranging from millions to billions of dollars, market participants point out that the cost estimates of what is needed to stop deforestation and reduce land-use emissions far outweighs the current capacity of the forest carbon markets, absent any regulatory signals or complementary market opportunities.

Substantial market expansion is ultimately tied to regulatory drivers. While recent policy announcements

Figure 12: Project Developers Predictions, All Markets, 2012-2013



Notes: Based on predictions provided by 73 survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

— such as the New York Declaration on Forests with its aim of ending forest loss by 2030 — hold promise, they also raise all too common questions about finding the financing needed to meet these ambitious goals.

Amid significant policy uncertainty, the major stakeholders in the forest carbon markets – developers, standards, registries, analysts, consultants, communities, and buyers – are focusing on initiatives within their control. But a growing number acknowledge that they must also be ready to adapt to a rapidly changing market environment, whether that translates into increased government-to-government transactions, further momentum along the pay-for-performance path or an expanded shift from voluntary to compliance-driven project activities. Regardless of the exact nature of the evolution, the forest carbon markets are undoubtedly turning over a new leaf.

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

$192 M	$119 M	$274 M	$0.9 - $1.6 B	$2.3 B
2013 market value: ACTUAL	Value of unsold offset portfolio	2013 value if developers had received desired price	Developer estimates to fully support existing projects	Value of developers' 5-year pipeline (if sold at 2013 prices)

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Table of Contents and Figures

Acronyms and Glossary

A/R	Afforestation/Reforestation
AAU	Assigned Amount Unit
AB3	California's Assembly Bill 32
ACR	American Carbon Registry
AFOLU	Agriculture, Forestry and Other Land Use
ARB	Air Resources Board
BC	British Columbia
CAR	Climate Action Reserve
CCB	Climate, Community and Biodiversity Standard
CCER	China Certified Emissions Reductions
CCX	Chicago Climate Exchange
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CFI	Carbon Farming Initiative
CIFOR	Center for International Forestry Research
CSR	Corporate Social Responsibility
DRC	Democratic Republic of Congo
ERF	Emissions Reductions Fund
EPA	Environmental Protection Agency
ERPA	Emissions Reductions Payment Agreement
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
GCF	Governors' Climate and Forests Task Force
GHG	Greenhouse Gas Emissions
Ha	Hectare
HFZ	High Forest Zone
IFM	Improved Forest Management
INDC	Intended Nationally Determined Contributions
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organization
IWS	Investment in Watershed Services
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
KfW	Kreditanstalt für Wiederaufbau
LDC	Least Developed Country
MOU	Memorandum of Understanding
MRV	Measuring, Reporting, and Verifying
$MtCO_2e$	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
NSW	New South Wales Greenhouse Gas Reduction Scheme
NZETS	New Zealand Emissions Trading Scheme
NZU	New Zealand ETS Units
OPIC	Overseas Private Investment Corporation
OPR	Offset Project Registry

OTC	Over-the-Counter
PCF	Peru Carbon Fund
PCS	Pacific Carbon Standard
PCT	Pacific Carbon Trust
PDD	Project Design Document
PES	Payment for Ecosystem Services
PFSI	Permanent Forest Sink Initiative
PIN	Project Idea Note
PIU	Pending Issuance Units
PMR	World Bank Partnership for Market Readiness
POD	Payment On Delivery
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD*X*	Forest Trends' REDD+ Expenditures Tracking Initiative
REM	Germany's REDD Early Movers
RGGI	Regional Greenhouse Gas Initiative
ROW	REDD Offsets Working Group
RRI	Rights and Resources Initiative
SALM	Sustainable Agricultural Land Management
T-VER	Thailand's Verified Emissions Reduction Program
tCER	Temporary Certified Emissions Reductions
tCO_2e	One tonne of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change
USAID	US Agency for International Development
VCS	Verified Carbon Standard
VCU	Voluntary Carbon Unit
VER	Verified Emissions Reduction
WCC	Woodland Carbon Code
WCI	Western Climate Initiative
WCU	Woodland Carbon Units
WRI	World Resources Institute

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 emissions (GHGs), population, gross domestic product, common practice, and other factors that would have occurred without undertaking any action to mitigate carbon emissions.

Carbon offset: An instrument representing the reduction, avoidance, or sequestration of one tonne of carbon dioxide or GHG equivalent.

Co-benefits: Additional environmental, social, or other benefits arising from a carbon project quantified based on metrics or indicators defined by the project developer, a co-benefits certification program, or third-party carbon project standard accounting 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 carbon markets: Marketplaces through which regulated entities obtain and surrender emissions permits (allowances) or offsets to meet predetermined regulatory targets. In the case of cap-and-trade programs, participants – often including both emitters and financial intermediaries – are allowed to trade allowances 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 encompassing reduced emissions from deforestation and forest degradation, as well as 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 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 resold – 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 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 Use (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"/"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 plans, 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.

Introduction

Just a few years ago, the majority of today's forest carbon offset projects were squarely situated in a "start-up" stage. Buyers invested in emissions reductions set to occur in the future and hoped that their upfront financing would help projects maneuver and survive the project cycle. Those early investments largely paid off, and between 2012 and 2013 alone, the volume of offsets issued from projects that avoid deforestation, plant trees, improve forest management, and incentivize sustainable agricultural practices tripled. Given the many land uses that forests have to compete with – from palm oil plantations to cattle grazing to urban development – this is no small feat.

It is no small feat, either, that in absence of carbon regulation, hundreds of private sector companies mobilized $140 million for forests. They did so in conjunction with efforts to reduce their own emissions, in some cases implementing business-wide internal carbon pricing to drive investment. Meanwhile, climate laws in just a few localities prompted regulated entities to spend another $52 million on forest carbon offsets as they sought to reduce emissions as efficiently as possible.

These funds achieved more than emissions reductions. They also created thousands of jobs, conserved habitat for dozens of endangered species, built schools and health centers, and provided proof of concept that people can receive paychecks for protecting forests rather than destroying them. Meanwhile both project-level activities and these associated "co-benefits" are scaling up as states, provinces, and countries begin to use market-based mechanisms to reduce or reverse deforestation.

Turning over a New Leaf: State of the Forest Carbon Markets 2014 – the fifth edition in an annual series from Forest Trends' Ecosystem Marketplace – explores a global marketplace in the throes of several major shifts: The shift from voluntary to compliance market drivers. The shift from pilot projects to large-scale programs. The shift from forests to "landscapes" (which now include everything from wetlands to rice fields to bamboo plantations). The shift from "tagging on" co-benefits delivery to fully incorporating these benefits into project designs. The shift from North-South financing flows to every-which-way financing flows. The shift from public sector preparations for REDD finance and implementation to receiving payments for forests' climate performance.

In all of these cases, "turning over a new leaf" does not imply that compliance markets are displacing voluntary ones but rather incorporating their methodologies. State-level efforts to reduce deforestation are not dislodging projects but rather "nesting" them within the bigger picture. A landscape approach does not diminish the importance of forests but rather expands the potential of land-based carbon sequestration. And so on.

Along with the market, we too are continuously exploring new metrics – from project benefits to needs to challenges – in order to provide transparent, reliable information on emerging trends in every corner of the world. We hope this report will continue to inspire project developers to share data and thank those that contributed information and insight for fostering a more accessible 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 California cap-and-trade program – 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 is based on data collected from offset project developers, retailers, and brokers, 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 February 25 and August 20, 2013. It was sent to approximately 500 organizations identified as possible forest offset suppliers and distributed through the Ecosystem Marketplace news briefs and Climate-L and Forest-L list serves.

We complemented the survey with data and insights provided by major registries, brokerages, and exchanges, including: APX, Australia's Clean Energy Regulator Registry of Offsets Projects, BlueRegistry, Carbon Trade Exchange (CTX), the Chicago Climate Exchange Offsets Registry Program, CDC Climat, CF Partners, Climex, Evolution Markets, GHG Clean Projects Registry, Japan Verified Emission Reduction (J-VER) Registry, Korea GHG Reduction Registry Center, Markit Environmental Registry, Numerco,, and TFS Green.

To minimize the occurrence of "double-counting" volumes reported by offset suppliers and brokers, we asked respondents to specify the volume of offsets 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 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.

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

Because the aim of this report is to account for all voluntary and compliance 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 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 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.[1]

We do collect data on the volume of offsets retired. This volume, along with origination numbers, represents the

[1] World Bank, *Mapping Carbon Pricing Initiatives.* May 2013.

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 2013 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 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 metric tonnes of carbon dioxide equivalent (tCO_2e) or million metric tonnes of carbon dioxide equivalent ($MtCO_2e$).

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 transactions of offsets to prepare for compliance obligations.

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 in advance of delivery ("pre-pay") or upon delivery ("pay on delivery") of offsets that will be generated from future emissions reductions. Contracts may 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 the survey's response rate in 2014?

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 136 forest carbon offset project developers that were active in project development or monetized carbon offsets and retailers who reported supplying forest carbon offsets to voluntary or compliance buyers in 2013. A total of 159 AFOLU projects reported detailed data on 2013 project activities. Historical analysis is also informed by another 258 projects that provided data in previous years.

What was the regional survey response distribution?

Offset suppliers from 39 countries transacted offsets in 2013. We received the largest number of responses from North American suppliers (36), followed closely by European (34) and Latin American suppliers (33). In terms of responses from the other regions, Oceania led the way (16), followed by Asia (12) and Africa (5).

1. Forest Carbon Market Overview

1.1 Market Volumes: Forest Carbon Offset Demand up 17% in 2013

The global markets for forest carbon offsets experienced steady growth over the past three years as projects that reduce emissions by avoiding deforestation, planting trees, or enhancing carbon sequestration in managed forests reach maturity and as buyers continue to incorporate offsetting as a core strategy for neutralizing the emissions they cannot reduce or for meeting carbon regulation.

These markets transacted 32.7 million tonnes carbon dioxide equivalent ($MtCO_2e$) in 2013, representing a 17% increase in demand for forest-based emissions reductions over 2012 and tying with 2010 for the highest transaction volumes tracked in this report series. More than 80% of offsets transacted from projects that reduce emissions from deforestation (REDD), and the majority of those were sourced from Latin America, which tripled 2012 activity and held almost half of overall market share last year.

The majority of tonnes – 29 $MtCO_2e$ – transacted to voluntary buyers using offsets to meet corporate social responsibility (CSR) commitments or to demonstrate leadership on climate change within their industry. These buyers increasingly sought out offsets with verified benefits beyond carbon sequestration, such as watershed protection, endangered species conservation, and employment of local people.

Compliance buyers also purchased forest carbon offsets last year to meet mandated caps on their industries' emissions or as a less expensive mitigation option in jurisdictions with a carbon tax. While this report series previously tracked activity for the US state of California and Australia as "pre-compliance" (as buyers engaged in the market in anticipation of carbon regulation), California's cap-and-trade legislation went into effect in January 2013 and Australia's carbon tax was the law of the land from mid-2012 through July 2014, before its repeal. Thus transactions driven by these regulations are considered "compliance" in this report.

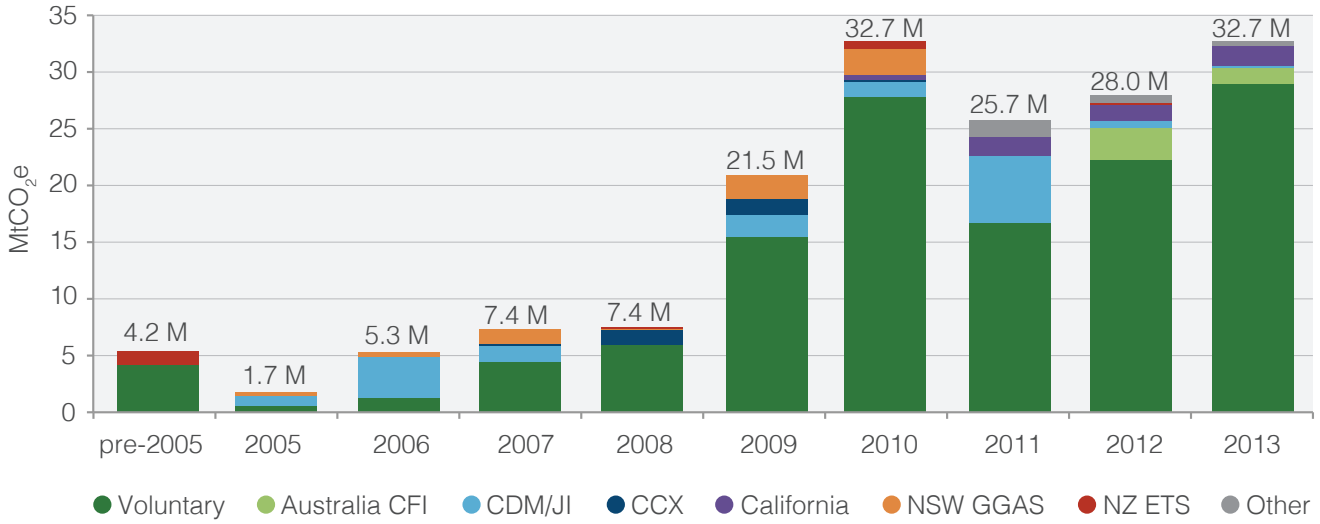
Table 3: Comparison of 2012 and 2013 Forest Carbon Markets' Transactions Volumes, Values, and Average Prices, All Markets

MARKET*	Volume		Value		Average Price	
	2012	2013	2012	2013	2012	2013
Voluntary	22.3 M	29.0 M	$147 M	$140 M	$7.6	$4.8
California**	1.5 M	1.7 M	$12 M	$16 M	$8.2	$9.4
Australia CFI**	2.9 M	1.5 M	$38 M	$32 M	$13.3	$20.8
CDM/JI	0.5 M	0.0 M	$0.6 M	$0.2 M	$1.1	$6.0
NZ ETS	0.2 M	0.0 M	$1.9 M	-	$7.9	-
Other	0.6 M	0.4 M	$15.6 M	$3.9 M	$25.3	$9.8
Voluntary Total	27 M	29 M	$198 M	$140 M	$7.7	$4.8
Compliance Total	1 M	4 M	$18.1 M	$52.4 M	$10.5	$9.7
Grand Total	28 M	32.7 M	$215.8 M	$192.1 M	$7.8	$5.2
Primary Market	22 M	30 M	$137 M	$153 M	$7.5	$5.0
Secondary Market	6.3 M	2.2 M	$57 M	$16 M	$9.8	$6.9

Notes: Based on 32.7 $MtCO_2e$ in transactions reported by 136 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.
** The California and Australia markets were pre-compliance in 2012 but transitioned to compliance in 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Figure 12: Historical Forest Carbon Offset Transaction Volumes, All Markets*



Notes: Based on 32.7 $MtCO_2e$ in transactions reported by 136 forest carbon offset project developers and retailers.
*See acronyms list for explanation of market abbreviations.

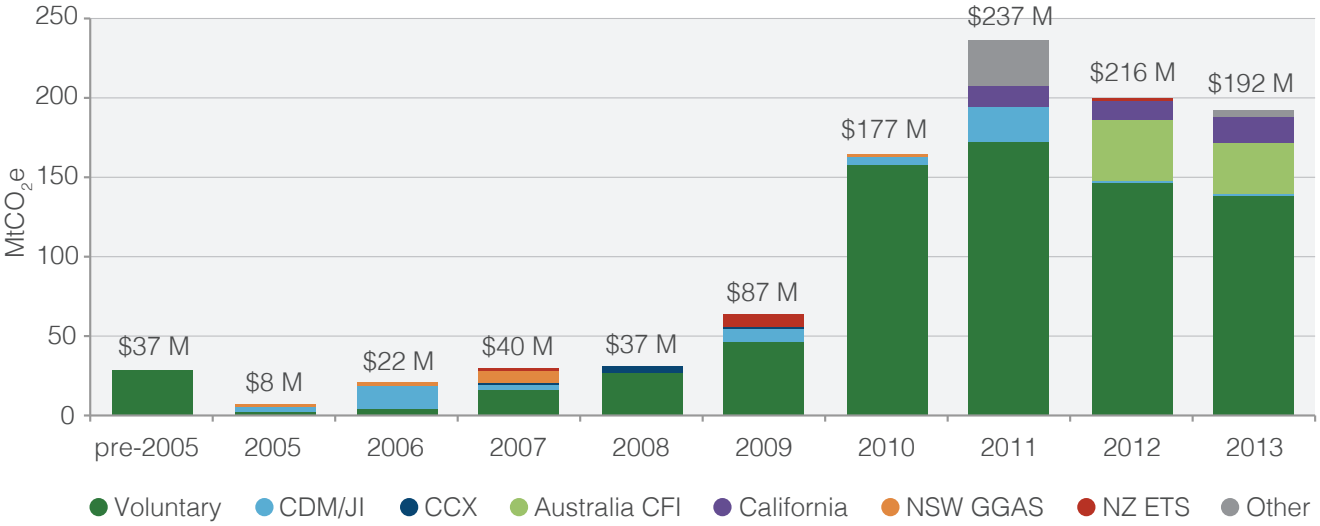
Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

While afforestation and reforestation (A/R) projects under the Clean Development Mechanism (CDM) made up a sizable portion of the market in 2011, those volumes dwindled after the first compliance period of the Kyoto Protocol ended in 2012. Developed-country governments are now waiting to see whether the CDM or a similar market-based mechanism will be included in an international climate agreement – or whether a bottom-up system of subnational linkages will emerge (more on this in Section 2, "Forest Carbon Markets in Context").

1.2 Market Value: Per-Tonne Prices Decline, Diminishing Market Value

The forest carbon offset market reached a milestone last year, with cumulative market value – the total amount of financing invested in forests in exchange for verified emissions reductions – topping $1 billion. However, despite notable growth in the demand for forest carbon offsets, global market value totaled $192 million last year, the lowest value tracked since 2010,

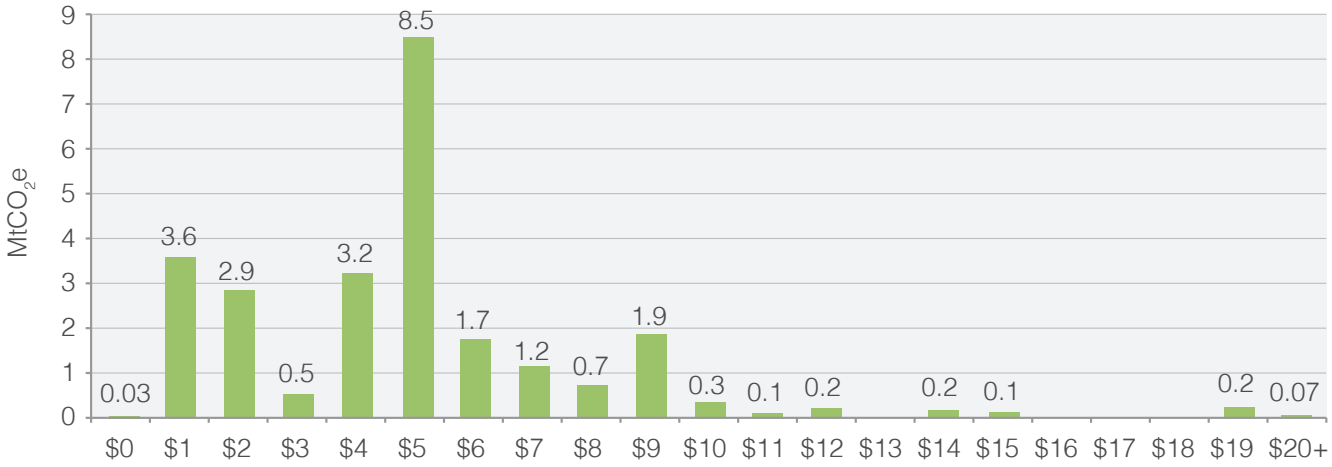
Figure 13: Historical Forest Carbon Offset Transaction Value, All Markets*



Notes: Based on 32.7 $MtCO_2e$ in transactions reported by 136 forest carbon offset project developers and retailers.
*See acronyms list for explanation of market abbreviations.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Figure 14: Volume Transacted by Offset Price



Notes: Based on 32.7 $MtCO_2e$ in transactions reported by 136 forest carbon offset project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

as average global prices fell by more than two dollars per tonne, from $7.8/t $MtCO_2e$ in 2012 to $5.2/t$CO_2e$ in 2013. If prices on the voluntary carbon market had held at 2012's average, 2013 value would have been $273 million.

Figure 15: Relationship Between Volume and Price in Forest Carbon Markets, 2010-2013

Notes: Based on responses associated with 119.2 $MtCO_2e$ from the *State of the Forest Carbon Markets* reports 2011-2014.

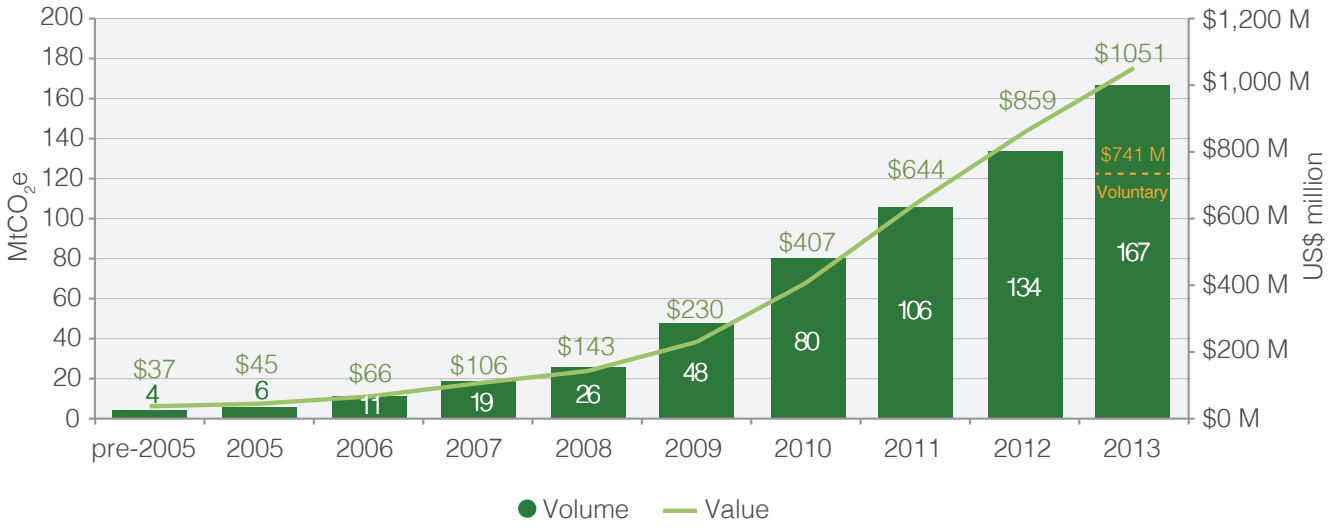
Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

The depreciating price explains why a high-demand year in terms of volume did not correspond with growth in market value, but it doesn't tell the whole story in terms of pricing. The price of offsets from any particular forest carbon project is determined through negotiations between discrete buyers and sellers and thus varies considerably based on project location, project size, carbon standard, a previous relationship between the parties, and a myriad of other factors. As Figure 14 illustrates, prices for forest carbon offsets ranged from less than $1/t$CO_2e$ for "legacy" offsets sold on the Chicago Climate Exchange (CCX) to $110/t$CO_2e$ for improved forest management (IFM) offsets sold to Japanese buyers purchasing domestic credits as part of the country's proprietary J-Credit Scheme.

As Figure 15 illustrates, volume and price in the forest carbon market have been inversely related over the past four years: When project developers and retailers sell more tonnes, they generally do so at lower prices.

While this is not a hard-and-fast rule, it reflects classic supply-and-demand dynamics in a market that has a stable but relatively stagnant buyer base. Suppliers reported that they transacted only 11% of offsets to "new" buyers that entered the market in 2013. Last year's global average prices were therefore similar to 2010's ($5.5/t$CO_2e$) – when the market transacted the same volume – but lower than 2011's and 2012's when suppliers sold fewer tonnes but charged a higher per-unit price.

Figure 16: Cumulative Forestry Offset Transaction Volume and Value, All Markets



Notes: Based on data reported by 418 forest carbon and land-use project developers and countless suppliers over nine years.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

Forest carbon offsets transacted for the compliance markets garnered higher prices compared to voluntary offsets largely because offsets are used as a cost-containment mechanism on compliance markets. While voluntary buyers paid an average of $4.8/tCO$_2$e for forest-based emissions reductions, compliance buyers paid an average of $9.4/tCO$_2$e.

Compliance buyers are willing to use this less expensive mitigation option as long as offset prices fall below allowance prices in a cap-and-trade system or the level of the carbon tax. This was true in California, where allowances[1] consistently traded above $11 per tonne in 2013, and in Australia, where the carbon tax was set at $24.2 per tonne last year. Forest carbon offsets in these markets generally sold below these marks – but not by much.

Though compliance demand for forestry offsets, in particular REDD, could someday dwarf voluntary purchases by the private sector as more governments implement carbon regulation (more on this in Section 2), a historical look at the forest carbon markets shows that the purely voluntary over-the-counter market has directed $741 million – about three-quarters of the cumulative market value – towards emissions reductions in forests over the last nine years.

[1] An allowance is a permit to emit one tonne of carbon dioxide.

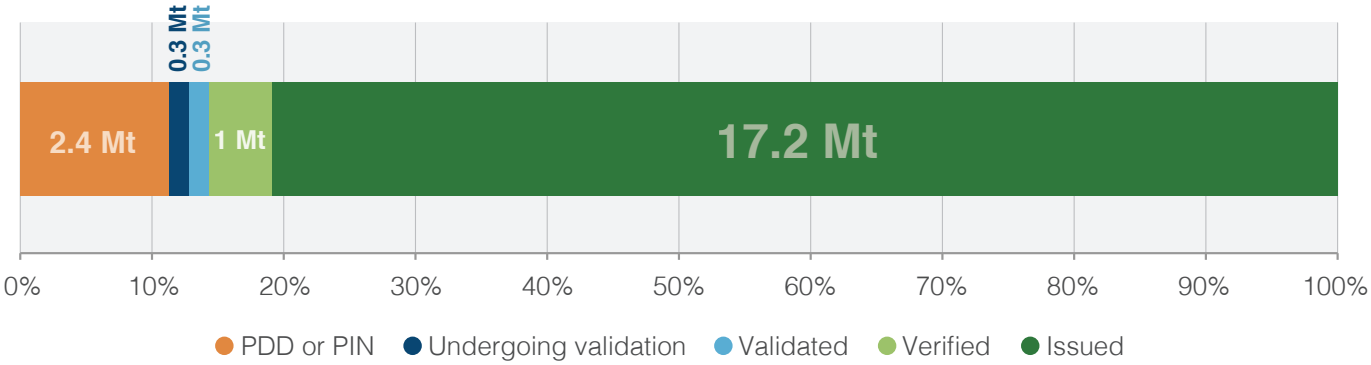
1.3 Offset Stage and Retirement: Buyers Wait for Issuance, Pull Back on Early-Stage Investment

Forest carbon projects often take years to develop. Under most standards, project developers begin with a Project Idea Note (PIN) that they then develop into a Project Design Document (PDD), a process that often involves engaging stakeholders who live in or around the project area. From there, a third party must validate the project idea and, ultimately, audit the project to quantify the emissions reductions that have been achieved over a set time period. At that point, offsets can be "issued."

It is only after issuance that governments or companies may "retire" the offsets against their emissions reduction commitments, thus taking them permanently out of circulation to signal that a tonne of carbon dioxide that would have otherwise been emitted is sequestered. Buyers may contract offsets from sellers at any stage in the project development process, not only after offsets are issued.

Historically, many buyers made early-stage investments in forest carbon projects. In 2011, for instance, two-thirds of offsets were contracted from projects that had not yet achieved verification. Over the last two years, however, buyers have increasingly sought offsets from fully operational (versus "in progress") projects, and last year the majority of tonnes (81%) were contracted after they were issued.

Figure 17: Market Share by Project Stage at Time of Transaction (Labeled by Transacted Offset Volume)



Notes: Based on 32.7 $MtCO_2e$ in transactions reported by 136 forest carbon offset project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

This marked shift in buyer behavior is partly due to the fact that, after years of development, more and more projects are now reaching the issuance stage – 29.4 $MtCO_2e$ were issued from forest carbon projects in 2013.[2] As large issuances occur, buyers gain confidence that projects will achieve and verify emissions reductions and that they can purchase offsets to be retired whenever they choose.

Last year, buyers transacted only 3 $MtCO_2e$ from investment stage, or pre-verification, projects. However, they did so at higher per-tonne prices: While issued offsets sold at a global average of $4/$tCO_2e$, offsets transacted before verification cost an average of $9.3/$tCO_2e$. This reflects buyers' willingness to pay more for unique projects, particularly if they can claim that their early investment got the project off the ground.

Registries reported that buyers retired 15.3 $MtCO_2e$ from forest carbon projects last year. In comparison to registry data, survey respondents reported 4 $MtCO_2e$ transacted in 2013 retired by voluntary buyers. The "proxy" retirement number in Figure 18 represents the volume of offsets contracted to purely voluntary buyers that do not plan to resell them. These 11 $MtCO_2e$ were therefore "likely" to be retired against emissions reductions commitments – and registry-reported retirement number indicates that they were.

[2] Includes issuances from land-use project registry data reported for the Acre Carbon Standard, ACR, CAR, the California Compliance Standard, Gold Standard/Carbon-Fix, ISO 14064/65, J-VER, the Pacific Carbon Standard, PFSI , Plan Vivo, VCS, and WCC. See section 7.6 for more information.

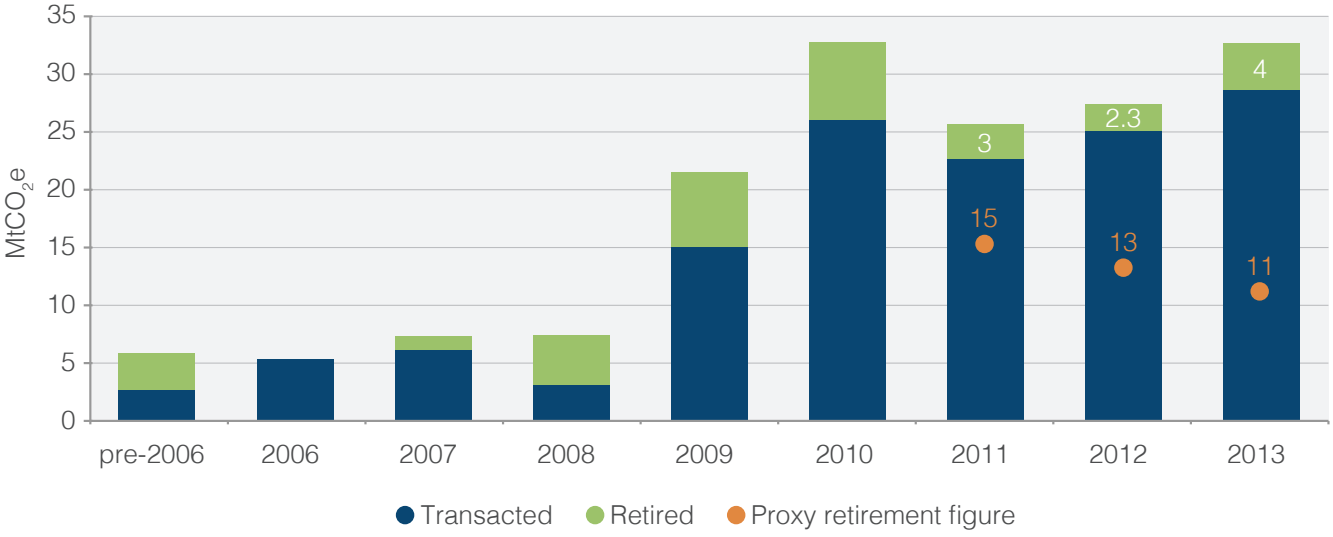
1.4 Supply Chain: Secondary Market Activity Slumps as Project Developers Sell Directly to End-Users

Buyers of forest carbon offsets do not make purchase decisions in a vacuum. They often contract emissions reductions from forests alongside offsets from other project types as part of a "portfolio," and offset purchases are usually part of a larger strategy to either voluntarily minimize environmental impact or comply with carbon regulation. Secondary market participants – the retailers that buy offsets from project developers and then resell them to end-users – therefore play an important role.

Offset retailers have built their businesses around helping companies set and achieve carbon management goals, with offsets serving as part of a comprehensive emissions reduction strategy. These intermediaries can also help translate the concepts of the carbon markets to corporate buyers and tell the stories of forest projects in ways that resonate with their intended audiences. (See the Directory at the back of this report for a full list of offset suppliers that reported data to Ecosystem Marketplace and chose to be listed.)

However, the secondary market for forest carbon offsets was relatively small last year compared to the broader voluntary offset markets in which retailers contracted 22 $MtCO_2e$ – more than a quarter of all demanded tonnes. After a couple of years of growth, forest carbon retailers held only 7% market share in 2013 and sold just over 2 $MtCO_2e$ of forest carbon offsets. Retailers have historically made up the single largest source of offset demand, but that was not the

Figure 18: Historical Transaction and Retirement Volumes, All Markets



Notes: Based on 32.7 $MtCO_2e$ in transactions reported by 136 forest carbon offset project developers and retailers.

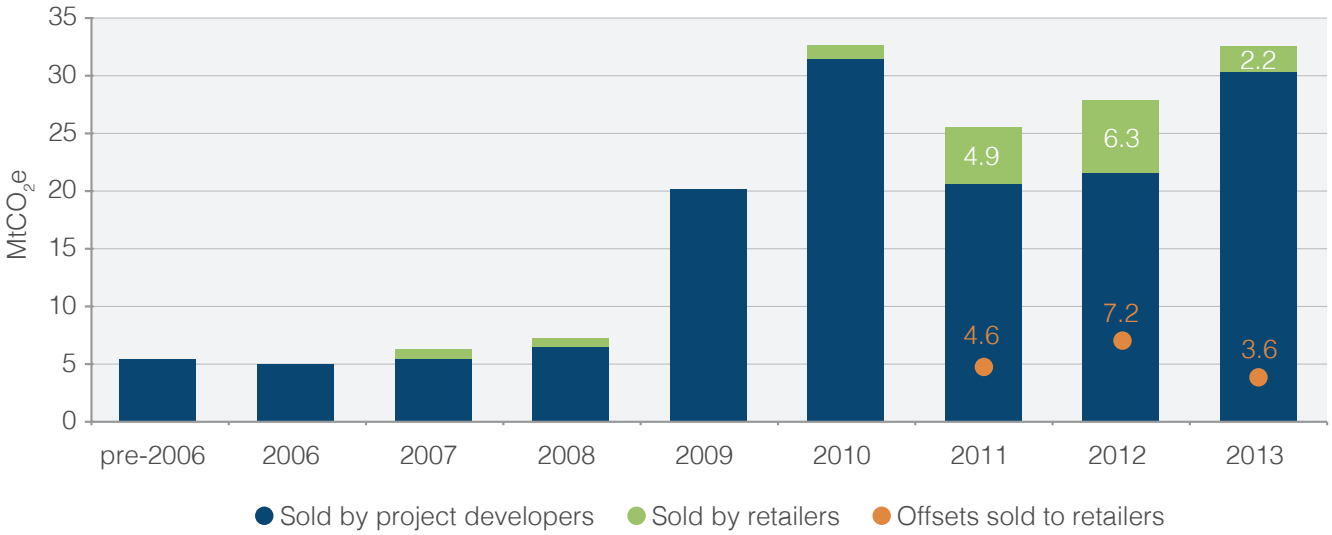
Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

case in 2013, when "resale" fell behind CSR as the most common buyer motivation.

The contraction of the secondary market essentially conceded market share to project developers, who transacted a total of 30.5 $MtCO_2e$ last year. There are a few explanations for this. Over the years, project developers have become savvier about marketing offsets directly to end users, and many project developers and end users have built business relationships without using retailers as intermediaries. End users have also become more familiar with international, third-party voluntary carbon standards such as the Verified Carbon Standard (VCS), which allow them to vet quality projects themselves.

A close look at the pricing on the primary and secondary market also reveals some interesting dynamics. As expected, retailers bought "low" from project developers (at an average of \$4.9/tCO_2e) and sold

Figure 19: Historical Transaction Volumes, Primary and Secondary Markets



Notes : Based on 32.7 $MtCO_2e$ in transactions reported by 136 forest carbon offset project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

higher ($6.9/tCO$_2$e) to their end-user clients. However, project developers that skipped these intermediaries sold offsets directly to end users at an average of $3.8/tCO$_2$e, significantly under the $6.9/tCO$_2$e average price offered by retailers – lower, too, than the price at which developers sold to retailers, thus undercutting retailers' possible market positions.

1.5 Suppliers: Project Developers Hail from All Sectors, with Headquarters in 39 Countries

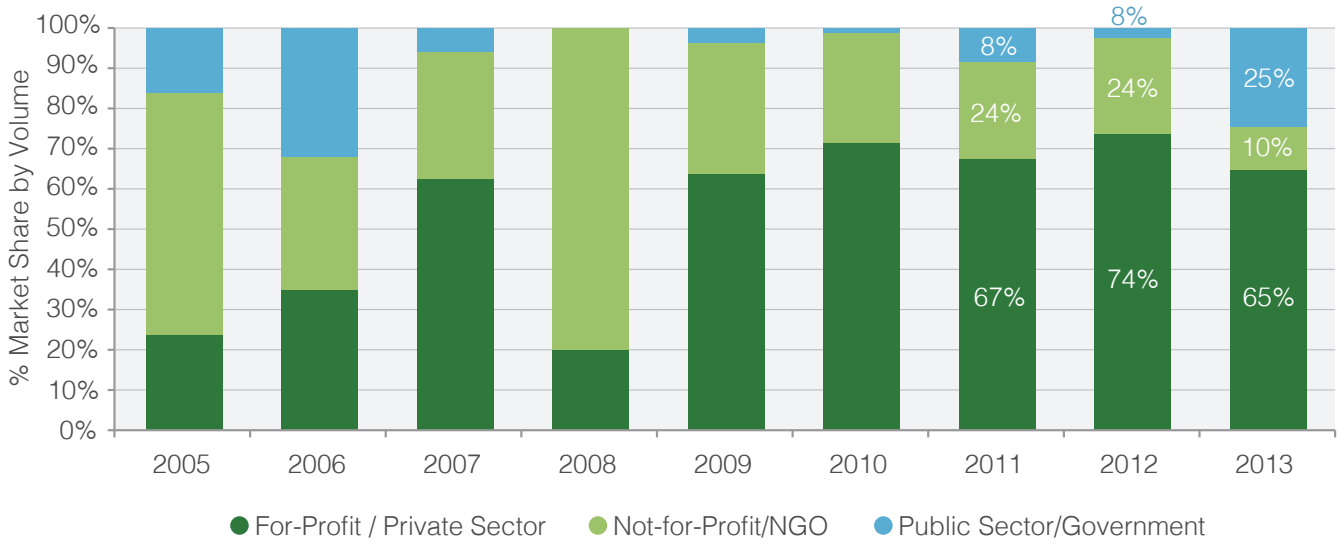
Project developers headquartered in 39 countries transacted offsets in 2013. Suppliers from developing countries – including Brazil, Peru, and Mexico – made up more than a third of all offset suppliers and sold a third of all forest carbon offsets transacted on the market last year. North America, Europe, and Latin America all host more than 30 forest carbon offset project developers and retailers, and Africa is now home to five forest carbon project developers in five different countries.

