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State of the Voluntary Carbon Markets 2011

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

Ecosystem Marketplace is financially supported by organizations such as the Norwegian Agency for Development Cooperation, the John D. and Catherine T. MacArthur Foundation, the Skoll Foundation, UNDP, the Global Environment Facility, the David and Lucile Packard Foundation, and the Gordon and Betty Moore Foundation.

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Back to the Future

State of the Voluntary Carbon Markets 2011

A Report by Ecosystem Marketplace & Bloomberg New Energy Finance

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Executive Summary

For five years, Forest Trends' Ecosystem Marketplace and Bloomberg New Energy Finance have published the *State of the Voluntary Carbon Markets Report*s to shed light on trading volumes, credit prices, project types, locations, and the motivations of buyers in this market. Every year's marketplace seems more complex than the one before, as actors continually refine their programs, businesses, and investments in search of a more perfect future – for their projects and the planet.

In 2010, suppliers that weathered the previous year's storm of political and economic uncertainty and transacted the largest market-wide volumes (131 $MtCO_2e$) ever tracked in this report series.[1] Success was built on a refined understanding of what turns the markets on or off.

Voluntary buyers continued their offsetting commitments – or made new ones – after reclaiming their CSR (Corporate Social Responsibility) dollars from the recession. Many new buyers took the "tried-and-true" approach to investments in project types like renewable energy and with a focus on sustainable development. For other offset backers the future was in the forests. The lungs of the earth breathed life into the voluntary market in 2010 when project developers were given new tools to unlock forestry's potential as a large-scale climate solution. The Global South took some ownership of these trends as governments, foundations, and buyers built local markets to foster domestic development and trades.

The year of 2010 was a bumpy ride for suppliers in the US, where the federal government's inability to reach a climate solution hastened the closure of the Chicago Climate Exchange (CCX) as well as several state-side trading desks. It also turned up the heat on regional markets like the emerging compliance programs in California and the Western Climate Initiative. Both of these impending markets stood as beacons for those suppliers generating pre-compliance credits.

Embracing the mantra of "what doesn't kill us makes us stronger," the market infrastructure turned recent years' political and economic unknowns to their advantage. Seeing that corporate and citizen consumers were willing and able to carry the climate action torch, standards began to trial approaches to scale up their "most wanted" locally-based projects. Registries built new partnerships, alliances, and even sub-national registries in an effort to share both the risks and rewards of shifting market dynamics. In these and many other ways, suppliers of market infrastructure and carbon credits looked back on recent lessons learned to plot a future market that they hope remains resilient to change.

Voluntary Market Transacts Record Volumes, Steady Value

In 2010, suppliers reported a total volume of 131.2 $MtCO_2e$ transacted in the global voluntary carbon markets. Compared to the 98 $MtCO_2e$ transacted in 2009, volumes grew by 34% to exceed historic "over-the-counter" (OTC) and overall transaction volumes as tracked in our previous reports.

As the global financial crisis gave way to recovery, voluntary buyers recommitted their discretionary income to offsetting emissions. At the same time, vastly different political circumstances in the US spelled the end of the CCX and shifted the majority of transactions to the OTC market.

The OTC market last year transacted 127.9 $MtCO_2e$, or 97% of global market share. Transactions collapsed on the CCX, which, due to the US Senate's failure to secure a climate bill, ceased trading at the end of 2010. A single bilateral OTC transaction of CCX Carbon Finance Units (CFIs) totaling 59 $MtCO_2e$ substituted for collapsed exchange activity but will not likely be repeated. Even excluding this statistical outlier, OTC volumes were higher than in any previous year (68.7 $MtCO_2e$).

[1] Findings are based on data voluntarily reported by 285 offset suppliers as well as exchanges and registries. Because of the challenges of inventorying and obtaining data from this disaggregated marketplace, numbers presented should be considered conservative.

Volumes remained steady – though still comparably small – from platforms and exchanges outside of the CCX, like the CCFE, and relative newcomers Carbon Trade Exchange (CTX) and China Beijing Environmental Exchange (CBEEX).

Table 1: Voluntary Carbon Markets Volumes and Value Overview, 2010[2]

	2009			2010		
Market	Volume ($MtCO_2e$)	Avg. Price (*US$*)	Value (*US$ million*)	Volume ($MtCO_2e$)	Avg. Price (*US$*)	Value (*US$ million*)
Voluntary market total	**98**		**415**	**131**		**424**
Of which OTC	55	6.5	354	128	6	414
Of which CCX	41	1.2	50	2	0.1	0.2
Of which other exchanges	2	6.2	12	2	6	10

In 2010, the volume-weighted average price of credits transacted on the voluntary OTC market fell slightly to $\$6/tCO_2e$ from $\$6.5/tCO_2e$ in 2009, due to a handful of large, low-priced trades – among other reasons. Using the volumes and prices in Table 1, we estimate the value of the voluntary carbon markets to be at least $424 million in 2010, which means it remained stable compared to 2009 as the voluntary carbon market derived most of its value from similarly priced OTC transactions in both years.

Land-Based Credits Sequester 46% of OTC Market Share

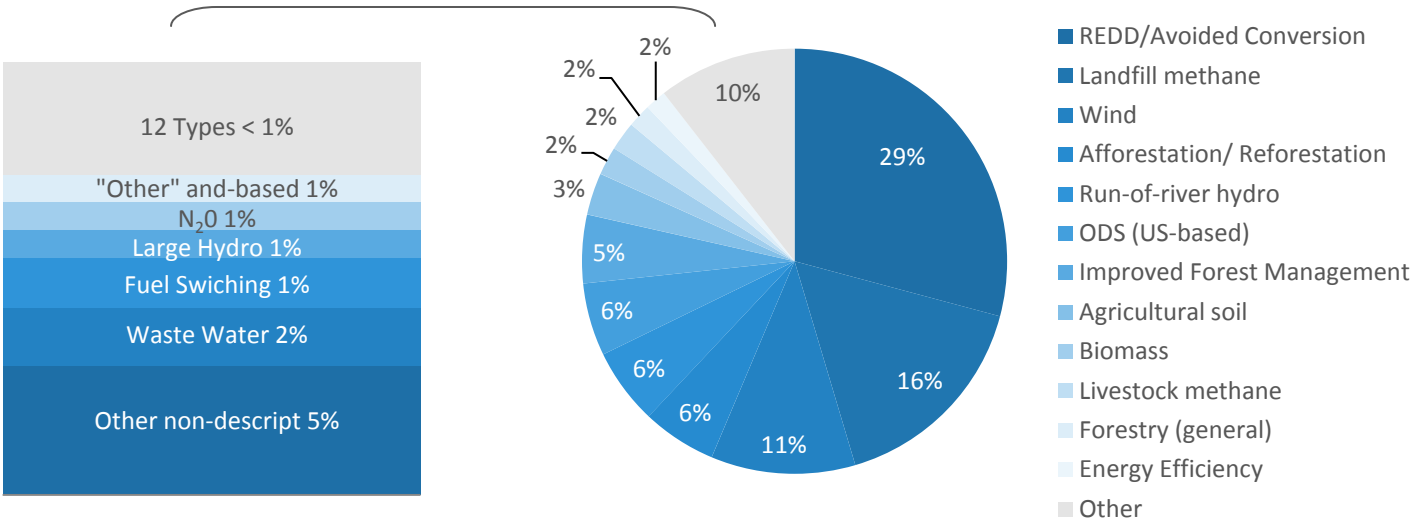
In 2010, land-based projects supplied the largest volume (28 $MtCO_2e$) of credits transacted in the OTC market where conservation efforts and international politics directed attention to projects that reduce emissions from deforestation and forest degradation (REDD). REDD projects alone generated 29% of credits transacted in the voluntary market.

Pre-compliance buyers again lined up for landfill methane credits in early 2010, transacting the second-largest volumes in the 2010 market. When hopes of a US climate bill were dashed mid-year, these buyers refocused their attention to credit types that California's Air Resources Board (ARB) recognized as "compliance-grade" and therefore eligible for use in its emerging market. These credit types included credits from projects that destroy ozone-depleting substances (ODS), which captured 5% of transacted volumes in their first year on the market.

Renewable energy projects tied with methane activities in overall market share (20%). Wind projects were responsible for over half (53% or 6.7 $MtCO_2e$) of last year's renewable volumes, while others looked to charismatic hydropower and biomass projects for their CSR investments. Buyers also rallied around local initiatives like bicycle sharing and household energy efficiency as well as other emerging project types including geothermal and N_2O emissions reductions.

[2] All numbers are based completely on reported transaction volumes unless otherwise specified, and our methodology does not include extrapolation. Because we gain new survey participants each year, we are able to supplement historically tracked transaction figures with new data. Hence, our volume figures for all years have increased slightly with this year's figures.

Figure 1: Transaction Volume by Project Type, OTC 2010



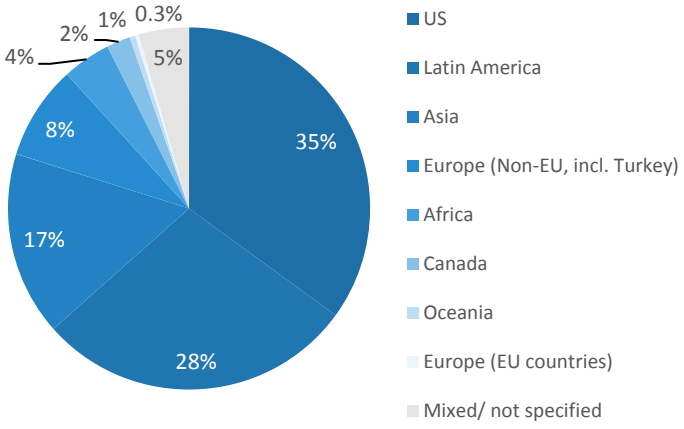
Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

The Americas Dominate Project Origination Locations

In 2010, the OTC market added six new countries to its roster of project locations, extending voluntary carbon finance to a total of 45 countries. North America maintained its top spot among project locations to originate 35% of transacted OTC volume – 94% of which was generated in the US.

Over half of credits transacted over-the-counter for which suppliers reported a project location were sourced from developing economies (58%) – 5% from least developed countries (LDCs) – where forestry dominated the expanding portfolios of project types. In Latin America, transaction volumes more than doubled from the rich forest reserves of countries like Brazil and Peru – which combined gave the US a run for its money as top project location.

Figure 2: Transaction Volume by Project Location, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Many Asian projects, supplying 17% of transacted credits, saw renewed demand from their traditional European buyers in 2010. In fact, Indian projects alone transacted around the same volumes as all Asian projects combined in the previous year – mostly from run-of-river hydropower. Asia's credit supply was still heavily influenced by the Clean Development Mechanism (CDM), although China is fast creating its own voluntary market hub as the government proliferates pilot programs and regional exchanges to address sustainable low-carbon development.

Cutting the data in a different way – exploring transaction volume by *supplier headquarters* instead of *project location* – shows that not only project finance but also revenues were more evenly disbursed across regions in 2010. Companies headquartered in North America and the EU again supplied the majority of credits transacted over-the-counter in 2010. Those based in developing countries, however, saw the most significant growth last year as the number of respondents headquartered in Asia, Latin America, and Africa doubled from 2009 in response to domestic market signals and demand for forestry.

REDD Stacked the Odds in Favor of VCS and CCB Standards

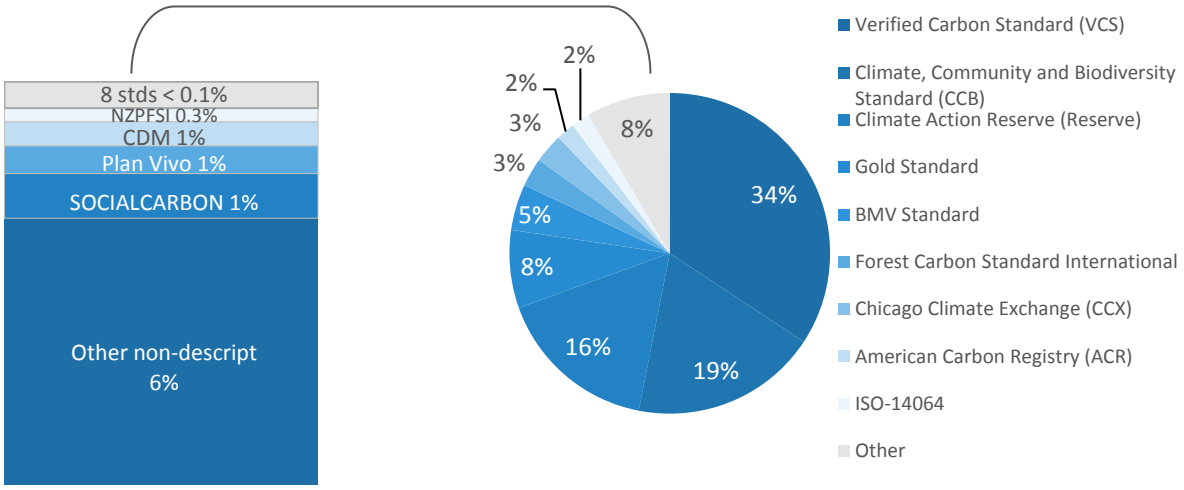
The Verified Carbon Standard (VCS) retained its top billing among third-party standards in 2010 with 34% of transaction volumes. This is largely attributable to its recent progress on REDD methodologies that gave the green light to investment in large-scale forest conservation efforts. VCS forestry credits alone (14.1 $MtCO_2e$) transacted almost enough volume to top the charts.

Close behind and in tandem with VCS market growth, the second-largest volume[3] of credits transacted in 2010 (15.5 $MtCO_2e$) came from projects validated by Climate, Community and Biodiversity (CCB) Standards. The CCB Standards do not quantify carbon reductions, so they are often "stacked" with a carbon standard – primarily VCS – to certify projects' additional social and environmental contributions.

Projects using the Climate Action Reserve protocols transacted the third-largest volumes (13.4 $MtCO_2e$) in the voluntary market. After last year's upset to US federal climate legislation – a strong driver of demand for Reserve landfill methane credits in 2009 – buyers turned their attention to California-compliant Reserve protocols for ODS destruction, US forestry, and livestock methane. At the other end of the buyer motivation spectrum, purely voluntary buyers transacted record volumes (6.5 $MtCO_2e$) from Gold Standard projects that in 2010 focused on scaling up community-based sustainable development.

Figure 3: Third-Party Standard Utilization by Primary and Secondary Standard, OTC 2010[3]

% of Market Share



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 676 observations.

The voluntary market branched out last year to include two new forestry standards – the Brasil Mata Viva (BMV) Standard and the Forest Carbon Standard International. These combined with the markets' existing specialty standards like CarbonFix

[3] Any VCS+CCB or VCS+SOCIALCARBON credits count toward both standards' transaction volumes to illustrate market share. Because suppliers could report up to two standards per transaction, the total volume of credits using third-party standards exceeds total OTC market volumes.

and Plan Vivo to support specialized or place-based forestry applications. Public sector standards met with mixed success as the US and Australian governments shed their respective Climate Leaders and Greenhouse Friendly programs, but the market saw voluntary transactions of credits from programs like the New Zealand Ministry of Agriculture's Permanent Forest Sink Initiative (PFSI) and the Alberta Government's greenhouse gas reduction program.

To inspire consumer confidence in carbon offset quality, an ever-growing number of suppliers and standards turned to registries for clarity of ownership and transparency. In 2010, suppliers reported that 63% of transacted credits were or will be registry-issued – up from roughly half of credits transacted in 2009. Registries weathered a storm of acquisitions and market positioning in order to compete for the attention of emerging marketplaces and regulatory frameworks – even other environmental markets – where voluntary carbon projects might play a future role.

As the top-grossing registry, Markit Environmental Registry users reported transacting 21.6 $MtCO_2e$ issued by Markit, up from 2 $MtCO_2e$ in 2009. This is partly the result of Markit's engagement with regional marketplaces and the sheer number of standards tracked by its system. Markit is also one of three registries in the VCS Registry System that includes the NYSE Blue and CDC VCS Registry. All three VCS registries saw growth tied to the standard's popularity in 2010. Credits listed on the NYSE Blue (formerly APX) VCS registry transacted the second-largest volumes among registries, followed by NYSE Blue-powered registries for Gold Standard and the Reserve credits. Together, they captured another 36% of market share.

A few registries saw setbacks in 2010 in line with lower transaction volumes from their respective standards, while place-based registries saw small but growing volumes – including Japan's Verified Emission Reduction (J-VER) registry and the Canadian Standards Association (CSA) GHG Registry.

Voluntary Carbon Market Participants "Cautiously Optimistic" about 2011 and beyond

In 2010, many voluntary buyers returned to the voluntary carbon markets to make new commitments to reduce and offset their emissions – and they brought reinforcements. Suppliers are cautiously optimistic that this demand will remain strong as the economy recovers and the market continues to mature in its effort to synthesize buyer motivations and market scale.

When we asked suppliers to estimate overall market performance in 2010 and beyond, they forecasted substantial growth for 2011, expecting that they and their peers will transact 213 $MtCO_2e$ over the next year. To achieve this, suppliers would need to transact 82 $MtCO_2e$ more than in 2010. In comparison, suppliers were overly cautious in their estimate of the size of the 2010 market – underselling its performance by a full 47 $MtCO_2e$ less than was actually tracked.

Through year 2015, suppliers' predicted a market size of 406 $MtCO_2e$, which vastly exceeds the volume of credits suppliers reported in their project pipelines through 2015 and suggests that their actual mid-term plans are far more conservative than future projections. Beyond 2015 – and especially after 2017 – 2010 respondents' predictions surpassed past years' projections. Suppliers who offered the most optimistic projections described a network of compliance-based or "semi-compliant" regional markets that "draw on the rapidly maturing voluntary carbon markets."

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Glossary

AAU	Assigned Amount Unit
AB 32	Assembly Bill 32: California's Global Warming Solutions Act
ACCE	Africa Carbon Credit Exchange
ACR	American Carbon Registry
ACX	Africa Carbon Exchange
AEP	American Electric Power
AFOLU	Agriculture, forestry and other land use
APA	American Power Act
A/R	Afforestation/Reforestation
ARB	Air Resources Board
BMV	Brasil Mata Viva
CBCX	Caribbean Basin Climate Exchange
CBEEX	China Beijing Environmental Exchange
CCB	Climate, Community and Biodiversity
CCFE	Chicago Climate Futures Exchange
CCX	Chicago Climate Exchange
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CFI	Carbon Financial Instrument (unit of exchange on CCX) *or* Carbon Farming Initiative
CFL	Compact fluorescent light bulb
CFMS	Community-focused Micro-scale Scheme
CRT	Climate Reserve Tonne
CSA	Canadian Standards Association
CSR	Corporate Social Responsibility
CTX	Carbon Trade Exchange
ECX	European Climate Exchange
EPA	US Environmental Protection Agency
ETS	Emissions Trading Scheme
EU	European Union
EUA	European Union Allowance
EU ETS	European Union Emission Trading Scheme
GARBO	Guaranteed Air Resources Board Offset
GGAS	New South Wales Greenhouse Gas Reduction Scheme
GHG	Greenhouse Gas
GM	General Motors
GreenX	Green Exchange
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
ICE	Intercontinental Exchange
IFM	Improved Forest Management
ISO	International Organization for Standardization
JI	Joint Implementation
J-VER	Japan Verified Emission Reduction
LDC	Least Developed Country
MGGRA	Midwestern GHG Reduction Accord
MOU	Memorandum of Understanding
$MtCO_2e$	Millions of tonnes of carbon dioxide equivalent
MWh	Megawatt-hour
NCOS	National Carbon Offset Standard
NGO	Non-Governmental Organization
N_2O	Nitrous Oxide
NSW GGAS	New South Wales Greenhouse Gas Abatement Scheme
NZ ETS	New Zealand Emissions Trading Scheme
NZU	New Zealand Units
ODS	Ozone-Depleting Substance
OTC	Over-the-Counter (market)
PCarbX	Pacific Carbon Exchange
PFSI	Permanent Forest Sink Initiative
PIU	Pending Issuance Unit
PoA	Programme of Activities
POD	Payment-on-delivery
PP	Pre-pay
RE	Renewable Energy
REC	Renewable Energy Certificate
REDD	Reducing Emissions from Deforestation and Degradation
RGGI	Regional Greenhouse Gas Initiative
ROR	Run-of-River
SCX	Santiago Climate Exchange
SEEE	Shanghai Environment and Energy Exchange
TCX	Tianjin Climate Exchange
tCO_2e	Tonne of carbon dioxide equivalent
UN	United Nations
UNFCCC	United National Framework Convention on Climate Change
VAT	Value-Added Tax
VCS	Verified Carbon Standard
VCU	Verified Carbon Units
VER	Verified (or Voluntary) Emission Reduction
WCI	Western Climate Initiative

1. Introduction

The voluntary carbon markets are inherently future-facing. Reducing greenhouse gases (GHGs) is an act designed with tomorrow's planet in mind. Projects that reduce GHG emissions can be years in the making, and some will even outlive their stakeholders. Carbon offset buyers commit millions of dollars every year to support the evolution of new technologies. Suppliers generate pre-compliance credits before regulations set the rules. Behind the scenes, the voluntary carbon market infrastructure sets the market trajectory with tools for transparency, accountability, and expansion.

Decisions that affect the future depend on information about the here and now. In 2007, Ecosystem Marketplace and Bloomberg New Energy Finance launched the first in a series of reports that guide market decision-makers through the relatively opaque voluntary carbon marketplace. *Back to the Future: State of the Voluntary Carbon Markets 2011* is our fifth such report that looks back on the trends, projects, emerging markets, and actors that in 2010 were fast refining the markets' future.

Our 2010 survey found carbon offset buyers and suppliers that – having weathered the quiet storm of recession and regulatory indecision – reengaged the market with polished perspectives on its role and future course. For many, this meant circling back to the market's philanthropic roots – literally – to inject much-needed private-sector finance into forest conservation and sustainable development. New tools continued to bring method and scale to projects in developing countries where a heightened level of market sophistication carved out a space for domestic suppliers *and* buyers in the Global South.

Buyers with purely voluntary intentions reclaimed their place at the market's core, but with the caveat that carbon reductions complement their goals for a sustainable future. Standards aimed to meet their demands with new methodologies that touch both the urban and agricultural landscapes. Voluntary market mechanisms also "came of age" in the eyes of regulators who gave them unprecedented backstage access to emerging compliance programs. As attention turned to new markets, technologies, and buyers on the horizon, registries and new exchanges vied for a place at the center of the voluntary carbon universe – a space that expanded despite the loss of some trading desks and notable voluntary programs like the Chicago Climate Exchange (CCX). In aggregate, voluntary buyers transacted the largest volumes of carbon credits ever tracked in this report series.

This year's *State of the Voluntary Carbon Markets* report offers insights from a larger proportion of the world's carbon offset suppliers representing more business and project locations than ever before. More than 280 suppliers voluntarily contributed data and dozens more offered their insights through interviews that narrate our largest data collection to date. It is important to note that it is not possible to track every trade and acknowledge the limitations of survey-based analysis. We encourage readers to consider our reported numbers as conservative and to understand the report methodology. Despite imperfections, this approach has enabled us to document market trends and drivers, helping participants to better understand the current market landscape and emerging developments.

Both Ecosystem Marketplace and Bloomberg New Energy Finance will continue to track this marketplace through 2011 via original news coverage, news briefs, and more. We hope you find this report and other services useful.

If you wish to contribute data or ask questions, please contact us at **vcarbonnews@ecosystemmarketplace.com** and **sales.bnef@bloomberg.net**.

2. Capturing the Data - Methodology

In this report, "voluntary carbon markets" refers to all purchases of carbon credits not driven by an existing regulatory compliance obligation. This includes transactions of credits created specifically for the voluntary markets (such as Verified Emission Reductions – VERs, or Carbon Financial Instruments – CFIs) as well as regulatory market offsets or allowances that buyers sought to voluntarily offset their emissions. It also includes transactions of voluntary credits in anticipation of future compliance obligations ("pre-compliance").

Our analysis examines transactions in the marketplace, rather than the individual "lives" of credits. For example, if a project developer sold a credit to a retailer and then the retailer sold the same credit to a final buyer, we counted each transaction separately in order to derive the volume and value of transactions in the overall market. We also collected retirement data to determine the end-consumption of offsets, at which point a credit can no longer be resold.

2.1 Data Collection

The information presented is based on data collected from offset project developers, wholesalers, brokers, and retailers as well as carbon credit-accounting registries and exchanges participating in the voluntary carbon markets.

The bulk of data was collected via an online survey designed for organizations supplying credits into the "over-the-counter" (OTC) voluntary carbon market. The survey was available between January 28 and April 15, 2011. It was sent to approximately 1200 organizations identified as possible suppliers and was distributed through the Ecosystem Marketplace news briefs and Climate-L and Forest-L list serves. Developers of forest carbon projects were identified and separately surveyed for both this report and the *State of the Forest Carbon Markets 2011* report which required a more extensive project-based (vs. transaction-based) survey.

We complemented the survey with data provided by major brokerage firms such as Evolution Markets, MF Global, CantorCO2e and Karbone, as well as registries and exchanges, including: the American Carbon Registry (ACR), CDC Climat, Markit Environmental Registry, Japan Verified Emission Reduction (J-VER) Registry, NYSE Blue, Carbon Trade Exchange (CTX), Chicago Climate Exchange (CCX), Chicago Climate Futures Exchange (CCFE), China Beijing Environmental Exchange (CBEEX), Climex, and Tianjin Climate Exchange (TCX).

We also utilized transaction-specific data publicly disclosed by the CCX that describes privately negotiated – not exchange-traded – contracts disaggregated by price, volume, project type, location, and vintages. And again, we reached out to CCX suppliers this year; CCX offset providers were sent the survey and asked to fill out transaction-specific details for bilateral trades cleared and not cleared by the CCX.

2.2 Survey Response Rates

Our goal was to identify and collect information from as many active suppliers as possible. It is critical to note that because of the fragmented nature of the market and confidentiality issues surrounding transaction data, it is impossible to capture all deals.

