



ECOSYSTEM MARKETPLACE INSIGHTS BRIEF

The Art of Integrity

State of the Voluntary Carbon Markets 2022 Q3

August 2022

2021 was a historic, record-breaking year for the Voluntary Carbon Markets, and 2022 is off to a fast-paced start. With the VCM now around the \$2 billion mark, this much-anticipated briefing provides final market values for 2021.

Ecosystem Marketplace (EM) is currently receiving trade reports from EM Respondents for the first half of 2022. New data and a more in-depth State of the Voluntary Carbon Markets 2022 report will be published during Climate Week NYC in September.

Visionary Partners



Strategic Supporters



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About Ecosystem Marketplace

Ecosystem Marketplace (EM), a non-profit initiative of Forest Trends, is a leading global source of credible information on environmental finance, markets, and payments for ecosystem services. For nearly two decades, EM has run the world's first and only globally recognized and standardized reporting and transparency platform for Voluntary Carbon Market (VCM) credit pricing data, news, and insights.

EM holds the largest repository of valuable carbon market insights and data, disclosed by a growing international network of more than 230 "EM Respondents", including project developers, investors, and intermediaries with headquarters in over 40 countries. Respondents share over-the-counter and exchange/trading platform carbon credit sales on thousands of nature-based and technological carbon projects in over 100 countries.

EM's flagship "State of the Voluntary Carbon Markets" reports and other market revered analyses on carbon credit trades (e.g., prices, volumes, projects, corporate buyers, sellers, etc.) and carbon standards' issuance and retirement data have become anticipated industry staples. EM also provides a publicly accessible data intelligence dashboard and a news platform for breaking news and market coverage.

A unique and influential stakeholder network, rigorous research methods, and an unparalleled database have made EM a leading source of decision-useful and trustworthy information for over 16 years with 100+ papers published. EM data on prices, regulation, science, and other relevant issues on environmental services markets and climate finance has been used extensively by companies, journalists, investors, practitioners, natural resource agencies and academics, and local and indigenous communities. For up-to-date information on environmental markets, sign up for EM newsletters: http://www.forest-trends.org/dir/em_newsletter.

About Forest Trends

Forest Trends Association is a 501(c)(3) organization founded in 1998. 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.

Disclaimer

Ecosystem Marketplace is an initiative of Forest Trends, located at 1203 19th Street, NW 4th Floor, Washington, DC 20036

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This report is made publicly available thanks to the generous financial and institutional contributions from 2021/22 Visionary Partners: The Nature Conservancy and Arbor Day Foundation and 2021/22 Strategic Supporters: 3Degrees; American Carbon Registry – an enterprise of Winrock International; Biofilica Ambipar Environment, C-Quest Capital; Cool Effect; Everland; Forest Stewardship Council, Gold Standard, Livelihoods Fund; Radicle; Strive by Vertis; and Verra.

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VCM Transparency is the Basis for Integrity & Trust

ECOSYSTEM MARKETPLACE BUILDS UPON NEARLY 20 YEARS OF DRIVING INTEGRITY WITH END-TO-END TRANSPARENCY IN CARBON MARKETS

The future of voluntary carbon markets (VCM) has never looked brighter. In many ways, it feels like a new day for the VCM, as a tsunami of new interest and capital pours into carbon project development and global climate and sustainability goals drive record demand. At the same time, this surge is reminiscent of the one that occurred nearly two decades ago in 2006, when Ecosystem Marketplace (EM) began tracking and reporting on The State of the Voluntary Carbon Markets.

At that time, when the supply and demand for the VCM were largely United States-centric, but today, the voluntary market is truly global and will become even more connected to governments and the private sector now that the Rulebook for Article 6 of the Paris Agreement has been agreed. There have also been increased efforts to develop guidance for companies on the claims they can make regarding credits purchased for their climate action goals, such as the Voluntary Carbon Markets Integrity Initiative (VCMI). Principles for ensuring integrity on the supply-side are also increasingly becoming available; the eagerly awaited Public Consultation for Core Carbon Principles (CCPs) by the Integrity Council for the Voluntary Carbon Market (ICVCM), launched on July 27, 2022, aims to “ultimately provide a credible, rigorous, and readily accessible means of identifying high-quality carbon credits that create real, additional and verifiable climate impact with high environmental and social integrity.”[1]