Some developers were for-profit companies, others were local or international non-profits, and still others were public sector agencies or – for the first time – a jurisdictional government. The jump in public sector supply seen in Figure 20 can mostly be attributed to the state of Acre, Brazil, which agreed to supply 8 MtCO$_2$e to German development bank Kreditanstalt für Wiederaufbau (KfW) last year under a "payment-for-performance" agreement via Germany's REDD Early Movers (REM) financing program. Acre's is the first jurisdictional REDD program in the world to reach this level of market maturity, though several other jurisdictions in Brazil, Indonesia, Mexico, Nigeria, and Peru are working towards a similar milestone.

As in past years, private-sector project developers supplied the majority (65%) of offsets to buyers in 2013, though these for-profit entities ranged from large companies with dozens of projects in several countries to domestic enterprises working on a single project close to home. Not-for-profit suppliers played a smaller role in 2013 than they have in past years, transacting 3.4 MtCO$_2$e at slightly above-average prices ($5.6/tCO$_2$e). The majority of non-profit forest carbon offset suppliers reporting transactions are based in Latin America, where the bulk of REDD tonnes originated last year.

However, this breakdown of project developers by profit status and location is a bit neater than it is in the real world, where many projects are the result of public-private partnerships and other collaborations. For example, the Makira REDD+ project in Madagascar that verified its first offsets last year is owned by the country's Ministry of Environment and Forests. But the Wildlife Conservation Society, an international not-for-profit, is the lead implementer of the project and Nedbank, based in South Africa, will monetize the offsets. The map shown in Figure 21 should therefore be considered a rough overview of suppliers by region because a single project may draw partners from several continents.

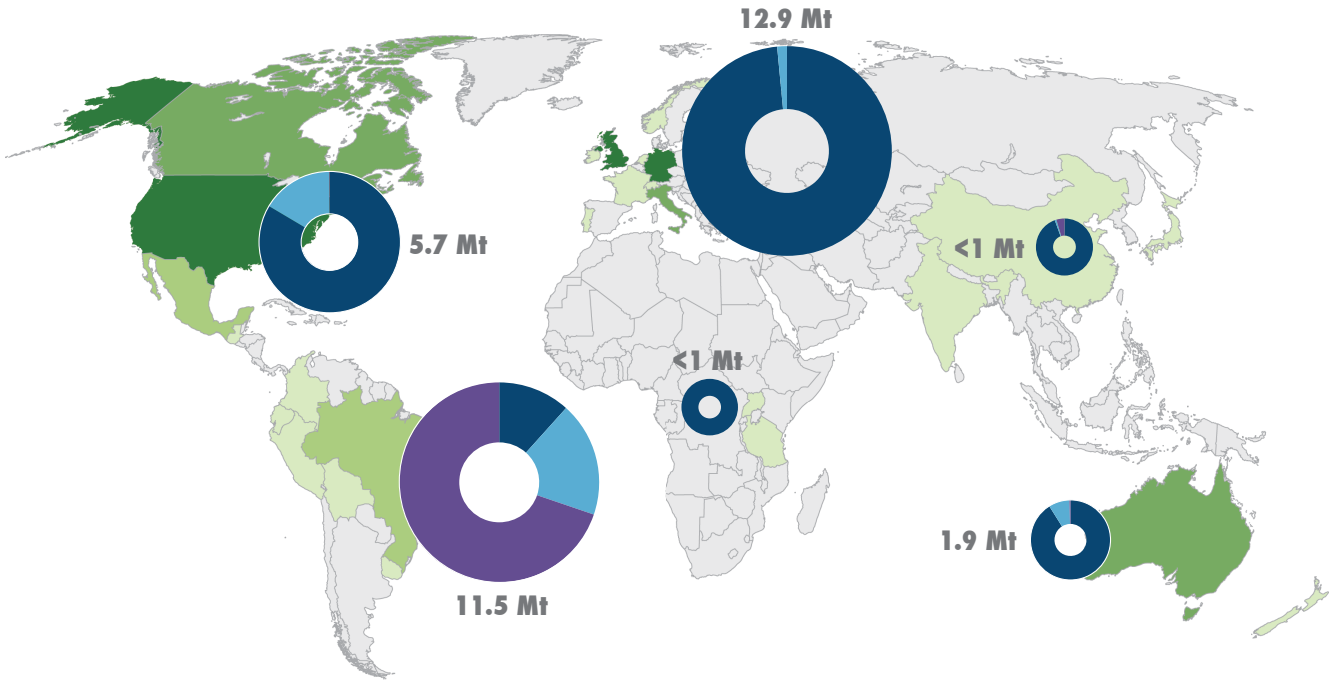
Figure 20: Historical Market Share by Offset Suppliers' Profit Status, All Markets



Notes: Based on 32.7 MtCO$_2$e in transactions reported by 136 forest carbon offset project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Figure 21: Response Rate by Country, Transacted Volume by Developers' Headquarters Region, and Market Share by Developers' Profit Status



Map key: Response Rate by Country: 1+ 5+ 10+ 20+

Chart key: Market Share by Developers' Profit Status: For-Profit / Private Sector, Not-for-Profit / NGO, Public Sector / Government

Notes: Based on 32.7 $MtCO_2e$ in transactions reported by 136 forest carbon offset project developers and retailers.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

2. Forest Carbon Offset Markets in Context

2.1 Introduction: Forests Carbon Markets and Climate Change

The role of forests in mitigating climate change has become increasingly prominent as societies fight to keep the rise in global average temperature to less than 2 degrees Celsius – the threshold beyond which climate scientists predict disastrous consequences for people and ecosystems. Deforestation accounts for 3 billion tCO_2e of emissions annually, more than the total emissions from burning fossil fuels in Africa and Central and South America combined. Though gross deforestation has declined since the early 2000s,[3] land-use change still accounts for an estimated 14% of global emissions[4] and the threats to forests are intensifying.

New research by Ecosystem Marketplace's parent organization Forest Trends reveals that commercial agriculture caused 71% of forest conversion between 2000 and 2012, a deviation from the 20th century when forests were mainly cleared for timber. The global trade of commodities such as soy, beef, paper, and palm oil is worth $1.4 trillion annually,[5] and demand for the products made from these commodities – everything from toothpaste to hamburgers to books – will grow as billions of people enter the middle class.

Clearing forests can be incredibly lucrative. Keeping them standing will require billions in financing every year.[6] Though forest carbon markets cannot meet this challenge alone, voluntary buyers last year provided $140 million to protect forests – money that would not have been invested without the infrastructure of the carbon markets. Carbon finance can also advance other, non-market funding streams (see Section 5, Finance), and can, in some cases, "tip the balance" toward making trees more valuable alive than dead.

Over the past year, global efforts to reduce deforestation have moved forward ahead of international emissions reductions targets. One of the few concrete outcomes of the 2013 United Nations Framework Convention on Climate Change (UNFCCC) negotiations in Warsaw, Poland, was the REDD Rulebook, which provides long-awaited guidance for countries to create reliable, national deforestation baselines to be recognized under the UNFCCC.

Forests were similarly prominent at the September 2014 UN Secretary General's Climate Summit (which is outside of the UNFCCC process) in New York City, where more than 150 governments, companies, indigenous peoples groups, and civil society organizations committed to ending deforestation by 2030, pledging an initial $1 billion to the effort.

The signatories to this New York Declaration on Forests included major donor governments such as Norway and the United Kingdom and subnational governments working on jurisdictional REDD such as Acre, Brazil and Chiapas, Mexico. The list also included consumer goods companies such as Unilever and Golden Agri-Resources that have recently committed to stop clearing forests for palm oil, as well as indigenous peoples on the front lines of forest protection in places such as Indonesia and the Amazon Basin. The global burden to protect forests and their carbon content brings together an unusual but powerful set of stakeholders.

This section places the idea of payments for verified emissions reductions in forests – which, as this report finds, has so far mainly occurred voluntarily – in the context of international efforts to finance avoided deforestation, as well as in the context of emerging carbon regulations around the world.

2.2 Trends in REDD Finance

The cumulative value of payments for emissions reductions from forest carbon projects over the years topped $1 billion this year, with almost $100 million

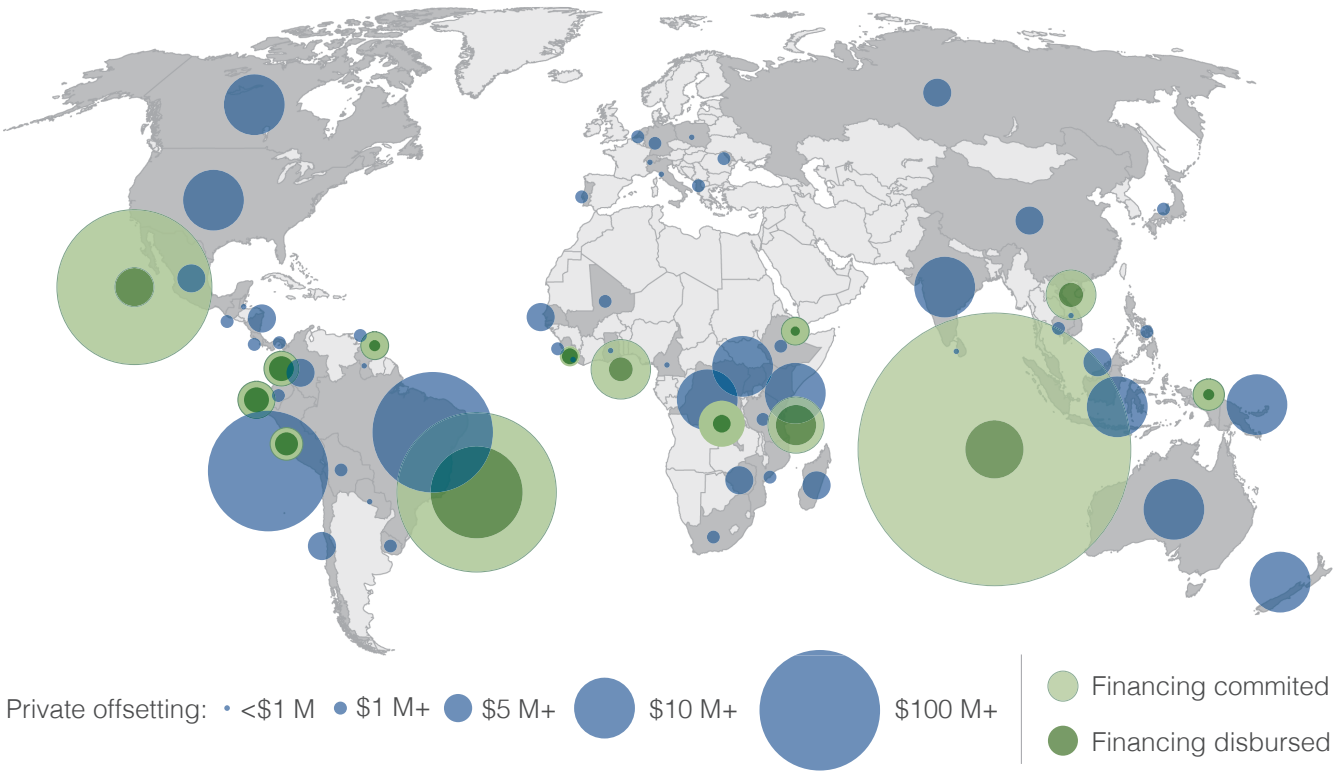
[3] Union of Concerned Scientists, "Deforestation and Global Warming." Citing research from Winrock International and Woods Hole Research Center, 2012. Available at: http://www.ucsusa.org/global_warming/solutions/stop-deforestation/deforestation-global-warming-carbon-emissions.

[4] Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report, Chapter 11: Agriculture, Forestry, and Other Land Use (AFOLU), 2013.

[5] Climate and Land Use Alliance, *Disrupting the Global Commodity Business*, September 2014. Available at: http://www.climateandlandusealliance.org/uploads/PDFs/Disrupting_Global_Commodity.pdf.

[6] Analyses from the Union of Concerned Scientists, the European Commission, and the government of Great Britain agree that deforestation-related emissions could be cut in half for $20 billion per year.

Figure 22: Comparison of Project- and Country-Level Finance, All Years



Notes: Based on value associated with all years of tracking for the State of the Forest Carbon Markets reports and REDD*X* finance data, as of October 2014.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

flowing to REDD projects in 2013 alone. However, market observers frequently considered project-level funding, which is mostly coming from the private sector, to be a "drop in the bucket" compared to the many billions that developed-country governments are expected to commit to reducing deforestation in developing countries.

Forest Trends' REDD Expenditures Tracking Project (REDD*X*) has tracked $4.5 billion in REDD commitments to 14 tropical forest countries in the last few years – a figure that indeed dwarfs project-level finance. However, less than $0.6 billion has so far been disbursed to recipient governments, according to REDD*X*. In Indonesia, a deforestation hotspot, donor governments, such as Japan and France, and multilateral institutions committed $2.4 billion to the country's REDD program starting in 2009, but just over $100 million of that funding reached programs as of 2012. Time lags often occur because of the months it takes for governments to create work plans, set up financial management systems, and decide on operational policies.

REDD*X* findings show that multilateral institutions such as the World Bank's Forest Carbon Partnership Facility (FCPF) have ramped up funding for REDD over the past few years, overshadowing the bilateral and private foundation funding supplying the bulk of funds in the "early" years of 2009 and 2010. Early in 2013, Finland, Germany, and Norway made new financial pledges totaling $180 million to the FCPF, which has now committed $825 million to 47 countries developing programs.

The majority of this funding has been disbursed through FCPF's Readiness Fund, but the institution reached a significant milestone in December 2013 when it approved the Methodological Framework for its Carbon Fund, unlocking a potential $465 million in payments for emissions reductions.

There are currently 11 countries in the Carbon Fund pipeline: Chile, Costa Rica, the Democratic Republic of Congo (DRC), Ghana, Guatemala, Indonesia, Mexico, Nepal, Peru, the Republic of Congo, and Vietnam. In September, Costa Rica became the first country

to sign a letter of intent with FCPF, providing insight on the maximum payment for emissions reductions it could receive: up to $63 million for as much as 12 $MtCO_2e$. Buyers in the Carbon Fund have expressed their willingness to pay $5/$tCO_2e$, but the final price will depend on the Emission Reductions Payment Agreements (ERPAs) negotiated with each country.

The Forest Investment Program (FIP), which is backed by multilateral development banks such as the World Bank, the Asian Development Bank, and the African Development Bank, also increased its REDD funding last year. FIP has now pledged a total of $639 million for efforts to reduce deforestation in eight countries, and donors have committed an additional $50 million to a Dedicated Grant Mechanism that aims to extend participatory governance and promote transparency for indigenous peoples and local communities. The World Bank's BioCarbon Fund also created a new funding initiative for forests – the Initiative for Sustainable Forest Landscapes – in December 2013, after years of focusing on CDM projects. The initiative aims to direct $30-50 million to forests in six jurisdictions, starting with Oromia, Ethiopia.

It is important to note that almost all of the commitments tracked by REDD*X* are grants to help countries develop and implement a REDD strategy, not payments-for-performance for the actual reduction of forest carbon emissions, which Ecosystem Marketplace tracks in this report series. Payments for verified emissions reductions occur in the third and final phase of the UN-REDD program, and no national government has yet reached that stage.

However, **select jurisdictions (e.g., states, provinces, regions) are leading the way for payment-for-performance REDD at a scale larger than the project level.** In 2013, the German development bank KfW agreed to finance the reduction of at least 8 $MtCO_2e$ of emissions reductions from the Brazilian state of Acre in a $40-million agreement spanning the next four years, and that marks the first payment for emissions reductions at the jurisdictional level. Though "performance" here correlates with a specific reduction target, the payments flow from the state government to indigenous groups and communities based on a variety of activities under Acre's State System of Incentives for Environmental Services, known as "SISA" from the Portuguese acronym.

"International REDD+ payments come into the state denominated in carbon, but the state distributes the money internally via payments for watershed services, payments for habitat restoration, and payments for any number of other actions that are consistent with SISA," says Rebecca Anzueto, a former Program Manager with the Communities and Markets Initiative at Forest Trends. "As long as the state meets its REDD+ emissions reductions targets, the REDD+ payments should continue to flow."

Acre is the first jurisdiction to reach the payment-for-performance milestone, but others are in line. Leading the push for jurisdictional REDD is the Governors' Climate and Forests (GCF) Task Force, a coalition of 22 states and provinces in Brazil, Indonesia, Mexico, Nigeria, and Peru that house more than a fifth of the world's tropical forests. Thirteen governors from these states recently signed the Rio Branco Declaration, a commitment to cut deforestation rates 80% by 2020, preventing four billion tonnes of emissions – if enough REDD financing flows.

The FCPF's Methodological Framework for its Carbon Fund describes how forest carbon projects and jurisdictions could fit into a national-scale emissions reductions program. The framework provides guidance on key aspects of these programs, including their level of ambition, carbon accounting, safeguards, sustainable program design and implementation, and transactions.

2.3 Trends in Voluntary Forest Carbon Offsetting

Though REDD and other project developers hope that the proliferation of compliance markets will multiply demand for forest-based emissions reductions, a historical look shows that pre-compliance and compliance activity made up only roughly a quarter of forest carbon market value over the past three years. In 2013, voluntary market buyers paid $140 million to protect forests, almost triple the value of compliance market payments for forestry offsets in California and Australia.

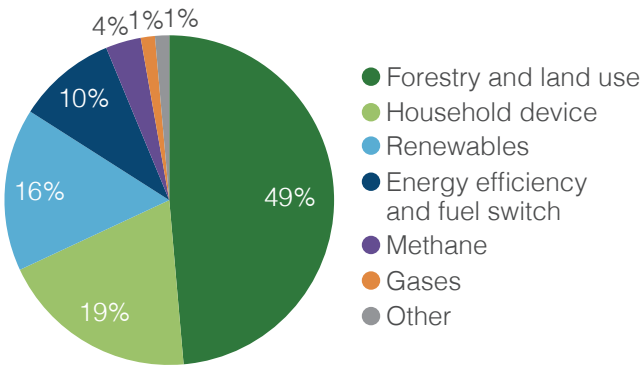
The voluntary market is also currently the only active international source of demand for forestry offsets. The CCX ceased its voluntary but legally binding emissions reductions program at the end of 2010; new project activities under the CDM practically ground to a halt after the first commitment period of the Kyoto Protocol ended in 2012; and forest project activity for New Zealand's Emissions Trading Scheme (ETS) is virtually non-existent due to fierce competition from inexpensive international non-forestry offsets. This section therefore looks at some of the overarching trends among the thousands of discrete buyers and

sellers that voluntarily enter into contracts for forest-based emissions reductions.

Purely voluntary demand for forest carbon offsets increased 7% last year, with buyers demanding 29 $MtCO_2e$, up from 26.6 $MtCO_2e$ in 2012. However, the largest single "buyer" last year was German development bank KfW facilitating finance from Germany's REM Programme. Germany was the first sovereign government to enter into a sizable agreement supporting early REDD emissions reductions that resembles those usually negotiated between companies and project developers or retailers. Excluding this 8 $MtCO_2e$ agreement reveals that the for-profit buyers that have traditionally made up the bulk of voluntary demand purchased about 20% fewer forestry tonnes last year, though corporations remain the single largest buyer sector.

Forestry and land-use offsets were the most popular offset category in the voluntary carbon markets in 2013 and comprised 49% of voluntary market value. Two out of every five offsets transacted by voluntary buyers last year came from a forest project, making forestry the most sought-after offset category. Buyers have always sought out forest carbon offsets because of their "charisma" – projects that plant trees or save endangered rainforest are easy to convey to consumers – but until recently, forestry offsets were priced significantly higher than renewable energy and have therefore sold in smaller volumes. However, the growing supply of forestry tonnes on the market has brought prices closer to those of other prevalent project types – in 2013, transaction volumes of REDD offsets in particular surged past wind project offsets (2012's most demanded offset type).

Figure 23: Market Share by Project Category, Voluntary Carbon Offset Markets, 2013



Notes: Based on 76 $MtCO_2e$ in transacted offset volume.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

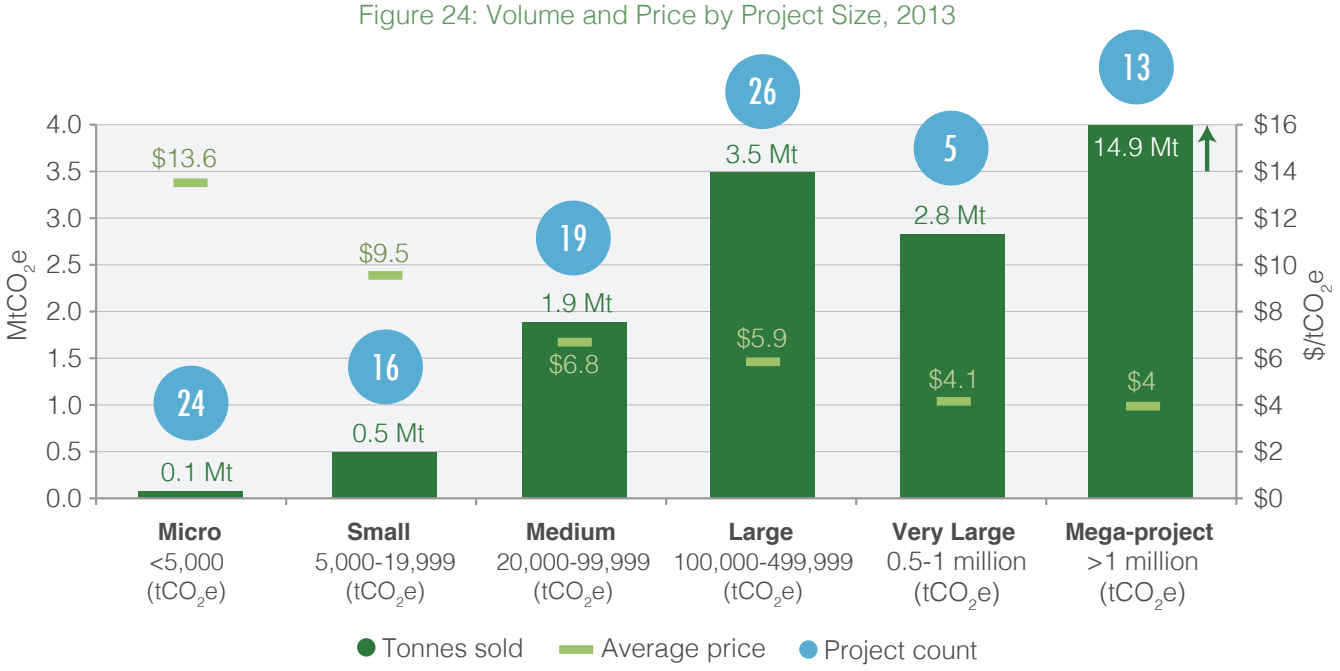
Voluntary buyers paid an average of $4.8/tCO$_2$e for forest carbon offsets in 2013, the lowest prices since 2009. Voluntary prices for forest carbon reached an all-time high of $10.3/$tCO_2e$ in 2011 but dropped to $7.7/$tCO_2e$ in 2012 and then even more last year. This trend can partly be attributed to classic supply-and-demand dynamics. Price and volume are more or less inversely related in the voluntary forest carbon market: When project developers and retailers sell more volume, they do so at lower prices; and when project developers and retailers sell less volume, they fetch higher prices per offset (see Figure 15 in Section 1).

Demand has not kept pace with the growing number of forest carbon projects reaching maturity and supplying more tonnes. A record 29.4 $MtCO_2e$ of forestry offsets were issued in 2013, more than tripling issuance volumes from 2012. Meanwhile, project developers and retailers reported that only 11% of offsets sold last year were contracted to "new" buyers; the other 89% were sold to buyers already active in the voluntary carbon market, meaning sellers often compete for the same clients. Though voluntary offset prices vary widely, competition drove at least some sellers to accept less cash per tonne.

Also, for projects that issue tens or hundreds of thousands of emissions reductions annually, the volume of offsets sold – rather than the price per tonne – is more important for cash flow. As illustrated in Figure 24, project size and offset price are inversely related: the greater the project's estimated annual emissions reductions, the lower the price per offset in 2013. The 24 "micro-scale" projects Ecosystem Marketplace tracked last year transacted at the highest average prices ($13.6/$tCO_2e$), while the 18 very large or mega projects (each of which reduces more than half a million tonnes of emissions annually) transacted at an average of $4.1/$tCO_2e$ and $4/$tCO_2e$, respectively. Also, while there were more micro, small, and medium projects by count, projects that reduced 100,000 tCO_2e or more annually contributed 90% of the transacted volume last year – so their (lower) prices are weighted more heavily in the global average.

Demand for REDD offsets nearly tripled last year, with the majority of supply coming from projects in Latin America. Though California's cap-and-trade market plans to consider allowing REDD offsets from select jurisdictions, these tonnes are currently only available to voluntary buyers who are showing a growing interest in avoided deforestation. Buyers spent

Figure 24: Volume and Price by Project Size, 2013



Notes: Based on responses associated with 23.7 $MtCO_2e$ transacted from 103 projects that reported project size in estimated annual emissions reductions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

$64.1 million on REDD in the Amazon Basin countries of Brazil, Peru, Colombia, and Ecuador. Another $15.4 million flowed to East African countries advancing REDD projects – the DRC, Zimbabwe, Kenya, and Tanzania.

Measuring and verifying the co-benefits of forest carbon projects is now "business-as-usual" as project developers seek to deliver beyond-carbon outcomes and mitigate risk. Eighty-five percent of offsets transacted under VCS, the most popular standard on the voluntary market, were also developed using the Climate, Community and Biodiversity (CCB) guidelines, and/or sourced from projects situated on land areas certified to the Forest Stewardship Council (FSC), as buyers demanded that a project's benefits to people and ecosystems be verified, alongside carbon sequestration. More than an added bonus, these "co-benefits" are increasingly becoming a baseline expectation. This is especially true for REDD projects, since co-benefits such as local jobs, alternative income streams, and community trainings are exactly the project activities that will successfully reduce deforestation.

Four out of five forest carbon offsets were contracted after issuance as projects reached this final stage of development and buyers scaled back on early-stage investment. This is the opposite picture of just two years ago, when the majority of forestry tonnes were contracted pre-verification. The 2013 market is therefore more mature – the emissions verification process that critics were once skeptical of has come to fruition – but also one in which project developers are receiving fewer early-stage infusions of finance from the market.

Voluntary buyers purchased 44% of their tonnes under internal standards in 2013, after previously converging around internationally accepted voluntary standards, namely VCS. These internal standards were often geographically contained to specific countries, such as the Peru Carbon Standard, or to jurisdictions, such as the Acre Carbon Standard which is a stand-in used by the state as it moves to pilot the VCS's jurisdictional REDD standard. Others, such as the Natural Forest Standard, were characterized by "internal" use by just one or two projects. Still, VCS remained the most popular forestry standard on the voluntary market in 2013, holding just over 50% market share. The Gold Standard also made its debut into forestry last year.

2.4 Trends in Compliance Forest Carbon Offset Markets

Compliance markets for forestry offsets look much different than many stakeholders imagined they would a decade ago. Over the years, this report tracked nearly

16 $MtCO_2e$ of forestry offsets under the CDM, which allowed offsets only from A/R projects approved by the CDM Executive Board that were designed primarily for compliance with the Kyoto Protocol. But that source of demand was exhausted as buyers secured their desired volumes before the end of the protocol's first commitment period in 2012. Ecosystem Marketplace tracked no CDM A/R offsets in this year's report.

In the wake of the CDM, the role of carbon markets in a potential international climate agreement at the UNFCCC meeting in Paris in 2015 is still evolving. Though countries are not expected to make emissions reductions commitments until then, governments may establish Intended Nationally Determined Contributions (INDCs) to outline their goals. An international market-based mechanism to reduce emissions – whether a reincarnation of the CDM or something completely different – would ultimately hang on the frame of each country's INDC.

In the meantime, many countries and jurisdictions are moving ahead of the UNFCCC process to price carbon locally and build compliance market infrastructure for the exchange of forest carbon offsets.

California saw its first compliance forest carbon activity in 2013 as "early action" projects developed under voluntary standards Climate Action Reserve (CAR) and American Carbon Registry (ACR) were approved and listed on the state's Air Resources Board (ARB) registry. In April 2014, the Yurok tribe's improved forest management (IFM) project located in northern California was the first to be issued offsets under the state's cap-and-trade program. Compliance buyers in California may purchase offsets to cover up to 8% of their capped emissions.

Though the state's offset protocols are currently restricted to U.S.-based projects, ARB officials will consider establishing regulations to allow offsets from international REDD projects located in Acre and Chiapas. The REDD Offset Working Group (ROW), a group of indigenous leaders, environmentalists, and government representatives, released its recommendations to the ARB in July 2013, after more than two years of consultations. The ROW advised that the California program accept only jurisdictional REDD offsets from states or territories (rather than projects) and established a detailed set of social and environmental safeguards.

The ARB has yet to make a final decision on REDD and does not have a timeline for doing so. However, market observers view California as a bellwether for other compliance markets in terms of its inclusion of forestry offsets and predict that the state's acceptance of REDD could act as a demand "magnifier."

"California is obviously not going to buy all of Brazil's credits, but putting a signal that says there is a compliance carbon market out there that accepts this and here's what the rules look like would be enormously powerful," says Steve Schwartzman, Director of Tropical Forest Policy at Environmental Defense Fund.

Forest carbon projects under **Australia's Carbon Farming Initiative** (CFI) enjoyed a full year of compliance demand in 2013 after the country's carbon tax became effective in July 2012. But the future of these projects is uncertain now that the federal government repealed the tax and replaced it with an Emissions Reduction Fund (ERF). Although the fund will be implemented through the existing CFI, project developers are now expecting offset prices to drop to a fraction of the $24.2 per tonne carbon tax. The head of CO2 Group, one of the largest CFI project developers, resigned at the beginning of this year, citing a sharp drop in investor interest.

The Australian government's decisions may seem like déjà vu for **New Zealand** forest project developers, who saw prices freefall after the government allowed international carbon offsets into its ETS and inexpensive offsets from China and Russia flooded the market. Early this year, Maori tribes in New Zealand threatened to sue the government for $600 million, their estimated losses from the 80% drop in forest carbon offset prices due to the policy.

As Oceania's compliance markets falter, though, emerging economies are busy developing carbon pricing mechanisms. **China**, the world's largest GHG emitter, launched seven subnational cap-and-trade markets and plans to roll out its national market in 2016. So far, though, forestry offsets are allowed only in Hubei province – and likely in the city of Chongqing – and forest carbon project development is very limited.

South Africa's "tax-and-trade" program is also set to launch in 2016, and a recent policy paper by the National Treasury indicates that forestry projects developed under voluntary standards will likely be included under the policy. Forestry projects in South Africa (the program will accept only domestic offsets) could produce up to 26 million tonnes of emissions reductions, according to an analysis by C4 EcoSolutions. The 120 rand per tonne (about $11.4 USD per tonne)

carbon tax would drive an estimated demand of 30 $MtCO_2e$ per year in South Africa – a figure that market participants active in the region say would be enough to spark interest in new project development.

Section 8 of this report goes into more depth on these and other emerging compliance markets for forestry offsets. These programs are developing in a ground-up patchwork, sometimes at the subnational level and sometimes with regional linkages. They are providing a bridge between the dormant CDM, which, at its peak in 2011, provided $23 million to A/R projects and whatever international, top-down carbon market comes next – or not.

"Why are you waiting for permission from the UNFCCC system to create carbon markets?" asked Paul Bodnar, Director for Environment and Climate Change for the White House's National Security Council, speaking at an International Emissions Trading Association (IETA) event in September. "Why are you waiting for permission to link those systems together? You don't need permission."

Building on this sentiment, national and jurisdictional governments are developing financing mechanisms to protect forests and lower emissions. These policies could fit into market-based mechanisms under an international climate agreement – but they don't depend on it.

3. Overview: Forest Carbon Projects and Jurisdictions

In recent years, the forest carbon markets have converged around four general project types that describe the main activity being undertaken in a given project area.

Afforestation or Reforestation (A/R): Project developers plant trees either on land that did not previously support forest (afforestation) or land that was previously deforested (reforestation).

Improved Forest Management (IFM): Project developers modify a forest management plan to enhance carbon sequestration and/or reduce losses, usually by leaving more trees on the landscape during harvest cycles.

Reducing Emissions from Deforestation and forest Degradation (REDD): Project developers reduce deforestation or degradation in a threatened forest, often by providing people with alternative sources of income to forest-degrading activities. REDD+ project developers may also sustainably manage forests or enhance forest carbon stocks.

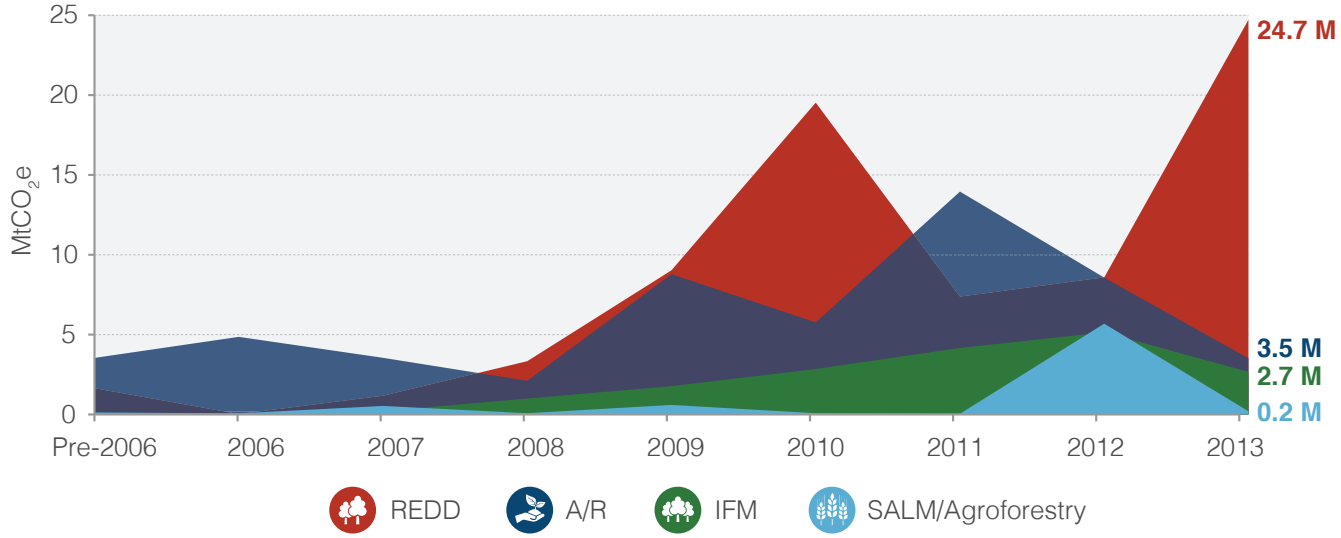
Sustainable Agricultural Land Management (SALM): Project developers enhance carbon sequestration in agricultural landscapes through the use of cover crops, no-till farming, agroforestry (the planting of trees alongside crops), and/or other activities.

As Figure 25 illustrates, the popularity of these project types fluctuates according to policy and economic drivers, or deterrents. Demand for A/R, the only forest carbon project type accepted under the CDM, dropped off after the first commitment period of the Kyoto Protocol (and therefore compliance demand) ended in 2012. After several years of steady growth, demand for IFM faltered last year partly due to diminished demand under Australia's CFI, which recognizes the project type.

REDD projects had a bumper year in 2010 in anticipation of available methodologies to account for avoided deforestation in the voluntary market and the ascent of REDD+ in international policy discussions. Demand for REDD was then subdued for a couple of years, but topped the charts with record volumes in 2013 as governments and companies focused on addressing deforestation and as many REDD projects completed their first verification cycle and issued offsets.

This section explores recent developments within these major forest carbon project types. It also previews emerging land-based carbon project types such as bamboo plantations and wetlands restoration.

Figure 25: Transacted Offset Volumes by Project Type, All Markets, Historical



Notes: Based on data reported by 159 projects and 50 additional offset suppliers in 2014, as well as more than 500 projects reported historically.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Table 4: Project Types by the Numbers, 2013

TYPE	Volume Transacted ($MtCO_2e$)	Average Price ($/tCO_2e$)	Value ($ Millions)	Total Number of Projects (Transacting Projects*)	Land Area Impacted (Million ha)	Potential Annual Emissions Reductions (Low to High Estimates, in $MtCO_2e$)
REDD	24.7	4.2	98.8	47 (26)	19.4	15.1 - 21.2
A/R	3.5	9.5	31.1	60 (27)	1.6	2.1 - 6.1
IFM	2.7	7.6	19.9	35 (22)	8.9	1.1 - 3.9
SALM/ Agroforestry	0.2	16.1	3.2	6 (3)	0.2	0.7 - 3.1
TOTAL	31.1	5.2	153.1	148 (78)	30	19 - 34.3

Notes: Potential annual reductions are based on supplier-reported ranges and include both early-stage (i.e., pipeline) and late-stage projects.
*The count includes only those projects for which Ecosystem Marketplace obtained project-level information. The parenthetical number is the count of projects that transacted offsets in 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

3.1 REDD Projects: Breakout Year

Project developers and retailers transacted a record 24.7 $MtCO_2e$ of REDD offsets last year, accounting for more than half of total market value and tripling REDD volumes from 2012. Avoided deforestation projects tracked in this report survey cover almost 20 million hectares, approximately the forest area of Cameroon or Malaysia.

The heightened market activity, however, occurred at lower prices, with the average REDD offset transacting at $4.9/$tCO_2e$ in 2013 versus $7.8/$tCO_2e$ the previous year. Only 1 in 10 REDD offsets transacted at a price point above $7/$tCO_2e$ last year, while roughly one in four tonnes sold at less than $3/$tCO_2e$ – though no REDD project sold offsets for less than one dollar.

REDD prices were lower this year partly because many of the world's largest REDD projects verified sizeable volumes of offsets in 2013, leading to ample supply. The Rimba Raya project in Indonesia verified 2 $MtCO_2e$ in June 2013, the same month that the Madre de Dios project in Peru verified 4.5 $MtCO_2e$. While some REDD project developers refused to go below an internally determined minimum price to sustain project activities, others slashed prices to transact tonnes.

"Some of the larger [REDD] projects are able to unload a significant quantity of offsets at a very low price to help with their cash flow issues," explained Brian McFarland of Maryland-based Carbonfund.org.