We received survey information from 284 organizations that supplied carbon offsets to voluntary buyers in or before 2010. We identified or communicated with another 261 suppliers from our list that did not transact credits in 2010, were no longer selling voluntary carbon credits, or were no longer in business. For a list of names and websites of non-anonymous survey respondents that classified themselves as carbon offset sellers, see Annex D.

From the list of suppliers believed to be active in the global voluntary carbon market, we estimate that well over a third of existing suppliers provided some level of data. Since respondents had the option of skipping questions, the response rate varied by question. The number of respondents per question is noted throughout the report.

This year's survey collected both organization-wide and transaction-specific information. Because many of the calculations in this report are weighted by respondents' transaction volumes, responses from suppliers who did not disclose 2010 transaction volumes were not included in many final figures, as it could not be ascertained how significant their answers were to the OTC market. For organizations that disclosed volume data but not price data, we used the market-wide average price as a proxy in our monetary valuation of the overall market.

2.3 Confidentiality

This report presents only aggregate data; all supplier-specific information is treated as confidential. Any supplier-specific transaction data mentioned in the text was already public information or approved by the supplier. Additionally, we do not identify prices from any country or project type for which we had fewer than three data points to protect the confidentiality of the suppliers' transaction information. We also only provide a country-breakdown for those countries that yielded an unusually large volume of credits for their region or that were one of only a few countries in the region (e.g., US, Turkey).

2.4 Accounting Methodology

Because the aim of this report is to count all transactions in the voluntary carbon markets, we did not apply any quality criteria screens for credits included in calculations. However, we did follow up with dozens of respondents to confirm or clarify survey responses.

Because we collected transaction data from brokers and exchanges as well as suppliers, we risked counting some transactions twice. To minimize the occurrence of "double-counting", we asked respondents to specify the volume of credits transacted through a broker. When we identified an overlap, the transaction was counted only once. Exchange-traded volumes are reported according to the exchange utilized (Section 6.6) and not as OTC transactions.

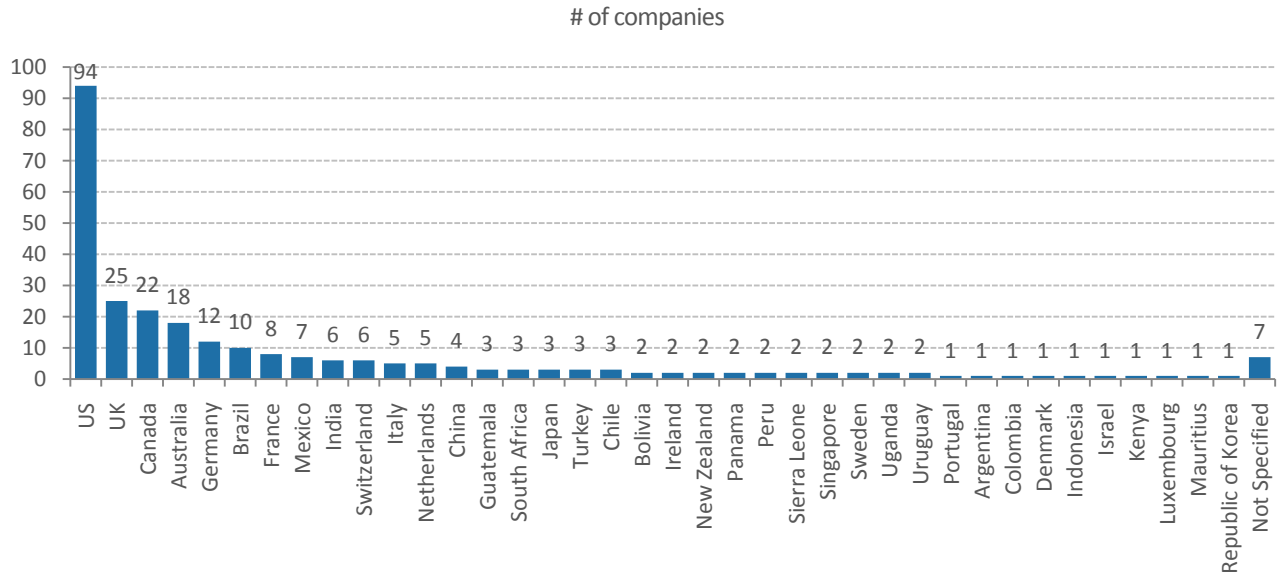
All financial figures presented are reported in US Dollars unless otherwise noted. The numbers presented throughout this survey are measured in metric tonnes of carbon dioxide equivalent (tCO_2e).

2.5 Response Distribution

As in previous years, the largest proportion of survey respondents was based in the US (34%). After the US, suppliers based in the United Kingdom (UK) replaced Australian suppliers with the second-most respondents, followed by Canada and Australia. While suppliers in developed countries still dominate offset supply, a growing number of respondents hailed from developing country locations (58, up from 29), particularly Latin America (33, up from 18). This corresponds with the growing number of buyers (Section 7.2) and transaction volumes (Section 5.3) attributed to projects in developing countries.

While the locations of respondents match the locations of the bulk of resellers in the marketplace (wholesalers, brokers, retailers), we believe there are dozens of project developers generating and selling to voluntary buyers across the globe that we were unable to survey. Many of these international projects are represented by reseller responses in the survey and hence Figure 4 does not fully represent the distribution of project locations. For this information, see Section 5.3.

Figure 4: Survey Participant Location, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Based on 274 survey respondents.

3. Voluntary Carbon Markets 101

Transactions in the voluntary carbon markets are not required by regulation, but are instead driven by companies and individuals that take responsibility for offsetting their own emissions as well as entities that purchase "pre-compliance" offsets. They co-exist with compliance markets that are driven by regulated caps on GHG emissions. The volume of carbon credits transacted *voluntarily* in 2010 represents less than a 0.1% share of the global carbon markets (Box 2).

What the voluntary carbon markets lack in size, they make up for in flexibility – spinning off innovations in project finance, monitoring, and methodologies that also inform regulatory market mechanisms.

Since the first carbon credits were transacted over two decades ago,[4] the voluntary carbon markets continue to evolve in response to buyers' ever-changing profiles and the uncertain regulatory context. For example, the voluntary carbon market has spawned its own standards, registries, and project types.

Carbon credits can be voluntarily purchased in one of two ways – through a formal exchange or on the decentralized "over-the-counter" (OTC) market where buyers and sellers engage directly, through a broker or retail storefront. This report focuses on OTC transactions, as the majority of voluntary offset transactions do not occur on a formal exchange.

Box 1: The Chicago Climate Exchange – A Platform for Early Market Growth

In previous years, large volumes of voluntary credits *were* transacted on a formal exchange – the Chicago Climate Exchange (CCX). The CCX defined its membership-based cap-and-trade program as "the world's first and North America's only voluntary, legally binding, rules-based greenhouse gas emission reduction and trading system."[5] Members' commitments to the program expired in December 2010 – leaving behind a decade's worth of lessons learned for voluntary programs worldwide.

In 2000, CCX founder Richard Sandor convened market and industry experts to scope and implement the CCX pilot program, which began trading in 2003. Founding members of the CCX included corporate heavyweights American Electric Power (AEP), IBM, Ford Motor Company, and DuPont.

Polluters that subsequently joined the CCX agreed to legally-binding reductions and traded Carbon Financial Instruments (CFIs) representing 100 tCO_2e. CFIs were either *offset credits* or *allowance-based credits*, issued to emitting members according to their baseline emissions and CCX program goals. In practice, offset use made up 12% of the program's total reductions – the majority of reductions (88%) were made at members' facilities.

Exchange members included both offset suppliers and buyers. Emitters committed to reduce or offset their direct or indirect emissions in two 3-year phases. Other members – including offset providers, project aggregators, trading firms and exchange participants – contributed carbon offsets and liquidity to the exchange.

In mid-2010, IntercontinentalExchange (ICE) acquired CCX parent company Climate Exchange Plc. – along with the profitable European Climate Exchange (ECX) – for US$597 million. ICE CEO Jeffrey Sprecher admitted soon after that the ECX was the more valuable acquisition, while the CCX was by then a "loss-making business."[6]

[4] Hamilton, Katherine, Chokkalingam, Unna, and Maria Bendana. *State of the Forest Carbon Markets 2009:Taking Root and Branching out.* Washington, DC: Forest Trends, 2010.

[5] http://www.chicagoclimatex.com.

[6] Speaker statement: http://plattsenergyweektv.com/story.aspx?storyid=107079&catid=293.

At the time of Sprecher's statement, CFI prices had fallen from $7.5/tCO$_2$e in 2008 to $0.5/tCO$_2$e. Offset suppliers that had ramped up registrations in response to positive price trends were left holding an oversupply of CFIs when one of the market's primary drivers – a US climate bill – gave way to disappointment. By 2010, offset suppliers sought higher prices on the OTC market as exchange trading collapsed. In late 2010, ICE and program members determined that CCX should continue to operate – but without the cap-and-trade program.

Despite the challenges of the recent years, the CCX program reports having reduced nearly 700 MtCO$_2$e through direct member reductions and offsets since 2003. Given this, CCX Senior Economist Stephen McComb says the program met its original mandate "to build capacity in the market where there was none." He says further evidence is the capacity of many CCX members to comply with federal regulations like the EPA's GHG reporting requirement.

The CCX tested the waters for a variety of project types (like agriculture and ozone depleting substance destruction) and methods for aggregating small landowners' projects. Other third-party carbon offset standards are now developing similar tools for their own programs (Box 4). Domestic voluntary markets worldwide also borrow from the CCX experiment to shape new regional exchanges (Section 6.6).

Through 2012, ICE will continue to administer the CCX registry and offset protocols under the CCX Offsets Registry Program – now competing with many of the third-party programs it helped to shape.

Because the voluntary carbon markets are not part of any mandatory cap-and-trade system, almost all carbon credits purchased voluntarily originate from emissions reduction projects. These credits, sourced specifically for the OTC market, are generically referred to as Verified (or Voluntary) Emission Reductions (VERs) – or simply as *carbon offsets*.[7]

OTC buyers may also voluntarily purchase and (in most cases) retire *allowances* from compliance markets like the Kyoto Protocol's Clean Development Mechanism (CDM) or the US Regional Greenhouse Gas Initiative (RGGI).

The OTC market is driven by both "purely voluntary" and "pre-compliance" buyers. Purely voluntary buyers purchase credits to offset their individual or organization's emissions and are driven by ethical or corporate social responsibility (CSR) motivations. Hence, the demand curve for these purely voluntary VERs has similarities with other "citizen consumer" ethical purchases such as for Fair Trade or organic products.

Pre-compliance buyers purchase VERs for one of two purposes: to purchase credits that they might be able to use for future compliance at a comparatively low price or to sell them at a higher price to entities regulated under a future mandatory cap-and-trade scheme. Entities that are likely to be regulated make up the first category, while companies with the second goal are typically intermediaries.

[7] The term VER is also used specifically to refer to credits generated by aspiring CDM projects that have not yet been registered by the CDM Executive Board. Once registered, these projects will generate CERs.

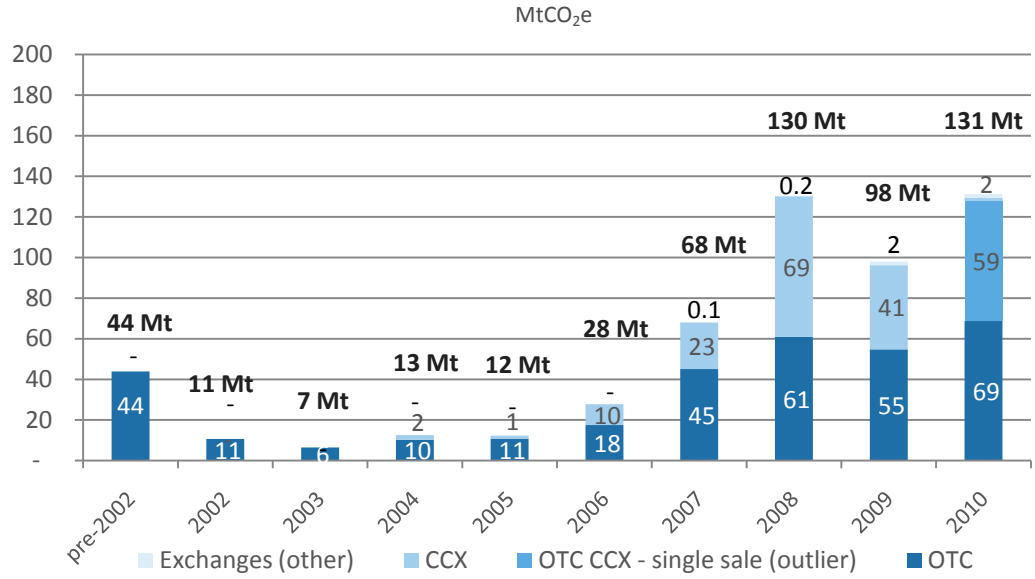
4. Turning up the Volume: Market Size

In 2010, the voluntary carbon markets followed financial markets out of a global recession to transact 131.2 $MtCO_2e$.This volume – 34% higher than the previous year – exceeded historic OTC and overall transaction volumes as tracked in our previous reports.

As the economy stabilized, voluntary buyers recommitted their discretionary income to offsetting emissions. The market returned to previous years' growth patterns under vastly different political circumstances in the US that spelled the end of the CCX and shifted the majority of transactions to the OTC market. Internationally, continued interest in offsets spawned a growing number of VER exchanges.

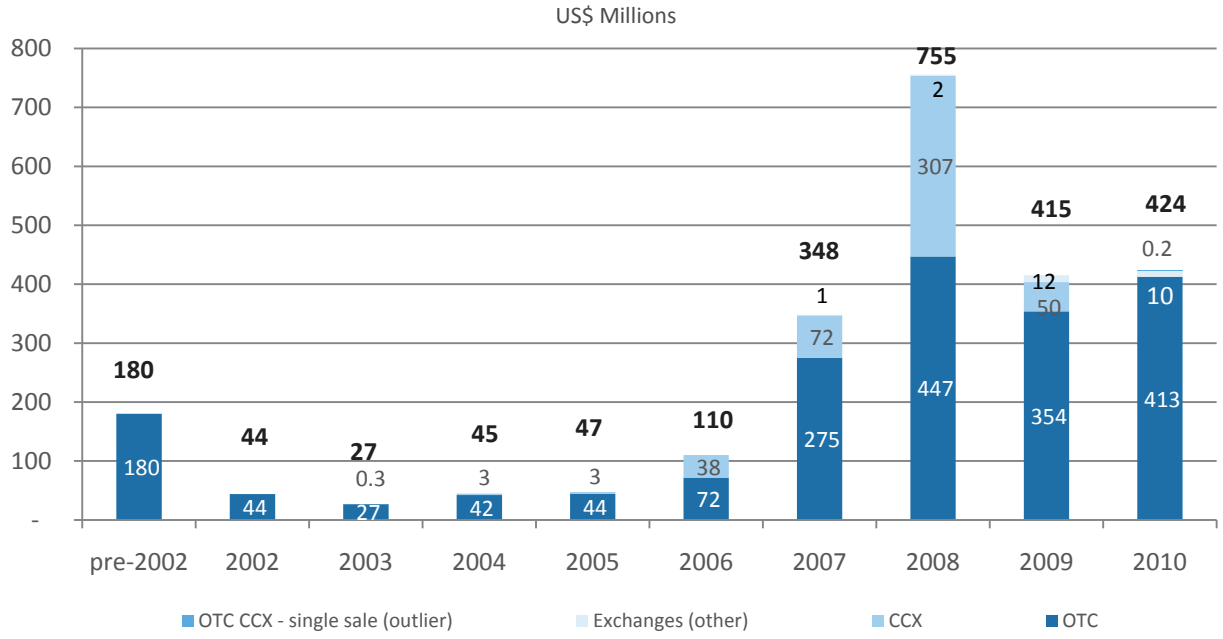
The OTC market – which customarily shared almost half of annual volumes with the CCX – last year transacted 127.9 $MtCO_2e$, or 97% of global market share. Transactions collapsed on the CCX, which ceased trading at the end of 2010 (Box 1). The exchange's swan song, however, was a single bilateral OTC transaction of CFIs totaling 59 $MtCO_2e$ – which on paper compensated for collapsed exchange activity, but is not likely to be repeated. Even excluding this statistical outlier (which is also excluded from general report analysis), OTC volumes were higher than in any previous year. Volumes remained steady – though still comparably small – from non-CCX platforms and exchanges like the CCFE and relative newcomers Carbon Trade Exchange (CTX) and China Beijing Environmental Exchange (CBEEX).

Figure 5: Historic Volume in the Voluntary Carbon Markets



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Notes: Based on 153 survey respondents. Annual totals may not equal sum of categories due to rounding.

Figure 6: Historic Value in the Voluntary Carbon Markets



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Notes: Based on 125 survey respondents.

In 2010, the volume-weighted average price of credits transacted in the voluntary OTC market fell slightly to $6/tCO$_2$e, down from $6.5/tCO$_2$e in 2009. As in the previous year, a handful of large low-priced trades were among the many factors that influenced the global average price, which ranged dramatically, from a low of $0.1/tCO$_2$e to a high of $136.3/tCO$_2$e.

Using the volumes and prices stated above, we estimate the value of the voluntary carbon markets to be at least $424 million in 2010 (Figure 6), which is slightly higher than the previous year but still a little more than half the value of the market at its 2008 height. The voluntary carbon market last year derived most of its value from OTC transactions, which captured 98% of the total market value. While the above-mentioned single large transaction of CCX credits buoyed market volumes in 2010, its credits – priced at less than $0.02/tCO$_2$e – contributed little to overall value.

Box 2: The Voluntary Carbon Markets in Context

The voluntary carbon market's growth in 2010 did little to stymie stagnation in the collective carbon markets. The international carbon markets transacted 6,692 MtCO$_2$e, valued at $124 billion – down slightly from $128 billion in 2009 despite higher average prices. The voluntary markets contributed a small (but growing) fraction of volume and value to this total (about 0.02% of volume, <0.01% of value), the rest of which was seen in regulatory markets.

Regulatory markets idled last year – challenged by the climate debate's contentious politics and uncertainty surrounding a post-Kyoto agreement. But unlike 2009's failed UN climate negotiations in Copenhagen, the progress achieved at last year's 16th Conference of the Parties in Cancun helped to restore some confidence in the UNFCCC process and outlook. Despite several criminal controversies – including value-added tax (VAT) fraud, "phishing" scams and theft – the European Union's Emissions Trading Scheme (EU ETS) continued to dominate the market. Its decelerating growth, however, is attributed to the lingering effects of economic downturn, reduced industrial output, and an oversupply of allowances. The Assigned Amount Unit (AAU) market, which had grown in 2009, shrank in 2010, while the primary CDM fell for the third year in a row to record lows. Even RGGI, the market segment with the largest growth in 2009, stalled due to over-allocation and abysmal outlook for a US climate bill.

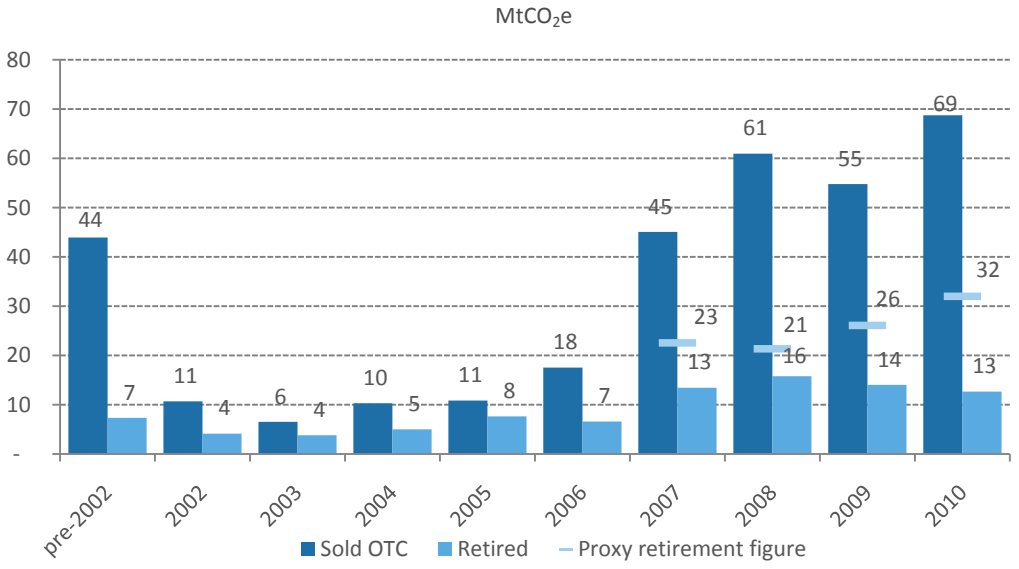
Table 2: Transaction Volumes and Values, Global Carbon Market, 2009 and 2010				
	Volume ($MtCO_2e$)		Value (US$ million)	
Markets	**2009**	**2010**	**2009**	**2010**
Voluntary OTC	55	128	354	414
CCX	41	2	50	0.2
Other Exchanges	2	2	12	10
Total Voluntary Markets	**98**	**131**	**415**	**424**
EU ETS	5,510	5,529	105,746	106,024
Primary CDM	135	94	2,858	1,325
Secondary CDM	889	1,005	15,719	15,904
Kyoto [AAU]	135	19	1,429	265
RGGI	768	45	1,890	436
Total Regulated Markets	**7,437**	**6,692**	**127,642**	**123,954**
Total Global Markets	**7,535**	**6,823**	**128,057**	**124,378**

Source: Ecosystem Marketplace, Bloomberg New Energy Finance
Note: Totals may not add up due to rounding.

4.1 Retirement: The Final Frontier

A carbon credit in the voluntary market does not fulfill its life's goal of offsetting another GHG emission until it is "retired" by a supplier or final buyer. In order for an entity to claim that it has neutralized emissions by purchasing carbon credits, the credits must be retired and cannot re-enter the marketplace – or the atmosphere. Retirement is critical in the voluntary markets because it illustrates the degree to which the market has fulfilled its ultimate environmental purpose.

Figure 7: Historic Transacted and Retired Volumes, OTC Market



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 153 survey respondents.

Of 285 total responding suppliers, 88 reported retiring credits in 2010. Suppliers or their voluntary buyers retired 12.7 $MtCO_2e$ – 1 $MtCO_2e$ more than was reported in our 2009 survey. Because many suppliers cannot confirm the fate of credits sold in the current year, this volume is likely to increase in future reports as suppliers gain clarity about their credits' end use.

In the meantime, it is possible to estimate the volume of credits retired in 2010 based on suppliers' responses to another survey question regarding customer motivations (Section 7.1). Suppliers noted that 47% of OTC credits sold to voluntary buyers or resellers were bound for retirement. Using this percentage figure, we can derive that a possible 32 $MtCO_2e$ were retired in 2010, almost 6 $MtCO_2e$ more than last year's estimate. This upward trend reflects the ever-growing volume of issued credits eligible for retirement via carbon offset registries (Section 6.4).

4.2 Firm Foundations: Suppliers in the Market

No two voluntary carbon offset suppliers are alike; but depending on their position in the supply chain, sellers can be categorized into four major types:

1. **Project Developers:** Develop emissions reduction projects to sell to resellers or final customers.
2. **Wholesalers:** Only sell offsets in bulk and often have ownership of a portfolio of credits.
3. **Retailers:** Own and sell small volumes of credits to individuals or organizations, usually online.
4. **Brokers:** Do not own credits, but facilitate transactions between sellers and buyers.

In order to understand suppliers' activities throughout the supply chain, we asked them to identify their role (Figure 8). Because many organizations wear several hats, respondents had the option to check an unlimited number of business activities that they perform, including an "other" category. Respondents selecting "other" described themselves primarily as carbon project advisors, consultants, or cooperatives of project developers. Because respondents could tick multiple boxes, the total number of organizations across the supply chain exceeds our survey response rate.

Figure 8: Response Count by Business Type, 2009 vs. 2010

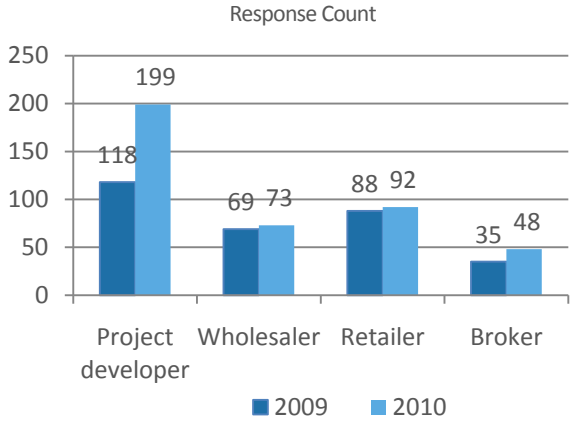
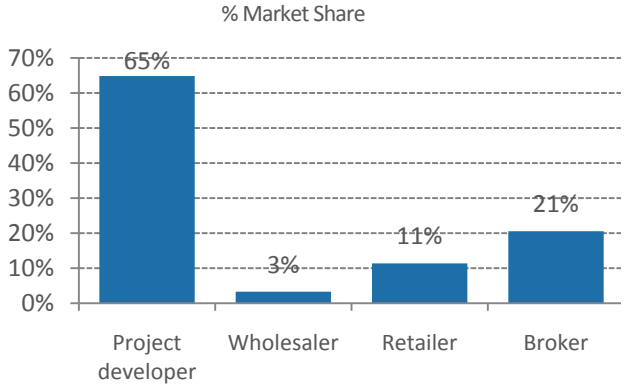


Figure 9: Market Share by Business Type, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Count based on 251 survey respondents, market share based on 139 survey respondents.