Everything old is new again. The ambition of the ICVCM both aligns with and supports EM’s core principle of promoting market integrity and trust through transparently presenting its internationally aggregated and standardized carbon credit trade data. Almost 20 years of experience and relationships with market participants have reinforced the fact that the “quality” of credits is a key ingredient to market growth. EM surveys found, as early as 2007 that *“the quality of offsets is – and will likely continue to be - the most important issue for both buyers and sellers in this market”*. More specifically, *“buyers indicated that the quality of offsets was more important to them than price, and sellers all agreed that addressing issues of quality would ultimately determine how (and how fast) this market continues to grow.”* [2]

[1] <https://icvcm.org/public-consultation/>

[2] <https://www.ecosystemmarketplace.com/publications/picking-up-steam/>

Sound familiar? With new market integrity initiatives and the bullish outlook of the VCM creating the wind at our backs, EM humbly leans into its increasingly critical role as a neutral and independent nonprofit initiative driving trust and integrity. Nearly 30 new “EM Respondents” already began reporting in Q1 of 2022, and we look forward to working with EM Respondents, Visionary Partners, Strategic Supporters, Data Partners, and new collaborators to continue to expand and enhance our coverage of credit sales from project developers and intermediaries in what is still largely an over-the-counter and cash market.

This much-anticipated briefing provides final market values for 2021 as the VCM is officially over the \$2 billion mark. EM is currently receiving trade reports from EM Respondents for the first half of 2022. A more in-depth State of the Voluntary Carbon Markets 2022 report will be published during Climate Week NYC in September. [Sign up to stay in touch.](#)

Value of Global Voluntary Carbon Markets Nearly Quadruples in 2021 towards \$2 Bn, Driven by Nature-based Solutions and Rising Prices

VCM NEARS 500 MILLION CREDITS TRADED IN 2021, SURPASSING EM'S PREVIOUSLY REPORTED PARTIAL YEAR 2021 VOLUMES BY 66% AND VALUE BY 2X.

Globally, Prices are Trending Upwards

Prices climbed in 2021 by nearly 60% over 2020 to a point not seen since 2013 [3], reaching an annual global weighted average price per ton of \$4.00 for all transactions [4] reported by EM Respondents, compared with \$2.52 in 2020. It's worth mentioning that this is an update and increase from the partial year 2021 price of \$3.13 reported in EM's "Markets in Motion" State of the Voluntary Carbon Markets report in September 2021.[5] There are many nuances to this global average price, which will be explored throughout this briefing (Figures 1 and 2).

Figure 1. Voluntary Carbon Market Size by Value of Traded Carbon Credits, pre-2005 to 31 Dec. 2021



Source: Ecosystem Marketplace, a Forest Trends Initiative.

[3] In 2014, EM reported a global weighted average price of \$4.93 for transaction year 2013.

[4] Weighted average prices are calculated for any transaction reported with a corresponding price/tCO₂e.

[5] <https://www.ecosystemmarketplace.com/publications/state-of-the-voluntary-carbon-markets-2021/>

Note: Market value is volume weighted based on market data reported by EM Respondents for 2020 and 2021 for trading between January 1, 2020, and December 31, 2021. As more organizations report to EM for the first time, and as existing EM Respondents report new transactions, we publish 2022 figures and update past years with new data as it is received. This will be reflected in future installments of EM's State of the Voluntary Carbon Markets reports and on the EM Data Intelligence & Analytics Dashboard (<https://data.ecosystemmarketplace.com>).

Figure 2. Voluntary Carbon Market Transaction Volumes, Prices, and Values by Category 2020 - 2021

	2020			2021		
	VOLUME (MtCO2e)	PRICE (USD)	VALUE (USD)	VOLUME (MtCO2e)	PRICE (USD)	VALUE (USD)
FORESTRY AND LAND USE	57.8M	\$5.40	\$315.4M	227.7M	\$5.80	\$1,327.5M
RENEWABLE ENERGY	93.8M	\$1.08	\$101.5M	211.4M	\$2.26	\$479.1M
CHEMICAL PROCESSES / INDUSTRIAL MANUFACTURING	1.8M	\$2.15	\$3.9M	17.3M	\$3.12	\$53.9M
WASTE DISPOSAL	8.5M	\$2.69	\$22.8M	11.4M	\$3.62	\$41.2M
ENERGY EFFICIENCY / FUEL SWITCHING	30.9M	\$0.98	\$30.4M	10.9M	\$1.99	\$21.9M
HOUSEHOLD / COMMUNITY DEVICES	8.3M	\$4.34	\$36.2M	8.0M	\$5.36	\$43.3M
TRANSPORTATION	1.1M	\$0.64	\$0.7M	5.4M	\$1.16	\$6.3M
AGRICULTURE	0.5M	\$10.38	\$4.7M	1.0M	\$8.81	\$8.7M

* Note, these are annualized averages, EM Data can be analyzed more granularly by day, month, quarter, year.

