



Voluntary Carbon Markets: Outlooks and Trends January to March 2018

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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: <https://www.forest-trends.org/ecosystem-marketplace/>

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Foreword

The carbon markets landscape is changing fast. Countries have begun to enact their emissions reduction goals under the Paris Agreement. Many plan to implement domestic carbon pricing schemes and/or trade emissions reductions across borders—if they have not done so already. Yet the Paris Agreement contains few hard-and-fast rules about international trading, so negotiators are working hard to develop this structure and guidelines before 2020 (see page 11). On top of that, the international aviation industry is preparing to launch what may become the largest cap-and-trade program in the world (see page 15).

How these compliance markets affect existing voluntary carbon projects depends on how they are rolled out. Will they allow offsets from voluntary projects? If so, which ones? Will there be restrictions on the type of project or when offsets are produced? With government and industry representatives around the world making critical decisions in the remaining half of 2018 or 2019, now is a crucial time to track these market developments.

In the meantime, voluntary carbon market actors are continuing to explore and innovate. They are finding new ways of generating and selling emissions reductions, integrating their projects' activities with broader sustainable development goals, and collaborating with policymakers and industry groups about how to ensure compliance markets incorporate the best practices from voluntary carbon markets. Overall, these activities have resulted over **430 million tonnes** of emissions reductions generated since 2005 – that's the equivalent of running over 100 coal-fired power plants for a year.

To reflect the rapidly changing carbon markets landscape this year, we are piloting a new mini-report, *Voluntary Carbon Markets: Outlooks and Trends*, that examines the key trends that have emerged in the first quarter (Q1) of 2018. In this report, we present an overview of the voluntary carbon markets—what they are and how they work—along with the latest first-quarter data on offset issuances, transactions, and retirements to bring our readers up to date. We also provide an in-depth outlook of the voluntary carbon markets, examining some of the major upcoming policy decisions that might radically change the voluntary carbon markets—or not.

Our full *State of the Voluntary Carbon Markets* report will return in 2019, but before then, we believe the above developments are significant enough to track as they happen. We welcome your feedback and input, even more so in these evolving times.

- *Michael Jenkins and the Ecosystem Marketplace team*

Q1 Trends: Issuances

Offsets are issued to a project once the following criteria are met: the project has implemented its emissions reductions activities, demonstrated that it has achieved quantifiable emissions reductions, *and* met all necessary requirements set by the relevant standard. Such standards typically require that projects undergo third-party **validation** (to approve project activities and plans) and **verification** (to ensure the project's activities have been implemented), as well as other processes to guarantee the project's beneficial impact on the climate.

When an offset is issued, it is assigned a unique serial number and listed on a **registry** that traces the offset from issuance through transaction(s) to retirement. This is a critical step in providing transparency around offset ownership and to prevent double claiming.

A project's total volume of offsets issued does not always equate to the project's total volume of emissions reduced. This is because project developers must pay for both third-party verification and the issuance of offsets. Some project developers, then, will only pay for these services if they have a committed buyer. Hence, issuance volumes represent a *minimum* amount of emissions reductions and available offset supply (see page 3 for more information about the environmental impact of offsetting).

Box 2. Voluntary Carbon Market Standards

During the early stages of the voluntary carbon markets, many project developers used internal methodologies to calculate their project's emissions reductions. Today, most projects adhere to methodologies set out by one of several voluntary standards. These standards require projects to submit to third-party validation and verification to ensure projects have achieved their stated emissions reductions. Standards can differ by which project activities and types are allowed, where projects may be located, and what regulations projects must adhere to.

However, all voluntary standards require that offsets be:

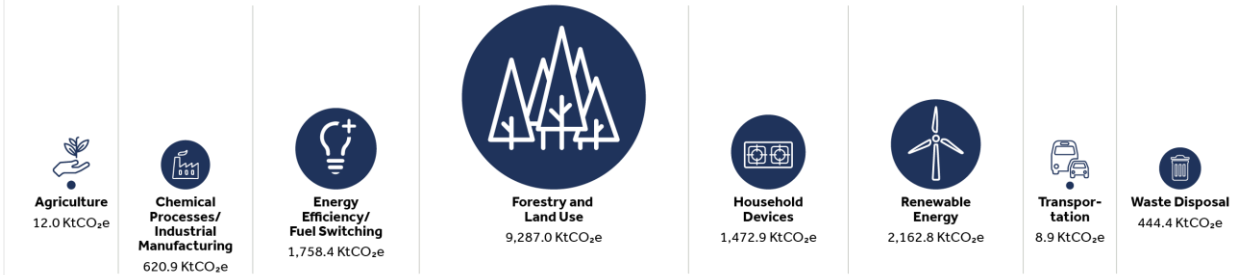
- **Real:** there will be evidence that the project actually removes or prevents emissions;
- **Additional:** the emissions reductions would not occur without those project activities;
- **Measurable:** the volume of emissions reductions can be accurately measured; and
- **Verifiable:** a neutral, third-party auditor has verified the emissions reductions.