Last year, project development dominated the business type categories as originators entered the market to meet the growing demand for forest carbon credits. The increased number of suppliers across *all* business types also resulted from broader survey outreach to existing and new companies – a full 9% of respondents transacted their first VERs in 2010. To shed more light on market activity by business type, for the first time, we also asked suppliers to identify their specific role in each transaction (Figure 9). Again, project originators topped the charts, transacting the majority of credits in 2010. The dropping population of middle men can be attributed to a low margin marketplace with developers reaching out to final buyers making bulk purchases for higher profits.

In fact, project developers reported that over half of their transacted volumes were purchased by end-users (not resellers) with retirement or pre-compliance motives. From a cash flow perspective, originators must also regularly transact available credits to cover their projects' overhead costs – unlike retailers or wholesalers who can hold out for more favorable market conditions.

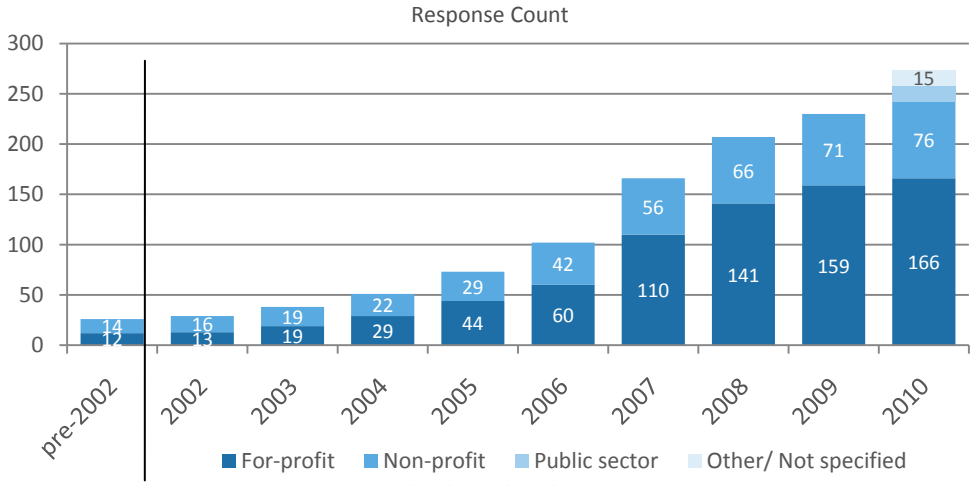
Because retail operations are characterized by a number of small transactions to purely voluntary buyers, their market-wide transaction volume is also small. Wholesalers' minimal market share, on the other hand, is related to the fact that only a handful of survey respondents engaged exclusively in wholesale activities. Those that did transact credits as wholesalers were typically project developers or retailers executing bulk transactions to supplement their primary business activities.

Brokers reported transacting roughly one fifth of global volumes. Again, while comparison with previous surveys is not possible, another question in the survey reveals that respondents transacted the same proportion of credits *via* brokers in 2009 and 2010 (8%). The majority of brokered credits went to US-based pre-compliance buyers betting on a federal climate bill in the first half of the year and on Guaranteed California Air Resources Board (ARB)-approved offsets ("GARBOs") in the fourth quarter.

4.3 Suppliers by Sector

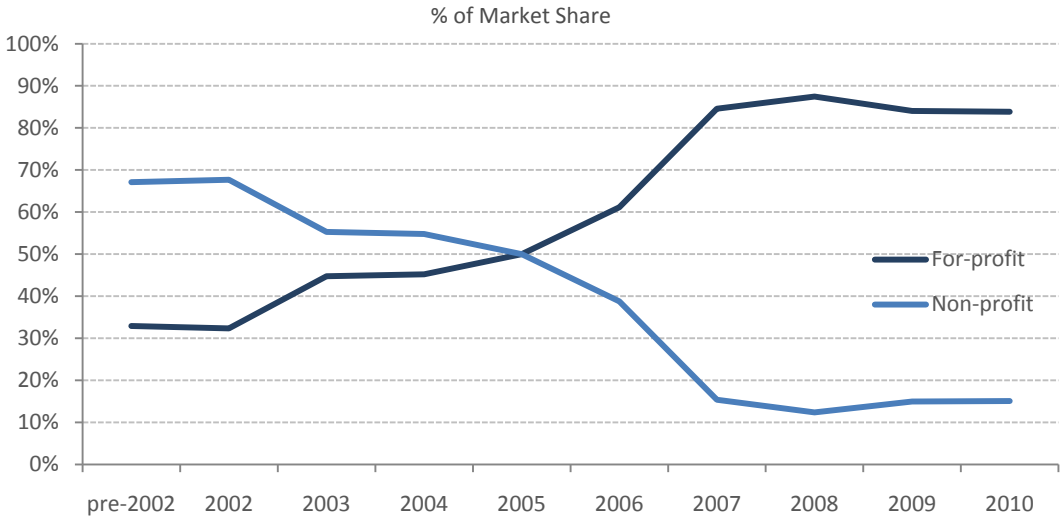
As a market driven by entities that choose to voluntarily minimize their climate impact, the voluntary carbon market uniquely unites the realms of philanthropy and commodity. In this arena, organizations from all sectors – private, public, and non-profit – supply carbon offsets. While non-profit organizations pioneered the market, since 2006 they have been outnumbered by private firms. Of the 271 respondents that reported a profit status in 2010, private sector suppliers again vastly outnumbered non-profit suppliers. Suppliers that identified as public sector organizations (a new category in the survey) were few in number but represented many levels of government worldwide.

Figure 10: Historic Response Count by Company Type



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 271 survey respondents from previous four years

Figure 11: Historical Market Share of Transaction Volume by Profit vs. Non-Profit Suppliers



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 271 survey respondents.

Non-profit market share held steady in 2010 as a result of non-profits' long-time engagement with forestry and conservation activities. For decades, non-profit organizations in the voluntary markets have focused almost exclusively on forest projects – this was also the case in 2010. Last year, 85% of credits transacted by non-profit suppliers were from forest carbon activities, compared to 34% in the private sector. Around two-thirds of public sector transactions were also rooted in forestry.

Breaking with previous years' trend, non-profit organizations were less likely than their private sector counterparts to retire credits in 2010 (12% vs. 22%). The majority of credits sold by non-profit suppliers were from reducing emissions from deforestation and degradation (REDD) activities – and as of December 2010, no major third-party standards had yet issued a significant volume of REDD credits eligible for retirement. On the other hand, the volume of credits retired by private sector suppliers actually increased last year as purely voluntary buyers reasserted their buying power.

5. Origin of an Offset

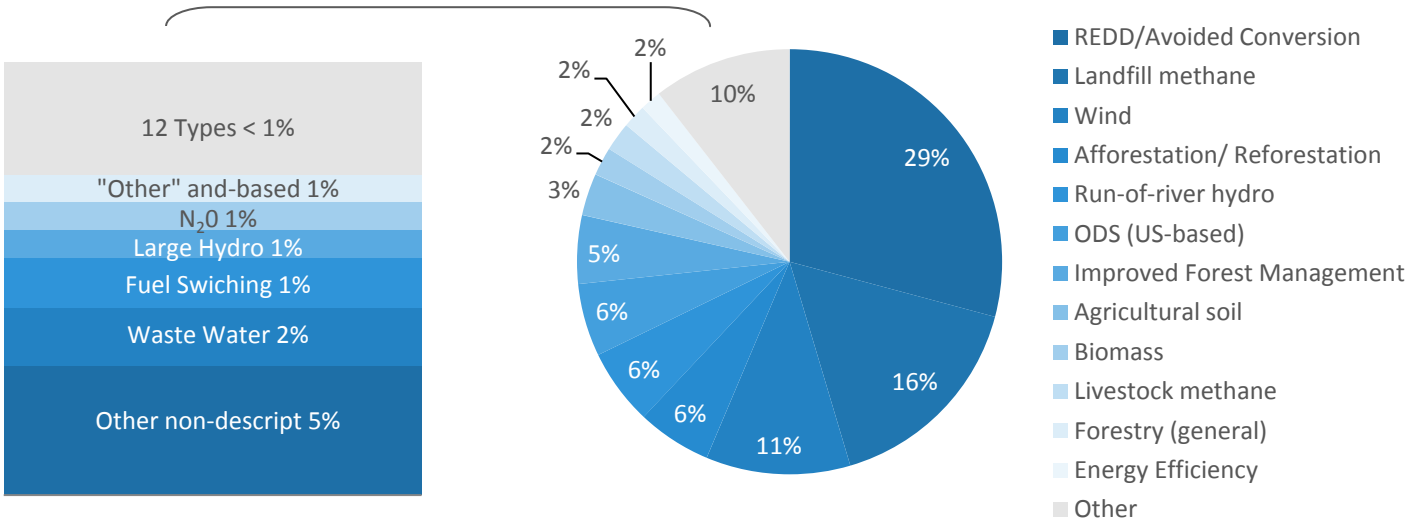
Projects that reduce or avoid carbon emissions are the source of credits in the voluntary carbon markets. Each project is differentiated by its technology, location, and potential environmental and social contributions ("co-benefits"). Voluntary buyers emphasize these project details – the story behind the credits – to make their purchase decisions. An ever-expanding variety of credits reflects voluntary buyers' diverse tastes and motivations. This section describes the origins of credits transacted OTC in 2010: their project type, location, size, and vintage as well as financing structures to deliver the credits.

5.1 In with the Old, in with the New: OTC Project Types

In 2010, the top project type transacted was REDD (17.8 $MtCO_2e$), followed by landfill methane (9.9 $MtCO_2e$) and wind (6.7 $MtCO_2e$).[8] Several macro-level trends underlie voluntary demand for these and other project types (Figure 12).

While the global economic recession suppressed offset demand in 2009, several suppliers took advantage of the lull to dramatically realign their portfolios and programs with emerging trends. This meant re-tooling voluntary programs to bring more small community-facing projects to scale (Box 4), intensifying efforts to approve methodologies and projects generating land-based credits, and developing projects under newly developed standards.

Figure 12: Market Share by Project Type, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Buyers returned to the market in 2010 with a craving for forest carbon credits – which roughly doubled their global market share to 45%. Supply began to catch up with voluntary demand for conservation-based credits from REDD and improved forest management (IFM) projects, which also appealed to pre-compliance buyers eying California's forest-friendly cap-and-trade program.

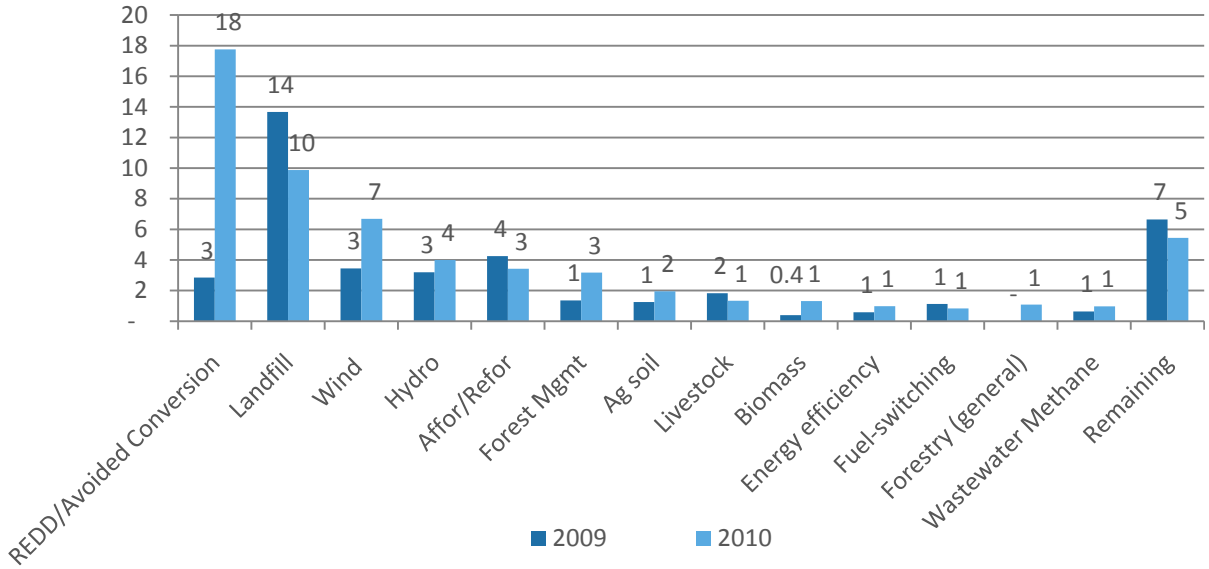
[8] Throughout this report, it's important to note that even a handful of large deals – reported *or* omitted – can easily swing market share from one year to the next. For example, excluding one bulk transactions of REDD credits from this year's survey would dramatically alter the project type landscape, putting landfill methane in the lead with REDD and wind projects tied for second place.

Pre-compliance buyers lined up for landfill methane credits in 2009 and early 2010 – only to have any remaining hopes of a US climate bill dashed by mid-year. Even the California program's recognition of some livestock methane credits could not prevent methane projects from declining transaction volumes. ARB's acceptance of some ozone-depleting substance (ODS) credits did drive sufficient demand for many industrial gas projects to transact 3.5 $MtCO_2e$ in their first year on the market.

Renewable energy projects – European offset retailers' bread and butter – tied with methane projects in overall market share (20%). Buyers also rallied around local initiatives like bicycle sharing and household energy efficiency as voluntary programs stepped up efforts to address two important emissions sectors – transportation and the built environment.

Figure 13: Transaction Volume by Project Type, 2009 vs. 2010

$MTCO_2$



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Notes: Based on 608 observations.

5.1.1 Forestry: The REDD Tide[9]

Land-based projects supplied almost half (45%) of transacted credits that reported a project type, as conservation efforts and international politics reasserted their iconic status in the voluntary market.

A staple of early carbon offset deals, forest carbon had steadily lost market share since 2004 as project types diversified and buyers flocked to credits issued from accepted third-party standards. Beginning in 2009 and intensifying in 2010, technical and political developments that had been several years in the making came together to further enable the voluntary market to contribute to halting deforestation and engaging developing countries in climate mitigation.

In 2010, the Verified Carbon Standard (VCS) approved for use its first methodologies for developing REDD projects, which helped to alleviate buyers' perceptions of forestry's reputational and investment risks. The prospect of emerging protocols prompted voluntary buyers to inject investments valued in this survey at $76 million into REDD projects through forward sales.

[9] For more information about forest carbon project activities worldwide, visit the Forest Carbon Portal website (http://www.forestcarbonportal.com).

Box 3: Rise of REDD - The UN-Told Story

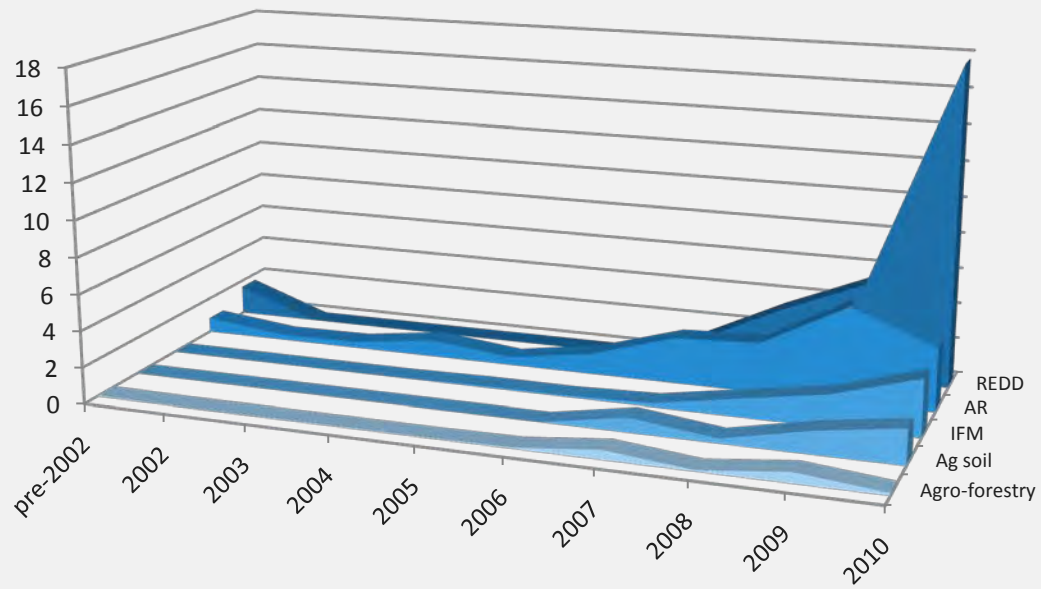
REDD's meteoric rise in 2010 (Figure 14), while surprising in size, is not without precedent. The UN got the ball rolling with the 2007 Bali Action Plan offering the first roadmap for international REDD policy. By 2009, developed countries at Copenhagen pledged over $4.5 billion in aid for REDD. Thus, non-market funding dwarfed the whole of forest carbon *market* activity before or since. At the end of 2010, negotiations in Cancun ended with an agreement on REDD. The role of market versus non-market based funding was a key source of debate and still undecided.

Zubair Zakir, Head of Carbon Sourcing for The CarbonNeutral Company, sees unmistakable international progress. "How the private sector will be involved over the long term is still unclear but I think it will be hard to call demand for REDD a bubble," he says.

State-side, although US cap-and-trade had been scuttled by mid-2010, the fact that virtually all proposals explicitly acknowledged international REDD credits should not be overlooked. When it comes to concrete progress, California takes the prize. California's cap-and-trade plan (going live 2012) is set to benefit from a November 2010 Memorandum of Understanding (MoU) with the states of Chiapas in Mexico and Acre in Brazil to develop sectoral REDD crediting. By 2015, these may be the world's first REDD credits granted access into any compliance market.

So why did the voluntary market respond? As Zakir sees it, "they're taking faith in the fact that forests are so important that any compliance schemes that exist ultimately would take these credits – and if not a compliance scheme, there will be other investments available."

Figure 14: Historic Transaction Volumes, Forestry and Other Land Use Types



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Based on 468 observations from 2010 and previous survey years.

Project developers point out that these millions represent a fraction of the investment made in previous years to support today's "near-term" REDD projects – including those that were originally initiated in response to positive signals from US climate bills. By 2010, though, REDD project developers took their cues from buyers representing the full range of buyer motivations (Box 5).

Like REDD, IFM credits were highly sought-after throughout 2010 – first for their potential eligibility under a US federal climate bill, and then for their *confirmed* eligibility as an early-action offset type under California's cap-and-trade program. Finite Carbon Vice President Sean Carney says IFM strongly appealed to voluntary buyers in the US for whom the projects meant "domestic employment, so real money going into real communities that put dinners on the table." Also sourced from projects in the US buyer's backyard, agricultural soil credits transacted slightly higher volumes in 2010.

Afforestation/reforestation (A/R) projects – common to both the voluntary and CDM forest carbon markets – and agro-forestry practices lost market share and volumes as REDD took center stage in the developing world. In some cases, project developers "landscaped" their REDD projects with agro-forestry and other land management practices (a.k.a. "REDD+") to address areas' underlying deforestation pressures. Many of these credits were categorized in the survey simply as "REDD".

5.1.2 Renewables: Wind in the Sails

Land-based transactions left enough room under the sun for renewable projects to regain their energy from the return of purely voluntary buyers. Wind projects were responsible for over half (53% or 6.7 $MtCO_2e$) of last year's renewable volumes. Described by one respondent as "the trees of the energy grid," suppliers said that wind projects offered buyers a "story" that is easy to communicate and at relatively low prices for Gold Standard credits.

Indeed, the global financial crisis taught voluntary buyers to leverage their still-limited CSR budgets by investing in projects with a message. Stories of carbon finance in non-traditional locations (like least developed countries … or backyards) as well as contributions to public health and communities propelled growth among other renewable project types.

This partly explains why transactions picked up steam for "run-of-river" (ROR) hydropower projects that in 2010 expanded to locations buyers deemed "exotic" – versus large hydro's controversial China and Brazil sites – and enabled the modernization of regional infrastructure, says Emergent Ventures India's Rishi Seth. "Setting up schools, setting up clinics in the community, employing people at the project site, afforesting the area around the dam – these are the kind of things that can help hydro projects sell."

Biomass projects – particularly those located in developing countries or stacked with the SOCIALCARBON co-benefits standard – saw significant growth in 2010 (to 1.3 $MtCO_2$). Transacting the largest volumes were biomass projects that scaled up using the Gold Standard's Voluntary Programme of Activities (PoA) guidance (Box 4). On the other hand, respondents reported small volumes from solar and "other" renewable projects using new methodologies or expensive inputs that limit their scale.

5.1.3 Methane: Back on the Farm

Another fifth of all credits transacted on the OTC market in 2010 were sourced from capture and combustion of GHG-heavy methane. Buyers of landfill methane credits – the largest methane project type – rode the bullish US federal pre-compliance market from 2009 through mid-2010. When a climate bill never materialized, landfill methane credit traders shifted their focus to the (albeit quieter) Western Climate Initiative (WCI), and voluntary markets and transaction volumes fell dramatically.

Landfill methane credits are not eligible for pre-compliance under California's cap-and-trade program because the state already limits landfill emissions. ARB *did* recognize methane emissions reductions from livestock operations under the Climate Action Reserve ("the Reserve") Livestock Project Protocol, but not until the last quarter of 2010. Nevertheless, livestock methane transacted slightly lower transaction volumes last year. TerraPass CEO Erin Craig explains that many livestock credits quickly found their way to soon-to-be capped entities, so did not continue to change hands. Also, many project developers chose to hold out for higher prices instead of taking an "uncertainty discount," or waited for additional

guidance on landfill projects from the WCI partners. While all eyes were on the major pre-compliance picks, credits from coal mines, waste water treatment and "other" methane projects like composting together transacted only 2% of OTC market share.

5.1.4 Industrial Gas: From Zero to Ozone Hero

Industrial gas projects blew up in 2010, capturing enough of the OTC market share (6%, up from <1% in 2009) to merit their own category. Most of these credits (3.5 $MtCO_2e$) were from projects that destroy ODS – like chlorofluorocarbons and halons found in older appliances, refrigeration systems and other "banks" not regulated by the Montreal Protocol's ODS phase-out.

Industrial gases have a very high global warming potential (GWP), so projects that destroy them can therefore generate a large number of credits at a relatively low price. Therefore, when the Reserve's ODS Project Protocol flew off the press in 2010, California's pre-compliance buyers were first in line to transact the relatively inexpensive ODS credits – before prices jumped for all ARB-compliant credits in the final months of 2010. Retailers like Pacific Gas & Electric's ClimateSmart program also sold purely voluntary buyers on the projects that PG&E Energy Principal Robert Parkhurst says appeal on the basis of their "multiple environmental benefits – protecting the ozone layer and combating climate change."

Also fertilizing market growth were projects that reduce nitrous oxide (N_2O) emissions from nitric acid production – a key component of synthetic fertilizers. N_2O transaction volumes (0.5 $MtCO_2e$) appeared in this year's survey for the first time since 2007, when a full fifth of all credits came from industrial gas projects (mostly N_2O and HFCs). Industrial gas projects were once power players in the voluntary carbon markets but evaporated in response to CDM controversies around industrial gas offsets – primarily HFCs – and buyers' concerns that the projects pick the "low-hanging fruit" by generating large volumes of low-cost reductions. Years later, suppliers say transactions of N_2O credits are picking up in anticipation of a nod from the California program and because of their domestic agricultural applications.

5.1.5 Other Project Types: The Gas Next Door

A light bulb went on for voluntary buyers who transacted an increased volume of credits from energy efficiency projects in 2010. Locations from Cambodia to Connecticut basked in the green glow of efficiency credits, some of which were generated from grassroots compact fluorescent light bulb (CFL) replacements programs.

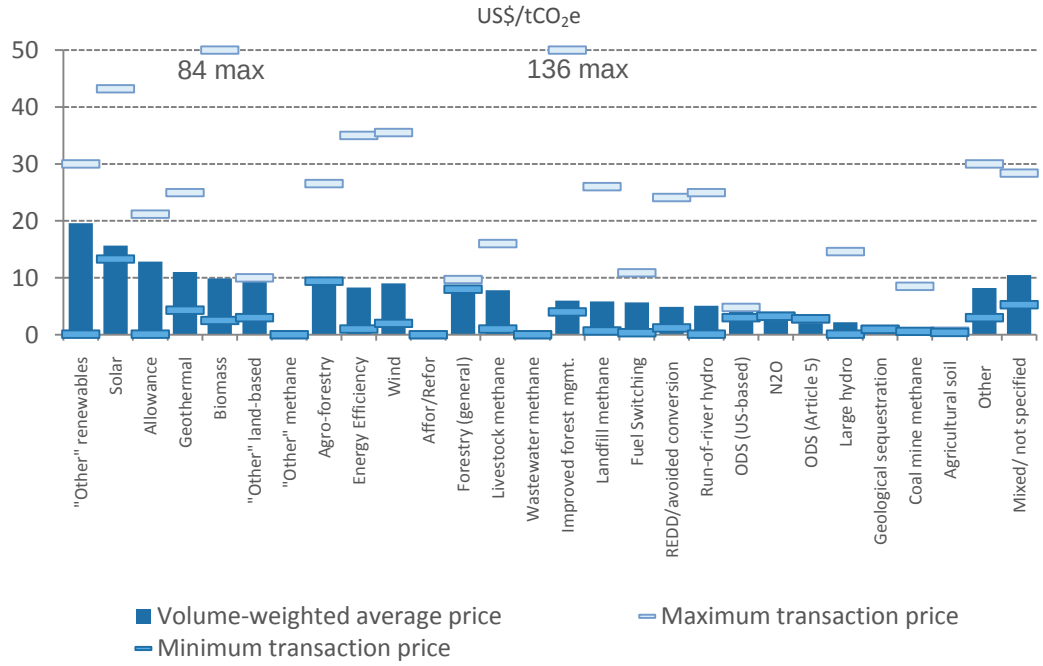
Many project types with smaller total volumes were likely to be "home grown" – literally in the case of CFL distribution activities. This was also the case for a few other project types that transacted insignificant volumes but at high prices – like community bicycle sharing programs and local transportation initiatives. Buyers warmed up to credits sourced from geothermal installations under the VCS, another new category in this year's survey that transacted .3 $MtCO_2e$. Also in 2010, a handful of suppliers offered CERs, EUAs, and RGGI permits that voluntary buyers purchased and retired – reducing by 49,491 the number of allowances available to regulated entities.