** Note, these are Categories, EM Data can also be analyzed more granularly by Project Type and sub-Type.

Source: Ecosystem Marketplace, a Forest Trends Initiative.

Higher Prices for Projects with Non-carbon Environmental and Social Benefits

Non-carbon benefits, such as supporting local communities and smallholders and biodiversity conservation, also known as co-benefits, and sustainable development goals are either integrated from the outset into carbon standards, i.e. Gold Standard and Plan Vivo, or bolted onto carbon credit projects that have already quantified greenhouse gas emission reductions and/or removals per the requirements of third-party carbon standards as certifications (i.e., The Climate, Community & Biodiversity (CCB) Standards, The Sustainable Development Verified Impact Standard (SD VISta) to also account for social, biodiversity and other non-carbon sustainability benefits.[6]

[6] The Sustainable Development Verified Impact Standard (SD VISta) and The Climate, Community & Biodiversity (CCB) Standards (both run and managed by Verra)

In both cases, credits sold from projects with non-carbon benefits either embedded by the carbon standard or as added certifications had a clear price premium over the global 2021 EM Global Carbon Price benchmark of \$4.00/tCO₂e. Gold Standard projects saw a 35% increase in weighted average price from 2020 to 2021 from \$3.74 a tonne to \$5.05 a tonne. 14% of Gold Standard volume in 2021 was from Clean Cookstove Distribution type projects, a project type that not only reduces emissions by a change in the business as usual scenario, but also improves livelihoods via reduced drudgery and reduced smoke inhalation. Plan Vivo also saw an increase in price from \$8.13 in 2020 to \$9.34 in 2021, a 15% increase. The majority of Plan Vivo's 2021 transaction volume, 79%, came from Afforestation, Reforestation, and Revegetation (ARR) projects.

The most used of all co-benefits certification standards is CCB, an add-on for VCS carbon credits (known as Verified Carbon Units, VCUs), which increased 277% in volume from 2020 to 2021, 17.4 MtCO₂e to 65.9 MtCO₂e, respectively and rose slightly in price from \$4.57 to \$5.25 a tonne between the two years. Similarly, SD VISTA-Labeled VCUs attracted \$4.43 on average in 2021, up from \$3.96 in 2020, with volumes increasing 715% from 5.5 MtCO₂e in 2020 to 45.3 MtCO₂e across the two years.

More than 170 Project-specific Types under Eight Categories Traded in 2020-2021

As the VCM has matured over the past couple of years, many market actors (developers, buyers, investors, overseers, and regulators), have become more focused on their own preferences by defining integrity and distinguishing credit's project attributes (e.g., co-benefits, reductions vs. removals, nature-based vs. technological). EM first responded to this by requesting an official Project ID for trade data, so these characteristics could be validated using the carbon standard under which they were issued.

EM also updated its "Carbon Offset Project Typology" for the first time since 2018 over the course of Q1 2022 (see Figure 3 and Appendix C).

We'll continue to track more standards – currently, EM Data covers +30, and methodologies as they come online, recognizing that the types "net" is widening to accommodate a range of natural and technological solutions of interest to the market for climate action and any of the other 17 total Sustainable Development Goals.

Figure 3. What's in a Category? EM Carbon Offset Project Typology



For more information on EM's Typology, please refer to Appendix C.

FORESTRY AND LAND USE

21 TYPES
17 STANDARDS
60 COUNTRIES

Increased in volume by 4x in 2021 over 2020 and retains the lead in terms of price per ton. Forestry and Land use accounted for 46% of traded volume in 2021, up from 28% of market share in 2020. While REDD+ remained the most dominant project type traded in the category (65%), this is up from 62 % in 2020. Forestry and Land Use “Removals” were priced at around \$7.90 for both 2020 and 2021, almost \$3.00 higher than combined “Reductions” and “Removals” credits. Credits issued in the VCS Program (Verified Carbon Standard, developed and managed by Verra), represented 76% of all traded credits reported to EM in 2021 and of those, 74% of the volume was from Forestry and Land Use projects at 170.8 MtCO_{2e}.