Some standards also incorporate co-benefits impacts, requiring projects to not only reduce emissions, but also address other sustainable development-related impacts like employing or training a certain number of local residents or protecting species' habitats (see Box 1 for more detail).

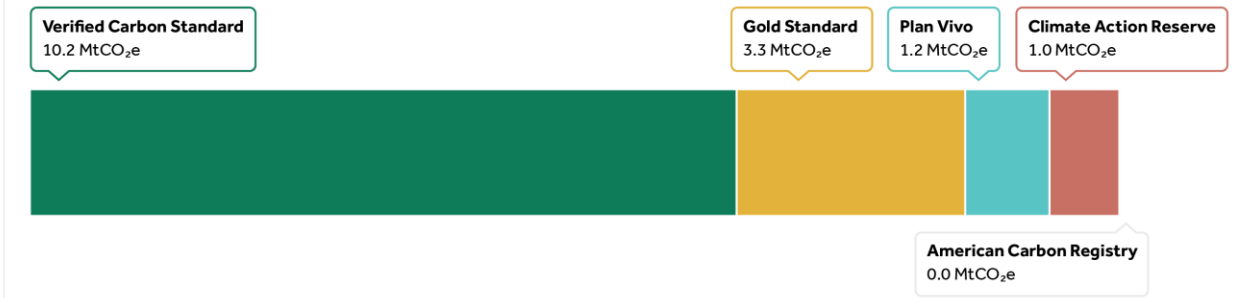
Figure 3. Q1 Issuances by Project Category, Standard and Country

160 projects issued 15.8 MtCO₂e offsets January-March 2018.
 7.0 MtCO₂e in January | 5.2 MtCO₂e in February | 3.5 MtCO₂e in March

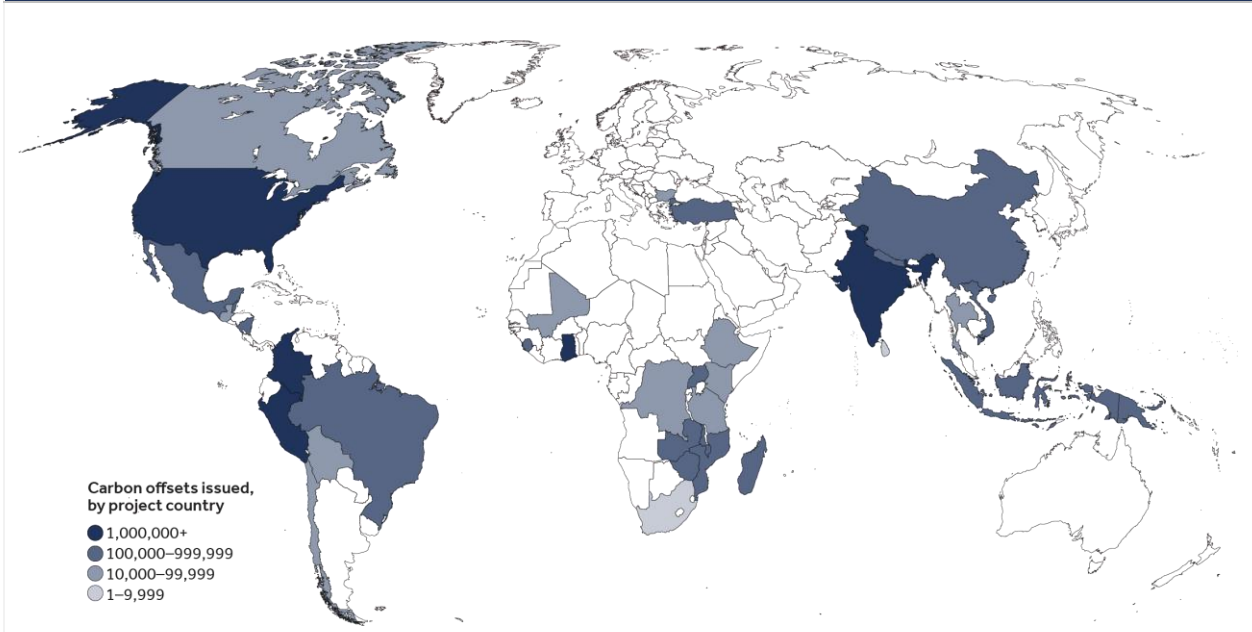
By Project Category



By Standard



By Country



Notes: The data is based on project registries from the following carbon standards: American Carbon Registry (ACR), Climate Action Reserve (CAR), Gold Standard, Plan Vivo, and Verra's Verified Carbon Standard (VCS) as of April 2018. Based on 14.7 MtCO₂e offsets issued. Some category totals do not add up to 14.7 MtCO₂e due to rounding conventions.