5.2 Tech Dollars: Prices by Project Type

In 2010, the volume-weighted average price for OTC credits fell slightly to \$6/tCO_2e from \$6.5/tCO_2e in 2009.[10] This price helps to benchmark the value of global OTC trades, but is also set against a wide range of prices that are highly stratified according to the availability of similar credits; the project's upfront costs and investment risk; the buyer's understanding of the marketplace; project characteristics, credibility and co-benefits; and a slew of other factors.

[10] This volume-weighted average price excludes a 59 $MtCO_2e$ CCX bi-lateral transaction reported in December 2010, priced at \$0.017/tCO_2e. As an anomalously large and low-priced transaction, it is excluded from this and all other price/volume analyses.

Figure 15: Average Credit Price and Price Range by Project Type, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 461 observations.

Despite transacting credits at a lower average price, last year's resurgence of purely voluntary buyers led to more project types at the expensive end of the price spectrum (>$8/tCO$_2$e). As in previous years, high-priced credits were characterized by their scarcity (solar energy); unique or locally-based activities (project types like composting and CFL distribution); high production costs (waste-to-energy or bio-digester projects); and social and environmental co-benefits (Gold Standard wind and SOCIALCARBON+VCS biomass projects). Together, these project types contributed less than a third of all transaction volumes but almost half of the total OTC market value as a result of their premium pricing.

In contrast, a crew of inexpensive project types (<$4/tCO$_2$e) brought low volumes and only 1% of the value to the OTC market. Low prices came from CCX credits traded OTC (agricultural soil management and coal mine methane), project types that posed potential environmental concerns (large hydro) and industrial gases not eligible for pre-compliance (ODS from international sources – "Article 5").[11]

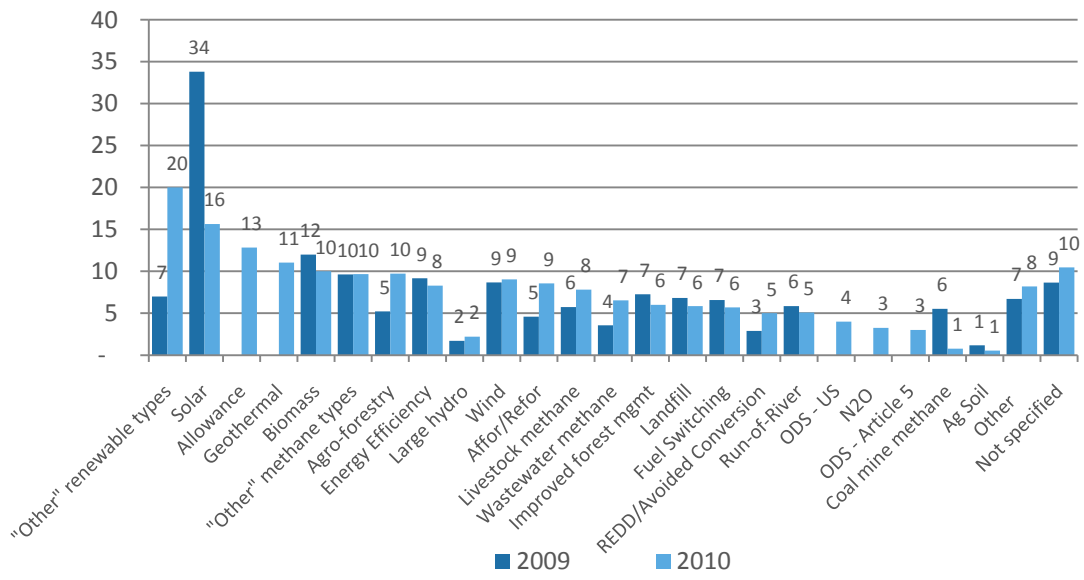
Project types that fetched moderate prices ($4-8/tCO$_2$e) saw the most variability in 2010, throughout the survey *and* the year. Here, one finds most of the guaranteed ARB offset types (IFM, livestock methane and US-based ODS), which varied significantly in price before ($4-7/tCO$_2$e) and after ($7-11/tCO$_2$e) their adoption into the California program. Therefore, the difference in price between ODS ($4/tCO$_2$e) and livestock methane ($7.8/tCO$_2$e) in this report partly depended on the time of year when the majority of credits were transacted – in early 2010 versus post-ARB adoption.

Purely voluntary buyers rescued landfill methane prices from impending collapse in the second half of 2010, paying a premium ($20+/tCO$_2$e) for credits from local government programs or verified to the Gold Standard or VER+ Standard. In some cases, REDD credit prices also topped $20/tCO$_2$e but illustrated the power of economies of scale – a few very large REDD projects transacted inexpensive credits that weighted down the price for this and all project types in 2010.

[11] The Climate Action Reserve offers two protocols for ODS project development. The US ODS Project Protocol requires that ODS must be sourced and destroyed in the US or its territories. The Article 5 ODS Project Protocol requires that ODS be sourced from developing countries identified in Article 5 of the Montreal Protocol and destroyed in the US or its territories.

Figure 16: Average Credit Price by Project Type, OTC 2009 vs. 2010

US$/$tCO_2e$

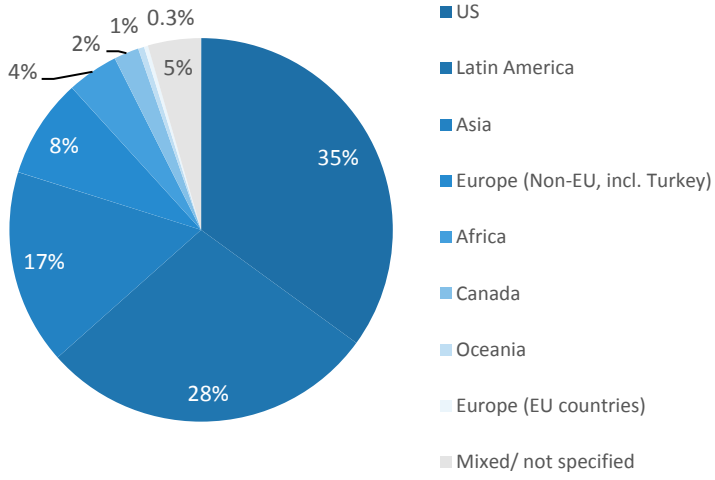


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: 2009 figures based on 326 observations, 2010 figures based on 461 observations.

5.3 Place-Based Portfolios: OTC Project Locations

Offset projects are implemented around the globe. In 2010, the OTC market added six new countries to its roster of project locations, extending voluntary carbon finance to a total of 45 countries.

Figure 17: Market Share by Project Location, OTC 2010[12]



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 726 observations.

Last year, the distribution of sales was tied to both supply- and demand-side developments. Domestic carbon policies, as well as risk, natural resources and available supply, influenced the choice of project locations. Buyer preferences for specific project locations also remained a strong driver of the supply and price of credits by region in 2010.

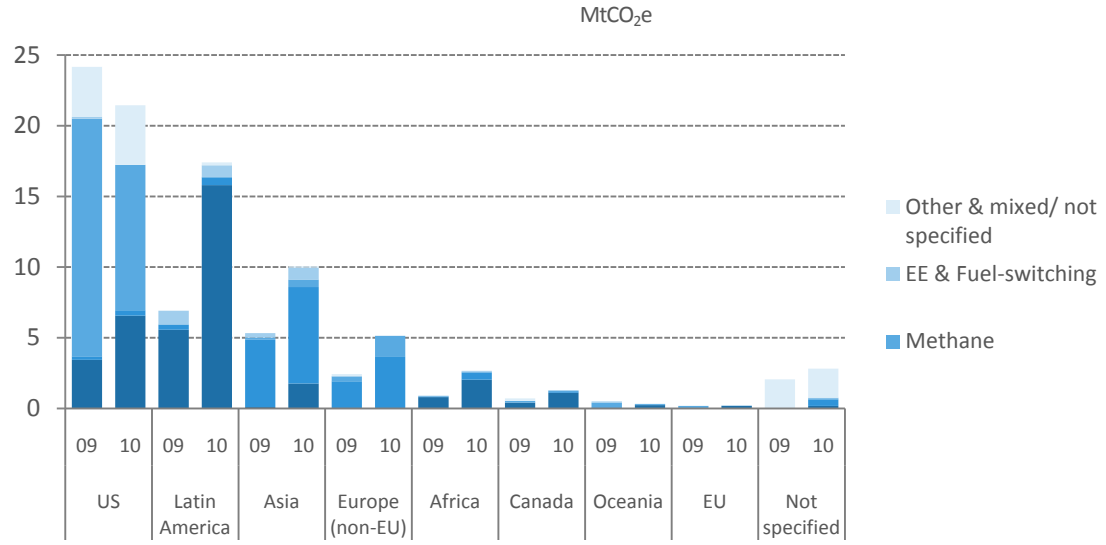
North America maintained its top spot among project locations to generate 35% of transacted OTC volume. The US again supplied more than twice the transacted credits of any other single country, but slightly less than what it saw in 2009. In fact, North America and Oceania were the only two regions that did not see growth in 2010. Weak signals from federal regulators drove buyers in both countries

[12] Regions divided using United Nations classifications: http://unstats.un.org/unsd/methods/m49/m49regin.htm#asia.

to home in on a handful of domestic project types or turn to internationally-sourced credits. Projects in Latin America and Africa benefitted in turn from the voluntary market's redoubled enthusiasm for international projects, and forestry in particular. In Latin America transaction volumes more than doubled from the rich forest reserves in countries such as Brazil and Peru.

Volumes grew from Africa-based projects, too, as new methodologies, large buyers and pilot projects converged to inject much-needed carbon finance into the region's expanding forestry sector. As a result, over half of credits transacted on the voluntary OTC market were sourced from developing economies (58%) – 5% from least developed countries (LDCs) – where forestry dominated their expanding portfolios of project types.

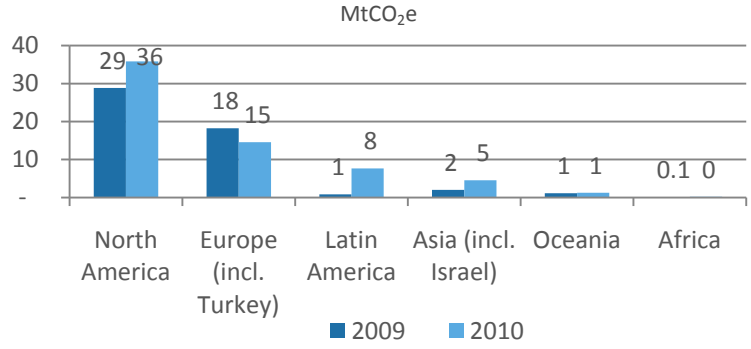
Figure 18: Transaction Volume by Location and Project Type, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 601 observations.

The year's overall market growth also left room for project locations in Asia and non-EU Europe (mainly Turkey) to regain market share and transaction volumes. Reemerging European buyers once again packed their portfolios with renewable energy credits from India, Turkey, and China, reinforcing the voluntary market's traditionally strong ties between European buyers and Asian suppliers.

Figure 19: Transaction Volume by Supplier Country Headquarters, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 147 survey respondents.

Cutting the data in a different way – exploring transaction volume by *supplier headquarters* instead of *project location* – shows that not only project finance but also revenues were more evenly disbursed across regions in 2010.

In line with project origination, companies headquartered in North America supplied the majority of credits transacted OTC in 2010. EU-based

suppliers transacted another large portion of OTC volumes, which was primarily sourced internationally due to the presence of the EU-wide mandatory scheme.

Suppliers headquartered in Asia and Latin America saw the most significant growth in 2010 – in number and in transacted volumes. As explored in our methodology section, the number of respondents headquartered in Asia, Latin America, and Africa doubled from 2009, in response to domestic market signals and demand for forestry. This translated into increased transaction volumes for suppliers headquartered in developing countries – one of many signals of domestic market expansion.

5.3.1 North America: Go West, Young Market

North America[13] again supplied the greatest share of OTC credits transacted in 2010 (21.5 $MtCO_2e$). Last year, the US supplied 94% of this volume (down from 97% in 2009) as US-based credits shared the stage with the expanding Canadian market.

Pre-compliance expectations continued to drive credit development in the US. After the US House of Representatives passed the *American Clean Energy and Security Act of 2009*, suppliers invested their hopes in the Senate equivalent – the *American Power Act* bill (APA). In line with the House Bill, the APA proposed an economy-wide cap-and-trade scheme that would allow for up to 2 billion tonnes of offsets per year from domestic and some international projects – possibly including credits for forestry and agriculture, industrial gas, and methane projects.

However, the bill languished in the Senate. By the time Senators Kerry and Lieberman introduced a discussion draft of the bill in May 2010, hope was already lost for bi-partisan support for a federal cap-and-trade program. As the Senate bill was laid to rest mid-year, North American suppliers turned their attention to California's Assembly Bill 32 (AB 32) cap-and-trade program. Cautious after the federal letdown, many waited for the program to clear the dual hurdles of a November ballot challenge and mid-December regulatory approval before bringing credits online.

The volume of North American credits transacted OTC in 2010 reflects these two major drivers. US-based landfill methane projects, perceived to be a likely pick for eligibility under any federal program, lost some market share but still produced the largest volumes of any single US project type (8.2 $MtCO_2e$). Suppliers say trading in these credits grew quiet after Q2 2010 because of their ineligibility in the California program – but anticipate that the WCI could eventually bring them in out of the cold.

Transactions picked up for credit types that the ARB deemed eligible for early action credits in California. ODS projects in particular struck a chord with both pre-compliance and voluntary buyers to transact the second-largest volumes coming out of the US (3.4 $MtCO_2e$). This represents a huge leap from 2009, when all industrial gas credits combined transacted 0.3 $MtCO_2e$ worldwide. Land-based projects held similar appeal for both types of voluntary buyers, injecting an additional $27 million in investment into American ecosystems through IFM, A/R, and agricultural soil management activities.

The market for credits sourced from Canada, on the other hand, was essentially divorced from the emerging "west coast" compliance buyers. In fact, the tremendous growth seen in Canada's forestry sector (up 166% over 2009) is from purely voluntary domestic or European buyers that appreciated Canada's relatively low investment risk. Canadian forestry credits were commonly used to counterbalance buyers' portfolios of perceived "high risk" credits from Africa or Southeast Asia.

5.3.2 Latin America: Change Grows on Trees

Latin American projects saw unrivaled growth in 2010. Latin America's abundant at-risk forested ecosystems have long been the focus of conservation projects and policies, but in recent years also appealed to international regulators and private investors that aim to institutionalize forestry as a key climate solution (Box 3). The region's forests were the source of 81% of all REDD credits and half of all forestry credits transacted OTC in 2010.

[13] In our analysis, North America consists of the US and Canada; Mexico is included in Latin America.

Peru captured the largest market share of any project location behind the US (10.7 $MtCO_2e$, from 1.6 $MtCO_2e$ in 2009), mostly from a handful of very large REDD projects. Brazilian projects harnessed reductions from a broader variety of project types – including REDD, biomass, and fuel switching – to attract the world's third-largest market share. Together, Latin American project locations transacted credits from every project type category – a first for the region.

Across the board, Latin American projects benefitted from a growing number of market mechanisms intended to incubate domestic market growth. Among the tools that emerged in the last year was the world's first sub-national carbon registry in the Brazilian State of Amapá, the forest-facing Brasil Mata Viva (BMV) sustainability standard and Fundacion Natura's pilot environmental exchange in Colombia.

Last year, we tracked voluntary projects from eleven Latin American and Caribbean countries: Peru, Brazil, Guyana, Costa Rica, Mexico, Guatemala, Panama, Nicaragua, Honduras, Argentina, and Uruguay (*in order of greatest to least transaction volume*).

5.3.3 Asia: Sitting with CDM

Most Asian project locations saw renewed demand from their traditional European buyers in 2010. In fact, Indian projects alone originated 5.1 $MtCO_2e$ of volumes transacted OTC – around the same volume sourced from all Asian projects combined in 2009. Domestic ROR hydro projects generated most of this volume. China also saw moderate growth, mostly among wind and energy efficiency projects.

Overall, the voluntary carbon market's supply chains are increasingly independent from the CDM. However, in Asia the CDM still strongly influences suppliers' choice of project types, as numerous vendors sell VERs that were generated while waiting in the CDM registration line. India and China are the top project locations for the UN's CDM market – reflected in their renewables-heavy credit supply.

According to Sarah Chapman of China-based developer Climate Bridge, China's continued pre-CDM focus is a matter of dollars and cents. "The CDM has higher prices and more predictable demand than any of the voluntary standards," she explains, "so if you're a project developer starting a wind project from scratch, developing it according to the CDM makes most sense."

Projects in other Asian locations, however, followed the voluntary carbon markets in their shift from the traditional CDM to more innovative project types in forestry and the built environment. Locations like Indonesia and Malaysia saw a large portion of transacted credits from REDD, IFM, and geothermal.

China is fast creating its own voluntary market hub as the government proliferates pilot programs and exchanges to address sustainable low-carbon development. One such program, the voluntary domestic Panda Standard, released its first specifications for agriculture, forestry, and other land use (AFOLU) projects in late 2010.

We tracked voluntary projects from nine Asian countries: India, China, Cambodia, Indonesia, Malaysia, Taiwan, Thailand, the Republic of Korea, and Japan (*in order of greatest to least transaction volume*).

5.3.4. Europe Gives Thanks for Turkey

Voluntary credits from non-EU Europe – solely represented by Turkey – saw a larger portion of global market share in 2010, while Kyoto-constrained EU nations supplied <0.1% of transacted OTC volumes.

EU members' volumes continued to slip due to the supply constraints imposed by the Kyoto cap. Under an emissions cap, a tonne of carbon reduced voluntarily is a tonne that someone else is free to emit – unless an equal number of compliance units are retired from the cap. This has led several countries to forbid domestic offset sales to foreign entities unless an AAU is also retired – which most suppliers find to be cost-prohibitive. European projects selling VERs in 2010 fell primarily into two project types: A/R and coal mine methane. Most of these emission reductions were created prior to the Kyoto compliance period, i.e., before 2008, and were therefore not compromised by the Kyoto cap.

Turkey was the exclusive respondent from non-EU member European countries where volumes grew in 2010 as a new supply of renewable energy credits – and buyers – came online. Although Turkey ratified the Kyoto Protocol, it is ineligible to generate CDM or Joint Implementation (JI) credits, and the voluntary market therefore remains its main niche until 2013, the end of the Kyoto Protocol.

The vast majority of Turkish credits transacted voluntarily in 2010 were from Gold Standard wind credits (78%) – mostly 2010 and future vintages that hit the market just in time to reengage European buyers. Suppliers say to expect continued supply-side growth since the government eased up on licensing requirements for installed power modifications and set a favorable floor price for all renewable energy project types in late 2010.

Last year, we tracked voluntary projects from eight European countries: Turkey, the Netherlands, Germany, Portugal, the United Kingdom, Latvia, Poland, and Switzerland (*in order of greatest to least transaction volume*).

5.3.5 Africa: Releaf for Forests

In 2010, some voluntary buyers took the low-carbon path less travelled – more than tripling investments in Africa's sustainable development and forest resources ($25.7 million).

In 2010, REDD projects generated 58% of the region's transacted credits – but they were not alone. African forestry activities also included agro-forestry and IFM, often in tandem with REDD. Lucy Goodman, a technical expert for Envirotrade, says the REDD+ approach is "the key to success" in preventing deforestation by ensuring food security. "Engaging individual farmers on an agro-forestry basis gives a greater ownership and participation in REDD." Groups like Plan Vivo were pioneers in this region, clearing the field for recent developments like Wildlife Works' REDD project in Kenya's Kasigau Corridor that issued the first VCS REDD credits in early 2011.

At a smaller scale, buyers continued to demand credits from community- and public health-oriented projects like clean cook stoves. Thanks to new programs for expanding or grouping micro-scale projects, originators were better equipped to deliver the charismatic credits that one supplier said "could have sold five, six, a billion times over." Other new market programs like the Africa Carbon Exchange (ACX) and the Gold Standard's 3-year program targeting new market mechanisms for LDCs (backed by German's Federal Environment Ministry) could contribute additional market clarity and scale that suppliers say is necessary to address Africa's lingering investment risks.

Last year, we tracked voluntary projects from eleven African countries: Kenya, Democratic Republic of the Congo, Uganda, United Republic of Tanzania, Egypt, South Africa, Ghana, Mozambique, Mauritius, Ethiopia, and Cameroon (*in order of greatest to least transaction volume*).

5.3.6 Australia and New Zealand: Local Market around the Corner

Within the region of Oceania, where all credits came from Australia and New Zealand, origination volumes continued to fall in 2010. Suppliers attributed the diminished activity to national compliance developments that impacted both supply and demand for voluntary carbon offsetting.

On the supply side, Australia and New Zealand's Kyoto commitments limited the emissions sectors eligible to generate truly additional voluntary offsets. For this reason – and in anticipation of a federal price on carbon – the Australian government phased out its long-running Greenhouse Friendly scheme for domestic offsets in mid-2010. In place of the popular program, the government launched its National Carbon Offset Standard (NCOS) – which effectively redirected domestic buyers to international projects.

As a result, Australian projects generated merely 0.3% of the OTC market share, but suppliers headquartered in Oceania transacted 1 $MtCO_2e$ in 2010 – mostly from non-domestic projects. In order to reinvigorate the market for offsets "made in Australia," the government introduced the idea of a Carbon Farming Initiative (CFI) to credit domestic emissions reductions occurring outside of the cap. The program will also allocate AAUs to suppliers in equal measure to voluntary reductions made within certain capped sectors – side-stepping the Kyoto barrier that has long deterred project development in

European locations. The government has not yet indicated that the CFI's domestic offsets will be eligible for compliance purposes in its proposed carbon pricing scheme.

The New Zealand voluntary market was again subdued in 2010, as many suppliers looked to the New Zealand Emissions Trading Scheme (NZ ETS) July 2010 start date for clarity regarding the scheme's treatment of offsets. In the meantime, a few suppliers transacted VERs generated from A/R activities under New Zealand's Permanent Forest Sink Initiative (PFSI). Suppliers said that buyers in the US and EU – and domestic buyers, too – appreciate the PFSI's government-backed, Kyoto-compliant permanence covenant with forest owners.

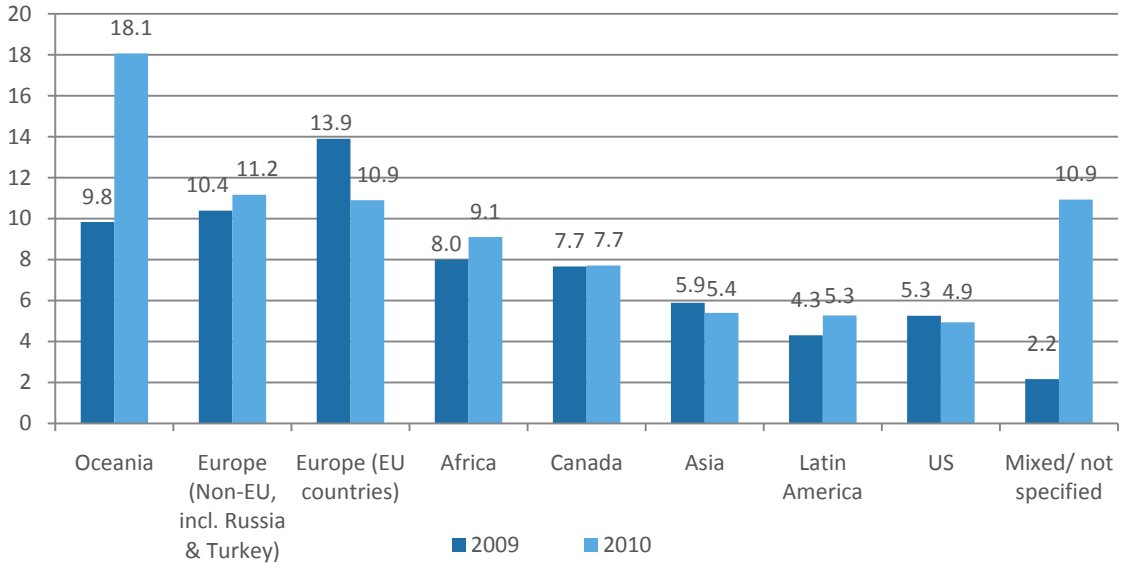
5.4 Product Placement: Price Trends by Project Location

As with the market-wide average price, prices by project location remained relatively stable in 2010. The most dramatic regional price increases (Oceania) and decreases (Europe) were confined to regions that did not transact a significant volume of credits.

Credit prices in Oceania reflected the premium that both Australians and New Zealanders were willing to pay for their increasingly rare "home grown" credits. Scarcity drove domestic buyers to pay upwards of \$20-\$30/tCO_2e for project types that are commonly (and less expensively) available elsewhere.

Limited supply also played a role in the price of credits from African locations. Buyers placed a high value on the right to "cherry-pick" credits from the region's rainforest reforestation and REDD projects certified through boutique programs like the Climate, Community and Biodiversity (CCB) Standards and Plan Vivo. Co-benefits compounded with exotic locations also elevated African credit prices, which did not fall below \$6/tCO_2e in 2010.

Figure 20: Average Price by Project Region, 2009 vs. 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 459 survey respondents.

Last year, the price of Turkish credits (\$11.2/tCO_2e) was tied to the average price of Gold Standard-certified wind projects. Turkey's growing volume of premium-priced wind and methane credits also crowded out the less expensive VCS wind and

hydropower credits seen in 2009. The market's discount on older vintage credits finally caught up with the mostly pre-2008 vintage EU credit prices. Unlike buyers in Oceania, most EU buyers are by now accustomed to buying international credits, too, and only paid premiums in 2010 for the region's most unique or recent vintage credits.