AGRICULTURE

6 TYPES
7 STANDARDS
8 COUNTRIES

Prices dropped from \$10.38 to \$8.80, due to a 160% uptick in the traded volume of Livestock Methane credits with a 10% decline in price per ton from 2020 to 2021. Additionally, it should be noted that over the two years prices for this category dropped with more volume and a lower price for the type Sustainable Agriculture Land Management.

RENEWABLE ENERGY

20 TYPES
10 STANDARDS
53 COUNTRIES

Remains a dominant source of credits in terms of volume traded in the voluntary carbon market in 2021, second to Forestry and Land Use. Of the 211.4 MtCO_{2e} in 2021, 19% originated from wind projects that are predominantly in Asia. Prices ticked up by \$1.20 per ton from 2020 to 2021, much of which was due to Hydro volumes increasing 6-fold from 2020 to 2021 at nearly a \$1.00 per ton price increase. It should also be noted that with EM’s full review of all transactions reported with a Project ID, many projects were able to be identified as Biogas from landfills, coal mines, livestock, etc., which are priced higher than the baseline global average for Renewables. Clean Development Mechanism (CDM) had the greatest increase in trading volume growing by 5X to 42.3 MtCO_{2e} in 2021 at a value of \$79 Million (albeit with a price decline), and of the 42.3 MtCO_{2e}, 63% was Renewable Energy at 26.8 MtCO_{2e}.

WASTE DISPOSAL

12 TYPES

8 STANDARDS

21 COUNTRIES

Increased just under \$1.00/tCO₂e from 2020 to \$3.62 in 2021, with a very wide range of prices, the various Project Types including landfill gas (capture and destruction), recycling, municipal solid waste treatment, as well as biochar production. Of the 11.4 MtCO₂e traded in 2021, 36% were landfill gas projects, and 63% of those were based in the United States using methodologies from CAR (Climate Action Reserve), ACR (American Carbon Registry), and Verra's Verified Carbon Standard (VCS).

HOUSEHOLD DEVICES

15 TYPES

5 STANDARDS

34 COUNTRIES

Volumes and prices for 2020 and 2021 have been updated after a full Project ID documentation review and reclassification, bringing the total volume to around 8MtCO₂e for each year. See Appendix C. In 2021 50% of Household Devices projects were Clean Cookstove Distribution, 63% of which are Gold Standard. Clean Cookstove projects not only reduce emissions by using less fuel than "business as usual", but also improve livelihoods by reducing the time and effort of collecting fuelwood and lowering indoor air pollution. In 2021, 88% of all Cookstoves projects were assessed and validated for their contributions to the SDGs.

CHEMICAL PROCESSES/ INDUSTRIAL MANUFACTURING

12 TYPES

5 STANDARDS

8 COUNTRIES

Saw strong growth in volume transacted from 2020 (1.8 MtCO₂e) and 2021 (17.3 MtCO₂), with the majority of these credits from standards CDM, ACR, and CAR.

ENERGY EFFICIENCY/ FUEL SWITCHING

11 TYPES

5 STANDARDS

10 COUNTRIES

Saw a large 20 MtCO₂e trade volume drop between 2020 and 2021, albeit with a \$1.00 per ton price increase.

TRANSPORTATION

6 TYPES

4 STANDARDS

3 COUNTRIES

Increased in volume 5x, and increased in price, despite relatively low market share compared with other categories, which appears to be led by CDM and Public Transportation projects.

Transparency & Disclosure are Indicators of Market Share

Interestingly, EM Respondents who report consistently and frequently throughout their carbon credit trades to EM are more active and have higher sales volume than market participants who report annually. The vast majority of this 200 MtCO₂e volume increase came from EM Respondents who had reported data at frequent intervals throughout 2021 for their trades occurring within that same calendar year. In addition to the roughly 300 MtCO₂e that they already had represented from reporting throughout 2021, these 129 “on-demand” EM Respondents accounted for 168.1 MtCO₂e (in total they account for ~470 MtCO₂e in 2021). The remainder of the balance of the increase since our COP21 State of the VCM special bulletin was from 7 “returning” EM Respondents that reported their VCM trades on an annual cycle (14.4 MtCO₂e) and 29 “new” EM Respondents (15.4 MtCO₂e). While these new respondents proportionally accounted for less than their annual cycle counterparts, given anecdotal insights we received from them about their future growth, we expect their volumes to increase throughout 2022.