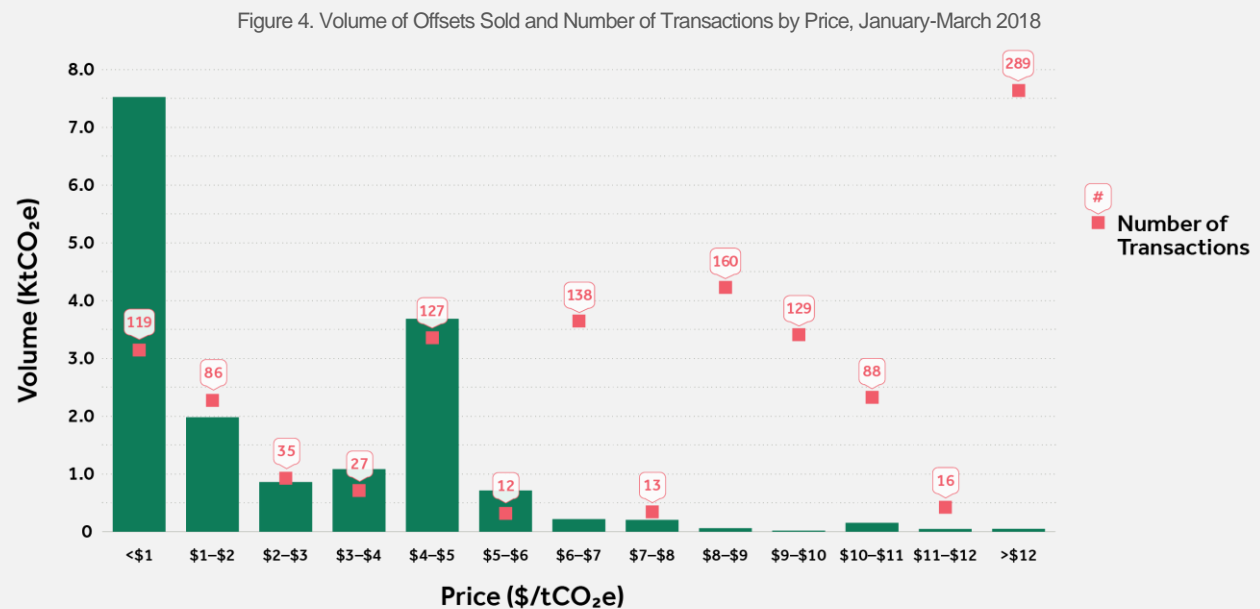
Q1 Trends: Transactions

After issuance, project developers can sell their offsets to intermediaries (like a retailer, broker or exchange) or directly to an end buyer. While an offset is only issued and retired once, it may be transacted multiple times before retirement. Because of this, there are a few critical differences between the transaction data presented here than the issuance and retirement data presented elsewhere in the report.¹

First, we include the volume of offsets recorded for each transaction—even if the same offset was transacted multiple times (for example, from project developer to retailer to end buyer). Second, because there is no public source of transaction data, Ecosystem Marketplace conducted a survey² to gather data directly market participants: this data should be viewed as conservative, as we only report on survey respondents' data. Third, because it is survey-based information, the responses include offsets that were certified by additional standards.

Box 3: What's in a Price?

In contrast to compliance markets, where offsets typically sell at a relatively consistent price, prices for offsets on the voluntary carbon markets can range dramatically. While Ecosystem Marketplace has tracked *average* prices ranging between \$3-\$6/tCO₂e, *actual* prices might be as little as \$0.5/tCO₂e or more than \$50/tCO₂e.³ Figure 4 below depicts the volume and number of transactions by price reported in Q1 of 2018.⁴



Notes: The data is based on results from Ecosystem Marketplace's survey of project developers, retailers, and brokers conducted in Spring 2018. Based on 1206 transactions totaling 11.4 MtCO₂e offsets reported between January to March 2018. See the methodology for more information.

This range in prices reflects several factors, including: project costs (which can differ based on the project's location and type of activity), buyer's preferences (as limited projects might need to meet specific location, project type, co-benefits, or other buyer criteria), and the deal itself (typically, offsets bought in bulk tend to sell at lower prices than offsets bought in smaller quantities).

¹ While most of the market activity data in this report comes directly from five voluntary standards (ACR, CAR, the Gold Standard, Plan Vivo, and VCS), transaction data comes from an Ecosystem Marketplace survey conducted to carbon project developers, retailers, and brokers. See the methodology section for more information.

² Our latest survey builds on our experience collecting voluntary carbon market data over the last twelve years.