Across Asia, prices were highly varied by project location. In India, credits averaged a low $4.5/tCO$_2$e. As a result of the oversupply of VCS renewable energy credits (often priced <$1/tCO$_2$e), some suppliers admit they are considering a switch to India's more lucrative emerging market for renewable energy certificates (RECs). On the other hand, Japan's voluntary J-VER program connected domestic credits with domestic buyers who brought the country's average price to a staggering $120/tCO$_2$e.

The Americas saw stair-step credit pricing, ranging from Canada's unchanged above-average price to the market's lowest average price in the US. Carbon prices for Latin American projects split the difference between its two largest supply locations – Peru ($3.4/tCO$_2$e) and Brazil ($8.3/tCO$_2$e) – which were both heavily influenced by low-to-moderately priced REDD credits. Given the broader array of project types in the US portfolio, prices swung from a low $0.1/tCO$_2$e to $35/tCO$_2$e. The US average price settled within the range of its most popular pre-compliance projects – IFM and landfill methane ($5.8/tCO$_2$e), and US-based ODS ($4/tCO$_2$e).

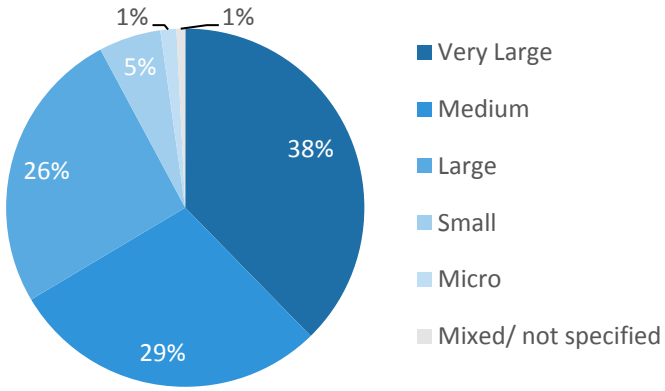
5.5 Switched on to Scale: Project Size

Demand for offsets varies not only by type and location, but also by project size. Hence, for the past five years, we have asked suppliers about the project sizes their offset sales are sourced to, defined as:

- Micro (less than 5,000 tCO$_2$e/year)
- Small (5,000 to 19,999 tCO$_2$e/year)
- Medium (20,000 to 99,999 tCO$_2$e/year)
- Large (100,000 to 500,000 tCO$_2$e/year)
- Very large (greater than 500,000 tCO$_2$e/year)

Predictably, the bulk of REDD credits – and thus over a third of all VERs – were transacted from "very large" projects in 2010. Unlike other forestry project types, REDD projects don't require interventions across the entire project area, so they're more easily scaled. After all, "very large-scale prevention of deforestation is the whole point of a REDD project," remarked one supplier.

Figure 21: Transaction Volume by Project Size, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 313 observations.

Other project types found the middle ground with medium-sized projects, which were common to all but the largest (industrial gases and hydro) and smallest (solar) project types. Medium-sized projects generated most of the volumes transacted from landfill methane and A/R activities. Landfill methane volumes helped tip the scales in favor of large projects in 2009, but were scaled back in 2010. In their place, large-scale wind projects made a comeback among some voluntary buyers who suppliers say preferred investing in large-scale low-carbon development – instead of small community-facing projects.

On the other hand are buyers that consistently demand credits from small, "charismatic" projects like cook stoves and water purification systems – project

types that were traditionally limited by high transaction costs. Last year, suppliers tripled the volume of credits coming from micro- and small-scale projects. Programs like the Gold Standard's Community-focused Micro-scale Scheme (CFMS) streamlined procedures and lowered costs for micro-scale projects in LDCs. Project grouping and aggregation guidelines also brought small project activities to scale. In fact, roughly a third of actively-selling medium- to very large-scale projects is actually made up of smaller aggregated or grouped project activities (Box 4).

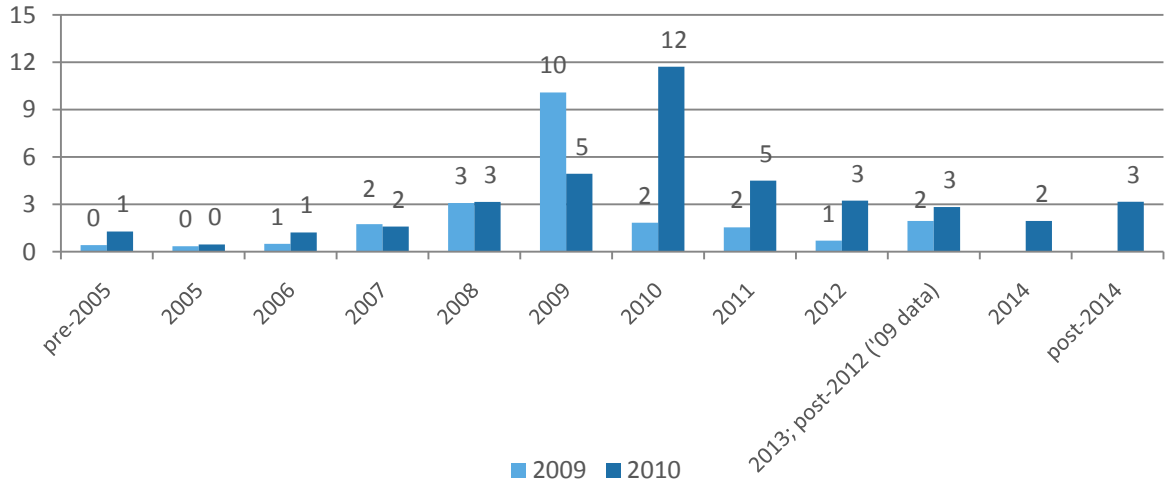
5.5.1 Project Vintage: Upping the Ex Ante

A credit's vintage refers to the year in which the emissions reduction occurred, or will occur. As in 2009, transactions in 2010 were heavily focused on the present year vintage, i.e., 2010. Many 2010-vintage credits were transacted immediately by developers trying to recoup the up-front costs for project types like ODS and ROR hydro. Credits from large forestry projects – particularly non-VCS REDD projects – were also generated and sold in the same year.

Demand for forestry credits also partly explains the voluntary market's intensified demand for future vintages. In fact, for the first time last year buyers were more interested in future vintages (post-2010) than in the present or previous years' vintages.

Over the last four years, *ex ante* (before reductions actually occurred) sales have been responsible for a quarter to a third of transacted credits. In 2010, 40% of transaction volume originated from ex-ante credits. While one in three ex-ante credits were from REDD activities in 2010, other forward sales spanned the full spectrum of project types – from landfill methane (13%) to wind (9%) – illustrating some originators' positive outlook for voluntary carbon markets.

Figure 22: Transaction Volume by Vintage, OTC 2009 vs. 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 256 survey respondents.

Credits issued in 2009 were the second most popular single-year vintage. Together, vintages 2009 and 2010 transacted 42% of 2010 OTC transaction volume, leaving little market share for less-popular older vintage credits. Suppliers reported that older vintage credits nonetheless found new life with some voluntary buyers who, still smarting from the recession, may have turned to pre-2009 vintages in search of lower prices.

Indeed, pre-2009 credits saw lower average prices than their current and future year counterparts – but not by much. With the exception of very early vintages (pre-2007), prices in most years came within a dollar of the 2010 market-wide average price of \$6/tCO_2e.

5.6 Atmospheric Obligations: OTC Contract Structures

In this year's survey, respondents chose from several contract structures to describe their transactions. The key terms are explained as follows:

- Pre-pay (PP): payment is made in advance of credit delivery;
- Payment-on-delivery (POD): payment is made when the credits are verified and delivered; unit-contingent means that delivered credit volumes depend on how many are produced;
- Firm delivery: quantities contracted for delivery are exactly specified;
- Spot transaction: the credit has already been produced – delivery and payment are instantaneous.

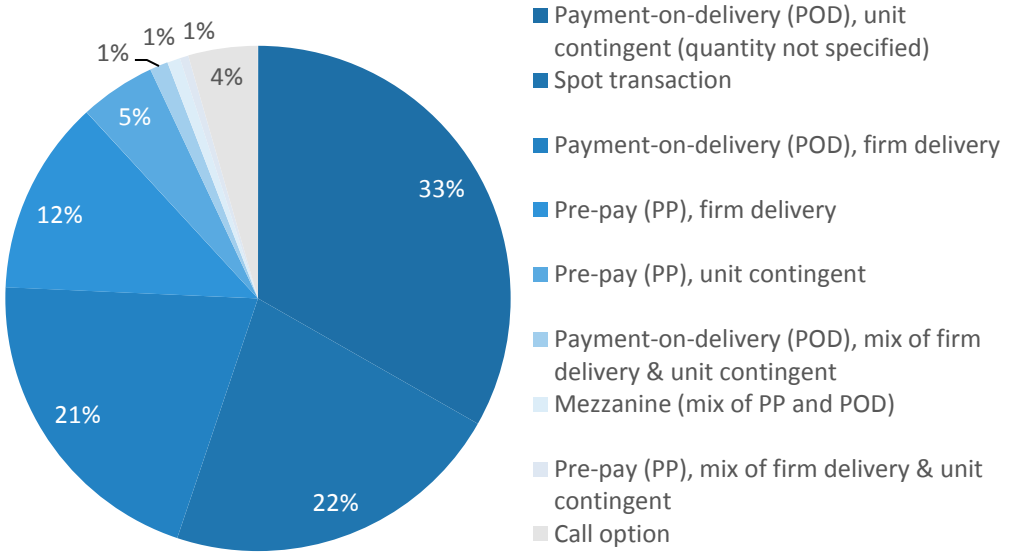
Similar to 2009, the most popular contract structure in 2010 was POD, unit-contingent. This, plus the growing volume of credits contracted via a call option is likely associated with the popularity of forward sales. "We're generally getting better prices for the forward contracts," noted CantorCO2e's Jon Stack. "People are more interested in buying from projects that commit to sell for years from now." Last year saw several forward sales that identified the purchaser as the sole off-taker of all offsets generated.

Buyers were also keen on the certainty of spot transactions ("There's not a lot of risk there and you can see what you're buying," Stack explains) and POD, firm delivery. Although suppliers are reticent to take on the higher delivery risk of a firm delivery, most transactions using this contract type were for credits from recent vintages and "predictable" project types like landfill methane and hydro. Some opted to mitigate delivery risk by agreeing to deliver within a range of volumes, with options built into the contract to allow the purchaser or seller to trade above or below pre-determined quantities.

Pre-pay contracts captured a larger volume of credits than in 2009 (18%, up from 7%). Several pre-pay deals – and particularly those that were unit-contingent – were transacted by donation-based organizations engaged in forestry.

Figure 23: Transaction Volume by Contract Type, OTC 2010

% of Market Share



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 316 observations.

6. Market Infrastructure: Standards and Serials

6.1 Rules of the Game: Standards

Less than five years ago, the availability of transparent protocols to guide project development was limited. Now, with rapid standardizing of the intangible carbon commodity, it is almost impossible to divorce market trends from the work being done by third-party programs. In many ways, the story of the voluntary carbon markets in 2010 follows the storyline of the standards that stood behind 90% of transacted credits.

In recent years, third-party standards raced to keep up with the voluntary carbon markets' storm of experimentation, innovation, and growth. When the market grew subdued in 2009, many standards seized the opportunity to take stock of their position as a "must-have" for credits to compete in the increasingly sophisticated voluntary marketplace. What they found needed to be addressed were some stubborn hurdles to market entry that were stunting market scale.

In response, standards began breaking down barriers that kept small-scale and often charismatic activities – like home weatherization, CFL, and cook stove distribution – in high demand and short supply. In 2010, the Gold Standard tackled transaction costs head on with the pro-poor Community-Focused Micro Scale Scheme that simplifies the fee and verification/validation structure for micro-scale projects in LDCs. Other standards also got with the program, developing guidelines that allow project developers to easily aggregate small or diffuse project activities (Box 4).

In the quest for simplification, several standards revisited the way they bring projects into the system. Is it simpler to credit any activities that meet a technology requirement or benchmark – or to evaluate them on a project-by-project basis? Programs like the Reserve argue that the first approach reduces the time and money required to bring projects online. In 2010, a home weatherization project was the first to use the benchmark approach under the VCS, where CEO David Antonioli says the markets' use of new approaches to additionality is "literally paradigm shifting – getting people away from this idea that you have to operate on a project-by-project basis, so you can begin to really scale up small interventions."

These types of small projects fit the bill for "boutique" shoppers who increasingly looked to standards like Gold Standard, SOCIALCARBON, and the CCB Standards to find credits with storytelling appeal. But charismatic carbon is not confined to micro-scale projects, as buyers discovered in 2010 when the VCS approved four long-awaited REDD project methodologies – and blew the lid off of voluntary investments in large-scale forest conservation. Even before the methodologies were approved (but with credit issuance in sight), buyers transacted millions of VCS REDD credits on promise of future delivery. Others opted for REDD credits that were already deliverable in 2010 under the specialty Plan Vivo Standard.

In fact, specialized forest carbon standards generated 10% of credits transacted OTC in 2010. From veteran forest-based standards like Plan Vivo and CarbonFix to newcomers the BMV Standard, the Forest Carbon Standard International and PFSI, forest-exclusive standards made up one third of all active standards in 2010.

Standards also continued to expand their geographic scope. Some of them leveraged their methodologies to tap into new locations – like the Reserve's expanding list of Mexico Project Protocols and the VCS REDD modules that suppliers can adapt to a variety of ecosystems. Another recent trend is that of the "embedded standard" that is applied exclusively in one geographic region. Brazil's BMV Standard, China's Panda Standard, and Japan's J-VER Standard are all tailored to their unique domestic situations, to meet local demand with a local supply of offsets. Last year, these programs made a significant impact in closing the loop of domestic supply and demand – the kind that already powers the US and Australian markets – as almost all embedded standard credits were sold to local buyers.

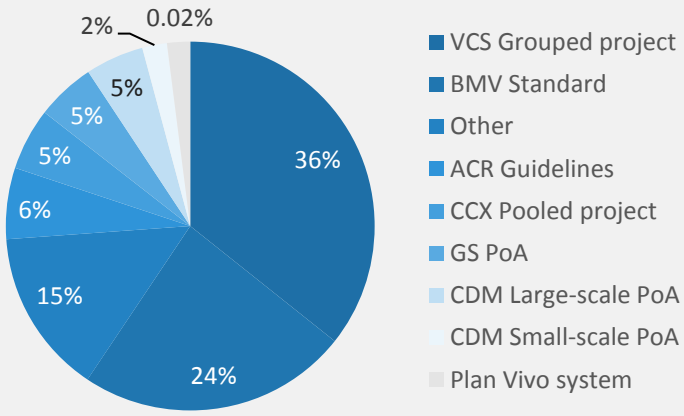
Box 4: Standards Get with the Programme (of Activities)

Buyers want to support small-scale community-based activities. Suppliers want to meet their demands. Everyone wants to make a big impact on climate *and* communities, but face high risks and costs to reduce emissions from small sources in underdeveloped locations. Enter Programmes of Activities (PoAs) and other project grouping tools that allow aggregation of similar projects under a single registered programme. Their aim is to improve regional representation and reduce costs for household-level activities like efficient cook stoves, solar water heaters, biogas and CFL installation to overcome the small-scale threshold and become economically viable.[14]

The PoA modality was introduced under the CDM and is quickly gaining traction among voluntary standards – many of which offer aggregation guidelines in some form. Although no two mechanisms are implemented in exactly the same way, VCS Director of Program Development Jerry Seager explains that at the end of the day, "they all achieve the same essential objective, which is to scale up some of the market's "most-wanted" projects."

Programmatic or grouped projects transacted 16.1 $MtCO_2e$ in 2010. The largest volumes came from VCS Grouped Project Guidelines – which were only formally issued in March 2011 but have long been available. Guidelines under ACR and CCX were mostly used for land-based projects, while the Gold Standard Voluntary PoA boosted the standard's core mission to implement sustainable energy at a meaningful scale. Gold Standard CEO Adrian Rimmer says that as buyers become aware of the importance of carbon-led development, "it is important that the voluntary market demonstrates that high-impact sustainable development projects can be delivered at sufficient scale to truly make a difference in carbon reduction" – or, he cautions, "they will remain forever niche."

Figure 24: Programmatic or Project Grouping Guideline Use, 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 51 survey respondents.

These and other standards also formed relationships with exchanges to tap into the wider world of voluntary buyers. In May 2010, the BMV Standard kicked things off when its creators selected the World Green Exchange to exclusively host an initial 15 $MtCO_2e$ of BMV Standard credits. The following month, the Carbon Trade Exchange (CTX) launched its electronic spot platform and by December had negotiated partnerships with the Gold Standard and ACR – the first time ACR credits have been listed on a formal platform. Gold Standard also made its credits available on the Markit registry in late 2010.

[14] https://www.southpolecarbon.com/_downloads/PoA_Guidebook_SouthPole.pdf

Standards added depth to their programs through new protocols and tools for project developers. Last year saw a range of new or revised protocols for project types like IFM, composting, ODS destruction, and fertilizer management, among other types. In November, ACR launched its *Carbon Reduction Guarantee* forest carbon risk mitigation tool, an alternative to the traditional forest carbon buffer pool for insuring project permanence. VCS also proposed a tool to give credit where credit is due – by creating a type of royalty system for compensating methodology developers $0.02 for every issued tCO_2e that uses their methodology.

Regulators continued to take notice of this rapidly maturing market infrastructure. The phrase "compliance-grade offset" entered suppliers' lexicon in 2009 when the Waxman-Markey bill – and later the Kerry-Lieberman Senate bill – identified an array of voluntary offset standards eligible for compliance including VCS, CCX, Gold Standard, and ACR. Pre-compliance trading of some credits from these standards remained strong until the Senate bill died in mid-2010.

It was then up to WCI members – most notably California – to determine offset eligibility under their compliance programs. And the California ARB came through, transitioning four Reserve methodologies – for US forestry, urban forestry, US ODS, and livestock methane projects – into ARB compliance offset protocols. When the ARB approved the design of its regulation in December 2010, it was "all systems go" for suppliers and pre-compliance buyers hoping to get an edge on the new market for Reserve credits.

6.2 It Takes All Kinds: Third-Party Standards Analysis

In 2010, the voluntary carbon markets saw VCS, the CCB Standards, and the Reserve at the front of the standard lin-up (versus VCS, the Reserve, and CCX in 2009). VCS maintained its historic top slot to transact 27.7 $MtCO_2e$. VCS forestry credits alone transacted almost enough volume to top the charts – over 90% of which were from REDD activities. Solidifying its market share, however, was a diverse portfolio of technologies that included ROR hydro (12%), wind (10%), and every other major project type besides industrial gas and agricultural soil management.

The VCS program achieved a broader geographic scope than ever before, with projects reported in 24 countries and 86% of its transacted volumes sourced from within developing countries. These factors – as well as VCS engagement with regional market hopefuls from Kazakhstan to Australia – helped maintain significant uptake of VCS methodologies.

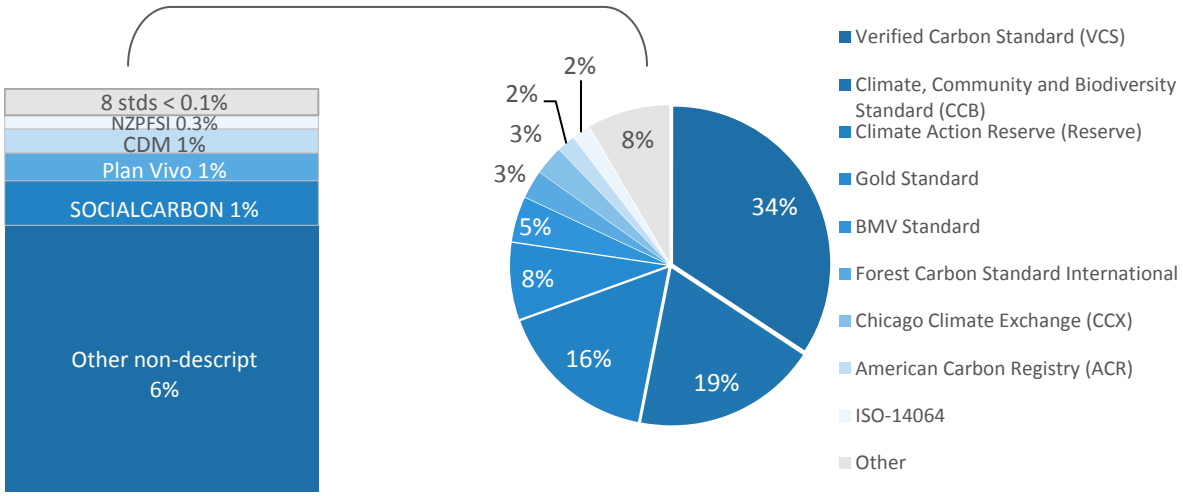
Demand for VCS credits also stacked the odds in favor of the CCB Standards, which certified the second-largest volume of credits transacted in 2010 – up from 1 $MtCO_2e$ in 2009 to 15.5 $MtCO_2e$ in 2010. Because the CCB Standards do not quantify carbon reductions, they are often "stacked" with a carbon standard – primarily VCS – to certify projects' additional social and environmental contributions.[15] The use of the CCB Standards grew alongside projects using the VCS, but also independently as some forest carbon projects that achieved CCB certification were forward sold while waiting for VCS certification. Suppliers said they appreciated the CCB Alliance's efficiency and familiarity with forest systems.

In 2010, projects using the Climate Action Reserve protocols transacted the third-largest volumes in the voluntary market. In spite of last year's upset to US federal climate legislation – a strong driver of demand for Reserve landfill methane credits in 2009 – Reserve credits transacted only 1 $MtCO_2e$ less than the previous year. Market participants, including Reserve President Gary Gero, say the slight drop is related to their potential value as compliance-grade offsets for the still-uncertain California market. "People are anticipating that the credits they're holding will soon be convertible into a regulatory unit," Gero explains, "so they're reluctant to sell today when they could either use them for compliance or sell them for a lot more in the near future." US buyers cornered 96% of the Reserve market in 2010, and pre-compliance was still their primary motivation. Though half of the Reserve's transacted volumes were from landfill methane credits, ODS (25%) and livestock methane (8%) made up another significant share.

[15] Any VCS+CCB or VCS+SOCIALCARBON credits count toward both standards' transaction volumes to illustrate market share. Because suppliers could report up to two standards per transaction, the total volume of credits using third-party standards exceeds total OTC market volumes.

Figure 25: Market Share by Primary and Secondary Standard, OTC 2010[16]

% of Market Share



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 676 observations.

Purely voluntary buyers transacted record volumes (6.4 $MtCO_2e$) from Gold Standard projects. Some suppliers used the Gold Standard's Voluntary PoA to scale large projects from small activities – like highly sustainable and sought-after biomass and energy efficiency projects in Africa (Box 4). Others celebrated a return to business as usual as voluntary buyers revisited Gold Standard's predominant project types (mostly wind) and location (Turkey).

The voluntary market branched out last year to include two new forestry standards – the BMV Standard and the Forest Carbon Standard International. Both standards transacted large volumes in their first year on the market. The BMV Standard's REDD+ standard is tailored to Brazilian projects and Latin American buyers, while the Forest Carbon Standard International appealed to US-based voluntary buyers with its IFM activities. Both standards plan to list their credits on the Markit registry and make the standards publicly available some time in 2011.

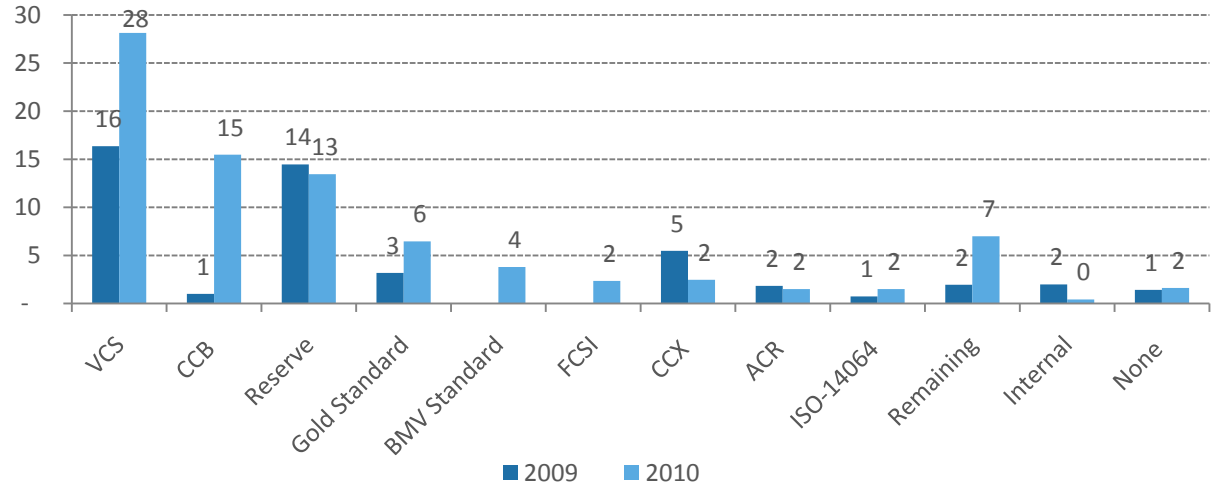
Amidst last year's rapidly changing market dynamics, a few standards lost market share. CCX credits traded OTC saw volumes cut in half through the end of year – until December when one anomalously large transaction of inexpensive CCX offsets (59 $MtCO_2e$ at \$0.017/tCO_2e) almost doubled OTC market volumes. ACR saw less activity in 2010 as the standard continued to focus on writing new methodologies that could bring scale to the program. Among these were methodologies to reduce fugitive methane emissions in the US oil and natural gas sector, for commercial timberlands IFM, N_2O reductions from fertilizer management – and in 2011, ACR's first international methodology for REDD projects.

