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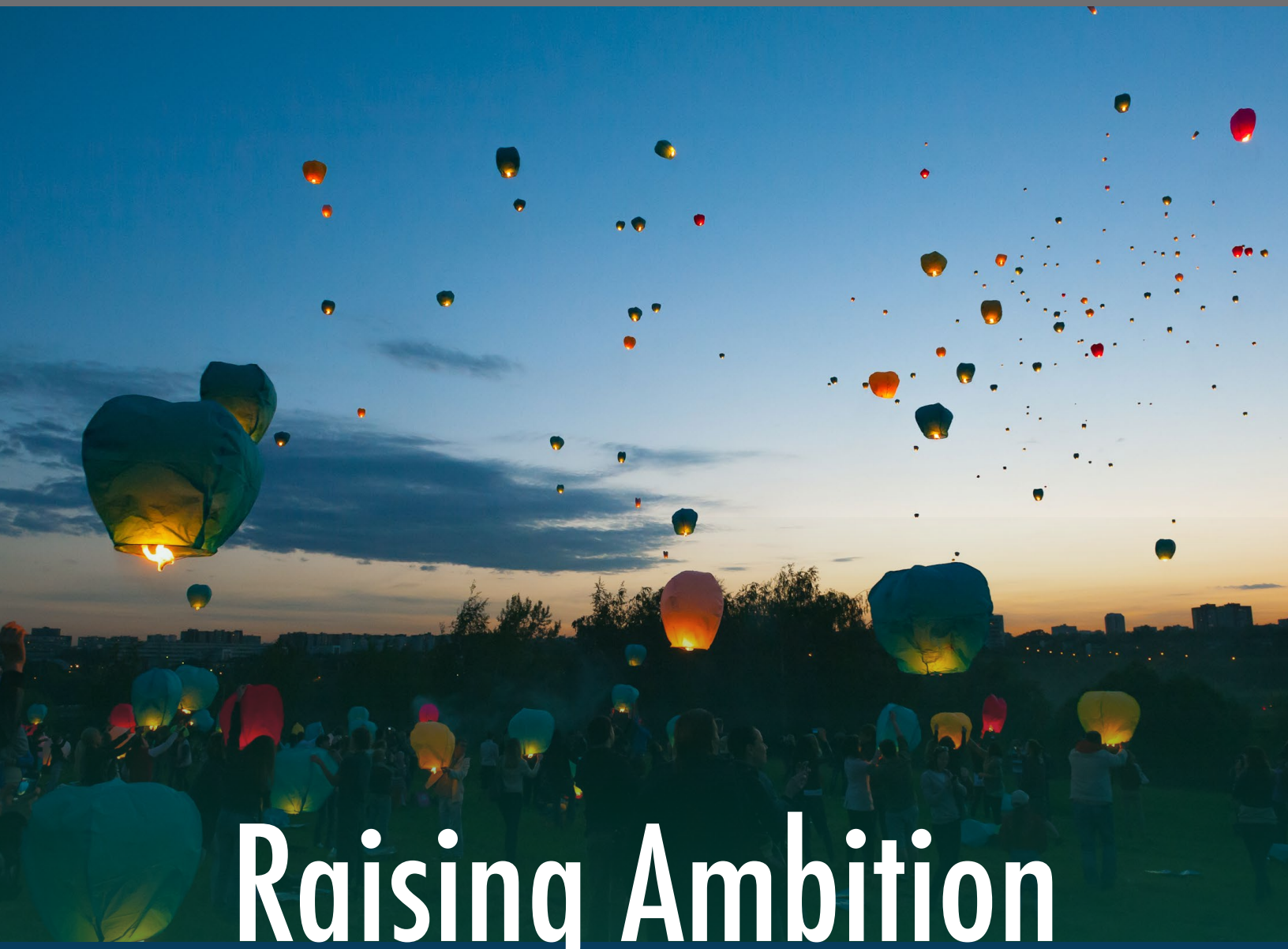

Raising Ambition

State of the Voluntary Carbon Markets 2016

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About Forest Trends' Ecosystem Marketplace

Ecosystem Marketplace, an initiative of the non-profit organization Forest Trends, is the leading global source of information on environmental finance, markets, and payments for ecosystem services. As a web-based service, Ecosystem Marketplace publishes newsletters, breaking news, original feature articles, and annual reports about market-based approaches to valuing and financing ecosystem services. We believe that transparency is a hallmark of robust markets and that by providing accessible and trustworthy information on prices, regulation, science, and other market-relevant issues, we can contribute to market growth, catalyze new thinking, and spur the development of new markets, and the policies and infrastructure needed to support them. Ecosystem Marketplace is financially supported by a diverse set of organizations including multilateral and bilateral government agencies, private foundations, and corporations involved in banking, investment, and various ecosystem services.

Forest Trends works to conserve forests, and other ecosystems through the creation and wide adoption of a broad range of environmental finance, markets and other payment and incentive mechanisms. Forest Trends does so by 1) providing transparent information on ecosystem values, finance, and markets through knowledge acquisition, analysis, and dissemination; 2) convening diverse coalitions, partners, and communities of practice to promote environmental values and advance development of new markets and payment mechanisms; and 3) demonstrating successful tools, standards, and models of innovative finance for conservation.

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Foreword

It was exciting to watch over the course of the last year as nearly every country in the world submitted a national climate plan to the United Nations Framework Convention on Climate Change. It was even more thrilling to be in Paris last December when French Foreign Minister Laurent Fabius banged his green gavel down to signal the adoption of the first truly global agreement on climate change.

Paris felt different from previous UN negotiations in a few ways. Rather than dividing by the lowest common denominator, countries pushed each other to do more. They went beyond the agreed limit of a 2 °C global temperature rise that has for years been the scientific point-of-no-return on climate change and decided to collectively aim for 1.5 °C. More than 100 nations joined the so-called "high ambition coalition" to make this happen. Importantly, the Paris Agreement directly referenced the Sustainable Development Goals, also adopted last year, thus joining the twin global visions of climate protection and a good life for all.

Meanwhile, significant leadership came from subnational governments as 128 jurisdictions joined the "Under 2 MOU" in Paris, committing to reducing their emissions at least 80% below 1990 levels by 2050 or to achieving per-capita emissions of less than two tonnes by then. The private sector was also more present and active at the negotiations than ever before. More than 1,000 companies have recently joined the World Bank's Carbon Pricing Leadership Coalition to call for a price on carbon, with dozens more setting "Science-Based Targets" to align their emissions pathway with the 2 °C limit.

The Paris Agreement set the tone for ambition, cooperation, and action at all scales. The voluntary carbon markets have always embodied these sentiments, with hundreds of market participants acting ahead of regulation to offset their unavoidable emissions. Last year, demand for offsets increased 10% as individuals, corporations, and governments voluntarily invested in clean energy, forest protection, methane reduction, and other projects around the world. At the same time, the falling offset prices documented in this year's report illustrate the fact that global offset demand has not caught up to supply – making demand the limiting factor to increasing the reach and climate impact of the voluntary carbon markets. Many market participants are working tirelessly to close this gap by innovating new metrics, engaging new business sectors, and working hand-in-hand with governments as they develop regulatory carbon pricing programs.

This annual report tracking these developments is itself ambitious, as it requires outreach to hundreds of organizations that take the time to complete our surveys and offer us a glimpse into voluntary climate action in every corner of the world. The outcome is this analysis, the only report of its kind, which we hope continues to provide valuable information for those working to raise ambition. We also hope it provides legitimacy to a new economic paradigm based on the protection, not the destruction, of our climate.

We thank those who contributed data and insights; this report would not be possible without your commitment to a more transparent and effective marketplace. Throughout 2016, Ecosystem Marketplace will track trends and questions first illuminated in this report. If you have ideas, questions about content, or would like to support our work, please contact us at: info@ecosystemmarketplace.com.

Michael Jenkins

Founding President and CEO

Forest Trends

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Rising Awareness: Voluntary Buyers Demand 84.1 $MtCO_2e$ in the Lead-up to Paris

Last year was in many ways a pivotal one for climate change, both in terms of climate change impacts and actions. On the ground, scientists recorded the highest average global temperatures on record. On the action side, governments spent the year preparing their national emission reductions proposals for the United Nations Framework Convention on Climate Change (UNFCCC), and ultimately negotiating the first "all-in" international climate agreement that included commitments from (nearly) all countries in the world.

In the background of these headlines, individuals, corporations, as well as state and national governments worked towards their own climate commitments, voluntarily purchasing carbon offsets tonne by tonne. In addition, businesses and governments around the world made new carbon neutrality commitments through the Under 2 MOU, Science-Based Targets, and other initiatives – setting the stage for implementation in future years.

Outside of any kind of regulatory obligation, voluntary buyers transacted a total of 84.1 million tonnes of carbon dioxide equivalent ($MtCO_2e$) last year, a 10% increase over 2014. However, the shrinking average price, $3.3/tonne,[1] resulted in an overall market value of $278 million (M).

Though 2015 was a year of heightened media coverage and citizen interest around climate change, this did not translate into a significant increase in voluntary offsetting. Suppliers reported that 92% of 2015's buyers were repeat customers, meaning that fewer than one out of 10 tonnes were transacted to a "new" buyer to the market last year. Assessing this situation, voluntary market participants expressed a range of views on the prospects for the voluntary market, from lamenting low prices to celebrating fresh climate commitments some expect will translate into future offset purchases.

Table 1: Market Size and Average Price Comparison, 2014 and 2015

	2015	2014*	% CHANGE	ALL YEARS**
VOLUME:*	84 $MtCO_2e$	77 $MtCO_2e$	+10%	0.99 $BtCO_2e$
VALUE:***	$278 M	$298 M	-7%	$4.6 B
AVERAGE PRICE:***	$3.3 / tonne	$3.8 / tonne	-14%	$4.6 / tonne

* Volume and market value have changed because Ecosystem Marketplace previously included a 10 $MtCO_2e$ government-to-government agreement, through the REDD Early Movers (REM) program, in 2014 total volume. Following an update of our methodology, we are no longer including REM or other government agreements that fall outside of voluntary market dynamics. See: Methodology, page **35**, for more details.

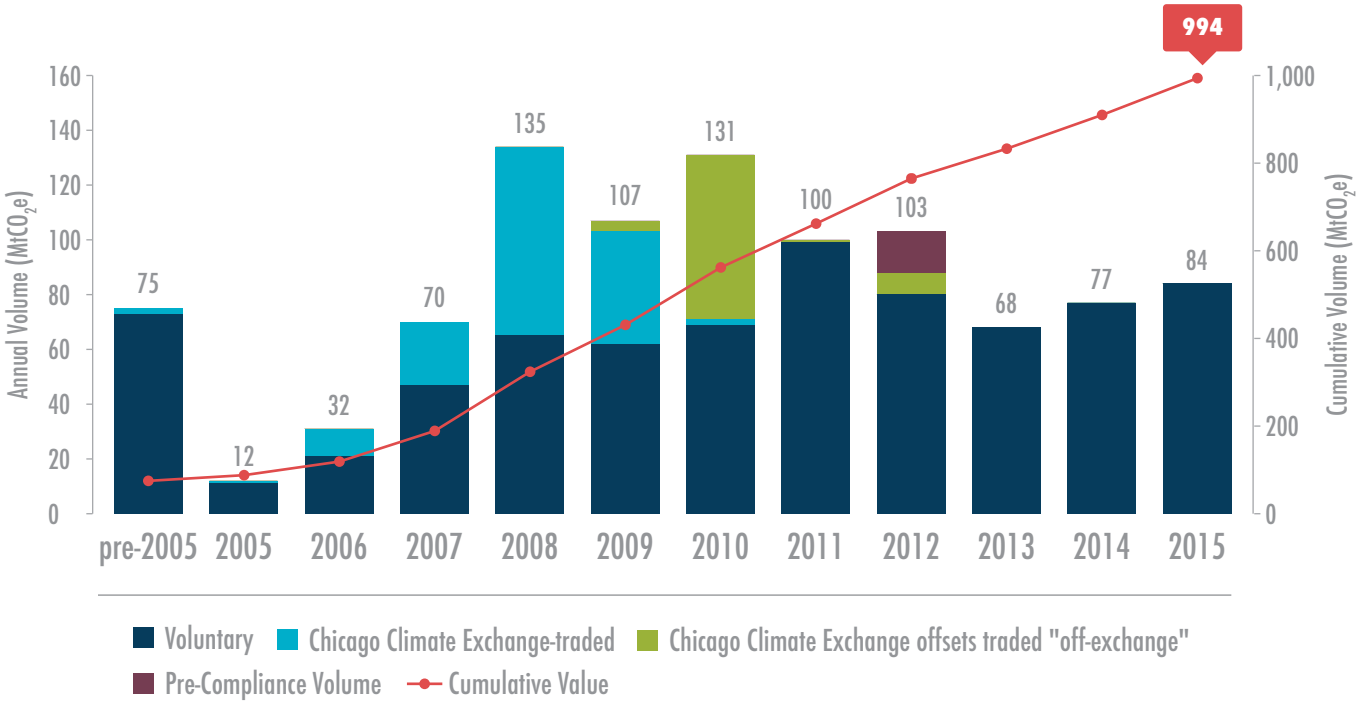
Additionally, 2014 market value has been updated because we corrected an unintentional double-counting of the REM value.

** Ecosystem Marketplace's first *State of the Voluntary Carbon Markets report* was published in 2007, but our data collection encompasses years prior to that date.

*** All prices (and market values) are volume-weighted to determine their significance.

[1] All prices and market values are reported in US dollars (US$) unless otherwise stated. Yearly average currency exchange rates were acquired from the Internal Revenue Service: https://www.irs.gov/Individuals/International-Taxpayers/Yearly-Average-Currency-Exchange-Rates.

Figure 1: Historical Market-Wide Voluntary Offset Transaction Volumes



Notes: Based on survey responses representing 992 $MtCO_2e$ transacted pre-2005 to 2015. The Chicago Climate Exchange (CCX) volume represents transactions from US-based projects by US buyers anticipating regulation. It is considered "pre-compliance" because at the time, buyers were acting voluntarily in anticipation of cap-and-trade in the United States. After the legislation failed to pass in 2009, CCX tonnes continued to be traded on a voluntary basis, "off-exchange." Additional pre-compliance volumes were documented in the lead-up to California cap-and-trade and Australia's (now repealed) carbon tax.

In previous years, this report series captured significant influxes of "pre-compliance" demand, for example ahead of the (never realized) nationwide carbon market in the United States and later California's now-operationalized cap-and-trade program, accounting for 9.7 $MtCO_2e$ in transaction volume in 2012. However, **this year our survey (capturing 2015 data) did not detect similar pre-compliance activity for emerging compliance markets such as in South Africa, South Korea, or China.** The lack of pre-compliance activities in those countries is largely driven by compliance entities taking a "wait-and-see" approach. In China, market experts say that companies that will fall under the national compliance market when it begins in 2017 prefer to wait for clear government mandates before taking action. In South Korea, many compliance entities opposed the government allocations of emissions reductions permits and pushed for regulatory changes instead of participating in early offsetting initiatives. Finally, many South African buyers held off of pre-compliance activity last year, as the government announced a delay of the upcoming carbon tax to 2017.

A note on our methodology: Forest Trends' Ecosystem Marketplace collects data through an annual survey of offset suppliers, tracking transactions at the point of contract. For more details of our survey response rate and analysis assumptions, see our Methodology (p. 35). If you are not already familiar with voluntary carbon offsetting, it is worth reading our Voluntary Carbon Markets 101 brief, found in Annex 1 of this report.

Box 1: The Voluntary Carbon Market in 2015 – Key Findings

- In 2015, the volume of voluntary offset transactions increased by 10% as buyers contracted 84.1 $MtCO_2e$. However, total market value fell 7% to $278 M, a result of the global volume-weighted average price dropping 14% to $3.3/tonne – a new low.

- Prices remain highly variable, with the lowest recorded transaction at $0.1/tonne and the highest reported transaction at $44.8/tonne.

- Buyer preferences for particular project types, standards, offset ages (also called vintages), and locations continue to remain influential – but not ultimate – determinants for price. Average prices also varied fairly consistently according to economies of scale, since organizations with large offset portfolios (in particular, retailers) were able to lower their prices.

- A record 39.5 $MtCO_2e$ were retired in 2015, and across all years, nearly half of the total 329.8 $MtCO_2e$ ever issued have now been retired.

- Excess historical supply resulted in buyers transacting 65.4 $MtCO_2e$ (87% of 2015's total volume) from older offsets (pre-2015 vintages), for lower average prices than current and future vintages.

- New markets and perceived opportunities have resulted in some offsets officially transferring from one market to another, with voluntary suppliers transitioning 19.7 $MtCO_2e$ from voluntary registries to the California compliance market, where prices track higher. On the flip side, voluntary prices looked attractive to many compliance-grade Certified Emissions Reductions (CER) holders, who cancelled 1.1 $MtCO_2e$ from the Clean Development Mechanism's (CDM) registry to transfer to the voluntary markets.

- Offsets from wind beat out Reducing Emissions from Deforestation and forest Degradation (REDD+) as the most sought-after project type in 2015, transacting 12.7 $MtCO_2e$ with attractive pricing for buyers: an average of $1.9/tonne. REDD+ retained high average prices, though, receiving more value than wind at $37.5 M.

- Almost all (98%) of offsets that found a buyer in 2015 were verified by an independent third-party standard. Verified Carbon Standard offsets remained the most transacted of all standards, holding 49% market share.

- The most supply and demand of any country originated from the US (15.4 $MtCO_2e$). Buyers also demanded significant volumes of emissions reductions from India (6.6 $MtCO_2e$), Indonesia (4.6 $MtCO_2e$), Turkey (3.1 $MtCO_2e$), Kenya (3.1 $MtCO_2e$) and Brazil (3.1 $MtCO_2e$).

- Suppliers transacted the majority (98%) of offsets to private-sector buyers in 2015, and most of the volume (92%) went to buyers previously active in the voluntary carbon markets. While energy, transportation, and finance/insurance companies remained significant sectors that purchased offsets, the events/entertainment and service sectors rose to the top last year.

- When deciding among offset options, suppliers reported that buyers behind at least 13.1 $MtCO_2e$ looked for a good "fit" with their organization's mission; others made decisions based primarily on cost or co-benefits.

- Despite a 10% increase in demand from buyers in 2015, suppliers reported 55.9 $MtCO_2e$ remained in suppliers' portfolios unsold at the end of the year. In addition to existing unsold supply, respondents reported they planned to issue another 70.4 $MtCO_2e$ in 2016, with offsets originating primarily from land use and forestry or renewable energy projects.

Box 2: Voluntary Offsetting in a Post-Paris World

The historic Paris Agreement adopted in December 2015 represents 196 countries' best plan for avoiding the worst impacts of climate change and the strongest signal yet that the international community may rise to this existential global challenge. A month after the agreement was reached, climate scientists confirmed that 2015 was the hottest year since modern climate record keeping began in 1880, shattering previous records.

The Paris Agreement is different from previous attempts to strike an international deal on climate in that it requires *all* countries, not just those deemed to be "developed," to submit national climate plans. Its Article 6 creates the space for a market-based mechanism that would allow countries to trade internationally transferred mitigation outcomes (known as "ITMOs"). **Unlike the Clean Development Mechanism (CDM), which was created for developed countries to purchase emissions reductions units from developing ones, a market-based mechanism under the Paris Agreement could potentially include any country, and transfers could flow in any direction.** Any transfer of emissions reductions among parties must therefore ensure that ITMOs are clearly defined and that each emissions reduction is counted only once. This will be a key topic for discussion as climate negotiators discuss the potential new, global market-based mechanism (tentatively being called the "Sustainable Development Mechanism" or the "New Mechanism").

Such a market-based mechanism would not fully go into effect until 2020 when countries become accountable for their national contributions to the global effort, but its rules will be debated over the coming years – with important conversations happening in May 2016 in Bonn, Germany, as well as during the next climate change negotiations in November 2016 in Marrakesh, Morocco. More than half of the parties to the United Nations Framework Convention on Climate Change (UNFCCC) indicated in their national climate plan submissions that they plan or hope to use market-based mechanisms to meet their targets, but only half a dozen of them – Canada, Japan, New Zealand, South Korea, Switzerland, and possibly Norway – are likely buyers. The rest are developing or emerging economies hoping to attract finance for their emissions reductions units.

