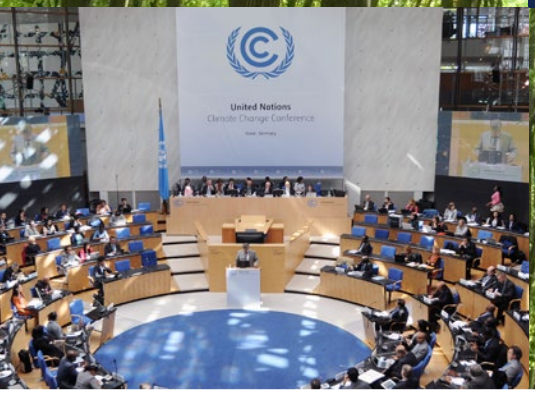
Ecosystem Marketplace

A FOREST TRENDS INITIATIVE

Financing Emissions Reductions for the Future

State of the Voluntary Carbon Markets 2019



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About Forest Trends' Ecosystem Marketplace

Ecosystem Marketplace, an initiative of the non-profit organization Forest Trends, is a 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.

For up-to-date information on environmental markets, sign up for our newsletters here:
http://www.forest-trends.org/dir/em_newsletter

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State of the Voluntary Carbon Markets 2019

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Disclaimer

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Acknowledgments

Attribution

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Acknowledgments

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

This report is publicly available thanks to the generous financial contributions from our institutional supporter sponsors, including: 3Degrees; American Carbon Registry, an enterprise of Winrock International; Arbor Day Foundation; Cool Effect; Livelihoods Fund; and Verra.

A number of people offered insights on market dynamics and regional trends through conversations with our team. We extend our grateful thanks to Ricardo Bayon, Todd Berkinshaw, Guillaume Bouculat, MaryKate Bullen, Antoine Diemert, Julian Ekelhof, Peter Flottmann, Mary Grady, Michael Greene, Kelley Hamrick, Stephanie Harris, Nadia Kähkönen, Edit Kiss, Donna Lee, Sarah Leugers, Olivier Levallois, Marco Magini, Jeremy Manion, Chris Stephenson, Ben Stuart, Naomi Swickard, Nicole Teitzel, and Lisa Walker.

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Foreword

There is something in the wind! Forest Trends' Ecosystem Marketplace has tracked voluntary carbon markets every year since 2006. By surveying what would otherwise be an opaque market, we've helped answer fundamental questions about the size, scope, and direction of voluntary offsets. The markets have had a tumultuous 13 years. But this year's report finds voluntary carbon offsets at the tipping point we've been long waiting for.

From their inception, the voluntary markets have served as both a tool for individuals to reduce their carbon footprints and as an incubator for larger-scale corporate action. Markets evolved slowly throughout the 1990s and early 2000s: it was an age of experimentation. Standards were created, voluntary platforms like the Chicago Climate Exchange and registries such as APX emerged, and the move to carbon neutrality gained momentum among companies, environmental organizations, and even countries. Our first major Forest Trends Katoomba event in 2000 near Sydney, Australia was co-hosted by the Sydney Futures Exchange, which was preparing to launch the world's first Carbon Futures Exchange. There was tremendous excitement and optimism that we would, in short order, have a global price on carbon. (The Katoomba Group projection at the time was $36 a metric ton).

Towards this end, projects were being developed under the Kyoto Protocol's Clean Development Mechanism (CDM), a worldwide compliance market that in turn spawned the European Union Emissions Trading System (EU ETS) when the Kyoto Protocol came into force in 2005. It seemed, for a moment, that a mandatory price on carbon was going to drive exactly the changes we needed. Ecosystem Marketplace began tracking prices and trends in voluntary carbon that year.

Tragically, politics and a global recession got in the way.

As too few countries kept their Kyoto promises, compliance prices began to slide — and then fell off a cliff after the world failed to reach an agreement at year-end climate talks in Copenhagen in 2009. By the early 2010s, prices for Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs) generated under the CDM were below $1 per metric ton. But prices for offsets created for the voluntary markets held their own (see Time Capsule, page 2). Buyers, it turned out, had come to trust the new voluntary methodologies. So had the state of California, which announced it would recognize a number of voluntary offsets in its new compliance cap-and-trade program.

In 2014, Norway, Germany, and the United Kingdom stepped into the marketplace with bilateral payments to reduce emissions from deforestation — activities that we covered in a separate State of Forest Carbon Finance report. Meanwhile, voluntary markets continued to innovate and evolve.

Now, as the world gears up for the official implementation of the Paris Climate Agreement in 2021, it feels like the wind is at our backs for the first time in a long time. As massive climate change-induced storms and fires wreak havoc across the world, companies are listening to demands from investors, employees, and consumers who want to reduce their own climate impacts and liabilities. Companies with forest-risk commodities like palm oil and soy in their supply chains are feeling pressure to demonstrate they're not contributing to tropical deforestation, a major source of greenhouse gas emissions.