Project Specificity in Trade Reporting Correlates with Higher Prices and Value

EM Respondents who reported sufficient transaction-linked project-specific metrics (e.g., Project ID or Project Name)[7] that enable cross-referencing with standards’ registries garnered higher prices (\$4.23) for their transactions (236 MtCO₂e at a value of \$1.005B) than when this cross-referencing was not possible (\$3.79; 258.4 MtCO₂e at a value of \$980M).

This level of trade reporting transparency was first implemented by EM in 2021. We will continue to analyze EM Data to identify trends, and further look to expand our project-level analysis with EM Respondents and other collaborators.

[7] Transaction linked project specific metrics include a Project ID, which was either reported or derived from other reported details such as project name.

More Forward Credit Sales Structured in the VCM

In anticipation of future demand for carbon credits by corporations with long-term climate commitments, EM introduced the ability for respondents to differentiate their transactions by spot and forward buyer agreements in 2020. Interestingly, the volume of forward transactions being reported to EM increased by 65% from 2020 to 2021. Of the 62.7 MtCO₂e of forward transactions in 2021, 47.7 MtCO₂e were Forestry and Land Use.

From the Experts

HOW DOES THE VCM PREFER TO BUY AND SELL CARBON CREDITS?

As the VCM develops and diversifies, project developers, investors, intermediaries, and end buyers are developing new ways to transact credits to meet needs such as corporate climate commitments (e.g., carbon neutrality, net zero) and stakeholder engagement strategies. In addition to the EM Global Carbon Trade Reports that are submitted by our growing global network of carbon credit developers, sellers, and resellers, many also responded throughout 2022 Q1/2 to a supplemental sentiment question about how they prefer to sell and buy credits.

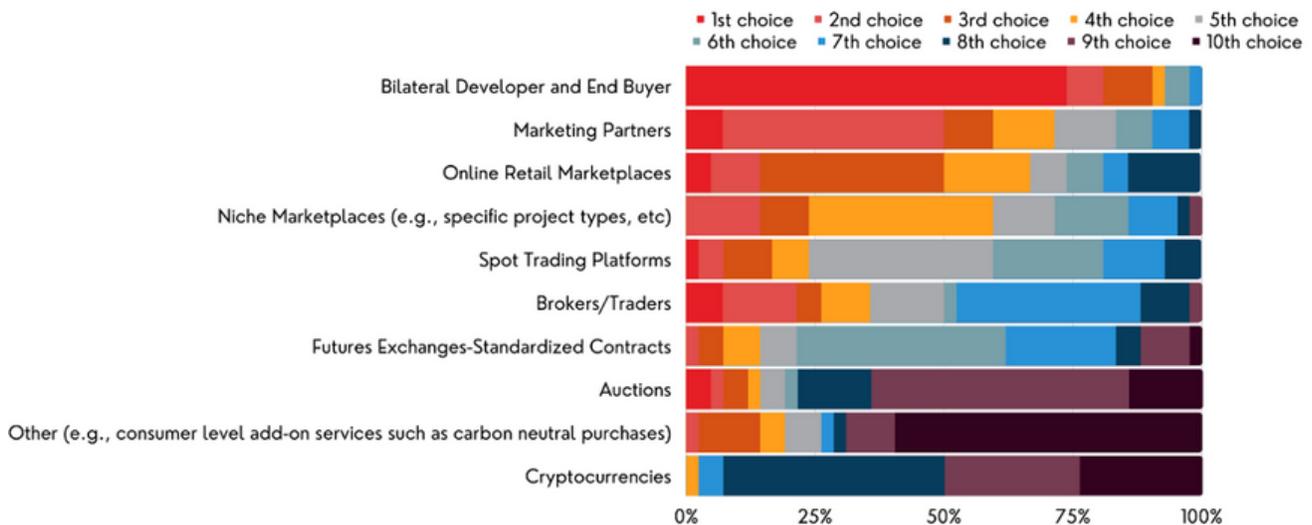
The vast majority of respondents prefer bilateral deals between project developers and end buyers as their first choice (Figure 2). While the results clearly show a wide range of preferences, the top choice of “developer to buyer” relationships, and the second choice of “using market partners”, reflects what EM has seen over the past couple of years: there are increasing opportunities for project developers to respond to corporate requests for proposals. Respondents have also indicated that “retail marketplaces” and “niche marketplaces” allow those with the greatest knowledge about the projects to participate, which would first be the developers themselves, followed by their marketing partners and marketplaces (both have increasingly dynamic and rich data insights and storytelling features). On the other side of the transaction, this allows buyers to develop a more direct relationship with the project proponents.