However, as the new UNFCCC mechanism develops and as countries seek to meet their targets at least cost, it's possible that the list of "buyer" countries will grow. The Paris Agreement also leaves the door open for the many bottom-up market-based mechanisms that are already being implemented, from the California-Quebec cap-and-trade program to China's seven pilot carbon markets to South Africa's upcoming carbon tax. Emissions reductions units created through domestic markets would not fall under UNFCCC rules unless they were traded internationally, and some jurisdictions may even choose to incorporate offsets originally developed for the voluntary markets.

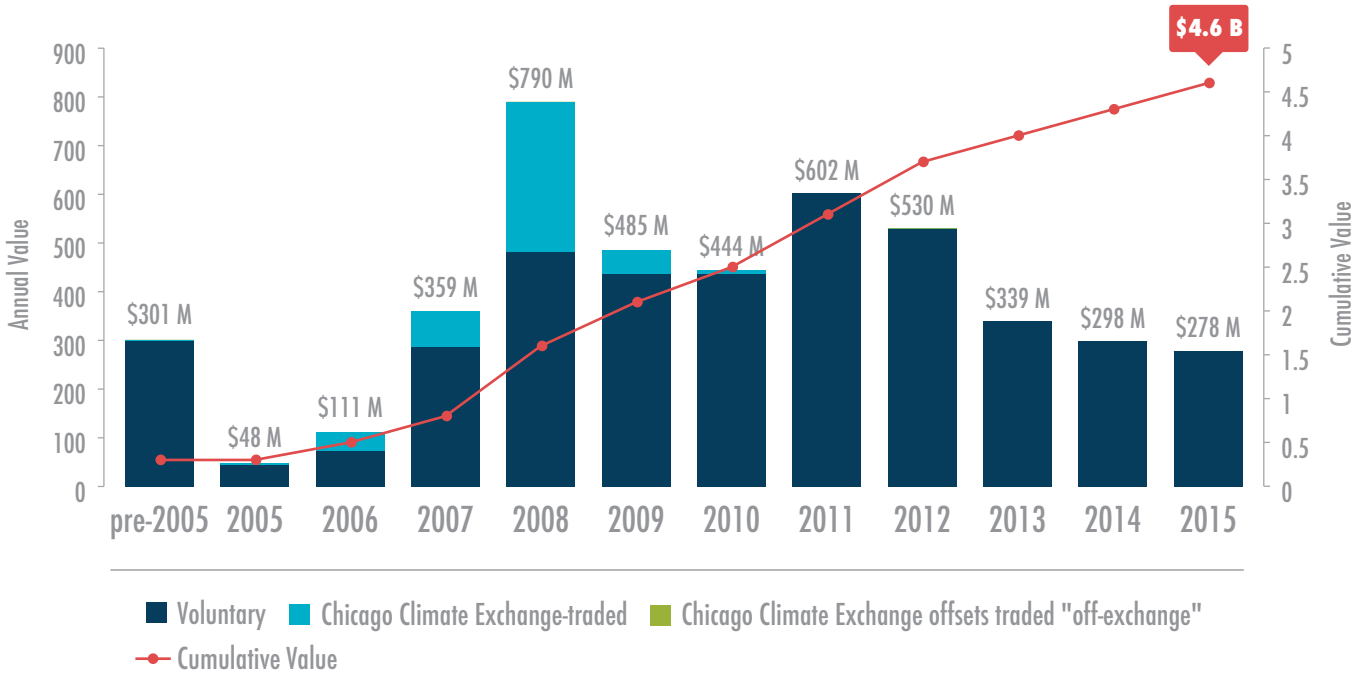
Still, **a key question with all of these developments – perhaps the key question – is what the role of voluntary carbon offsetting will be in a world in which nearly every country is effectively under a compliance agreement to reduce emissions.** While this is a question that can only be definitively answered with time, Forest Trends' Ecosystem Marketplace's historical record indicates that compliance markets often serve to catalyze rather than cannibalize the voluntary markets. There is thus evidence that, no matter what the compliance targets, there will always be companies that want to demonstrate "above-and-beyond" action as part of a corporate social responsibility strategy, or simply because their leadership has seen the (climate change) writing on the wall and wants to do everything it can to preserve a livable planet.

Built-Up Supply, Steep Competition Depress Market Prices and Value to New Low

Over the last few years, voluntary carbon market participants have reported a maturing market but one with increasingly stiff competition as suppliers jockey to differentiate themselves in what is decidedly a buyers' market. In this context, while the total transaction volume grew in 2015, **buyers paid lower prices across almost all project types, resulting in a lower overall market value of $278 M.** (This is the lowest annual injection of new finance from purely voluntary actors since 2006.)

Ninety-eight percent of this new finance came from private-sector actors, mainly multinational corporations, while the remaining was contracted by the public sector (1%), or non-profits and individuals (a combined 1%). Overall, 2015's voluntary market value dropped 7% from 2014 and more than 50% from the all-time high of $602 M, recorded in 2011. Across all years, the cumulative value of the voluntary carbon markets has topped $4.6 billion (B).

Figure 2: Historical Market-Wide Voluntary Offset Transaction Values



Notes: Based on survey responses representing 992 $MtCO_2e$ transacted over time. The CCX "off-exchange" value is too small to be visible.

While the lower average prices and market value are driven mainly by stark price competition as well as built-up supply (discussed in more detail on p. 9), conversion rates to US dollars also affected the total value. On average, exchange rates between foreign currencies and the US dollar fell an average of 19% (with a particularly stark drop in Brazil), meaning that the converted prices might result in a lower US value but could indicate a more robust margin in local currencies. Analyzing the data with 2014 conversion rates between foreign and US currencies paints a slightly better picture, with the average price at $3.6/tonne and the value surpassing that of 2014's to total $306 M.

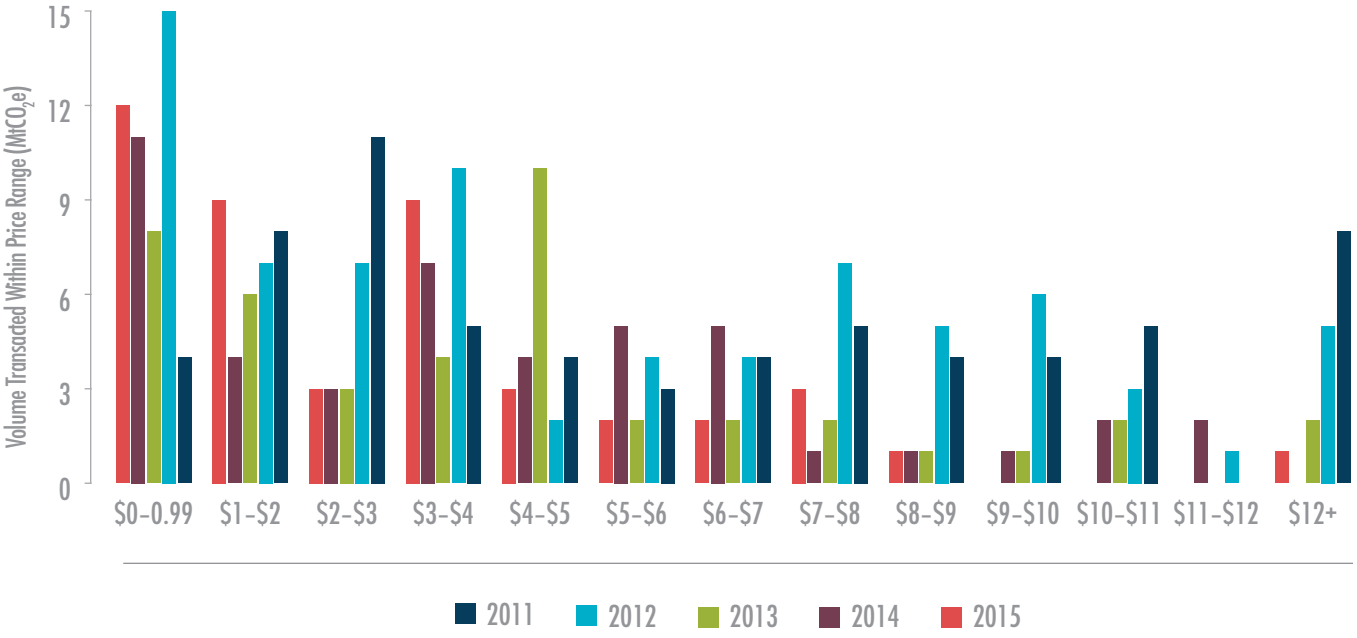
Average 2015 Voluntary Offset Price Drops to All-Time Low of $3.3/tonne – Though the Price Range is Gaping Wide

Reflecting challenging supply-and-demand dynamics, the average volume-weighted price decreased to $3.3/tonne in 2015, 14% below the 2014 average. However, this single number only tells part of the story, since individual reported prices ranged widely from a low of $0.1/tonne to a high of $44.8/tonne.

Though there are several explanations for the decreasing voluntary market value seen in 2015 (see p. 5), perhaps the most straightforward one is that end buyers (at least those without very particular preferences) and intermediaries are operating in a supply-laden market and have the upper hand when negotiating transactions.

Even though some suppliers continue to transact tonnes at $8/tonne or more, an increasing number of offsets are being transacted at lower prices. **More than half, 52%, of all 2015 offsets (23.5 $MtCO_2e$) transacted at less than $3/tonne,** compared to 41% below this price point in 2014 and 40% in 2013. Another 16% (7.1 $MtCO_2e$) sold for between $3/tonne and $6/tonne last year, and only 12% (5.6 $MtCO_2e$) sold for more than $6/tonne. Volume-weighted average prices dropped across nearly all project types and regions, with the most severe price losses occurring for water filtration/clean water projects and avoided planned deforestation projects, and for projects in Oceania.

Figure 3: Transaction Volume by Average Price, 2011–2015



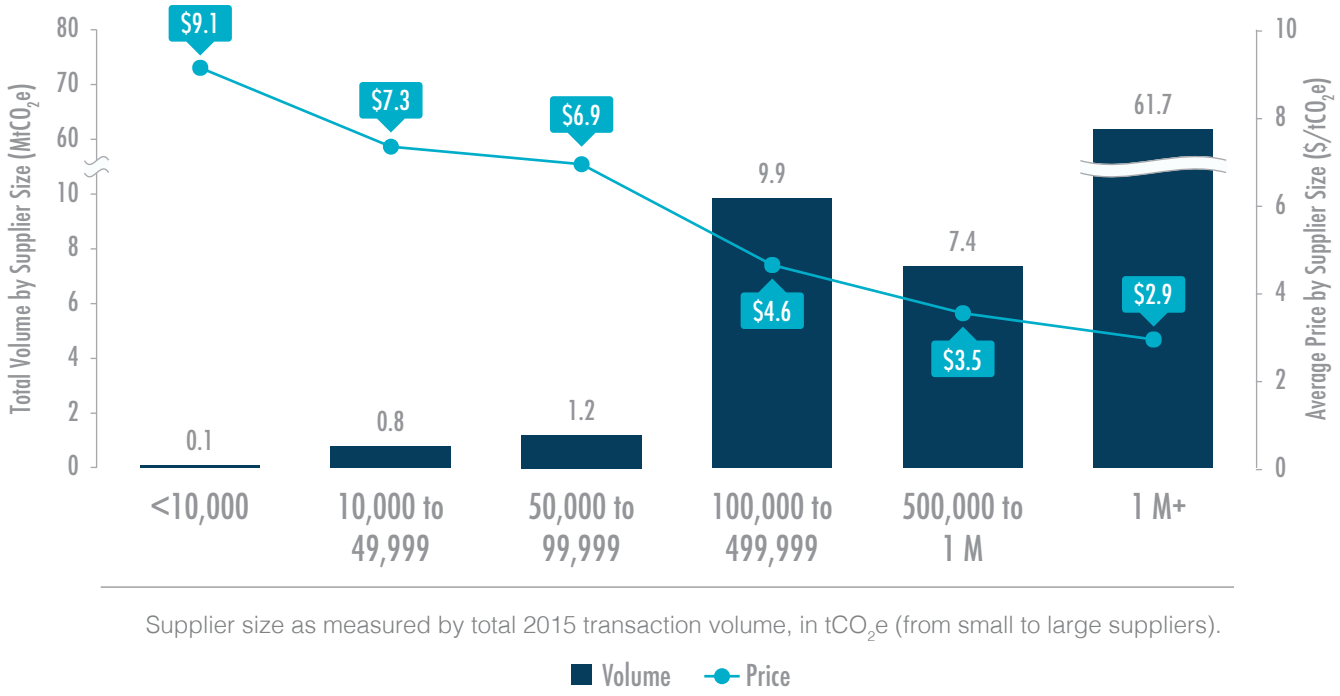
Notes: Based on survey responses representing 364 $MtCO_2e$ transacted between 2011 and 2015.

While it is difficult to parse out why a particular offset sells for more or less than another – prices vary according to factors such as project type, project location, offset age ("vintage"),[2] the standard used, the motivations of the buyers, verified co-benefits (if any), and more – one factor that does seem to play a strong role is the total

[2] For the purpose of this report, a vintage is the year the emissions reduction occurred (sometimes a vintage refers to a specific verification period). A buyer may contract past (pre-2015, in the context of this report), current (2015), or future (post-2015) vintage offsets. Often, past or current vintages are already issued on a registry while future vintages – for instance, from trees that have been planted and will sequester carbon each year as they grow – are by definition not yet verified or issued.

transacted volume per supplier. Simply put, **suppliers transacting large volumes (mainly retailers that aggregate project portfolios, or owners of projects with large annual issuances) are able to offer lower prices and accept smaller margins per tonne than smaller project developers and retailers that must sell at higher prices per tonne to meet cash flow needs.** Organizations reporting total transactions volumes of more than 1 $MtCO_2e$ reported an average price of $2.9/tonne, while organizations selling less than 50,000 tonnes reported an average price of $7.5/tonne.

Figure 4: Total Volume Transacted and Average Price by Supplier Transaction Volume, 2015



Notes: Based on survey responses representing 81.1 $MtCO_2e$ transacted in 2015.

Seller type is another cause for price divergence, with brokers – sometimes called "traders" and defined in this report as intermediaries that facilitate transactions but do *not* take ownership of tonnes – facilitating 4.3 $MtCO_2e$ in transactions for an average of $1/tonne. Retailers – or intermediaries that take ownership of offsets and then resell them to end-users – recorded an average price of $3.4/tonne across 28.3 $MtCO_2e$, and project developers earned an average of $3.7/tonne across 20.2 $MtCO_2e$. (Market role of the supplier could not be determined for all 2015 transactions).

These findings are a bit counterintuitive, since secondary market actors typically mark up prices before sale to end-users. The pricing dynamic can be explained by project types transacted: retailers sold more wind and landfill methane offsets, which typically transacted between $1.9–$2/tonne, while project developers sold larger amounts of clean cookstove and forestry offsets, which averaged between $4.9–$7.5/tonne. Further differences in pricing are explored in the "Details of the Deals" section, starting on page 15.

Box 3: In Light of Dropping Offset Prices, Innovators Seek to Prop Up the Market and Capture True Cost

With 12 $MtCO_2e$ selling for less than $1/tonne in 2015 and over half of those offsets selling for less than $0.6/tonne, some offset suppliers report that current pricing cannot support continued emissions reductions activities – and for some project types, it sends a weak signal for new project development. Here are some of the reasons why 2015 offset suppliers that have recurring costs may have been willing to offload tonnes for record-low prices:

The disillusioned: An offset supplier relied entirely on carbon finance but couldn't find enough buyers. Over the years, the supplier loses money to the point where the supplier is willing to sell their remaining volumes at a possible loss to exit the market.

The distressed optimists: An offset supplier sells tonnes below cost so that the temporary influx of finance – though not enough to cover the full costs of mitigation – helps the supplier stay afloat in the immediate future. This "distress selling" allows the supplier to remain in the market, with the hope that demand will grow in the coming years and that prices will rise.

The diversifiers: An offset supplier initially relied solely on carbon finance, but soon found alternative sources that provided a more reliable source of revenue, such as grants or microfinance (for project developers), or added advisory or consulting services (for resellers). For some diversifiers, the varied income streams allow them to ride out bumpy demand in the carbon markets, while others exit the market entirely.

The heavy hitters: An offset supplier finds a buyer willing to purchase a large volume of offsets and is willing to reduce prices in exchange for higher overall value gained.

In light of these pricing dynamics, market participants have recently launched several different initiatives to try to increase prices where they view them as too low. These initiatives include:

Price floors which set a minimum price that an offset is worth.

The Fairtrade Climate Standard, the result of a multi-year collaboration between The Gold Standard Foundation and Fairtrade International, launched in December 2015. Just as Fairtrade bananas and cocoa have minimum prices, the standard introduces a price floor for offsets, set initially at 13 euros per tonne for tree-planting projects, and 8.2 euros and 8.1 euros per tonne for energy efficiency and renewable energy projects, respectively. A handful of projects are piloting the Fairtrade Climate Standard but none have verified tonnes yet.

Another recent initiative is the World Bank's Pilot Auction Facility for Methane and Climate Change Mitigation (PAF), which creates auctions for buyers to purchase offsets at an agreed price on or before a particular date.

Co-benefits quantifications which look to separate the values from additional ecosystem and social services from carbon projects in order to provide project developers with an alternative financing stream.

The Gold Standard 3.0 seeks to quantify co-benefits ranging from health and gender to water and biodiversity protection, so that projects providing more co-benefits can potentially access new financial streams from funds, impact investments, and more, or sell co-benefits as a separate asset.

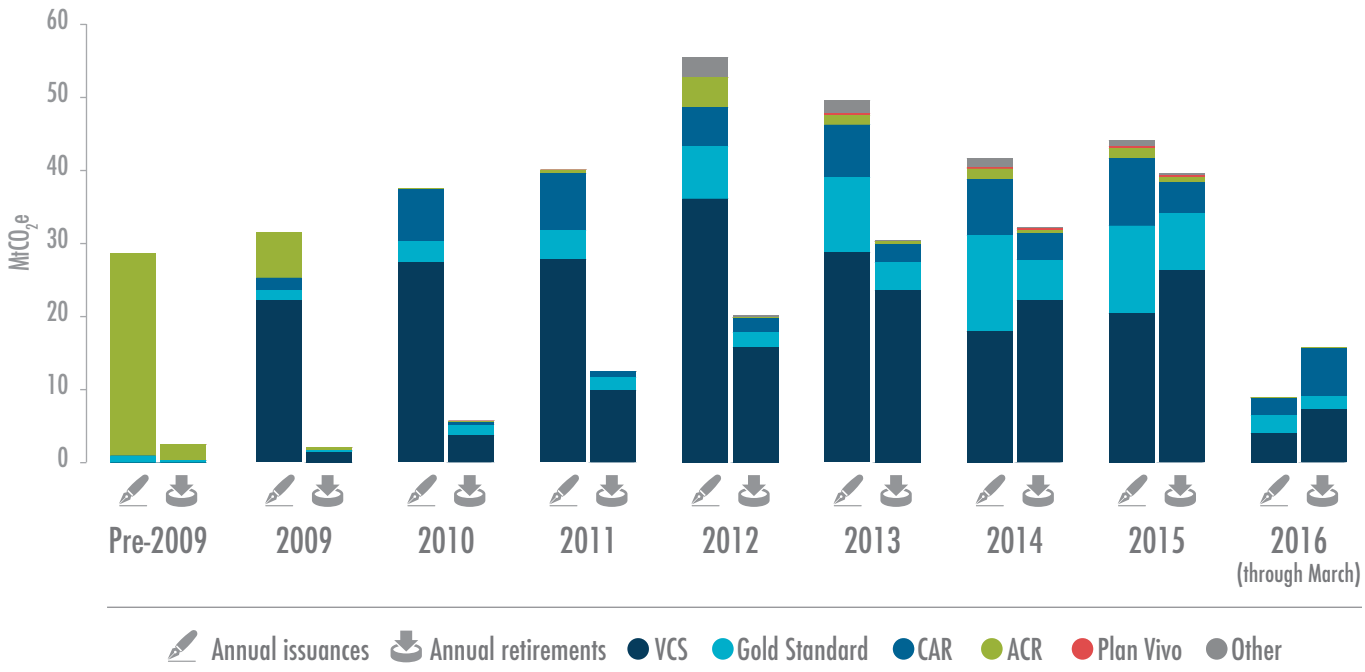
The American Carbon Registry (ACR) is also developing water quantity and habitat creation metrics that it will pilot alongside its voluntary rice protocol, and Arkansas farmers involved in the first pilot projects hope to earn a premium for rice certified against multiple metrics.