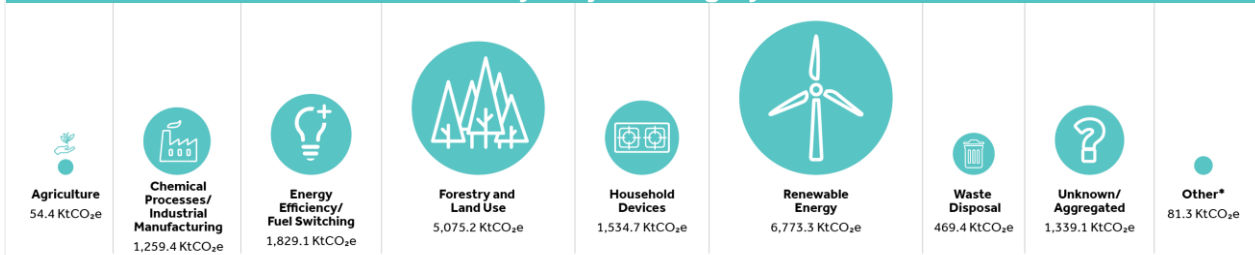
³ Kelley Hamrick and Melissa Gallant, *Unlocking Potential: State of the Voluntary Carbon Markets 2017* (Forest Trends' Ecosystem Marketplace, 2017), <https://www.forest-trends.org/publications/unlocking-potential/>.

⁴ Transaction data could be presented in aggregate or individual transactions. As a result, the number of transactions in this figure is underestimated.

Figure 5. Q1 Transactions by Project Category, Standard and Country

18.7 MtCO₂e offsets transacted January-March 2018 at an average price of \$2.4/tCO₂e.

By Project Category



By Standard

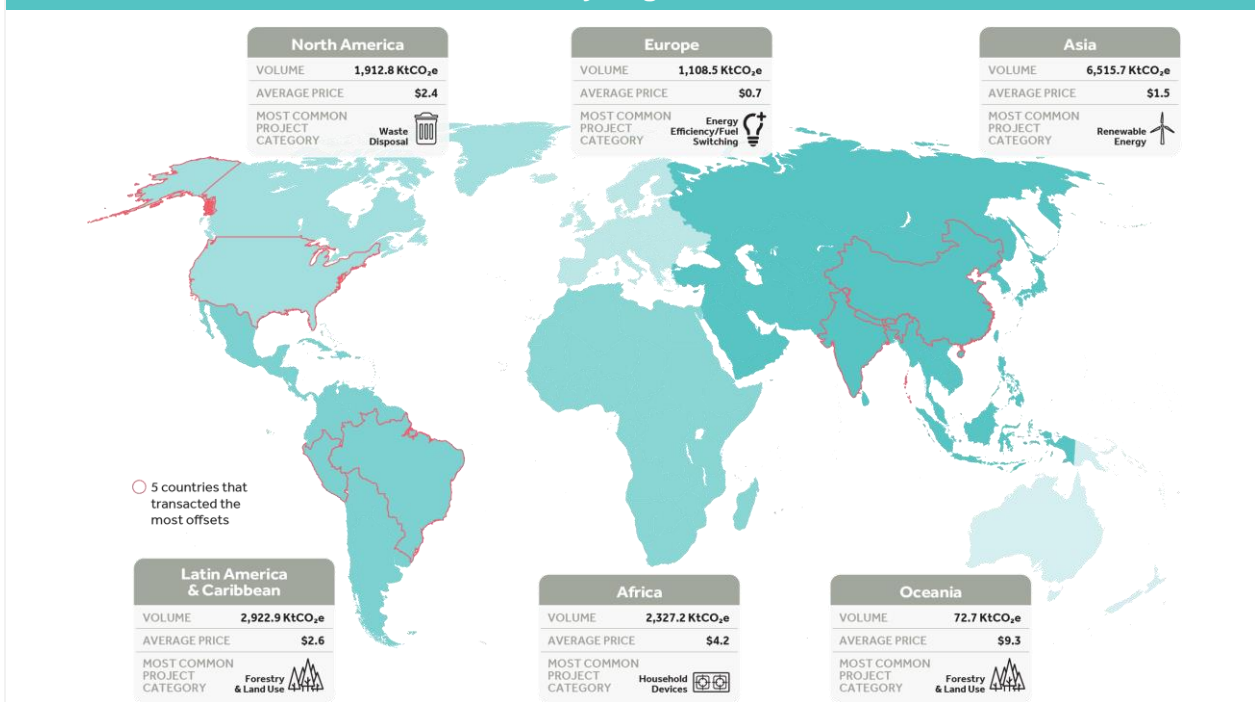
Volume



Value

Verified Carbon Standard 12,287.1 KtCO ₂ e \$22,565.3 K	Gold Standard 3,728.5 KtCO ₂ e \$11,667.8 K	Multi/Aggregated 1,284.3 KtCO ₂ e \$4,142.4 K	Climate Action Reserve 600.7 KtCO ₂ e \$869.9 K
Clean Development Mechanism 313.0 KtCO ₂ e \$319.9 K	American Carbon Registry 292.9 KtCO ₂ e \$1,425.8 K	Plan Vivo 98.4 KtCO ₂ e \$787.7 K	Other/None 23.6 KtCO ₂ e \$228.2 K

By Region



* Other includes transportation and other project types.

Notes: Data is based on results from Ecosystem Marketplace's survey of project developers, retailers, and brokers conducted in Spring 2018. See the methodology for more information. Based on 9.4 MtCO₂e offsets transacted. Some category totals do not add up to 9.4 MtCO₂e due to rounding conventions.