There has been a significant uptick in voluntary carbon market activity in 2018, as borne out by the data herein, and similarly positive anecdotal evidence for 2019 from those interviewed for this report, that runs parallel to these new signals. It feels very different from the market fluctuations we have weathered these last two decades. Major new sources of demand have materialized, and more are on the horizon (Exhibit A: the International Civil Aviation Organization). A proliferation of national, state, provincial, and municipal carbon programs have emerged globally. Forests are back in favor and are a dominant project category again as the world has woken up to the realization that nature-based climate solutions are credible and available to us today. And the distinction between compliance (regulated) and voluntary carbon seems to be blurring.

So fasten your seat belts. What we've long hoped for is now happening — fast. But the Kyoto-style single global carbon market we envisioned back in 2000 isn't the future anymore. Instead, the future is a "global bazaar" — many unique markets, many diverse players, and many kinds of deals. That means there is tremendous need for

smart accounting, for sophisticated registries, for improved monitoring and measuring, and for more equitable ways of distributing pain and profit.

We can't wait to see what next year brings. I encourage all of our readers to work with us and our collaborators: we all need to step up to help ensure the carbon marketplace delivers the climate and community benefits it has promised for so long.

Michael Jenkins
Founding President and CEO
Forest Trends

Ecosystem Marketplace
A FOREST TRENDS INITIATIVE

We at Ecosystem Marketplace take our work seriously and are proud to be a fixture in the global carbon markets. We embarked on the journey of revisioning our sponsorship program at the end of 2018 and have had a humbling learning experience about how our work is valued, perceived, and put to use. We are immensely grateful for the financial and institutional support provided by our inaugural group of strategic sponsors. With this support, we can continue to build upon our:

- Proven track record of more than a decade tracking voluntary carbon markets, engaging with stakeholders, collecting confidential data, providing guidance and insights, and advising market participants.
- Reputation for high-quality data, analysis, and reports. EM generates dependable, decision-making information used by carbon market participants and policymakers worldwide.
- Diligence in ensuring our mission is credible, confidential, and neutral. EM maintains strict confidentiality of individual responses, and do not favor any specific standards or projects.

As 2020 approaches, we recognize that there's much more to do. We look forward to continued engagement with this growing group of strategic sponsors, and welcome others to join us.

For market actors who have not yet shared 2017 or 2018 transaction data

If you received the survey but did not submit your 2017 or 2018 data, or if you're a project developer, retailer or broker and were not contacted in 2019, it's not too late to further enrich our dataset by visiting www.forest-trends.org/sovcm2019 to download the survey and submit data. Even as we move into 2020, we will continue to conduct analysis with historical data, so please let us know if you have requests or would like to discuss additional analysis you'd like to see.

Stephen Donofrio
Director, Ecosystem Marketplace

Our Supporters

3 Degrees

At 3Degrees, our business is our mission. We make it possible for businesses and their customers to take urgent action on climate change. As a certified B Corporation, we provide renewable energy and emission reduction solutions to Fortune 500 companies, utilities, universities, green building firms, and other organizations. Headquartered in San Francisco, 3Degrees serves clients around the world.

American Carbon Registry

American Carbon Registry (ACR), a nonprofit enterprise of Winrock International, is a leading carbon offset program recognized for environmental integrity and innovation. Founded in 1996 as the first offset program in the U.S., ACR has over two decades of unparalleled experience in the development of rigorous, science-based greenhouse gas emissions reduction standards as well as experience in the technical aspects of carbon offset project registration, oversight of third-party verification, issuance of serialized offset credits and transparent registry operations. In addition to its role in the voluntary carbon market, ACR is also the leading Offset Project Registry for California's Cap-and-Trade Program, having issued over 100 million tons valued at over one billion dollars.

Arbor Day Foundation

The Arbor Day Foundation's mission is simple: we inspire people to plant, nurture, and celebrate trees. In the carbon markets, the Foundation specializes in scaling-up verified carbon credit projects via forest restoration and agroforestry. We co-create compelling carbon credit and value chain portfolios that include forest protection, improved forest management, forest restoration, blue carbon, and community trees/forests. Together we can create a climate-positive economy that restores forests and empowers all people and communities. The time for trees is now. To learn more visit arborday.org/carbon.

Cool Effect

Cool Effect is a San Francisco Bay Area 501(c)(3) nonprofit dedicated to reducing carbon emissions around the world by allowing individuals, businesses, organizations and universities to create a tangible impact on climate change by funding the highest quality carbon reduction projects that are verifiably and measurably reducing global warming emissions. The organization was founded by Dee and Richard Lawrence on their passionate belief that support of carbon offset projects will create a cumulative effect that will reduce and prevent carbon pollution. Like the Butterfly Effect, The Ripple Effect, and others, a single action can have global impact.

Livelihoods Fund

With a first Carbon Fund launched in 2011, the Livelihoods investment funds are supported by private companies committed to generating impact while offsetting their carbon footprint or transforming their supply chains. Our mission? Design and implement large-scale projects with strong social, environmental and economic impact, for the benefit of rural communities in Africa, Asia and Latin America. We build performance-driven coalitions with public institutions, NGOs, experts and rural communities to co-create and implement solutions that create value for all: improved livelihoods for rural communities, public goods (nature and water conservation, CO_2 sequestration), sustainable sourcing and high-quality carbon credits for businesses.