REDD+ market activity was geographically stratified across most relevant regions, but projects based in Latin America alone transacted 70% of all REDD offsets last year. Brazilian projects, in particular, were

Figure 26: REDD Pricing by Transacted Volume and Response Count

Notes: Based on responses associated with 20.1 $MtCO_2e$ from REDD projects that reported a price.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Avoiding Planned versus Unplanned Deforestation

This report series for the first time asked project developers to report whether their REDD project avoided planned or unplanned deforestation, according to the VCS definition.* While both fall under the umbrella of REDD, these projects face categorically different threats to forests – usually requiring very different approaches to forest protection.

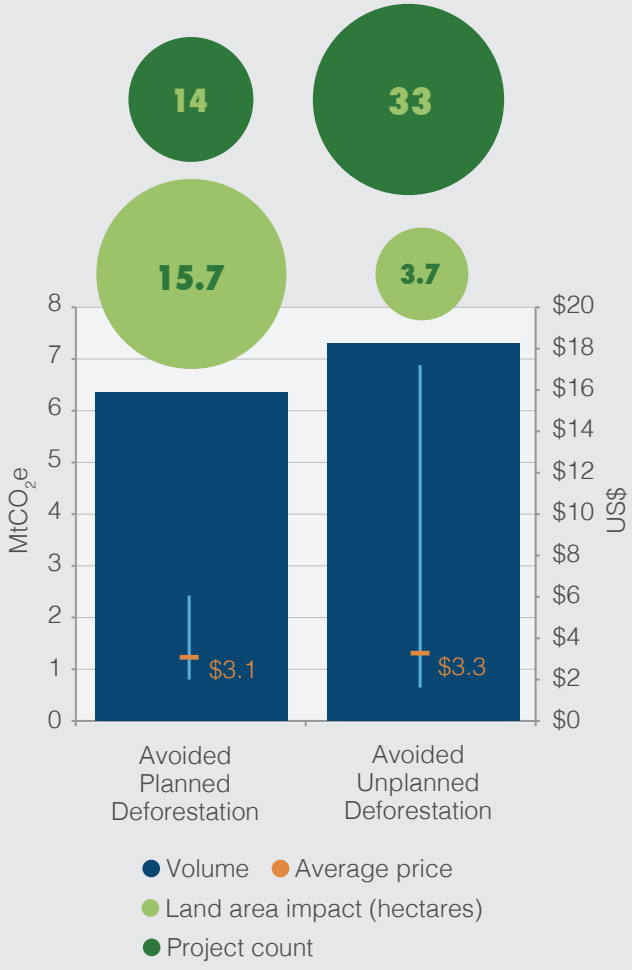
Planned deforestation usually occurs along a "frontier" where commercial agriculture or urban infrastructure encroaches on forests. Land tenure is often clear for these projects, and avoiding deforestation means changing a planned harvest regime or ensuring that a legal concession for agriculture does not result in clear-cutting.

In contrast, unplanned deforestation usually occurs in a "mosaic" pattern and may be caused by a variety of drivers such as subsistence agriculture, livestock grazing, collection of fuelwood charcoal, illegal logging, and small-scale extractive activities. This type of deforestation is more often instigated by the same people who depend on the forests for their livelihoods and who may not have clear title to the land. Preventing unplanned deforestation can be complex both because the frontier of deforestation is not as obvious as in planned deforestation and because local people must see a viable economic alternative to cutting down trees.

Overall, our survey tracked 33 projects avoiding unplanned deforestation and 14 projects avoiding planned deforestation last year. The average price per tonne was similar for both types of projects – \$3.3/tCO_2e for "unplanned" and \$3.1/tCO_2e for "planned." However, REDD projects that avoided planned deforestation tended to sell large volumes, with just six projects transacting 6.4 $MtCO_2e$, versus 20 "unplanned" projects that transacted 7.3 $MtCO_2e$ total.

Avoided planned deforestation projects also covered a much larger land area – 15.7 million hectares versus just 3.7 million hectares for avoided unplanned deforestation. African projects mainly avoid this "mosaic" deforestation while Latin America played host to both types of REDD projects.

Figure 27: Comparing REDD Types: Project Count, Land Area Impacted, Transacted Volume, and Average Price for Avoiding Planned vs. Unplanned Deforestation



Notes: Based on responses associated with 13.6 $MtCO_2e$ transacted from projects that defined whether deforestation was planned or unplanned.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

* See VCS's Methodology for Accounting Mosaic and Landscape-scale REDD Projects: http://www.v-c-s.org/methodologies/methodology-carbon-accounting-mosaic-and-landscape-scale-redd-projects-v21

Table 5: REDD Projects Unpacked

	Volume ($MtCO_2e$)	Average Price
I. Contract Type		
Pay-on-delivery	11.3	$4.8
Spot	6.6	$2.9
Pre-pay	0.8	$8.2
II. Project Stages		
Issued	15.0	$2.7
Verified	0.2	$6.7
Validated	<0.1	$10
Undergoing validation	<0.1	$12

Notes: Based on responses associated with 22.5 $MtCO_2e$ from respondents that reported a contract type and 21 $MtCO_2e$ from respondents that reported the stage at time of transaction.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

responsible for 11.8 $MtCO_2e$ of this volume, while Peruvian projects sold another 5 $MtCO_2e$. African REDD projects also had a fruitful year, when the continent held 21% of REDD market share as projects in Zimbabwe, the DRC, Kenya, and other countries sold 5.2 $MtCO_2e$, a 3 $MtCO_2e$ increase from 2012. Avoided conversion projects also remained popular in Australia and made up the majority of tonnes transacted under the CFI.

While most UN-REDD finance flowing from sovereign governments remains geared toward "readiness" – activities, such as stakeholder consultations, government agency capacity-building, and deforestation baseline development, to prepare for national- or state-level REDD –, the vast majority of voluntary buyers financed REDD offsets that were already issued and listed on a registry. Buyers purchasing already issued tonnes are truly "paying for performance" rather than investing in emissions reductions projected to occur in the future.

3.2 REDD Jurisdictions: Acre Leads the Way

While voluntary REDD projects and UN-REDD readiness have so far mostly involved distinct entities accessing separate funding streams, the two are beginning to intersect at the level of states, provinces, or regions ("jurisdictions") as project developers seek to "nest" their projects within emerging jurisdictional REDD programs.

Ecosystem Marketplace's survey has tracked REDD projects moving up the nesting ladder over the last two years. As shown in Figure 28, 58% of nested REDD projects were "active" last year, with eight projects pursuing formal Jurisdictional Nested REDD (JNR) pilots under VCS and another eight actively engaged with a government entity on integrating project baselines with regional efforts. In contrast, in 2012 the majority of project developers were still in preliminary or technical discussions with jurisdictional governments or simply unsure how to progress.

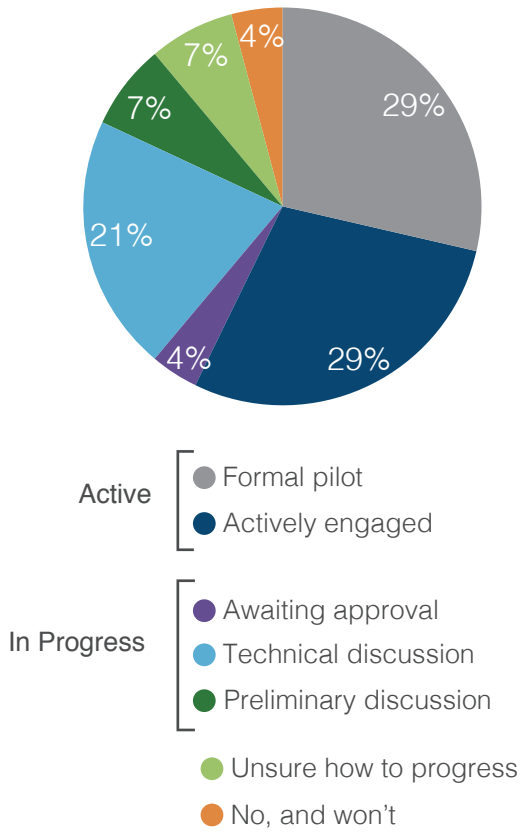
VCS's JNR guidelines were released in fall 2012, and the voluntary standard remains the only one to have laid out a comprehensive framework for jurisdictional accounting and verification. ACR does have a nested REDD+ standard that provides technical guidance for projects nested within a REDD+ jurisdiction, but has no pilot projects to date.

The state of Acre, Brazil is on the path to piloting VCS JNR. In recent years, the state became the first jurisdiction to receive payments for performance, including last year signing an agreement to deliver 8 $MtCO_2e$ to German development bank KfW at a value of $40 million, financed by Germany's REM Programme. Because it is not motivated by regulation but does hinge on the delivery of REDD+ emissions reductions through an established registry system (in this case Markit Environmental Registry), this agreement is tracked in this report's voluntary forest carbon offset findings. It also resembles the kind of government-to-government payment structure that could occur if REDD offsets are one day used to meet binding sovereign commitments to reduce emissions.

Acre has one of the most advanced JNR programs in the world, but other states and provinces are also scaling up REDD programs. This process takes time as jurisdictions grapple with challenges such as developing larger-scale deforestation baselines, preventing leakage (off-loading deforestation pressures to neighboring areas), clarifying land tenure and carbon rights across large land areas, and determining the best way to recognize or incorporate project-level activities already underway within the jurisdiction.

After signing a Memorandum of Understanding MOU to cooperate on the design of jurisdictional

Figure 28: REDD Projects by Project Nesting Progress



Notes: Based on responses representing 29 projects.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

REDD+ programs in 2010, experts from California, Acre, and Chiapas, Mexico met as part of the REDD Offsets Working (ROW) Group to discuss these very issues. Their ultimate guidance, released in July 2013, suggests that JNR programs must have transparent accounting systems for both state-level emissions and nested project emissions – and specify what they will do if nested projects achieve emissions reductions within their respective land areas, but the jurisdiction's non-project areas do not.

Jurisdiction-wide and project-level emissions baselines may also differ if the state or province uses historical deforestation rates (in accordance with FCPF guidelines) while the REDD project baseline accounts for increased deforestation pressures. In this case, the project may use its own baseline until the crediting period expires – then they must adopt the jurisdictional baseline, according to VCS JNR guidelines.

Despite the fact that individual REDD projects add a layer of complexity to jurisdictional programs' development, some governments have chosen to leverage the experience of private project developers in regional program development. For example, Wildlife Works partnered with the regional government in DRC's Mai Ndombe to develop a nested jurisdictional REDD approach in the province, which would include its 300,000-hectare project. Once a logging concession, the Mai Ndombe REDD+ project area is home to 50,000 people as well as threatened bonobos and forest elephants and is expected to avoid 100 $MtCO_2e$ of emissions over 30 years.

The GCF Task Force, a group of subnational governments collaborating to build robust jurisdictional REDD+ programs, is also leading the push for JNR by bringing together governors of tropical forest states to share best practices and promote market development for jurisdictional offsets. The six Brazilian GCF states alone claim to have reduced deforestation by 70% between 2006 and 2012, preventing an estimated 3 billion tCO_2e from entering the atmosphere. Calling this progress "significant but fragile," in August 2014, GCF states met in Acre's Rio Branco and committed to reducing deforestation by another 80% by 2020. Their pledge, however, depends partly on payments-for-performance from the private sector – a big question mark.

Though GCF focuses on governors, JNR does not necessarily have to be subnational. The national-level forestry administrations in Costa Rica and Chile have signed agreements with VCS to pilot JNR programs. Both countries also have agreements with the FCPF and the World Bank's Partnership for Market Readiness as they develop national REDD+ strategies, which will in turn "nest" jurisdictions.

A 3-year $1.4-million grant administered by the Norwegian Agency for Development Cooperation (NORAD) is currently funding VCS's work to develop JNR accounting and verification frameworks in Costa Rica, Acre, Mai Ndombe, San Martín, and Madre de Dios. It is hard to say, though, which jurisdictions may follow Acre's lead and be the next to reach the stage of payment-for-performance.

"It's hard to predict which jurisdictions are going to make the most advancements," says Naomi Swickard, AFOLU Manger for VCS. "We see a lot of turnover in [jurisdictional] government agencies, and any time an event like an election comes up, that can turn things around."

Table 6: Status of Current Jurisdictional REDD Programs Around the World

Jurisdictional REDD program	GCF Task Force Member?	VCS JNR Pilot?	MOU with California?	Country signed preparation grant with FCPF?
Acre, Brazil	✓	✓	✓	
Amapá, Brazil				
Amazonas, Brazil				
Mato Grosso, Brazil	✓			
Pará, Brazil	✓			
Tocantis, Brazil	✓			
Chile		✓		✓
Costa Rica		✓		✓
Mai Ndombe, Democratic Republic of Congo	✓	✓		✓
Aceh, Indonesia	✓			✓
Central Kalimantan, Indonesia	✓			✓
East Kalimantan, Indonesia	✓			✓
Papua, Indonesia	✓			✓
West Kalimantan, Indonesia	✓			✓
West Papua, Indonesia	✓			✓
Campeche, Mexico	✓			✓
Chiapas, Mexico	✓		✓	✓
Jalisco, Mexico	✓			✓
Quintana Roo, Mexico	✓			✓
Tabasco, Mexico	✓			✓
Cross River State, Nigeria	✓			
Amazonas, Peru	✓	✓		✓
Loreto, Peru	✓			✓
Madre de Dios, Peru	✓	✓		✓
San Martín, Peru	✓	✓		✓
Ucayali, Peru	✓			✓

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

3.3 A/R Projects: Strong Project Development but Modest Transactions

A/R was the most popular project type by count last year. Ecosystem Marketplace tracked 60 active A/R projects that planted trees across 1.6 million hectares on six continents.

However, at 3.5 $MtCO_2e$, transaction volumes from tree-planting projects were a far-off second from REDD and continued to decline from an all-time high of 14 $MtCO_2e$ in 2011 followed by 8.6 $MtCO_2e$ in 2012. This is partly due to a drop-off in compliance demand from Kyoto Protocol signatories that used A/R CDM offsets to meet emissions reduction goals for a 2012 deadline. Demand for A/R offsets in Australia also diminished after policy developments put the country's carbon tax on the chopping block. While Asian countries again transacted more than half of all A/R offsets worldwide, 2012's growth in the region was not repeated last year.

Latin America transacted a modest number (0.6 $MtCO_2e$) of A/R offsets last year but reported that 30 projects are

Table 7: A/R Projects Unpacked

	Volume ($MtCO_2e$)	Average Price
I. Contract Type		
Pre-pay	2.2	$11.3
Spot	0.5	$10.2
Pay-on-delivery	0.3	$7.9
II. Project Stages		
Project Design Document	1.8	unknown
Issued	0.9	$8.8
Validated	0.3	$7.6
Verified	0.1	$8.5

Notes: Based on responses associated with 22.5 $MtCO_2e$ from respondents that reported a contract type and 21 $MtCO_2e$ from respondents that reported the stage at time of transaction.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

under development in Peru, Colombia, Guatemala, and other countries. Only a third of these projects transacted offsets last year, but they have the potential to generate 1.9 $MtCO_2e$ to 3.4 $MtCO_2e$ of emissions reductions annually. Reforestation efforts are also ramping up under the UK's Woodland Carbon Code (WCC), which had validated 89 projects estimated to sequester 1.5 $MtCO_2e$ as of September 2014.

A/R offsets transacted at the highest prices of any project type, selling at an average of $9.5/$tCO_2e$. As a result, these projects contributed disproportionately (20%) to market value as buyers spent $31.3 million on tree-planting efforts last year.

3.4. IFM Projects: Biding Time

After years of steady growth, IFM projects saw their first dip in transaction volumes last year amid lengthy approval processes for these projects on the California cap-and-trade market.

Across all regions, buyers contracted 2.7 $MtCO_2e$ of IFM offsets at a total value of $19.9 million, a decrease from the 5.1 $MtCO_2e$ transacted in 2012. The global average price for IFM tonnes dropped almost $3 from 2012, to $7.6/$tCO_2e$ on average, though prices ranged widely, from $4/$tCO_2e$ to more than $50/$tCO_2e$.

Though analysts project that IFM projects will eventually become the largest source of offset supply on the California market, North American transactions of these offsets actually dropped 75% from 2012 volumes, to just 0.6 $MtCO_2e$ in 2013. However, this phenomenon was much more a function of supply than demand.

Rather than marketing tonnes from existing voluntary projects, project developers shifted their attention to working with landowners on forest management projects in line with the California Compliance Offset Protocols. The year 2013 was therefore transitional for IFM, spent laying the groundwork for future transactions at California prices. Under the state's cap-and-trade program, offsets typically sell just under the allowance floor price, set at $10.7/$tCO_2e$ in 2013 and $11.3/$tCO_2e$ this year.

California's program requires forest carbon projects to ensure the permanence of emissions reductions. This means landowners and developers must commit to maintain all credited emission reductions or removal enhancements for 100 years following the last offset issuance for the projects. Given that IFM projects offer the most flexibility and quickest returns, landowners can be persuaded to sign a 100-year commitment for an IFM project because they can receive significant economic benefits in the first year, explains Steve Baczko, Vice-President of Business Development at ERA Ecosystem Services.

"When pitching a landowner on the benefits of developing a forest carbon project be it under voluntary or compliance standards and explaining the requirements of permanence commitments and you show them where the voluntary price is versus where the compliance price is, it's often times a quick conversation as to which approach to take," he says.

Early action IFM projects began listing on the California Air Resources Board's (ARB) registry in March 2013 with the Farm Cove project in Maine. Regulated entities in California could therefore only purchase early action tonnes from forestry projects in 2013.

The first issuance of IFM tonnes under the California Compliance Offset Protocols did not occur until April 2014, when the ARB issued over 800,000 tonnes to the Yurok tribe project in northern California. The mixed hardwood forest in the project area has been used for timber production since the California Gold

Table 8: IFM Projects Unpacked

	Volume ($MtCO_2e$)	Average Price
I. Contract Type		
Pay-on-delivery	0.6	$8.4
Spot	0.2	$40
II. Project Stages		
Issued	1.2	$6.5
Verified	0.7	$6.3
Undergoing validation	0.1	$4.0

Notes: Based on responses associated with 22.5 $MtCO_2e$ from respondents that reported a contract type and 21 $MtCO_2e$ from respondents that reported the stage at time of transaction.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Rush, and tribal leaders say that forest loss has left native plant and animal species struggling. The new carbon management plan aims to improve habitat for deer and elk and reduce runoff that negatively affects salmon and steelhead populations.

IFM projects such as these typically receive a "first-year bump" of verified emissions reductions following the transition to a more carbon-centric management plan. Assuming these early tonnes find a buyer, the upfront carbon revenue can incentivize landowners to make the switch. Slow and steady issuance volumes then continue over several decades.

3.5 Emerging Project Types: Wetlands, Grasslands, Bamboo, Climate-Smart Agriculture, and More

Forest carbon market participants are increasingly seeing the landscape for the trees. Though project types such as REDD, A/R, and IFM are useful shorthand, on the ground, these lines often blur. REDD projects may involve tree-planting, and IFM projects may address some of the key causes of deforestation.

Emerging project types are expanding the definition of "forests" to include mosaics of crops and trees, coastal and savannah ecosystems, and other landscapes. These "beyond-forest" project types reflect the reality that preventing land-use emissions will require a broad approach – one that doesn't stop at the forest edge. Pioneer project developers are piloting new methodologies to test carbon-accounting principles in uncharted territory.

The quickly disappearing coastal ecosystems along Louisiana's Gulf Coast prompted Tierra Resources to develop a **wetlands restoration** carbon methodology, funded by the major utility in the region, Entergy. ACR approved the methodology, which is specific to the Mississippi Delta, in September 2012, and Tierra Resources, Entergy, and The Climate Trust are now piloting it at a wetland west of New Orleans that is threatened by subsidence (regional sinking) and saltwater intrusion. The project involves diverting nutrient-rich municipal wastewater to help the wetland grasses grow – a win-win for a utility such as Entergy that wants to offset its GHG emissions but also has half a million miles of transmission lines and hundreds of generation facilities along the coast. (More on blue carbon methodologies in Section 7.)

Grasslands, which cover roughly 25% of the Earth's land surface, are also gaining access to carbon finance. In April 2014, VCS approved a new methodology for sustainable grasslands methodology that includes activities such as rotating grazing animals to improve carbon sequestration. The UN's Food and Agricultural Organization, the Chinese Academy of Agricultural Sciences, and other partners that worked on the voluntary methodology hope that these land-based credits may someday be recognized as Chinese Certified Emissions Reductions (CCERs).

VCS also revised its avoided conversion methodology to include grassland and shrublands. Wildlife Works piloted the methodology at its Taita Hills REDD+ project in Kenya, where landowners that do not have trees on their land were previously excluded from the project because their hectares did not meet the forest definition.

Bamboo also made a debut on the carbon market in 2014 when EcoPlanet Bamboo verified its first offsets from its bamboo plantations in Nicaragua, allowing the first of its 1.5 million validated tonnes to be listed on Markit registry. The offsets are developed under both VCS and CCB, and the project area meets requirements. Rather than encroaching on forests, EcoPlanet Bamboo builds its plantations only on degraded land that was deforested at least 10 years ago.

After a strong year in 2012, SALM projects – which include agroforestry and grasslands management – transacted just 0.4 $MtCO_2e$ last year from developed-country projects located in Europe, North America, and Oceania. But more projects in developing countries may be on the horizon. The Kenya Agricultural Carbon Project rang in 2014 by becoming the first organization to issue offsets under VCS's SALM methodology, approved in 2011. The project, implemented by the Swedish NGO Vi Agroforestry, promotes climate-smart agriculture among 60,000 small-scale farmers. The BioCarbon Fund committed to purchasing 150,000 tCO_2e generated by these activities through 2017, at an estimated value of $600,000.

After starting with an A/R methodology, The Gold Standard is also opening up opportunities for SALM project development. The organization now hosts the Cool Farm Tool that allows farmers to calculate their GHG emissions online. It recently concluded the public consultation period on its climate-smart agriculture requirements that will facilitate both stand-alone and grouped projects.

4. Beyond Carbon: People and Ecosystems

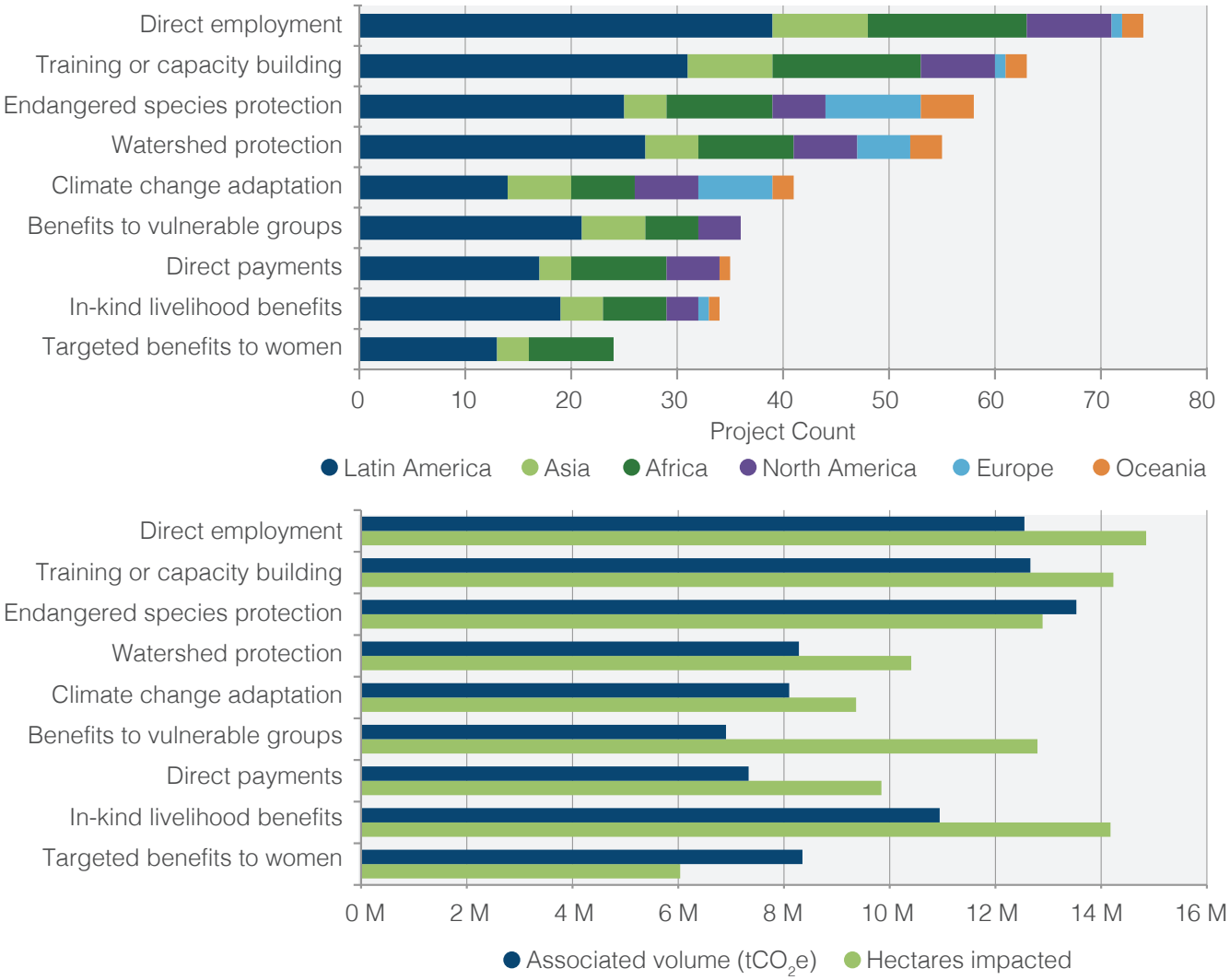
As an ever greater number of forested hectares come under carbon management each year; project developers can be found conducting in-depth stakeholder consultations with forest communities, working with governments and indigenous peoples to define land tenure, implementing measures to protect endangered species, and more. Frequently, a wide scope of project activities – from paid forest patrols to beekeeping – is hidden under the umbrella of a broad project category such as REDD.

This section explores some of the ways in which forest carbon projects affect people and ecosystems, and how the beyond carbon benefits of projects translate in the market.

4.1 Project Co-Benefits: Jobs, Jaguars, and More

For the first time this year, Ecosystem Marketplace explicitly tracked forest carbon projects' co-benefits – asking project developers to attempt to quantify non-

Figure 29: Project Co-benefits: Project Count by Region, Associated Volume, and Hectares Impacted



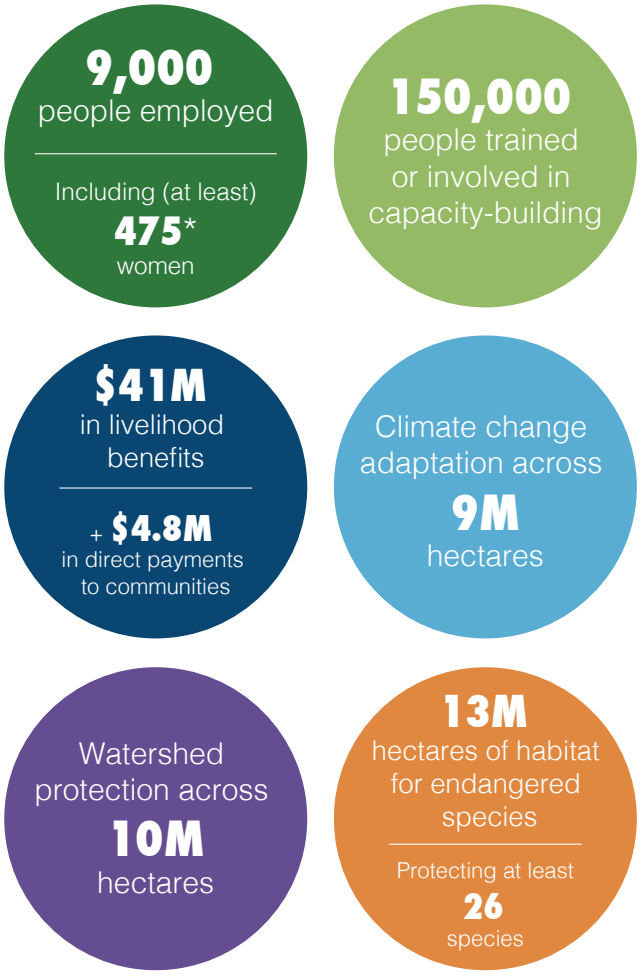
Notes: Based on responses representing at least 75 projects.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

carbon project benefits – such as job creation, women's empowerment, and climate change adaptation. Project developers are increasingly measuring and monitoring these benefits as buyers demand to know the "story" behind the offset.

The vast majority of projects developed under VCS, the most popular "carbon-only" standard last year, additionally sought to certify their non-carbon benefits or land area improvements. More than three-quarters of VCS offsets transacted in 2013 were also developed under the CCB Standard, which ensures that projects meet net-positive impact criteria for communities and biodiversity. Twenty percent of VCS tonnes were from projects developed within a land area that was FSC-certified. In fact, only a handful of projects that transacted offsets last year used only VCS as a standard.

Figure 30: Project Co-benefits: Key Impacts, 2013



Notes: Based on responses representing at least 75 projects. *The number of women employed is out of 2,000 jobs that specified gender, not the 9,000 total jobs.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Direct employment and **training and capacity building** were the most common co-benefits of forest carbon projects, according to survey respondents. Nearly half of all projects tracked last year (77 projects) employed local community members, providing jobs to more than 9,000 people. Another 150,000 people were trained in new skills – ranging from forest carbon monitoring to firefighting to sustainable pig farming to honey production – or participated in capacity-building activities, often focused on REDD readiness.

Projects that reforest degraded areas or keep tropical forests standing also provide **benefits to biodiversity.** Developers reported their project areas protected habitats for dozens of endangered species, including mega fauna such as orangutans, koalas, African elephants, cheetahs, jaguars, giant armadillos, and bonobos, as well as a few lesser-known specimens such as the blue-throated piping-guan and the Amazon dwarf squirrel. Offset buyers such as the National Geographic Society that focus on biodiversity as part of their core mission often decide which projects to back primarily based on co-benefits, especially species protection.

Project developers also cited a myriad of **watershed protection benefits** from forest carbon projects, including decreased erosion, flood protection, and absorption of nutrient runoff from fields that would otherwise pollute waterways. Conversely, investments in watershed services (IWS) often help to protect carbon-rich landscapes, even if these benefits aren't quantified in tonnes as they are on the carbon market. Ecosystem Marketplace's *State of Watershed Investment* 2014 tracked $9.6 billion in IWS investments in 2013, protecting 365 million hectares of land, an area larger than India. More than 50 IWS projects covering 240 million hectares and receiving $6.1 billion in watershed payments last year, managed watersheds for carbon sequestration – though emissions reductions are not always quantified.

Forty-two projects covering more than nine million hectares claimed to provide climate change adaptation benefits, many of which enhanced "landscape resilience" – or the ability of a given ecosystem to withstand climatic changes such as temperature increases or more intense precipitation events. For instance, projects that prevent deforestation on sloped terrain also mitigate the erosion that might otherwise occur after heavy rains or storms. Several developers also reported their project activities contributed to food security for local communities through the planting of drought-resistant crops or by maintaining the habitat for

Table 9: Examples of Species Protected by Forest Carbon Projects.* 2013

African elephant
African wild dog
Amazon dwarf squirrel
Bilby
Blue-throated piping-guan
Bonobo
Cedar
Cheetah
Giant anteater
Giant armadillo
Jaguar
Macaw
Leche caspi
Lowland tapir
Mahogany
Orangutan
Razor-billed curassow
Red howler monkey
Sanborn's squirrel
Tasmanian devil
Tasmanian wedge-tailed eagle
Wild fig tree

Notes: *This list includes only those species reported by project developers through our annual survey and is therefore an underestimate.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

the animals and plants consumed by hunter-gatherer peoples.

Thirty-six projects provided **direct payments** to communities last year. These payments totaled at least $4.8 million (from 16 projects that reported dollar figures). Another 35 projects provided communities with **in-kind livelihood benefits** which ranged from education to water storage infrastructure to a vaccination campaign to honey sales. These benefits were worth at least $40.8 million – the value reported by just 10 out of the 35 projects.

Twenty-six projects reported providing **targeted benefits to women**, sometimes through women's groups that generated their own income by selling handicrafts or advancing ecotourism. Other projects explicitly included women in decision-making processes, and offered training and leadership opportunities. Overall, though, employment opportunities for women within carbon projects lagged behind those for men. Of the 13 projects that reported on the gender of the people they employed, the percentages of women employed ranged from 0% to 50% – no project reported that women held more than half of the jobs in the project area. Overall, out of more than 2,000 people employed by these projects, just 475 were women.

Thirty-eight projects covering 12.8 million hectares provided targeted benefits to vulnerable or marginalized groups. In some cases, ethnic minorities or hunter-gatherer groups were in fact the main beneficiaries or managers of project activities. Other project developers streamlined their provision of in-kind livelihoods such as school subsidies, medical treatment, and training to the segments of the population that need them the most.

4.2 Land Tenure: Getting It Right

Placing a value on the carbon content of standing forests inevitably triggers questions of ownership. Who owns the forests? Who owns the carbon they contain? Who receives revenues from the sale of associated offsets?

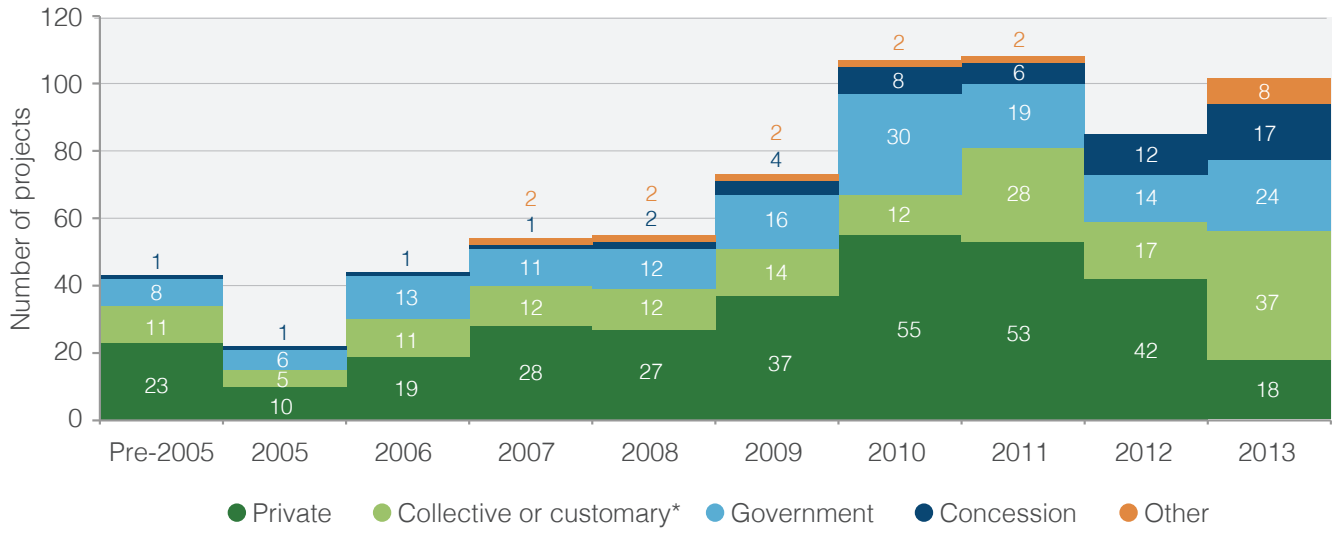
Land tenure – the legal structure that determines how lands can be used by individuals and communities – remains a hot-button issue because of these questions. Debate has continued to heat up as the development of UN-REDD creates the potential for large-scale financing to flow to tropical forest countries, many of which have undefined or unclear land tenure spanning millions of hectares.

Not only does unclear land tenure disadvantage communities and indigenous people, but it also undermines the goals of reducing deforestation. Recent research by the World Resources Institute (WRI) and the Rights and Resources Initiative (RRI) found that deforestation rates within community forests with strong legal recognition and government protection are dramatically lower than in forests outside those areas.[7] Sometimes, the distinction is stark even to the naked eye.

"On the map of Guatemala, our lands look like islands in a sea of devastation," says Marcedonio Cortave, from the Association of Forest Communities of Petén.

[7] WRI and RRI, Securing Rights, Combating Climate Change, July 2014. http://www.wri.org/sites/default/files/securingrights_executive_summary.pdf

Figure 31: Historical Number of Projects Reporting Tenure Type



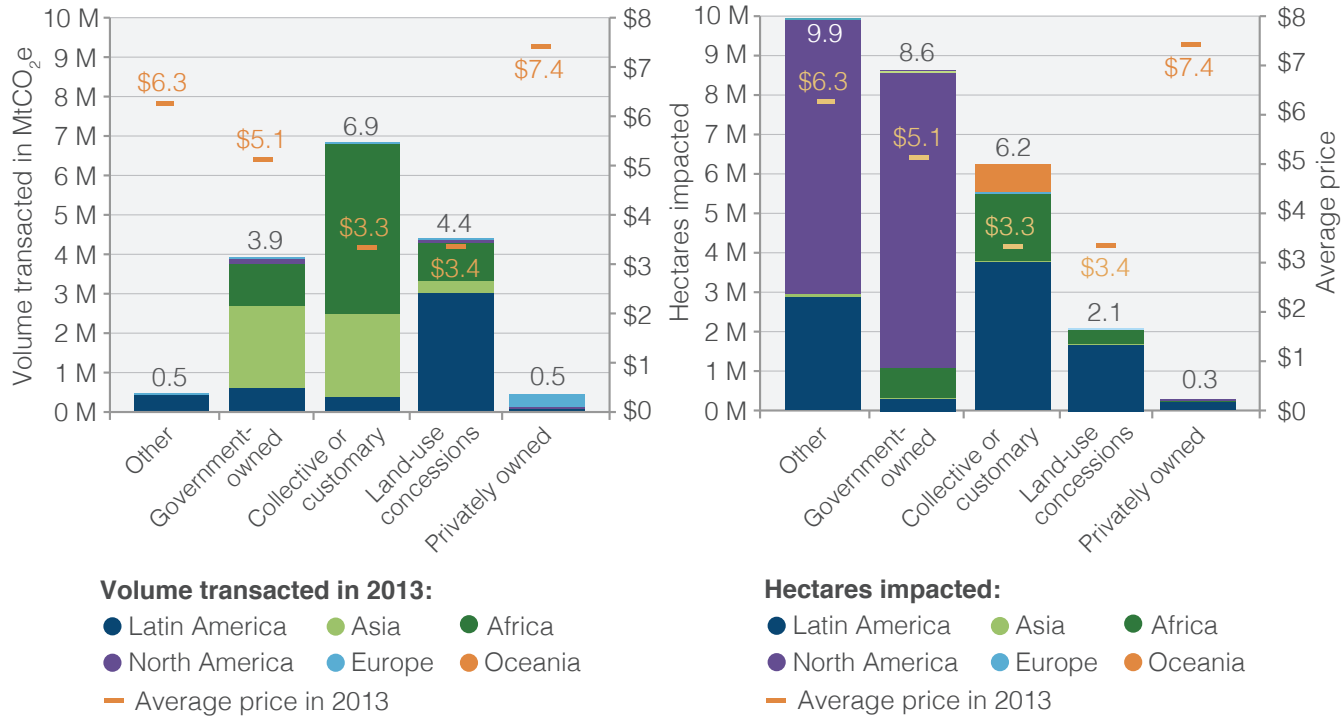
Notes: Based on responses associated with 104 projects reporting tenure type in 2013, and historical data.
*Collective or customary land tenure refers to land areas owned by communities or indigenous people.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

"The lands that surround the forests of indigenous communities are being destroyed."