Q1 Trends: Retirements

Retirement is the final stage in an offset's life cycle, after which offsets are no longer able to be traded. An offset is retired when an end buyer claims the quantity of emission reductions associated with that offset against their own emissions.

When this happens, the registry tracking that offset permanently removes the offset's unique serial number from circulation. This ensures the offset cannot be resold, and the emissions reductions represented by that offset are considered permanently "removed" from the atmosphere.

While it is best practice to retire an offset before claiming it against emissions, in reality that does not always happen. Even if an end buyer does retire the offset, there may also be a lag in the time between when the offset is "used" in emissions calculations, and when it is officially retired through a registry. Hence, the retirement volumes noted throughout this periodical represent a *minimum* amount of end-demand for offsets.

Box 4. Who Buys Offsets?

Many kinds of people, companies, and organizations voluntarily offset their emissions. A traveler might offset their air travel emissions. A major company may choose to offset a portion of their emissions as part of their sustainability strategy. Earlier this year, the rock band Pearl Jam offset the emissions associated with their tour in Brazil.⁵

In the surveys for our *State of the Voluntary Carbon Markets* reports, Ecosystem Marketplace asks respondents about their end buyers. [Last year's report](#) supported trends we have seen over the last decade, namely that:

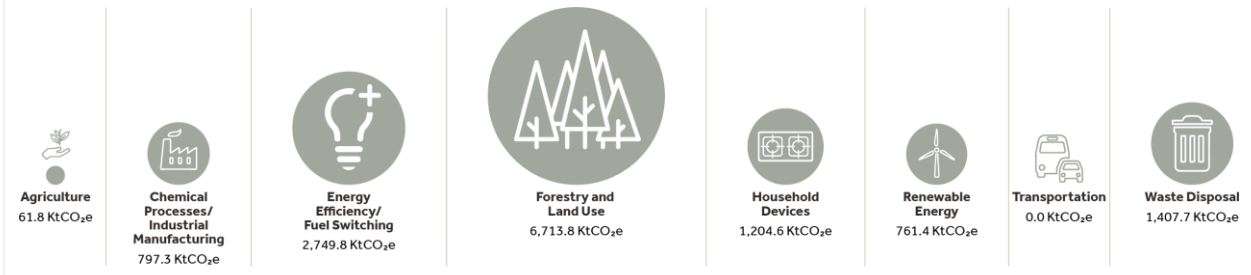
- The bulk of voluntary offset purchases by volume are made by multi-national, private, for-profit companies.
- Returning buyers tend to purchase higher volumes, while new buyers, perhaps dipping their toes in the market, often purchase fewer offsets at a time.
- There are many different reasons an end buyer may choose to purchase offsets, but often offsetting is part of a broader environmental sustainability strategy and/or specific goal to reduce emissions.
- When choosing which offsets to buy, end buyers looking for "charismatic" offsets emphasize co-benefits like economic growth or biodiversity preservation and often pay higher prices.

⁵ "Pearl Jam invests in Amazonian reforestation to offset emissions from current Brazil tour," Mongabay, published March 20, 2018, <https://news.mongabay.com/2018/03/pearl-jam-invests-in-amazonian-reforestation-to-offset-emissions-from-current-brazil-tour/>.

Figure 6. Q1 Transactions by Project Category, Standard and Country

213 projects retired 13.7 MtCO₂e offsets, January-March 2018.
 5.2 MtCO₂e in January | 5.1 MtCO₂e in February | 3.3 MtCO₂e in March