Verra

Verra develops and manages standards that help the private sector, countries, and civil society achieve ambitious sustainable development and climate action goals. Verra's global standards frameworks serve as linchpins for channeling finance towards high-impact activities that tackle some of the most pressing environmental issues of our day. One of Verra's standard programs, the Verified Carbon Standard (VCS) program allows certified projects to turn their greenhouse gas (GHG) emission reductions and removals into tradable carbon credits. Since its launch in 2006, the VCS Program has grown into the world's largest voluntary GHG program. There are currently almost 1,600 registered projects in over 70 countries that have generated more than 380 million carbon credits.

If you'd like to collaborate with us on this effort, please contact EM's Director, Stephen Donofrio (sdonofrio@forest-trends.org).

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Introduction

Between 2006 and 2018, Forest Trends' Ecosystem Marketplace (EM) annually distributed surveys to our network of project developers, investors, retailers, and brokers to collect confidential information about their voluntary carbon offset market transactions. They kindly provided us with detailed information about the offsets sold, including project type, location, and standard.

Last year, we surveyed the market and introduced a report covering the first quarter of 2018, and we are pleased to follow this with the State of Voluntary Markets 2019, which includes data collected for calendar years 2017 and 2018. Also included are insights compiled through interviews with a diverse set of market participants covering trends through late 2019.

It's worth underscoring that the figures and trends described in this report focus on transactions of carbon offsets for voluntary purposes. Although the lines between compliance and voluntary markets are blurring, with standards once established for voluntary transactions increasingly being considered for inclusion in compliance markets, all data herein relates to voluntary transactions. Simply put, if the credit is being used to satisfy a regulatory requirement, it is not considered voluntary and not covered in this report.[1] This report does, however, discuss the evolution of certain compliance markets, such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), and certain national and subnational markets, to the extent that they form the boundaries of and influence what is considered "voluntary."

EM was initially created to improve transparency and price discovery in the voluntary space, as there is no centralized system for transacting voluntary carbon credits. We've produced this report over the past 13 years by aggregating and anonymizing confidentially submitted details of individual transactions, providing all market participants, from small project developers to large corporate buyers to policymakers, a comprehensive view of market conditions. When we piloted a quarterly report format in 2018, market feedback was loud and clear: the data and trends revealed in a comprehensive annual report are highly valued by the broader market. While this report is being released in December 2019, Forest Trends' Ecosystem Marketplace will be issuing our 2020 carbon survey in the first quarter of next year and will continue to publish these reports on an annual basis to inform the ever-evolving carbon market.

This year's report offers a streamlined structure, beginning with a brief timeline of major milestones in carbon markets over the past 30 years and findings from the past 13 years of State of Voluntary Carbon Markets reports. This is followed by a summary of Key Findings from this year's report. We will also be releasing two additional sections of the Key Findings on Monday, December 9th to coincide with a side event at COP25. These sections are the result of a series of interviews with key market participants and focus on "Market Dynamics in 2019" and "Market Direction in 2020". Further analysis and key charts and tables will be released in in a series of appendices later in December 2019 and include background information such as a list of acronyms, a glossary, FAQs, categorization of project types, and a supplier's directory. These appendices will be available as separate downloads at https://www.forest-trends.org/sovcm2019/.

We sincerely thank this year's survey respondents for taking the time to share data and insights. We also are very grateful for our growing group of strategic supporters, interviewees, and report reviewers, that together tremendously strengthen our efforts to ensure delivery of timely and robust analysis of carbon pricing. If you'd like to collaborate with us on this effort, please contact EM's Director, Stephen Donofrio (sdonofrio@forest-trends.org).

[1] Other reports such as the World Bank's State and Trends of Carbon Pricing 2019 track the compliance markets, the value of which were estimated to be US $44 billion (B) in 2019.

The EM Time Capsule

Looking Back: Thirty Years of Voluntary Carbon

Ecosystem Marketplace has been tracking voluntary carbon markets since 2006. Until EM's first carbon survey cycle in 2006/2007, the voluntary markets' one-off transactions had little in the way of transparency. In those early years, the data received was from environmental NGOs and green-minded businesses that had been experimenting with the mechanisms we now call "carbon offsets" since the late 1980s.

In 1992, transactions picked up when negotiators from around the world signed the United Nations Framework Convention on Climate Change (UNFCCC). Transactions accelerated in 1997, when those same negotiators signed the Kyoto Protocol, for which the United States was a key country in its development. The Kyoto Protocol was a global pact for action on climate change that unfortunately failed to include a mechanism to finance activities that work to address tropical deforestation. A cornerstone of the Protocol was the Clean Development Mechanism (CDM), which was conceived as a global compliance market for offsetting emissions.

After the United States (US) withdrew from the Kyoto Protocol, the Chicago Climate Exchange (CCX) was initially developed as a pilot program for the US in 2003 to be an "international rules-based greenhouse gas emission reduction, audit, registry and trading program," in which "industrial, governmental and academic sectors execute legally binding commitments to meet annual emission reduction goals of 4% below baseline for 2006 and 6% below baseline by 2010." It was also the world's first large-scale platform for registering and trading voluntary offsets.