In 2015, 42 $MtCO_2e$ Issued and Record 39.5 $MtCO_2e$ Retired; Nearly Half of All Issued Tonnes Have Now Been Retired

While this report series tracks voluntary carbon offset transactions as the key measure of market health year-on-year, issuance and retirement data also provide insight into supply-and-demand dynamics – with a few caveats. In 2015, offset issuances increased 6% over 2014, reaching 42 $MtCO_2e$. Across *all* years, 329.8 $MtCO_2e$ have been issued for the voluntary carbon markets. Since there is a fee to issuing tonnes under most standards, suppliers often wait until they have a prospective buyer to incur the cost of listing their tonnes on a registry. Therefore, these issued tonnes are one measure of the total emissions reductions that have resulted from voluntary carbon finance – but they should be considered as the minimum. **Rapid ramp-up of project development in the United States in anticipation of the California cap-and-trade market also indicates that the growth of the voluntary carbon markets is limited by demand, not supply, and that developers could quickly supply more verified emissions reductions in response to a clear demand signal.**

Issuances under the Verified Carbon Standard (VCS) accounted for most, 20.4 $MtCO_2e$ (49%), of the new supply in 2015, while the Gold Standard issued 9.9 $MtCO_2e$[3] (24%), the Climate Action Reserve (CAR) issued 9.2 $MtCO_2e$ (22%), the American Carbon Registry (ACR) issued 1.4 $MtCO_2e$ (3%,) and Plan Vivo issued 0.3 $MtCO_2e$ (1%). These numbers exclude an additional 6.6 $MtCO_2e$ in ACR issuances that were California-eligible, under the assumption that those issuances would in fact be sold to compliance rather than voluntary buyers. Similarly, total CAR issuances subtracted the 6.3 $MtCO_2e$ of CAR offsets cancelled for compliance in 2015, leaving 9.2 $MtCO_2e$ for *potential* sale to voluntary buyers.

Figure 5: Offset Issuances and Retirements by Standard, Pre-2009 through March 2016



Notes: Based on annual issuance and retirement data from the Verified Carbon Standard (VCS), the Gold Standard, the Climate Action Reserve (CAR), the American Carbon Registry (ACR), Plan Vivo, and other domestic standards such as Japan's J-Credit, Korea's K-VER, the UK's Woodland Carbon Code (WCC), and the New Zealand Permanent Forest Sink Initiative. Data acquired from Markit and APX offset registries.

[3] Gold Standard totals include only Verified Emissions Reductions (VERs). Gold Standard also issues Certified Emissions Reductions (CERs) under the CDM, which have totaled 4.8 Mt over time but are not included here because they are typically not destined for voluntary buyers.

Meanwhile, **retirements reached a record 39.5 $MtCO_2e$ in 2015, an impressive 23% increase over 2014.** Retirements are a measure of final end-user demand, since offsets cannot be resold after they are retired on a registry. Though not all buyers take this final step of retiring offsets on a registry, retirements do make a dent in the accumulation of existing offset supply. Across *all* years, retirements grew to 160.7 $MtCO_2e$ – meaning nearly half of the offsets issued to date have been permanently removed from circulation, leaving 169.1 Mt in already-issued tonnes still available for sale and resale.

About two-thirds of the tonnes retired in 2015 were developed under VCS, where retirements actually *exceeded* new issuances by 29%. Trailing VCS retirements were: the Gold Standard (20% of 2015 retirements), CAR (11%), ACR (2%), and Plan Vivo (1%). Voluntary retirements reached record highs under nearly every standard (Plan Vivo, which has already retired nearly nine out of 10 offsets issued, was the exception). However, the biggest year-on-year jump occurred under the Gold Standard, which went from 5.6 $MtCO_2e$ retired in 2014 to 8 $MtCO_2e$ retired in 2015. This trend of strong retirements seems to be continuing into 2016, with 15.7 $MtCO_2e$ retired in just the first three months of the year. As of April 2016, new retirements were nearly double the 9 $MtCO_2e$ in new issuances recorded so far in 2016.

Retirement rates across all years vary by standard, ranging from just 11% under ACR to 41% under CAR to 53% under the Gold Standard to 60% under VCS to 88% under Plan Vivo. Voluntary retirements may be comparatively low under ACR and CAR because suppliers plan to transition some issued tonnes to California's compliance market. **Market participants also noted that some of the issued offsets with vintages more than a few years old could at this point be considered stranded assets, since buyers typically seek to finance more recent emissions reductions – and it is possible that they may never retire some of those older tonnes.** For example, there are 15.6 $MtCO_2e$ in pre-2012 vintage CAR issuances that have yet to be retired or canceled for compliance.

While some market participants view growing retirements as a sign of growing demand, the relationship isn't always immediate. Retirements can also represent residual demand since buyers often hold onto purchased tonnes for a year (or several) before final retirement. The time between offset issuance and retirement can be used as a proxy for this phenomenon: under VCS, 69% of offsets issued to date were retired a year or more later, and of those, 24% were retired three or more years after initial issuance. The bump in 2015 retirements may be due partly to the fact that many companies set 2015 as the milestone year for meeting voluntary emissions reductions targets and thus retired offsets accordingly to meet their internal due dates.

Box 4: How the Aviation Negotiations Could Shake the Voluntary Market (Or Not)

The International Civil Aviation Organization (ICAO) has set a "global aspirational goal" of carbon-neutral growth starting in 2020 and is moving forward on designing a global market-based mechanism (GMBM) to reduce airline emissions accordingly. **Even with anticipated advances in technology such as lighter-weight materials and advanced engine efficiency, which will increase fuel efficiency and decrease carbon emissions, ICAO aircraft operators will need to purchase offsets to meet the carbon reduction target for the industry.** A recent presentation by ICAO's Air Transport Bureau estimates that airlines covered by the GMBM will generate an offset demand for between 288 $MtCO_2e$ and 376 $MtCO_2e$ by 2030 (depending on how effectively they are able to reduce emissions by other means).*

A recently released Draft Resolution for the GMBM gives a sense of how the scheme is developing: The first implementation phase will begin in 2021, but ICAO aims to develop guidance for "Emissions Unit Criteria" by 2018. The Committee on Aviation Environmental Protection (CAEP) has already outlined some basic criteria for offsets, including that they should be additional; permanent; based on a credible baseline; have a transparent chain of custody; safeguard against leakage; do no net harm; and are not double-counted. Part of the task of upcoming ICAO negotiations will be to determine which programs meet those criteria since, as the ICAO presentation notes, "an early decision on eligible emissions units under the GMBM would help the market to be ready to respond to international aviation demand."

The Draft Resolution, a version of which ICAO is expected to adopt at its triennial meeting in Montreal this September/October, mentions the CDM, new market mechanisms, and "other programs under the UNFCCC" as potential options for offset supply. Many of the standards currently active on the voluntary carbon markets are lobbying for inclusion, arguing that they meet CAEP's criteria and are already working closely with compliance markets such as California's. Some environmental groups, including Ecosystem Marketplace's publisher Forest Trends, are pushing specifically for the inclusion of REDD+ offsets in the GMBM, with an eye to the transition towards scaled-up avoided deforestation under the UNFCCC, discussed in Box 7.

If standards such as the Verified Carbon Standard, the Gold Standard, the American Carbon Registry, or the Climate Action Reserve were folded into an ICAO market-based mechanism, it could be a game-changer for offset suppliers that are currently struggling to find buyers on a relatively stagnant market. As of an October 2015 Ecosystem Marketplace analysis, there were more than 1,200 active projects under these four standards with an estimated annual issuance of 90 $MtCO_2e$. However, a look at what happened when the California market announced that it would accept early-action offsets shows that project developers could rapidly ramp up supply in response to a compliance demand signal: issuance under the Climate Action reserve has grown an average of 14% since 2009, a full 11% of which can be attributed to ramping up compliance-eligible supply.

Then again, the exclusion of (currently) voluntary offset programs from an ICAO market is also a distinct possibility – and one that would dash the hopes of suppliers looking for a silver bullet on the demand-side. The aviation industry's decision on which *vintages* of offsets to allow could also impact the market, with owners of existing tonnes hoping that ICAO would allow pre-2020 vintages for compliance – or at least permit ex-ante sales.

*ICAO. 2016. "The Role of Carbon Markets in the Global MBM Scheme," ICAO presentation. Accessed May 22, 2016. http://www.icao.int/Meetings/HLM-MBM/Documents/20160504_HLM_Pre-Event_Role%20of%20Carbon%20Markets%20in%20ICAO%20global%20MBM_V04.pdf

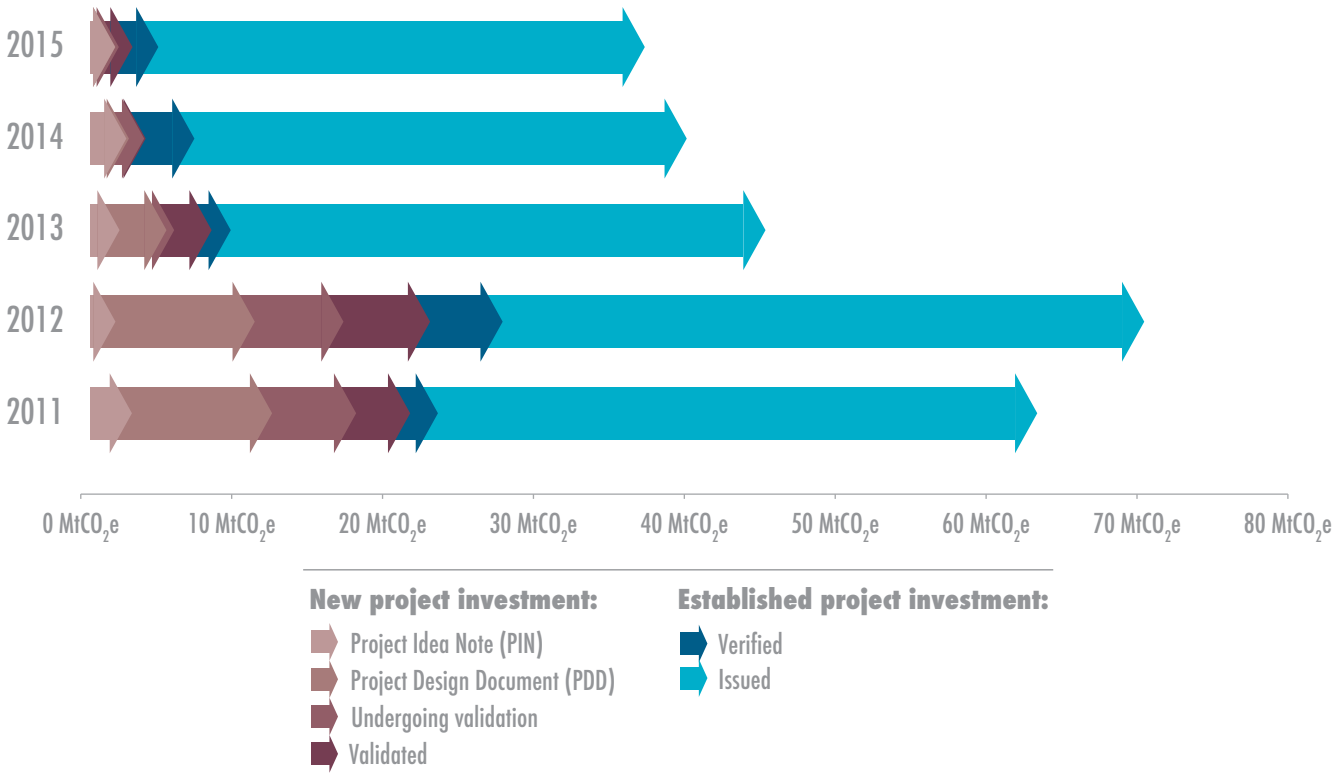
Growing Issuances, Build-Up of Old Vintages Point to Buyer-Favored Supply-and-Demand Dynamics

Suppliers reported challenging market dynamics in which buyers generally had their pick of already-issued offsets – and thus the upper hand. However, they also noted that many buyers seek to finance "recent" emissions reductions – those with current-year vintages, or at least not more than a year or two in the past – and that some of the pre-2012 vintages may be stranded forever if they are not sold to an end-user soon.

Those buyers that do purchase current or future offset vintages typically have a greater understanding of the need for upfront financing and are willing to pay more to support projects. As a result, buyers paid more, on average, for current (2015) vintages ($4.4/tonne) and upcoming (post-2015) vintages ($7.2/tonne). However, **overall there was less demand for current and future vintages, which collectively made up only 13% of total transactions.** Reflecting the build-up of available supply on the market, a full 87% of the tonnes transacted in 2015 were pre-2015 vintages, and they did sell at below-average prices: $2.7/tonne.

The types of contracts that buyers and sellers used to transact offsets in 2015 also reflected buyers' preferences for purchasing past or current-year emissions reductions: only 4% of total transactions represented early-stage financing (from project idea note through validation). Payment-on-delivery and spot contracts were the most common contract types in 2015, with 20.2 $MtCO_2e$ and 15.1 $MtCO_2e$ contracted, respectively. Both require the verified offsets to be delivered at the time of payment (rather than in the future). In contrast, pre-pay contracts (1.1 $MtCO_2e$) or transactions including a mix of pre-pay and payment on delivery (1.6 $MtCO_2e$) were comprised of much smaller volumes.

Figure 6: Offsets Transacted by Project Stage, 2011–2015



Notes: Based on survey responses representing 248 $MtCO_2e$ transacted between 2011 and 2015. Not all survey respondents reported project stage at the time of transaction in any given year.

Box 5: Shifting Sands: Offset Suppliers Look to Find Stable Footing in New Markets

Amid trying supply-and-demand dynamics, one strategy among suppliers for offloading built-up portfolios is simply to look for different types of buyers in other markets.

In North America, many offset suppliers view the grass as greener in California, with compliance-grade offsets typically selling for just-below allowance prices (currently set at $12.7/tonne at auction) in the state's cap-and-trade market. By transferring their offsets to compliance, US project developers thus have the opportunity to earn several times what they would on the voluntary markets, where US offsets transacted for an average of $3.1/tonne last year. As a result, suppliers transferred 12.4 $MtCO_2e$ of eligible offsets from CAR and 7.3 $MtCO_2e$ from the ACR, for a total transfer of 19.7 $MtCO_2e$ from voluntary standards into the California compliance market in 2015.

CAR, ACR, and VCS are currently the three standards that work closely with the California's regulatory Air Resources Board (ARB). The relationship is multi-faceted: the standards help existing eligible voluntary projects transfer into the compliance market, while also providing registry services for compliance offsets as approved Offset Project Registries (OPRs). In addition, these standards have proposed voluntary methodologies for the ARB to consider as compliance protocols – though these proposals are not a feature exclusive to the three standards.

Even as many US-based offsets that have been developed under approved methodologies look to the California cap-and-trade program as a more consistent and better-paying source of demand, voluntary demand remains active. Last year, US-sellers sold 15.4 $MtCO_2e$ offsets to voluntary buyers – up 71% from 2014. While some emissions reductions methodologies (such as the recently adopted rice protocol in California) may eventually be folded into compliance protocols, others will remain outside of the scope of the compliance program, but still be of interest to voluntary buyers wanting to go above and beyond.

Shifting supply and demand across markets is not limited to the transitions between the voluntary and California cap-and-trade markets; similar trends can be seen across the voluntary carbon markets and the CDM (see Box 9). In light of plummeting compliance demand for CDM tonnes after the end of the first commitment period of the Kyoto Protocol, project developers are looking to both alternative compliance markets and the *voluntary* markets as a source of new demand. The 5.1 $MtCO_2e$ voluntarily canceled on the CDM last year included 3.3 $MtCO_2e$ converted into Korean Carbon Units for use in Korea's domestic cap-and-trade program and 1.1 $MtCO_2e$ transferred into VCS offsets.

Box 6: How New Reporting for Renewable Energy Certificates May Affect Corporate Offsetting

The Greenhouse Gas (GHG) Protocol Corporate Standard, a step-by-step guide developed by experts convened by the World Resources Institute (WRI) and widely used by companies to quantify and report their emissions, was revised last year for the first time since its release in 2001. In an important change to the protocol, companies may now include *select* market-based instruments in how they report their scope 2 emissions, the indirect emissions from purchased electricity, heat, or steam. Rather than calculating scope 2 emissions based only on how much energy they pull from the grid, a company may now subtract renewable energy gained from direct contracts or certificates such as Renewable Energy Certificates (RECs) from their reported scope 2 total.

A REC represents one megawatt-hour of renewable electricity generation delivered to the power grid. These certificates share some similarities to offsets – they have unique tracking numbers and are retired on registries, thus avoiding double-counting. A company that is unable to purchase renewable energy directly (e.g., by drawing energy from their own solar panels) may purchase RECs as a way of investing in renewable capacity. **In practice, the change in the GHG Protocol has driven increased corporate interest in purchasing RECs since they are now officially "counted" against companies' scope 2 totals.**

Carbon offset suppliers – some of whom also transact RECs – have different opinions on the change to the GHG Protocol. On the one hand, it could be a positive demand development since it gives credibility and visibility to market-based instruments, potentially drawing the attention of companies who have not previously purchased RECs *or* offsets. On the other hand, it's possible that some companies that currently purchase offsets could shift their demand to RECs. (The revision to the GHG Protocol is too new to discern an impact in either direction in Ecosystem Marketplace data).

The recognition of RECs within the GHG Protocol has also led some market participants to wonder whether offsets might be similarly accounted for within the methodology that serves as the basis for reporting emissions publicly, both voluntarily and within the context of compliance markets such as the European Union's. However, WRI reports that there are no plans to give similar credence to offsets in the near-term, though companies are encouraged to quantify and report any offset purchases under optional information. If offsets were officially "counted" against companies' emissions within the GHG Protocol, companies might be able to use them to mitigate scope-1, -2, *or* -3 emissions.

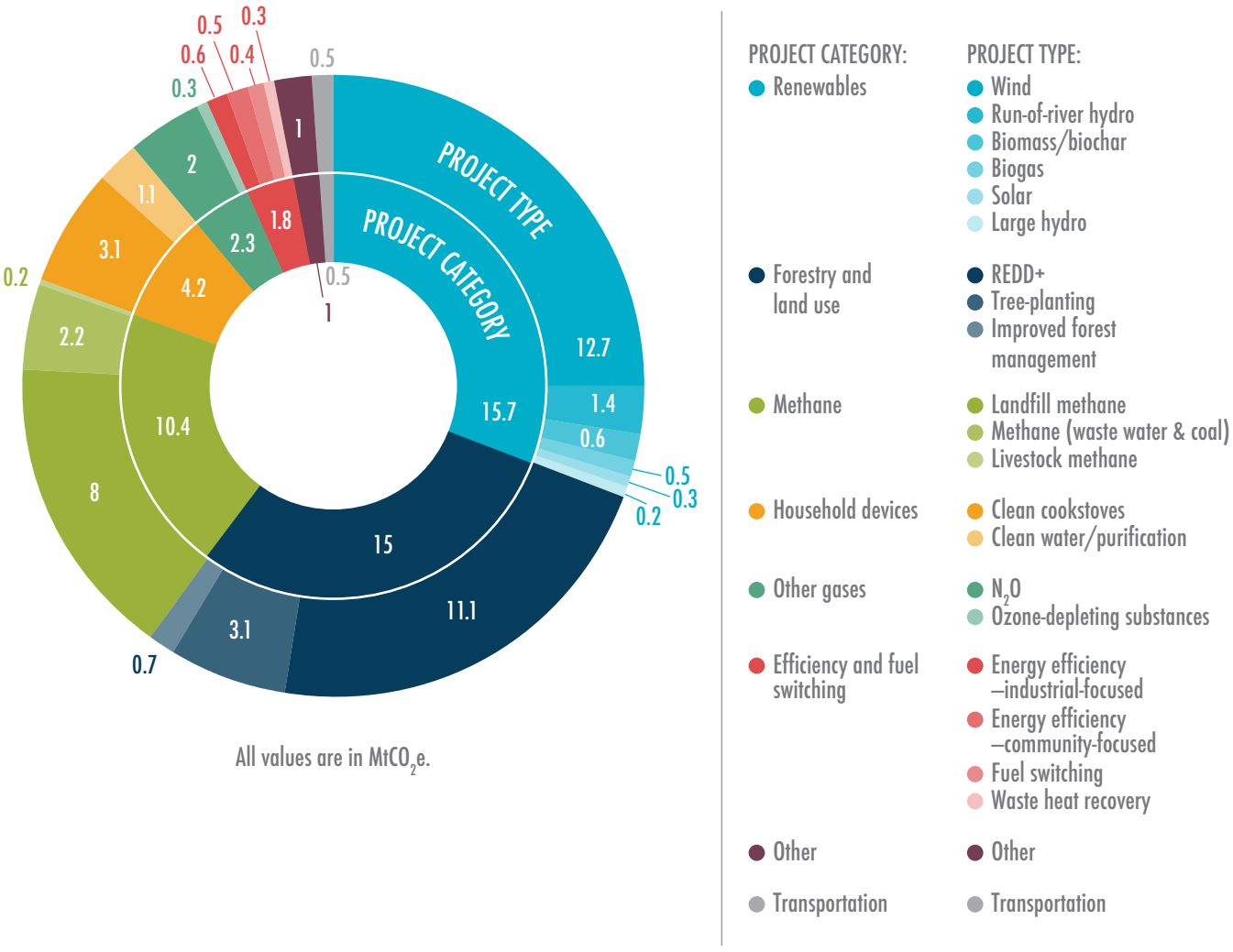
Some offset advocates are looking at a different but related channel to increase demand for offsets (at least in the United States). They're hoping that the White House's Council on Environmental Quality (CEQ) will look more favorably on offsets in an upcoming revision of federal guidance on GHG accounting, last updated in 2012. Currently, the guidance allows US federal agencies to count REC purchases against scope 2 emissions, but it punts on offsets, saying the government needs more time "to understand how the market for carbon offsets … could be applied consistently across the Federal community."* Pro-offset groups are making the case that carbon standards and their processes have become considerably more consistent since 2012 and thus should be eligible.