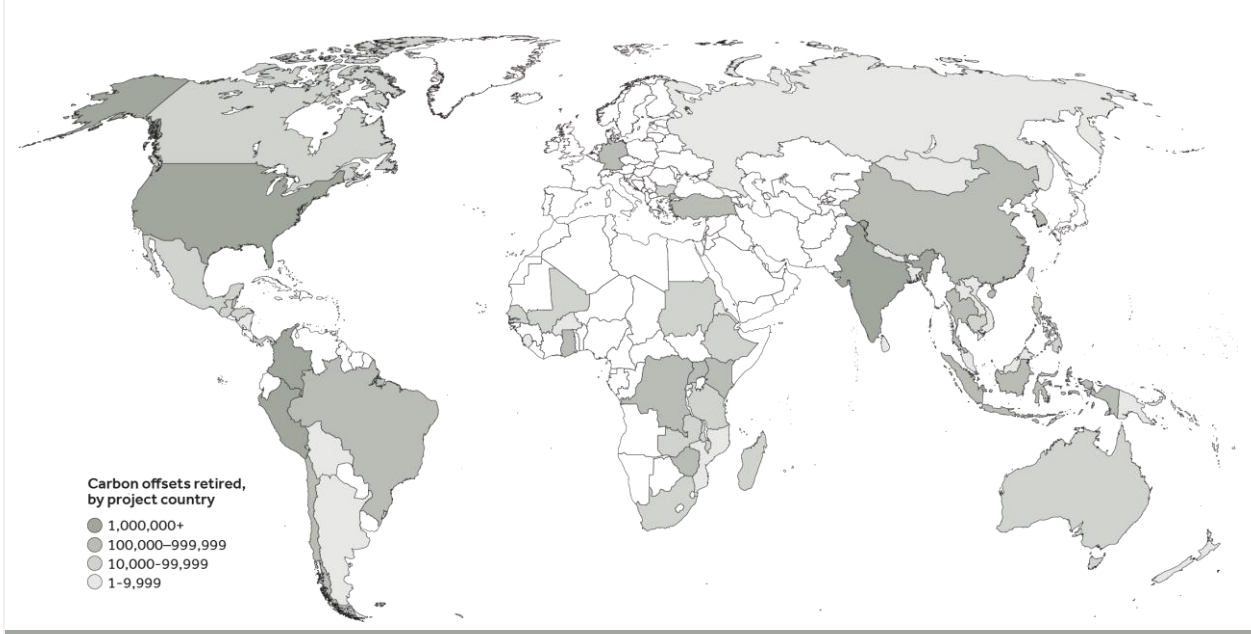
By Project Category



By Standard



By Country



Notes: The data is based on project registries from the following carbon standards: American Carbon Registry (ACR), Climate Action Reserve (CAR), Gold Standard, Plan Vivo, and Verra's Verified Carbon Standard (VCS) as of April 2018. Based on 13.5 MtCO₂e offsets retired in 58 countries. Some category totals do not add up to 13.5 MtCO₂e due to rounding conventions.

Annex I: Methodology

Where Did the Data Come From?

We obtained issuance and retirement data in April of 2018 from five voluntary standards: American Carbon Registry, Climate Action Reserve, Gold Standard, Plan Vivo, and Verra's Verified Carbon Standard. Where up-to-date public information was available, we downloaded records from standards' websites. Where it was not, we obtained records through email correspondence.

There is no comprehensive online data available for voluntary transactions of carbon offsets. In order to obtain information about the volume, price, project type, and standards for offsets traded in the voluntary market, Ecosystem Marketplace conducted a survey of carbon project developers, retailers and brokers. In March and April 2018, we sent 607 requests for data. We received 131 responses in total, 37 of whom did not conduct transactions in Q1, and 63 of whom had conducted transactions and shared that information confidentially for this report.

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.

What Is Not Included in Our Findings and Figures?

While we have done our best to ensure that the data in this periodical is as complete as possible, due to limited time and data availability, there are some elements of the market that are not included. As such, all findings and figures should be regarded as conservative.

Our issuance and retirements data is based on data from 5 major voluntary standards (listed above), but does not include offsets used voluntarily from the United Nations Framework Convention on Climate Change's Clean Development Mechanism, or offsets issued under voluntary government-mediated programs with their own standards, like the United Kingdom's Woodland Carbon Code.

Our data on carbon offset transactions is based on a survey of project developers, retailers and brokers. Not all companies and organizations active in this space responded to our request for data, and we did not send requests to every active company and organization. The carbon offset industry is an ever-evolving world. While we do our utmost to ensure that we reach out to any carbon project developers, retailers, and brokers actively involved in the market, inevitably there are some we miss. If you are in the carbon space and would like to be included in future surveys, please email info@ecosystemmarketplace.com.

Annex II: Project Categories

Project Category	Project Type
Agriculture	Fertilizer - N20
	Grassland/rangeland management
	Livestock methane
	No-till/low-till agriculture
	Rice cultivation/management
	Sustainable agricultural land management
	Other - Agriculture
Chemical Processes/Industrial Manufacturing	Nitric Acid
	Ozone-depleting substances (Article 5)
	Ozone-depleting substances (US based)
	Carbon capture and storage
	Coal mine methane
Other - Chemical Processes/Industrial Manufacturing	
Energy Efficiency/Fuel Switching	Energy efficiency - community-focused (targeting individuals, communities, etc.)
	Energy efficiency - industrial-focused (targeting corporations)
	Fuel switching
	Waste heat recovery
	Other - Energy Efficiency/Fuel Switching
Forestry and Land Use	Afforestation/reforestation
	Agro-forestry
	Avoided conversion
	Improved forest management
	REDD - Avoided planned deforestation
	REDD - Avoided unplanned deforestation
	Soil carbon
	Urban forestry
	Wetland restoration/management
	Other - Forestry and land use
Household Devices	Clean cookstove distribution
	Water purification device distribution
	Other - Household Devices
Renewable Energy	Biogas
	Biomass/biochar
	Geothermal
	Large hydro
	Run-of-river hydro
	Solar
	Wind
	Other - Renewable Energy
Transportation	Transportation - private (cars/trucks)
	Transportation - public (bikes/public transit)
	Other - Transportation
Waste Disposal	Landfill methane
	Waste water methane
	Other - Waste Disposal

Annex III: Producing and Selling a Voluntary Carbon Offset

Producing a Voluntary Offset

In order to generate offsets, a project developer must complete a rigorous process in order to ensure that real, quantifiable emissions reductions have been achieved. Although the process can vary, most follow a similar series of steps (Figure 9).