In 2005, Europe launched the EU ETS to trade CDM offsets, and the global compliance market was born. While attention shifted to compliance markets, innovation continued on voluntary projects, where new methodologies could be developed, tested, and then either adopted, adapted, or abandoned — leading to rapid evolution that seemed to be happening out of sight of the rest of the world.

Thus emerged the need for a comprehensive survey of the voluntary market space. Enter Ecosystem Marketplace, which in 2007, teamed up with New Carbon Finance to survey these markets to produce the first-ever EM report, the State of Voluntary Carbon Markets 2007: Picking Up Steam. This report uncovered rapidly evolving markets that had reduced global emissions by the equivalent of at least 110 million metric tons of carbon dioxide, and probably much more.

Here is a year-to-year breakdown of findings from our reports, which are all available for download at https://www.forest-trends.org/publications/?filter=voluntary+carbon+markets#filter.

2006

Volume:	**$31.6 MtCO$_2$e**
Market Value:	**$111.3M**
Average Price:	**$4.10**

15 active standards have already emerged to ensure quality.

In 2007, we tracked transactions for calendar year 2006 of 31.6 million metric tons of carbon dioxide equivalent ($MtCO_2e$) valued at $111.3 million. Surprisingly, we found that only 10.3 $MtCO_2e$ were transacted on CCX. The bulk (21.3 $MtCO_2e$) were transacted "over the counter" (OTC) and in accordance with at least 15 standards that had emerged to ensure the emission reductions were real, measurable, and verifiable. To track the offsets, eight registries were either operational or in the works, and at least 60 intermediaries were active in the sector — ranging from NGOs to online startups to deep-pocketed bank-backed brokers. The United States, having failed to join the Kyoto Protocol, was both the biggest buyer and the biggest supplier of voluntary offsets, while online platforms marketing to individuals were the fastest-growing segment of the markets. Project types were evenly divided between forestry and land-use sequestration (36%), renewable energy (33%), and industrial gases (30%). Average price: $4.10 per metric ton.

In 2008, we identified more than twice as many offsets transacted in 2007 and a tripling of market value, as buyers looked beyond North America to developing countries. That year, 69.8 $MtCO_2e$ were transacted: 22.9 $MtCO_2e$ on the CCX and 46.9 $MtCO_2e$ OTC. Market value surged to $359 million, and prices averaged $3.15 on the CCX and $6.10 OTC as buyers developed confidence in voluntary standards. The first clean cookstove project also issued credits this year.

In 2009, we chronicled a topsy-turvy 2008, during which market value doubled to $790.2 million as US companies prepared for anticipated cap-and-trade legislation. This gave rise to a new term — "pre-compliance" — which would become a formal category in later reports. Amid concerns about quality control, the International Carbon Reduction and Offset Alliance (ICROA) launched its Code of Best Practice. The world was beginning to look towards the Copenhagen climate talks slated for the next year. But then markets changed direction as the depth of the global economic recession became apparent.

In 2010, we identified a 20% plunge in volume and a 39% plunge in market value in 2009. Offsets traded on the CCX suffered a 73% nosedive in prices, from $4.45 per metric ton to $1.18. Meanwhile, average OTC prices fell just 12%, from $7.34 to $6.46. That year, methane destruction projects captured 41% of OTC market transactions, followed by forestry projects (24%), and renewable energy (17%). The Voluntary Carbon Standard (VCS), which later became today's Verified Carbon Standard, began to consolidate market share, certifying 35% of volume in 2009, followed by the Climate Action Reserve (CAR) at 31%.

In 2011, our data showed volumes soaring in 2010 to 131.4 $MtCO_2e$ (of which 62.1 $MtCO_2e$ was CCX). The CCX stopped certifying projects under its own standards. We chronicled growing interest in nature-based solutions; transactions of VCS-certified forestry credits topped 14.1 $MtCO_2e$ that year as VCS's Reducing Emissions from Deforestation and forest Degradation (REDD) methodologies were taking shape. More than 6.5 $MtCO_2e$ of Gold Standard offsets transacted that year focused on scaling up community-based sustainable development.

In 2012, we identified a slide in volume in 2011 to 100 $MtCO_2e$, largely reflecting the exit of CCX. Nearly all volume transacted that year (98.8 $MtCO_2e$) was OTC. OTC market value hit $587.2 million. Interestingly, the remaining 2 $MtCO_2e$ was traded on emerging national exchanges. Our report identified, for the first time, a growing willingness on the part of governments to recognize voluntary standards for their domestic compliance markets.

In 2013, we detailed a drop in market value to $529.8 million in 2012 despite an increase in transacted volume to 102.8 $MtCO_2e$. Volume of projects certified by both VCS and the Climate, Community & Biodiversity (CCB) standard (referred to in this report as VCS+CCB) forestry projects surged, along with volume of Gold Standard cookstove and water filtration projects. The Gold Standard also began recognizing A/R projects through its acquisition of the CarbonFix standard. Buyers increasingly looked to generate positive social impact as well as emission reductions. Much of 2012 demand, however, was identified as "pre-compliance," tied to Australia and the emerging California cap-and-trade market.