Communities currently hold legal claim to at least 513 million hectares of forests, about an eighth of the world's total forested area. In lower- and middle-income countries, more hectares are slowly beginning to transfer to community ownership. In 2002, governments owned 71% of forested lands while communities held legal rights over 21%. By 2013, the percentages had shifted

Figure 32: Volume Transacted, Average Price, and Hectares Impacted by Tenure Type and Region, 2013



Notes: Based on responses associated with 16.1 $MtCO_2e$. Note that projects could report more than one tenure type; values are counted towards multiple tenure types in these cases.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

to 61% and 30%.[8] However, RRI warns that progress has slowed in the last five years.[9]

Last year, Ecosystem Marketplace tracked 37 projects situated on land under collective or customary ownership by communities – the most-ever recorded in this report series. The majority of these community-owned projects are located in Latin America (16 projects) and Africa (10 projects). Ten projects were implemented on government-owned land or concessions as well as community-owned hectares. Amid uncertainties among private-sector project developers and a growing emphasis on public finance and bilateral agreements, only 18 forest carbon projects reported private land ownership in 2013.

Projects developed on community-owned land transacted 6.9 $MtCO_2e$ in 2013 – more than the volume contracted from projects sited on land-use concessions (4.4 $MtCO_2e$) or under government (3.9 $MtCO_2e$) or private (0.5 $MtCO_2e$) ownership. However, as Figure 32 illustrates, carbon projects on government-owned land still cover more hectares.

Offsets developed under collective or customary land ownership garnered the lowest prices, selling at less than half the average price of offsets sourced from privately-owned land. This is partly due to location – projects on community-owned land were common in Latin America and Africa, where project development and opportunity costs are typically lower than in North America or Asia, where the majority of projects were located on private or government-owned land, or on purchased eco-concessions.

4.3 Community Involvement: Opting In, Taking Ownership

Ecosystem Marketplace asked project developers how communities were involved in project activities in 2013. This community involvement ranged from informing community members about project activities and obtaining free, prior, and informed consent (FPIC) – minimum thresholds for inclusiveness under leading carbon standards – to communities that led project management and owned some or all of the carbon assets.

Community members were most often involved in implementing project activities such as tree-planting or patrolling for illegal extraction and in monitoring project performance, sometimes through training in carbon-accounting principles. Local stakeholders managed the project themselves in 23 cases.

Protecting forests and their carbon content is sometimes dangerous work – and indigenous peoples are often on the front lines. In September 2014, four Asháninka leaders in Peru were murdered on their way to meet with their tribal counterparts across the border in Brazil to continue their collective work to safeguard their territories against the invasion of illegal loggers and narco-traffickers. The Asháninka of Acre are a part of the Brazilian state's recent efforts to advance jurisdictional REDD.

Given this history of sometimes life-threatening encroachments on their land, indigenous peoples are sometimes skeptical of outside groups that want to develop carbon projects. COICA, a coalition of indigenous organizations from across the Amazon Basin, has engaged with REDD policymakers over the years and in 2013 released a document outlining an "Indigenous REDD+" mechanism that would prioritize public funding over voluntary private-sector payments, arguing that the unregulated voluntary market is "risky for indigenous peoples."[10] The mechanism would also include payments for standing forests with low historical deforestation rates since many indigenous territories might otherwise be excluded from a REDD finance precisely because they have thwarted past threats to forests so successfully.

While COICA is open to moving forward with REDD payments as long as it is done on communities' terms, the FPIC process has in other cases led to a "no-project" scenario. The Guna Yala people of Panama rejected a REDD project proposal in October 2013 after a year and a half of discussions, ultimately deciding that carbon finance didn't fit with their culture and that they didn't need financial incentives to protect a forest they consider sacred.[11]

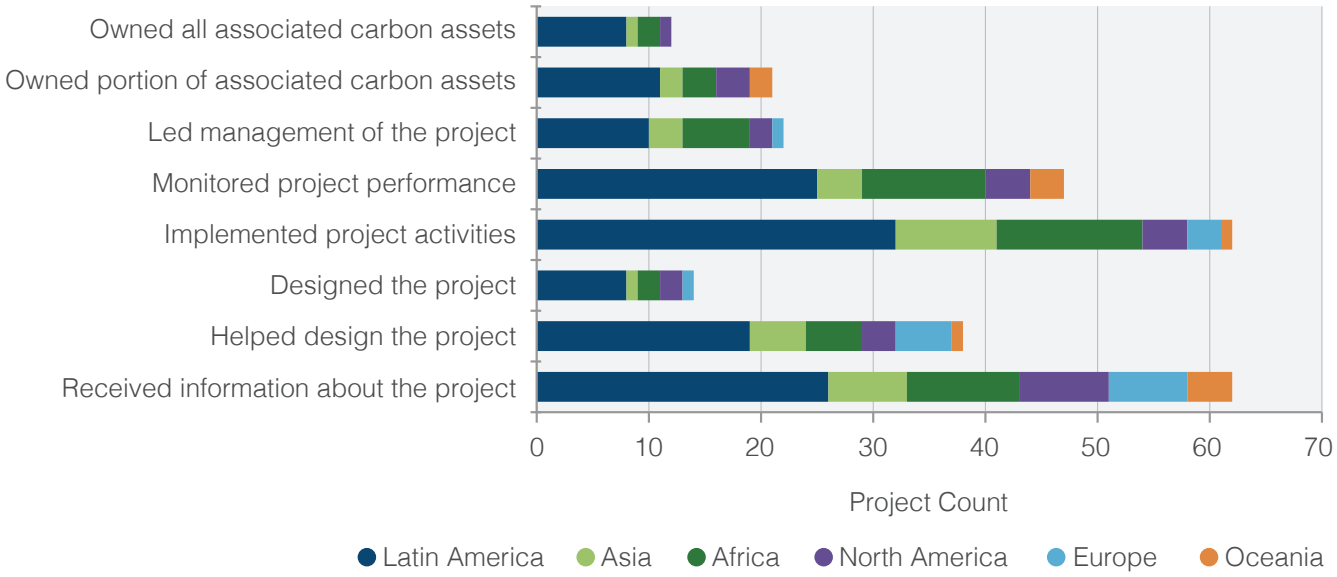
[8] RRI, Lots of Words, Little Action: Will the private sector tip the scales for community land rights? February 2014.

[9] RRI, Status of Forest Carbon Rights and Implications for Communities, the Carbon Trade, and REDD+ Investments, March 2014. http://www.rightsandresources.org/documents/files/doc_6594.pdf

[10] Coordinadora de las Organizaciones Indígenas de la Cuenca Amazónica (COICA), Indigenous REDD+ Alternative: Indigenous Territories of Harmonious Life to Cool the Planet, 2013. http://theredddesk.org/resources/indigenous-redd-alternative-indigenous-territories-harmonious-life-cool-planet

[11] Mongabay.com. "REDD+ versus indigenous people? Why a tribe in Panama rejected pay for their carbon-rich forests." September 2014.

Figure 33: Project Count by Community/Stakeholder Involvement, by Region



Notes: Based on responses associated with 100 projects. Respondents were able to select multiple categories.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

At the UN-REDD Programme level, the FPIC guidelines, published in January 2013, specify that REDD activities must be clearly opt-in, and communities need ample time and understanding to make a collective decision about how to move forward, or not. Three countries with prominent indigenous populations – Bolivia, Gabon, and Paraguay – chose not to pursue REDD readiness finance through the FCPF.

Some indigenous peoples and local communities worry that carbon will be no different than other commodities extracted from their forests without their permission and for the enrichment of outsiders. Though third-party carbon standards are continually refining safeguards to protect and include communities, at the national level, the question whether land rights are intrinsically linked to carbon rights remains a key unanswered question. In a review of 23 tropical forest countries' laws and policies, RRI found that only two countries legally defined carbon rights, though six others have drafted laws.[12]

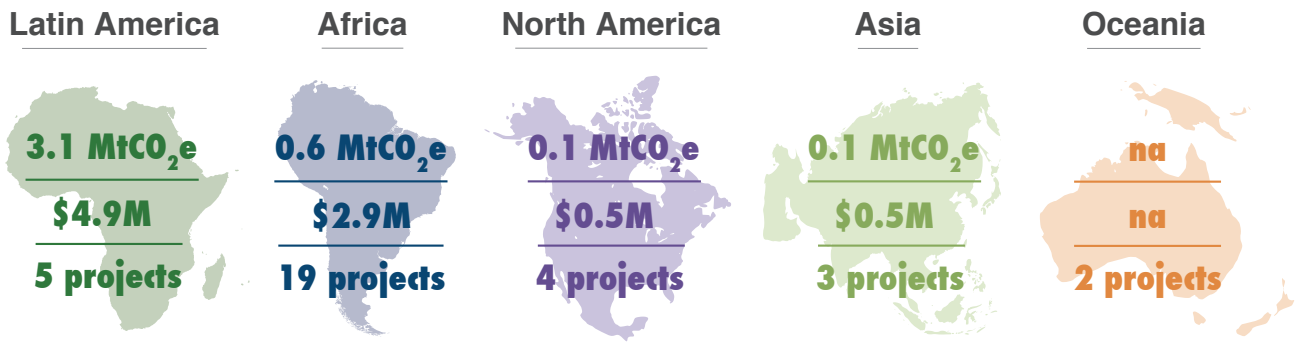
Forest carbon projects have in some cases been the impetus for clarifying carbon rights. In British Columbia, the provincial government and the First Nations that jointly own the land rights to the Great Bear Rainforest IFM project which covers millions of hectares in the province spent years discussing carbon rights. Ultimately, they decided that though land rights cannot be split up (joint ownership means that the First Nations and the Crown both own 100% of the land area), carbon rights could. This was important to the First Nations since it meant that they could earn revenue from carbon sales without conceding any land rights, says Cornelia Rindt of ERA Ecosystem Services, which facilitates offset sales from Great Bear.

Overall, this report survey reveals that communities owned at least 3.8 $MtCO_2e$ of the offsets transacted last year and earned more than $8 million from new contracts. The majority of these tonnes transacted from projects in Africa, where communities sold 3.1 $MtCO_2e$ for almost $5 million, or 25% of market share in the region. In Latin America, the Paiter Suruí people of Brazil developed the first indigenous-owned project to earn carbon revenues and sold 120,000 tonnes to a Brazilian cosmetics company, Natura Cosméticos.

Overall, community-owned carbon offsets constituted less than 5% of total market value. However, this should be considered a low-end estimate since it includes only those project developers that opted to report on carbon ownership.

[12] RRI, Status of Forest Carbon Rights and Implications for Communities, the Carbon Trade, and REDD+ Investments. March 2014. http://www.rightsandresources.org/documents/files/doc_6594.pdf

Figure 34: Volume and Value of Carbon Assets Transacted and Owned by Communities, by Region



Notes: Based on volumes associated with 15 projects.

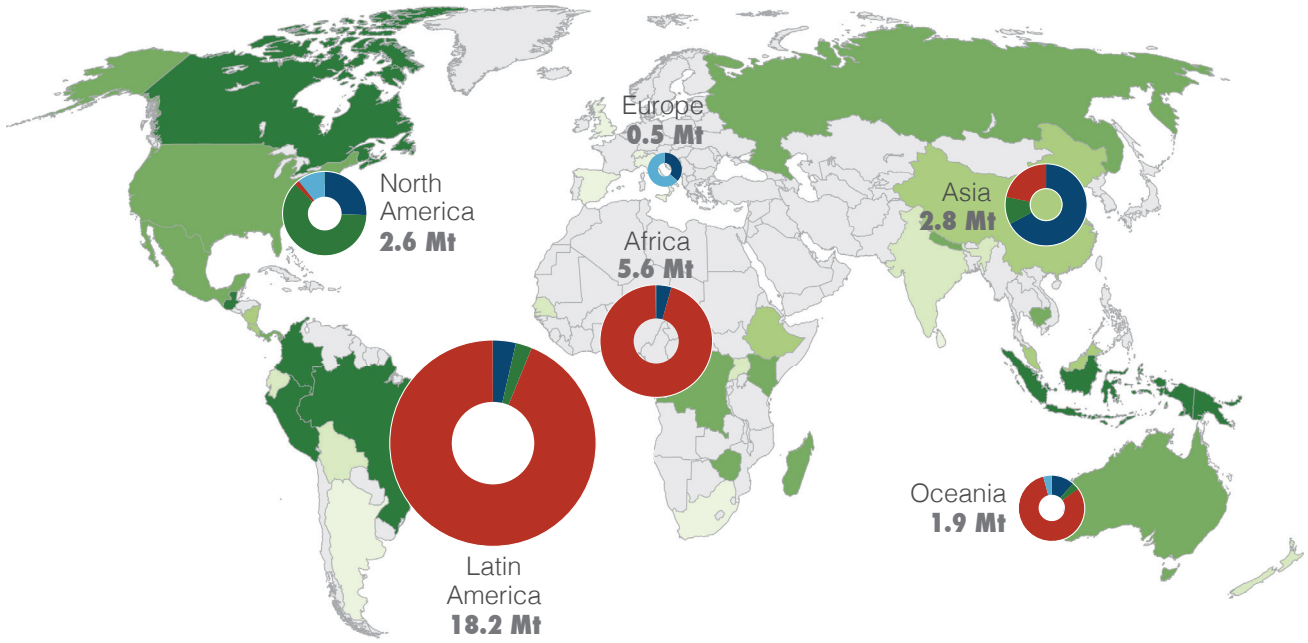
Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

4.4 Project Land Area: Gaining Ground

Project developers reported that 30 million hectares were under forest carbon management in 2013, a 13% expansion from the 26.5 million hectares Ecosystem Marketplace tracked in 2012. REDD, IFM, and A/R projects covered a land area nearly the size of Vietnam. Of that area, 11.9 million hectares (about 40% of the total) were associated with projects that completed transactions last year.

Two-thirds of the land area under carbon management is associated with REDD projects, many of which seek to reduce deforestation across large swaths of threatened forests. The average size for an avoided planned deforestation and avoided unplanned deforestation

Figure 35: 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 30.1 million hectares of carbon project area and 29.4 $MtCO_2e$ transacted.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

project are 115,000 hectares and 57,000 hectares, respectively. However, some projects – such as the Kariba REDD project in Kenya and the April Salumei Project in Papua New Guinea – were much larger.

IFM projects covered a total of 8.9 million hectares, mostly in Canada and the US Because these projects typically require close on-the-ground management, hectare by hectare, they cover smaller land areas – an average of 30,000 hectares per project. The Great Bear project breaks this rule, spanning millions of hectares across the remote temperate rainforest of British Columbia.

A/R projects expanded to 1.6 million hectares last year, up from 1.2 million hectares in 2012 despite lower transaction volumes from tree-planting projects last year. The average tree-planting project covers fewer than 5,000 hectares – a reflection of the fact that reforesting degraded or deforested land is labor-intensive, so most projects are modest in size. Indeed, Ecosystem Marketplace tracked 60 A/R projects last year compared to 47 REDD projects, but REDD projects covered 12 times the land area.

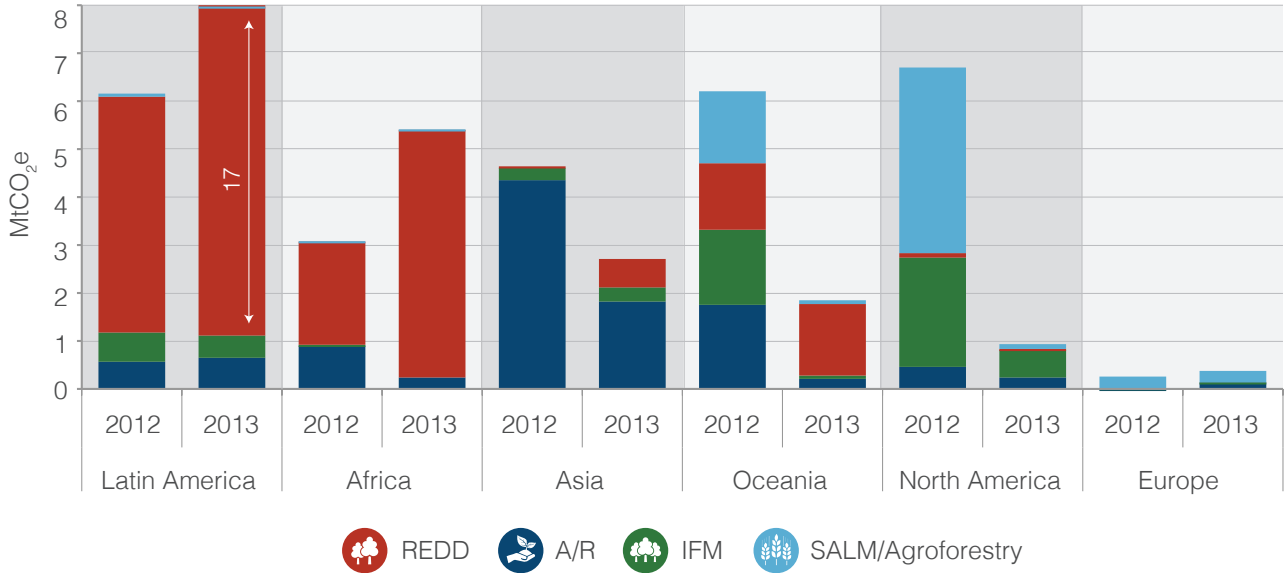
4.5 Project Location: Ramp-up in Latin America, Africa

Projects based in Latin America transacted three times the forest carbon offsets of any other region last year as projects that reduce Amazonian deforestation captured buyers' attention. Brazil supplied the most offsets of any country, transacting 11.8 $MtCO_2e$ from 12 projects and one jurisdiction (excluding Acre's 8 $MtCO_2e$ agreement with KfW would put Brazil's transactions at 3.8 $MtCO_2e$, behind Peru's). At 5.1 $MtCO_2e$, Peru supplied the second-largest volume worldwide, with 14 projects transacting tonnes last year. Projects in Mexico, Guatemala, Argentina, Colombia, Bolivia, and other countries also contributed to Latin America's breakout volume in 2013.

Across the Atlantic, African projects transacted 5.6 $MtCO_2e$, a more than 80% increase over 2012's volume, as REDD projects in Zimbabwe, the DRC, Kenya, Uganda, and other countries attracted voluntary demand. Offsets from Africa-based projects were priced at an average of \$3.4/tCO_2e, the lowest of any region. Excluding significant outliers, however, results in a regional average price of \$5.8/tCO_2e which is more representative of the majority of African project developers' typical transactions.

Asian projects transacted 2.8 $MtCO_2e$, a decrease from last year when a few large-scale (>1 $MtCO_2e$) transactions drove volumes in the region to new heights. Indonesia earned the infamous title of "world's top deforester" in 2013, but the country is also the first in the world to establish a national REDD+ agency that aims to shift the lucrative palm oil industry away from its rainforests. The Rimba Raya project in Indonesia, the

Figure 36: Transacted Volume by Region and Project Type, 2012-2013



Notes: Based on responses associated with 29.4 $MtCO_2e$ of forest carbon offset transactions that reported a project type and location.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Figure 37: Top Drivers of Deforestation by Region

Note: Based on more than 300 responses by project developers indicating drivers of deforestation.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

first REDD project to achieve methodology approval under VCS and one of the largest in the world, verified more than two million tonnes of emissions reductions last year.

While the United States hosted the most forest carbon projects of any country (24), North American projects transacted 2.6 $MtCO_2e$ in 2013, a more than 60% decline from the previous year. However, compliance buyers in California bought 1.7 $MtCO_2e$ – a slight increase from pre-compliance demand in 2012 – so the smaller transaction volume from North American projects is entirely due to a decline in voluntary demand for offsets sourced in the region.

Oceania's transaction volumes dropped back to the level of 2011 volumes, before the (brief) implementation of Australia's carbon tax drove up 2012 demand. The vast majority of forest carbon projects in Oceania sell offsets to domestic buyers at an average price of $14.5/$tCO_2e$ – tying with Europe's pricing as the highest of any region. European projects again sold about half a million tonnes last year, mainly from insular domestic markets in the UK and Italy.

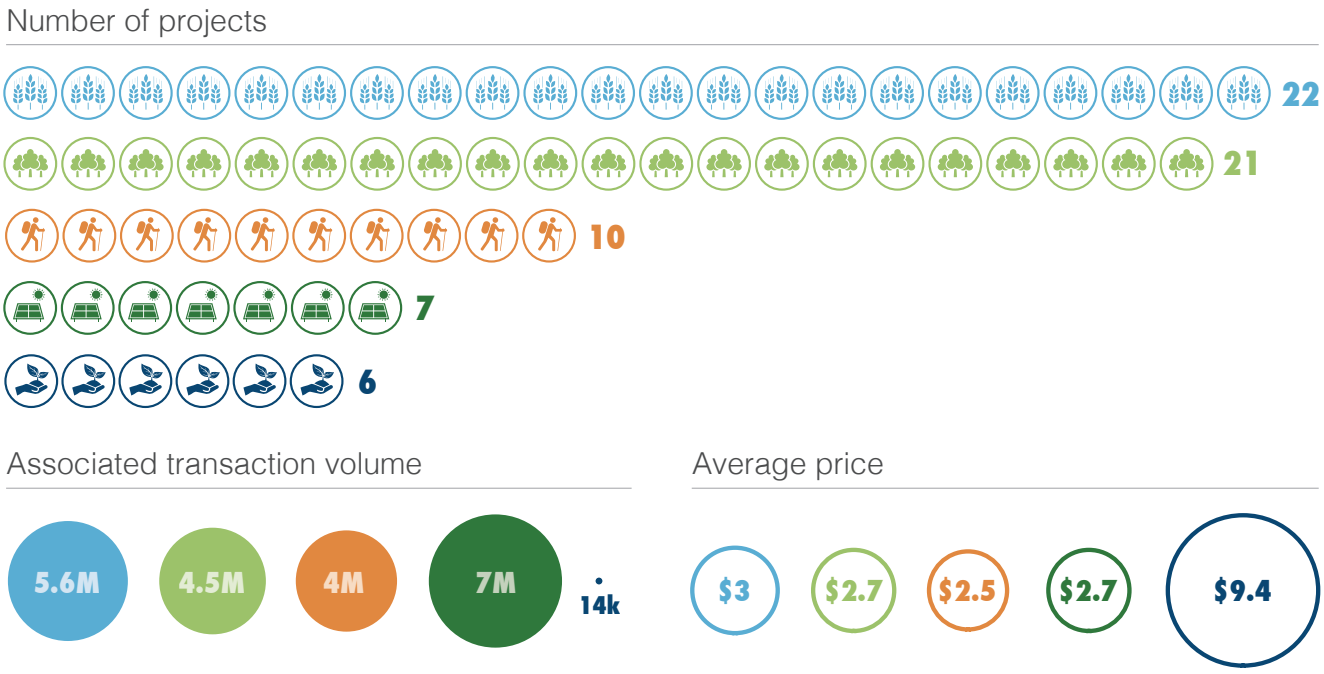
These and other regional developments are discussed in greater depth in section 8.

4.6 REDD Activities and Drivers of Deforestation: Shifting Incentives

The concept of using carbon finance to avoid deforestation arose as a "last resort." Previous international and national policies tried to address deforestation by implementing reduced impact logging, restricting local peoples' access to forests, sending grant money to tropical forest countries, and other strategies. But these policies failed to target the source of the problem.[13]

[13] William D. Sunderlin and Stibniati Atmadja, Is REDD+ an idea whose time has come, or gone? CIFOR, 2009. http://www.cifor.org/publications/pdf_files/Books/BAngelsen090204.pdf

Figure 38: Most Common REDD Activities by Project Count, 2013



Notes: Based on responses associated with 47 REDD projects and 21.1 $MtCO_2e$ of offset transactions. Projects could report more than one REDD Activity.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

Billions of dollars and several decades later, carbon dioxide emissions from land-use change continue to rise.

Though it is too early to say whether REDD will succeed where other strategies fell short, the concept, even at the project-level, is distinct from previous approaches. Through carbon markets, payments flow according to the results achieved. REDD also takes a wider landscape view of deforestation than previous international approaches. Leading third-party standards require project developers to identify the social and economic drivers of deforestation in the project area and describe specific activities that will address them.

As Figure 37 illustrates, drivers of deforestation as reported by project developers vary by regions. In Latin America, smallholder and commercial agriculture encroach on rainforest hectares, while in Africa, subsistence agriculture and firewood collection to make cooking charcoal – rather than large-scale agriculture – are the primary threats to forest. While illegal logging is rampant in developing countries, avoiding deforestation in North America and Oceania more often means altering cycles of planned, legal harvesting (see the Box in Section 3.1 on avoiding planned versus unplanned deforestation. For coastal projects, sea level rise and subsidence may exacerbate forest loss alongside economic factors such as the conversion of mangrove forests for shrimp ponds.

REDD project developers must design project activities that directly address the causes of deforestation, and these strategies vary by location. Across all regions, sustainable agriculture was again the most common strategy last year, followed by sustainable forest management. Ten projects transacting more than 4 $MtCO_2e$ collectively used ecotourism as a REDD strategy. Another seven projects – the majority of them in Africa, where firewood collection is a major driver of deforestation – cited sustainable energy as a strategy to reduce deforestation. REDD projects that included tree-plant-

ing activities transacted less than 0.1 $MtCO_2e$ but sold offsets at an average of \$9.4/tCO_2e, very close to the average price for A/R projects globally.

4.7 Tree Planting and Forest Management Activities: Mixing It Up

Forest carbon project developers and policymakers are increasingly taking a "landscape approach" to reducing emissions in the land-use sector, and as a result, the definition of a forest carbon project is expanding to include new project types, from bamboo plantations to wetlands restoration to climate-smart agriculture (see Section 3). Even within the boundaries of traditional forest carbon project types such as A/R, IFM, and REDD, there is often a mosaic of forest types to which project developers may apply a variety of silviculture and conservation techniques.

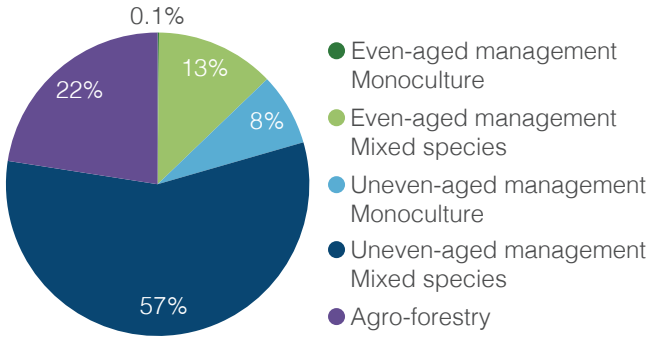
In 2013, projects that planted or maintained only native species transacted the majority of tonnes – 11.3 $MtCO_2e$ from 80 projects – versus the less than 0.1 $MtCO_2e$ from projects that planted only exotic species. In between, 24 projects were home to a mix of native and exotic species, though most were more than 50% native.

A/R was in fact the only project type that mixed in more than 50% exotic species last year, in just seven projects in Latin America and Africa. A few of these projects used non-native species (often fast-growing and non-invasive varieties) to reforest degraded land; others included plantation-style plantings. Predictably, since REDD projects typically avoid deforestation in threatened tropical forests, these projects rarely included exotic species.

IFM and A/R project developers also reported on the forest management strategies they used in the carbon project area, across five options:

- Even-aged, monoculture – all tress 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

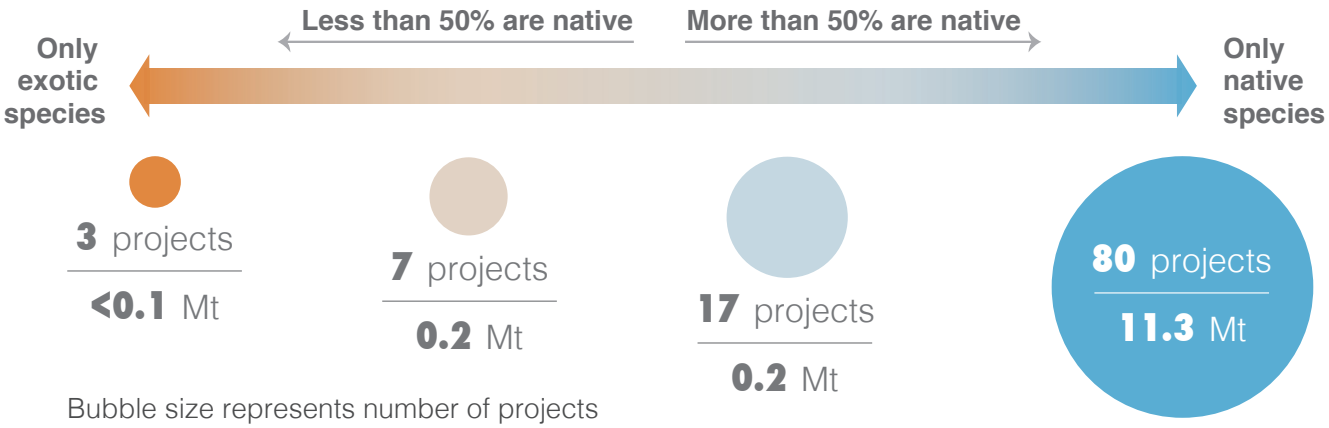
Figure 40: Transacted Volume by Forest Management Strategy, 2013



Notes: Based on responses associated with 31 projects that reported a management strategy. Project developers could select more than one strategy.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

Figure 39: Species Mix by Project Count and Transacted Tonnes, 2013



Notes: Based on responses associated with 107 projects and 11.8 $MtCO_2e$ of offset transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

The most popular management strategy last year was uneven-aged management with mixed species – unsurprising given that the majority of project developers are managing forests full of native (rather than exotic) species. Thirty projects used this management strategy in 2013, transacting just under 1 $MtCO_2e$. In contrast, only 10 projects planted or managed monoculture species typical of tree plantations.

Sixteen projects used a variety of species but planted trees all of the same age – a common strategy for A/R projects that use seedlings for tree plantings. Another 14 projects planted or managed trees alongside crops, transacting 0.3 $MtCO_2e$. These projects were not primarily classified as agroforestry, but rather used within A/R or IFM projects that assist local farmers and consider growing food and conserving forests to be symbiotic, not mutually exclusive, activities.

5. Project Finance

The premise of the forest carbon markets rests on the idea that payments for land-based emissions reductions "tip the balance" to incentivize activities that enhance carbon storage across landscapes – making it financially feasible for landowners and communities to keep trees standing. In many cases, carbon finance must compete with the opportunity costs of other land uses such as palm oil production, cattle grazing, or urban development. This report section provides an in-depth analysis of the forest carbon offset transactions and contracts that channel finance to projects in hopes of demonstrating and enabling their feasibility.

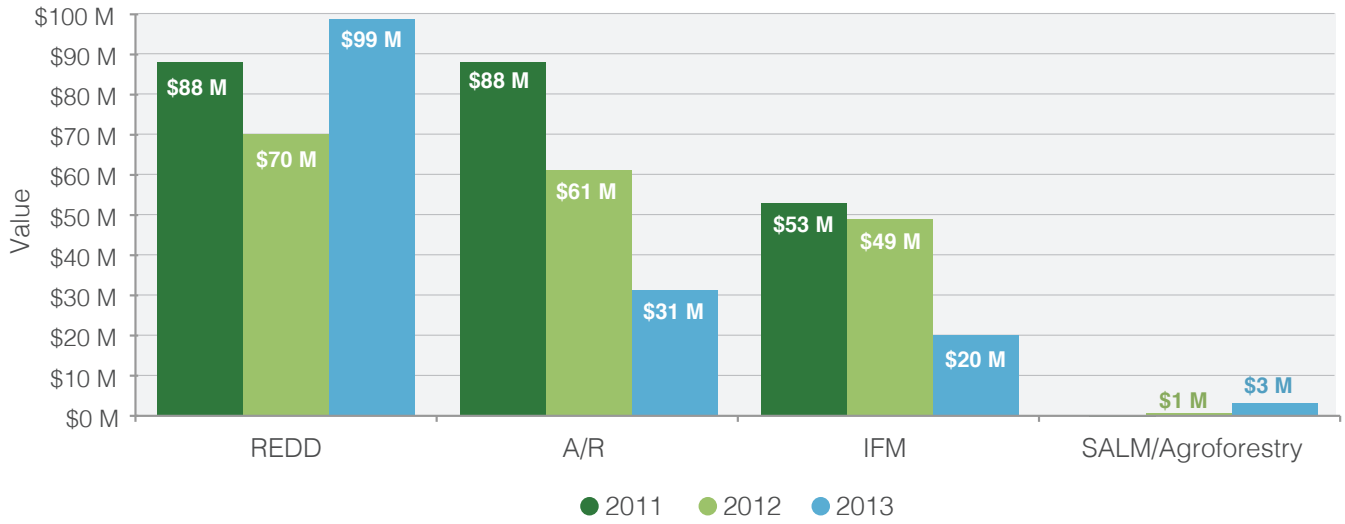
Beginning at a high level, this year's survey respondents report that project needs – defined as the financing project developers require to deliver emissions reductions – are not being met by current levels of offset sales. In response, many projects are accessing other sources of funding to supplement carbon finance. Sometimes, these multiple income streams are part of the project design, but other times they reflect a compilation of short-term solutions to keep projects afloat until (as project developers hope) demand picks up.

5.1 Market Value and Offset Pricing: REDD's Challenge

Buyers injected $192 million into forest carbon projects in 2013, an 11% decline from 2012's $216 million. While voluntary forest carbon offset transactions have so far driven the majority of market-based project finance – and accounted for 73% of total value in 2013 – observers have long recognized that policy-driven compliance offset demand remains key to bringing the forest carbon market to scale.

In the absence of such clear signals, the forest carbon market only narrowly surpassed a cumulative $1 billion mark in transactional value last year. Decision-makers admit that this combination of voluntary and nascent compliance markets is currently inadequate in providing the level of funding needed to conserve forest carbon, which the UN-REDD Programme estimates at $30 billion annually – the cost of achieving the Convention on Biological Diversity's forest-related Aichi Targets.

Figure 41: Value by Project Type, 2011 - 2013



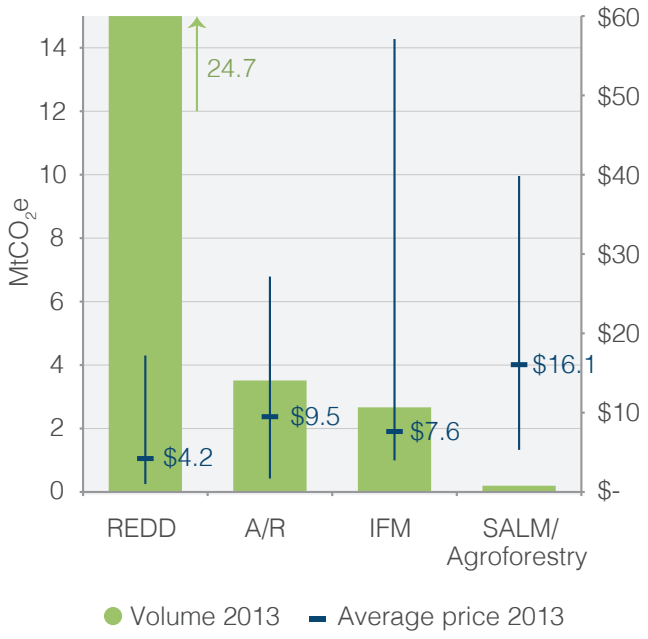
Notes: Based on 31.3 $MtCO_2e$ transacted in 2013, plus historical data from 2012 and 2011.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

As shown in Figure 41, companies and governments spent just under $100 million on REDD offsets last year – the highest value ever attributed to the REDD offset market in this report series. A/R market value has fallen steadily over the last three years following the end of compliance demand under the Kyoto Protocol. The number of IFM transactions – and thus value – was sliced in half from 2012, though many North American project developers reported that they were simply waiting to transfer into California's cap-and-trade market and thus "lay fallow" last year. Across all project types, the effects of a compliance market – or its absence – are starkly apparent across report years.

The above-mentioned financing gap is particularly evident in light of the demand-side challenges forcing the price of REDD offsets to what project developers describe as "unsustainable lows" as REDD offsets sold at an average of $4.2/tCO$_2$e last year. Had REDD prices remained at 2012's $7.8/tCO$_2$e average, REDD projects' transactional market value would have neared $200 million in 2013.

Figure 42: Transacted Volume and Average Price by Project Type, 2013



Notes: Based on responses associated with 31.3 of forest carbon offset transactions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Depressed prices for REDD offsets resulted from a combination of factors. Offset issuances tripled last year as large REDD projects reached maturity, and VCS alone issued 9.2 MtCO$_2$e of REDD – more than 2012's total forest carbon issuance. This influx of supply was not met by a similar increase in demand since only 11% of buyers were "new" to the forest carbon marketplace in 2013.

Very large or "mega"-sized REDD projects that avoid more than half a million tonnes of emissions annually may have also pulled prices down for smaller project developers. Figure 24 (in section 2.3) reveals that project size and offset price are inversely related: "micro" and small projects that reduced less than 20,000 tCO$_2$e per year sold offsets at the highest prices ($13.6/tCO$_2$e and $9.5/tCO$_2$e, respectively) while mega projects transacted tonnes at a global average of $4/tCO$_2$e. Therefore, though only about 40% of REDD projects that reported a size were "very large" or "mega" (defined as projects that avoided the emission of more than half a million or more than a million tonnes annually, respectively) these projects had a disproportionate effect on price. Excluding these large-volume transactions, the average global REDD offset price would have been closer to $7.2/tCO$_2$e.

Given that project developers plan to bring more than 200 million REDD offsets to the voluntary market in the next five years (see the "pipeline" numbers in Section 9), matching supply and demand is a pressing challenge.

Though project developers are no doubt concerned about a REDD market in which voluntary prices are slumping and any kind of international compliance market under UN-REDD is still at least five years away, it is important to keep in mind that these voluntary dollars are in fact "paying for performance" and are thus distinct from the millions multilateral development banks and governments are spending on REDD readiness efforts (see section 2.2 for data from Forest Trends' REDD*X* expenditure tracking initiative).