*"Federal Greenhouse Gas Accounting and Reporting Guidance." 2012. Accessed May 23, 2016. https://www.whitehouse.gov/sites/default/files/microsites/ceq/revised_federal_greenhouse_gas_accounting_and_reporting_guidance_060412.pdf

Wind Breezes to the Forefront As Most Sought-After Project Type

The voluntary carbon markets have long been a place for innovation as, by definition, they work to reduce emissions in sectors that fall outside of regulation. This has led to a breadth of project types across categories such as renewable energy, forestry, household devices, and transportation. Voluntary buyers express their preferences among these categories according to both the volumes they purchase and the prices they negotiate.

Figure 7: Transacted Volume by Project Type, 2015

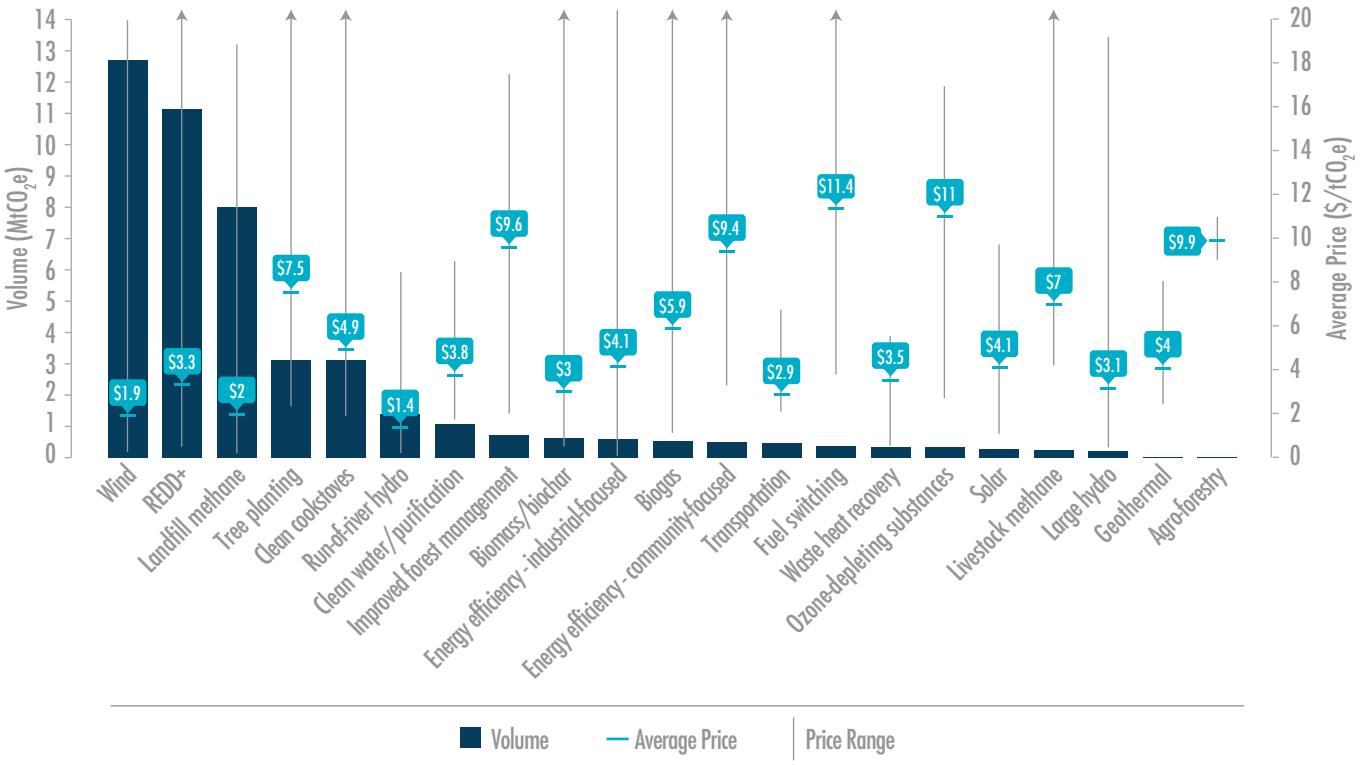


Notes: Based on 1,306 transactions, representing 50.9 $MtCO_2e$, for which project type information was provided.

In 2015, wind edged out REDD+ as the most sought-after offset type, with buyers transacting 12.7 $MtCO_2e$, representing 25% market share. Wind offsets were one of the highest-transacting project types in recent years due, in part, to their affordability and "understandability" factor. Even buyers with little to no knowledge of offset types understand wind projects at a glance. However, the high volumes came with lower prices, with transactions averaging $1.9/tonne leading to a total value of $24.4 M.

REDD+, which was the most-transacted offset type in both 2013 and 2014, last year trailed wind transactions at 11.1 $MtCO_2e$ (22% market share), representing a 26% decline from 2014. While the governments of Germany, Norway, and the UK pledged billions of dollars to finance avoided deforestation last year, this large-scale, non-

Figure 8: Transacted Volume, Average Price, and Price Range by Project Type, 2015



Notes: Based on transactions representing 48.8 $MtCO_2e$ for which both price and project type was provided, and for which there were at least three respondents..

market finance has not translated into increased demand among voluntary buyers – though project developers generally see any high-profile recognition of REDD+ as a move in the right direction. Despite the lower volume, REDD+ generated a higher overall value than wind at $37.5 M.

Aside from wind and REDD+ offsets, buyers sought out 8.0 $MtCO_2e$ from landfill methane projects last year, 3.1 $MtCO_2e$ from tree-planting, 3.1 $MtCO_2e$ from clean cookstoves, and 1.4 $MtCO_2e$ from run-of-river hydro; all other project types represented 1 $MtCO_2e$ or less in transaction volume.

Though landfill methane, tree-planting, and clean cookstove transaction volumes all increased over 2014 numbers, perhaps the most unexpected surge was among landfill methane transaction volumes, which grew 79% over 2014 to become the third-most transacted offset type. Demand for landfill methane tonnes came overwhelmingly from the US as buyers sought out inexpensive tonnes from projects reaching the end of their crediting period; most of these projects are not planning to renew (see p. 30, North America, for more detail). Though landfill methane volumes are more than double those of tree-planting sales, the difference in average pricing means that the latter earned a higher total value at $23.5 M (compared to $15.7 M for landfill methane).

Offset prices – usually the result of direct negotiations between individual buyers and sellers – ranged *across* but also *within* the various project types (Figure 8). In some cases, the differences can be explained by project location: for instance, plentiful wind offsets from India sold at an average of $1.2/tonne while those originating from the United States typically sold for $3.7/tonne. In other cases, price variation can be explained by actual differences in emissions reductions methodologies: for instance, offsets from avoided "unplanned" deforestation projects (where the drivers of deforestation are typically smallholder agriculture or illegal logging) earned higher prices ($5.4/tonne, on average) compared to avoided "planned" deforestation projects ($1.9/tonne, on average), where the driver of deforestation (typically a large landowner or company) has a legal clearing plan that is then voluntarily altered. More detailed price data by project type can be found in Annex 4.

Box 7: Carbon Finance for Avoided Deforestation: A Time of Transition

The inclusion of results-based payments to Reduce Emissions from Deforestation and forest Degradation (REDD+) as an article in the Paris Agreement sent a strong signal that the mechanism first conceived at the Bali climate negotiations in 2007 has finally come to fruition. Indeed, with deforestation and degradation contributing 10–15% of global greenhouse gas emissions, countries will not be able to limit global temperature rise to 2 degrees Celsius – let alone the aspirational goal of 1.5 degrees Celsius – without curbing it.

The Paris Agreement could create further demand for REDD+ emissions reductions either through non-market channels (for instance, financial pledges under the Green Climate Fund that would not necessarily involve the transfer of an emissions reduction unit from one party to another) or through the UNFCCC's new market mechanism, if REDD+ becomes one of the "ITMOs" (see Box 2) that can be transferred between parties.

At the same time, domestic carbon markets developed outside of the UNFCCC may also include results-based payments for REDD+. **The most likely inclusion of REDD+ in an existing compliance market is in California, where the state's Air Resources Board is considering linking its program with Acre, Brazil**, in order to source REDD+ offsets from the tropical forest state in time for the third compliance period (2018–2020) of their cap-and-trade system. The decision could have wider influence, since California's market is currently linked to Quebec's, and future links are planned with Ontario's upcoming market (in 2017) and Manitoba's (date unknown). The International Civil Aviation Organization (ICAO) is also considering REDD+ for its market-based mechanism (see Box 4).

A key question for REDD+ going forward has to do with scale. While 11.1 $MtCO_2e$ of REDD+ offsets transacted on the voluntary market in 2015, those tonnes were all produced by project-level initiatives that avoid deforestation within a defined project area – often covering hundreds of thousands of hectares, but still smaller than the scaled-up REDD+ that is envisioned for entire states and countries. Yet, **compliance markets developed by the UNFCCC, ICAO, California, and others may sanction only REDD+ offsets produced at the jurisdictional scale, or they may require that projects "nest" within these frameworks.** This scaling-up of REDD+ is critical to avoid deforestation at the scale necessary to stop catastrophic climate change, and it could also help to prevent leakage or the shifting of deforestation drivers from one area to another.

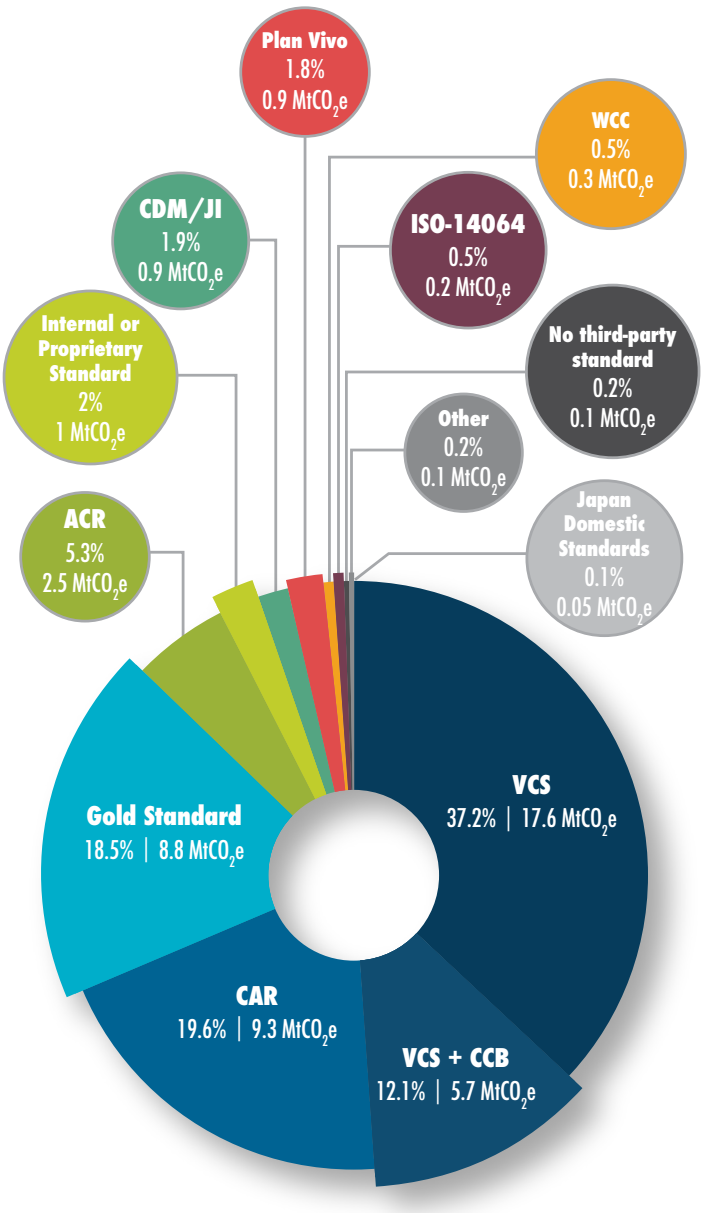
Some project developers are concerned that lessons learned at the project level – not to mention the emissions reductions they've achieved and could achieve in the future – may not carry over to a post-Paris world. A total of 29.5 $MtCO_2e$ in REDD+ offsets have been issued by 34 projects developed under the Verified Carbon Standard since 2010. With continued funding, these projects collectively have the ability to issue an estimated 29.5 $MtCO_2e$ *every* year – and that's not including the REDD+ projects in the VCS pipeline. VCS is currently developing a new guidance document on nesting due out in a few months that will address methodological challenges between different approaches among project, jurisdictional, and national scales, and the standard is actively working with several countries to resolve nesting challenges.

Ecosystem Marketplace's *State of Forest Carbon Finance 2016* report, due out this fall, will further explore this issue of bringing REDD+ to scale, with new data on projects' collective progress on jurisdictional nesting.

Nearly All (98%) Offsets Transacted Use a Third-Party Carbon Standard

In the context of voluntary transactions, standards have developed over the years to offer important guidance on project development as well as a process to assure that emissions reductions are real and verified by a third-party. **Today, the vast majority of buyers consider standard use to be an essential prerequisite before they will consider purchasing tonnes: nearly all offsets (98%) transacted in 2015 were developed under a third-party standard.** The standards represented by market share in Figure 9 are largely the same as those that have emerged as the dominant voluntary standards in previous years, with some jockeying in position for total transaction volumes.

Figure 9: Market Share by Standard, 2015



Notes: Based on transactions representing 48.8 $MtCO_2e$.

The majority of market share went to the Verified Carbon Standard (VCS), which – in part due to its early inclusion of REDD+ methodologies – has been the leading voluntary standard by transaction volume for the last eight years. VCS offsets comprised over half of total transactions associated with a standard, with 23.3 $MtCO_2e$ VCS offsets selling at an average price of $3.2/tonne. Of all VCS offsets, forestry projects are most likely to have additional certifications, with 57% including either the Climate, Community & Biodiversity (CCB) Standards (averaging $4.8/tonne), SOCIAL CARBON, the Forest Stewardship Council (FSC), or a combination of CCB/FSC. Across all standards and project types, a total of 5.8 MtCO2e transacted last year used CCB, 0.9 MtCO2e used SOCIAL CARBON, and 0.9 MtCO2e used FSC.

Trailing VCS, the US-focused Climate Action Reserve (CAR) offsets held 20% market share in 2015, with buyers purchasing 9.3 $MtCO_2e$ at an average price of $2.6/tonne. This volume represented more than triple the number of CAR offsets contracted in 2014 as buyers sought out inexpensive landfill gas tonnes before these projects phase out of their 10-year crediting periods. The large volume illustrates that, while the standard has increased its focus on helping projects sell in California's compliance markets, voluntary offsetting remains an integral feature as well.

The Gold Standard followed closely behind with 19% of the total volume (8.8 $MtCO_2e$) transacted at an average of $4.3/tonne, with the majority of transactions split between renewable energy and household device projects. The standard has a number of initiatives in the works to create new sources of demand and increase prices. Among these is the development of Gold Standard 3.0, which will have quantification methodologies for a variety of sustainable development benefits so that projects might be able to measure and sell verified

water, health, gender, or other benefits in addition to emissions reductions. Another is the launch of the long-awaited Fairtrade Climate Standard, which was the result of a three-year effort by the Gold Standard, Fairtrade, and other partners to set a minimum price and producer premium for carbon offsets, just as there is a Fairtrade minimum price for cocoa or bananas (see Box 3 for more detail on Fairtrade minimum pricing).

The American Carbon Registry, which transacted a similar amount to CAR in 2014, grew its market share by 31%, reaching 2.5 $MtCO_2e$ in 2015 and with prices averaging $4.3/tonne. Nearly half of these tonnes were forestry, with large volumes of transactions from transportation and methane projects as well. Plan Vivo, a standard specifically designed for community forestry and land-use projects, more than doubled transactions to more than 860,000 tCO_2e in 2015, while continuing to retain higher average prices at $7.6/tonne. On the opposite end, internal/proprietary offsets hit a low of $1.1/tonne, with about 969,000 tCO_2e sold.

Standards saw varying proportions of primary versus secondary demand last year. For the volumes under CAR and VCS, more than two-thirds of 2015 tonnes were transacted by a reseller while one-third was transacted directly by the project developer. Gold Standard and Plan Vivo saw more mixed market activity – 43% and 47% of their 2015 volume was sold through intermediaries, respectively, while the majority (66%) of offsets sold under ACR transacted from project developers. Resellers didn't touch the tonnes in the "internal/proprietary standard" and "no standard" categories, with nearly 100% of those tonnes sold directly by project developers.

Box 8: Finding Their Footing: Standards in a Post-Paris World

In a world in which *all* countries have emissions reductions obligations post-2020, the role of voluntary offset standards is unclear. In many cases, standards active on the voluntary markets have and are responding to this uncertainty with innovation as they strategize to position themselves and their projects for success post-Paris.

One potential strategy among standards is to work with emerging compliance programs to make the case that their methodologies (and in some cases, their already-issued offsets) should be eligible for compliance. Standards are particularly active in lobbying the International Civil Aviation Organization (ICAO), which is in the process of developing a market-based mechanism to reduce emissions from airlines (see Box 4 for more information on ICAO). VCS, the major standard currently issuing REDD+ offsets, was a signatory to a recent policy paper advocating for the inclusion of REDD+ in the upcoming ICAO market along with a number of conservation non-profits, including Ecosystem Marketplace's publisher Forest Trends. Offsets originally developed for the voluntary markets could also play a role in existing and future compliance programs, though California is the only current example where project developers are actively transitioning their tonnes for compliance-eligibility.

China, which has seven subnational carbon markets pilot programs and which is launching its national cap-and-trade program in 2017, has not given any indication towards supporting the transition of voluntary offsets. Instead, China appears to prefer only allowing for certified emissions reductions through the CDM to convert to its own Chinese Certified Emissions Reductions (CCERs). At the moment, South Korea's cap-and-trade program has similar restrictions, but the government has indicated that it may allow international offsets into its market starting in 2020. This may create a new chance for conversion of offsets originally developed for voluntary markets. South Africa's upcoming carbon tax, which includes an offsetting mechanism, is perhaps the friendliest towards voluntary markets: a 2014 policy paper gave a nod to VCS and Gold Standard, indicating that these standards could be eligible for compliance.