Among other trends, suppliers in Canada continued to utilize ISO-14064 standards for domestic forestry and energy efficiency projects, while suppliers stacking charismatic SOCIALCARBON credits with the VCS standard rounded out Latin America's supply of non-forest based projects (i.e., fuel-switching and biomass). Transaction volumes were also up for credits from Plan Vivo, where Governance and Policy specialist Alexa Morrison says its system used aggregation tools to help smallholders and community groups "have real carbon impacts as well as powerful benefits in terms of poverty reduction and wider ecosystem services – and reach scale."

[16] This chart illustrates the volume of credits that utilized various standards. Because some projects applied more than one standard ("stacked standards"), these volumes were counted toward both standards. Therefore, volumes in this graph exceed total OTC volume.

Figure 26: Transaction Volume by Primary and Secondary Standard, OTC 2009 vs. 2010

$MtCO_2e$



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: 2009 data based on 320 observations, 2010 data based on 676 observations.

Public sector standards met with mixed success last year. The US and Australian governments shed their respective Climate Leaders and Greenhouse Friendly programs as federal climate efforts fizzled – along with the programs' transaction volumes. The Japanese Ministry of the Environment's J-VER program saw small but growing domestic demand for its pricey biomass and IFM credits. New to this year's survey, voluntary buyers also sought credits from the New South Wales Greenhouse Gas Reduction Scheme (GGAS), the New Zealand Ministry of Agriculture's PFIS and the Alberta Government's greenhouse gas reduction program. Forest Carbon Group's Michael Streck says some European buyers sought "safe" credits like these to balance other riskier investments in their portfolios.

6.3 Standard Costing: Prices by Standard Utilized

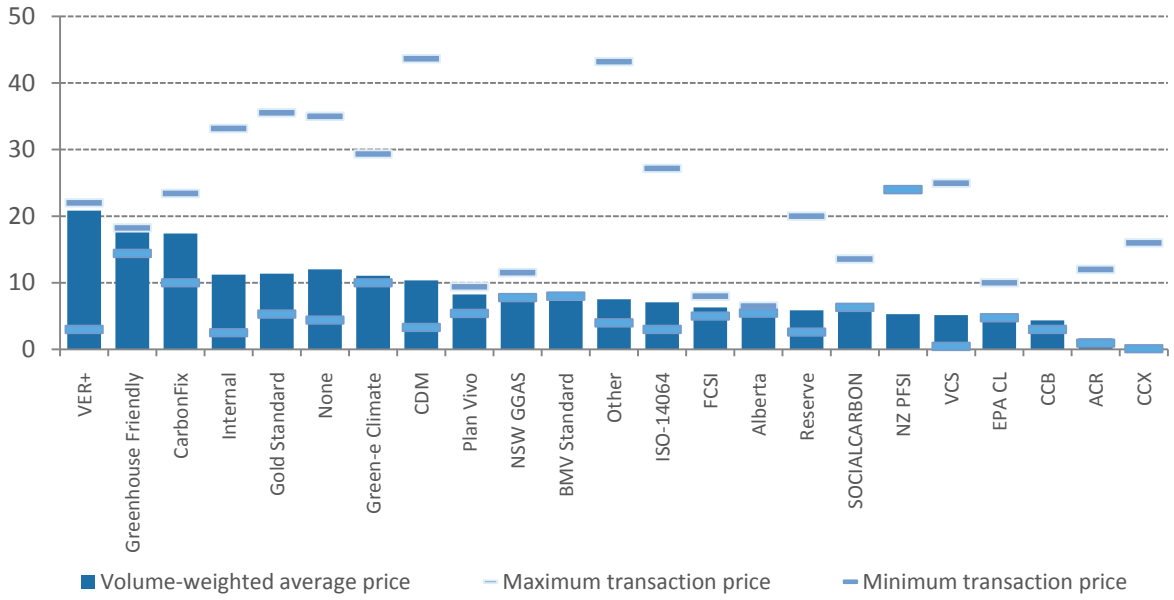
Credit prices are highly stratified across the range of available third-party standards. They can also vary widely within each standard, depending on other project characteristics. In 2010, volume-weighted average prices ranged from $\$0.1/tCO_2e$ for the CCX to $\$119.6/tCO_2e$ for J-VER credits (which as an outlier have been omitted from price graphs).

Higher-priced standards ($>\$8/tCO_2e$) are primarily focused on pure voluntary buyers, especially those who pay premiums for the co-benefits associated with the Gold Standard and SOCIALCARBON certification. Suppliers said scarcity also played a role in pricing for credits from the J-VER, Greenhouse Friendly, VER+ and CarbonFix programs. Overall, more expensive standards outnumbered their lower-priced counterparts 2:1 (versus 1:1 in 2009) and contributed $135 million to overall market value – but less than a fifth of all OTC transaction volumes.

In contrast, average-priced standards set the pace for transaction volumes. Credits from market leader VCS transacted at close to the overall average price of $\$6/tCO_2e$ – but within the program, prices ranged from $<\$1/tCO_2e$ for early vintage wind credits to more than $\$20/tCO_2e$ for biomass and geothermal activities. The Reserve's credits mostly traded at $\$4$-$\$6/tCO_2e$, but suppliers said that ODS, IFM, and livestock credits jumped into the expensive category when ARB gave them the nod in late 2010.

Figure 27: Average Price by Standard, OTC 2010

US$/$tCO_2e$



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 462 observations

CCX and ACR credits again traded at the low end of the average price spectrum, where they were devalued for their early vintages, project type oversupply (the case with ACR landfill methane) or ongoing concerns about CCX credits' additionality and integrity. Nevertheless, some suppliers decided to "work with what they had" and bundled CCX credits' low-priced carbon attributes with other environmental credits/commodities to obtain a price premium.

Table 3: Offset Standards in the Voluntary Carbon Markets, 2010						
Standard	**Description**	**Co-Benefits Requ'd?**	**Registry**	**Geographic Scope**	**Total Projects Registered**	**Total VERs Verified [1]**
American Carbon Registry Standard	Certification program for offsets, and an emissions reporting registry	No	Registry incorporated	Global	25	31.3 $MtCO_2e$
Brasil Mata Viva Standard	Certification program for forestry offset projects	Yes	Markit	Brazil	9	0
CarbonFix Standard	Certification program for forestry offset projects	Yes	Markit	International	4	0.7 $MtCO_2e$
Chicago Climate Exchange Offset Program	Internal system for offset credits verified to CCX standards	No	Registry incorporated	Global (historically US-focused - 60%)	340	83.5 $MtCO_2e$
Climate Action Reserve	Registration and verification program for offsets and registry	No	Powered by NYSE Blue	US and Mexico currently; Canada soon	286	11.7 $MtCO_2e$
Climate, Community & Biodiversity Standard	Validation & verification standard for land-based carbon offset projects	Yes	Projects on website; on VCS registries, CCB label can be added to VCUs issued from projects that are also CCBS verified	International	32	VERs not issued
EPA Climate Leaders Offset Guidance	Guidance for companies on voluntary offset use	No	No	International	4 approved projects	None
Gold Standard	Certification program for renewable energy and energy efficiency carbon offset projects	Yes	Powered by NYSE Blue	International	247	4.6 $MtCO_2e$
Green-e Climate	Certification program for retail offset products	No	Registry incorporated	International	23	176.2$MtCO_2e$ certified
ISO 14064/5	Certification program emissions reporting, offset projects, and carbon credits	No	No	International	Unknown	Unknown
J-VER	Verification and certification scheme for offset projects	No	J-VER	Japan	75	34,148 tCO_2e
Panda Standard	Certification program for offsets, and an emissions reporting registry	Yes	Under development	China	2 pilot projects selected	0
Plan Vivo Standards	Certification program for forestry offset projects	Yes	Markit	International	5	1 $MtCO_2e$ issued and retired
SOCIALCARBON Standard	Validation program for offset projects	Yes	Markit registry	South America, Asia & Europe	37	1.5 $MtCO_2e$
VER+ Standard	Certification program for offset projects and carbon neutral products	No	TÜV SÜD BlueRegistry	International	32	3.7 $MtCO_2e$
Verified Carbon Standard	Certification for offset project & carbon credits	No	Project Database; VCS registry system powered by Markit, NYSE Blue, and CDC Climat	International	555 validated and registered	49.4 $MtCO_2e$

Source: Ecosystem Marketplace, Bloomberg New Energy Finance. Note: Data in table is accurate as of December 2010.

[1] Total refers to the entire volume of VERs verified during Standards' existence, as of December 2010, except where otherwise noted.

6.4 Registries: Cataloging Carbon

To inspire consumer confidence in the quality of carbon offsets as financial instruments, a growing number of suppliers and standards are turning to registries for clarity of ownership and transparency. The use of registries to facilitate tracked issuances grew again in 2010, when suppliers reported that 66% of transacted credits were or will be registry-issued – up from half of credits transacted in 2009.

Last year, registries continued to weather a storm of acquisitions and market positioning aimed at increasing their ability to adapt to the carbon markets' swiftly changing dynamics. Registries looked to the horizon for emerging marketplaces, regulatory frameworks – even other environmental markets – where voluntary carbon projects might play a future role.

Kathy Benini, Managing Director and Global Head of Markit Environmental Products, says flexibility is a must for registries to continue to service voluntary markets – especially as project types like REDD intersect both the regulatory and natural landscapes. "The goal now is to make registries flexible enough to respond to policies as they're handed down or to new market opportunities as they come up, whether in forest carbon or other ecosystem markets."

The term GHG "registry" can describe systems that simply track organizations' emissions and reductions, or "accounting registries" that serialize and track carbon credits. For the purpose of analyzing carbon credit transactions, this report exclusively follows the latter. Accounting registries track verified emissions reductions or allowances after they have become carbon credits – and in a few cases before credits are issued. Registries often utilize serial numbers as an accounting tool, and generally incorporate screening requirements such as third-party verification to a specific offset standard.

Credit-accounting registries may be *independent*, meaning that they accept credits from a variety of standards, or *standard- or exchange-specific*, meaning they are built specifically to serve a particular standard or exchange. Several registry companies serve as infrastructure providers for standards and/or serve as independent registries. As of mid-2011, we have identified 11 existing credit-accounting registries that can be categorized as independent or standard-specific, and three infrastructure providers that serve a variety of standards and in some cases also serve as independent registries. These registries are detailed in Annex B and summarized at the end of this section.

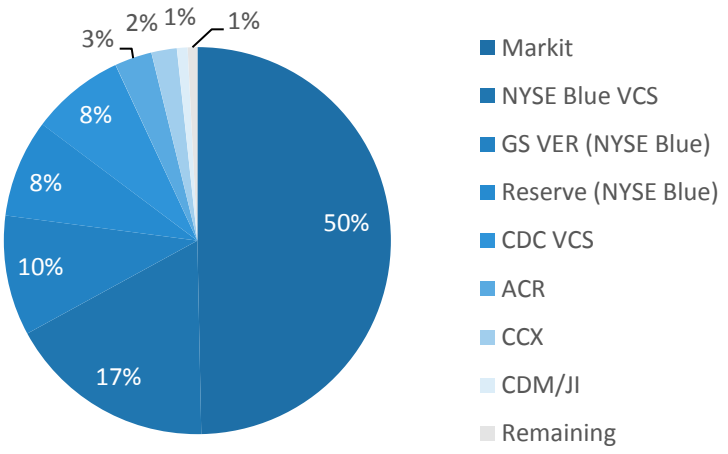
6.5 The Issuance at Hand: Registry Usage in 2010

Registries are increasingly transparent and their market share can be examined from many angles. In keeping with our methodology, we first determine registry market share by the volume of supplier reported *transacted* credits that were issued by various registries – or that they intend to list on a registry once the credits are verified. We then explore the volume of credits that registries reported as *issued* in 2010. We do not track the volume of credits that were *transferred* between registry accounts in 2010, because the information is often not available.

Figure 28 illustrates survey respondents' registry usage by transacted volume in 2010. As the top-grossing registry, Markit Environmental Registry users reported transacting 21.6 $MtCO_2e$ issued by Markit, up from 2 $MtCO_2e$ in 2009. This growth partly resulted from its engagement with project developers in emerging markets – especially in Asia and Latin America. For example, since mid-2010, Markit has been working closely with different regional governments, such as the Brazilian State of Amapá, to create sub-national registries throughout the region, with a focus on REDD but an eye on other environmental assets like water and biodiversity credits.

Markit also benefitted from being one of three registries in the VCS Registry system that, along with the CDC VCS and NYSE Blue VCS registries, grew alongside the popular VCS standard. Because many VCS credits were forward-sold REDD credits, some of this volume has not yet found its way to a registry. In some special cases, though – and with compliant project documentation including a validation report – Markit does help facilitate the tracking of forward credits that have not yet been issued. The registry assigns potential emissions reductions a temporary serial number and lists them in the registry as "pending issuance units" (PIUs). Once they are verified under their respective standard and credits are issued, Markit cancels the PIU to avoid double-counting.

Figure 28: Transaction Volume by Registry Utilized, OTC 2010



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: This figure excludes the volume of OTC credits (33%) that were reported as not tracked in registries. Based on 107 survey respondents.

Though the infrastructure around forward sales is still emerging (to date, Markit has designated 1.2 $MtCO_2e$ PIUs based on VCS standards and substantial additional PIUs based on other standards), ecosur America's Timothee Lazaroo says his clients appreciate the transparency PIUs bring to early stage projects – especially REDD. "They have more trust in PIUs than in generic pre-validated VERs because they can actually see that the standardization process is in place and moving forward."

With a few exceptions, registry market share again mirrored standard usage as standard-specific registries entered the market mainstream. Credits listed on the NYSE Blue (formerly APX) VCS registry transacted the second-largest market share among registries, followed by other NYSE Blue-powered registries for Gold Standard and the Reserve credits. Together, they captured another 36% of market share. In 2010, the registries' original infrastructure provider, APX Inc., joined forces with BlueNext Exchange operator NYSE Euronext to form NYSE Blue – with the intent to increase their platforms' flexibility as new buyers, sellers, and environmental commodities emerge in response to regulation.

Rounding out the VCS Registry System trifecta was the CDC VCS Registry. The registry's former operator, Caisse des Dépôts, handed over the keys to the registry (and its 40% stake in the BlueNext exchange) to its wholly-owned subsidiary CDC Climat in February 2010. Throughout the year, the CDC VCS registry managed to grow its market share among predominantly European suppliers and buyers.

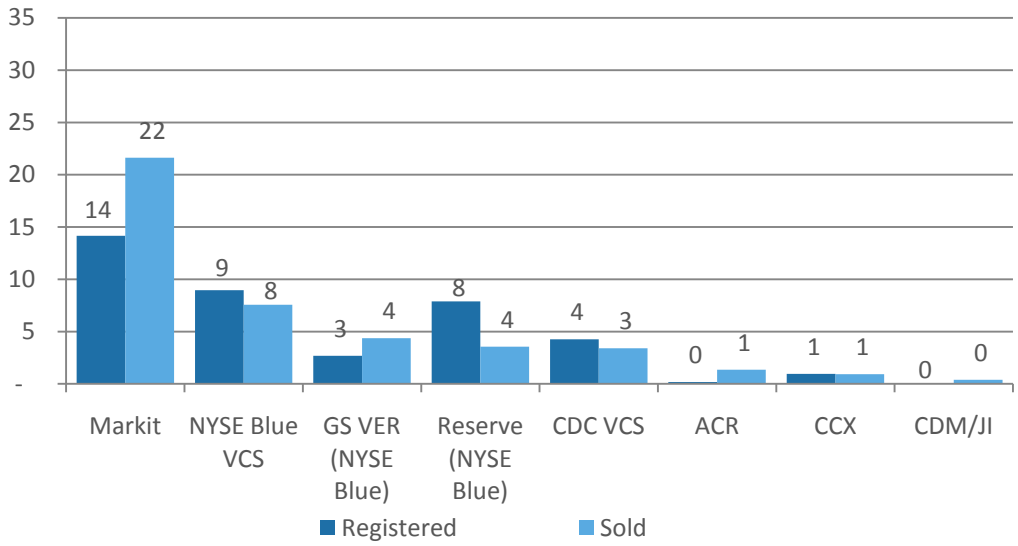
A few registries saw setbacks in 2010 in line with lower transaction volumes from their respective standards, including CCX-registered credits sold bilaterally and credits issued by ACR under its own standard. Also echoing standard use, place-and government-based registries saw small but growing volumes – including Japan's J-VER registry and the CSA GHG Registry. These registries are captured in the "remaining" category, along with the Manitoba Green Registry that had not yet launched in 2010 but did issue 1.3 $MtCO_2e$ of offsets "made in Manitoba."

Figure 29 illustrates both the volume of registered credits that suppliers transacted and the volume of credits that registries reported as issued in 2010. Issuance is not tied to transactions, but is nevertheless how most registries measure their market share. In this case, Markit once again took the lead with 14.2 $MtCO_2e$ issued by multiple standards, followed by the NYSE Blue VCS (9 $MTCO_2e$) and the Reserve (7.9 $MtCO_2e$) registries. All major registries issued more credits in 2010 than in the previous year.

Comparing transactions with issuances highlights several market trends – most notably that Markit's transaction volumes began to catch up with its large volume of issuances in 2009 and 2010 (24 $MtCO_2e$). The same is true of the Gold Standard and ACR programs, which suppliers claimed were generally oversupplied, but in fact transacted more credits than were issued by their registries. Reserve registry users suggested that the registry saw more issuances than transactions in 2010 as project developers hold their credits until the California program offers more clarity – and also higher prices.

Figure 29: Registered vs. OTC Transacted Volumes, 2010

$MtCO_2e$



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Registered volumes provided by registries. Transaction volumes based on 107 survey respondents.

Table 4: Registry Infrastructure Providers

Registry or Infrastructure Provider	Market Position	Entities Served (in case of Infrastructure Provider)	Transparency	Total Projects Listed (as of December 31, 2011)	Total VERs Issued (as of December 31, 2011)[1]
BlueRegistry	Quasi- independent	VER+ and others	Project info public; List of account holders public; Listing eligibility requirements clear	32	3.7 $MtCO_2e$
CDC Climat (Caisse des Dépôts)	Infrastructure	VCS	No public info	25	5,420,990 VCUs
GHG Clean Projects Registry	Independent	Not applicable	Project information public; List of account holders public; Listing eligibility requirements clear	126	6.5 $MtCO_2e$
Markit Environmental Registry	Infrastructure/ Independent	VCS; BMV; Carbon Fix; CCB Standards; Cosain; ISO 14064; Gold Standard; Permanent Forest Sink Initiative (PFSI); Plan Vivo; Social Carbon	Most project info public; Some account info public; Listing eligibility requirements clear	350 (public only)	75 $MtCO_2e$
NYSE Blue	Infrastructure	VCS, Gold Standard, Climate Action Reserve	Project info public; Account info public; Listing eligibility requirements clear	840	32 $MtCO_2e$

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

[1] *Total refers to the entire volume of VERs or projects registered during the lifetime of the registry as of December 2010, except where otherwise noted.*

Registry	Affiliated Standard/ Exchange	Infrastructure Provider	Transparency	Total Projects Registered (December 31, 2011)	VERs Registered[2] (as of December 31, 2011)
American Carbon Registry	American Carbon Registry Standard	Internal	Project info public; All account info public; Listing eligibility requirements clear	25	31.3 $MtCO_2e$
CarbonFix Registry	CarbonFix	Markit	Project info public; Some account info public; Listing eligibility requirements clear	29	145,637 tCO_2e
CCB Standards Website	CCB	Projects on website; on VCS registries, CCB label can be added to VCUs issued from projects that are also CCBS verified	Project info public; Some account info public; Listing eligibility requirements clear	32	Not Applicable; CCB Standards does not issue VERs
Climate Action Reserve	Climate Action Reserve	NYSE Blue	Project info public; List of account holders public; Listing eligibility requirements clear	286	11.7 $MtCO_2e$ issued; 0.5 $MtCO_2e$ retired
CCX Offsets[17] Registry	CCX	Internal	Some project info public; Some account info public; Listing eligibility requirements clear	340	83.5 $MtCO_2e$
Gold Standard Registry for VERs	Gold Standard	NYSE Blue	Project info public; Most account info public; Listing eligibility clear	247	4.6 $MtCO_2e$ issued; 2.1 $MtCO_2e$ retired
J-VER Registry	J-VER	4CJ Managed	Project info public; Some account info public; Listing eligibility requirements clear	75	34,148 tCO_2e
Plan Vivo Registry	Plan Vivo	Markit	Project info public; Some account info public; Listing eligibility requirements clear	5	1 $MtCO_2e$ issued and retired
SOCIALCARBON® Registry	SOCIALCARBON® Standard	Markit	Project info public; Some account info public; Listing eligibility requirements clear	37	1.5 $MtCO_2e$
VCS Registry System	VCS	NYSE Blue, Markit, Caisse des Depots	Full transparency on all project and VCU information	555 (Markit: 258; NYSE Blue: 284; CDC: 13)	49.4 $MtCO_2e$ (APX: 16.8 $MtCO_2e$; Markit: 27.2 $MtCO_2e$; Caisse des Dépôts: 5.4 $MtCO_2e$)

Source: Ecosystem Marketplace, Bloomberg New Environmental Finance.

[1]Fee information availability varies among standards; only publicly available information is presented in this table.

[2]Total refers to the entire volume of VERs or projects registered during the lifetime of the registry as of December 2010, except where otherwise noted.

6.6 Trading Platforms: Dedicated to Deals

Voluntary OTC transactions have traditionally shared the marketplace with formal trading activities on the CCX (Box 1). In 2007, however, other platforms began carving out a spot in the OTC market when Climex-enabled VER trades on its auction platform and from then to the present, governments, standards, and registries have enlisted VER exchanges to connect voluntary emissions reductions with international finance.

[17] Includes offset credits transacted on the exchange and privately negotiated.

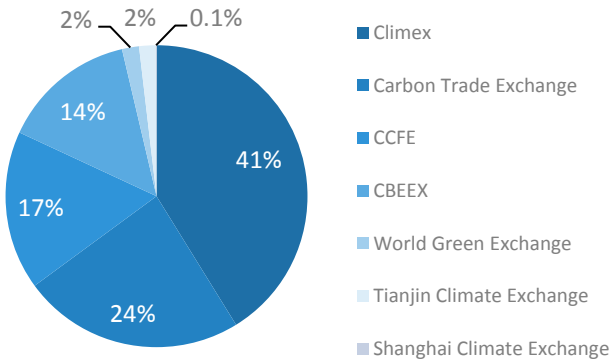
Climate exchanges provide an electronic platform for voluntary carbon market players to clear contracts for offsets, allowances and environmental derivatives like the CCFE's futures and options contracts. Within the marketplace, the term "exchange" describes a variety of products. This section details exchanges that actively listed and transacted VERs in 2010 and can be broken down into two types. *Independent VER exchanges* host credits from a variety of standards and project types, typically on an online platform (like CTX or World Green Exchange). *Dedicated VER exchanges* are designed with one credit type (CCFE Reserve contracts) or domestic market in mind (CBEEX).

In 2010, the volume of VERs transacted across all non-CCX platforms was again small compared to the overall size of the voluntary market (1%) and other regulated carbon exchanges. Trading volumes remained relatively steady in 2010, when suppliers reported that 1.7 $MtCO_2e$ were voluntarily transacted on a platform or exchange, though many suppliers did not disclose the platform used. The rest reported transacting two thirds of exchange volumes on independent platforms – Climex, CTX, and World Green Exchange.

Climex hosted a handful of VER auctions for VCS Verfied Carbon Units (VCUs) in 2010, where buyers ranged from Rabobank to Wagenplan. Close behind Climex was CTX, a new platform for spot trading VERs that only traded for a partial year but cast a wide net in search of partners and linkages to ensure its uptake. In March 2010, CTX launched a strategic alliance with the Markit Registry to provide an electronic link between registry account holders and the exchange. Later in the year, CTX also partnered with Gold Standard and ACR to list their credits on the exchange, and with Westpac Bank to provide the financial structure for facilitating trades on CTX. All of these developments went live in early 2011.

Figure 30: Market Share for VERs transacted on Exchanges and Trading Platforms, OTC 2010

% of Market Share



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 133 respondents and 5 trading platforms.

Speaking about recent CTX developments, founder and CEO Wayne Sharpe predicted that the voluntary carbon market will see more activity via exchange mechanisms from those voluntary buyers that find "the process of buying offsets itself to be an impediment to going carbon neutral, partially offsetting their emissions or even selling credits as a retailer." He explains, "Efficient platforms give buyers pay-as-you-go access to credits – including retailers who otherwise have to sit on a lot of inventory – and for originators provide a low cost, efficient route to market."

While the quest for transparency and efficiency led the majority of suppliers to independent exchanges, others built or used dedicated exchanges to incubate domestic carbon marketplaces. Governments, foundations, and NGOs worldwide view voluntary exchanges as a pivotal component of capacity- and market-building programs – as evidenced by the startling number of dedicated exchanges currently in use or development.

The most active dedicated exchanges are found in China, where the government announced pilot low-carbon programs in eight cities and five provinces in 2010. Many of these programs are tied to regional exchanges, four of which were captured in survey responses. Our respondents' most widely used China-based exchange is the CBEEX, which partnered with BlueNext to develop its platform in 2009. CBEEX also supports the development of China's domestic Panda Standard, alongside partners BlueNext, Winrock International and the China Forestry Exchange. The first Panda Standard credits were transacted via CBEEX in March 2011.

In 2010, the *Shanghai* Environment and Energy Exchange (SEEE) also reached across the water to sign an MOU with California-based Pacific Carbon Exchange (PCarbX) to help develop carbon markets in China and the US. Closer to home, some offsets used to neutralize Shanghai Expo vendor emissions were transacted on the SEEE in 2010 – however, these

volumes are not publicly available. We also identified market-based initiatives in other developing regions that launched or continued to develop dedicated exchanges in 2010. These include the Kenya-based ACX, Zambia-based Africa Carbon Credit Exchange (ACCE), Colombia-based Mechanism for Voluntary Mitigation of Emissions of Greenhouse Gasses, Dominican-based Caribbean Basin Climate Exchange (CBCE), and most recently the Chile-based Santiago Climate Exchange (SCX) launched in April 2011.