2007
Volume: ▲ **69.8 $MtCO_2e$**
Market Value: ▲ **$359.0M**
Average Price: ▲ **$6.10**
The first clean cookstove project issues credits.

2008
Volume: ▲ **134.5 $MtCO_2e$**
Market Value: ▲ **$790.2M**
Average Price: ▲ **$7.34**
ICROA launches its Code of Best Practice.

2009
Volume: ▼ **107.2 $MtCO_2e$**
Market Value: ▼ **$484.5M**
Average Price: ▼ **$6.46**
The Voluntary Carbon Standard (VCS) certifies 35% of volume.

2010
Volume: ▲ **131.4 $MtCO_2e$**
Market Value: ▼ **$444.1M**
Average Price: ▼ **$6.00**
Natural Climate Solutions begin to ascend as VCS-certified forestry credits top 14.1 $MtCO_2e$.

2011
Volume: ▼ **100.0 $MtCO_2e$**
Market Value: ▲ **$602.3M**
Average Price: ▲ **$6.20**
More governments begin to consider voluntary standards for their domestic compliance markets.

2012
Volume: ▲ **102.8 $MtCO_2e$**
Market Value: ▼ **$529.8M**
Average Price: ▼ **$5.87**
Buyers increasingly look to generate positive social impact as well as emission reductions.

In 2014, we identified a drop in volume in 2013 to 68 $MtCO_2e$ for 2013 as pre-compliance volume migrated to California's cap-and-trade program. Governments began entering the markets as buyers. On the corporate side, markets failed to attract many new buyers that year; most corporate buying came from companies that had already participated in the markets in previous years. REDD volumes more than doubled, to 22.6 $MtCO_2e$, but prices slid as transaction size and oversupply increased. Market-wide, the average price of voluntary offsets decreased 16% to $4.93.

In 2015, we found that that volume increased in 2014 to 76.8 $MtCO_2e$, driven by demand for projects associated with natural climate solutions and strong social components. Governments including Germany and Norway began stepping up with results-based payments to jurisdictions that reduce their emissions, usually at a price of $5 per metric ton. Prices for voluntary offsets slid to an all-time low of $3.80.

In 2016, we documented a 10% increase in volume ahead of the Paris Climate talks in 2015, but overall market value declined 7% to $278.2 million. New buyers, we found, were electing to purchase older offsets or those generated from wind farms, both of which tend to trade at lower prices. That year, wind overtook REDD+ as the most-transacted project type. At the same time, 19.7 $MtCO_2e$ were transferred into the California compliance market. The US remained the largest source of both voluntary supply and demand. Market-wide, the average price of voluntary offsets fell to a new low of $3.26.

In 2017, we identified a 23% drop in volume to 64.5 $MtCO_2e$ and a market value of $199.1 million in 2016 as voluntary markets entered a limbo phase after the Paris Agreement. Most offsets sold came from wind, REDD+, or landfill methane projects, but smaller or more community-focused project types dominated projects in the pipeline.

In 2018, we piloted a quarterly approach that would provide shorter time-framed snapshots of the market. We found that 18.7 $MtCO_2e$ were transacted in the first quarter of the year, at an average price of $2.40 per metric ton. At that point, transactions of offsets developed through Renewable Energy development were still ahead of those in Forestry and Land Use, 6.8 $MtCO_2e$ to 5.1 $MtCO_2e$, while registry data showed Forestry and Land-Use Projects had issued 9.3 $MtCO_2e$, compared to just 2.2$MtCO_2e$ for Renewable Energy. By year-end, Forestry and Land Use was the clear leader in both transactions and issuances. A shift to Natural Climate Solutions had begun.

2013
Volume: ▼ **68.0 $MtCO_2e$**
Market Value: ▼ **$338.5M**
Average Price: ▼ **$4.93**
Companies that previously offset emissions become repeat customers.

2014
Volume: ▲ **76.8 $MtCO_2e$**
Market Value: ▼ **$298.5M**
Average Price: ▼ **$3.80**
Governments begin stepping up with results-based payments to jurisdictions that reduce deforestation.

2015
Volume: ▲ **84.1 $MtCO_2e$**
Market Value: ▼ **$278.2M**
Average Price: ▼ **$3.26**
Wind overtakes REDD+ as the most-transacted project type.

2016
Volume: ▼ **64.5 $MtCO_2e$**
Market Value: ▼ **$199.1M**
Average Price: ▼ **3.10**
Smaller, more community-focused project types dominate the pipeline.

2017
Volume: ▼ **46.2 $MtCO_2e$**
Market Value: ▼ **$145.8M**
Average Price: ▲ **3.16**
Natural Climate Solutions begin to ascend again.

2018
Volume: ▲ **98.4 $MtCO_2e$**
Market Value: ▲ **$295.7M**
Average Price: ▼ **3.01**
Natural Climate Solutions lead to seven-year high in volume.