Another strategy among standards to keep afloat post-Paris could be to fill in the sectoral gaps in countries' economies that are not capped under upcoming climate plans by creating innovative offset methodologies that achieve emissions reductions that otherwise wouldn't occur. A number of standards introduced new methodologies on the voluntary markets within the last year that focused on land-use or agriculture. These included grasslands (CAR), grazelands (ACR), wetlands (VCS), and low-tillage farming (Gold Standard) methodologies. **In a shift from the previous "if you build it, they will come" mentality, standards are increasingly looking to test the marketability of new methodologies and are working more actively with project developers to bring their concepts to fruition.** CAR, for example, has sweetened the deal for landowners interested in piloting the standard's new grasslands methodology by channeling its Conservation Innovation Grant money (courtesy of the US Department of Agriculture) to reduce barriers to project implementation.

Buyers Increasingly Connect Offset Purchases with Major Events, Customers

In the context of a buyers' market, suppliers often hold information about their clients close to the chest. Nonetheless, in response to Ecosystem Marketplace's annual survey, 113 suppliers reported information about more than 500 buyers headquartered across 35 countries. From this reporting, we are able to discern a broad understanding of what types of organizations are voluntarily purchasing offsets globally and what drives them to do so.[4]

As in past years, most of the offset demand in 2015 came from the private sector, with companies financing at least 25.2 $MtCO_2e$ in emissions reductions valued at $136 M – about 98% of the market value associated with a specific buyer type. Suppliers reported contracting the most tonnes to multinational corporations, followed by domestic corporations (with headquarters in Brazil, China, Germany, South Africa, Switzerland, and the United States, among other countries), and then small-to-medium enterprises.

While large companies dominated purchases in 2015, a number of new offsetting platforms launched in the past year targeting individuals and small-to-medium enterprises. The non-profit organization Stand for Trees sells REDD+ offsets at a flat rate of $10/tonne, while the non-profit organization Cool Effect includes dynamic, transparent pricing to reassure buyers about the amount of finance flowing back to the projects. Meanwhile, the UNFCCC launched its own carbon offsetting platform, Climate Neutral Now, in hopes of creating new demand for CDM projects and giving project developers a space to name their own price publicly (for more on the CDM, see Box 9).

Offset buyers' motivations are as varied as the buyers themselves, from the United States-based utility that wants to offer its customers a carbon-neutral energy option to the French cosmetics company seeking to invest in forest conservation in its supply chain to the Japanese manufacturer that wants to raise its profile domestically as a responsible business. "Demonstrating climate leadership within industry" became the top-cited reason for offsetting in the lead-up to Paris as companies took a more active role in last year's international climate change negotiations (Figure 10). "Pursuit of a greenhouse gas emissions target," whether driven by a corporate social responsibility or public relations team within the company, was the second most commonly cited motivation.

While energy, transportation, and finance/insurance companies are typically the sectors that demand the most offsets, the events/entertainment and services sectors rose to the top last year. Major events such as the World Cup, the Olympics, and the Superbowl are now carbon neutral – giving sponsors high visibility – and service industries such as hotels are increasingly incorporating climate commitments into their brands. While forestry offsets remained a favorite among most buyer sectors, a few diverged: renewables composed 88% of total volume offset by the transportation sector, methane purchases made up 75% of events/entertainment offsetting, and non-methane gases comprised 57% of total volume offset by the services sector.

As is typical, though, the carbon market itself is the most prominent buyer sector, with project developers selling 9.3 $MtCO_2e$ to offset retailers before those offsets resold to end-users. Overall, those final buyers are mostly familiar faces. **Suppliers reported that they sold the majority (92%) of offsets to pre-existing clients, while only 8% of 2015 transactions represented demand from buyers new to the voluntary carbon markets**.

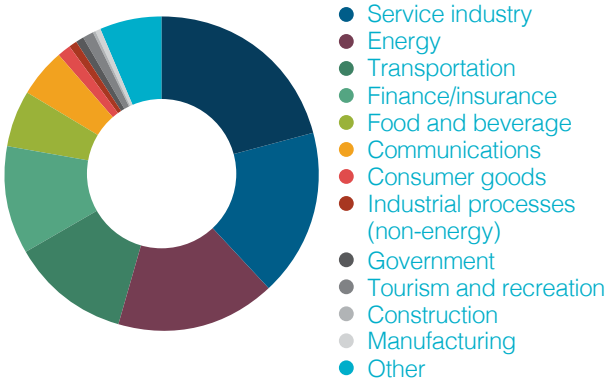
[4] Though suppliers rarely will, companies disclose information on their climate change activity to CDP that allows us to name some of the major private sector actors on the voluntary carbon markets and explore their offsetting strategies. These activities can include which projects they buy from, how offsetting fits into larger emissions reductions goals, and how they are engaged with carbon policy, as well as who is entering and exiting the market. See: Forest Trends' Ecosystem Marketplace. 2015. *The Bottom Line: Taking Stock of the Role of Offsets in Corporate Carbon Strategies* for a glimpse into the top voluntary buyers as of 2014, and look for our update of this demand-side report in June 2016 for more information. http://www.forest-trends.org/publication_details.php?publicationID=4858

Figure 10: End-Buyer Breakdown by Profit Status, Sector, Type, Experience, and Motivation

BUYER PROFIT STATUS

PRIVATE SECTOR:	$136 M
PUBLIC SECTOR:	$2.1 M
NON-PROFIT SECTOR:	$.4 M
INDIVIDUALS:	$.8 M

BUYER SECTOR



BUYER TYPE

RESELLERS:	24%
END USER:	76%

BUYER EXPERIENCE

NEW BUYER:	8%
RETURNING:	92%

BUYER MOTIVATION

Notes: Based on 298 transactions (25.8 $MtCO_2e$) associated with buyer profit status, 310 transactions (22.4 $MtCO_2e$) associated with buyer sector, 535 transactions (38.3 $MtCO_2e$) associated with buyer type, 522 transactions (36.8 $MtCO_2e$) associated with buyer experience, and 151 transactions (21.6 $MtCO_2e$) associated with buyer motivation, as described by survey respondents. Buyer motivations represented in the word cloud are roughly proportional to the percentage they represent.

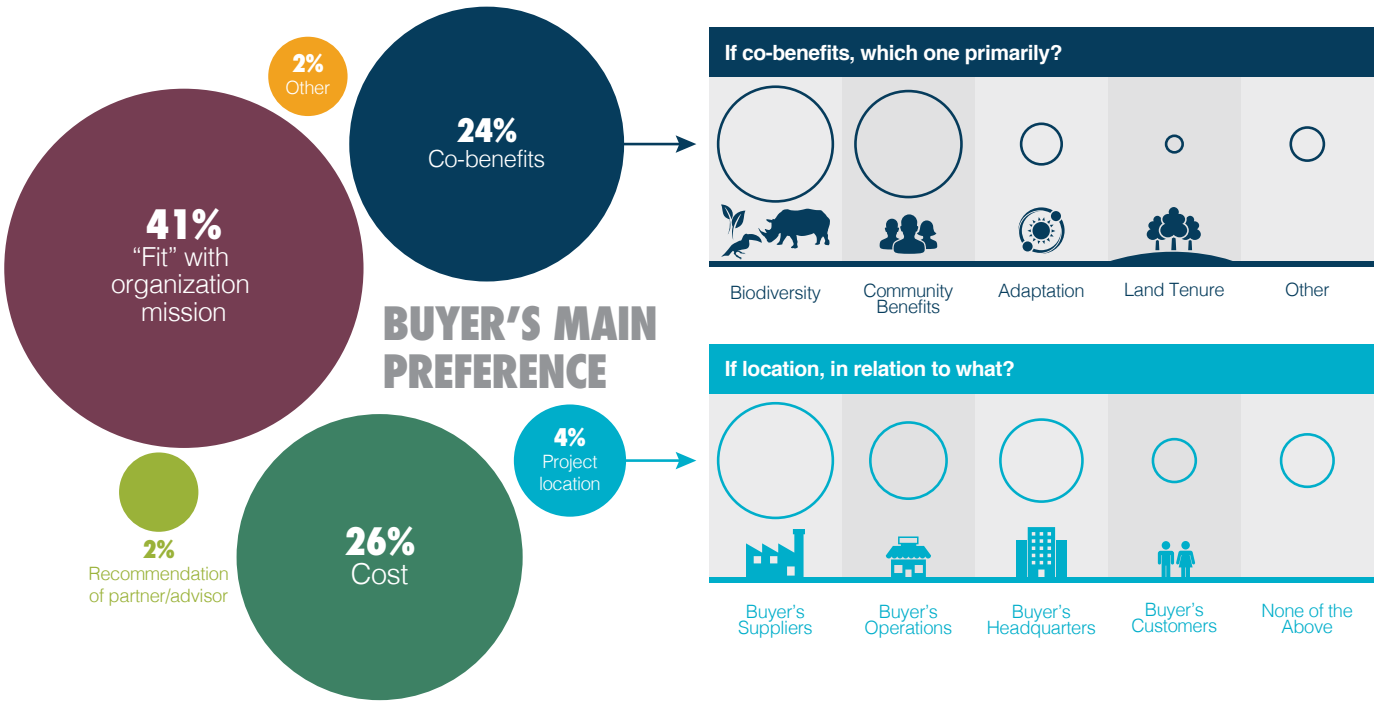
Most Buyers Seek Offsets That "Fit" Their Organization's Mission

Beyond their reasons for participating in the voluntary carbon markets in the first place, offset buyers have varied motivations and preferences when it comes to choosing the projects or portfolio of projects they buy from. While a wind offset from Turkey might be just right for one buyer, another buyer might prefer to purchase clean cookstove offsets from Rwanda, or to invest in a grasslands restoration project in Kenya. Suppliers – in particular the retailers that aggregate portfolios of offsets and work with dozens of buyers – are particularly attuned to these preferences. **For the first time in this year's annual survey we asked suppliers about the *primary* concerns of their buyers.**

Buyers in search of a "fit" – which could comprise a mixture of factors including price, project location, and co-benefits – with their organization's mission purchased the most transaction volume (13.1 $MtCO_2e$). Others had more clear-cut priorities. Buyers concerned with price, first and foremost, bought 8.3 $MtCO_2e$ at, unsurprisingly, the lowest average price of $2.9/tonne. Nearly the same number of tonnes (7.7 $MtCO_2e$) went to buyers that selected offsets primarily based on project co-benefits, or the impacts they achieved beyond carbon sequestration. These buyers were primarily interested in biodiversity and community benefits, and most purchased offsets from forestry or clean cookstoves projects.[5]

Among those who purchased offsets based on where they originated, many (32 reported buyers) were looking for some connection to their suppliers or supply chain while others sought projects near their operations or headquarters – perhaps to boost their profile in the places where they have employees or customers. The buyers who prioritized location typically purchased offsets in smaller amounts, while buyers who sought cost-effective offsets often bought in bulk.

Figure 11: Buyer Breakdown by Main Concern When Choosing Offsets



Notes: Based on 230 transactions (31.7 $MtCO_2e$) associated with buyer's main preference. Of those, 62 transactions (5.9 $MtCO_2e$) specified a location preference and 40 transactions (1.7 $MtCO_2e$) specified a co-benefits preference.

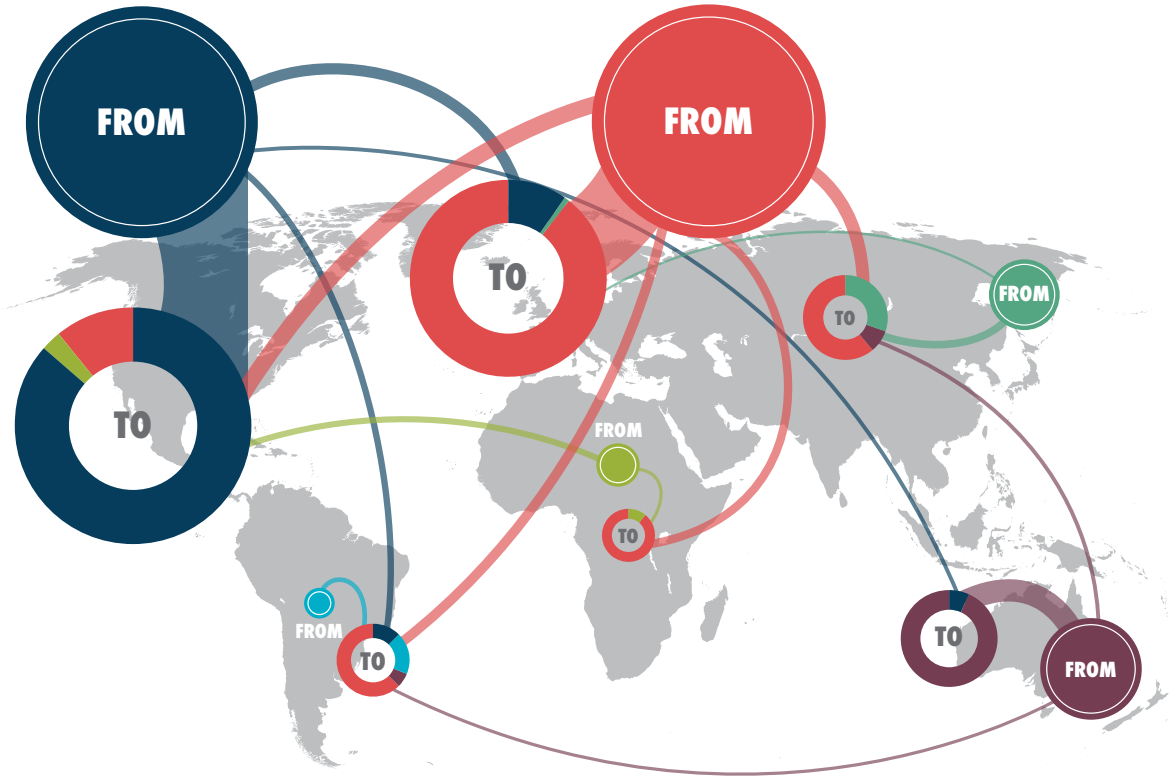
[5] For a detailed analysis of buyer preferences according to co-benefits, see: Forest Trends' Ecosystem Marketplace. 2016. *Not So Niche: Co-Benefits at the Intersection of Forest Carbon and Sustainable Development.* http://forest-trends.org/releases/p/not-so-niche

Voluntary Buyers Busiest in North America and Europe; Suppliers Typically Build Relationships Nearby

High-GHG-emitting regions including North America (defined in this report as the United States and Canada) and Europe are home to the majority of buyers on the voluntary carbon markets, who are mostly private-sector actors striving to take action to reduce emissions in the absence of – or sometimes in addition to – carbon regulation. **In 2015, US buyers purchased the most (16.0 $MtCO_2e$) offsets of any country, nearly the equivalent of combined demand stemming from all European countries combined (16.1 $MtCO_2e$).** Within Europe, buyers from the United Kingdom, the Netherlands, and France purchased the most tonnes.

When it comes to purchasing offsets, most buyers looked to close-by project developers or retailers for guidance. Suppliers headquartered in Europe sold the majority (68%) of offsets to European buyers: ditto for North American suppliers (90%), Oceania (88%), Latin America (94%), and Asia (84%).

Figure 12: Flow of Transacted Volume from Supplier Region to Buyer Region, 2015



From ↓ To →	North America	Latin America	Africa	Asia	Oceania	Europe
North America	15.5 $MtCO_2e$	0.2 $MtCO_2e$	–	–	0.2 $MtCO_2e$	1.2 $MtCO_2e$
Latin America	–	0.3 $MtCO_2e$	–	–	–	–
Africa	0.5 $MtCO_2e$	–	0.1 $MtCO_2e$	–	–	–
Asia	–	–	–	0.7 $MtCO_2e$	–	0.1 $MtCO_2e$
Oceania	–	0.1 $MtCO_2e$	–	0.2 $MtCO_2e$	2.7 $MtCO_2e$	–
Europe	1.9 $MtCO_2e$	1 $MtCO_2e$	0.8 $MtCO_2e$	1.4 $MtCO_2e$	–	11 $MtCO_2e$

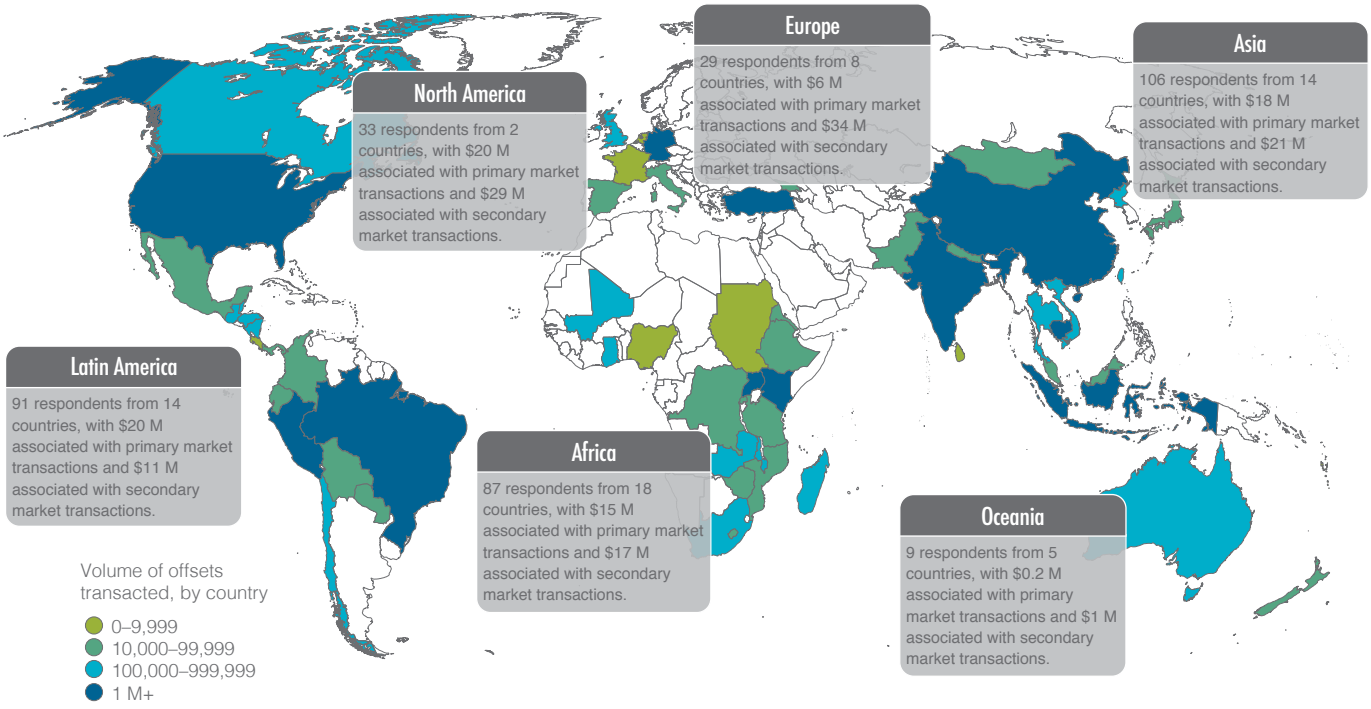
Notes: Based on 38.2 $MtCO_2e$ in 2015 transaction volume for which both the supplier region and the buyer region was available. The supplier region is not necessarily the same as the project location, since the supplier may be a secondary market actor. Project location is represented in Figure 13 below.

Offsets Originating from the United States, India, and Indonesia Collectively Compose Half of 2015 Transaction Volume

With US buyers typically favoring local projects, offsets originating from the US transacted the most of any country (15.4 $MtCO_2e$). Other major project locations remained old favorites in 2015, including: India (6.7 $MtCO_2e$), Indonesia (4.6 $MtCO_2e$), Turkey (3.1 $MtCO_2e$), Kenya (3.1 $MtCO_2e$) and Brazil (3.1 $MtCO_2e$).

In aggregate, this translated into North America and Asia transacting the most offsets. However, taking a closer look at the value of transactions flowing to primary versus secondary market actors reveals that finance flowed differently to recipients across regions. Project developers in Latin America received $19.9 M, the most (57%) of finance from the sale of offsets in any region. In contrast, $34.1 M (84%) of finance flowing to European projects actually went to intermediaries. The following sections go into more detail about project development, supply-and-demand dynamics, and policies to watch, by region.