The majority (91%) of REDD market value is paid to project developers implementing emissions reductions activities on the ground versus just $9.4 million changing hands on the secondary market. Voluntary REDD financing may be inadequate so far, but the 47 REDD projects Ecosystem Marketplace tracked around the world are also a proof of concept that avoided deforestation can be monitored, quantified, and valued – and that payments can indeed flow.

5.2 Project Needs: Mind the Gap

Across project types, developers reportedly contracted offsets last year at prices and/or volumes far below what they say is needed to sustain these projects. To understand this gap, Ecosystem Marketplace's survey asked project developers:

- What they think the price of carbon should be to support their projects' existing and future activities
- How many years' worth of offsets they need to sell to cover upfront capital and ongoing project costs
- Their projects' expected range of annual emissions reductions

Developers reported needing between $249 million and $450 million per year to maintain currently active forest carbon projects, which have the potential to reduce between 20 $MtCO_2e$ and 36 $MtCO_2e$ annually. Last year's $192 million market value falls short of this need by between $57 million and $258 million per year.

As shown in Table below, both A/R and IFM projects contracted offsets within the volume of their total available offset supply (tracked as estimated annual emissions reductions), but both received carbon financing at the very low end of their "need" range. REDD projects in contrast sold more offsets than their collective annual emissions reductions meaning that some avoided deforestation tonnes were contracted for future delivery or sourced from prior years' vintages. Despite selling more than their potential annual issuance, REDD projects took home less than 70% of

Table 10: Comparison of Project Needs and Actual Project Activity, 2013

	REDD		A/R		IFM	
Supplier-estimated annual reductions	Low	High	Low	High	Low	High
	15.1 Mt	21.2 Mt	2.1 Mt	6.1 Mt	1.1 Mt	3.9 Mt
2013 volume contracted (actual)	24.7 Mt		3.5 Mt		2.7 Mt	
Years' worth of expected annual issuance sold in 2013	1.6	1.2	1.6	0.6	1.9	0.5
Total years' worth of expected annual issuance developers *need* to sell to meet project needs (average)	15.8 / 6.8 (Planned / Unplanned)		17.7		7	
Total value needed to support existing projects (supplier estimated, no timeframe)	Low (Planned/ Unplanned)	High (Planned/ Unplanned)	Low	High	Low	High
	$708 M/$405 M	$727 M/$660 M	$287 M	$771 M	$325 M	$859 M
Average value **per year** needed to support existing projects (supplier estimated)	Low (Planned/ Unplanned)	High (Planned/ Unplanned)	Low	High	Low	High
	$52 M/$91 M	$58 M/$164 M	$30 M	$71 M	$21 M	$75 M
Value contracted in 2013	$99 M		$31 M		$20 M	

Notes: Based on responses from 78 project developers.

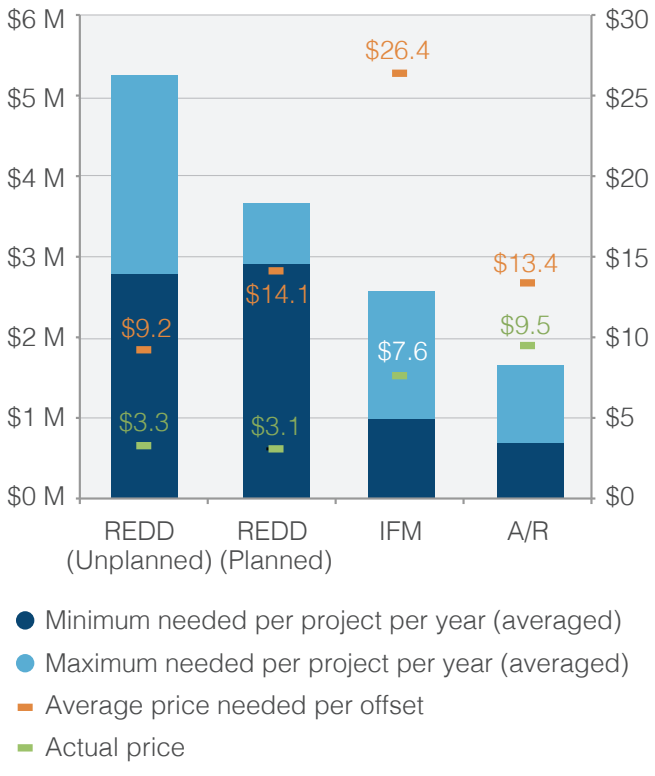
Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

the minimum $143 million that project developers need to support annual project activities.

To finance this year's and future years' activities, project developers reported needing between $2.8 billion and $5.3 billion. This is more than twice the value of developers' 2012 estimates but similar to 2011 project needs, as market participants are constantly re-evaluating. The range is large because of uncertainty in terms of how many emissions reductions existing projects will actually achieve – and because the estimates are based on rough back-of-the-envelope calculations by project developers. Nevertheless, these suppliers point out that it's the unit that's most important, saying that the forest carbon offset market needs to reach billions rather than millions of US dollars in value in the next decade or two to support existing projects – not to mention new projects.

Across all project types, developers reported needing an average of $16.9/tCO$_2$e to support their projects through offset sales, more than three times the actual average price on the market. However, project needs varied widely by project type, as illustrated in Figure 43.

Figure 43: Project Needs as Reported by Project Developers



Notes: Based on responses associated with 29 AR, 13 IFM, 8 REDD (Planned), and 23 REDD (Unplanned) projects.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

The ideal price desired by IFM projects was by far the highest across project types at $26.4/tCO$_2$e, partly due to the increasing popularity of the project type in regulated markets such as California's cap-and-trade program. Actual IFM prices dropped to $7.6/tCO$_2$e last year, making the gap between ideal and real the widest of all. Overall, IFM project developers reported needing between $21 million and $75 million in annual revenue to support existing projects, but their offset sales fell short at $20 million last year. IFM developers also reported needing to sell nearly 18 years worth of offset issuances on average – the longest timeframe of any project type.

REDD project developers described requiring an average price of $14.1/tCO$_2$e for each offset from projects avoiding planned deforestation and $9.2/tCO$_2$e for projects avoiding unplanned deforestation. Though actual prices for these two types of REDD projects were similar, the different project needs reflect the fact that avoiding planned deforestation means countering the opportunity costs of logging or agricultural concessions. In contrast, avoiding unplanned "patchwork" deforestation means overcoming the (smaller) opportunity costs of smallholder agriculture, firewood collection, or other drivers of deforestation. REDD projects contracted $99 million in offset sales in 2013, but they reported needing at least $52 million for projects avoiding planned deforestation plus at least $91 million for projects avoiding unplanned deforestation.

Though A/R prices rose to $9.5/tCO$_2$e in 2013, up from $7.3/CO$_2$e in 2012, these prices still fell short of the $13.1/tCO$_2$e desired by developers. A/R project developers contracted $31 million worth of offset sales last year – the only "actual" value that fell within the range of the $30-71 million they said they needed, albeit at the very low end.

5.3 Sources of Project Finance: Complementing Offset Sales

Third-party offset project standards require forest carbon projects to meet the basic principle of additionality: The project must be markedly different from the business-as-usual scenario in the project area, and that difference must be made possible by an injection of carbon finance.

Table 11: Other Project Finance, by the Numbers

Source	Project count	Associated transaction volume ($MtCO_2e$)
Private equity	21	0.4
Domestic government grant	10	0.1
International government/ bilateral finance	7	0.5
Foundation grant	9	0.2
Philanthropic contribution	4	0.5
Other	5	0.2

Notes: Survey respondents could select multiple other project financing sources.

Source: Forest Trends Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

A common misconception – particularly for REDD projects – is that carbon payments per hectare must be greater than the amount a landowner could earn from an alternate land use to be feasible. In practice, communities and other project owners could usually make much more money by converting a rainforest to a palm oil plantation or soy field. Carbon finance does not provide an "incentive" to stop converting land to another use for those responding to purely economic motivations. Rather, it makes it financially possible for people who already want to conserve a forest to do so. At least that's the idea.

However, as section 5.2 illustrates, current carbon finance from offset sales is falling short of the amounts needed to support existing projects. In the context of this challenging market, dozens of project developers reported accessing multiple funding streams. Complementary revenue streams and alternative investment sources do not imply a lack of project additionality, but can be tapped when the present value of carbon revenues is insufficient to cover project costs.

As shown in Table 11, Ecosystem Marketplace's survey demonstrated a diverse range of funding sources accessed by project developers. By project count, most (21) 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.

Private-sector entities are stepping in to fill the financing void to a certain extent. The Althelia Climate Fund completed its first closing in June 2013 after raising more than $80 million to be spent on REDD+ and other ecosystem services projects. In March 2014, the fund made its long-awaited first investment in a REDD+ project: a $10 million commitment to support REDD+ in Kenya's Taita Hills, adjacent to the historic Kasigau Corridor REDD+ Project, operated by project developer Wildlife Works.

However, even these private-sector efforts do not occur in a vacuum. The US Agency for International Development (USAID) announced a new risk-sharing loan guarantee in June 2014 that will enable the Althelia Climate Fund to lend up to $134 million in commercial financing for forest conservation and sustainable land-use projects in developing countries where people rely on the forests for their livelihoods. The agency – in keeping with its mandate to improve services for the poor – honed in on particular sectors such as REDD+ that feature demonstrable co-benefits, but experience difficulty acquiring necessary capital.

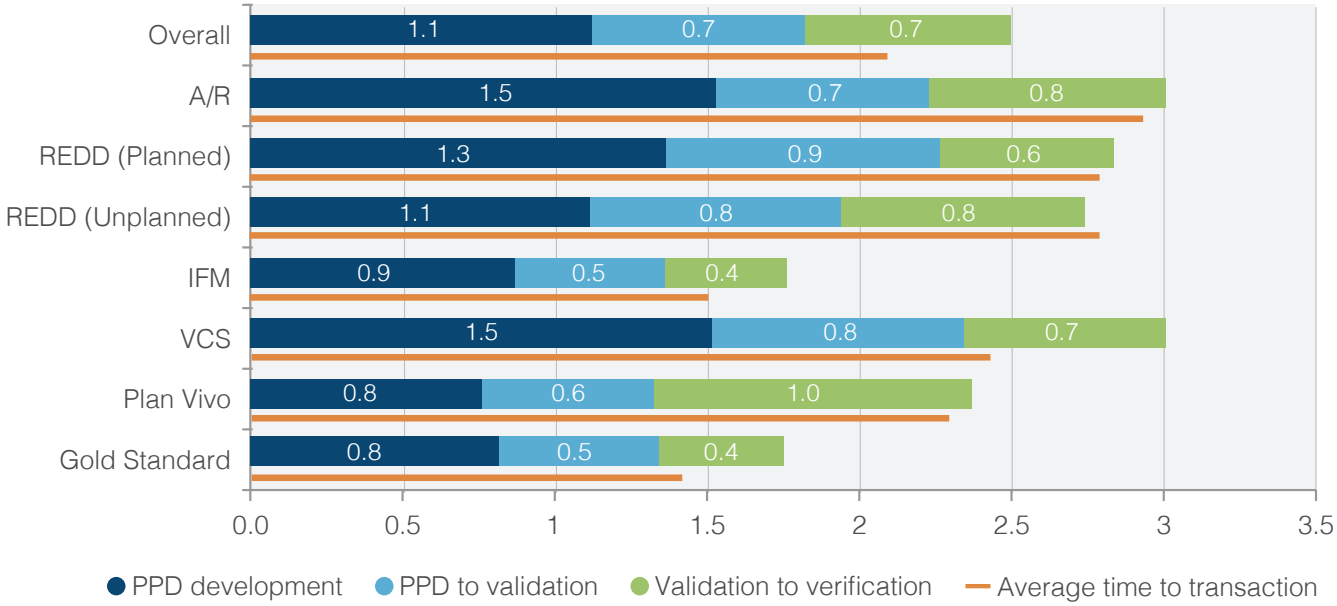
5.4 Time to Market: Careful Design

Project developers often cite the time required to navigate the project cycle as one of the most challenging and unpredictable contributors to the overall cost of their projects. This year's survey captures high-level estimates of the time 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.

The average time required from Project Design Document (PDD) development to offset verification was 2.5 years, a contraction from the 3.5 years reported by 2013's surveyed project developers and across all project types and standards. Project developers report signing their first contract for offset delivery a little over two years after starting the process. Because of this lag time, developers often need to access outside sources of finance to cover upfront capital costs – especially since fewer buyers than before are "pre-paying" for offsets to be delivered in the future, instead relying more heavily on the spot market or payment-on-delivery contracts (see Section 5.5 below).

Figure 44 shows that time to project development varied slightly across project types and standards, though a few aspects were held (mostly) constant. Aside from Plan Vivo projects which reportedly require approximately one year to move from validation to verification, the majority of projects spend the most

Figure XX: Supplier-Estimated Average Years to Achieve Project Milestones, by Project Type and Standard, 2013



Notes: Based on responses associated with 29 AR, 13 IFM, 8 REDD (Planned), and 23 REDD (Unplanned) projects.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

time in the project design stage. This "scoping" phase often includes time-consuming but essential activities such as mapping the project area, calculating carbon baselines, clarifying land rights, engaging local stakeholders, and securing finance.

Once again, A/R project developers endured the longest timelines of any project type at roughly three years to market, unsurprising given the greater amount of time required for projects to "ramp up" sequestration. A/R and IFM projects experienced the starkest difference in timeframes to market as IFM projects generally moved at a faster pace of 1.8 years, owing in large part to the extended PDD development period for A/R projects compared to other project types.

By major offset project standard, VCS projects spent nearly double the time in the PDD phase compared to Gold Standard and Plan Vivo, which extended the average timeline for VCS projects to three years. It should be noted, however, that VCS projects tend toward larger scales and developing REDD projects which in particular require significant time outlay to engage communities, establish tenure, and reconcile deforestation baselines, among other activities. By far the majority of REDD offsets were developed according to VCS guidelines and some at significant scale.

5.5 Contract Type: A Shift to Later-Stage Investments as Projects Reach Maturity

Contractual agreements between buyers and sellers create the structure by which offsets change hands. Contract terms can directly influence offset price, and different project types often lend themselves to different terms. The most common contract types for forest carbon offsets, as defined in this report, appear in the box below.

Developers reported that 10.3 $MtCO_2e$ of forest carbon offsets transacted in 2013 received immediate payment (via spot transactions or prepayment for future offset delivery) worth nearly $73 million. Another 12.2 $MtCO_2e$ were associated with transactions for which developers will be paid upon delivery. Remaining market value is associated with unknown contract types.

In previous years, most tonnes transacted from A/R and REDD projects were associated with pre-payments because of these projects' need for upfront financing to enable tree planting or technical costs. That trend remained intact for A/R projects in this year's report as pre-payments accounted for the largest volume of transactions at 2.2 $MtCO_2e$ and also secured the highest average price at $11.3/$tCO_2e$.

CONTRACT TYPES AND TERMS

Spot: Offsets are already issued – delivery and payments are made instantaneously

Payment-on-delivery (POD): Payment is made as the offsets are issued and delivered

Pre-pay: Payment is made in advance of offset delivery

Unit-contingent: Delivered offset volume is not exactly specified in contract, but is contingent on how many offsets are issued

Fixed/firm delivery: Delivered offset volume is exactly specified in contract

Call option: Offset buyer has the right (but not obligation) to buy a specified volume of offsets upon issuance

Put option: Offset seller has the right (but not obligation) to sell offsets at specified price within a specified period of time

Swap contract: An exchange of one volume and type of offsets for another, according to a ratio specified in contract

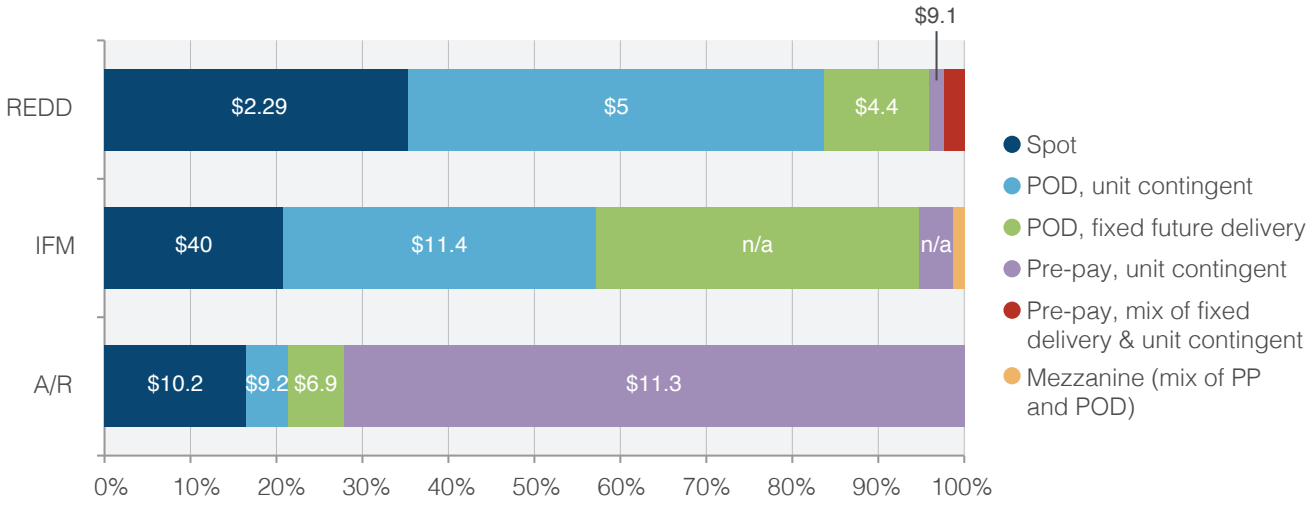
However, pre-payments for REDD constituted less than 1 $MtCO_2e$ compared to the 11.3 $MtCO_2e$ contracted on a pay-on-delivery basis as project developers unloaded existing verified/issued REDD offsets to address projects' cash flow issues. A large volume of REDD offsets transacted on a spot basis – 6.6 $MtCO_2e$ – at a depressed average price of \$2.9/tCO_2e, speaking to the growing supply-demand imbalance for this project type.

IFM projects – particularly popular in active compliance markets – typically incur fewer upfront costs than either A/R or REDD projects. About 75% of IFM projects transacted on a pay-on-delivery basis, with an average price of \$8.4/tCO_2e.

Contract terms continually evolve to reflect market realities and challenges, with developers and investors often seeking to de-risk projects to the greatest possible extent. In 2014, EcoPlanet Bamboo Group applied for an \$8.8 million guarantee from the World Bank's Multilateral Investment Guarantee Agency to protect a South Africa-based project against risks such as expropriation, and war and civil disturbance for a period of 10 years. The project involves the purchase and conversion of degraded land in South Africa into functioning bamboo plantations for the production of activated carbon and bio-charcoal for sale.

In January 2013, EcoPlanet Bamboo became the first carbon offset project to receive political risk insurance – to the tune of \$27 million – from the agency. But it was not the first project to receive such insurance backing. That distinction belongs to Terra Global Capital's Oddar

Figure 45: Contract Type, Market Share, and Average Price by Project Type, 2013



Notes: Based on 22.5 MtCO2e of transacted forest carbon offsets. See Box X for explanations of different contract types.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Meanchey REDD project, which aims to protect more than 60,000 hectares of forest in one of Cambodia's poorest provinces. The company obtained a political risk insurance policy valued at $900,000 in 2011 from the Overseas Private Investment Corporation (OPIC) – the US government's development finance institution.

5.6 The Big Picture: Scaling Up REDD Finance

As explored in Section 2.2, multilateral institutions have expanded REDD funding over the past few years and are beginning to explore paying not just for "readiness" activities but also performance.

The World Bank, which provided a total of $11.3 billion in lending with mitigation and adaptation co-benefits in fiscal year 2014, stands out as a significant source of financing for country-level REDD+ initiatives through a suite of programs. The World Bank's Forest Carbon Partnership Facility (FCPF) invested $825 million in REDD+ readiness in 47 countries since becoming operational in 2008. The BioCarbon Fund spent $90 million to reduce deforestation on 350,000 hectares since 2004.

The FCPF signed off on a new Methodological Framework for its Carbon Fund in December, unlocking a total of $465 million that could be paid to developing countries that reduce deforestation against a national baseline. Eleven countries – Chile, Costa Rica, the Democratic Republic of Congo, Ghana, Guatemala, Indonesia, Mexico, Nepal, Peru, the Republic of Congo, and Vietnam – were in the pipeline as of mid-October 2014, with final decisions on funding still pending.

Buyers in the Carbon Fund expressed a willingness to pay $5/t$CO_2$e, but the final price will depend on the Emission Reductions Payment Agreements (ERPAs) negotiated with each country. At that point, the FCPF funding would move from readiness to payment-for-performance.

However, this shift also creates some doubt about the viability of these jurisdictional REDD+ programs. A Center for International Forestry Research (CIFOR) study of 23 subnational REDD+ initiatives showed that almost half of the participants didn't think they would continue to operate beyond 2015 due to funding uncertainty. William Sunderlin of the Global Comparative Study on REDD+ finds it "troublesome" that many of the REDD projects in the study were aiming for the voluntary market, given the volatility of the market and the oversupply pressuring prices in recent years.

"The forest carbon voluntary market, in spite of the fact that it has been growing unevenly in recent years and is currently on an upward swing, is infinitesimally small against the donor funding stream, partly because of this turn toward a jurisdictional approach and a shift recently of public sector funding in that direction," he says. "Some of the projects are suffering even more because this funding that has been there for readiness is less available now because more of that is going to the jurisdictional approach."

Jurisdictional governments could theoretically 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 unsuccessful in the market.

Indonesia incorporated a version of this concept in its pitch for Carbon Fund financing. Agus Sari, chair of a working group within the Presidential Task Force on REDD+, proposed a financing mechanism called FREDDI that would act as a "fund of funds" for the government itself to purchase voluntary REDD offsets. Sari sees the REDD+ Agency acting as an intermediary between domestic and international carbon markets, perhaps by securitizing domestic carbon offsets and packaging them for international sale, which would offer buyers certainty they may not enjoy when buying offsets directly from private projects.

"If I buy from multiple projects in such a way that if one dies I have 200 others that survive, then any buyer will look at us as a secure intermediary," he says. "Because of that, buyers will be willing to pay the higher price from us, which means we can buy at a higher price, and because we can buy at a higher price, we can enlarge our portfolio. Because we enlarge our portfolio, we are even more secure, and that means the buyer will be even more willing to buy at a higher price. That's the virtuous cycle that we're looking for."

Some participants look to the UNFCCC for a viable solution to the supply-demand imbalance. When asked what international policy changes are needed for these REDD projects to fulfill their objectives, the CIFOR study uncovered an almost wholesale focus on economics and funding and the need for interim pre-compliance arrangements in the run-up to 2020 to make up for deficiencies of the voluntary market.

The Green Climate Fund could be tapped to finance REDD initiatives. The fund, emanating from the 2010 Cancún Agreements, was established under the UNFCCC to help developing countries reduce their emissions and adapt to the adverse effects of climate change. Developed countries pledged $100 billion

Table 12: Sources of REDD+ Finance

Finance source	Amount	Administered by…	Contributors	Timeframe	Available for…	Notes
FCPF Readiness Fund	$360 million	World Bank	Developed country governments, 18 private sector donors	Through 2020	REDD grants in developing countries	22 countries have signed Readiness Fund grants
FCPF Carbon Fund	$465 million	World Bank	Developed country governments, 10 public and private sector contributors	Through 2020	Payment-for-performance for emissions reductions	11 countries in the pipeline
BioCarbon Fund's Initiative for Sustainable Forest Landscapes	$311 million	World Bank	Donor governments: Norway, UK, US, with private sector partners	Capitalized November 2013	$30-50 million available for 4-6 jurisdictions advancing climate-smart agriculture and sustainable forest management (payment-for-performance for emissions reductions)	Pilot jurisdiction = Oromia, Ethiopia
Forest Investment Program	$639 million	World Bank	Multilateral development banks, private sector	Investment plans for all 8 pilot countries approved by November 2013	Designed to complement other REDD funding	Includes $50 million Dedicated Grant Mechanism for indigenous peoples & communities
Green Climate Fund	$7.5 billion	UNFCCC	Developed country governments, private sector	Capitalized in 2013	Adaptation and mitigation to climate change, including REDD projects	Fund operations to begin in 2015

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

per year by 2020 – via a mix of public and private financing – but commitments to the fund materialized slowly. However, countries collectively pledged more than $2 billion to the fund in September, including a $1 billion commitment from France, in response to UN Secretary-General Ban Ki-moon's request for countries to begin capitalizing the fund. **In November, the US and Japan announced new commitments of $3 billion and $1.5 billion, respectively, increasing total pledges to $7.5 billion.** Officials expect to acquire the necessary funding to kick-start the fund's operations at the beginning of 2015.

"We look forward to seeing how the (Green Climate Fund) will use these pledges to leverage private capital," says Katie Sullivan, Director of Climate Finance for the International Emissions Trading Association. "Private investors are ready and willing to invest further in climate change mitigation and adaptation measures. They just need the right frameworks to invest."

6. Forest Carbon Offset Buyers

From multinational energy companies to domestic food and beverage producers to small jurisdictional governments, carbon offset buyers have diverse reasons for entering – and remaining in – the market. Their preferences drive demand for forest-based emissions reductions and in many ways shape the projects (and now political jurisdictions) that produce them.

This report series has historically analyzed offset demand from the perspective of the suppliers responding to Ecosystem Marketplace's survey. Project developers and retailers have a close understanding of buyers' motivations and preferences because they must market offsets to end-users. This section again includes these insights.

For the first time in this report series, we also include data on offset purchases from the 1,800+ companies that disclosed information to CDP's 2013 climate change questionnaire.[14] This data gives us a glimpse into forest carbon demand from the perspective of the buyers themselves. A forthcoming report by Ecosystem Marketplace will further examine this demand-side information to explore how carbon offsetting fits into companies' overall emissions reduction strategies and how offset purchases may be connected to climate change, regulatory, and reputational risk management.

6.1 Buyer Types: Energy Sector Takes the Lead

German development bank KfW's $40-million emissions reductions agreement with Acre, Brazil under Germany's REDD+ Early Movers Programme represents one of the first payment-for-performance agreements negotiated between a public-sector entity and a REDD jurisdiction. This eight-million-tonne agreement alone accounts for nearly a quarter of the forest offsets and 21% of market value contracted in 2013 for immediate or future delivery. Other jurisdictions are building capacity in hopes of someday also signing a multi-million dollar contract to reduce emissions from deforestation,[15] but in the context of the 2013 market, this agreement is an anomaly.

Aside from this public sector payment-for-performance agreement, which is excluded from Figure 46 below, demand for forest-based emissions reductions looked much the same as in 2012, with 96% of tonnes sold to private-sector companies.

Suppliers reported that multinational companies were again the most common buyer type, contracting 8.7 $MtCO_2e$ – or 54% – of the tonnes that suppliers associated with a buyer. Domestic corporations and small-to-medium enterprises contracted 4.6 $MtCO_2e$ and 1.9 $MtCO_2e$, respectively, accounting for another 40% of supplier-reported demand.

Few public-sector entities purchased forest carbon offsets last year in the absence of legally binding emissions targets or market-based mechanisms for meeting them. Those that did accounted for about 2% of demand, with national and state or local governments each contracting 0.2 $MtCO_2e$. These public sector buyers were mainly developed-country governments pursuing an internal GHG reduction target or aiming to show leadership ahead of national- or regional-scale carbon policy. (Again, the 2% figure excludes the KfW agreement.) European and North American NGOs also purchased 0.2 $MtCO_2e$, often investing in projects in line with each organization's conservation or development mission.

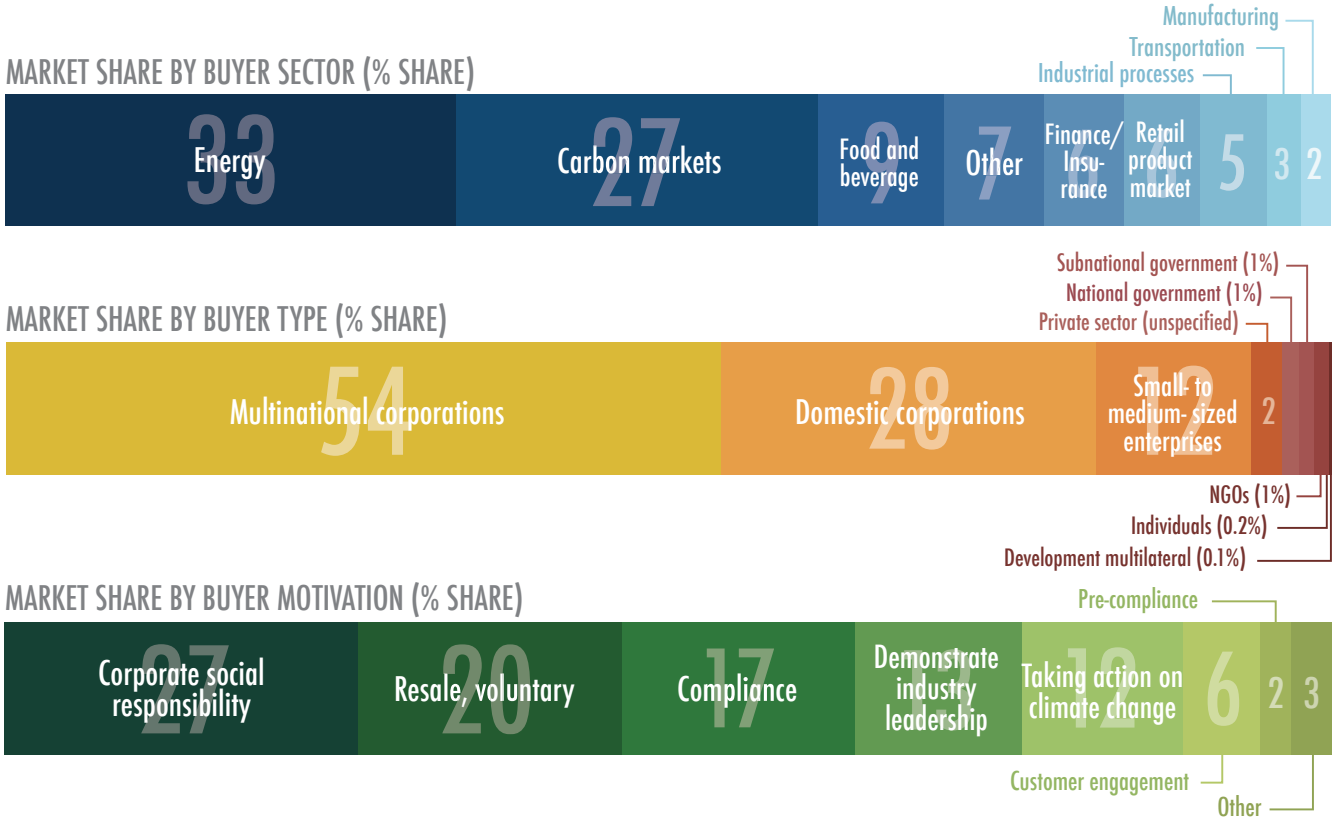
Because market infrastructure is mostly geared toward larger-scale transactions, individuals' demand for forest carbon offsets was barely a blip on the radar last year – just over $700,000 in value. However, Code REDD, an organization founded with the goal of drumming up corporate demand for high-quality avoided deforestation projects, recently announced a "Stand for Trees" campaign that will allow individuals to easily offset their emissions in tonne and half-tonne denominations through a mobile website.

For the first time in this report series, offset retailers were not the largest source of forest carbon offset demand as the secondary market conceded market share to project developers selling directly to end-users. Previously, offset retailers were project developers' primary means to access corporate demand. Some developers have since built their own buyer networks on the back of these initial retailer relationships, offering prices to end users that on average undercut their prices to retailers. In turn, retailers say they're

[14] CDP, Climate action and profitability: CDP S&P 500 Climate Change Report 2014. Available at: https://www.cdp.net/CDPResults/CDP-SP500-leaders-report-2014.pdf

[15] See also discussion of potential future ERPAs (e.g., Costa Rica) under FCPF (Section 2.)

Figure 46: Market Share by Buyer Sector, Type, and Motivation



Notes: Based on 212 buyer types as described by survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

looking to new projects offering exclusivity or falling back on existing supplies.

In retailers' place, energy companies stepped up as the top buyer sector, purchasing more than 5 $MtCO_2e$, or one third of the offsets associated with a buyer last year. Electric utilities were prominent under this category. PG&E, the utility that supplies electricity to Northern California and is subject to the state's cap-and-trade law, (voluntarily) purchased offsets from US-based CAR projects developed by The Conservation Fund. Brazilian electric utility AES Tietê S.A., which operates hydroelectric plants in the state of São Paulo, reforested the riparian areas surrounding its reservoirs beginning in 2001 and continues to quantify the sequestered carbon from this offset origination project (according to the company's CDP disclosure).

Food and beverage companies such as Danone, Starbucks, and others were a prominent buyer sector last year, purchasing at least 1.3 $MtCO_2e$. The retail product market was also a notable source of demand. British clothing company Marks & Spencer – a household name in the voluntary carbon market after years of investments in offsets projects – continued supporting forest carbon projects last year, purchasing offsets from several projects, including a VCS+CCB project in Kenya managed by The International Small Group and Tree Planting Program (known as "TIST") that teaches smallholders to plant and care for fruit trees. And, in an example of Latin American companies driving regional demand, NOEL, a Colombian cookies and chocolates company, bought offsets from a reforestation project in Colombia – the first in the country to be verified under CarbonFix (now The Gold Standard).

Other private-sector buyers included banks, airlines, hotels, sports teams, and more. Table 13 lists the top 30 private-sector buyers among the hundreds of companies that disclose their GHG emissions and the strategies – including offsetting – that they use to address them to CDP.

French consumer staples company Danone is the top buyer (among those that disclosed forest offset purchases to CDP). In 2008, Danone created the Livelihoods Fund which invests in agroforestry and

Table 13: Top 30 Private Sector Forest Carbon Offset Buyers by Volume, 2013

1.	Danone	16.	Banco Santander Brasil
2.	BRF S.A	17.	Macquarie Group
3.	TransAlta Corporation	18.	Olam International
4.	Allianz SE	19.	Abengoa
5.	Norfolk Southern Corp.	20.	Pearson
6.	Natura Cosméticos S.A.	21.	FedEx Corporation
7.	AES Tiete SA	22.	PUMA SE
8.	The AES Corporation	23.	Deutsche Post AG
9.	Barclays	24.	British Sky Broadcasting
10.	Microsoft Corporation	25.	Commerzbank AG
11.	Kering	26.	Marks and Spencer Group plc
12.	Novartis	27.	Qantas Airways
13.	Nedbank Limited	28.	Starbucks Corporation
14.	Old Mutual plc	29.	Caltex Australia
15.	TUI Travel	30.	Sumitomo Chemical Co., Ltd.

Notes: This list includes only those companies that disclosed climate change information to CDP for reporting year 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

mangrove restoration in Senegal, India, Indonesia, and Guatemala, among other countries. Now valued at 40 million euros, The Fund was opened to outside investors in 2011, and European companies including tire manufacturer Michelin, accessories brand Hermès, and mail service La Poste are expecting returns of more than 8 $MtCO_2e$ in carbon offsets over the next 20 years.

6.2 Buyer Motivations: Feeling the Heat

Reflecting a market still geared towards voluntary buyers, corporate social responsibility (CSR) was the most common buyer motivation last year, behind 27% of transactions – up from 23% in 2012.

As Tamara "TJ" DiCaprio, Senior Director of Carbon and Energy at Microsoft, put it as last year's REDD+ talks in California: "We are part of the problem, especially when we look at our customers and the proliferation of devices that are emerging and the energy they require, so we need to be part of the solution." The technology giant uses an internal carbon price of $6-7/$tCO_2e$ to essentially "tax" its own business divisions and uses the revenue to purchase forest carbon offsets from REDD and A/R projects in Kenya, Cambodia, and Brazil.

Another 25% of buyers invested in forest carbon projects to "demonstrate industry leadership" (13%) or "take action on climate change" (12%). While these motivations might simply be considered variations on CSR, they do include a bit of nuance. Companies that aim to demonstrate industry leadership are likely first movers in their sector, acting outside of regulation to reduce emissions and perhaps gain a competitive edge over their peers. Companies galvanized to take action on climate change may have a deep concern about the consequences of a carbon-laden atmosphere – sometimes because they are directly experiencing the effects of climate change. This was the most common motive for purchases of all offset types within the broader voluntary market in 2013.

CDP data reveals that corporations now perceive climate change impacts as more immediate, likely, and direct than they did just two years ago. More than half of forest carbon offset buyers said they faced reputational risks to their business due to climate change. Olam International, a Singapore-based agribusiness that operates in 65 countries, recognizes that a "rise in customer and NGO expectations" could lead to an "inability to do business" with certain customers if they are not proactive about climate change. Alongside the Congolese government, a subsidiary of Olam developed the North Pikounda REDD+ project, the first REDD project in the Congo.

Though nearly half of all companies reporting to CDP recognize a failure to act on climate change as a reputational risk, and 377 companies purchase carbon offsets as part of their emissions reductions strategy, offsetting itself can come with reputational risks. Indeed, this is the reason why the majority of buyers seek out projects certified to third-party standards. Some companies go to extra lengths to ensure that their investments in forest carbon projects achieve real emissions reductions and social benefits – and that these results will be recognized by watchdog organizations.

Table 14: Risks by the Numbers

55% of forest carbon offset buyers are concerned about reputational risks & **46%** foresee changing consumer behavior related to climate change
40% anticipate cap-and-trade regulation & **11%** anticipate a carbon tax
40% view changes in precipitation extremes and droughts as a risk that could affect business & **22%** forecast induced changes in natural resources
33% face emissions-reporting obligations

Notes: Based on 96 companies that purchased forest carbon offsets in CDP reporting year 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

After pledging to invest in REDD projects through the Althelia Climate Fund, Dutch energy company Eneco worked with the International Union for the Conservation of Nature and the World Wildlife Fund to create a Code of Conduct for private sector engagement in avoided deforestation projects.[16]

"We wanted to make ourselves, as much as possible, 'NGO-proof,' because I've sat inside offices with climate demonstrators outside against a particular project we might have been involved in," says Mark Meyrick, head of Eneco's carbon desk. "We certainly didn't want people banging on our door saying 'look at what Eneco's doing.' It was really important to develop as robust a code of conduct for our activities in this area as possible, which we did."

Nearly half (45%) of companies anticipate physical climate risks to their business such as changes in precipitation, tropical cyclones, and sea level rise to be felt in the next one to five years – if they are not affecting operations already.

Ecosystem Marketplace's preliminary analysis of CDP data found that offset-buying companies reported slightly more potential climate risks, on average, than companies that did not purchase offsets. For example, Natura Cosméticos reported that climate change could affect its supply chain if rising temperatures adversely affect biodiversity – narrowing the potential botanical library for cosmetics products. The German travel company TUI Travel that purchases forest carbon offsets from Nicaragua, Mozambique, India, and other countries recognizes that extreme climatic events may impair the tourism infrastructure in some of its key destinations – a direct and immediate risk.