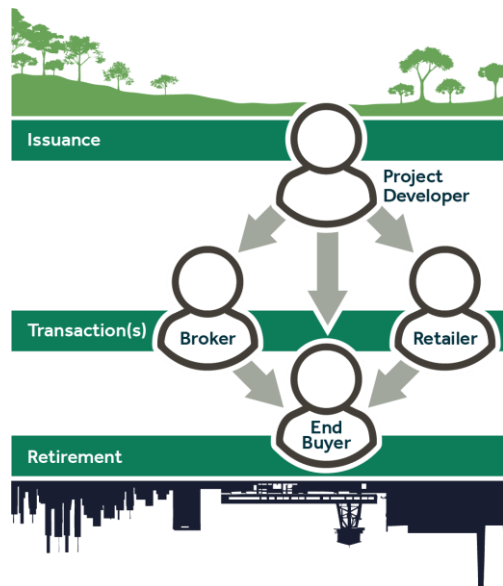
Figure 9. Project Development Process for Carbon Offset Projects



Once the project developer has decided on their project activities, they begin to work on a **Project Idea Note**. This first step focuses on early-stage preparations, like generating a project plan, assessing the project’s feasibility, impacts, and risks, and/or engaging with local stakeholders.

Next, the project developer makes more concrete plans in a **Project Design Document**. The developer provides information about the project’s anticipated emissions reductions, plans for quantifying and monitoring the delivery of climate and other social and environmental benefits, and a demonstration that the project’s activities exceed “business-as-usual” reductions and avoids emissions leakage.⁶

Figure 10. Example Life Cycle of a Carbon Offset



These plans and assumptions are then “validated” by a third-party auditor. After the project has been implemented and monitored over a period of time, another audit process called “verification” assesses the delivery of greenhouse gas mitigation. Only after the project has successfully passed each of these steps can the project developer begin to issue tradeable offsets.

Selling a Voluntary Offset

Once a project developer issues offsets, s/he can sell them. But with no centralized voluntary marketplace, finding a buyer can be a multi-step, challenging process. Some project developers sell their offsets directly to end buyers. Others sell their offsets through a broker or an exchange, which provide platforms for buyers and sellers to meet; still others may sell to a retailer, who then resells offsets to an end buyer.⁷

The transaction phase includes any time an offset is sold. Yet once an end buyer is ready to claim that offset against their own emissions, s/he should retire it. Retired offsets are no longer able to be traded in the market, and represent emissions that are permanently “removed” from the atmosphere.

⁶ Leakage means that emissions are simply displaced to a different location, instead of avoided altogether. For instance, if a forestry project claimed to avoid emissions by preventing deforestation, but resulted in other forests being felled.

⁷ We define brokers/exchanges and retailers by offset ownership; retailers take temporary ownership of an offset, while brokers and exchanges do not. However, there are many other differences as well. Retailers are more likely to walk companies through the process of offsetting and provide more tailored, customized advice.

Annex IV: Acronyms and Glossary

Acronyms:

ACR – American Carbon Registry
CAR – Climate Action Reserve
CDM – Clean Development Mechanism
CORSIA - Carbon Offsetting and Reduction Scheme for International Aviation
EU – European Union
GHG – Greenhouse Gas
ICAO – International Civil Aviation Organization
ICROA – International Carbon Reduction and Offset Alliance
ITMO – Internationally Transferable Mitigation Outcomes
Q1 – First quarter of 2018 (January – March)
REDD+ – Reducing Emissions from Deforestation and forest Degradation
SARPs – Standards and Recommended Practices
tCO₂e – metric tonnes of carbon dioxide or equivalent (typically measured in millions, M, or thousands, K)
UN – United Nations
UNFCCC - United Nations Framework Convention on Climate Change
US – United States
VCS – Verified Carbon Standard

Glossary:

Broker: Brokers are intermediaries who do not take ownership of offsets, but facilitate transactions for a fee between project developers and end users, between project developers and retailers, and/or between retailers. When given the opportunity, some retailers will also perform this role, but generally not at significant volumes.

Carbon Market: Carbon markets are where carbon offsets are bought and sold. They may be either voluntary or compliance.

Voluntary markets refer to the collective voluntary transactions tracked worldwide. There is no centralized single marketplace for voluntary transactions but rather many discrete transactions and, in some cases, country or program-related markets (such as the United Kingdom's Woodland Carbon Code).

Compliance markets are the result of government regulation to reduce greenhouse gas emissions, and allow regulated entities to obtain and surrender emissions permits (allowances) or offsets in order to meet predetermined regulatory targets.

Carbon Offset: A carbon offset is a quantified environmental benefit that is designed to compensate for impacts to habitat, environmental functions, or ecosystem services. Offsets may be regulatory or voluntary. Within carbon and greenhouse gas markets, offsets specifically refer to one metric tonne of carbon dioxide equivalent reduced, avoided or sequestered by an entity to compensate for emitting that tonne elsewhere.