Figure 13: Volume of Offsets by Project Country and Breakdown of Regional Respondents



Notes: Based on 49.9 $MtCO_2e$ associated with a project location. Country-specific volumes were reported here if they exceeded 100,000 $MtCO_2e$ and if at least three unique respondents replied. Total respondents per region will add up to more than the total respondents that responded to the survey, as some respondents replied on behalf of projects in multiple regions.

Africa: Creating Value from Carbon and Co-Benefits

While African carbon project development has historically lagged behind its Asian and Latin American counterparts, total offsets transacted have steadily risen over the years. To date, buyers have contracted a total of 45.1 $MtCO_2e$ from the continent, of which 54% was transacted in the last three years alone. African offset sales remained stable last year at 6.7 $MtCO_2e$, just slightly less than 2014's volume. The majority of the volume originated from forestry or cookstoves projects as buyers sought to support emissions reductions that contributed to low-deforestation and sustainable development on the continent.

Though average prices decreased 9% to $5.2/tonne, buyers paid more for African offsets than those from any other region except Oceania, for a total value of $34.7 M. Buyers (whether end-users or retailers) often contracted directly with project developers: 54% of Africa's 2015 offset transactions represented primary market demand while the remaining 46% of tonnes were resold by secondary market actors.

Within the region, **Kenya** remained the primary source of offsets, supplying 3.1 $MtCO_2e$ from cookstoves and forestry projects. Neighboring **Uganda** followed at 1.5 $MtCO_2e$, with **Zambia**, **Madagascar**, and **Malawi** also recording at least three transactions from separate organizations. Though **South Africa** plans to enact a carbon tax in 2017 that would allow compliance entities to offset up to 10% of their regulated emissions (according to preliminary policy documents), the program has been delayed several times. Ecosystem Marketplace has not tracked pre-compliance activity around buyers preparing for the tax. Market participants said that businesses took a wait-and-see approach in 2015.

Though demand from African buyers remained a small portion of global demand (less than 2%), interest appears to be growing. Suppliers reported selling more than 600,000 tonnes to African end-users last year – with 88% of those offsets finding a home with buyers that were new entrants to the carbon markets.

Trends to Watch:

- **South Africa** is expected to finalize rules for its offset program in mid-2016. A 2014 policy paper by the National Treasury indicated that offsets developed under VCS and the Gold Standard could be eligible for use in its upcoming carbon tax slated to begin January 1, 2017.

- In early 2016, the **Kenya** Stock Exchange announced it will launch a carbon trading platform for domestic projects to sell to local and foreign buyers, though the exchange has not said when the platform would launch. The news followed another announcement in late 2015 by KenGen, the country's largest power company, that it would seek to sell its CDM offsets to voluntary buyers.

Table 2: Africa by the Numbers, 2015

VOLUME	VALUE	AVERAGE PRICE
6.7 $MtCO_2e$	$34.7 M	$5.2/tonne
Top Transacted Project Categories		
Forestry and Land Use	Household Device	Efficiency and Fuel Switching
46%	44%	4%
Top Transacted Project Standards		
Gold Standard	VCS	VCS + CCB
39%	30%	22%

Notes: Based on 6.7 $MtCO_2$ associated with offset project location.

- The **World Bank's Carbon Initiative for Development** (CI-Dev) contracted offsets from a biogas project developer in Kenya in January 2016, marking the first purchase of the four-year old program. CI-Dev, which is capitalized at $100 M, expects to contract additional offsets from 12–15 projects, with a focus entirely on least developed countries – many of which are found in Africa.

Asia: Steady Breeze of Supply

Asian offset suppliers continued to transact significant volumes in 2015 (15.5 $MtCO_2e$) but lost the top spot to North American suppliers by a small margin. The average voluntary offset price across Asia, though up 32% from 2014, remained the lowest of all regions at $2.5/tonne, resulting in a total value of $39.5 M.

Though **Chinese** and **Indian** offset suppliers have historically dominated voluntary supply within Asia, a growing gulf has appeared between the two countries over the last two years as Chinese offset developers shift their focus to the country's upcoming compliance market. In 2015, that gap grew ever-wider, with Indian projects supplying 6.6 $MtCO_2e$ and transactions from China-headquartered projects dwindling to 2.2 $MtCO_2e$. Though Ecosystem Marketplace tracked significant pre-compliance offset transactions in California in the lead-up to its cap-and-trade regulation, Chinese market participants report that no similar phenomenon is taking place in China, where to-be-regulated entities are waiting for clear direction from the national government.

In India, nearly all transacted offsets (91%) originated from wind projects and sold at an average price of $1.2/tonne. For some transactions, mostly those through retailers or wholesalers, the price fluctuated even lower, causing some project developers to raise concerns about the viability of using carbon finance to support their projects – especially as offset prices approach verification costs.

Meanwhile, **Indonesian** projects – almost exclusively ones that seek to protect the country's carbon-rich tropical forests – transacted 4.6 $MtCO_2e$ in 2015. The voluntary activity continued despite REDD+ taking a backseat in Indonesia in 2015, when the country's REDD+ Task Force was subsumed into the newly merged Environment and Forestry Ministry and again when the country submitted its climate action plan, which focused more on reducing industrial emissions than avoiding deforestation.

On the demand side, Asian buyers from India, Singapore, and Sri Lanka transacted 884,000 tCO_2e, mainly purchasing renewable energy offsets (82%) and forestry offsets (12%). At $1.7/tonne, Asian buyers paid the lowest average prices of any region.

Trends to Watch:

- Following **Indonesia's** forest fires, REDD+ is coming back into the spotlight, along with the newly created Peat Restoration Agency that seeks to restore two million hectares of peat land.
- **Japan's** Joint Crediting Mechanism, a bilateral mechanism for Japan and Japanese firms to invest in emissions reductions projects and receive offsets, issued its first offsets with one of its 16 partner countries, Indonesia, in May 2016. The tiny issuance – 40 tonnes – is more symbolic than anything else at this point, but does set a precedent for how the program will split offsets between Japan and a host country.

Table 3: Asia by the Numbers, 2015

VOLUME	VALUE	AVERAGE PRICE
15.5 $MtCO_2e$	$39.5 M	$2.5/tonne
Top Transacted Project Categories		
Renewables	Forestry and Land Use	Household Device
57%	31%	4%
Top Transacted Project Standards		
VCS	VCS + CCB	Gold Standard
68%	16%	12%

Notes: Based on 15.5 $MtCO_2$ associated with offset project location.

- Taking a page from the World Bank's PAF, **Singaporean** Carbonbank plans to auction 2 million voluntary carbon offsets this June 2016 in an effort to drive demand.

Europe: Turkish Supply Reigns, Though Smaller Regional Initiatives Bud

With the majority of European emissions regulated through the European Union's Emissions Trading Scheme (EU ETS) or through individual country emissions reductions targets such as in Switzerland or Norway, offset suppliers here typically function as intermediaries (selling offsets originating in other regions) instead of as project developers.

The one exception is **Turkey**, which, as an "advanced developing country" under the Kyoto Protocol, was not eligible to sell offsets under the CDM, yet was not advanced enough to finance its own emissions reductions. Instead, Turkish offset developers saw a clear pathway for demand in the voluntary markets, and in 2015 Turkish suppliers transacted 3.2 $MtCO_2e$. At $1.3/tonne, Turkey was also home to the lowest average price of the top 20 supplier countries. The vast majority (97%) of Turkey's inexpensive offsets came from renewable energy projects.

In contrast, offsets originating from **elsewhere in Europe** transacted at the highest regional average price ($17.1/tonne) but totaled only 2.1 $MtCO_2e$. The most active domestic program in the EU is the **United Kingdom**'s Woodland Carbon Code (WCC), a voluntary standard administered by the UK Forestry Commission for domestic companies. Italian and German developers also originated a modest number of offsets for sale to domestic end-users.

On the demand-side, European offset buyers typically constitute the largest source of demand, alongside North American buyers. In 2015, Europeans transacted 16.1 $MtCO_2e$ at an average price of $4.1/tonne. The majority (91%) of buyers had purchased offsets before and favored forestry and land use (49%), renewables (21%), or household device (18%) projects. Though most of the emissions reductions themselves originated from a conserved forest, solar energy installation, or clean cookstove far away, European end-users often worked with European intermediaries to source those tonnes: at least 11 $MtCO_2e$ in 2015 transaction volumes passed through a European seller, typically a retailer.

Trends to Watch:

- The **EU ETS** has agreed on a Market Stability Reserve, a cost-containment mechanism that would lock up excess supply of allowances in an effort to resuscitate the market. Tightened allowance supply could in turn revive prices for CDM offsets – possibly attracting more CDM sales on the EU ETS instead of on the voluntary or other markets.
- **New domestic offset programs** include the Italian city's Bologna Carbon Market, announced late last year, which aims to entice local businesses to purchase offsets from nearby projects and a voluntary carbon land certification in France called "VOCAL," which creates a framework for local project developers.

Table 4: Europe by the Numbers, 2015

VOLUME	VALUE	AVERAGE PRICE
5.3 $MtCO_2e$	$40.4 M	$1.8/tonne
Top Transacted Project Categories		
Renewables	Methane	Forestry and Land Use
58%	35%	6%
Top Transacted Project Standards		
Gold Standard	VCS	WCC
53%	37%	5%

Notes: Based on 5.3 $MtCO_2$ associated with offset project location.

Latin America: Voluntary Carbon Finance at the Frontiers of Deforestation

Market activity in Latin America slumped in 2015, with suppliers in the region transacting 6.7 $MtCO_2e$ – down from 11.2 $MtCO_2e$ in 2014. More than two-thirds of 2015's transaction volume came from forestry projects, many of which seek to halt deforestation in the Amazon and other critical tropical forests on the continent. Because many of these REDD+ projects produce hundreds of thousands of offsets every year, a handful of large transactions can swing the voluntary markets up or down – and 2015's lower volume can in part be explained by the fact that a few significant 2014 sales were not repeated last year. Market participants also noted that high-profile events in Latin America in 2014 (the World Cup in Brazil and the UN climate negotiations in Peru) spurred offset demand in that year that turned out to be short-lived.

The average offset price in the region remained unmoved at $5/tonne, tracking alongside the $5/tonne value calculated for emissions reductions achieved through Brazil's Amazon Fund and through new finance pledged through Germany, Norway, and the UK's REDD Early Movers program. The majority (64%) of the $33.2 M value attributed to Latin America went directly to project developers while the remaining 36% passed through intermediaries. **Brazil** remained the largest Latin American offset supplier in 2015, transacting 3.1 $MtCO_2e$, with **Peru** following at 1.5 $MtCO_2e$. **Guatemala**, **Nicaragua**, and **Honduras** each supplied around half a million tonnes and supported a wider variety of project types – including household devices, efficiency and fuel switching, and renewables.

Though most demand for Latin American tonnes came from outside the continent, Latin American buyers – mostly those from the food and beverage sector – purchased at least 304,000 tCO_2e last year.

Trends to Watch:

- The California Air Resources Board is considering a linkage with **Acre**, **Brazil**, to source REDD+ offsets from the state, with a decision expected in the second half of 2017. Meanwhile, the Brazilian federal government has stated that its national strategy does not include the transfer of offsets to other countries and that any domestic emissions reductions financed outside of the Paris Agreement will not be recognized. This stance applies to voluntary offsets as well. Meanwhile, market participants (and lawyers) are trying to figure out what it all means before 2020, when national climate targets go into effect.

Table 5: Latin America by the Numbers, 2015

VOLUME	VALUE	AVERAGE PRICE
6.7 $MtCO_2e$	$33.2 M	$5/tonne
Top Transacted Project Categories		
Forestry and Land Use	Renewables	Efficiency and Fuel Switching
68%	9%	8%
Top Transacted Project Standards		
VCS	VCS + CCB	CDM/JI
54%	18%	5%

Notes: Based on 6.7 $MtCO_2$ associated with offset project location.

- **Chile's** carbon tax on power plants is due to start in 2017, and the government has indicated it would consider an emissions trading program in the longer term. Currently, the voluntary Santiago Climate Exchange trades VCS offsets, which could lay the groundwork for third-party standards' inclusion in a domestic offset program later.

- **Mexico** is considering implementing an ETS, based on its 2012 General Climate Change Law. In October 2014, the National Emissions Register was established, requiring companies emitting more than 25,000 tCO_2e annually to report emissions; emitters may also choose to report voluntary offset purchases sourced from within Mexico. The country's voluntary carbon offset exchange, $MexiCO_2$, allows for both compliance-grade (CERs) and voluntary offsets (VCS, Gold Standard, Plan Vivo, and CAR) and is positioning itself for growth as Mexico's domestic carbon market develops.

North America: Voluntary Markets Thrive Alongside Subnational Compliance Caps

While some market participants predicted that the implementation of **California**'s cap-and-trade carbon market and its subsequent linkage with **Quebec**'s would undermine voluntary offset demand in North America, the voluntary markets have instead grown over the last two years. In 2015, US buyers purchased 15.4 $MtCO_2e$ (another 0.1 $MtCO_2e$ came from Canada). Ecosystem Marketplace previously documented a similar phenomenon in the European Union, where the implementation of the Emissions Trading System supplemented rather than weakened voluntary demand.

Nearly all of North America's 2015 volume was contracted to buyers headquartered on the continent, indicating a relatively insular market. Suppliers noted fresh interest in offsetting among technology firms and customer-facing green gas programs. Market participants also said that while voluntary markets may be oversupplied globally, that's not the case from the perspective of American and Canadian buyers that insist on offsetting "locally." However, average prices on the North American voluntary market did not reflect increased competition, instead tracking just under the global average at $3.2/tonne. This is partly due to a surge in transactions of low-priced landfill methane offsets, which made up almost half of North America's volume and sold for an average of $1.9/tonne. Most landfill methane projects developed shortly after 2007 when CAR first released its landfill methane protocol. The projects are now reaching the end of their 10-year crediting period and 2015's bump in landfill gas transaction volumes is unlikely to be repeated.

Instead, future North American voluntary offset supply (and demand) may orbit around project types that fall outside of California's compliance market – or are difficult to implement under the state's protocols. Technical changes to ARB's US forest protocol caused a rush to list projects under the old rules before the November 1, 2015 deadline, with some market participants predicting that future forestry supply could shift back to the voluntary markets. CAR, ACR, and VCS are actively navigating these dynamics: all are Offset Project Registries for California, but they continue to support voluntary offset protocols, and they work to develop new methodologies that (like ACR's rice protocol) may eventually be adopted into the compliance market.

Trends to Watch:

- **California's** ARB is considering allowing jurisdictional REDD+ offsets into its cap-and-trade program and may hear a proposal from staff as early as September 2016. If the process moves forward, REDD+ offsets would initially be sourced through a jurisdictional linkage with Acre, Brazil. Though market participants claim that a surge of REDD+ supply would rock the California market, it is unclear how it would affect the voluntary markets for REDD+ offsets other than to signal a move from project-based to (scaled up) sector-based demand (see Box 7).
- **Ontario** plans to launch a cap-and-trade program in 2017 that will link with California and Quebec's and allow compliance entities to purchase offsets for up to 8% of their emissions reductions obligation. The province has not yet decided on specific offset protocols, but it put out a request for bids to develop 13 potential ones.
- The Canadian province of **Manitoba** signed a Memorandum of Understanding with Quebec and Ontario last December to eventually link all three provinces' cap-and-trade programs, though a launch date remains unknown.

Table 6: North America by the Numbers, 2015

VOLUME	VALUE	AVERAGE PRICE
15.6 $MtCO_2e$	$49 M	$3.2/tonne
Top Transacted Project Categories		
Methane	Renewables	Gases
51%	19%	14%
Top Transacted Project Standards		
CAR	VCS	ACR
60%	25%	14%

Notes: Based on 15.67 $MtCO_2$ associated with offset project location.

Oceania: Supply Low Given Political Uncertainties

Following a record transaction volume of 4.5 $MtCO_2e$ in 2012 when **Australian** buyers snapped up pre-compliance tonnes in anticipation of the country's Emissions Trading System (ETS), voluntary offset demand in Oceania dropped to a record low of 172,000 tCO_2e last year. Though the average voluntary price, $6.4/tonne, remains the highest of any region, it too is a dive from previous numbers ($9.1/tonne in 2014 and $14.2/tonne in 2013) as Australian suppliers shift their tonnes to what is now the biggest buyer in the country: the government.

Following the election and promises of Prime Minister Abbott in 2014, Australia's ETS was formally disbanded on Feb 15, 2015 and replaced by the AU$2.55 B (approximately US$1.90 B) Emissions Reductions Fund (ERF). To date, the government has held three reverse auctions and purchased 143 $MtCO_2e$ for AU$1.73 B, leaving AU$816 million remaining in the ERF. In the shadow of the ERF, Australian suppliers sold just 111,000 tCO_2e to voluntary buyers last year.

In nearby **New Zealand**, market participants say that the low compliance prices on the country's ETS hurt the sale of voluntary domestic offsets, since the general perception of offsets' values is low. However, change could be coming as the government's tacit acknowledgment of prior trading barriers has appeared in recent consultation documents seeking to reform the program. Though no actual policy changes have been implemented, allowance prices have already surged to over NZ$14/tonne (approximately US$9.4) in 2016, an amount not seen since 2011. While this does not mean anything directly for the voluntary markets, higher compliance prices typically correlate with higher voluntary prices in the country's local Permanent Forest Sink Initiative.

While demand for local offsets remains limited, Oceania buyers almost doubled their purchases of offsets abroad to total 3.1 Mt in 2015, up from 1.6 Mt in 2014. These buyers also paid the most, on average, for offsets, at $12.1/tonne for a total value of $37.6 M. Participants reported that Oceania buyers will typically look for a mixed portfolio, sourcing the majority of offsets internationally and throwing in a handful of Australian or New Zealand offsets at higher prices.

Trends to Watch:

- Australia updated and expanded its **National Carbon Offset Standard** and associated Carbon Neutral Program in November 2015, which encourage businesses to reduce emissions and offset by purchasing Australian Carbon Credit Units, CERs, and Gold Standard or VCS offsets. The government review that guided the update acknowledged that awareness around the program and standard remains low and promised reforms with the aim of increasing carbon neutral participants. NCOS also launched the Carbon Neutral Precincts program in March 2016, which allows precincts and cities to participate for the first time.

- Carbon markets remain a contentious issue in **Australia's federal elections** in July 2016, with the current government considering buying international offsets and the opposition party considering a link to China's carbon market.

- The city of **Adelaide, Australia** announced its goal of becoming the world's first carbon neutral city in November 2015 and is looking at offset opportunities.

At the End of 2015, 56 Million Orphaned Offsets Remained in Suppliers' Portfolios – And Even More Supply is on the Way

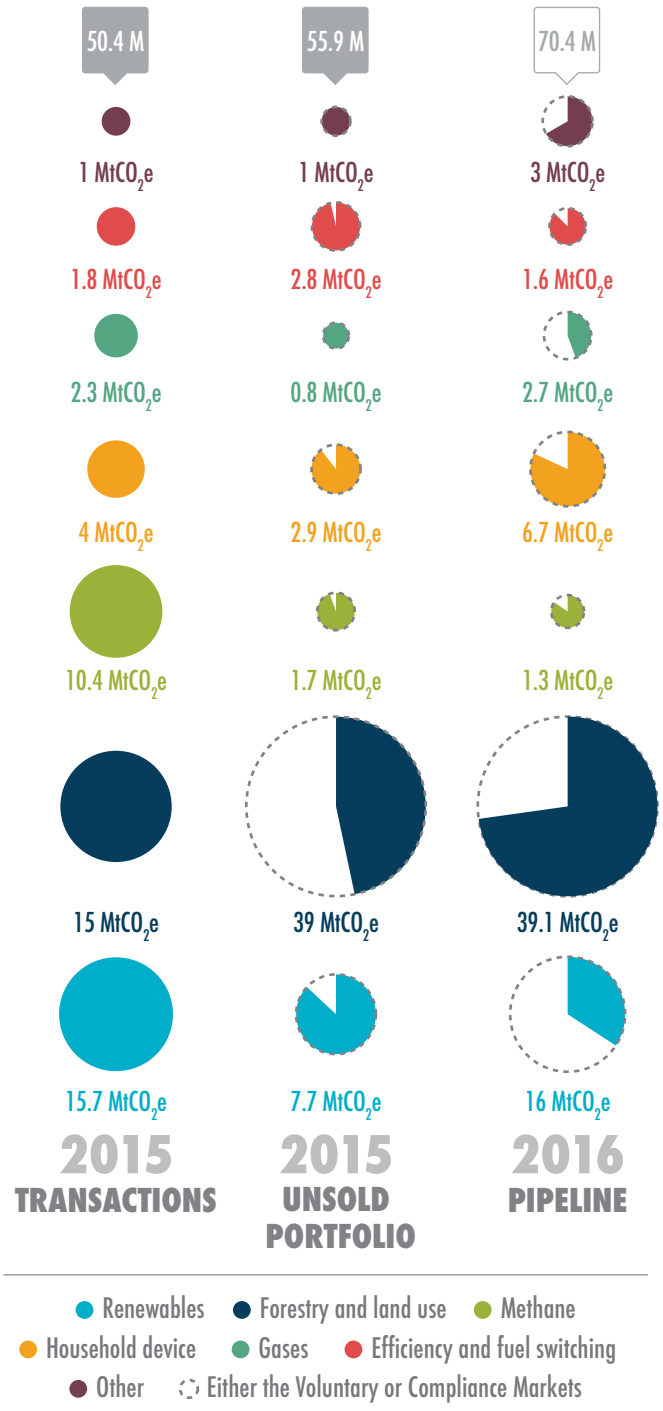
Though respondents to Ecosystem Marketplace's 2016 survey reported a modest increase in voluntary offset sales last year (to 84.1 $MtCO_2e$), they also said that 55.9 $MtCO_2e$ remained unsold in their portfolios at the end of the year. This is about the same volume as was transacted to end users in 2015 (the primary market demand), indicating that **for every tonne sold through to a final buyer, there was another that remained unsold in a supplier's portfolio.** However, as the majority (70%) of these unsold tonnes are forestry and land-use offsets, suppliers behind more than half of those forestry tonnes said they are looking to sell to either voluntary or compliance markets.