Market Overview: Insights & Key Findings from 2017 and 2018

Near All-time High for Voluntary Offsets Tracked by 2019 EM Carbon Survey

Forest Trends' Ecosystem Marketplace (EM) tracked transactions of voluntary carbon offsets for 2018 representing emission reductions equivalent to 98.4 $MtCO_2e$[2] with a market value of $295.7 million. This represents a 52.6% increase in volume and a 48.5% increase in value over 2016. It is also very nearly the highest volume of purely voluntary offsets (not counting CCX or pre-compliance offsets) ever tracked, with the exception of 98.8 $MtCO_2e$ tracked in 2011.

Cumulative volume has now exceeded 1.2 billion metric tons ($GtCO_2e$) transacted since Ecosystem Marketplace began tracking voluntary markets. This is roughly equivalent to the average annual emissions of Japan.[3]

BOX 1

A Note on Methodology and 2017 Data

The State of Voluntary Carbon Markets (SOVCM) report is unique in that it focuses on offsets transacted, as opposed to offsets issued or retired (e.g., permanently taken out of circulation by end users). Although issuances and retirements do inform our findings, the true value of the SOVCM comes through extensive surveying of market participants to identify trends in transacted supply and demand.

Our methodology is to report only what survey respondents report to us and not what we believe we can extrapolate from the data. Our volume figures are always conservative as a result. In 2019, we requested market participants provide data for both 2017 and 2018, in our survey. Approximately 20% more responses were received for 2018 than for 2017. Given this noticeable difference in the number of responses, this report makes more historical comparisons between 2016 to 2018, over those from 2017 to 2018 (see "Volume of Offsets Transacted" in Appendix 1, to be released in late December at https://www.forest-trends.org/sovcm2019/).

Market Highs are Fueled by Interest in Nature-Based Climate Solutions

Forestry and Land Use is a key component of Natural Climate Solutions[4] (NCS), which are often treated as a subset of broader Nature-based Solutions (NbS) (Box 2: Trending Demand for Natural Climate Solutions). When we peel back the layers, we find that a staggering 57% of the overall increase in volume came from one country, Peru, and was driven by one market category, Forestry and Land Use.

The volume of offsets generated through Forestry and Land Use activities increased 264% between 2016 and 2018, growing from 13.9 $MtCO_2e$ to 50.7 $MtCO_2e$, while volume in all other offset types by comparison grew just 21% (see Table 1).

Within the Forestry and Land Use category, volume from REDD+ projects, focused on forest conservation, increased 187%, from 10.6 $MtCO_2e$ in 2016 to 30.5 $MtCO_2e$ in 2018, with almost all of the increase concentrated in Peru (see

[2] $MtCO_2e$ refers to Millions of metric tons of carbon dioxide equivalent. The numbers presented throughout this report are measured in (millions of) metric tons of carbon dioxide equivalent. A metric ton is also often referred to as a "tonne" in the literature.

[3] National Greenhouse Gas Inventory Report of JAPAN 2019, National Greenhouse Gas Inventory Report of JAPAN 2019 § (2019). http://www.cger.nies.go.jp/publications/report/i144/i144.pdf.

[4] Within voluntary carbon markets, NCS drives demand for several project types — specifically: Afforestation, Reforestation and Revegetation (ARR), Afforestation/Reforestation (A/R), Agricultural Land Management (ALM), Improved Forest Management (IFM), Reducing Emissions from Deforestation and forest Degradation (REDD), Avoided Conversion of Grasslands and Shrublands (ACoGS), Wetlands Restoration and Conservation (WRC), and REDD+ (REDD plus elements of other activities that enhance carbon stocks).

Box 3). This rapid growth in REDD+ enabled it to regain the spot as the top project type in terms of volume that it had relinquished to wind farms back in 2015. Offsets from tree-planting projects (e.g., A/R) increased 342% from less than 2 $MtCO_2e$ in 2016 to 8.4 $MtCO_2e$ in 2018 and were distributed around the world.

The increased volume in Forestry and Land Use would appear to be driven by buyer enthusiasm for Natural Climate Solutions, but it's unclear at this point how much of the surge in volume for Forestry and Land Use relative to other project types represents shifting buyer preferences versus the expansion of domestic policy into activities previously covered in the offset space.

BOX 2

Trending Demand for Natural Climate Solutions

NCS reduce emissions by financing improved management of forests, farms, and natural ecosystems. They have been integral to voluntary carbon markets since their inception in the late 1980s (see Time Capsule, page 2), but they have gained in popularity over the past two years, for several reasons.

First, in 2017, widely cited research published in the Proceedings of the National Academy of Sciences showed that the climate mitigation potential of NCS had been vastly underestimated. In 2018 the Intergovernmental Panel on Climate Change (IPCC) Lands Report identified carbon sinks, especially from NCS, as critical to meeting the Paris Climate Agreement's target of keeping global warming below 2° Celsius. Nongovernmental organizations (NGOs) and United Nations agencies used this to launch awareness-raising campaigns around NCS, and media outlets ratcheted up their coverage of NbS, especially tree-planting. Market actors tell us these campaigns have influenced their purchasing decisions, and fossil fuel companies like Royal Dutch Shell and BP have incorporated NCS into their mitigation strategies.