Over the past couple of years, intermediaries such as futures exchanges (i.e., CME Group) have re-emerged into the VCM, working with digital spot trading exchanges (i.e., CBL) to develop standardized futures contracts that are pegged to specific project attributes and/or compliance requirements. Other spot trading platforms include the Carbon Trade Exchange (CTX), The Voluntary Climate Marketplace (TCVCM), AirCarbon Exchange (AirCarbon), Climate Impact X (CIX), among others.

Interestingly, EM Respondents placed these transaction methods as bookends to brokers/traders, who are likely to be users of exchange-traded contracts as well as transacting via the cash market. Fee structures differ and so do the contracts that they offer, and with a growing and diversifying market of traditional and non-traditional players, we look forward to seeing how these transaction methods grow and evolve.

Cryptocurrencies were identified as respondents' least preferred transaction method. Blockchain, as a disruptive technology for carbon markets, could represent a new area of innovation and demand in the VCM, or if abused, a potential throwback to the days of 'carbon cowboys'. After an initial, but relatively modest, surge in carbon-backed crypto activity, several working groups and public consultations have been launched by leading VCM institutions such as ACR, Verra, Gold Standard, and the International Emissions Trade Association (IETA) to ensure that tokens marketed as delivering the benefits of carbon credits are in compliance with the issuing standards.

Figure 4. Buyer and Seller Preferred VCM Transaction Methods



Source: Ecosystem Marketplace, a Forest Trends Initiative.

Note: Over the first half of 2022, a total of 42 EM Respondents provided responses on how they prefer to sell and buy carbon credits, ranked in order of preference. Of these, 26 were identified as project developers, 18 as both buyers and sellers, 13 as sellers/intermediaries, 2 as buyers, and 2 as "other."

Appendices

APPENDIX A. 2021/2022 Visionary Partners & Strategic Supporters

Visionary Partners



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. arborday.org/carbon



In 1999, Jeff Skoll created the Skoll Foundation to build a sustainable world of peace and prosperity for all. The Skoll Foundation catalyzes transformational social change by investing in, connecting, and championing social entrepreneurs and other social innovators who together advance bold and equitable solutions to the world's most pressing problems. To mobilize climate action, the Skoll Foundation supports social innovations that advance renewable solutions, shape policies, influence private sector action, advance climate justice in partnership with the hardest-hit communities, and build strong support for climate action globally.



The Nature Conservancy is a global environmental nonprofit working to create a world where people and nature can thrive. Founded in the U.S. through grassroots action in 1951, The Nature Conservancy has grown to become one of the most effective and wide-reaching environmental organizations in the world. Thanks to more than a million members and the dedicated efforts of our diverse staff and over 400 scientists, we impact conservation in 72 countries and territories: 38 by direct conservation impact and 34 through partners.

Strategic Supporters



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 (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.



Founded in 2008, Biofíllica is a Brazilian company focused on the management and conservation of native forest through the commercialization of carbon offsets and the compensation of legal reserves. Through an innovative business model, we contribute to the creation and development of a solid and reliable market of environmental services. Biofíllica was acquired by the Ambipar Group in July 2021, which operates in several segments offering complete products and services focused on environmental management. An expansion foresees massive investment in the development of Nature-Based Solutions (NBS) carbon projects and programs, and in the medium term, our mission is to become the world's largest NBS company.



C-Quest Capital is a social impact investment firm that focuses on improving the lives of the rural and peri-urban poor throughout developing countries by providing clean sustainable energy solutions. Our particular focus is on improving the health and well-being of women girls and infant children through our core business of cleaner cooking technology and improved kitchen ventilation. CQC was founded in 2009 and is headquartered in Washington DC and has offices in Delhi Phnom Penh Singapore Malaysia and Malawi. Amongst other investments, our own field teams and our implementing partners will deliver 2-3 million stoves and 20m to 30 m LED lights to the rural poor per year across our developing country geographies over the next four years.



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.