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

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

End Buyer: End-buyers are buyers who purchase offsets with the intention to retire them. Offsets will no longer be sold after transferring to an end-buyer. This is in contrast to retailers, who purchase offsets with the intention to resell them. End buyers are also referred to in this report as “end-users.”

Greenhouse Gas: a gas that contributes to the climate change by absorbing the sun’s infrared radiation when in the earth’s atmosphere.

Issuance: Issuance is the final project stage which occurs after third-party auditors have guaranteed a project has avoided or sequestered carbon dioxide or its equivalent. Once a project has met all requirements by its voluntary standard, the developer can apply to a standards body to issue eligible offsets. Any offsets issued to the project owner come with a unique serial number and are listed in a registry that monitors any ownership transfers or offset retirement. Issuance takes place once a carbon offset project has been validated, verified, and undergone other required processes.

Paris Agreement: The Paris Agreement was a landmark decision negotiated by 196 countries participating at the United Nations Framework on Climate Change’s Conference of the Parties in December 2015. The Agreement states that countries should set national emissions reductions goals in order to keep the global average temperature rise below 2 degrees Celsius, and attempt to keep temperature rise below 1.5 degrees Celsius. As of June 2018, 195 countries signed the agreement and 178 countries are party to the agreement. The United States, while party to the agreement, has announced its intention to withdraw; the earliest this withdrawal can happen is November 2020.

Project: A project is a site, or suite of sites, where restoration, sequestration, or other activities are implemented for the purposes of marketing the resulting ecosystem service assets or outcomes to buyers. Carbon offset projects quantify their avoided or reduced emissions to produce tradable climate reduction certificates, called offsets.

Project Category: Project categories represent similar groups of project types of carbon offset projects.

Project Design Document: The Project Design Document is the project stage that follows the Project Idea Note, once a methodology is selected. A Project Design Document details project design, anticipated emissions reductions, plans for quantifying and monitoring the delivery of climate and other social and environmental benefits, demonstrates that the project activity exceeds “business-as-usual” reductions and avoids emissions leakage, and addresses other technical issues.

Project Developer: A project developer is a catch-all phrase to describe organizations that create carbon offset projects, beginning with the initial Project Design Document all the way to offset issuance. Project developers include organizations that are the project owner, partner organizations involved in project implementation, project financiers/investors, or others.

Project Idea Note: The Project Idea Note is the first stage in project development. The Project Idea Note is a preparatory step before creating a carbon offset project that is often required by project methodologies. A Project Idea Note may include project plans; project feasibility, impact,

and risk assessments; findings from stakeholder input sessions; and other early-stage preparations.

Project Type: Projects may implement a variety of activities to reduce, sequester or avoid emissions from greenhouse gases. Forest Trends' Ecosystem Marketplace Initiative has designated "project types" to denote similar types of activities occurring by projects; however, projects may utilize multiple activities to achieve emissions reductions.

Reduced Emissions from Deforestation and Forest Degradation (REDD+): REDD+ projects are project types in areas where existing forests are at risk of land-use change or reduced carbon storage. The projects focus on conserving these forests before they are degraded or deforested, resulting in the avoidance of a business-as-usual scenario that would have produced higher emissions. Emissions reductions occur primarily through avoided emissions.

Registry: A registry issues, holds, and transfers carbon offsets, which are given unique serial numbers to track them throughout their lifetime. Registries can also retire offsets. In compliance markets, each market has its own designated registry. In the voluntary market, independent registries exist.

Retailer: Retailers do not traditionally manage project development and documentation. Instead, they contract with project developers to take ownership of a portfolio of offsets that they then offer to end-buyers. Retailers typically offer other corporate carbon management services to end-buyers, such as advising on internal emissions reductions strategies.

Retirement: The final project development stage, retirement is the point at which an organization permanently sets aside a carbon offset in a designated registry, effectively taking the carbon offset's unique serial number out of circulation. Retiring offsets through a registry ensures that they cannot be resold. This is of particular importance if the buyer's intent is to claim the offset's emissions reductions against a carbon reduction or neutrality target.

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

Transaction: The point at which a buyer signs a contract to purchase offsets, regardless of whether suppliers agree to deliver offsets immediately or in the future.

Validation: The project development stage that follows the Project Design Document. Validation is the approval of carbon offset projects during planning stages. To achieve validation, projects must submit information on project design for third-party approval. Project design information generally includes baseline scenarios, monitoring plans, and methodologies for calculating emissions reductions.

Verification: The project development stage that follows validation. Verification may take place up to several years after validation. It refers to the process of verifying emissions reductions generated by an offset project to a particular standard, which quantifies actual emissions reductions to ensure that the appropriate number of offsets are issued to the project.

Vintage: The year in which emissions reductions occur. The vintage of the offsets may not necessarily match the year in which the offsets are transacted—and the vintage year may be in the future.

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