Some of these programs are experiencing an uphill battle to build market capacity before "going live" with pilot trades. Karin Sosis, a program coordinator at the ACCE, says she's not surprised by the delays encountered by platforms in developing countries. "You can't create an exchange in a political vacuum," she explains. "There's a lot of work required in terms of getting political entities to okay the program and private entities to put money into it – and at the end of the day, you don't want to get it wrong."

Established platforms, too, faced challenges to facilitating non-OTC voluntary transactions in 2010. For example, the Brazilian Securities, Commodities and Futures Exchange (BM&FBOVESPA) offered for auction 180 $MtCO_2e$ of SOCIALCARBON credits in April 2010 – but found no takers.

These challenges haven't stopped exchanges from trying to get it right. Green Exchange (GreenX) CEO Tom Lewis commented to a carbon conference in March 2010 that the alleged fraudulent activity in the compliance markets confirms the need for reliable and transparent transaction systems. "One of the primary motivations for the maturation of exchanges that we're seeing now is the need for certainty."Looking ahead, GreenX is one of several infrastructure providers currently developing exchange contracts for ARB-approved offsets under the Reserve.

Table 5: Examples of Trading Platforms in the Voluntary Carbon Market

Exchange	Host Company	Credits Traded	Formal Affiliations with Voluntary Standards, Registries, Schemes	Launch Date of VER Trading	VER-related Fees (US$ except where otherwise specified)
Africa Carbon Exchange	ACX	CERs, VERs (multiple standards)	To Be Determined	2011	Unknown
Carbon Trade Exchange	CTX	VERs (multiple standards)	Markit	2010	7% (5% on the sell side and 2% on the buy side)
China Beijing Environment Exchange	China Beijing Equity Exchange	VERs (multiple standards)	BlueNext	2008	Unknown
Climex	Climex	EUAs, CERs, ERUs, RECs, VERs (multiple standards)	None	2007	Auctioneer: 1.75% of transacted amount; Buyer: 1-1.75% of transacted amount
Green Exchange	Green Exchange Holdings	CRTs, EUAs, CERs, RGGI, NOx and SO_2 futures and options emissions allowances	Climate Action Reserve	2010	$2.50/contract (Contract = 1,000 CRTs)
Tianjin Climate Exchange	InterContinentalExchange and The China National Petroleum Company	VERs and other major pollutants (CDM and EMC development consulting)	To Be Determined	2009	Unknown
World Green Exchange	World Energy Solutions, Inc.	RECs, RGGI, VERs (multiple standards), VERRs (Canada's GHG CleanProjects Registry), Alberta Offsets	Markit, Gold Standard, Canadian Standards Association (GHG CleanProjects Registry) , BMV Standard	2008	Brokerage fee: 1-1.5% of total transaction per side

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Information is accurate as of December 2010.

7. Buyer Breakdown: Voluntary Market Customers

In 2010, the road to OTC market growth was paved with purely voluntary intentions. Almost 75% of all OTC volumes were transacted by carbon-conscious buyers who directly or through resellers offset emissions – some of them for the first time. The buyers' market that emerged in 2009 also became business-as-usual last year, requiring suppliers to meet savvy buyers on their playing field.

"Three years ago we talked to companies who said, 'Climate change? Tell me about that,'" remarked Freddy Sharpe, CEO of Australia-based Climate Friendly. "Now they come to us with a pre-measured footprint and specific requirements for this many tonnes of VERs from this project at this location and this price. Buyers are much more informed and aware than they were even a year ago."

Reportedly, many buyers were schooled by the markets' mushrooming class of online project information and on a deeper level by their exposure to risk. Buyers' desire to mitigate climate-related risk may have brought them to the market, but suppliers said that their accumulated exposure to other risks – like financial crisis, negative press or regulatory uncertainty – led buyers to approach carbon offset purchases with care in 2010.

Given the ever-present diversity of buyers in the voluntary marketplace, demands were diverse. New buyers in particular sought credits from "tried-and-true" projects like clean energy-based sustainable development projects – and at entry-level prices. "The new buyers in this environment are very cost-conscious," observed Gold Standard CEO Adrian Rimmer, "and they're also following a pretty standard path already laid by buyers before them."

As in previous reports, that same path led many purely voluntary buyers to projects with community and environmental co-benefits beyond the carbon reduction itself. Adding a twist, buyers in 2010 were also on the lookout for credits that could potentially have value in other consumer markets – like combining forest management and coffee production. Pieter van Midwoud from the CarbonFix Standard described this full circle approach to a project in Peru where a UK-based coffee manufacturer purchased both the coffee and the credits generated by the project to neutralize its product emissions. To varying degrees, other buyers also linked their offset preferences directly with business activities (Box 5).

Over and over again, suppliers pointed to this corporate shift from "carbon solutions to climate solutions," as buyers sought to sync their offset purchases with sustainability targets for energy, water, biodiversity, and waste footprints. ClimateCare Executive Director Edward Hanrahan said that while his company saw a "comeback" for carbon neutral pledges, "what we're seeing now is that carbon is one of many metrics of sustainability that people are reporting on. There's a lot of work being done to place value on and measure a set of outcomes from each project in addition to the pure carbon piece."

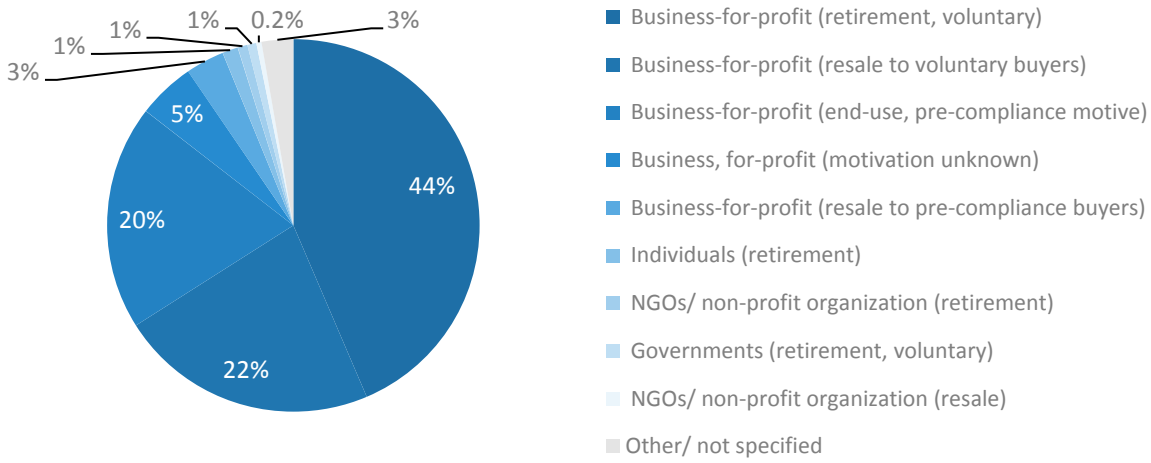
7.1 Obtaining Offsets: Who's Buying?

To learn more about demand from the organizations and individuals that purchased offsets in 2010, we asked suppliers to describe their customers by the percentage of credits sold to each type, including:

- Business for profit (retirement, voluntary)
- Business for profit (resale to voluntary buyers)
- Business for profit (end use, pre-compliance motive)
- Business for profit (resale to pre-compliance buyers)
- Business for profit (motivation unknown)
- Governments (retirement, voluntary)
- NGOs/non-profit organizations (retirement, voluntary)
- NGOs/non-profit organizations (resale)
- Individuals (retirement, voluntary)
- Other/not specified

From suppliers that reported knowing their buyers' motivations, voluntary buyers motivated by credit retirement transacted 47% of volumes or 22.9 $MtCO_2e$ in 2010, up from 19.3 $MtCO_2e$ reported by suppliers in 2009. Another 22% of credits were transacted by resellers that will market the credits to purely voluntary buyers for retirement.

Figure 31: Transaction Volume by Type of Buyer, OTC 2010
% of Market Share



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 348 survey respondents.

Of these purely voluntary buyers, for-profit businesses transacted 21.5 $MtCO_2e$ – 119% more than the previous year – as economic recovery unfroze many CSR budgets. Even in recession, some companies upheld their offsetting pledges and, as Hanrahan pointed out, "many more made commitments through 2012 and beyond." Entities as diverse as Puma brand parent company PPR group, News Corp, the NedBank Group and Timberland outdoor clothiers achieved carbon neutrality in 2010. Others like Jaguar Land Rover and Google continued to buy offsets as part of their multi-year purchase commitments.

Pre-compliance buyers also tried to take the long view on carbon offset purchases but saw regulatory signals were fading fast for federal programs and too dim to act on the California market until the last quarter. "Some of the buyers that were only interested in federal cap-and-trade are now kind of defunct," notes Evolution Markets' Lenny Hochschild, "but the overall sentiment for buyers still in the market is a little frustration mixed with cautious optimism about west coast programs." Overall, pre-compliance credit end-users captured 19% of OTC market share in 2010, down from 25% in 2009.

In last year's report, survey respondents identified the volume of credits they sold to resellers – including retailers and wholesalers – that were building a portfolio of credits to sell to final buyers. This year, we broke down the reseller category to also capture the makeup of resellers' final buyers. Purchasing the second largest volumes in the marketplace were resellers marketing their credits to voluntary buyers with the intent to retire credits. Resellers intending to pass their credits on to pre-compliance end users made up a much smaller proportion of buyers (3%).

Individuals still represented a small percentage of the market due to the relatively small size of each transaction. Individuals purchase credits to offset their personal emissions or support conservation or development efforts, among other reasons. In 2010, respondents had another motivation to add to the list. "Some retail customers are looking at carbon credits as investments," reported Matthew Sullivan at Carbon Advice Group. Infrastructure providers made similar observations based on changes in registry activity. On registry administrator noted, "We've always had aggregators selling to individuals and then retiring credits on their behalf. Now, instead of being retired right away, it looks like individuals are starting to hold these credits as investment vehicles."

Box 5: Buyers Tell All

This report focuses on the voluntary carbon markets' supply-side, which in many ways captures demand-side trends – after all, every transaction expresses a project's appeal to buyers. But in a marketplace as decentralized and dynamic as this, suppliers are constantly challenged to understand buyer motivations. Why do buyers… buy? What do they look for in a project and why? Here, a few of the markets' most visible buyers tell all.

Connecting with customers and learning through investment are recurring themes among companies. In 2011, **General Motors** launched the Chevy carbon reduction program that goes "above and beyond GM's CSR activities" to invest $40 million in US-based projects over the next 3-5 years. Why? "It's about interfacing with our customers," says Mike Robinson, GM's VP of Environment, Energy and Safety, "but also incubating new energy ideas. As these projects come to fruition, we hope to learn a few things along the way."

UPS spokesperson Elizabeth Rasberry says the shipping company had similar aims when it launched its carbon neutral shipping option that expanded to 35 locations internationally in 2010. "We had an opportunity because we are so particular and obsessive about shipping data. We know that we're a big part of our customers' footprint, but they can't obtain that data otherwise."

Dutch financial institution **Rabobank's** 1.3 $MtCO_2e$ 2010 investment in Gold Standard credits helped fulfill its ongoing carbon neutral pledge. "Carbon offsetting is in line with our sustainability and CSR aims," explains Gregor Flodin, the bank's Executive Director of Carbon Origination and Structuring.

Buyers typically have a clear process and set of criteria for selecting projects. Google's Jolanka Fischer says the internet megalith prefers sourcing credits for its emissions pledge from straightforward projects. "Additionality trumps charismatic carbon – if the projects are boring, it's a good sign," she explains. "We like them to be straightforward and 'cookie cutter' with solid data – so we can understand all the revenue streams, the financial additionality case, etc." Similarly, Rasberry says UPS purchases – which it sources through the CarbonNeutral Company – have strict environmental quality requirements that come before project location and other attributes. "Our credits don't necessarily align with the region where the shipment was made – if we don't find any projects in South America that align with what our goals are then we look elsewhere."

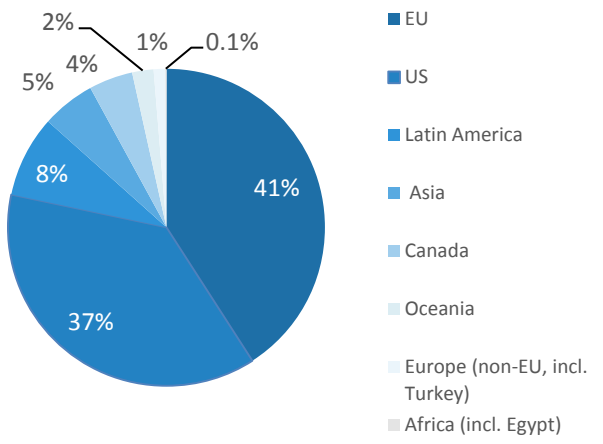
On the other hand, Flodin says Rabobank's projects "are selected to fit with the bandwidth of Rabobank." He explains, "Internationally – particularly in Asia and Latin America – our activities are focused very much on the food, agriculture, and renewable energy sectors. So the projects are sourced from those sorts of areas." GM went a different route for designing its project criteria, consulting an advisory committee that included experts from CAR, the Climate Group, Clean Air-Cool Planet, and Bonneville Environment Foundation, which will be managing project selection.

As the newest company to publicly commit to a large, multi-year offsetting program, Robinson says he hopes other companies will pursue programs similar to GM's that are suited to their business models, "whether it's through their consumers or communities or their own treasuries." He continues, "We looked at alternative ways we could make a difference to separate Chevrolet as a brand that stands for something – and so far we've been very pleased with what's happening in the offset marketplace."

7.2 Buyers without Borders: Customer Location

Buyer locations spanned the globe in 2010, but European buyers came out on top to transact 21 $MtCO_2e$ in 2010. Over the years, European buyers have viewed voluntary action as complementary to regulation. Increasingly, European buyers are also responding to the voluntary markets' function of "minding the gap" between Europe's existing regulatory framework and nebulous post-2012 scenarios. Jonathan Shopley, Managing Director for the CarbonNeutral Company, remarked, "The more complications there are in international negotiations, the more our European clients are saying 'enough's enough' – we have to know how to incorporate the cost of carbon in our business ourselves.'"

Figure 32: Transaction Volume by Customer Location, OTC 2010
% of Market Share



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 248 survey respondents.

One fifth of credits sold to Europeans were land-based. Europe's NGO community has long held reservations about forestry's permanence and accounting, but Forest Carbon Group's Micheal Streck said he is seeing a "coalition of the willing" of NGOs that support forestry projects – if reductions occur under relatively strict criteria. "It's certainly not the no-go area it was a few years ago," he noted.

Last year, volumes transacted to buyers in the US fell to 19.2 $MtCO_2e$ from 21.8 $MtCO_2e$ in 2009. While the volume of credits purchased by purely voluntary buyers in the US held steady from 2009-2010 (8.5 $MtCO_2e$), demand from both pre-compliance buyers and US-based resellers fell sharply as regulatory uncertainty induced what one supplier called "climate change fatigue."

The same was true for buyers in Oceania, whose already minuscule market share fell again as the Australian and New Zealand governments struggled publicly with the climate change debate and merits of a carbon price. Meanwhile, suppliers reported a relatively higher volume of credits sold to buyers in Canada, where originators interfaced directly with purely voluntary end users or sold to resellers with a voluntary customer base.

As buyer locations go, the story of the year came out of the developing world, where volumes transacted to buyers in Latin America and Asia eclipsed those seen in locations like Oceania or Canada. Buyers in developing countries, when combined, transacted 7.1 $MtCO_2e$ – increasing their market share from 2% in 2009 to 14% in 2010. Both Latin America and Asia benefitted from their regions' intensified focus on fostering domestic markets through mechanisms like exchanges, regional registries and place-based project standards (Section 6). As a result, domestic buyers in both cases almost exclusively purchased "home grown" credits.

Buyers in Latin America – as in the rest of the world – focused on forestry, given its vital role in the regional landscape and overt cues from developed country regulators, the international climate community and Latin America's own large conservation foundations and regional governments.

In China, too, the government intensified its focus on raising a domestic market through its own State Forestry Administration and NGOs like the China Green Carbon Foundation and the Global Environmental Institute. Working through China's piloted voluntary market infrastructure, domestic buyers in 2010 purchased credits to offset conferences and events, neutralized local transit emissions with carbon neutral transport cards,[18] or donated their airline points to "finance" afforestation initiatives. Also in 2010, CBEEX launched the pledge-based China Carbon Neutral Alliance, similar to an initiative launched by the TCX in late 2009.

CBEEX, along with partners Winrock International, BlueNext and the China Forestry Exchange, also focused on bringing to market China's domestic Panda Standard. In early 2011, domestic realtors Franshion Properties purchased the standard's first VERs on a forward basis for \$9.1/tCO_2e. China-based suppliers expect that domestic buyers will have a strong preference for Panda Standard credits, given the standard's emphasis on local sustainable development alongside carbon reductions.

[18] http://www.ppg.com/en/newsroom/news/Pages/20101111C.aspx.

8. On the Horizon: Market Projections

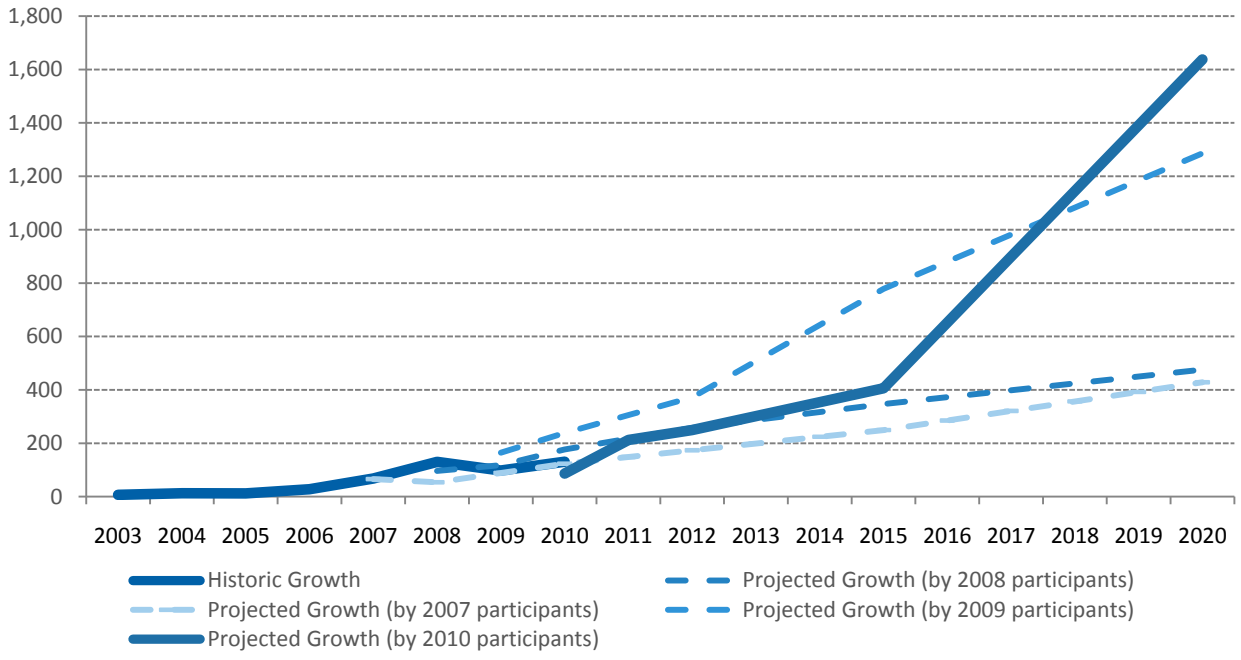
The findings in this report illustrate the sea change that continues to occur in the voluntary carbon markets as participants of all kinds adjust to capricious environmental, political and financial realities. This evolution is tracked in our survey of transaction data that begins every January – and four months later reveals the approximate "state of" the markets in the previous year.

While we crunch last year's numbers, suppliers transition to the new year and a fresh set of opportunities and challenges. When we asked suppliers to estimate overall market performance in 2010 and beyond, their perspectives on the 2010 market were still fresh, but already adapting to new developments in early 2011. Suppliers gave a panoramic view of their projections for voluntary carbon market growth and – for the first time in this survey – their potential part in it (Box 6).

This year, 95 survey respondents predicted the transaction volume of the voluntary carbon markets in 2010 and projected market size and growth through 2020. With all responses weighted evenly, this year's respondents again underestimated the market in which they sold credits, predicting a conservative 87 $MtCO_2e$ transacted in 2010. This is a full 47 $MtCO_2e$ less than was actually tracked. With this moderate prediction as a baseline, suppliers also forecasted substantial growth for 2011, expecting that they and their peers will transact 213 $MtCO_2e$ over the next year. To achieve this, suppliers would need to transact 82 $MtCO_2e$ more than in 2010.

Figure 33: Supplier-Projected Growth in the Voluntary Carbon Markets

$MtCO_2e$



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 95 survey respondents.

This year's projected rate of annual growth through year 2015 was roughly in line with those given by suppliers in the 2007 and 2008 markets. The predicted market size of 406 $MtCO_2e$ in 2015 vastly exceeds the volume of credits suppliers reported in their project pipelines through 2015 (Box 6). This suggests that suppliers' actual mid-term plans are far more conservative than their projections.

Beyond 2015 – and especially after 2017 – 2010 respondents' predictions surpassed past years' projections. When we followed up with several suppliers who predicted the most optimistic projections, they described a network of compliance-based or "semi-compliant" regional markets that "draw on the rapidly maturing voluntary carbon markets." Their projection of 1,638 $MtCO_2e$ in 2020 places the voluntary markets at 150% the size of the primary and secondary 2010 CDM market.

Box 6: The Ghost of Credits Past and Future

This report is about transactions. But what about all the credits in portfolios still waiting to leave the nest? Investigating unsold and anticipated credits provides insight into actual marketplace supply – as well as actual GHG tonnes reduced. With this in mind, we asked suppliers to reveal the volume of unsold credits in their portfolios at the end of 2010, what volumes they plan to generate or purchase through the end of 2015, and what are their intended buyers' motivations.

Even given the sensitive (and new) nature of the questions, 184 suppliers responded (65%). The numbers in Table 6 are nonetheless considered to be conservative, but we can discern several trends from the available data. For example, combining the volume of unsold credits with what suppliers intend to originate or buy, this supply alone could sustain a market of the size seen in 2010 for five years – not allowing for market growth.

At the canopy level, respondents reported that the ratio of unsold to transacted forest carbon credits was 5:1 in 2010. Moreover, portfolios and future plans reveal that many of the markets' large REDD programs were and will be designed with voluntary buyers in mind. Still, one quarter of pipeline credits from forestry activities are destined for pre-compliance buyers – including some REDD projects. This represents the largest pre-compliance pipeline of any project type currently awaiting clear project guidelines from a compliance market.

On the other hand, industrial gas projects like ODS destruction and N2O management will take direct aim at the California market. These and other pre-compliance credit suppliers were less likely than their pure voluntary market peers to hold onto (or reveal) their portfolios. Overall, suppliers selling to purely voluntary buyers represent 76% of available or planned volumes, while pre-compliance suppliers make up the remaining quarter – consistent with buyer motivations reported by suppliers in this year's survey.

Table 6: Unsold Portfolio 2010, and Project Pipeline Through 2016 (by Buyer Motive)

	Portfolio Unsold 2010 *Volume ($MtCO_2e$)*		Pipeline through Dec. 31, 2015 *Volume ($MtCO_2e$)*	
Project Type Category	**Pure Voluntary**	**Pre-Compliance**	**Pure Voluntary**	**Pre-Compliance**
Forestry and Land-Use	136.4	1.5	291.6	94.8
Renewable Energy	4.4	.2	40.1	1.2
Methane	2.9	.08	11.5	8.4
Efficiency and Fuel Switching	1.5	1.5	20.2	4.2
Industrial Gases	.6	.05	1.1	13.4
TOTAL	**145.9**	**3.4**	**364.6**	**122.1**

Source: Ecosystem Marketplace, Bloomberg New Energy Finance

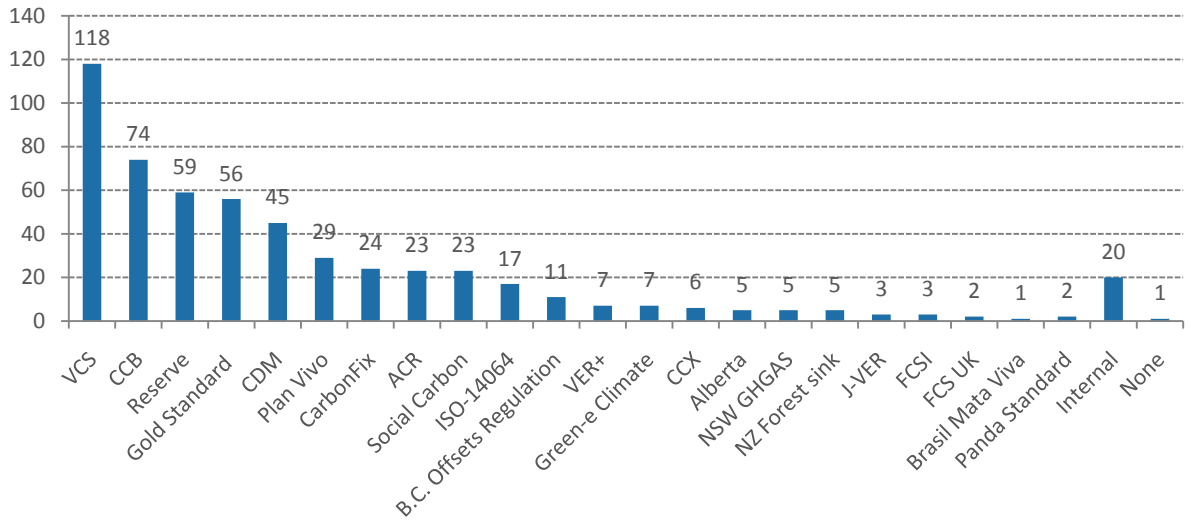
8.1 Project Planning: Future Standard Utilization

Third-party standards play a powerful role in shaping the voluntary carbon market, offering guidance to project developers in the mainstream and niche markets. With all of the choices available, we asked suppliers to weigh in on which standards they plan to use in 2011. Participants were given the option to select an unlimited number of standards from our list – including internally created standards and a write-in option. Each response was given equal weight regardless of suppliers' transaction volume. Figure 34 depicts the number of respondents that selected each standard. As responses are not volume-weighted, a standard's popularity does not necessarily equate to market share in 2011.