Strategic Supporters (continued)



Everland brings together forest communities and corporations in a common cause to protect some of the world's most important and vulnerable forests. We are a specialized conservation marketing company that exists to mitigate climate change by helping governments and forest communities prosper by protecting their forests. Everland represents the largest portfolio of high-impact forest conservation projects in the world under a United Nations-developed-mechanism called REDD+, an acronym for "Reducing Emissions from Deforestation and Forest Degradation."



The Forest Stewardship Council® (FSC) is an independent, not for profit, non-government organization established to support environmentally appropriate, socially beneficial, and economically viable management of the world's forests. FSC's vision is that the world's forests meet the social, ecological, and economic rights and needs of the present generation without compromising those of future generations by the FSC Certification Scheme which supports the preservation of worldwide forest resources. With more than 27 years of existence, FSC has around 1.200 international members in 89 countries, covering about 230 million hectares of certified forests.



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, CO2 sequestration), sustainable sourcing and high-quality carbon credits for businesses.



Radicle is the largest developer of compliance-grade carbon credits in Canada, and we're committed to making a difference by enabling solutions to reduce emissions. Since getting our start in Calgary, Canada in 2008, our globally-minded company has taken root internationally. We've assembled an award-winning team eager to help guide businesses and organizations through their emissions reduction journey. We use data-centric and rigorous processes to develop and advise on projects on both a local and international scale.



Action on climate is growing strongly across the private sector. Organizations are demonstrating a clear appetite to contribute to the 1.5°C-2°C goals of the Paris Agreement by committing to carbon neutrality and net zero strategies. Strive was born to help organizations take action, to inspire and empower everyone to act and change the legacy.

Strive is a brand by Vertis Environmental Finance, the oldest emissions trading firm in Europe. With over 20 years' experience in the carbon markets, a billion carbon units traded, and over 1,800 clients, the company provides the solid base you need for your net zero journey.



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.

APPENDIX B. 2020-2021 EM Global Carbon Survey Respondents*

Ecosystem Marketplace is grateful for valuable carbon market insights and data, disclosed by a growing international network of more than 230 EM Respondents, including project developers, investors, and intermediaries, with headquarters in over 40 countries.

3Degrees Group, Inc.	COTAP	Lyme Timber
ACCIONA	Credible Carbon	Mendocino Redwood Company
Across Forest AS	Cultivo Land PLC	MÉXICO2
Agrocortex	DelAgua Health and Development Programs	Microsol
Agroempresa Forestal	Ducks Unlimited, Inc.	Mikro-Tek
AIDER	Eco2librium LLC	Mindo Cloudforest Foundation
ALLCOT Group	EcoAct	Mongolian Society for Rangeland Management
American Forest Foundation	Econegocios Occidente	NCX
Appalachian Mountain Club	EcoPlanet Bamboo	Nedbank
Arbor Day Foundation	EcoSecurities	Nexus for Development
AzzeroCO2	Ecosphere+	Nordic Offset
Barings PERA	ECOTIERRA Inc.	Nova Institute
Beijing Qianyuhui International Environmental Investment Co., Ltd.	EcoTrade	ONF International
Biofílica Ambipar Environment	EFM	Ostrom Climate Solutions
BIOFIX CONSULTING	Element Markets	OurOffset
BioCarbon Partners	Embrasca Inc	PacificHydro
Biome5	Emergent Ventures	Pachama
Blue Source, LLC	ENGIE	Permanent Forests NZ Limited
BOCS Foundation	EnKing International	PRIMAKLIMA
BOKU Competence Center for Climate Neutrality	Enviro-Mark Solutions Ltd	ProSustentia
Bonneville Environmental Foundation	EQAO	Proyecto Mirador
Bosques Amazónicos	ESTI Impact	Radicle Group Inc
Bosques Sostenibles S.L.	EthioTrees	Redshaw Advisors
Brasil Mata Viva	ETIFOR SRL	Regen Development Network
C-Quest Capital LLC	Everland LLC	Respira International
Carbon Consulting Company	Face the Future	RSPB (Gola Rainforest Conservation LG)
Carbon Expert	Fauna & Flora International	South Pole
Carbon Forest Services Limited	First Climate Markets	Sustainable Carbon
Carbon Green Africa	Fondo Accion	Sustainable Forestry Investment
Carbon Offset Timor	Forest Carbon	Swiss Climate AG
Carbone Boreal	FORLIANCE	Taking Root
Carbonext	Fundação Carbon Offset Timor	Terra Global Capital, LLC
Carbonfund.org Foundation	Fundaeco	The Climate Trust
Carbon Reset	FutureCamp Climate GmbH	The Nakau Program
CarbonSink Group	Gold Standard	The Nature Conservancy
Cassinia Environmental	GoodPlanet Foundation	The Nature Conservancy Canada
CBL Markets	Green Resources	The Voluntary Climate Marketplace
Cima	Greenoxx NGO	Timing Carbon
Clean Air Action Corp/TIST Kenya	Grupo Ecológico Sierra Gorda IAP	UPC Renewables
Clean Air Trade, Inc.	Hivos Carbon Credits	UPM Group
Climate Bridge	IDESAM	Vertis Environmental Finance Ltd
ClimatePartner GmbH	Integradora de Communities Indígenas y Campesinas de Oaxaca, AC (ICICO)	Waara
ClimateSeed	Infinite Solutions	WayCarbon
ClimeCo	Inlandis Fund	We Are Neutral
CO2CERO	Khasi Hills Ecosystem Pvt Ltd	WeForest
CO2logic	King County Department of Natural Resources & Parks	Wildlife Conservation Society
Community Forests International	KKI WARSI - Komunitas Konservasi Indonesia Warsi	Wildlife Works Carbon LLC
Compensate	Livelihoods Venture SAS	World Land Trust
Conservation International	Louis Dreyfus Company	World Vision Australia
Cool Effect, Inc.		Worldview International Foundation
Cooperativa AMBIO Programa Scole'te		WWF Australia
		YPF
		ZeroMission AB