There are several reasons why a tonne might remain unsold in a supplier's portfolio. Thirty-five suppliers behind 14.6 $MtCO_2e$ of the orphaned portfolio volume said they did in fact try to sell the offsets in 2015 but were unsuccessful. However, nearly half of the offsets in suppliers' portfolios remained unsold because suppliers opted to hold onto them, either because they were awaiting higher prices (21 suppliers), more favorable contract terms (4 suppliers), or an expansion of the market (4 suppliers). Ten suppliers behind 8.8 $MtCO_2e$ in unsold volume said they had a prospective buyer but were still in negotiations with them at the end of the year. Another 17 suppliers held onto 1.5 $MtCO_2e$ simply because it is unnecessary from a financial perspective to sell all of the offsets in their portfolio in any given year.

Despite the weak demand signals documented in this report, suppliers reported that they expect to develop more than 70.4 $MtCO_2e$ in new offset supply in 2016 – slightly larger than the pipeline volume reported for 2015. More than half of this anticipated volume would come from forestry or land-use offsets, and another quarter would come from renewables. For the most part, suppliers intend to market these pipeline tonnes to voluntary buyers; however, suppliers behind 25.2 $MtCO_2e$ said they were open to selling their pipeline volume to either voluntary or compliance end users.

Access to compliance markets depends on whether these emerging programs allow offsets originally developed under voluntary standards to transition.

Figure 14: Remaining 2015 Portfolio and 2016 Pipeline Volumes by Project Category



Notes: Based on 55.9 $MtCO_2e$ in 2015 portfolio volume reported and 70.4 in 2016 pipeline volume reported.

Box 9: The Clean Development Mechanism: On a (Voluntary) Life Raft?

Though the Paris Agreement set out new frameworks for carbon markets, it left it up to future negotiations to address an old one: the Clean Development Mechanism. The 15-year old international carbon offset registry has approved 8,512 projects at last count (March 2016) and issued more than 1.6 *billion* Certified Emissions Reductions (CERs) – about five times the cumulative issuances on the voluntary carbon markets.

But not all of these tonnes have found buyers. Sellers continue to look for new sources of demand, with some eyeing the voluntary markets as a source of more attractive pricing. **Even though prices on the voluntary markets have reached historic lows, they are still attractive to some CER-holders, who have seen CER prices drop to an average of $0.19/tonne in 2014 on the secondary market.**

Some CDM sellers are motivated by a more pressing issue: offsets from the first compliance period under the Kyoto Protocol, called CP1s, are no longer eligible for compliance use. Though the calendar deadline for the first compliance period ended in 2012, countries had until November 2015 to "true up" on their 2012 obligations – and compliance demand for CP1s therefore trickled on until very recently. Additionally, the CDM itself is trying to drum up voluntary demand for its suppliers. The CDM Executive Board recently identified potential sources of demand for CERs, including South Korea's Emissions Trading System (ETS), the Green Climate Fund, the International Civil Aviation Organization's (ICAO, see Box 4) prospective offset market, and even green bonds – and they're watching closely to see how negotiations about Article 6 of the Paris Agreement develop.

However, even if these compliance offsets do enter the voluntary markets, whether or not voluntary buyers *want* CERs is another story. So far, the Climate Neutral Now platform has sold 16,000 tCO_2e tonnes and survey respondents reported another 823,000 tCO_2e CERs sold to voluntary buyers last year – barely a dent in the 84.1 $MtCO_2e$ total voluntary offsets sold. In the short term, governments may remain the best source of demand for these otherwise stranded offsets, and many of them are purchasing CERs in a voluntary or semi-voluntary capacity.

On the "semi-voluntary" side, **select governments have also stepped in to provide a lifeline to struggling CDM projects by transacting their emissions reductions at above-average prices:** though the end-use of second compliance period offsets is still for compliance purposes, the above-average pricing was voluntary. The Nordics have long been leaders in this field, with organizations such as the Swedish Energy Agency and Nordic Environment Finance Corporation targeting at-risk projects in least developed countries and paying much higher prices than those commonly transacted on the CDM.

Most recently, Germany launched the Nitric Acid Climate Action Group last December, which aims to phase out nitrous oxide (N_2O) emissions by 2020 through a combination of CER purchases at above-average prices and support to governments for additional abatement measures. While Germany indicated its purchases will be voluntary (that is, the offsets will not be used against the country's international emissions promise), partners could participate out of either voluntary or compliance motivations. The new group may participate through the World Bank's Pilot Auction Facility (PAF), which, after holding a first auction in July 2015 that sold only compliance-grade offsets, is now widening its second auction to include select Gold Standard and VCS offsets. This report series will track any voluntary-driven Nitric Acid Climate Action Group and PAF transactions going forward.

Demand Developments to Watch

Every year, we ask our survey respondents and other market experts to identify the key policy and business trends that keep them up at night – either out of excitement or concern for future voluntary offset demand. Several of these most important "demand developments to watch" – including the potential ICAO offset market (p. X), the new accounting for RECs (p. X), the scaling up of avoided deforestation efforts (p. X), and the breakdown of the developed/developing country divide post-Paris (p. X) – are discussed through in-depth call-out boxes in earlier sections of this report. Here are a handful of other trends that market participants are watching closely:

New voluntary climate commitments: While 92% of offsets transacted last year were sold to repeat buyers, offset suppliers are looking towards a few recent high-profile initiatives that aim to ramp up private- and public-sector commitments around climate change. The Science-Based Targets initiative, which launched in September 2014, aimed to get 100 companies to set emissions reductions targets in line with a 2 ˚C temperature rise threshold by the end of 2015; 157 companies, from Coca-Cola to Sony, have signed up to date. The World Bank's Carbon Pricing Leadership Coalition, officially launched at the Paris climate talks, includes 74 countries and more than 1,000 companies that support carbon pricing. The Under 2 MOU, also launched in Paris, includes 128 jurisdictions committed to either reducing GHGs at least 80% or achieving per-capita emissions of less than two tonnes by 2050. Though it is too early to tell whether these initiatives will translate into offset purchases, market participants note that many of the targets could potentially require signatories to look beyond emissions in their direct control.

New metrics, new assets: The Sustainable Development Goals (SDGs) launched with much fanfare last year, generating interest and commitments from governments and corporations around 17 themes. Many of the proposed indicators for the SDGs align with co-benefits metrics that project developers already measure, and some market participants are thinking about how to verify and communicate multiple impacts to create new channels for results-based finance. The Gold Standard 3.0 hopes to drive demand for new asset types either in addition to or separate from emissions reductions, while the American Carbon Registry is working on water quantity and habitat creation metrics to potentially be delivered alongside emissions reduction under its voluntary rice protocol. At the same time, several large offset suppliers have re-branded within the last year to emphasize their "beyond-carbon" services, and many others are diversifying their offerings without a name change.

Efforts to prop up prices: With average offset pricing reaching new lows across nearly all project types, a handful of new initiatives have emerged to try to attract buyers at higher per-tonne price points. The Fairtrade Climate Standard, which launched last year and includes minimum offset prices as well as a minimum premium paid to producers, seeks to tap into buyers already engaged in the Fairtrade network. Offsetting platforms targeting individuals and small-to-medium enterprises such as Cool Effect and Stand for Trees also emerged over the last 18 months; these platforms include transparent pricing in an effort to bring greater value to projects. Meanwhile, recognizing that some projects cannot sustain key activities below certain pricing benchmarks, a number of mostly government-led initiatives such as the World Bank's Pilot Auction Facility and Germany's Nitric Acid Climate Action Group have begun to pay above-average prices for offsets, in some cases targeting the highest-risk CDM projects with voluntary finance.

Supply chain management: Also identified in last year's report as a trend to watch, Forest Trends' Supply Change project has identified dozens of corporate commitments to reduce deforestation through their supply chains in 2015, bringing the total number of companies with some kind of no-deforestation pledge to more than 300. Most of these companies are still at the very early stages of figuring out how to meet these supply chain targets, and some offset suppliers argue that investments in existing avoided deforestation initiatives could be part of their strategies. In Paris last December, a group of consumer goods companies including Unilever and Marks & Spencer announced their intent to favor sourcing from regions with strong forest and climate protections. In a separate announcement, also in Paris, Monsanto laid out a carbon neutrality goal alongside plans to develop and offset farmers' emissions reductions activities within its supply chain.

Frequently Asked Questions

Where does Ecosystem Marketplace's market data come from?

Information presented is based on data collected from offset project developers, wholesalers, brokers, and retailers, as well as carbon offset accounting registries and exchanges that track and facilitate the transfer of offsets between owners. The bulk of data was collected via an online survey designed for organizations supplying offsets into the "over-the-counter" voluntary carbon market. The survey was available between February 4 and April 1, 2016 and distributed via our internal list of approximately 1,100 organizations identified as possible offset suppliers and externally through Ecosystem Marketplace's news briefs and the Climate-L and Forest-L list serves of the International Institute for Sustainable Development (IISD). To avoid any 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 does this report define "voluntary" offsetting?

In this report, the term "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 transactions of offsets by buyers preparing for future compliance obligations ("pre-compliance").

How does this report define a transaction?

We consider "transactions" to occur at the point that offsets are contracted; or when 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.

How does this report define "market" transactions?

Ecosystem Marketplace previously included two REDD Early Movers (REM) agreements in this series of reports, a 10 $MtCO_2e$ government-to-government agreement between Germany, Norway, and Ecuador in 2014 and another 8 $MtCO_2e$ bilateral deal between Germany and Acre, Brazil, in 2013. However, following a restructuring of our methodology which first began in Ecosystem Marketplace's *State of Forest Carbon Finance 2015*, such results-based payments among governments are now classified as "non-market" finance. We concluded that these commitments are distinct from previous REDD+ "readiness" finance in that they pay for achieved results quantified in terms of emissions avoided. However, they fall **outside of market-based finance** in that the tonnes typically do not transfer ownership and the funder does not intend to retire them against its own emissions. As such, we are no longer counting REM or other non-market finance within the context of the State of the Voluntary Carbon **Markets** report, though we will continue to track these agreements through the State of Forest Carbon **Finance** series. We have also removed references to REM data in historical data displayed in this report.

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 a retailer and then the retailer sold the same offset to a final buyer, we count each transaction separately to derive the volume and value of transactions in the overall market. This methodology is consistent with most other marketplace analyses, such as the World Bank's annual reports on carbon pricing mechanisms.

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

How do you protect the confidentiality of survey responses?

This report presents only aggregated data. All supplier-specific information is treated as confidential. Any supplier-specific transaction data mentioned in the text is 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 have fewer than three data points. We do not share supplier information with third parties without prior permission from the survey respondent.

What was this report's survey response rate in 2016 (examining the 2015 offset marketplace)?

Each year, our goal is to identify and collect information from as many active 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 deals. This year, we received survey information from 286 organizations, 174 of which transacted carbon offsets in 2015. We identified or communicated with another 91 organizations that did not transact offsets in 2015, and 21 organizations that did not provide sufficient data for analysis.

The majority of responses came from European suppliers (59), who also supplied the most volume (39.8 $MtCO_2e$). North American suppliers (45) respondents sold a total of 25.5 $MtCO_2e$, while Oceania suppliers (18) trailed behind to sell 12.2 $MtCO_2e$. Organizations headquartered Latin America (33), Asia (43), and Africa (25) reported transacting the remaining 11% of all transacted volume. Private-sector respondents (113) sold the majority (84%) of offsets, followed by non-profit organizations (47) supplying 14% of market share. Public-sector respondents (5) sold only 1% of the total volume, and another 13 organizations that did not identify into one of the categories above reported selling the remaining 2% of volume.

What estimated percentage of the voluntary carbon markets does Ecosystem Marketplace's survey capture?

We attempt to capture 100% of the voluntary offset transactions completed in 2015, but it is impossible to discern the volume of offsets sold by organizations that choose not to respond to our survey. We do know that organizations accounting for 3.8 $MtCO_2e$ in offset transactions in 2014 chose not to report to us in 2015. On the flip side, several new organizations reported transaction volumes in 2015. Ecosystem Marketplace staff could not make contact with another 23 organizations, presumed to be out of business. An additional 26 organizations chose not to respond, though we cannot tell whether this was because they are not active in the voluntary carbon markets or another reason.

How do you 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 submissions. 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. Notes at the bottom of most figures report the transaction volume associated with the figure.

How does this report present 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 transaction level as more granular and robust 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 ($MtCO_2e$).

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 payments for emissions reductions, we do not apply any quality criteria screens for offsets included in calculations. However, we do follow up with dozens of respondents to confirm or clarify survey responses that were incomplete or raised a red flag. In a few cases where we were unable to confirm that transactions occurred, these responses were omitted.

Annex 1: Voluntary Carbon Offset Markets 101

Voluntary demand for carbon offsets is driven by companies and individuals that take responsibility for neutralizing their emissions above and beyond – or in the absence of – existing regulations.

How does the voluntary carbon market ensure real, lasting emissions reductions?

Although not required by law, the vast majority of voluntary carbon projects now use third-party standards to guide project development and to ensure that emissions reductions are real and "additional" – meaning they would not have been achieved without carbon finance. To accomplish this, most standards require projects to go through a series of steps to assess the feasibility and risks (called a Project Idea Note) and later to outline project activities and establish a baseline level of emissions (in a Project Design Document). A third-party auditor then "validates" these assumptions, and, after project implementation and monitoring, another audit process called "verification" assesses the delivery of greenhouse gas mitigation. Offset project registries then issue each tonne of emissions reduction (now an eligible offset) a unique serial number that can then be transacted multiple times before an owner "retires" it on a registry, where it can no longer be sold.

What does this report track?

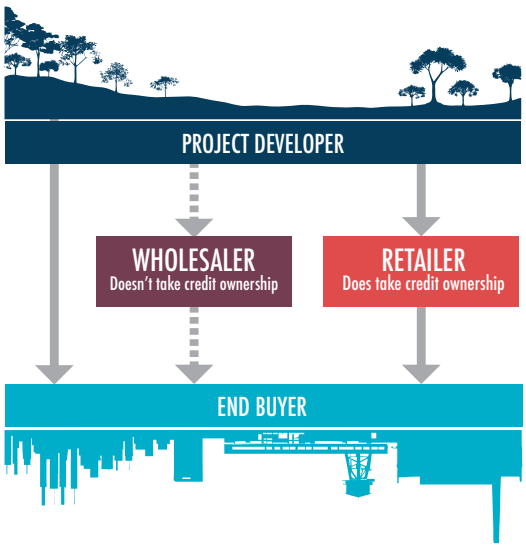
Ecosystem Marketplace tracks offset "transactions," which are defined in this report as the point of contract between the buyer and the seller. Transactions may occur at any stage of the project development process, from before its carbon reduction impacts are verified (i.e., "investment" stage) to after it generates verified offsets. This is important because voluntary offsetting remains largely unregulated and specific information about transacted volumes and prices is scarce outside of Ecosystem Marketplace's annual report series, despite increased transparency through the development of market infrastructure such as standards and registries.

Carbon dating: How do buyers and sellers meet?

For organizations wishing to offset but without the in-house expertise necessary to navigate this complex marketplace, retailers or brokers can serve as "matchmaker" between buyer needs and the seller's portfolio of available offsets. Meanwhile, market-savvy buyers or marketing-savvy project developers can chose to transact directly with each other. In some cases, organizations with a clear interest in particular project types or locations may finance offset projects from conception or during the start-up phase before offsets are actually generated. Another, less common, approach involves organizations issuing a request for offsets that meet specific criteria.

What is the voluntary market's environmental impact?

Offset transactions, issuances, and retirements are all important metrics for market size – but none of them is a comprehensive indicator of environmental impact. Transactions are a measure of the health of the market (indicating new demand for offsets year-on-year), but a single offset may be traded more than once. Issuances are a measure of emissions reductions that have been verified as occurring, but that number may not capture all of the emissions reductions that resulted from the carbon finance – especially since many projects only issue offsets when they have a willing buyer. Retirements are a measure of the offsets that can no longer be traded and are therefore permanently "removed" from the atmosphere, but some end-users choose not to retire their offsets (even if they do not plan to resell them) – and retirement can occur years after an actual transaction. In this sense, tracking the exact environmental impact of the voluntary carbon market year-on-year is elusive, but undoubtedly exceeds the volume of offsets that have been issued historically.



Annex 2: Supplier Directory

This directory includes carbon offset suppliers that responded to Ecosystem Marketplace's survey in 2016 and *chose to be listed*. They are organized by region according to supplier headquarters.