Regulation itself is a climate change "risk" from a private-sector perspective. According to Ecosystem Marketplace data, 17% of buyers were in fact compelled to purchase forest carbon offsets to meet obligations under California's cap-and-trade program or Australia's carbon tax – and many of them looked for local projects. Newmont Mining Corporation, which operates several gold mines in Australia, originates ACCUs from forestry projects in New South Wales and Western Australia Mallee.

Another 2% of demand was tied to pre-compliance activity in anticipation of direct regulation. Barclays Africa and Nedbank, two financial institutions with headquarters in Johannesburg, purchase VCS offsets from the Kasigau Corrdior REDD project in Kenya. South Africa's National Treasury has indicated that it will consider approving VCS-certified tonnes as eligible under its upcoming carbon tax, presumed to begin in 2016. In South Korea, another country whose government is considering carbon pricing, wireless telecommunications operator SK Telecom purchased forest carbon offsets as part of a portfolio.

[16] Memorandum of Understanding: REDD+ Business Initiative and Althelia Climate Fund. Available at: http://cmsdata.iucn.org/downloads/summary_mou_redd__business_initiative.pdf

However, a look at the CDP numbers reveals that a larger pool of companies – 28% of all companies that disclosed climate change data in 2013 – view cap-and-trade as a regulatory risk to their business. Of the more than 500 companies that anticipated cap-and-trade, 161 purchased carbon offsets and 38 purchased forest carbon offsets specifically.

Six percent of buyers were motivated by customer engagement, and many designed their offset purchases around customers. Spanish soccer club Getafe announced a five-year offsetting commitment with ALLCOT Group last June and allowed fans to choose among three VCS projects in Latin America. The RMDLT Portel-Pará REDD project in Brazil received the most votes – and the investment. Airlines such as United Airlines and Qantas have programs that allow customers to offset flight emissions with just a few clicks, and Delta matched customer offset purchases during Earth month last year.

6.3 Buyer Locations: Two-Thirds of Buyers Are European

Buyers from 23 different country locations contracted forest carbon offsets in 2013. Of those project developers and retailers that reported a buyer, the vast majority (98%) sold tonnes to companies in developed countries. American, Australian, British, Canadian, Dutch, French, and German buyers each contracted at least one million tonnes.

Developing countries contracted just 0.3 $MtCO_2e$ last year, though this demand was spread across six countries, including 15 transactions with Mexican companies and six with buyers in Peru. This demand was mostly insular by continent: Latin American buyers purchasing offsets from Latin American projects and Africans buying from Africa-based projects.

European buyers were again the largest source of demand for forestry emissions reductions in 2013, purchasing two-thirds of tonnes associated with a buyer at a value of (at least) $77 million. Many major offset retailers are based in Europe, and the EU ETS has actually enhanced voluntary demand since the compliance market familiarizes companies with the concept of offsetting and requires them to go "above and beyond" regulation in order to make CSR claims.

EU-based voluntary buyers sourced the majority of offsets from outside of Europe and comprised the largest source of demand for projects based in Latin America, Asia, and Africa. Europeans buyers also purchased half a million tonnes of forestry offsets within insular domestic markets including the UK's WCC and Italy's "zero emissions" provinces.

Table 15: Top 7 Buyer Countries, by Volume and Value

Country	Volume	Value
United Kingdom	3.1 $MtCO_2e$	$23.3 M
Netherlands	2.4 $MtCO_2e$	$10.5 M
United States	2.2 $MtCO_2e$	$29.5 M
France	2.1 $MtCO_2e$	$33.8 M
Australia	1.5 $MtCO_2e$	$8.8 M
Germany	1.2 $MtCO_2e$	$5.6 M
Canada	1.1 $MtCO_2e$	$1 M

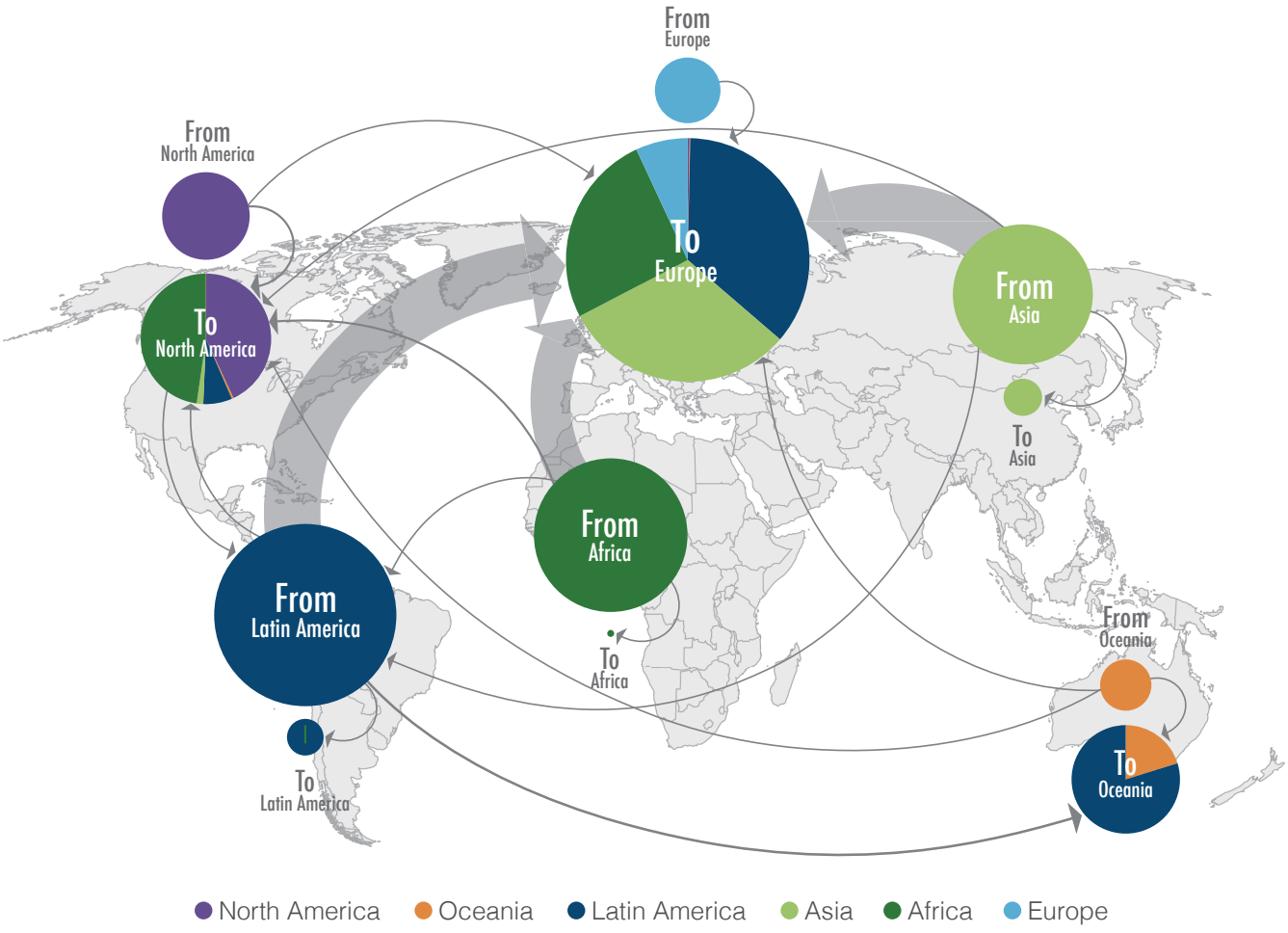
Notes: Based on 14.4 $MtCO_2e$ of tonnes associated with a buyer.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

North American buyers contracted about a fifth of forestry offsets sold last year. Survey respondents reported 38 unique transactions with buyers headquartered in the United States – the most of any country. Even so, North American demand slipped slightly from 2012, when buyers based in the United States and Canada transacted a quarter of the total volume. This was due to a drop-off in voluntary demand among North American companies that chose not to renew offset contracts or met emissions reductions goals in other ways. Compliance volumes in California's compliance market grew to 1.7 $MtCO_2e$ in 2013 – up from the 1.5 $MtCO_2e$ contracted for pre-compliance purposes the previous year.

As proponents of Australia's CFI feared, 2012's $40-million influx of carbon payments was not repeated in 2013 because of the anticipated repeal of the country's carbon tax. Aussies were nevertheless the fifth-largest buyer of forest carbon offsets in 2013, transacting 1.5 $MtCO_2e$ – roughly half of previous volumes. The majority of these tonnes were again sourced from domestic projects, though some Australian buyers invested in REDD in Latin America.

Figure 47: Flow of Transacted Volume from Project Region to Buyer Region, 2013 (% Share)



Notes: Based on 212 buyer types as described by survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

7. Market Infrastructure: Standards and Registries

7.1 Overview of Standard Use: Old Favorites, with a New Independent Streak

Carbon offset project standards offer frameworks for developing methodologies to build forest carbon projects and verifying their emissions reductions. They also provide signals to buyers who rely on standards that projects are reputable and that their climate impacts are confirmed.

Over the years, leading independent third-party standards in the voluntary market have jostled for market share – in the process refining their guidelines to facilitate methodologies that enable new AFOLU project types. Governments around the world continue to look to and even borrow best practices from these voluntary standards in devising their compliance offset markets.

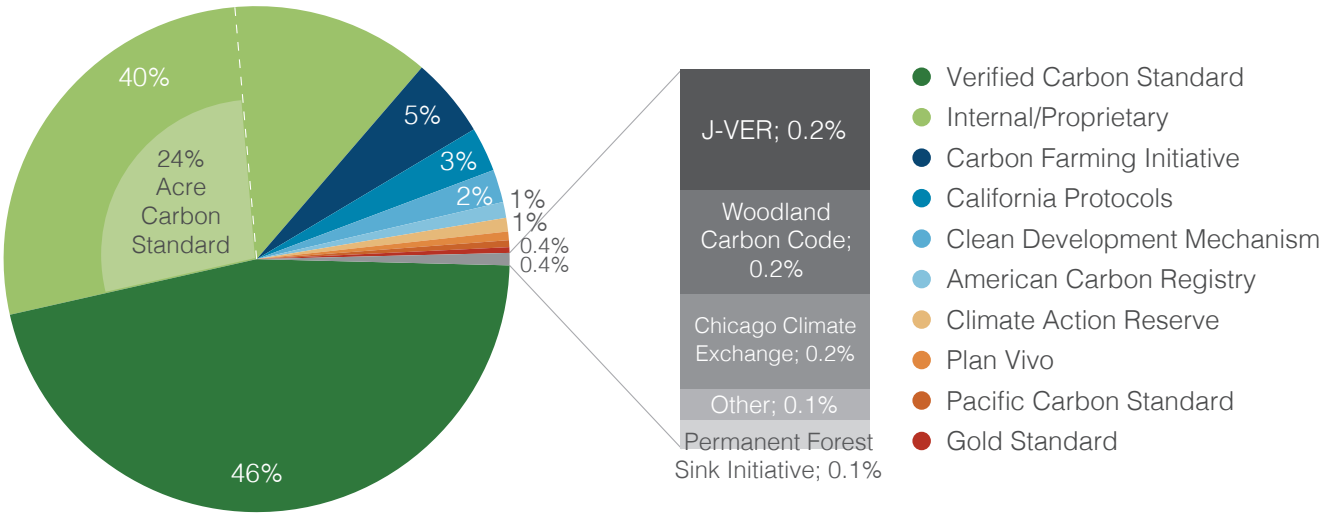
VCS was again the most popular standard for AFOLU projects last year. Ecosystem Marketplace tracked 93 projects developed under VCS, about two-thirds of which transacted offsets in 2013 – a total of 14.6 $MtCO_2e$. As shown in Figure 51, the majority of these tonnes were from REDD projects, though 14 VCS A/R and 6 VCS IFM projects also sold offsets, albeit in smaller volumes. Though A/R and IFM made up more than a fifth of VCS projects by count, these projects covered just over half a million hectares – 9% of the total land area under VCS forestry and land-use project development.

VCS's 46% market share represents about a 10% decline from 2012 as **internal and proprietary standards** made a surprising comeback after years of consolidation. These "internal" standards are each used in only one or two projects or by a single project developer.

The largest internal standard is the **Acre Carbon Standard**, used by the Brazilian state to track performance against emissions reductions targets as Acre continues its pilot under VCS JNR. Of the 12.6 $MtCO_2e$ attributed to internal standards last year, the Acre-KFW agreement lay claim to 8 $MtCO_2e$.

Other standards are proprietary by design. The Peru Carbon Fund (PCF) developed its own standard specific to Peru that focuses on fast-growing native trees in the Amazon and allows for harvesting as long as the wood will be used for construction or another purpose that keeps it sequestered. The PCF Forestry Standard also contains the unique feature of no certification costs to landowners, since the Fund covers the needed assessments.

Figure 48: Market Share by Standard/Certification Type, All Markets 2013



Notes: Based on the 32.2 $MtCO_2e$ transacted under a standard in 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

"We believe it's impossible to target a problem as large as deforestation in Peru with a standard that was not made specifically for the Peruvian reality," says PCF Executive Director Alessandro Riva. "Additionally, we believe that the extremely high costs of implementing international standards in the Peruvian jungle are the main reason why they haven't succeeded in turning around this dramatic situation."

Even so, VCS was the dominant standard utilized by Peruvian projects in 2013, guiding the development of 3.7 $MtCO_2e$ of transacted offsets. Other internal standard users said language barriers deterred them from using international voluntary methodologies, which are usually published in English. Some chose internal standards as a less expensive verification option but still designed their projects according to VCS.

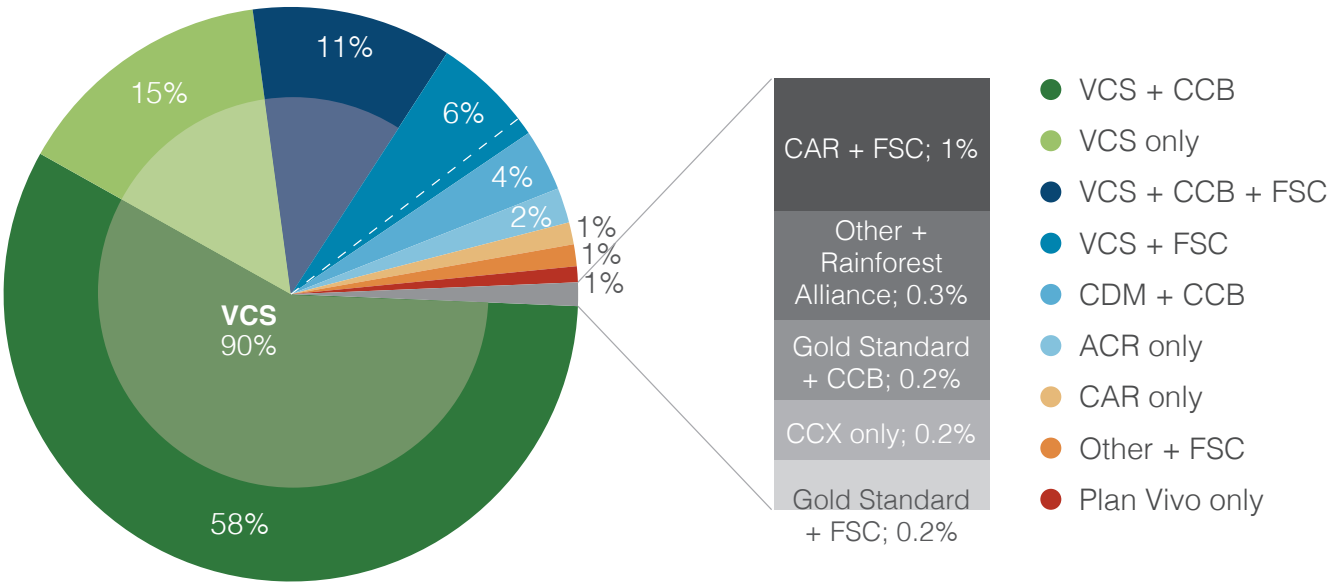
Putting aside the ascent of internal standards (as is done in Figure 49 below) reveals that VCS held 90% market share among independent standards, up from 71% in 2012.

Australia's quasi-compliance-driven Carbon Farming Initiative (**CFI**) was again the third-most used standard in 2013, though market share dropped from 10% to 5% following the repeal of Australia's carbon tax. Conversely, the volume of forestry offsets developed according to **California's Compliance Protocol** nearly doubled in transaction volumes from 2012 as the state's cap-and-trade program officially launched in 2013.

Offsets developed under the United Nations' **CDM** transacted a similar volume as in 2012, again holding 2% market share. Value, however, increased considerably as the average CDM offset sold at \$4.1/tCO_2e – close to the voluntary average – as opposed to \$1.5/tCO_2e in 2012, since CDM project developers looked to the voluntary market to sell some of the "legacy" tonnes originally developed for compliance. Voluntary-facing standards such as VCS and The Gold Standard note that a handful of CDM forestry project developers are actively trying to transfer.

North American-facing standards **ACR** and **CAR** each held approximately 1% market share, with three projects developed under each standard contracting offsets last year. ACR and CAR as well as VCS administer Offset Project Registries (OPRs) under California's cap-and-trade program, and many United States- or Canada-based projects developed under these standards now aim to certify their tonnes under California's Compliance Protocol, which will allow them to access the higher prices and demand pool of the regulatory market. Combined transaction volumes under both standards were just around half a million tonnes last year as projects underwent this transition.

Figure 49: Market Share by Independent Standard, All Markets 2013*



Notes: Based on the 16.3 $MtCO_2e$ transacted under an independent standard in 2013.
*Excludes the 12.6 $MtCO_2e$ transacted under an internal or proprietary standard.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Table 16: Popular Independent Carbon Standards

Carbon Standards		
Description	**2013 -2014 Activity**	**Average $/tCO$_2$e in 2013**
Verified Carbon Standard (VCS) www.v-c-s.org REDD, A/R, IFM, SALM "VCS provides the most widely used standards, frameworks, and methodologies for the GHG accounting of projects and jurisdictional programs, including forestry, agriculture, and other land- use activities."	• New AFOLU methodologies under development for tidal wetlands and seagrass restoration and reduced impact logging • New methodologies developed for rewetting drained peatland, coastal wetland creation, sustainable grassland management, improved nitrogen management, and avoided grasslands conversion • VCS JNR REDD pilots underway in Acre (Brazil), DRC, Chile, Costa Rica, and Peru, and under consideration in a dozen other jurisdictions • Approved California OPR	**$4.1**
Gold Standard www.goldstandard.org A/R, IFM, SALM "The Gold Standard's Land-Use & Forests Programme aims to maintain and enhance the carbon stock stored at the landscape level, while improving the sustainable use of resources, people's livelihoods, and the conservation of biodiversity."	• Launched the road-test version of the Gold Standard A/R requirements • First alignment of the A/R requirements with the FSC rules • Cooperation with Hivos and Solidaridad to use the Cool Farm Tool for calculation of emissions reductions from agriculture • Launch of the Gold Standard Agricultural requirements (at the UNFCCC Conference of the Parties in Lima)	**$8.5**
Climate Action Reserve (CAR) www.climateactionreserve.org A/R, IFM, REDD, SALM 'The Climate Action Reserve is a national offsets program focused on ensuring integrity of GHG emissions reduction projects to create and support financial and environmental value in the US carbon market."	• Adopted the Mexico Forest Protocol • Revised Urban Forestry Protocol • Approved California OPR	**$9.9**
American Carbon Registry (ACR) www.americancarbonregistry.org A/R, IFM, REDD, SALM "ACR publishes standards, methodologies, protocols, and tools for GHG accounting, which are all based on International Standards Organization (ISO) 14064 and sound scientific practice."	• Announced first avoided conversion of grasslands project issuance and first fertilizer management project issuance • New AFOLU methodologies approved, including A/R on degraded lands, compost additions to grazed grasslands, and grazing land and livestock management • Published Nested REDD+ standard • California OPR work ramped up significantly	**$8.6**
Plan Vivo www.planvivo.org A/R, IFM, REDD, SALM *"Plan Vivo is a framework for supporting communities to manage their natural resources more sustainably, with a view to generating climate, livelihood, and ecosystem benefits. Plan Vivo project design is community-led."*	• New version of Standard published (December 2013), after a year-long consultation with stakeholders • New projects registered in India, Tanzania, and Kenya • Expansion of existing projects into new regions	**$6.9**

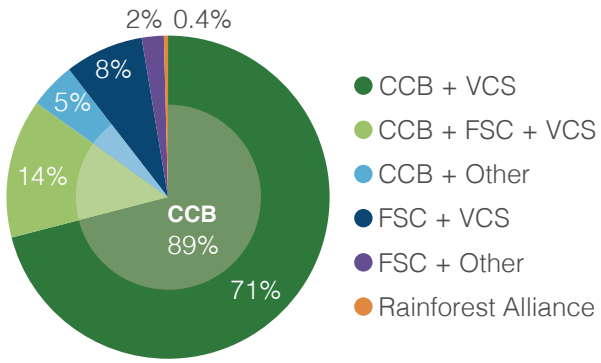
Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Plan Vivo projects sold just under 0.2 $MtCO_2e$ last year, an 18% increase in its market share from 2012, as more than a dozen projects – mainly A/R – successfully found buyers. The **Gold Standard** held less than 1% market share in its first year of forestry projects, with nine A/R projects transacting modest volumes. With a previous focus on renewable energy projects, The Gold Standard is the second leading independent standard on the overall voluntary market, and market participants expect both supply and demand of The Gold Standard forestry offsets to pick up in the coming years – and directly compete with VCS.

"I think it's a great thing [The Gold Standard is] evolving into the land-use space because I think it's necessary," says Michael Sahm, the Forest Carbon Group's Director of Strategic Marketing and External Affairs. "The remaining question is what is going to happen with the buyers, and to what extent they accept that there are two standards," referencing The Gold Standard's primary AFOLU market rival, VCS.

The Forest Carbon Group had three projects under CarbonFix that transitioned to The Gold Standard after the organization's late-2012 acquisition of CarbonFix A/R projects. Of the 28 A/R projects currently under The Gold Standard's wing, 15 were previously under development with CarbonFix.

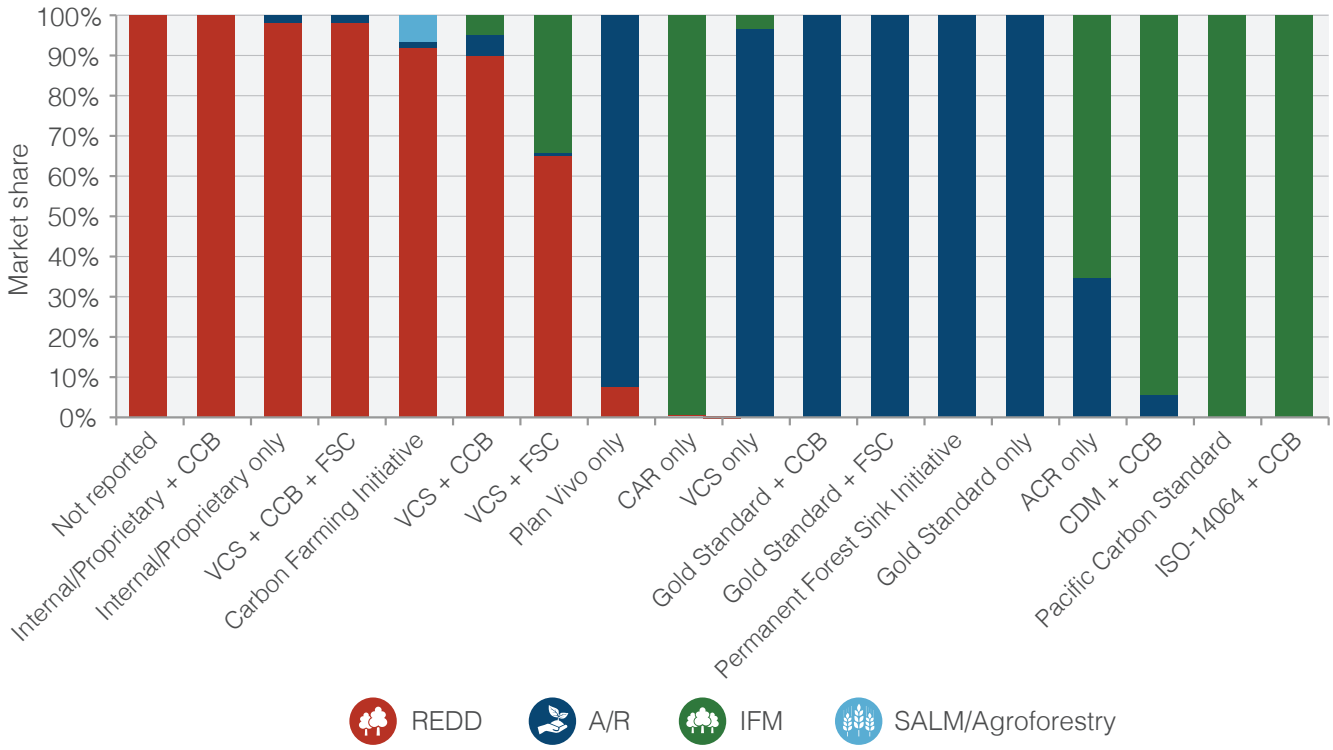
Figure 50: Market Share by Co-benefits Standard or Project Area Certification, 2013



Notes: Based on 13.2 MtCO2e transacted under co-benefits standards or project area certifications in 2013.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Figure 51: Market Share of Standard Use by Project Type Certified, 2013



Notes: Based on 30 $MtCO_2e$ associated with a standard and project type.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

7.2 Co-Benefits Standards and Land Area Certifications: Doubling (and Tripling) Up

Use of co-benefits and land area certifications was prevalent in 2013 as buyers sought out forest projects that provided livelihood and ecosystem benefits alongside carbon sequestration. Of the 16.3 $MtCO_2e$ transacted under an independent standard 81% also verified the delivery of co-benefits under CCB (11.8 $MtCO_2e$) or certified sustainable land area attributes under FSC (3.2 $MtCO_2e$) or Rainforest Alliance (0.5 $MtCO_2e$).

Eighty-four percent of VCS offsets co-applied CCB or FSC, or both, and the vast majority of these tonnes

Table 17: Popular Co-Benefits Standards and Land Area Certifications

Co-Benefits Standards*	
Description	**2013 -2014 Activity**
Climate, Community and Biodiversity Standards (CCB) www.climate-standards.org "The CCB Standards identify projects that simultaneously mitigate climate change, improve the well-being of local communities and smallholders, and conserve biodiversity."	• Released third edition of the standards in December 2013 after a year-long review process. Updates include the use of programmatic approaches to allow project area expansion, clarification of FPIC requirements, promotion of gender equality and empowerment • Validated a total of 85 projects in 35 countries as of October 2014. Twenty-three CCB projects have achieved verification
SOCIALCARBON www.socialcarbon.org "SOCIALCARBON is a standard developed by the Ecologica Institute that certifies emissions reduction projects for their contributions to sustainable development."	• Released version 5.0 of the standard in June 2013, along with a streamlined process for designing VCS & SOCIALCARBON projects • The Ecomapúa Amazon REDD project in Brazil became the first VCS & SOCIALCARBON to verify offsets in August 2014
Fairtrade International www.fairtrade.net "Fairtrade is an alternative approach to conventional trade and is based on a partnership between producers and consumers. When farmers can sell on Fairtrade terms, it provides them with a better deal and improved terms of trade."	• Developing the Fairtrade Carbon Credit program in collaboration with The Gold Standard.
Land Area Certifications	
Forest Stewardship Council (FSC) www.fsc.org "FSC certification ensures that products come from responsibly managed forests that provide environmental, social, and economic benefits."	• Preparing the policy framework to enable FSC certification of forest ecosystem services outcomes at the site level: carbon, water, biodiversity, soil, and tourism • Developing approaches for joint application of forest management standards with The Gold Standard Foundation A/R requirements
Rainforest Alliance www.rainforestalliance.org "The Rainforest Alliance works to conserve biodiversity and improve livelihoods by promoting and evaluating the implementation of the most globally respected sustainability standards in a variety of fields."	• Alongside CCB, developed guidance providing explanations of key concepts and requirements to help project proponents and auditors using the CCB Standards.

* Co-benefits standards are applied to carbon offsets themselves (e.g., a "Fairtrade Carbon Credit") while land area certifications are applied to the hectares on which a carbon project occurs.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

were derived from tropical forest REDD projects. Only a handful of projects – mainly A/R in developed countries – were "VCS only." From November 2014, VCS will assume the day-to-day management of the CCB Standards in a move they hope will "help to develop efficiencies that will ultimately make it easier for project developers to use both standards" either together or separately. The current members of the Climate, Community and Biodiversity Alliance – CARE, Conservation International, Rainforest Alliance, The Nature Conservancy, and Wildlife Conservation Society – will continue to guide the standard as part of a newly formed steering committee.

Though CCB and VCS were by far the most common co-benefits and carbon standard pairing in 2013, the "CCB + Other" category in Figure 50 includes some interesting combinations. The majority of land-based CDM offsets transacted last year also used the CCB Standards as CDM developers tried to make their projects more attractive to voluntary buyers. Several projects of The Gold Standard that transferred from CarbonFix also used CCB, though most future projects are expected to be "The Gold Standard-only."

Nearly 10% of offsets sold last year (3 $MtCO_2e$) were from project land areas that were also certified by the FSC. While the majority of projects developed on FSC land areas used VCS as their carbon standard, FSC-certified land-owners also pursued carbon certification under The Gold Standard, California Compliance Offset Protocols, CDM, and the Pacific Forest Standard. Fourteen percent of offsets that attached co-benefits or project area practices actually went for the triple VCS-CCB-FSC verification, compared to less than 1% of transacted offsets that claimed all three in 2012. One of the largest triple-certified projects is the 100,000-hectare Madre de Dios Amazon REDD project in Peru, which verified 4.5 $MtCO_2e$ in June 2013.

More Fairtrade carbon projects may be on the horizon after the organization launched a partnership with The Gold Standard this year that aims to attach the principles of fair trade – such as a minimum price and producer-consumer relationships – to land-use climate projects. The Gold Standard and Fairtrade issued a call for proposals and plan to select up to 10 Fairtrade pilot projects that will move forward in the first quarter of 2015. A general minimum offset price would not be established for all these projects, but rather would depend on the costs of production and verification, as with all Fairtrade minimum price systems, says Pieter van Midwoud, The Gold Standard's Director of Business Development for Land use and Forests.

7.3 Domestic-Only Standards: Insular Markets

Amid policy turnover in key jurisdictions, demand for offsets transacted under domestic-only standards declined 35% last year to 2.8 $MtCO_2e$. In particular, avoided conversion and IFM projects under Australia's CFI sold roughly half the volume reported in 2012 as compliance buyers anticipated the repeal of the country's carbon tax. The Pacific Carbon Standard lost market share after British Columbia eliminated the Pacific Carbon Trust that operated the Canadian province's offset program, instead folding it under the Environment Ministry to cut administrative costs. And volumes on New Zealand's Permanent Forest Sink Initiative (NZ PFSI) shriveled after the country opted out of the second commitment of the Kyoto Protocol, thus ending compliance offset demand.

New domestic offset programs may soon step up to fill the void, but these initiatives were nascent in 2013. Just under a million forestry offsets were transacted under California's Compliance Protocols last year as early-action IFM projects slowly transitioned towards eligibility under the state's cap-and-trade program. The UK's Woodland Carbon Code (WCC) also spent much of last year testing out new market infrastructure: the first "Pending Issuance Units" – representing domestic woodland carbon to be sequestered in the future – were listed on Markit Environmental Registry in July 2013.

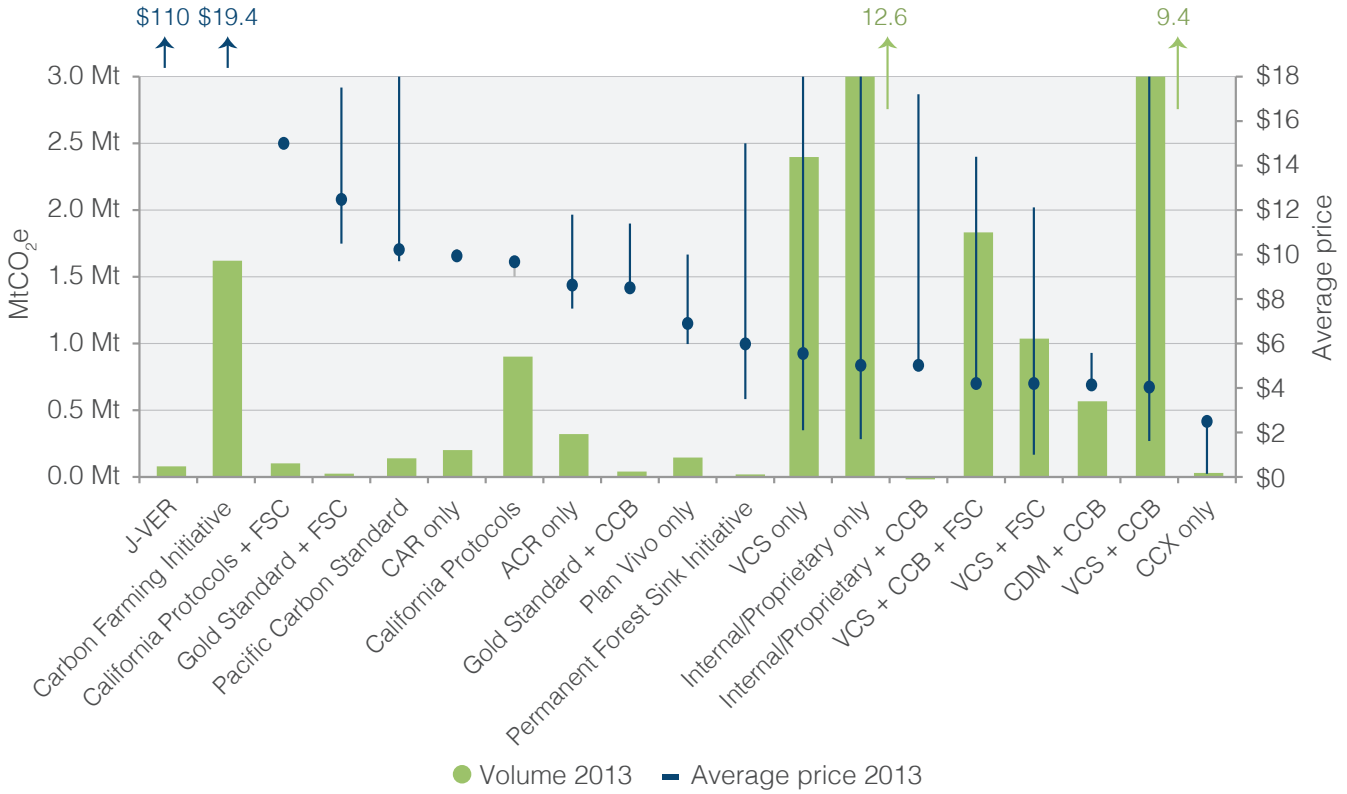
In Asia, forest carbon offsets so far play a modest role within insular domestic markets. Only two of China's seven subnational carbon market pilots accept forest-based offsets, though it's expected that AFOLU emissions reductions used in the pilots will be credited under the country's national carbon market, projected to launch in 2016.

7.4 Price by Standard: Demand Expressed in Volumes More Than Prices

Forest carbon offset prices ranged widely last year, with buyers paying as little as 10 cents per tonne and as much as $110. Though an offset's standard is just one of the many variables that influence price, looking at prices across standards does provide some insight into buyers' preferences – including how certification choice, supply, and project stage affects offsets' appeal.

As shown in Figure 52, offsets developed under domestic protocols and marketed into insular markets transacted slim volumes but wore the highest price

Figure 52: Transacted Volume and Average Price by Standard and Other Certification Types, 2013



Notes: Based on responses representing 31.4 $MtCO_2e$ in transaction volume.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

tags in 2013. In the case of Australia and California, compliance instruments drove the price up since offsets are used as a cost-containment mechanism – and therefore priced just under the level of the carbon tax (in Australia) or the allowance floor price (in California). Offsets developed under the California-facing standards CAR and ACR also traded near compliance prices, at an average of $9.9/tCO2e and $8.6/tCO2e, respectively.

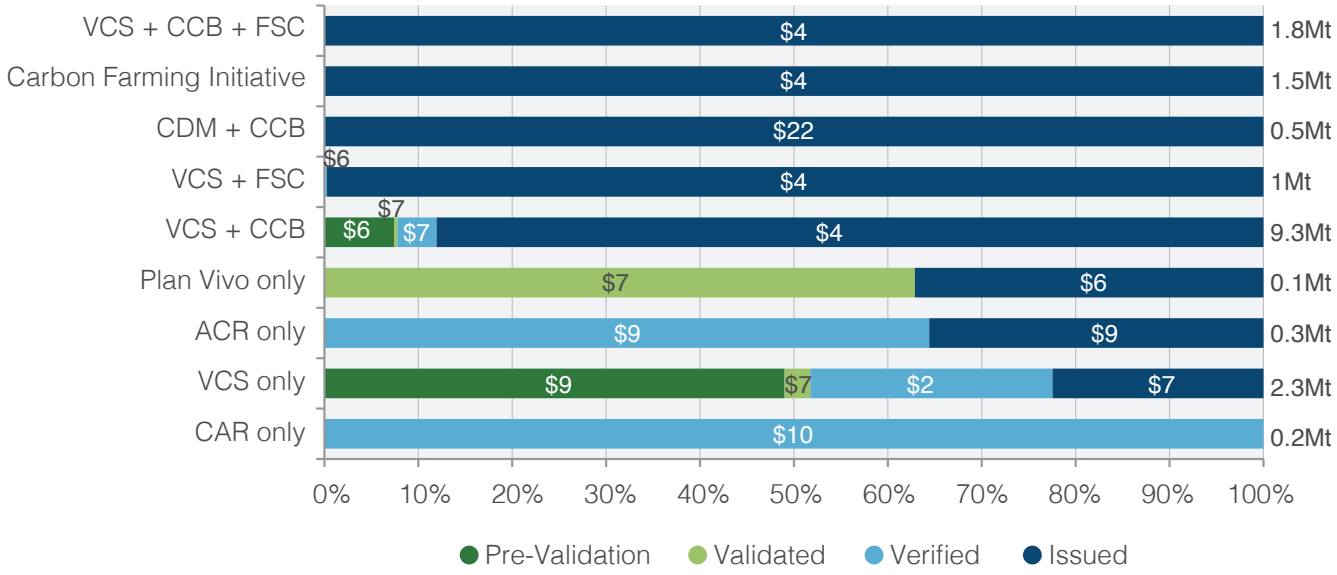
Under Japan's J-Credit Scheme, offsets sold for the highest prices seen on the market – $110/$tCO_2e$ – in line with the program's historically high-end pricing. Japanese companies typically buy a small number of J-VER offsets to neutralize the emissions of a discrete event or product for the reputational benefit of having invested in a domestic forestry project. If companies want to make their operations carbon neutral, they'll fill in the "boutique" J-VER offsets in their portfolio with less expensive international CERs.