TABLE 1

Transacted Voluntary Carbon Offset Volume, Value, and Weighted Average Price by Project Category, 2017 and 2018

	2017			2018		
	VOLUME $MtCO_2e$	AVERAGE PRICE	VALUE	VOLUME $MtCO_2e$	AVERAGE PRICE	VALUE
FORESTRY AND LAND USE	16.6	$3.4	$63.4M	50.7	$3.2	$171.9M
RENEWABLE ENERGY	16.8	$1.9	$31.5M	23.8	$1.7	$40.9M
WASTE DISPOSAL	3.7	$2.0	$7.4M	4.5	$2.2	$10.0M
HOUSEHOLD DEVICES	2.3	$5.0	$11.8M	6.1	$4.8	$29.5M
CHEMICAL PROCESSES/ INDUSTRIAL MANUFACTURING	2.6	$1.9	$4.9M	2.5	$3.1	$7.9M
ENERGY EFFICIENCY/ FUEL SWITCHING	1.1	$2.1	$3.3M	2.8	$2.8	$7.8M
TRANSPORTATION	0.1	$2.9	$0.2M	0.3	$1.7	$0.5M

Notes: 2017 figures are based on 1,041 transactions for a total volume of 43.2 $MtCO_2e$. 2018 figures are based on 1,568 transactions for a total of 90.7 $MtCO_2e$. These figures do not include responses that didn't provide price data.

Latin American Volume Leads the Way

The shift to NCS has also meant a change in the composition of countries and regions of origin for offsets, with Asia's market share sliding from 48% in 2016 to 31% in 2018, and Latin American and the Caribbean's market share ballooning from 13% in 2016 to 37% in 2018.

Within Latin America, Peru's volume transacted leaped from 1.5 $MtCO_2e$ in 2016 to 21.2 $MtCO_2e$ in 2018. This accounts for 86% of the overall 22.8 $MtCO_2e$ increase in volume from Latin America. Furthermore, nearly all of Peru's growth came via REDD+ projects. Without Peru, global REDD+ volume would have been virtually unchanged in the 2016-2018 period (see Box 3 for one possible reason why).

Africa's share of the markets increased slightly from 2016-2018, from 11% to 15% of overall global volume.

BOX 3

"Nests" REDD+ With an Eye on the Sky

Peru led the world in REDD+ activity in 2018, and it accounted for virtually all of the increase in REDD+ transactions from 2016 through 2018. Driving the surge is a government-led "nesting" model that supports REDD+ projects.

"Nesting" is a long-discussed (by carbon market standards) but only recently executed practice of embedding individual REDD+ projects into national or sub-national programs that aim to reduce greenhouse gas emissions by reducing deforestation. Nesting programs are designed to ensure both environmental integrity and economic fairness by making sure that all activities that contribute to emissions reduction are properly identified and accounted for while reducing uncertainty associated with leakage.

Peru's nesting program was piloted with projects verified under both VCS and CCB in the country's Natural Protected Areas (NPA), which are National Parks, National Reserves, and Communal Reserves, and has recently been extended to all REDD+ carbon projects in the country. It makes it possible for the country to deduct a project's exported emissions reductions from the national inventory in the future. This serves two key domestic constituents: developers of Peruvian REDD+ projects seeking to sell offsets into either the voluntary market or compliance programs such as Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and Peruvian jurisdictions seeking funding from government-to-government programs (this will be addressed in a section entitled "The Jurisdictional Juggernaut Could Steamroll Projects — or Tuck Them into a Nest," to be released December 9).

Higher Volumes Aren't Bringing Higher Prices

Verification is the last step of project development before issuance, and many project developers have held off on taking this costly step until a sale is imminent. This left a significant inventory of unissued offsets at the start of 2018, so increased demand that year did not result in the kind of shortages that would lead to a significant increase in price. The volume-weighted average price[5] per metric ton was $3.01 in 2018 — down from $3.10 per ton in 2016 and $3.16 in 2017, although there was wide variance in prices.

One thing remains clear: average prices for voluntary offsets remain well below average prices in compliance markets around the world, and lower still than the $40-$80 per metric ton range that the World Bank estimates to be necessary to achieve the goals of the Paris Agreement. Despite growing demand and positive signals for future growth in the market discussed in this report, the surplus of voluntary credits — i.e., the gap between annual

[5] Weighted average takes into account the varying degrees of importance of the numbers in a data set. In calculating a weighted average, each number in the data set is multiplied by a predetermined weight before the final calculation is made. (Source: Investopedia). In the case of this data, sales prices are weighted by their corresponding volumes for each transaction to determine an overall volume-weighted average.

issuances and retirements (see Appendix 1, to be released in late December) — appears to have kept a lid on prices in 2018.

Prices were higher for low-volume transactions and lower for high volume transactions, as evidenced in the higher median[6] prices reported of $5.43 in 2018 and $6.12 in 2017. The median price in 2016 was $5.32. (See Figure 4 in the Appendix 1, to be released in late December).