Table key: Project developer · Retailer · Broker · Investor · Domestic Carbon Market Program · Other

Africa			
Organization	Website	Headquarters	Market Role(s) Played in 2015
BioCarbon Partners	www.biocarbonpartners.com	Zambia	●
Carbon Manna Africa Ltd / Climate Pal Ltd	www.carbonmannaafrica.com / www.climatepal.com	Kenya	●
Carbon Tanzania	www.carbontanzania.com	Tanzania	●
Credible Carbon	www.crediblecarbon.com	South Africa	●
ECOTRUST	www.ecotrust.org	Uganda	●
Nedbank	www.nedbank.co.za	South Africa	●
Nova Institute	www.nova.org.za	South Africa	●
Uganda Carbon Bureau	www.ugandacarbon.org	Uganda	●
Vi Agroforestry Programme	www.viagroforestry.org	Kenya	●

Asia			
Organization	Website	Headquarters	Market Role(s) Played in 2015
CAFACA	www.cafaca.com	Cambodia	●
CARBONyatra	www.carbonyatra.com	India	●
CLP Wind Farms (India) Private Limited	www.clpindia.in	India	●
Hydrologic Social Enterprise Ltd.	www.hydrologichealth.com	Cambodia	●
Infinite Solutions	www.infisolutions.org	India	●
InfiniteEARTH Ltd	www.infinite-earth.com	Hong Kong	●
Korea Energy Agency	www.energy.or.kr	Korea	●
MAFF/National Biodigester Programme	www.nbp.org.kh	Cambodia	●
Microenergy Credits	www.microenergycredits.com	India	●
Nexus - Carbon for Development	www.nexus-c4d.org	Singapore	● ●
Overseas Environmental Cooperation Center - JCREDIT	www.oecc.or.jp	Japan	●
PEAR Carbon Offset Initiative	www.pear-carbon-offset.org	Japan	●
Shan Shui Conservation Center	www.shanshui.org	China	●
Sindicatum Sustainable Resources	www.sindicatum.com	Singapore	● ●

SKG SANGHA	www.skgsangha.org	India	●
Tamiladu Spinning Mills Association (TASMA)	www.tasma.in	India	●
The Carbon Consulting Company	www.carbonconsultingcompany.com	Sri Lanka	●
Think Green		Pakistan	●
Value Network Venture Advisory Services LLP	www.vnvadvisory.com	India	●
Vert Conservation PTE LTD	www.vertconservation.com	Singapore	●

Europe			
Organization	Website	Headquarters	Market Role(s) Played in 2015
2050 Consulting	www.2050.se	Sweden	●
Aera Group	aera-group.fr	France	●
ALLCOT Group	www.allcot.com	Switzerland	● ●
Althelia Ecosphere	www.althelia.com	United Kingdom	●
AzzeroCO2	www.azzeroco2.it	Italy	●
BaumInvest GmbH & Co KG	www.bauminvest.de	Germany	●
BioCarbon Group	www.biocarbongroup.com	Germany	● ●
Bischoff & Ditze Energy GmbH	www.bd-energy.com	Germany	●
Bosques Sostenibles	www.bosquessostenibles.com	Spain	●
Carbon Clear	www.carbon-clear.com	United Kingdom	●
Carbon Expert	www.carbonexpert.ro	Romania	●
Carbon Online Ltd	www.carbononline.co	Hungary	●
carbon-connect AG	www.carbon-connect.ch	Switzerland	●
CarbonSinkGroup	www.carbonsink.it	Italy	●
China Carbon	www.chinacarbonfund.com	Netherlands	● ●
CLevel	www.clevel.co.uk	United Kingdom	●
Climate Care	www.climatecare.org	United Kingdom	●
Climate Neutral Group	www.climateneutralgroup.com	Netherlands	●
Climate Partner	www.climatepartner.com	Germany	●
Climex	www.climex.com	Netherlands	●
CO2 Solidaire	www.co2solidaire.org / www.geres.eu/en	France	● ●
co2balance	www.co2balance.com	United Kingdom	● ●
CO2OL	www.co2ol.de	Germany	● ●

Concern Universal	www.concern-universal.org	United Kingdom	
Cool Earth	www.coolearth.org	United Kingdom	
Die Ofenmacher e.V.	www.ofenmacher.org	Germany	
EcoAct	www.eco-act.com	France	
EcoWay S.p.a.	www.ecoway.it	Italy	
Face the Future	www.facethefuture.com	Netherlands	
Fair Recycling Foundation	www.fair-recycling.com	Switzerland	
Fair Climate Fund	www.fairclimatefund.nl	Netherlands	
First Climate	www.firstclimate-climateneutral.com/gb	Germany	
Forest Carbon Ltd	www.forestcarbon.co.uk	United Kingdom	
FutureCamp Climate GmbH	future-camp.de	Germany	
Green Innovation Srl	www.co2-zero.it	Italy	
Green Resources	www.greenresources.no	Norway	
GTE Carbon Trading	www.gtecarbon.com	Turkey	
Initiative Développement (ID)	www.id-ong.org	France	
Lavola 1981, SA	www.clean-co2.com	Spain	
Mavi Consultants	www.maviconsultants.com	Turkey	
Microsol	www.microsol-int.com	France	
myclimate	www.myclimate.org	Switzerland	
Natural Capital Partners	www.naturalcapitalpartners.com	United Kingdom	
Numerco	www.numerco.com	United Kingdom	
OurOffsetLtd	www.ouroffset.com	Hungary	
PrimaKlima -weltweit- e.V.	www.primaklima.org	Germany	
South Pole Carbon Asset Management Ltd.	www.southpolecarbon.com	Switzerland	
Stichting HIVOS	www.hivos.org	Netherlands	
UPM Umwelt-Projekt-Management GmbH	www.upm-cdm.eu	Germany	
Wind to Market SA	www.w2m.es	Spain	
Woodland Trust	www.woodland-trust.org.uk	United Kingdom	
World Land Trust	www.worldlandtrust.org	United Kingdom	
Yorkshire Dales Millennium Trust	www.ydmt.org	United Kingdom	
ZeroMission	http://www.zeromission.se	Sweden	

Latin America			
Organization	Website	Headquarters	Market Role(s) Played in 2015
AMBIO S.C. de R.L.	www.ambio.org.mx	Mexico	●
Biofílica	www.biofilica.com.br	Brazil	●
Brasil Mata Viva	www.brasilmataviva.com.br	Brazil	●
CIMA-Cordillera Azul	www.cima.org.pe	Peru	●
COLBUN S.A.	www.colbun.cl	Chile	●
Cooperativa Agraria Cacaotera ACOPAGRO	www.acopagro.com.pe	Peru	●
Green Farm CO2FREE	www.greenfarmco2free.com.br	Brazil	●
Greenoxx NGO	www.greenoxx.com	Uruguay	●
Grupo Ecológico Sierra Gorda, I.A.P.	www.sierragorda.net	Mexico	●
MÉXICO2	www.mexico2.com.mx	Mexico	●
Mindo Cloudforest Foundation	www.mindocloudforest.org	Ecuador	●
Monte Rosa S.A.	www.pantaleon.com	Nicaragua	●
ONF International - Brazil	www.onfinternational.org	Brazil	●
Pacific Hydro Chacayes	www.pacifichydro.cl	Chile	●
Pronatura Mexico	www.pronatura.org.mx	México	●
Proyecto Mirador	www.proyectomirador.org	Honduras	●
Secacao Group	www.gruposecacao.com	Guatemala	●
Sustainable Carbon	www.sustainablecarbon.com	Brazil	● ●

North America			
Organization	Website	Headquarters	Market Role(s) Played in 2015
3Degrees	www.3degreesinc.com	United States	●
Blue Source, LLC	www.bluesource.com	United States	●
Bonneville Environmental Foundation	www.b-e-f.org	United States	●
Brinkman Climate	www.brinkmanclimate.com	Canada	●
Carbon Offsets To Alleviate Poverty (COTAP)	COTAP.org	United States	●
Carbonfund.org Foundation, Inc.	www.carbonfund.org	United States	● ●
Clean Air Action Corp	www.cleanairaction.com	United States	●
ClimeCo Corporation	climeco.com	United States	● ●
Clinton Development Initiative	www.clintonfoundation.org	United States	●
Code REDD	www.coderedd.org / www.standfortrees.org	United States	●
Community Energy, Inc.	www.communityenergyinc.com	United States	●

Conservation International	conservation.org	United States	●
Diversified Pure Chem, LLC	www.divpc.com	United States	●
ECOTIERRA	www.ecotierra.co/en	Canada	●
Ecotrust Forest Management	www.ecotrustforests.com	United States	●
Element Markets	www.elementmarkets.com	United States	●
Envirofit	www.envirofit.org	United States	●
Environmental Attribute Advisors	www.enviadvi.com	United States	●
Forest Carbon Offsets LLC	www.forestcarbonoffsets.net	United States	●
GreenTrees (C2Invest)	www.c2invest.net	United States	●
Impact Carbon	www.impactcarbon.org	United States	●
Less Emissions Inc.	www.less.ca	Canada	●
Mikro-Tek Inc	www.mikro-tek.com	Canada	●
NativeEnergy Inc.	www.nativeenergy.com	United States	●
NatureBank	naturebank.com	Canada	●
Origin Climate	www.originclimate.com	United States	● ●
Renewable Choice Energy	www.renewablechoice.com	United States	●
Sustainable Travel International	www.sustainabletravel.org	United States	●
Taking Root	www.takingroot.org	Canada	●
TerraPass	www.terrapass.com	United States	●
The Climate Trust	www.climatetrust.org	United States	● ● ●
The Conservation Fund	www.conservationfund.org	United States	●
The Paradigm Project	www.theparadigmproject.org	United States	●
Truckers Carbon Exchange		United States	●
Verus Carbon Neutral	www.verus-co2.com	United States	●
Wildlife Conservation Society	www.wcs.org	United States	●
Wildlife Works LLC	www.wildlifeworks.com	United States	●

Oceania

Organization	Website	Headquarters	Market Role(s) Played in 2015
Carbon Neutral Australia	www.carbonneutral.com.au	Australia	●
Carbon Trade Exchange	www.ctxglobal.com	Australia	●
Cassinia Environmental	www.cassinia.com	Australia	●
Climate Friendly Pty Ltd	www.climatefriendly.com	Australia	●
Cool Planet Energy Pty Ltd	www.coolplanet.com.au	Australia	●
Ekos	www.ekos.org.nz	New Zealand	● ●
Enviro-Mark Solutions (Landcare Research)	www.enviro-mark.com	New Zealand	●
GreenCollar Climate Solution	www.greencollarclimate.com.au	Australia	●

Greenfleet	www.greenfleet.com.au	Australia	●
New Leaf Carbon Project	tasland.org.au	Australia	●
SIGMA GLOBAL	www.sigmaglobalcompany.com	Australia	●
WeAct	www.weact.com.au	Australia	●

Registries – Where Offsets are Listed and Retired	
APX VCS Registry	www.vcsregistry.com
Australia's Clean Energy Regulator Registry	nationalregistry.cleanenergyregulator.gov.au/
Canadian Standards Association GHG Registr	www.csaregistries.ca
Japan Verified Emissions Reductions (J-VER) Registry	j-ver.registry.go.jp/
Markit Environmental Registry	www.markit.com/product/registry

Annex 3: Carbon Standards Directory

This directory includes details on the carbon offset standards that respondents list as using in Ecosystem Marketplace's 2016 survey. They are organized by associated volume.

Verified Carbon Standard (VCS)* *Overall, and used alongside the Climate, Community & Biodiversity Standards (CCB)				
Transacted Volume, 2015	Average Price	Value	% Market Share	Change from 2014
22.3 Mt (5.7 Mt with CCB)	$3.2/tonne ($4.8/tonne)	$74.5 M ($27.6 M)	49% (12%)	-29% (-55%)
% Transactions by Top Offset Categories			% Transacted by Project Developers	% Transacted by Secondary Market Actors
Forestry – 46% (Forestry – 100%)	Renewable Energy – 39%	Methane – 11%	32% (75%)	68% (25%)

Climate Action Reserve (CAR)				
Transacted Volume, 2015	Average Price	Value	% Market Share	Change from 2014
9.3 Mt	$2.6/tonne	$24.2 M	20%	348%
% Transactions by Top Offset Categories			% Transacted by Project Developers	% Transacted by Secondary Market Actors
Methane – 74%	Gases – 24%	Forestry – 1%	32%	68%

Gold Standard				
Transacted Volume, 2015	Average Price	Value	% Market Share	Change from 2014
8.8 Mt	$4.3/tonne	$38 M	19%	-2%
% Transactions by Top Offset Categories			% Transacted by Project Developers	% Transacted by Secondary Market Actors
Renewables – 44%	Household devices – 41%	Efficiency and Fuel Switching – 9%	57%	43%

American Carbon Registry (ACR)				
Transacted Volume, 2015	Average Price	Value	% Market Share	Change from 2014
2.5 Mt	$4.3/tonne	$10.8 M	5%	31%
% Transactions by Top Offset Categories			% Transacted by Project Developers	% Transacted by Secondary Market Actors
Forestry – 33%	Other – 28%	Methane – 19%	66%	34%

Plan Vivo				
Transacted Volume, 2015	Average Price	Value	% Market Share	Change from 2014
865,000 t	$7.6/tonne	$6.6 M	2%	124%
% Transactions by Top Offset Categories			% Transacted by Project Developers	% Transacted by Secondary Market Actors
Forestry – 100%			53%	47%

Clean Development Mechanism, as sold to voluntary buyers (CDM)				
Transacted Volume, 2015	Average Price	Value	% Market Share	Change from 2014
839,000 t	$2.3/tonne	$1.9 M	2%	36%
% Transactions by Top Offset Categories			% Transacted by Project Developers	% Transacted by Secondary Market Actors
Efficiency and fuel switching – 54%	Renewables – 24%	Methane – 15%	47%	53%

Annex 4: Detailed Transactional Data, by Project Type

This annex includes detailed data by project type, including: the volume of offsets transacted in 2015, the volume-weighted average price, the spread between the minimum and maximum prices reported (to give a sense of the price range), and the total market value. We only included project types for which there were at least 100,000 tonnes in transaction volume and for which at least three different organizations reported volume and price data (to protect confidentiality of individual respondents).

Project Type	Volume Transacted, 2015	Average Price ($/tonne)	Spread Between Min & Max Price ($/tonne)	Value
Wind	12.7 $MtCO_2e$	$1.9	$19.7	$24.4 M
REDD+	11.1 $MtCO_2e$	$3.3	$21.6	$37.5 M
Landfill methane	8.0 $MtCO_2e$	$2.0	$18.6	$15.7 M
Tree-planting	3.1 $MtCO_2e$	$7.5	$42.5	$23.5 M
Clean cookstoves	3.1 $MtCO_2e$	$4.9	$37.1	$15.2 M
Run-of-river hydro	1.4 $MtCO_2e$	$1.4	$8.3	$1.9 M
Clean water/ purification	1.1 $MtCO_2e$	$3.8	$7.3	$3.6 M
Improved forest management	0.7 $MtCO_2e$	$9.6	$15.5	$6.8 M
Biomass/biochar	0.6 $MtCO_2e$	$3.0	$29.2	$1.8 M
Energy efficiency – industrial-focused	0.6 $MtCO_2e$	$4.1	$19.9	$2.4 M
Biogas	0.5 $MtCO_2e$	$5.9	$20.2	$3.0 M
Energy efficiency - community-focused	0.5 $MtCO_2e$	$9.4	$28.5	$4.5 M
Transportation	0.5 $MtCO_2e$	$2.9	$4.7	$1.3 M
Fuel switching	0.4 $MtCO_2e$	$11.4	$21.2	$4.3 M
Waste heat recovery	0.3 $MtCO_2e$	$3.5	$5.0	$1.2 M
Ozone-depleting substances	0.3 $MtCO_2e$	$11.0	$14.3	$3.6 M
Solar	0.3 $MtCO_2e$	$4.1	$8.7	$1.1 M
Livestock methane	0.2 $MtCO_2e$	$7.0	$21.4	$1.7 M
Large hydro	0.2 $MtCO_2e$	$3.1	$18.8	$0.7 M

Annex 5: Detailed Transactional Data, by Project Location

This annex includes detailed data by project location, including: the volume of offsets transacted in 2015, the volume-weighted average price, and the total market value. We only included project locations for which there were at least 100,000 tonnes in transaction volume and for which at least three different organizations reported volume and price data (to protect confidentiality of individual respondents). Volumes under one million tonnes are rounded to the nearest 1,000.

Project Location	Volume Transacted, 2015	Average Price ($/tonne)	Value
United States	15.4 $MtCO_2e$	$3.1	$48.1 M
India	6.6 $MtCO_2e$	$1.6	$10.6 M
Indonesia	4.6 $MtCO_2e$	$2.6	$12.0 M
Turkey	3.1 $MtCO_2e$	$1.3	$4.2 M
Kenya	3.1 $MtCO_2e$	$5.5	$17.0 M
Brazil	3.1 $MtCO_2e$	$3.9	$12.0 M
China	2.2 $MtCO_2e$	$2.0	$4.4 M
Germany	1.8 $MtCO_2e$	*Not enough price data to report accurate figure*	*Not enough price data to report accurate figure*
Peru	1.5 $MtCO_2e$	$5.9	$8.7 M
Uganda	1.5 $MtCO_2e$	$4.7	$7.1 M
Cambodia	1.0 $MtCO_2e$	$5.9	$6.1 M
Zambia	~ 647,000 tCO_2e	$5.2	$3.4 M
Guatemala	~ 581,000 tCO_2e	$5.4	$3.1 M
Madagascar	~ 526,000 tCO_2e	$3.5	$1.9 M
Nicaragua	~ 500,000 tCO_2e	$4.4	$2.2 M
Viet Nam	~ 472,000 tCO_2e	$8.7	$4.1 M
Honduras	~ 466,000 tCO_2e	$5.4	$2.5 M
Malawi	~ 291,000 tCO_2e	$6.7	$1.9 M
United Kingdom	~ 259,000 tCO_2e	*Not enough price data to report accurate figure*	*Not enough price data to report accurate figure*
Thailand	~ 256,000 tCO_2e	$3.3	$0.8 M
South Africa	~ 155,000 tCO_2e	$6.0	$0.9 M
Chile	~ 149,000 tCO_2e	$6.9	$1.0 M
Canada	~ 124,000 tCO_2e	$7.7	$1.0 M
Australia	~ 111,000 tCO_2e	$7.1	$0.8 M
Ghana	~ 104,000 tCO_2e	$4.1	$0.4 M

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Good Energies Foundation (http://www.goodenergies.org) supports sustainable systems that can prevent poverty and disruption caused by climate change in the Global South. Good Energies Foundation was established in 2007 and founded as an integral part of Good Energies Inc., a private equity company specialized in investing in the renewable energy and energy-efficiency industries. Good Energies Foundation's historical mission is the alleviation of future poverty in the Global South by mitigating climate change. Good Energies Foundation initially leveraged its know-how in solar photo-voltaic to provide access to clean energy, especially in the area of rural electrification. At a later stage, climate-change related solutions were added to the portfolio, including sustainable reforestation models. As temperatures rise, we believe that innovative solutions are urgently needed to prevent the future displacement and impoverishment of the world's most vulnerable populations.

Our Sponsors

EcoAct is a leading company in climate and energy strategy, project development and poverty alleviation. EcoAct empowers companies, NGOs and intergovernmental authorities to make their climate and energy strategy a driving force. A climate pioneer for more than 10 years, EcoAct has a portfolio of more than 1,000 projects worldwide that have created more than 20,000 jobs in developing countries and offset 10 $MtCO_2e$ to date, with investments of more than $60 million in local communities. EcoAct's carbon offsetting projects have delivered over $6 billion in economic, social and environmental benefits for local communities around the world (*source: Imperial College University Study*). Having completed more than 500 missions in climate advisory, EcoAct's in-depth knowledge of climate & energy programs is centralized in offices in France (Paris, Lyon, Toulouse) and Kenya (Nairobi, Embu), and a vast network of experts in India, China, Niger, and South Africa. To ensure the quality of its sustainable development approach and proposed programs, EcoAct respects high standards and frameworks (ISO14064, VCS, Social Carbon, Gold Standard, CDM, PoA, NAMAs...) and certificates (RECs, CEEs...). Furthermore, EcoAct has committed to the ICROA Charters, Global Compact, and is an accredited CDP Partner. EcoAct was awarded Worldwide Best Advisory Service and Worldwide Best Project Developer – Energy by Environmental Finance. More information about EcoAct can be found at www.eco-act.com.

InfiniteEARTH is dedicated to Sustainability Solutions that go Beyond Carbon Neutral & Sustainable. We are committed to the development of economically viable solutions to climate change and environmental degradation by addressing the underlying driver of deforestation – poverty. InfiniteEARTH's projects focus on the preservation of Endangered Species Habitat, High Conservation Value (HCV) and High Carbon Stock (HCS) Forests, and the protection of National Parks through the creation of social and physical buffer zones. Additionally, our projects are designed to meet the UN Sustainable Development Goals by funding sustainable development in rural communities through capacity building and technology transfer of low impact technologies such as solar, fuel-efficient cookstoves, aquaponics, agro-forestry ("jungle crop" model) and social benefits programs such as health care and early childhood education materials.

InfiniteEarth is the developer of the Rimba Raya Biodiversity Reserve, the world's largest initiative to protect and preserve HCV, lowland peat swamp forests – one of the most highly endangered ecosystems in the world. The Rimba Raya Biodiversity Reserve aims to reduce Indonesia's greenhouse gas emissions and protect the endangered Borneo Orangutan by preserving 64,977 hectares of tropical peat swamp forest. More information can be found at http://infinite-earth.com/.

BCP (BioCarbon Partners) is one of the leading African-based forest carbon offset development companies in the REDD+ (Reducing Emissions from Deforestation and Degradation) sector. BCP's mission is to make African forests valuable to people. BCP focuses on achieving long-term conservation solutions for African dryland forests, through local presence, community empowerment and strong partnerships. Our REDD+ activities are validated and verified to the highest of international standards and include the VCS verified Lower Zambezi REDD+ Project in Zambia (CCBA triple gold Validated). BCP is also developing a large-scale REDD+ activity in Zambia's Luangwa Ecosystem through the 5 year USAID-funded Community Forests Program. BCP combines an entrepreneurial approach with a core philosophy of caring for people and environments to catalyze deforestation reduction in ecosystems of global biodiversity significance. More information about BCP can be found at www.biocarbonpartners.com.

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