Independent international standards that embed co-benefits within the carbon methodologies – namely The Gold Standard and Plan Vivo – sold at above-average prices: $8.5/$tCO_2e$ for The Gold Standard and $6.9/$tCO_2e$ for Plan Vivo. The Gold Standard and Plan Vivo offsets were almost exclusively from tree-planting projects that sold, on average, at higher prices. The relative scarcity of offsets under these standards – Plan Vivo certificates typically sell in small volumes and The Gold Standard forestry is brand new – may have also contributed to the above-average prices.

"VCS only" tonnes – mainly from A/R projects in developed countries – sold at higher prices ($5.6/$tCO_2e$) than VCS offsets that tagged on the CCB label ($4/$tCO_2e$; mostly REDD projects).

Buyers did, however, pay slightly more for offsets derived from certified land areas. VCS projects sited on land hectares managed according to FSC principles were priced slightly higher ($4.2/$tCO_2e$) than those on non-certified land, and The Gold Standard projects developed in FSC-certified forests attracted on average $4/$tCO_2e$ more. Even offsets developed under California's compliance IFM protocol were sold at higher prices ($15/$tCO_2e$) when located on FSC-certified land.

Figure 53: Market Share, Average Price, and Stage by Popular Forestry Offset Types, 2013



Notes: Based on responses representing 20.5 $MtCO_2e$ associated with a standard and transaction stage.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

7.5 Project Stage: Majority of Tonnes Contracted After Issuance

As illustrated in Figure 53, under almost every standard, project developers and retailers contracted the majority – if not all – of their offsets after issuance, a notable shift from two years ago when the market saw more investment in early-stage projects. Issued offsets have historically been more expensive than those still under development due to buyers' perception that these "fully cooked" offsets were lower-risk.

However, the opposite was true last year. Under the most popular independent standards combination (VCS + CCB), buyers paid between \$6/tCO_2e and \$6.8/tCO_2e, on average, for pre-issued tonnes and just \$3.8/tCO_2e for issued tonnes. Suppliers theorize that this is largely because, for the first time, issued offsets were widely available. Buyers felt more confident in the availability of forest carbon offsets and in the ability of new projects to make it through all stages of the process. Earlier-stage offsets therefore became the "rarer" specimens, attracting higher prices as a result.

7.6 Registry Use: Offset Issuances and Retirements Soar; Registries Build JNR Infrastructure

Over the years, carbon offset registries have played an important role in legitimizing carbon market activities by providing transparent platforms where sellers can upload project documentation and where buyers can retire offsets. Markit Environmental Registry and APX Inc. are the two major registries serving the voluntary carbon market, holding 62% and 34% of offsets transacted in 2013, respectively. Forestry and other land-use offsets make up a large percentage of issuances on both registries: 53% on Markit and 20% on APX.

On the compliance side, three voluntary standard organizations – ACR, CAR, and VCS – have been named Offset Project Registries (OPRs) for California's cap-and-trade market, allowing them to facilitate project listing, reporting, and verification. Domestic programs such as Japan's J-Credit Scheme and Australia's CFI also typically have their own registries to track offset issuances and retirements.

Registries reported 29.5 $MtCO_2e$ in new issuances from AFOLU projects in 2013, nearly three times the previous years' issuances and an all-time record. Even excluding the 11.6 $MtCO_2e$ issued under the Acre Carbon Standard used only in this REDD+ jurisdiction, last year's issuances still shattered previous volumes. VCS alone issued more than 10 $MtCO_2e$ forestry and agricultural offsets in 2013.

Of the record VCS issuance, the vast majority of offsets (9.2 $MtCO_2e$) were from REDD or avoided conversion projects, contributing to the perceived "flood" of REDD offsets into the market – an influx that was not met with an equal bump in voluntary demand.

Though project developers reported that the majority of tonnes transacted under VCS were also pursuing verification under co-benefits standard CCB, only 4% of tonnes issued on registries last year tagged on the CCB label. This is likely because VCS and CCB validations are sometimes staggered, and some forest carbon projects choose to add on CCB after the first verification and sale of VCUs. The discrepancy between VCS+CCB transactions and VCS+CCB issuances indicates that many AFOLU offsets listed on registries as "VCS only" may in fact have co-benefits certification underway.

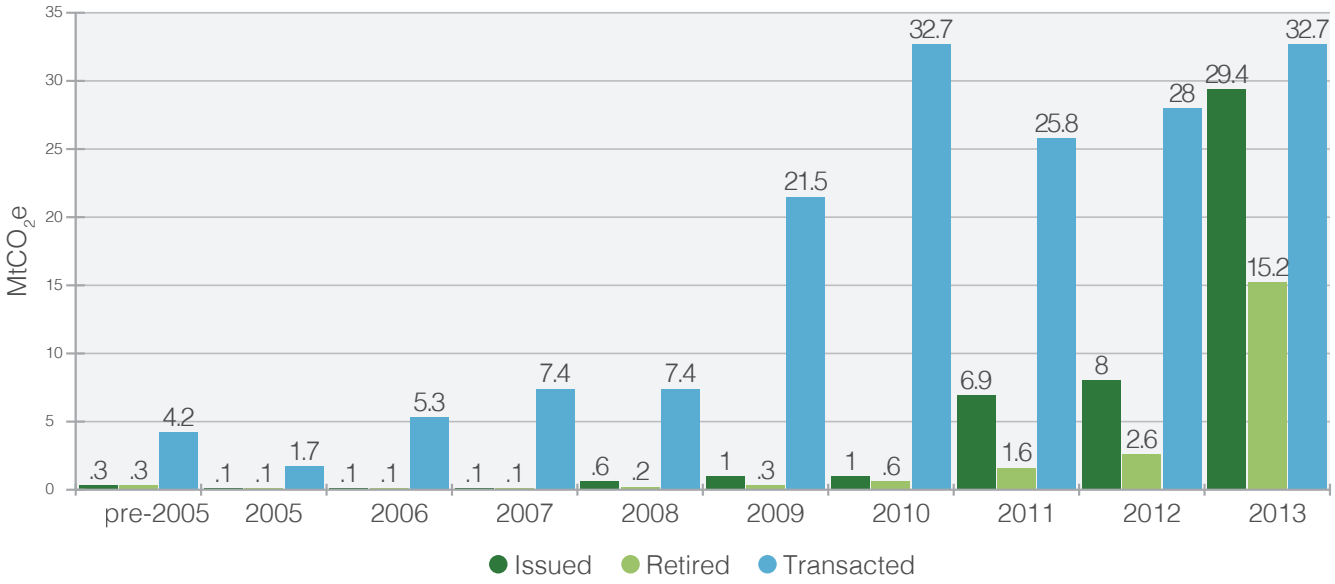
A total of 15.3 $MtCO_2e$ forest carbon offsets were "retired" in 2013. These tonnes are now out of circulation in the carbon market and represent permanent removals of carbon dioxide from the atmosphere. Typically, buyers retire offsets on a registry in the year when they want to make sustainability claims – though they may have contracted offsets in projects' early stages and retire those offsets when the emissions reductions are eventually verified. Thus, retirement volume is not an accurate measure of market activity, as an unknown volume of offsets retired were already paid for in the near to distant past. The majority of offsets retired (11.6 $MtCO_2e$) in 2013 were developed under the Acre Carbon Standard, but even excluding these tonnes, retirements reached a record 3.7 $MtCO_2e$.

For a few standards – namely the Pacific Carbon Standard in British Columbia, New Zealand's PFSI, and ISO 14064/65 – retirements were higher than issuances, indicating a winding down of project development under these standards. Other standards for new domestic programs, including California's Compliance Protocol and the UK's WCC, were just ramping up and had no retirements yet.

As jurisdictional REDD programs around the world strive to reach the payment-for-performance stage, registries are beginning to develop the infrastructure to issue and retire forest offsets developed at the state, province, or country level.

Markit began hosting the jurisdictional Acre Carbon Standard in 2013 as a placeholder of sorts for VCS JNR activities and issuance. One of Markit's enhancements enables monitoring of performance-based milestones that aren't necessarily tied to carbon offsets. The Markit Registry features a dashboard through which government authorities and others can create a set of finance-tied goals or outcomes for jurisdictional programs and receive "alerts" with the next steps needed to be taken – and on what timeline – to release that funding. The biodiversity markets, which have also used milestones in payment-for-performance mechanisms, and the renewable energy credit market, which operates at the state level, serve as models.

Figure 54: Historical Issued, Retired, and Transacted Offset Volumes



Notes: This figure tracks land-use project registry data reported for the Acre Carbon Standard, ACR, CAR, the California Compliance Standard, Gold Standard/CarbonFix, ISO 14064/65, J-VER, the Pacific Carbon Standard, PFSI , Plan Vivo, VCS, and WCC.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

7.7 On the Horizon: New Project Methodologies

The search for new or adaptable project methodologies seemingly never ceases, especially in light of expected increases in demand for offsets from certain compliance programs. Here again, the voluntary standards are showing the way.

Across several standards, **blue carbon** methodologies that seek to quantify and credit the carbon stored in seagrasses, tidal salt marshes, and mangroves are quickly emerging as the science on the incredible carbon storage of these ecosystems[1] – and the incredible rate (2% per year) at which they are being lost[2] – advances.

After releasing the world's first carbon methodology for wetlands restoration in 2012, ACR and Tierra Resources teamed up with the Sacramento Municipal District to expand the methodology's geographic scope beyond the Gulf Coast and to California. A wetlands methodology is considered a top candidate for future acceptance into California's compliance program, which will likely need to incorporate additional offset protocols to contend with the anticipated rise in demand associated with an expansion of the program in 2015.

VCS also has several new blue carbon methodologies. The standard approved its coastal wetland creation methodology, developed by the Louisiana Coastal Protection and Restoration Authority but applicable anywhere in the United States, in January. Most recently, a new methodology for rewetting drained peatlands in Southeast Asia – specifically Malaysia, Indonesia, Brunei, and Papua New Guinea – was released in July 2014. And VCS's tidal wetland and seagrass restoration methodology, applicable anywhere in the world, is wrapping up its first assessment and is expected to be available early in 2015.

Several new **grasslands** methodologies also gained traction recently. The Climate Trust helped develop an avoided conversion of grasslands and shrublands methodology, which estimates the emissions avoided from preventing conversion to crop production. The organization will also buy offsets from the first project using the protocol, which protects rich prairie land in North Dakota and was approved by ACR in October 2013. A CAR working group that met in October 2014 is currently developing a US grassland project protocol to tackle issues such as project definition, GHG assessment boundary and quantification, and ownership and aggregation – with an eye toward accommodating the California ARB program wherever possible.

VCS also recently revised its avoided deforestation methodology to incorporate avoided grasslands conversion, and Wildlife Works is piloting the methodology at its Taita Hills project in Kenya. The Standard's sustainable grassland management methodology, designed specifically for semi-arid regions where livestock graze, was approved in April 2014.

Sustainable agriculture methodologies also continue to proliferate – and become more sophisticated. Though it has not finalized its requirements for SALM projects yet, The Gold Standard recently joined forces with The Cool Farm Institute and its Cool Farm Tool, an online greenhouse gas emissions calculator that they hope will enable smallholder farmers to more easily quantify emissions reductions from sustainable agricultural practices such as reductions in fertilizer use.

This spring, ACR revealed the first project developed under its rice cultivation offset protocol and announced the expansion of the methodology beyond California to the Mid-South rice-growing states. (CAR also has a rice protocol.) The ARB is expected to vote on whether to include a rice protocol under California cap-and-trade in December.

California regulators are not ready to make any public announcements about the next set of protocols that could be allowed into the program, but are aware of the work being done by ACR and CAR to develop and road-test wetlands, grasslands, and rice protocols, said Rajinder Sahota, ARB's Chief of the Climate Change Program Evaluation Branch.

"We love land-based offsets," she said. "We think it's a good sector to look at. It's the challenge of making sure those offsets meet the criteria of the current regulation and making sure that a tonne for an offset is the same as a tonne for an emission in the regulated sectors."

[1] United Nations Environment Programme, The Importance of Mangroves to People: A Call to Action, 2014.

[2] The Blue Carbon Initiative. http://thebluecarboninitiative.org/category/about/blue-carbon/

8. Regional Market Deep Dive

Enhancing carbon sequestration in forests and agricultural landscapes is inherently a location-based endeavor, and buyers of forest carbon offsets often engage in the market ***because*** they want to invest in a specific place. While less than 1% of the world's land area is currently under carbon management, this report series has tracked forest carbon projects "gaining ground" over the years as governments, companies, and communities increasingly realize the need to manage forests for carbon in the face of runaway climate change.

A zoomed-out view of the global forest carbon markets shows that the majority of offset supply comes from developing countries in Latin America, Africa, and Asia – many of them containing rich but threatened tropical forests – while the majority of offset demand comes from "emitter" countries in Europe and North America. However, the lines of this "North-South transfer" are beginning to blur a bit as California's cap-and-trade policy creates a compliance market for North American-based forest carbon projects and as private-sector actors in emerging economies such as Brazil and Colombia seek out projects within the region to voluntarily offset their emissions.

This section breaks down 2013's forest carbon market by region and takes a look at supply and demand as well as major transactions and policy developments in specific countries.

Table 18: Latin America by the Numbers, All Markets, 2013

Land and project area			
Total forest area*	956 million hectares		
Carbon project area	7 million hectares		
# projects represented in 2013	65		
Market Snapshot			
Year Document	2011	2012	2013
Volume supplied**	7.7 Mt	6.2 Mt	18.2 Mt
Average price	$10.3/t	$8.1/t	$4.8/t
Value	$73 M	$50 M	$86 M
Volume purchased domestically	1.9 Mt	0.2 Mt	0.3 Mt

Notes: **Volume supplied is the number of offsets sold from projects based in Latin America while volume purchased domestically is the number of offsets purchased by buyers based in Latin America (from projects based anywhere in the world).

Source: Total forest area from FAO 2010; All other data from Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

8.1 Latin America: Breakout Year

Propelled by emerging jurisdictional REDD programs and demand for offsets sourced from the Amazonian "lungs of the Earth," Latin America tripled its transaction volumes in 2013, contracting more than 18 $MtCO_2e$ from 65 projects (and one jurisdiction). More than half of all forest carbon offsets and 70% of REDD tonnes worldwide originated in the region. Brazil and Peru were the top two forest carbon offset supplier countries overall, contracting 11.8 $MtCO_2e$ and 5.1 MtCO2e, respectively, and together accounting for 40% of global market value.

Buyers from Europe, Oceania, and within Latin America channeled a record $86 million to forest carbon projects in 14 Latin American countries last year. However, this chart-topping market value was due entirely to large transaction volumes as prices declined. The average forest carbon offset price in Latin America was $4.8/$tCO_2e$ – similar to the global average price of $4.7/$tCO_2e$ – but significantly lower than 2012's average price of $8.1/$tCO_2e$ in the region. The vast majority (95%) of offsets contracted from Latin American projects originated from REDD projects that saw dropping prices in a year when many projects reached maturity and issued unprecedented numbers of tonnes (see section 1.3).

Brazil's record volume was in part due to the 2013 agreement between the state of Acre, Brazil and German development bank KfW to deliver 8 $MtCO_2e$ worth of emissions reductions over four years. Historically a

rubber- tapping economy that was threatened by the timber and cattle industries, Acre established a cutting-edge payment for ecosystem services (PES) law, the State System of Incentives for Environmental Services (called "SISA" from the Portuguese acronym) in 2010 and in 2012 became the first jurisdiction to pilot VCS's JNR framework to reduce deforestation at the state level. These developments paved the way for the KfW agreement through Germany's REM Programme. Under the agreement, money flows to Acre's regional Association of Indigenous Agroforestry Agents (the state is home to 15 distinct ethnic groups dispersed among 35 indigenous territories), which then distributes it to support indigenous territorial management plans (or "life plans") that decouple development from deforestation.

Though Acre stole the spotlight last year, many projects outside of the jurisdiction also reached important milestones in 2013. Ecosystem Marketplace tracked 16 active forest carbon projects in Brazil, 13 of which transacted offsets. Among them was the Paiter Suruí REDD project in Mato Grosso which in June 2013 became the first indigenous REDD project under the VCS standard to generate offsets by saving endangered rainforest. Three months later, the Paiter Suruí community sold 120,000 tonnes of carbon offsets from to Brazilian cosmetics giant Natura Cosméticos. And early in 2014, Mato Grosso became the second Brazilian state (after Acre) to create a regulatory framework for REDD+.

Peru's status as the host of the next round of international climate talks in December motivated some project development in the country, with 14 Peruvian projects – mostly REDD – transacting offsets last year. However, other project developers reported stiff competition for buyers in a country with many charismatic projects.

Peru may be poised for more forest carbon action in the future. Six years in the making, the country's Congress unanimously passed its PES law in June 2014, which draws a clear connection between water and forest conservation and establishes an "incubator" through which the Ministry of Environment will support regional and local governments to create PES projects. Five Peruvian states are already active within the GCF Task Force that promotes jurisdictional REDD activities, including San Martín, Loreto, and Ucayali which joined in October 2013.

Mexico ranked third in Latin America in terms of volume, with 10 active projects in the country collectively transacting half a million offsets, mainly from IFM projects. Mexico's unique ***ejido*** land governance system means that upwards of 80% of the country's forests are community-owned, and carbon projects such as the Amigos de Calakmul IFM project in the state of Campeche use offset sales to compensate communities that forgo their logging rights. Partly because of the slant towards IFM projects with high

Table 19: Latin America: Transacted Forest Carbon Offset Types and Buyers, All Markets, 2013

Top Transacted Forest Carbon Offset Types, 2013					
Project Type		Project Stage		Standard Use	
REDD	94%	Issued	89%	Internal/proprietary	69%
A/R	4%	Project Idea Note	7%	VCS	29%
IFM	3%	Verified	3%	Plan Vivo	1%
Top Forest Carbon Offset Buyer Types, 2013					
Buyer Locations		Buyer Sectors		Buyer Motivations	
Europe	65%	Carbon Market	45%	Resale to voluntary end users	44%
Oceania	28%	Energy	32%	To demonstrate climate leadership	34%
Latin America	4%	Other	15%	Corporate social responsibility	14%

Notes: Based on responses from 62 suppliers. Percent values are based on the volumes associated with individual questions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

opportunity costs, Mexican offsets fetched prices that were 20% higher than the average in Latin America.

Though few Mexican REDD projects actually transacted offsets last year, many Mexican states, including Chiapas, Oaxaca, Jalisco, and the tri-state area of Yucatan peninsula, are in the process of working on REDD readiness through training and legislative initiatives. Along with Acre, Chiapas signed an MOU with California that offers a pathway for their participation in the US state's cap-and-trade system – if regulators decide to allow international offsets into the compliance program.

Forest carbon projects in Argentina, Bolivia, Costa Rica, Colombia, Ecuador, Guatemala, Nicaragua, and Panama collectively sold 0.7 $MtCO_2e$, contributing modestly to market value in the region. In September 2013, **Costa Rica** became the first country to sign a letter of intent with the World Bank's FCPF to receive $63 million for the regeneration of forests across 340,000 hectares. Though the ultimate terms of the agreement are yet to be negotiated, investors in the FCPF's Carbon Fund have expressed a willingness to pay $5/$tCO_2e$ for the emissions reductions.

On the buyers' side, European offset retailers and energy companies purchased more than two-thirds of offsets from Latin America. However, projects developers also saw modest demand within the region, as 4% of offsets originating in Latin America were sold to Latin American buyers. In many cases, these buyers seek to support forest carbon projects within their own country – for instance, the Colombian oil services firm Independence bought 20,000 tCO_2e from the Tolo River REDD project in the Chocó.

8.2 Africa: Shattering REDD Volume Records

African countries such as Zimbabwe, the DRC, Kenya, and Uganda committed to major initiatives to conserve their tropical forests in 2013 with an assist from the international community, particularly the government of Norway. However, a lack of financial resources continues to challenge efforts to scale up forest carbon mitigation activities, and the carbon markets have yet to resolve the supply-demand imbalance driving down prices for REDD offsets.

In 2013, projects in the region transacted a record 5.6 $MtCO_2e$, a jump of more than 80% from the 3.1 $MtCO_2e$ reported in 2012. However, the overall value and average price for these projects declined 14% and 53%, respectively. Offsets from Africa-based projects were priced at an average of $3.4/$tCO_2e$, the lowest of any region. Excluding significant outliers, however, results in a regional average price of $5.8/$tCO_2e$, which is more representative of the majority of forest carbon transactions in Africa.

Table 20: Africa by the Numbers, All Markets, 2013

Land and project area			
Total forest area*	674 million hectares		
Carbon project area	1.8 million hectares		
# projects represented in 2013	19		
Market Snapshot			
Year Document	2011	2012	2013
Volume supplied**	4.7 Mt	3.1 Mt	5.6 Mt
Average price	$6.1/t	$7.2/t	$3.4/t
Value	$24 M	$22 M	$19 M
Volume purchased domestically	N/A	N/A	<0.1 Mt

Notes: **Volume supplied is the number of offsets sold from projects based in Africa while volume purchased domestically is the number of offsets purchased by buyers based in Africa (from projects based anywhere in the world).

Source: Total forest area from FAO 2010; All other data from Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

REDD offsets represented the vast majority of the offsets transacted in the region. Given the dominance of REDD, the widespread use of the VCS is predictable – 99% of projects in the region were developed under the voluntary standard.

As the country that contains the second-most forest area in the world (after Brazil), many stakeholders consider the **DRC** to be at a critical crossroads between sustainable development and widespread deforestation. The usual threats to forests – logging and agricultural expansion – have historically been muted by the civil war that plagued the DRC since the mid-1990s. However, increasing political stability might result in forests falling under threat from development, which could release 140 billion tonnes of GHGs. To ensure that development does not come at the expense

of the country's rich forests, the DRC government is launching a new pilot program to safeguard nearly nine million hectares – 10% of the DRC's forests in an area the size of England – in the districts of Mai Ndombe and Plateaux using the UN REDD+ mechanism. VCS received a $1.4 million grant from the government of Norway to pilot JNR accounting frameworks in Mai Ndombe.

At the national level, the DRC was accepted into FCPF's Carbon Fund pipeline in June 2014, with a final decision on funding forthcoming (they pursued $60 million through 2020). Meanwhile, several smaller-scale projects are active in the country, projecting nearly 300,000 hectares. In 2013, these projects generated more than 1.3 $MtCO_2e$ of forest carbon offsets sold at an average price of $\$4.3/tCO_2e$ – which is more than the $\$3.4/tCO_2e$ average price for the region.

In addition to the DRC, many other African countries are actively pursuing REDD readiness funding streams in hopes that national emissions reductions targets in developed countries will someday direct billions to avoiding deforestation.

Ghana is seeking nearly $6.7 million in combined funding from the FCPF's Readiness and Carbon Funds to back its REDD+ efforts. The degradation and deforestation in Ghana's High Forest Zone (HFZ) primarily caused by cocoa farming continued unabated for several decades, but the country's Cocoa Forest REDD+ Program aims to significantly reduce emissions across the HFZ. The funding will go towards developing and implementing the forest monitoring and MRV system, stakeholder consultation and engagement, and developing the benefit-sharing and grievance redress mechanism. Ghana's Forestry Commission expects REDD+ readiness will be complete by 2015.

Tanzania has eight REDD+ pilot projects financed by Norway – the African country received 2% of the $1.7 billon dispersed by Norway's International Climate and Forest Initiative over the 2008-2013 time period – and is expected to officially begin implementing REDD+ in 2016. Since September 2009, NGO Tanzania Forest Conservation Group has worked on a 5-year pilot project financed by the government of Norway that covers nearly 175,000 hectares. The project focused on demonstrating interventions that can be made at the local level to reduce emissions via a model that directs equitable incentives to communities to conserve and manage the forests sustainably.

Beyond the REDD+ readiness phase, however, communities must receive sufficient financial benefits to incentivize behaviors that do not result in deforestation, says Charles Meschak, Executive Director of the Tanzania Forest Conservation Group. "The price of carbon on the voluntary market is too low for this to make rational economic sense for communities," he says.

Africa-based projects reported that an average price of $\$7.4/tCO_2e$ for REDD offsets would support long-term project development – about $\$4/tCO_2e$ more than the current average price.

Table 21: Africa: Transacted Forest Carbon Offset Types and Buyers, All Markets, 2013

Top Transacted Forest Carbon Offset Types, 2013					
Project Type		Project Stage		Standard Use	
REDD	95%	Issued	100%	VCS	99%
A/R	4%			CDM	1%
Top Forest Carbon Offset Buyer Types, 2013					
Buyer Locations		Buyer Sectors		Buyer Motivations	
Europe	65%	Carbon market	48%	Resale to voluntary buyers	83%
North America	35%	Energy	35%	Corporate social responsibility	10%
		Retail product market	8%	Anticipation of direct regulation	1%

Notes: Based on responses from 62 suppliers. Percent values are based on the volumes associated with individual questions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Projects based in **Kenya** received prices near that ideal threshold, as the average price for the 1.1 $MtCO_2e$ offsets transacted in that country was $7.3/$tCO_2e$, reaching a total value of more than $8 million – the most in the region. These projects protected more than 217,000 hectares in 2013. Wildlife Works' Kasigau Corridor REDD project was the first project to be issued VCUs for REDD under VCS, and a roster of big-name international companies purchase offsets from the project, including Microsoft and Coca-Cola.

In early 2014, a project in the Nyanza and Western Provinces in Kenya became the first to earn offsets under the VCS' sustainable agriculture methodology. The Kenya Agricultural Project recruited 60,000 farmers on 45,000 hectares to, for the first time, monitor their soil carbon – a quantification that allows them to bring those metric tons of sequestered carbon to market. The World Bank's BioCarbon Fund committed to purchasing 150,000 tonnes of emissions reductions, estimated at $600,000, generated by the project between 2009 and 2016.

In March, the Althelia Climate Fund agreed to a $10 million investment in the Taita Hills project, which will cover most of the forest area in the Kenyan wilderness outside of Tsavo National Park, one of the largest national parks in the world. The program will generate REDD+ offsets from protection of the forest and savannah. The project differs from the Kasigau project in that Wildlife Works developed an avoided conversion of grasslands system methodology that facilitates evaluation of a landscape in its entirety, not just forests.

On the compliance side, Africa has been overshadowed as a potential host of carbon offset projects under the Kyoto Protocol's CDM. But the European Union instituted a ban on CDM offsets from non-LDCs (least-developed countries) registered post-2012, a move that largely pushed traditional CDM heavyweights such as China and India out of the market. Project developers saw opportunity for Africa-based projects in this change, but less than 3%, or 246 CDM projects, are based in the region, and A/R CDM projects made up only 1% of Africa's transactions last year.

South Africa's proposed carbon tax – the only pending national compliance carbon market on the continent – dealt with another delay as the program's start was pushed back to 2016. But a policy paper released early in 2014 gave insight to the offset component of the program. The paper carves out a strong role for offsets – including forestry – developed under VCS, Gold Standard, CCB, and CDM that will be eligible for use by compliance entities as long as the project passes the scrutiny of the Designated National Authority.

Compliance entities may use offsets to cover up to 10% of their emissions under the carbon tax, generating a potential demand of 30 $MtCO_2e$, according to an analysis by project developer Camco Clean Energy. Though the potential is significant, some market participants are waiting to see how the policy will play out before making any investment decisions.

8.3 Asia: Indonesia Displaces Brazil as Top Deforester

The fight to save Asia's forests starts in Indonesia, which in 2013 displaced Brazil as the country with the highest rate of forest loss. Facing pressure from NGOs and consumers, major palm oil suppliers such as Asian Agri and Wilmar[1] committed to new steps to eliminate deforestation from their supply chains, many of which can be traced to the continent. Meanwhile, Indonesia and other Asian countries ramped up their REDD+ readiness efforts in hopes of tapping into the millions of dollars earmarked by Norway and multilateral funds to stop deforestation.

Asia-based forestry and land-use transaction volumes declined nearly 40% to 2.8 $MtCO_2e$ in 2013. Due to the lower volumes, the total value of Asia-based forestry offsets fell 34% to $21 million although the average price paid for the offsets increased by 8% to $7.6/$tCO_2e$.

A/R projects accounted for two-thirds of the forest carbon offsets transacted from Asia-based projects last year. One of the largest A/R projects in the region is belongs to the Livelihoods Fund , an investment firm funded by European companies to finance agroforestry, mangrove restoration, and rural energy projects. The fund's Yagasu project is located on the northern coast of Sumatra, where a 2004 tsunami killed 170,000 people. Reforestation – particularly of coastal mangroves – in Indonesia and other Southeast Asian countries is the first line of defense against the hurricanes and typhoons increasing in intensity with climate change.

Given the increasing focus on deforestation in Asian

[1] Wilmar, "No Deforestation, No Peat, No Exploitation Policy," Dec. 5, 2013. Available at: http://www.wilmar-international.com/wp-content/uploads/2012/11/No-Deforestation-No-Peat-No-Exploitation-Policy.pdf

Table 22: Asia by the Numbers, All Markets, 2013

Land and project area			
Total forest area*	547 million hectares		
Carbon project area	0.2 million hectares		
# projects represented in 2013	12		
Market Snapshot			
Year Document	2011	2012	2013
Volume supplied**	2.2 Mt	4.6 Mt	2.8 Mt
Average price	$6.7/t	$7/t	$7.6/t
Value	$6 M	$32 M	$21 M
Volume purchased domestically	0.3 Mt	0.3 Mt	0.1 Mt

Notes: **Volume supplied is the number of offsets sold from projects based in Asia while volume purchased domestically is the number of offsets purchased by buyers based in Asia (from projects based anywhere in the world).

Source: Total forest area from FAO 2010; All other data from Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

countries, REDD+ initiatives gained traction in the region. REDD accounted for a 22% market share in 2013 after holding less than 1% of the market in 2012.

Forest carbon offset projects protected more than 1.8 million hectares in **Indonesia**, according to Ecosystem Marketplace's survey. But that would be the tip of the iceberg in a country featuring 90 million hectares of forests. Indonesian officials aim to reduce the country's GHG emissions 41% by 2020 – a goal that will require massive forest protection efforts, with an estimated $5 billion price-tag.

The magnitude of the deforestation challenge in Indonesia captured the attention of the international community. Norway pledged $1 billion in May 2011 to finance Indonesia's efforts to protect its forests. The financing agreement between Indonesia and Norway included a two-year moratorium on new logging in Indonesia scheduled to end in May 2013, but extended through 2015. Indonesia created a REDD+ Task Force that contributed to strengthening the rights of indigenous peoples to the forests and developing a new licensing system and a process for reconciling conflicting land-use maps across different sectors and ministries.

Outgoing President Susilo Bambang Yudhoyono established the REDD+ Agency – the first national-level REDD+ body in the world – in September 2013 and named Heru Prasetyo to head it in January. Prasetyo is tasked with developing a national strategy for REDD and other changes in land use that require a complete restructuring of not just the country's forest sector, but its agricultural economy.

"We've spent 50 years developing this economy, and if we simply stop producing palm oil, we will be taking a massive economic hit, and production will just go elsewhere," he says. *"So we have to engineer a land swap. This means identifying degraded land that could be used for palm oil and trying to see if there is a way to persuade the people who have palm-oil concessions to switch over."*

REDD+ preparations are also proceeding elsewhere in Asia. In May 2014, **India** – which accounts for about 5% of global GHG emissions – released a draft national REDD+ policy that provides a roadmap for implementation of REDD+ projects. The REDD+ program could capture around one billion tonnes of carbon dioxide over the next three years, while providing significant financial incentives such as monies that flow to local communities, according to the draft. Ecosystem Marketplace tracked less than 0.1 $MtCO_2e$ transacted in India in 2013, a steep decline from the 2.7 $MtCO_2e$ India-based suppliers transacted the previous year, although the $6.7/$tCO_2e$ average price remained constant.

In July 2013, **Vietnam** entered the second phase of the UN-REDD Programme, financed by a $30-million cash infusion from Norway and scheduled to last through the end of 2015. The second phase features wide-scale implementation of results-based REDD+ activities by thousands of land users across six pilot provinces: Lam Dong, Ca Mau, Binh Thuan, Ha Tinh, BacKan, and Lao Cai.

Japan is home to the original Kyoto Protocol, but the country dropped out of the second phase of the program and abandoned its plans to reduce GHG emissions to 25% below 1990 levels. Instead, Japan aims to keep its emissions from rising more than 3% above that year's levels – a change instigated largely by the country's decision to shutter its nuclear power

Table 23: Asia: Transacted Forest Carbon Offset Types and Buyers, All Markets, 2013

Top Transacted Forest Carbon Offset Types, 2013					
Project Type		Project Stage		Standard Use	
A/R	67%	Project Design Document	66%	VCS	97%
REDD	22%	Issued	33%	J-VER	3%
IFM	11%	Validated	1%		
Top Forest Carbon Offset Buyer Types, 2013					
Buyer Locations		Buyer Sectors		Buyer Motivations	
Europe	95%	Finance/Insurance	82%	Pursuit of climate-driven mission	75%
Asia	3%	Carbon Market	6%	To demonstrate climate leadership	20%
North America	1%	Other	5%	Corporate social responsibility	2%

Notes: Based on responses from 62 suppliers. Percent values are based on the volumes associated with individual questions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

plants after the 2011 Fukushima disaster in a move that could increase fossil fuel use.

However, the government created a new streamlined voluntary standard: the J-Credit System, which stems from the Domestic Credit System (Japan's Domestic CDM) and the J-VER (Japan's verified emissions reduction) System. The J-Credit Scheme contains about 60 new projects after one year, although the certified offsets listed on the official site amounted to only 30,000 tonnes from 11 projects. In addition, some projects transferred from the old systems (142 projects from Domestic CDM and 59 projects from the J-VER). About 70% of J-VER offsets were issued from the forestry sector, almost all of them from IFM projects.

J-VER offsets are the most expensive forest carbon offsets in the world. Though IFM offsets are popular for neutralizing the emissions of a specific event or as part of a portfolio, Japanese companies typically buy such small volumes of domestic forestry offsets that the high price doesn't matter, says Aya Marabini, a researcher at Japan's Overseas Environmental Cooperation Centre. Japanese companies turn to less expensive CERs from renewable energy projects for the bulk of the offset purchases needed to meet carbon neutral or other commitments.

China quickly became the second-largest player in the global carbon markets – behind the EU ETS – after implementing seven pilot trading programs and preparing for a national system to launch in 2016. Offsets exist as a compliance option in China's trading programs for up to 5-10% of obligations, although the majority of offset trades are unlikely to occur until 2016.[2] So far, forestry offsets are allowed only in Hubei's trading program and are likely to be eligible in Chongqing.

In June 2012, the rules for China's project-based offset market were released, with the offsets named CCERs, short for China Certified Emissions Reductions (CCER). As of March 2014, four new non-CDM methodologies – carbon sequestration, bamboo forestation, IFM, and sustainable grasslands – target emissions reductions from forestry and land use. But it will take time for forestry projects to materialize, the paper predicted.

"I want to see more methodologies on the forest and agriculture sectors because much more attention is now on industry and the energy sector," says Wen Wang, Scientific Director, Climate Economics Professor, Paris-Dauphine University (Climate Economics Chair). "I want to see more innovative methodologies to scale up mitigation."

[2] Climate Economics Chair, CDC Climat, "Overview of Climate Change Policies and Development of Emissions Trading in China," March 2014.

South Korea plans to bypass China's initiative and become the world's second-biggest carbon emissions trading scheme in early 2015 with the launch of its nation-wide ETS. The small country is currently one of the world's top 10 carbon producers[3] and the top Korean emitters must participate, meaning an estimated 66% of Korea's total emissions will be included in the ETS.[4] However, only 10% of offsets may be surrendered out of the total provided during the first compliance period – and the role of forestry offsets in particular remains uncertain.

8.4 North America: California's Guiding Light for Markets

Select US states and Canadian provinces are moving ahead of their federal governments by implementing carbon pricing programs. In 2013, those efforts took a major step forward with the launch of **California**'s cap-and-trade program. As of now, the program only allows domestic forestry offsets, but California could become the first regulatory program to incorporate international REDD offsets if the state's Air Resources Board (ARB) approves the avoided deforestation offset protocol.

Last year, North American project developers transacted 2.5 $MtCO_2e$ at a value of $20 million. The majority of these tonnes sold to North American-based buyers either subject to carbon regulation or anticipating it.

Forestry transactions declined 63% from 2012 despite the onset of California's compliance market amid delays in the ARB's assessment of offset projects. Developers reported ARB review of their projects routinely took six to nine months and sometimes longer.

"The process has been extremely frustrating," says Kevin Townsend, Chief Commercial Officer of Blue Source, which develops forestry and other types of carbon offset projects. "It's very, very difficult as an offset project developer to get credits through that system, especially on the early action portion of the program where there are no regulatory constraints around the timing by which ARB must complete its review. We continue to wait for credits that have been in ARB's court for a very long time. The program has been designed to incorporate expert verifiers and registries certified to ensure the integrity of offsets, and in our view ARB staff should rely more on the work these parties do rather than trying to repeat it themselves."

Table 24: North America by the Numbers, All Markets, 2013

Land and project area			
Total forest area*	614 million hectares		
Carbon project area	7 million hectares		
# projects represented in 2013	30		
Market Snapshot			
Year Document	2011	2012	2013
Volume supplied**	6.9 Mt	6.7 Mt	2.6 Mt
Average price	$10.4/t	$9.8/t	$8.6/t
Value	$70 M	$49 M	$22 M
Volume purchased domestically	6.0 Mt	5.7 Mt	3.3 Mt

Notes: **Volume supplied is the number of offsets sold from projects based in North America while volume purchased domestically is the number of offsets purchased by buyers based in North America (from projects based anywhere in the world).

Source: Total forest area from FAO 2010; All other data from Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

However, the average price of forest carbon offsets in the region only dropped 12% to $8.6/$tCO_2e$ as California's $10.7/$tCO_2e$ reserve price for allowances in 2013 made carbon offsets a comparatively cost-effective compliance option.

California's forestry protocol was the most widely used, with nearly 40% of forestry projects in the region developed according to those standards – not surprising given the higher prices generated for California compliant offsets. The VCS accounted for

[3] Reuters, "S.Korea increases emissions cap in proposed carbon trading scheme," 11 Sept. 2014. Available at: http://in.reuters.com/article/2014/09/11/carbon-southkorea-idINL3N0RC2N720140911

[4] International Emissions Trading Association (IETA) Business-Partnership for Market Readiness, B-PMR MISSION KOREA: Industry-to-Industry Dialogue on Emissions Trading & Market Readiness. Available at: http://www.ieta.org/assets/BPMR/SouthKorea/korea%20bpmr_summary_en.pdf

22% of standard use in the region, and the organization aims to play a major role in California's cap-and-trade program. In August, the ARB designated the VCS as an offset project registry, which allows it to facilitate the listing, reporting and verification of offset projects developed using the ARB's compliance protocols and help those offsets transition into the cap-and-trade program. VCS is the third organization to receive such a designation after ACR and CAR.