Prices for REDD+ offsets fell 47% from $4.40 per metric ton in 2016 to $2.35 per metric ton in 2018, and several respondents suggested this reflects project developers clearing out inventory of older vintages before they are perceived as out of date. Prices for A/R offsets fell 30%, from $8.10 per metric ton in 2016 to $5.70 in 2018, while Improved Forest Management (IFM) projects, although low in volume, drew the highest price per metric ton of any project type in 2017 and 2018, at $9.32 and $8.15, respectively.

Buyers Want Co-Benefits, but Balk at Paying More for Them

Buyers prefer projects that demonstrate benefits beyond emission reductions, but their willingness to pay a premium is limited. This is reflected in the fact that the biggest jump in volume was for offsets that achieved dual certification under both the VCS, which certifies greenhouse-gas impacts, and the CCB standards, which certify positive social and biodiversity impacts.

Transacted volume of VCS+CCB-certified offsets increased 325%, from 7.7 $MtCO_2e$ in 2016 to 32.7 $MtCO_2e$ in 2018, with 76% of the increase concentrated in Peru. These increases further underscore both the rise in forestry offset transactions and the apparent preference for projects that generate co-benefits, because VCS+CCB exclusively covers forestry projects with clear co-benefits.

The rise in VCS+CCB certified offsets lifted total VCS volume 88.6%, from 33.4 $MtCO_2e$ in 2016 to 63.0 $MtCO_2e$ in 2018. Last year, VCS's overall market share stood at 73%: 38% for VCS+CCB and 35% for VCS alone. The second highest volume standard, Gold Standard, had a market share of 15%.

Despite (or, perhaps, because of) the strong volume, the price of VCS+CCB offsets in 2018 fell below that of offsets certified under VCS alone. The price of VCS+CCB offsets fell from $3.90 in 2016 to $2.49 in 2018, while the price of offsets certified under VCS alone increased from $2.30 to $2.71. This counter-intuitive price differential appears to flow from a combination of transaction size, location, and project mix. Specifically, the VCS+CCB segment saw several large transactions in 2017 and 2018, and these took place at a lower than average price. Furthermore, VCS+CCB verification only applies to the Forestry and Land Use category, while projects verified under this combination tend to be located in lower-income countries. Finally, he VCS+CCB verified projects reported in 2018 were 82% REDD+ by volume, a segment where developers are believed to have held ageing inventory that they sold at a discount. Meanwhile, VCS-only projects covered a wider range of project types, almost half of which were renewables, 18% A/R (which command a price premium), and just 5% REDD+.

Another popular project type for buyers seeking positive social co-benefits are offsets generated by the distribution of clean-burning cookstoves. Transaction volume for these offsets increased 113%, from 2.3 $MtCO_2e$ in 2016 to 4.9 $MtCO_2e$ in 2018. Average prices held relatively steady at $5.10 in 2016, $6.17 in 2017, and $5.00 in 2018, when the market value topped $24.8 million.

Other Standards Hold Steady, But CDM Slides

Growth in VCS+CCB far outpaced the volume increases of the other standards (see Figure 9 in Appendix 1, to be released in late December). The volume of Gold Standard certified offsets, for example, increased 35% (9.9 $MtCO_2e$ in 2016 to 13.4 $MtCO_2e$ in 2018) compared to the aforementioned 325% jump for VCS+CCB during the same period.

[6] Median price, which is defined as the value of separating the higher half from the lower half of a data sample, therefore means that that half of the transactions in 2018 were for less than $5.43/metric ton, and half were more.

Of the five largest standards, the CDM was the only one to see a decline in volume — from 4.8 $MtCO_2e$ in 2016 to 2.2 $MtCO_2e$ in 2018, a drop of 54%. The CDM was initially created as a compliance standard under the Kyoto Protocol, but the program faces an uncertain future that will be decided by two key upcoming negotiations around Article 6 of the Paris Agreement and CORSIA. Voluntary buyers have also steered clear of CDM-certified projects, largely due to additionality concerns, the exception being those that reduce emissions by distributing clean-burning cookstoves. Nonetheless, many CDM project developers have turned to the voluntary markets to try and find buyers.

There Appears to be Consolidation Among Market Participants

Although volumes reached an all-time high in 2018, the number of survey respondents fell from 144 in 2016 to 105 in 2018, indicating a possible consolidation of offset providers and intermediaries as the sector matures and new trading technologies emerge. Market participants concurred with this assessment, but more data is needed.

FOREST TRENDS

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Promoting development of sound, science-based, and economically sustainable mitigation and no net loss of biodiversity impacts

Coastal and Marine Initiative

Demonstrating the value of coastal and marine ecosystem services

Communities and Territorial Governance Initiative

Strengthening local communities' capacity to secure their rights, manage and conserve their forests, and improve their livelihoods

Ecosystem Marketplace

A global platform for transparent information on environmental finance and markets, and payments for ecosystem services

Forest Policy, Trade, and Finance Initiative

Supporting the transformation toward legal and sustainable markets for timber and agricultural commodities

Public-Private Finance Initiative

Creating mechanisms that increase the amount of public and private capital for practices that reduce emissions from forests, agriculture, and other land uses

Supply Change

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