Note: This directory includes EM Respondents that reported carbon credit trades to Ecosystem Marketplace in 2021 and/or 2022 and chose to be listed.

APPENDIX C. 2022 EM Carbon Offset Project Typology

Over the years, EM has continuously updated its trade reporting metrics to respond to the current and emerging needs of the market. EM's Carbon Offset Project Typology 2022 data integrity update was propelled forward by growing interest in the most granular as possible details of project-by-project attributes. This disaggregation enables differentiation of projects by their carbon and non-carbon benefits (e.g., protection of indigenous peoples, biodiversity conservation, SDGs, additional certifications[8], other environmental benefits). This update was also motivated by third-party carbon standards that have been widening their net to incorporate more technologies and approaches for project-based climate action over the past few years since our last typology update in 2018.

The updates made in 2021-2022 were important steps for EM to ensure the greatest usability of its data by project developers, corporate buyers, investors, and increasingly also governments. For example, in 2021, EM solidified an agreement with the International Civil Aviation Organization to enhance States' and stakeholders' understanding of the development of carbon markets, and to help States to better understand the effects of CORSIA on the international aviation sector.[9]

The typology update follows changes to EM's Global Carbon Trade Report process in 2021, which called for EM Respondents to report more specific metrics related to their carbon credit transactions, such as the project's unique identification code as prescribed by the carbon standard under which it is verified. With this level of detail about transactions, the EM team has enhanced its data validation QA/QC approach by first mapping all EM Respondents' reported Project IDs to their corresponding carbon standards' registries. Subsequently, EM corroborates each project's details (e.g., name, type, geographic origin, methodology, co-benefits certifications, SDGs, etc) by individually reviewing their formal Project Design Documents and monitoring reports.

The result of this newly implemented effort led EM to expand its list of Project Types and define a third tier of its project typology to cover all 170+ Project-specific Types represented by EM Carbon Trade Data. All Types are rolled up into 60 Project Type Clusters, an increase from EM's former typology that had 45 Types (now called Clusters), and 8 Project Categories that served as their highest-level buckets. EM's Categories have remained largely the same with some reclassifications of underlying Project Types into new Categories, for example, to account for unique social and community benefits of projects that previously would have been bundled into Categories dominated by large-scale corporate or industrial level projects.

Accepting Consultation Requests.

Contact the EM Insights Team with any questions info@ecosystemmarketplace.com

[8] EM tracks additional related certifications that are associated with the project boundary such as Forest Stewardship Council

[9] <https://www.ecosystemmarketplace.com/articles/new-partnership-with-un-aviation-agency-to-provide-insights-on-carbon-offsetting-market-press-release/>



Pioneering Finance for Conservation

Biodiversity Initiative

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

Tracking corporate commitments, implementation policies, and progress on reducing deforestation in commodity supply chains

Water Initiative

Promoting the use of incentives and market-based instruments to protect and sustainably manage watershed services

Learn more about our programs at www.forest-trends.org