North of the US-Canada border, the **British Columbian** government dissolved the Pacific Carbon Trust (PCT) as part of a cost-saving maneuver in November 2013. However, the provincial government committed to maintaining carbon neutrality – first achieved in 2010. Public sector organizations still purchase offsets if they cannot lower their emissions to zero through other means. All provincial public-sector organizations continue to pay a $25/tCO$_2$e charge for GHG emissions to encourage efforts to reduce emissions and energy costs.

PCT's Pacific Carbon Standard defined the requirements for developing offsets to be recognized as Pacific Carbon Units. The standard was originally exclusively owned and transacted by PCT, but the units are now transacted by other parties for the voluntary market, and the standard accounted for a 6% share of the North American market in 2013.

Quebec officially linked its cap-and-trade program with California's program and the two jurisdictions are moving toward their first official joint auction of allowances in November 2014. Though regulated entities in Quebec could now theoretically purchase ARB-approved forest carbon offsets, demand for offsets in the Canadian province is not expected to pick up until fuel distributors are included under the cap-and-trade program starting next year.

Outside of the nascent subnational compliance markets in the region, North American buyers continued to purchase forest carbon offsets as part of voluntary emissions reductions efforts. Many buyers took a "portfolio approach" to their offsetting programs that involved mixing large volumes of low-priced offsets in the landfill methane category with more expensive offsets from forestry, but purchases of these more charismatic and marketable offsets were often limited to 10-20% of these portfolios at most.

About 1 MtCO$_2$e of forestry offsets – many of which were eligible for California's compliance offset market – were sold to North American voluntary buyers. Overall, however, demand for voluntary offsets was somewhat constrained by buyers redirecting a portion of their CSR dollars toward non-carbon offset initiatives in the renewable energy and efficiency space.

Table 25: North America: Transacted Forest Carbon Offset Types and Buyers, All Markets, 2013

Top Transacted Forest Carbon Offset Types, 2013					
Project Type		Project Stage		Standard Use	
IFM	62%	Verified	51%	California Compliance	39%
A/R	26%	Issued	13%	VCS	22%
SALM/Agroforestry	11%	Undergoing validation	7%	ACR	14%
Top Forest Carbon Offset Buyer Types, 2013					
Buyer Locations		Buyer Sectors		Buyer Motivations	
North America	98%	Energy	49%	Resale to compliance end users	68%
Europe	2%	Retail product market	14%	Anticipation of direct regulation	15%
		Other	14%	Corporate social responsibility	7%

Notes: Based on responses from 62 suppliers. Percent values are based on the volumes associated with individual questions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

California's Compliance Carbon Market and Forest Offsets 101

The basics

California's compliance cap-and-trade market under AB 32 – the state's landmark greenhouse gas emissions reduction legislation – went into effect on January 1, 2013. About 350 entities are capped, and they may purchase offsets to cover up to 8% of their compliance obligation. Three AFOLU project types are currently accepted for use in California: IFM, avoided conversion, and urban forestry. The ARB plans to consider a REDD protocol that would accept international avoided deforestation offsets from Acre, Brazil and Chiapas, Mexico into the program.

2013-2014 developments

Actual offset transactions for California's program materialized slowly in 2013. The ARB – the agency tasked with overseeing the state's cap-and-trade program and its offset component – finally issued the first forest offsets in November 2013. Two IFM projects generated the first offsets: the California-based Willits Woods project developed by Coastal Ridges and the Maine-based Farm Cove Improved Forest Management Project from Finite Carbon and the Downeast Lakes Land Trust.

The ARB issued more than 6 MtCO2e of offsets under its forestry protocol as of early November 2014. The urban forestry protocol has produced no carbon offsets for the California program to date and is unlikely to do so because the protocol is impractical for the large volumes necessary to make projects worthwhile, according to developers.

In July 2014, the ARB officially amended its rules for forest carbon projects by shifting the invalidation risk for forestry offsets to the buyers. This represented a change from the previous rule that placed the risk of buyers' liability – the potential for offsets to be invalidated in circumstances such as outright fraud or a significant calculation error – on the sellers. The ARB decided to emphasize consistency in its treatment of the invalidation risk across all the project types accepted into its program.

Challenges

As it stands, the California program creates challenges for forest carbon project developers. The state's compliance regulations can be too cumbersome and expensive for anything other than large IFM projects; IFM projects accounted for the largest share of the North America market at 62%. Rising verification costs preclude small landowners – already discouraged by the lengthy issuance delays – from participating in the program, and California's 100-year permanence requirements for forestry projects serves as another deterrent.

"Landowners are sitting outside of this market, being somewhat skeptical, wondering if they want to tie up their land for the next 100 years and bind their children and grandchildren in order to get a little bit of money upfront," says Finite Carbon President Sean Carney. "They don't see it as a functional marketplace yet. I think we all have a little work to do to demonstrate to them that this is a real opportunity."

The future

North American project developers are eager to deliver forest carbon offsets to a California market projected to face a supply shortage starting as early as next year, when transportation fuels are phased into the regulatory program. One partial solution to the expected supply crunch could be for California to become the first compliance program to welcome international REDD offsets. The ARB publicly committed to consider REDD offsets that come from reduced deforestation at the larger scale of jurisdictions rather than individual projects, although the agency refused to commit to a timeline.

"The world is watching California to see if California is going to implement REDD or not," says Daniel Nepstad, Senior Scientist and Executive Director of the Earth Innovation Institute.

VCS officials have high hopes for the potential inclusion of international REDD offsets in the California program using the VCS jurisdictional and nested REDD+ approach, which features the first framework for accounting and crediting REDD+ programs implemented at either the national or subnational (state) level. The framework also establishes a pathway for existing and new subnational jurisdictional activities and projects to be integrated or "nested" within broader jurisdictional REDD+ programs.

8.5 Oceania: Policy Reversal Dampens Market

Oceania's 2012 market growth proved to be a temporary blip on the carbon market radar as the Australian federal government followed through on a threat to repeal its carbon pricing program this year. Oceania, unlike other regions, appears to be less than enamored with the idea of carbon markets these days, as even New Zealand, home of the second-oldest ETS, pulled out of the second phase of the Kyoto Protocol. The absence of strong compliance signals in either country could continue to dampen carbon market activity in the near term.

The overall volume of Oceania transactions declined by nearly 70% in 2013 from the more than 6 $MtCO_2e$ of forestry and land-use offsets transacted in the region in 2012. Regulated entities scaled back offset purchases under **Australia**'s Carbon Farming Initiative (CFI), the program that enabled farmers and landholders to earn offsets for reducing GHG emissions, last year as Prime Minister Tony Abbott's election in September 2013 cast doubt on the future of the country's carbon tax.

Oceania's forest carbon projects were valued at $28 million in 2013, down from $49 million in 2012. However, the average price paid for CFI offsets rose by nearly 50% to $19.8/$tCO_2e$ after the $24.2/$tCO_2e$ carbon tax went into effect in July 2012. Therefore, for the entire year of 2013, regulated entities sought out offsets as a less expensive compliance option – and sellers knew that even prices just slightly under the tax would be attractive.

The previous government planned to replace Australia's national carbon tax with an ETS linked to the EU ETS in July 2014. Instead, Abbott – whose anti-carbon tax rhetoric contributed to his electoral victory – succeeded in scrapping the carbon pricing program in July after several futile attempts with the opposition legislature then in office.

In its place, the federal government established an Emissions Reduction Fund (ERF) through which the government will pay for GHG emission reduction activities that deliver valuable co-benefits, such as improving agricultural soils and managing fires in savannah grasslands. However, offset purchases via the fund will be transacted on a competitive basis at auction, which will limit the amount of carbon offsets purchased through the program. To date, the government committed AUS $2.6 billion, which is about $1 billion more than initially pledged.

For project developers, the policy change means transitioning from selling to regulated companies to a single buyer: the Australian government, which made it clear it will be looking to reduce emissions at the lowest cost possible. Green Collar Group, a project developer with 30 forest carbon projects in Australia, says the shift will "block out" projects on the upper end of the cost curve as prices per tonne under the ERF drop to a third of the $24.2 carbon tax (or less).

Forest carbon offsets played a critical compliance role in **New Zealand**'s Emissions Trading System (NZ ETS) – the first compliance program to accept forestry offsets in 2008 – in previous years. But that role diminished once the program began accepting less expensive, international carbon offsets. In 2012, Ecosystem Marketplace tracked about 200,000 tonnes of carbon offsets transacted for the NZ ETS at an average price of $7.9/$tCO_2e$, but project developers reported no transactions specifically related to the ETS in this year's survey. While forest New Zealand Units (NZUs) constituted 65% of the units surrendered for compliance under the program in 2010, that amount fell

Table 26: Oceania by the Numbers, All Markets, 2013

Land and project area			
Total forest area*	191 million hectares		
Carbon project area	0.9 million hectares		
# projects represented in 2013	11		
Market Snapshot			
Year Document	2011	2012	2013
Volume supplied**	1.8 Mt	6.2 Mt	1.9 Mt
Average price	$12.4/t	$8/t	$14.5/t
Value	$15 M	$49 M	$28 M
Volume purchased domestically	0.8 Mt	5.7 Mt	1.5 Mt

Notes: **Volume supplied is the number of offsets sold from projects based in Oceania while volume purchased domestically is the number of offsets purchased by buyers based in Oceania (from projects based anywhere in the world).

Source: Total forest area from FAO 2010; All other data from Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Table 27: Oceania by the Numbers, All Markets, 2013

Top Transacted Forest Carbon Offset Types, 2013					
Project Type		Project Stage		Standard Use	
REDD	81%	Issued	95%	CFI	85%
IFM	11%	Undergoing validation	5%	Internal/proprietary	99%
SALM/Agroforestry	4%			VCS	6%
Top Forest Carbon Offset Buyer Types, 2013					
Buyer Locations		Buyer Sectors		Buyer Motivations	
Oceania	95%	Carbon Market	46%	Resale to compliance end users	87%
North America	3%	Energy	41%	To demonstrate climate leadership	9%
Europe	2%	Retail product market	3%	Resale to voluntary end users	24%

Notes: Based on responses from 62 suppliers. Percent values are based on the volumes associated with individual questions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

to a low of 0.3% in 2013, compared to the more than 95% of international offsets submitted for compliance last year, according to government data.

The influx of international offsets instigated a major dispute between the government and the Forest Owners Association about the government's alleged failure to sufficiently back domestic activities to prevent deforestation. In response, the Labour Party proposed legislation requiring 50% of the carbon offsets surrendered for compliance be NZUs, while the Green Party proposed scrapping the ETS entirely in favor of an emissions tax. However, the fate of both proposals is uncertain since the National Party retained control of the government in October 2014. Amid the policy uncertainty, only 25,000 tonnes of voluntary carbon offsets transacted in 2013 in New Zealand at an average price of $7.9/tCO$_2$e.

Not surprisingly, project developers utilized the CFI standard for the bulk (85%) of Oceania forest carbon offsets, followed by 9% of forestry offsets developed under internal/proprietary standards and 6% under the VCS.

In Australia, Ecosystem Marketplace tracked six VCS forestry projects that transacted just over 0.1 MtCO$_2$e. But the VCS determined these projects could no longer generate offsets under the voluntary standard once Australia decided to count forest management toward its emissions reduction target beginning January 1, 2013, because of double counting. VCS projects that issued offsets before that date retain those offsets, but cannot issue offsets for emission reductions after that date, unless the government cancels an Assigned Amount Unit to guard against double counting – an unlikely proposition. However, the government will permit Australian-based projects approved under the VCS to shift to the ERF, allowing projects protecting native forests on private land to continue to deliver emissions reductions and biodiversity benefits.

8.6 Europe: Domestic Programs in UK, Italy Expand

European buyers are consistently the major purchasers of forest carbon offsets from projects around the world, procuring the vast majority of offsets transacted from projects in Asia and Africa in 2013 (and ***all*** offsets from projects located within Europe). The region's share of the global market on the supply side remains small, although certain voluntary domestic programs could be ramping up activity in the future.

Projects in Europe transacted 0.5 MtCO$_2$e, more than a 100% increase from 2012, as buyers in the United Kingdom, Italy, and other countries tapped into domestic IFM and agroforestry offsets. The overall value of Europe-based projects was $8 million. Average prices on the continent were $14.5/tCO$_2$e – almost three times the global average forest carbon prices, despite the 65% drop in price from $41/tCO$_2$e in 2012 – because many projects in Europe sell into mostly insular domestic markets.

Voluntary purchases of forest carbon offsets produced within Europe are limited because parties to the Kyoto

Protocol sometimes count carbon sequestration in forests against their national emission reductions targets, creating a double counting conundrum. However, small transaction volumes were reported under programs such as the UK's Woodland Carbon Code (WCC), for which we tracked more than 66,000 tonnes of forest carbon offsets developed according to the WCC standard in 2013.

The **UK** Forestry Commission launched the WCC in 2011 as a domestic voluntary carbon offset program to incentivize local action on forestry. The WCC is the standard for woodland creation projects in the UK that generate verifiable Woodland Carbon Units (WCUs) – measurable amounts of CO_2 removed from the atmosphere by growing trees. Under the program, companies can establish woodlands on their own land or buy the rights to the carbon sequestered in woodlands established by others.

Since April 2013, UK companies have been required to report their gross CO_2 emissions. However, the UK Department for Environment, Food and Rural Affairs allows UK companies to claim 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). The WCC Registry went live on the Markit Registry last year and originally listed only offsets already sold.

Starting in March 2014, however, Markit began listing Pending Issuance Units (PIUs) that represent promises to deliver woodlands emissions reductions in the future once the trees grow and carbon sequestration is verified. This allows potential buyers to make long-term offsetting plans.

A total of 201 projects were registered under the WCC as of September 30, 2014. These registered projects cover 15,389 hectares of woodland and are projected to sequester 5.7 $MtCO_2e$. Eighty-nine projects estimated to sequester 1.5 $MtCO_2e$ have been validated under the WCC, representing an increase of 2% in projected carbon sequestration since the previous quarter and a 55% rise since September 2013. Scotland leads the way with 47 validated projects covering 2,276 hectares expected to sequester more than 1 $MtCO_2e$.

Italy's forest carbon market is similarly inward-facing, with Italian A/R and climate-smart agriculture initiatives selling offsets to Italian buyers. In 2013, nearly 70,000 tonnes of offsets were sold from forestry projects.

Demand is driven by public-sector subnational initiatives such as the "zero emissions" Trento Province, though private sector food and beverage companies such as pasta maker Jolly Sgámbaro also offset emissions through domestic forestry projects. Because of close relationships between buyers and sellers, most forestry projects in Italy don't use carbon standards. However, a stakeholder group called Nucleo Monitoraggio has drafted an Italian Forest Code that specifies the rules for forest carbon projects going beyond Kyoto Protocol requirements. The Code is currently being considered by the Ministry of Agriculture and Forestry.

Project developers and retailers with headquarters in Europe supplied 12.9 $MtCO_2e$ last year, the most of any region, even though there are few forest carbon projects located in Europe. The vast majority of these suppliers are for-profit companies, some of which have years of experience working with companies on carbon management. At least two of them joined forces last year: **German** offset retailers Forest Carbon Group and Forest Finance Group pooled their sales operations and portfolio of forest carbon projects verified under the Gold Standard and the VCS in June 2013.

Table 28: Europe by the Numbers, All Markets, 2013

Land and project area			
Total forest area*	196 million hectares		
Carbon project area	<0.1 million hectares		
# projects represented in 2013	19		
Market Snapshot			
Year Document	2011	2012	2013
Volume supplied**	0.6 Mt	0.3 Mt	0.5 Mt
Average price	$14.2/t	$41/t	$14.5/t
Value	$2 M	$11 M	$8 M
Volume purchased domestically	9.4 Mt	11.4 Mt	9.2 Mt

Notes: **Volume supplied is the number of offsets sold from projects based in Europe while volume purchased domestically is the number of offsets purchased by buyers based in Europe (from projects based anywhere in the world).

Source: Total forest area from FAO 2010; All other data from Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

Table 29: Europe: Transacted Forest Carbon Offset Types and Buyers, All Markets, 2013

Top Transacted Forest Carbon Offset Types, 2013					
Project Type		Project Stage		Standard Use	
SALM/Agroforestry	63%	Issued	50%	None	73%
A/R	36%	Undergoing validation	26%	Woodland Carbon Code	13%
		Validated	24%	VCS	7%
Top Forest Carbon Offset Buyer Types, 2013					
Buyer Locations		Buyer Sectors		Buyer Motivations	
Europe	100%	Retail product market	33%	Pursuit of climate-driven mission	44%
		Finance/insurance	29%	Resale to compliance end users	44%
		Energy	17%	Corporate social responsibility	10%

Notes: Based on responses from 62 suppliers. Percent values are based on the volumes associated with individual questions.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

9. Looking Ahead: Market Projections

9.1 Developer Predictions: Realism Reigns

The forest carbon market exists in a constant state of evolution, with the policy and technical requirements governing these projects often shifting significantly from the time when market participants complete their transactions to the time they respond to this report survey, and to the time this report is published. These fast-moving developments make it difficult to base future projections for market performance on real-time forest carbon offset pricing.

Nevertheless, Ecosystem Marketplace once again asked suppliers to "guesstimate" market size for the current and future years. Their views provide valuable insight into how suppliers of forest carbon offsets intend to navigate challenges in the voluntary and compliance-driven offset markets.

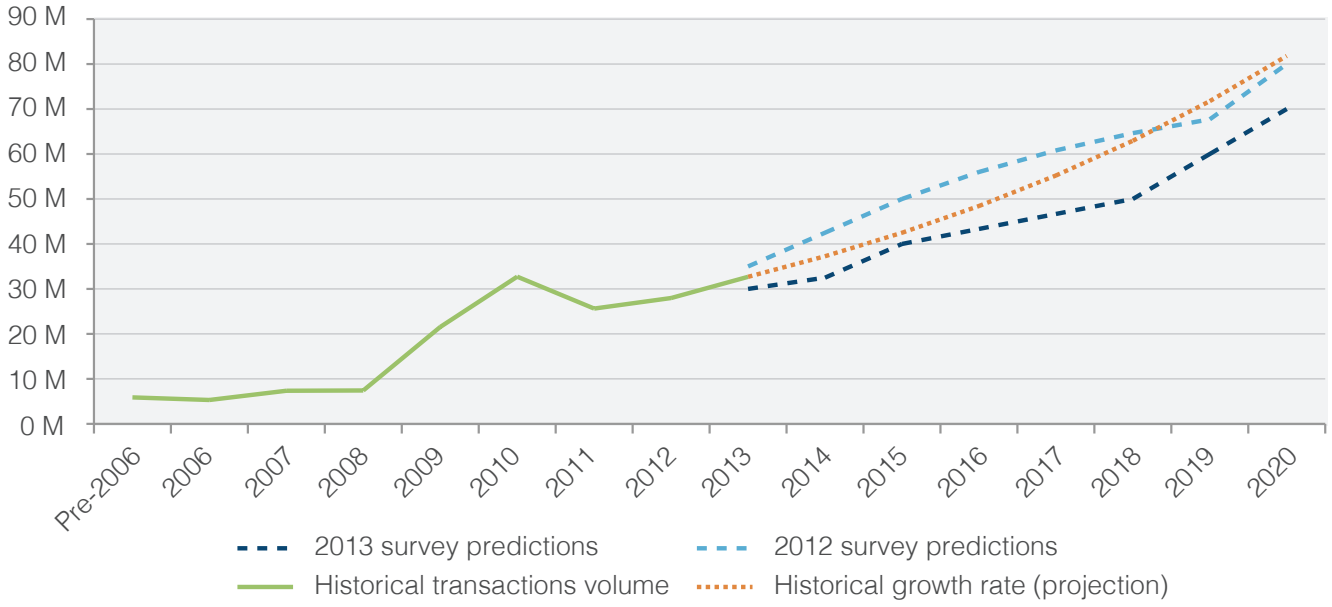
Figure 55 shows that project developers' predictions of transaction activity become more conservative in the face of policy challenges and somewhat fickle voluntary demand. This year's survey respondents estimated that the market would transact 30 $MtCO_2e$ in 2013 – a bit under the actual volume of 32.7 $MtCO_2e$.

On a long-term basis, however, they foresee a marketplace in 2020 that is significantly smaller than prior years' respondents predicted. While two years ago market participants projected 93 $MtCO_2e$ of forest carbon transactions in 2020, that projection has since tempered: 2012's respondents predicted an 80 $MtCO_2e$ forest carbon market by the end of the decade, and 2013 respondents lowered their expectations even further, to 70 $MtCO_2e$ by 2020.

Market participants' projections are now actually more conservative than the historical market growth rate of 14% – the year-on-year average growth between 2010 and 2013. If this growth were to continue at a steady pace, market size would be 81.8 $MtCO_2e$ in 2020.

Survey respondents in 2014 were cautiously optimistic about potential demand signals from jurisdictional compliance programs such as California's cap-and-trade system, voluntary initiatives such as the UK's Woodland Carbon Code (WCC), and pay-for-performance programs such as the FCPF and the BioCarbon Fund Initiative for Sustainable Forest Landscapes. Compliance markets in emerging economies such as China and South Africa as well as the

Figure 55: Project Developers Predictions, All Markets, 2012-2013



Notes: Based on predictions provided by 73 survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

ascent of REDD+ in international policy discussions also create the possibility of larger-scale compliance demand for forest carbon offsets – though these markets would take several years to ramp up.

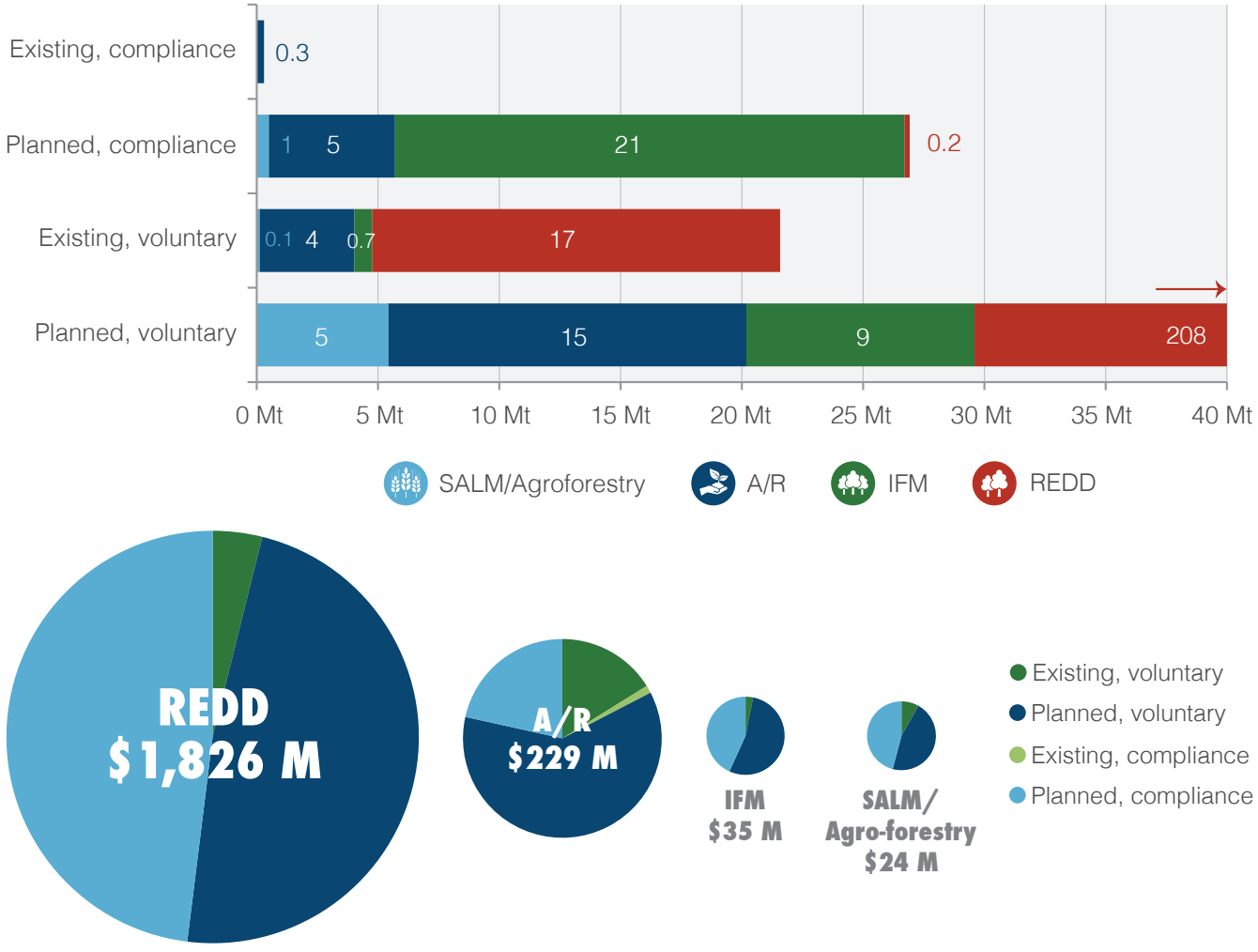
Though project developers and retailers reported that only 11% of voluntary buyers were new to the forest carbon markets in 2013, market participants continue to try to drum up private-sector interest in offsetting. They see potential in the fact that dozens of corporations now have internal carbon pricing that is driving their sustainability decisions and that companies now consider climate change risks to be more immediate, likely, and direct than they did just a few years ago (see section 6, Buyers), perhaps lending to their sense of urgency to neutralize their emissions.

9.2 Remaining Portfolios and Pipeline: Tempering Expectations

Developers retained about 26 $MtCO_2e$ of unsold offsets in their portfolios at the end of 2013, which would have added $119 million to the overall market value if those offsets had transacted at 2013 prices. REDD offsets constituted the bulk of the unsold portfolio at 17 $MtCO_2e$, partly owing to the refusal of some developers to sell below what they established as the minimum price for their offsets.

However, about 9 $MtCO_2e$ of unsold offsets were from IFM projects, mainly in North America where project developers spent much of last year waiting

Figure 56: Developer-Estimated Portfolio and Pipeline, All Markets



Notes: Based on the unsold portfolios of 53 survey respondents and the pipelines of 75 survey respondents.

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014.*

on California regulators to provide guidance on transitioning voluntary tonnes into California's compliance program with substantially higher prices. IFM offsets may have also been temporarily stranded by the abandonment of Australia's carbon pricing program and the uncertainty about the scope of the ERF that replaced it.

Given the extensive supply of REDD offsets in the marketplace, the pipeline of projects planned in this category declined significantly. In 2012, project developers anticipated developing 1,222 $MtCO_2e$ REDD offsets over the next five years, but that pipeline shrunk to 208 $MtCO_2e$ for 2014-2019, as developers moderated their expectations about demand.

The pipeline for A/R and SALM projects also narrowed considerably compared to last year's planned activity. However, the compliance pipeline for IFM projects grew substantially, with 21 $MtCO_2e$ planned for compliance programs, as California's cap-and-trade program more than doubles in size in 2015 with the inclusion of transportation, natural gas, and other fuels.

IFM project developers reportedly contracted 78% of their existing portfolio in 2013, unsurprising in the face of compliance-related demand for these projects. A/R projects contracted about 45% of their target sales volumes, while SALM placed 78% of these offsets. REDD developers sold 60% of their "available" or target portfolio, with some developers succumbing to cash-flow issues.

Less ambitious expectations, as well as the price decline for forest carbon offsets, had a visible influence on the projected value of developers' 5-year pipeline, which shrunk to $2.3 billion, or less than 20% of the $10.7 billion projected value reported in last year's survey.

9.3 Looking Ahead: 2014 and Beyond

Estimates of existing and future market needs abound, ranging from millions to billions of dollars over the next 10-15 years, as seen in Table 30 and throughout the report. What's clear is that the cost estimates of what is needed to stop deforestation and reduce land-use emissions far outweighs the current capacity of the forest carbon markets, absent any regulatory signals or complementary market opportunities.

What policy developments could correct the supply-demand imbalance that currently exists in the forest carbon markets? Some market participants point to the New York Declaration on Forests, which – with its commitments from so many of the largest stakeholders to work to cut forest loss in half by 2020 and completely end it by 2030 – could spur increased demand for land-based emissions reductions. However, only about $1 billion in confirmed financial pledges are attached to the declaration to date, falling far short of estimates of the funding needed to achieve such admirable goals.

The UNFCCC could provide momentum for forest carbon project development if negotiators meeting in Lima, Peru in December and Paris in 2015 reach an accord that recognizes the importance of avoided deforestation as a climate solution and makes good on concrete financing mechanisms to underpin these efforts. However, the role of the carbon markets – if any – remains undefined in the world of Intended Nationally Determined Contributions,[17] which are expected to form the basis of an international climate agreement. And some stakeholders remain skeptical the UNFCCC can overcome the stalemate experienced in previous climate talks to achieve and implement an agreement.

The potential inclusion of REDD+ at the jurisdictional level in California's cap-and-trade program for carbon emissions has game-changing potential. State regulators have already sent encouraging signals about forest conservation projects, which now constitute the largest share of issued offsets in the program and have publicly committed to consider sector-based REDD offsets. However, California regulators have not established a timeframe for the possible incorporation of these offsets into their compliance market. The current rules of the program firmly restrict the use of international offsets, meaning California's market will be unable to absorb a sizable portion of the offset surplus that currently exists unless regulators amend the offset rules.

Aside from California, compliance-driven demand could rise as a result of emerging carbon markets in countries such as South Africa and China, particularly if the latter implements a national ETS in 2016, as expected. But the extent to which forestry offsets will be welcomed into the program is another source of uncertainty, although two of the seven pilot programs in China already include forest offsets.

[17] Ecosystem Marketplace, "Role of Carbon Markets Still Evolving in Run-up to Peru Climate Talks," http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=10558&section=news_articles&eod=1

Amid such significant policy uncertainty, the major stakeholders in the forest carbon markets – developers, standards, registries, analysts, consultants, communities, and buyers – are focusing on initiatives within their control. The VCS, responding to feedback about the complexities of its JNR framework, for example, streamlined the model in a manner designed to ensure robust accounting of emissions reductions while simplifying the process for JNR programs to access the FCPF's Carbon Fund. And various project developers are experimenting with carbon accounting in wetlands, grasslands, bamboo plantations, and other landscapes new to the carbon markets but with great potential to reduce land-use emissions.

These stakeholders could also work to ensure that commodity supply chain initiatives to end deforestation are properly aligned with avoided deforestation incentives in the carbon markets. Mechanisms for such an alignment currently do not exist, but are a topic of discussion among some of these parties, who see these efforts moving in the same, appropriate direction, but on separate, unaligned tracks.

At a minimum, stakeholders acknowledge the need to improve the messaging about forest carbon projects, if for no other reason than to attract new buyers to a market in real need of an expanded customer base. But stakeholders must also be ready to adapt to a rapidly changing environment, whether that translates into increased government-to-government transactions, further momentum along the pay-for-performance path or an expanded shift from voluntary to compliance-driven project activities. Regardless of the exact nature of the evolution, the forest carbon markets are undoubtedly turning over a new leaf.

Table 30: Various Estimates of Market Reality and Future Needs, 2013 and Beyond

$192 M	$119 M	$274 M	$0.9 - $1.6 B	$2.3 B
2013 market value: ACTUAL	Value of unsold offset portfolio	2013 value if developers had received desired price	Developer estimates to fully support existing projects	Value of developers' 5-year pipeline (if sold at 2013 prices)

Source: Forest Trends' Ecosystem Marketplace. *State of the Forest Carbon Markets 2014*.

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Blue Source, LLC	www.bluesource.com
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Carbon Advantage	www.carbon-advantage.com.au
Carbon Forest Services Ltd	www.carbonforestservices.co.nz
Carbon Green Africa	www.carbongreenafrica
Carbon Tanzania	www.carbontanzania.com
Carbone Boreal	carboneboreal.uqac.ca/home/
Carbonfund.org Foundation, Inc.	www.carbonfund.org
CarbonSinkGroup S.r.l	www.carbonsink.it/
Cassinia Environmental	www.cassinia.com
Ceres EnvE	www.ceres-tr.com
China Green Carbon Foundation	www.thjj.org
City of Arcata	Cityofarcata.org
Clean Air Action Corp	TIST.org
ClearSky Climate Solutions	www.clearskyclimatesolutions.com
Climate Bridge Ltd.	www.climatebridge.com
Climate Friendly	www.climatefriendly.com

CO2OL / Forest Finance Service GmbH	www.co2ol.de
Community Forests International	www.forestsinternational.org
Compensation International Progress S.A.	www.ciprogress.com
Cooperativa AMBIO	www.ambio.org.mx
COSPE	www.cospe.org
Credible Carbon	www.crediblecarbon.com
Delta Institute	www.delta-institute.org
Eco2librium	www.eco2librium.net
Ecomapuá Conservação Ltda.	www.ecomapua.com.br/home_ingles.html
EcoPlanet Bamboo	www.ecoplanetbamboo.com
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Ecosystem Services LLC	www.ecosystemservicesllc.com
Ecotierra	www.ecotierra.co
EKO Asset Management Partners	www.ekoamp.com
Etc Terra	www.etcterra.org/en
Face the Future	www.facethefuture.com
Finite Carbon	www.finitecarbon.com
Forest Carbon Group	www.forestcarbongroup.de
Fundação Amazonas Sustentável	www.fas-amazonas.org
GFA Consulting Group	www.gfa-group.de
GREEN EVOLUTION SA	www.green-evolution.eu
Green Farm	www.greenfarmco2free.com.br
Green Resources	www.greenresources.no/
Greenfleet	www.greenfleet.com.au
Greenoxx	www.greenoxx.com
GreenTrees, LLC	www.green-trees.com
Grupo Ecológico Sierra Gorda, I.A.P. and Bosque Sustentable, A.C.	sierragorda.net/
IMEI Consultoria - Brasil Mata Viva Standard	www.brasilmataviva.com.br
Initiative Developpement	id-ong.org/
Innovative Carbon Investment Co., Ltd.	www.innovativecarbon.com.cn/
Mikro-Tek Inc.	www.mikro-tek.com
Mountain Association for Community Economic Development	www.maced.org
Mozambique Carbon Intiatives LDA	www.mozcarbon.co.mz
Municipalidad Provincial de Chanchamayo	www.munichanchamayo.gob.pe
myclimate	www.myclimate.org

Northwest Natural Resource Group	www.nnrg.org
Oceanium	www.oceaniumdakar.org/
Offsetters Climate Solutions	www.offsetters.ca
OSSEDI Malawi	www.ossedi.webbs.com
Overseas Environmental Cooperation Center, Japan	www.j-ver.go.jp/e/index.html
Permanent Forests NZ Limited	www.permanentforests.com
Peru Carbon Fund	www.perucarbonfund.com
PrimaKlima -weltweit-	www.prima-klima-weltweit.de
Pronatura México A.C.	www.pronatura.org.mx
R.Tarraubella & Asoc.	www.bonosdecarbono.com.ar
Reforest The Tropics	www.reforestthetropics.org
Shan Shui Conservation Center	www.shanshui.org
Sigma Global	www.sigmaglobalcompany.com
Socio-eCO2nomix-Global	www.vccslindia.org
Sustainable Carbon	www.sustainablecarbon.com
Taking Root	www.takingroot.org
Terra Global Capital, LLC	www.terraglobalcapital.com
The Carbon Consulting Company	www.carbonconsultingcompany.com
The Cochabamba Project	www.cochabamba.coop
The Conservation Fund	www.conservationfund.org
The Nature Conservancy	www.nature.org
The Trust for Public Land	www.tol.org
Titi Conservation Alliance	monotiti.amerisol.com/
Uyoolche AC	www.uyoolche.org
Viridor Carbon Services	Viridor.net
W. M. Beaty & Associates, Inc.	www.wmbeaty.com
Wildlife Works	www.wildlifeworks.com
Woodland Trust	www.woodlandtrust.org.uk
Yorkshire Dales Millennium Trust	www.ydmt.org

These forest carbon offsets suppliers responded to Ecosystem Marketplace's survey in 2014 and indicated that they would like to be listed in the report directory.

This is not a comprehensive list of all forest carbon offset suppliers.

Sponsors

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.

EcoPlanet Bamboo (www.ecoplanetbamboo.com) is leading the industrialization of bamboo as a viable and environmentally attractive alternative fiber for timber manufacturing industries. Our conversion of degraded land into certified bamboo plantations is coupled with innovative technology development to provide bamboo based solutions for products and markets that currently contribute to the deforestation of our world's natural forests.

With plantation operations in Central America, Southern and West Africa, and expansion into Southeast Asia underway, we are providing a tangible solution for the need for a sustainable fiber to meet the consumer products demanding by a growing global population. In addition to providing a secure and long term source of fiber, these plantations sequester and store vast volumes of atmospheric carbon dioxide, restore degraded soils, provide continuous canopy cover and habitat for biodiversity, and maintain water tables. Located in some of the poorest parts of the world, the creation of secure and attractive employment opportunities is regenerating stagnant rural economies.

In conjunction with our plantations, EcoPlanet Bamboo invests heavily into research and technology development to assist and enable manufacturing companies and product developers to mainstream bamboo fiber. In combination with Fortune 500 companies, our turnkey solutions helps such companies secure the product they need, in a positive manner, to meet demand for tomorrow's markets.

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New Forests (www.newforests.com.au) is a sustainable real assets investment manager offering leading-edge strategies in forestry, land management, and conservation. Founded in 2005, we offer institutional investors targeted opportunities in the Asia-Pacific region and the United States and have over USD 2 billion in assets under management. Our assets include sustainable timber plantations, rural land, and conservation investments related to ecosystem restoration and protection. New Forests focuses on managing our clients' assets for a future in which landscapes will encompass both production and conservation values. New Forests manages over 500,000 hectares of land and forests and is headquartered in Sydney with offices in San Francisco and Singapore.

Forest Carbon Partners (www.forestcarbonpartners.com) is an investment fund managed by New Forests. Forest Carbon Partners finances and develops forest carbon offset projects for the California carbon market. We work with family, industrial, and tribal landowners to create carbon offset projects that deliver real financial value – increasing and diversifying revenue for timberland owners. Our work delivers a reliable, high-volume supply of offsets to businesses regulated under the California cap and trade system.

The Family of Forest Trends Initiatives

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Protecting watershed services through markets and incentives that complement conventional management

Forest Trade & Finance

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

BBOP

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

the katoomba group

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

Communities and Markets

Supporting local communities to make informed decisions regarding their participation in environmental markets, strengthening their territorial rights

MARES

Marine Ecosystem Services Program

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

Public-Private Co-Finance Initiative

Creating innovative, integrated, and efficient financing to support the transition to low emissions and zero deforestation land use

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