In 2010, the VCS stayed ahead of the pack as the most popular standard, with 118 organizations (58% of respondents) planning to use the standard in 2011. The CCB Standards were right behind VCS – doubling since 2009 the number of market participants that plan to use the CCB Standards. This reflects both their frequent layering on top of VCS credits and increasingly popular forestry application. Next in line was the Reserve, which rode the pre-compliance wave into third place, while Gold Standard – last year's runner up – fell to fourth place. This top-four ranking is consistent with the standards' 2010 market share, suggesting that many suppliers will "stay the course" in 2011.

Figure 34: Standards Suppliers Intend to Use in 2011

# of respondents



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 202 survey respondents.

Suppliers showed a greater interest in the Plan Vivo and CarbonFix standards (both up from 6 responses in 2009), in line with 2010's heightened demand for forest carbon certification. Another significant prediction is the sheer number and variety of standards likely to be used in 2011 (22, up from 16). While many project developers chose to align with themselves with the leading standards, this suggests that there is still room for growth in the market for specialized or regional certification schemes.

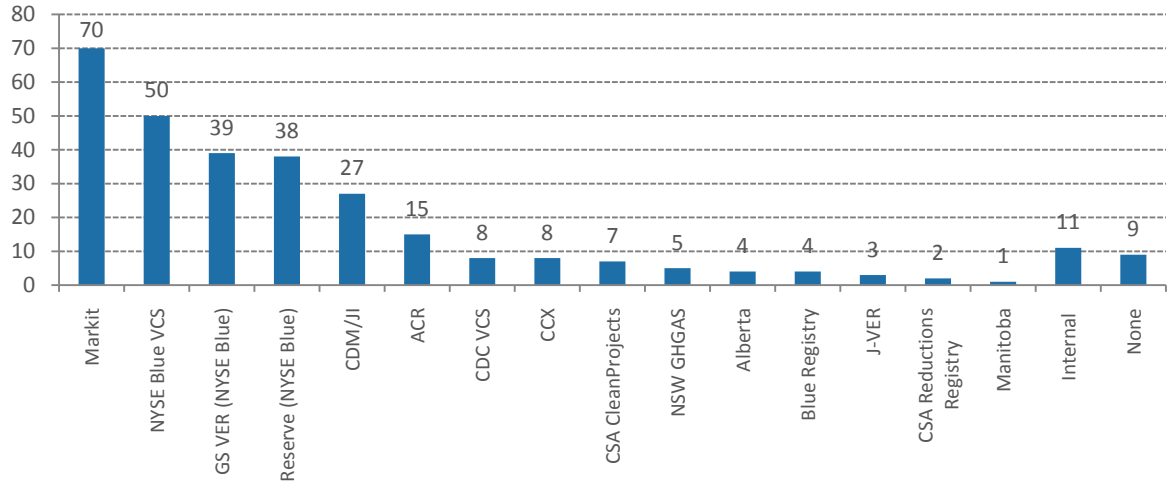
8.2 Vying for VERs: Future Registry Utilization

Registries vie for market share on the basis of engaging new suppliers, standards and partners in their systems. In California, some may also soon compete for regulatory approval in order to track offsets in both the voluntary *and* regional

compliance markets. In this context, market share for registries – still a relatively new service in the carbon marketplace – has remained highly variable.

As with standards, we asked market suppliers which registries they plan on using in 2011. Again, participants were given the option to select an unlimited number of registries from among 16 third-party infrastructure providers, independent registries and standard- and exchange-registries, as well as to select an internal registry or write in option.

Figure 35: Registries Suppliers Intend to Use in 2011
# of respondents



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.
Note: Based on 130 survey respondents.

Most suppliers listed said they will use the Markit registry, which surpassed the NYSE Blue VCS registry by 20 supplier "votes." The difference between the top registry and the fifth most-popular registry – CDM/JI – was 43 responses, which doubled from 2009. Aside from Markit, every other registry saw fewer responses in 2010 – partly because registry options are less restricted for some suppliers using the VCS and the Gold Standard in 2011. Even so, NYSE-Blue administered registries (NYSE-Blue VCS, Gold Standard and the Reserve registries) captured more responses combined than any other infrastructure provider (127).

Responding to increasingly accessible registry services, only 11 respondents plan to use an internal registry in 2011 (down from 20 in 2009). Fewer still indicated they will not use a registry, while – as seen with standards – slow and steady growth is expected from regional and government-based registries like Canada's CSA and provincial registries, Japan's J-VER Registry and Australia's NSW GGAS Registry.

8.3 The 59 $MtCO_2e$ Question: Looking ahead

Back to the present – Over the first five months of 2011 the voluntary carbon markets have continued to evolve as they develop mechanisms, drivers and deals around the big stories tracked in this year's report.

With renewed confidence in voluntary buyers' commitments to offsetting and a slew of emerging methodologies – most of them tied to projects that are waiting in the wings – the market that once played around the edges of the larger carbon marketplace is seeking to reposition itself as a more substantial complement to regulated markets. The buzzword for

suppliers and standards worldwide is "market scale" – how to achieve it on the supply-side and scale up demand among voluntary buyers.

"If there was less demand around offsets in an improving economy, it would have meant that society no longer accepted offsets as an effective strategy for reducing emissions," noted Evolution Market's Lenny Hochschild. "But since demand for offsets from companies and people is voluntary and actually growing – it seems the question now is how to make it have a bigger impact."

In the new year, programs have continued to develop tools to bring scale to projects that appeal to purely voluntary buyers as they continue to make emissions reduction pledges – for themselves or their companies. This could bring about a larger volume of credits from projects with sustainability and biodiversity components over the next few years as local and forestry-based activities become increasingly viable. Signals show the markets will continue to grow its impact in developing countries and, through the refinement of regional voluntary programs, engage buyers in middle-income countries.

The value of corporate social responsibility initiatives only continued to grow in 2010. Many carbon-literate voluntary buyers are likely to continue interacting directly with project developers – especially those that in 2010 sought to "green" their supply chains through long-term contracts for projects that generate offsets and directly secure more sustainable energy or commodities. Others will take the more traditional route to offsetting through carbon management firms that navigate the maze of offset options in the absence of recently shuttered government quality assurance programs.

On the pre-compliance front, the outlook is fragmented. In the absence of a post-Kyoto successor and a US federal climate program off the table, regional programs – in developed and developing nations – are pointing a way forward and exhibiting flexibility in their engagement with voluntary programs. We anticipate that regional efforts launched in 2010 in the Global South will begin to bear the fruits of their capacity building through some pilot exchange trades resulting from engagement with domestic buyers *en route* to regional regulation.

In the US, the California cap-and-trade program began implementation in 2011 as other states (i.e., New Jersey and Arizona) and regions (the Midwest Greenhouse Gas Reduction Accord) shelved plans to engage in regional emissions trading. Now with the California program facing legal setbacks to its January 2012 start date, pre-compliance activity will likely remain muted until the end of 2011 when suppliers could again gain some clarity around the program's fate. Suppliers predict that this could also delay the number of new projects coming online – with one supplier explaining their hesitation that "the longer we go without an auction, the more in jeopardy this program is going to be."

In terms of trading activity, the closure of the formal CCX program will leave a gap in transaction volumes, to the tune of an average 30 $MtCO_2e$/year since 2007. In 2010, an anomalously large bilateral trade of CFIs (59 $MtCO_2e$) compensated for the loss of exchange-traded voluntary activity on paper but the "59 $MtCO_2e$ question" is what will incentivize this volume of voluntary activity in the future? Many suppliers are looking to REDD for the answer, but in the shadows of forestry's tremendous growth linger many questions about how to fortify the forest carbon markets. How will voluntary conservation projects fit within emerging jurisdictional programs and fund-based approaches to REDD? How (and how early) can the market infrastructure ensure that emissions reductions being sold from early-stage projects in the pipeline will eventually deliver verified credits?

2011 has already seen a flurry of activity as standards and registries engage directly with suppliers and regulators to address these reservations. Their ability to design solutions to these and other challenges to project transparency, scale and diversity will set the tone for market growth in the medium- to long-term. In the mean time, we anticipate continued demand for the iconic forestry projects that suppliers predict could help "mainstream" the voluntary carbon markets. At a high level, market players will also continue to refine the partnerships, mechanisms, technologies and innovations that in 2010 enabled suppliers to shift their focus away from the clear and present uncertainty – and back to the future of the voluntary carbon markets.

Annex A: Overview of Voluntary Market Standards and Certification Programs

Annex A.1 Voluntary Market Standards

American Carbon Registry (ACR) Standards[19]

The American Carbon Registry (ACR) is a non-profit enterprise of Winrock International, founded in 1996 as the GHG Registry by the Environmental Defense Fund and Environmental Resources Trust. It currently has three published standards, ACR Standard v2.1, Forest Carbon Project Standard v2.1 and Livestock Waste Management Standard v1.0, and numerous methodologies published and under development. ACR also accepts offsets verified to its own standards that use Clean Development Mechanism (CDM) methodologies and other (select) ACR-approved methodologies from the VCS and Climate Leaders programs. While serving primarily as a voluntary and US pre-compliance offsets registry, ACR also functions as a voluntary emissions-reporting registry.

Brasil Mata Viva (BMV) Standard[20]

The Brazilian Brasil Mata Viva (BMV) Standard is a payment for environmental services standard. A single BMV Methodology provides resources for the introduction of new sustainable technologies for land use and for the establishment of processing units that will add value to the rural production, recomposition and recovery of areas. The goal is to create solutions for sustainable development focused on curbing deforestation and reducing emissions. BMV projects are supervised and supported by three divisions of the government, prosecutors and the Brazilian Institute of Environment and Renewable Natural Resources.

The CarbonFix Standard[21]

The CarbonFix Standard was developed in 2007 by CarbonFix, an independent non-profit organization. The CarbonFix Standard applies to projects related to afforestation, reforestation, natural regeneration and agro-forestry which have a demonstrated commitment to socio-economic and ecological responsibility. Project developers using the standard manage their certification processes over the ClimateProjects platform, which also allows them to issue their carbon credits in Markit – CarbonFix's official credit registry. In January 2011, the International Carbon Reduction and Offsets Alliance (ICROA) recognized CarbonFix Standard as suitable for use under its Code of Best Practice.

Chicago Climate Exchange (CCX) Offsets Program[22]

The Chicago Climate Exchange (CCX) operated a voluntary and legally binding cap-and trade program with an offsets component from 2003 through 2010. The CCX cap-and-trade program formally concluded as scheduled in December 2010 with all verification and compliance activities to be complete by the fall of 2011. In 2011, the CCX launched the distinct Chicago Climate Exchange Offsets Registry Program for voluntary emission reductions (VERs) that is set to run for 2011 and 2012. Although the CCX has its own set of protocols for offset projects, projects that vary from or do not meet a specific protocol (such as CDM projects) may be approved on a case-by-case basis by a standing committee of industry experts. The CCX will maintain a registry for offsets based on the existing registry.

[19] http://www.americancarbonregistry.org.

[20] http://www.brasilmataviva.com.br/index.php?option=com_content&view=article&id=46&Itemid=54&lang=en&Itemid=54.

[21] http://www.climateactionreserve.org.

[22] http://www.chicagoclimatex.com.

The Climate Action Reserve Protocols[23]

The Climate Action Reserve (the Reserve) is a non-profit carbon offset registry and standards-setting body. In 2008, the Reserve was established by (and is now the parent organization of) the California Climate Action Registry – a greenhouse gas emissions-tracking (as opposed to an offset-tracking) registry created to protect and promote early actions to reduce GHG emissions. The Reserve has so far developed offset protocols for forestry, landfill methane (US and Mexico), livestock methane (US and Mexico), coal mine methane, nitric acid, organic waste composing and digestion, and destruction of ozone-depleting substances. It is currently exploring or developing many others, including protocols for cropland management and reforestation projects in Mexico, and protocols for use in Canada.

Climate, Community, and Biodiversity (CCB) Standards[24]

The CCB Standards are a set of project-design criteria for evaluating land-based carbon mitigation projects and their community and biodiversity co-benefits. The Standards are managed by the Climate, Community and Biodiversity Alliance (CCBA), a consortium of international non-governmental organizations. The CCB Standards do not generate tradable offset certificates but are frequently applied with a carbon-accounting standard like the CDM or VCS. In 2009, the CCBA and CARE facilitated development of the REDD+ Social and Environmental Standards (REDD+ SES) to assess the social and environmental performance of government-led REDD+ programs. Version 1 of the REDD+ SES was released in June 2010 and is being applied in pilot countries.

EPA Climate Leaders Offset Guidance[25]

The US Environmental Protection Agency (EPA) launched the Climate Leaders program in 2002 as an industry-government partnership enabling companies to develop comprehensive climate change strategies by voluntarily completing a corporate GHG inventory, purchasing carbon offsets certified to EPA-approved methodologies and annually reporting their progress. In August of 2008, the program released its Offset Module Overview guidance, which was viewed as a potential pre-compliance standard for a future US regulatory market. In September 2010 the EPA announced that it would phase down the program over the coming year in favor of non-federal programs.

Greenhouse Gas Services Standard (GHGS)[26]

The Greenhouse Gas Services Standard (GHGS) is a joint venture of General Electric Energy Financial Services and the AES Corporation. Established in 2007, it was originally designed to build capacity in sectors where methodologies were not available. The GHGS has developed and published four methodologies focused on methane destruction or capture: coal mine methane, wastewater treatment, landfill gas management, and agricultural waste management. Each of the GHGS methodologies is based on the ISO 14064 Standard and WRI/World Business Council for Sustainable Development (WBCSD) guidelines for project accounting. Independent third-party verification is a requirement of all project activities and all issued credits are serialized and accounted for on a registry.

The Gold Standard for VERs[27]

The Gold Standard is a certification standard managed by a non-profit foundation based in Geneva that certifies renewable energy and energy efficiency carbon offset projects in both the compliance and voluntary markets. All projects must demonstrate real and permanent GHG reductions and sustainable development benefits that are measured, reported and verified. The Gold Standard was conceived in 2001 and established in 2003 by WWF and other non-governmental organizations (NGOs). The Gold Standard is now supported and endorsed by 70 NGOs worldwide. It maintains a registry specifically for Gold Standard VERs (managed by NYSE Blue) and a project database for Gold Standard-verified CDM and Joint Implementation (JI) credits.

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[23] http://www.climateactionreserve.org.

[24] http://www.climate-standards.org.

[25] http://www.epa.gov/stateply/resources/optional-module.html.

[26] http://www.ghgs.com/ghgs/index?page=home&view=GHGS_VIEW.

[27] http://www.cdmgoldstandard.org.

ISO 14064/ 65 Standards[28]

The ISO 14064/14065 Standards are part of the International Organization for Standardization (ISO) family of standards. Released in 2006 and 2007 respectively, they govern the quantification, reporting, and verification of GHG emissions. The ISO 14064/14065 Standards were created to be "regime neutral" so that they could be used as the basis for any program, but they are increasingly treated as their own third-party standard. Certain voluntary offset schemes, such as the Canadian GHG CleanProjects Registry, will only accept credits from projects verified to the ISO 14064/14065 Standards.

Japan Verified Emissions Reduction (J-VER) Scheme[29]

The Japan Verified Emissions Reduction (J-VER) Scheme, launched in 2008 by Japan's Ministry of the Environment, is a verification scheme for VERs designed to support the development of Japan's domestic carbon market. Credits must be generated through the reduction or removal of atmospheric GHGs by Japanese projects. There are currently 26 applicable methodologies, three of which are for forest management. In order to meet international standards, the Scheme is designed to comply with ISO 14064-2, 14064-3 and ISO14065 standards. Credits are issued in 4CJ-managed registry, and may be used for carbon offsetting and other purposes by individuals, businesses and governmental institutions.

The Panda Standard[30]

The Panda Standard is the first standard tailored to the Chinese market and focused on agriculture, forestry and other land use (AFOLU). Founded by The China Beijing Environment Exchange (CBEEX) and BlueNext, and co-founded by the China Forestry Exchange and Winrock, the Standard requires that all projects must be located within the People's Republic of China. Aimed at developing China's market readiness and providing an investment vehicle to early domestic movers, the Panda Standard selected two pilot projects in order to inform its development with field inputs and domestic data collection. At the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Cancun, the Panda Standard partners released its draft AFOLU specifications.

Plan Vivo[31]

Plan Vivo is a program designed for community-based forest management and agroforestry payments for ecosystem services projects. The system was created over a decade ago by the Edinburgh Center for Carbon Management and is now developed and overseen by a Scottish charity, the Plan Vivo Foundation. There are currently five fully operational Plan Vivo projects in Mexico, Uganda, Mozambique, Tanzania and Nicaragua and several upcoming projects in developing countries including Malawi, Cameroon, Ethiopia, and Nepal. Plan Vivo maintains a listing of projects on its website and lists credits (Plan Vivo Certificates) on the Markit Environmental Registry.

SOCIALCARBON Standard[32]

The SOCIALCARBON Standard is a certification program created and owned by the Brazilian Ecológica Institute. The Standard is based on the sustainable livelihoods approach and project developers must apply the Standard's indicators that point to degrees of sustainability and correlate with six aspects of the project: social, human, financial, natural, biodiversity and carbon. SOCIALCARBON is a "stacking" standard, accounting for the stakeholder co-benefits of projects that are also verified through a voluntary carbon-accounting standard. In 2010, the SOCIALCARBON Standard validated its first projects outside of Brazil –hydropower projects in China, Turkey and Indonesia – and listed its first credits on the Carbon Trade Exchange (CTX).

[28] http://www.iso.org/iso/catalogue_detail?csnumber=38381.

[29] http://www.4cj.org/jver.

[30] http://www.pandastandard.org.

[31] http://www.planvivo.org.

[32] http://www.socialcarbon.org.

VER+ Standard[33]

The VER+ Standard is a voluntary offset standard launched by project verifier TÜV SÜD for projects that are not eligible for CDM or JI accreditation but follow the CDM and JI project design methodologies. Launched in 2007, it focuses purely on voluntary offset projects. The standard notably excludes credits from nuclear energy, and for large hydroelectricity projects requires a World Commission on Dams validation. The projects wishing to receive VER+ accreditation may only be validated and verified by UNFCCC-accredited Designated Operating Entities or AIE organizations. In tandem with VER+, TÜV SÜD created the BlueRegistry in July of 2007 to serve as a database of certified VERs and Renewable Energy Certificates (RECs).

The Verified Carbon Standard (VCS)[34]

The VCS was first launched as the Voluntary Carbon Standard in November 2007 by The Climate Group, the International Emissions Trading Association, the World Economic Forum and the WBCSD to bring standardization to the voluntary offset market. The current version of the standard is VCS Version 3, released in March of 2011. VCS projects can use methodologies approved under the CDM and the Reserve, as well as VCS methodologies approved through the VCS methodology approval process. The VCS infrastructure includes a Project Database that provides public access to information on validated projects and Verified Carbon Units (VCUs) and three approved VCS registries: Markit, Caisse des Dépôts and NYSE Blue.

Annex A.2 Offset Provider Certification and Codes of Best Practices

Green-e Climate[35]

Green-e Climate was launched in early 2008 as a sister program of Green-e Energy to certify retail offset products in the voluntary market. This program requires that suppliers sell credits certificated by one of five endorsed project standards, including the CDM, Gold Standard, VCS, Green-e Climate Protocol for Renewable Energy and the Reserve – which made the list in 2010. Green-e Climate's independent certification ensures that offsets sold in the voluntary market are additional and verified, and it requires that sellers disclose relevant information about sources and follow accurate accounting procedures to ensure against double counting. In spring 2011, Green-e began gathering stakeholder input for potential revisions to the standard.

The International Carbon Reduction and Offset Alliance (ICROA)[36]

ICROA is a non-profit alliance of carbon reduction and offset providers founded in 2008. Its objectives are to advocate for strong industry standards in the voluntary carbon sector. It demonstrates quality for company members as they adhere to the ICROA Code of Best Practice, a policy outlining best practice for carbon reduction and offset services. Members must adhere to the ICROA Code of Best Practice, which lays out rules for measuring carbon footprints, setting emissions targets, and the use of alliance-approved standards for carbon offsets. The ICROA Code currently allows its members to use CDM/JI, Gold Standard, Carbon Fix, VCS and the Reserve standards.

Japan's Certification Center on Climate Change[37]

In November 2008, Japan's Ministry of the Environment launched three separate but related programs to support Japan's domestic VER market. The programs are administered by the Certification Center on Climate Change (the 4CJ), which acts as the Secretariat for executing the Ministry's carbon offsetting guidelines released in February 2008. The Public Certification Scheme for Carbon Offsetting provides certification and awards carbon offset labeling in accordance with the Ministry's

[33] https://www.netinform.de/KE/Beratung/Service_Ver.aspx.

[34] http://www.v-c-s.org.

[35] http://www.green-e.org.

[36] http://www.icroa.org/faq.html.

[37] http://www.4cj.org/english/4CJ-Eng.pdf.

standards. Through the Carbon Offset Providers' Disclosure Program, the 4CJ monitors and publicly discloses offset providers' adherence to the government's offset guidelines. The 4CJ, in consultation with the Japan Carbon Offset (JCO-F) and Carbon Offset Network (CO-Net), launched the Japan Verified Emissions Reduction Scheme (J-VER) in 2008, which verifies projects and certifies domestic VERs according to ISO-14064-2.

National Carbon Offset Standard Carbon Neutral Program/Greenhouse Friendly (NCOS)[38,39]

The National Carbon Offset Standard (NCOS) Carbon Neutral Program is an initiative by the Australian Government to allow organizations and products to become carbon neutral. The NCOS provides a voluntary standard for businesses, including a list of eligible offsets and emissions sources accepted under the standard. Administrated by the Low Carbon Australia (formerly the Australian Carbon Trust), the Carbon Neutral Program replaced the Greenhouse Friendly initiative on July 1, 2010. Greenhouse Friendly operated from 2001 through 30 June 2010 as the Australian government's voluntary carbon offset program for encouraging GHG-emissions reductions.

Quality Assurance Scheme for Carbon Offsetting (QAS)[40]

The Quality Assurance Scheme for Carbon Offsetting (QAS) was a UK-government standard for offset retailers that will be closing its doors on June 30, 2010. Launched in March 2009, the aim of the scheme was to use a Quality Mark to direct consumers to approved offsets and to educate them about the role offsets can play in tackling climate change. The scheme lists suppliers whose offsets have been approved on its website. Version 1.4 of the Scheme's requirements, published in March of 2011, approves only CERs, Emission Reduction Units (ERUs), Assigned Amount Units (AAUs) and phase-2 European Union Allowances (EUAs).

[38] http://www.greenhouse.gov.au/greenhousefriendly.

[39] http://www.climatechange.gov.au/en/government/initiatives/carbon-offset.aspx.

[40] http://offsetting.defra.gov.uk.

Annex B: Overview of Voluntary Market Registries

BlueRegistry[41]

In tandem with the VER+ Standard, TÜV SÜD created the BlueRegistry in July of 2007 to serve as a database of certified VERs and green energy certificates. Although the BlueRegistry accepts various voluntary carbon market standards, the majority of credits listed on the registry are from the VER+ Standard. Users do not have to create an account in order to view the registry and can search for projects by various criteria, including project proponent, project name, host country and tonnes available.

Caisse des Dépôts [42]

CDC was one of three financial institutions initially chosen in 2008 by the VCS Association to host the VCS registry system. The CDC VCS Registry is managed by its subsidiary CDC Climat, created in 2010 to manage its carbon market infrastructures, investments and market research. It manages all aspects of VCUs: issuance, holding, transfer, acquisition, cancellation and retirement. The registry is aimed particularly at offsetters and project developers and is linked to the VCS' central project database. Registry information is not available to the public.

GHG CleanProjects Registry[43]

Launched in 2007, the Canadian Standards Association's (CSA) GHG CleanProjects™ Registry was developed to list GHG reduction projects that result in emissions reductions. Projects seeking to have their reductions serialized in the registry must be quantified and verified according to the international series of ISO 14064 standards for project level GHG emission reductions and reporting. Once emissions reductions are independently third-party verified, they are eligible to be serialized and to become Verified Emission Reduction-Removals (VERRs). Users do not have to create an account to view the registry and may search by different criteria including project or proponent name.

Markit[44]

The Markit Environmental Registry Service operates its own independent registry and also provides registry services for a full range of credit standards, including the VCS registry system, SOCIALCARBON, BMV Standard, ISO, Plan Vivo, CarbonFix, the Gold Standard and the CCB Standards. The registry provides full settlement services through an alliance with the Bank of New York Mellon, and connections to many trading facilities including the Carbon Advice Group and the CTX for clients to buy and sell registered credits. There are separate public and "members-only" sections of the website, but the public may view everything in the registry except information which Markit customers have requested be kept confidential. In 2009, Markit acquired the TZ1 registry system from NZX Limited, as well as New Zealand's Registry.

NYSE Blue[45]

NYSE Blue is an infrastructure provider for environmental and energy markets in renewable energy and GHGs, including carbon commodities. NYSE Blue was formed in February 2011. It brings together **APX** and NYSE Euronext's **BlueNext**, a spot exchange for the European Union Emissions Trading System (EU ETS). NYSE Blue provides carbon market infrastructure

[41] http://www.blue-registry.com.

[42] http://www.vcsregistry.caissedesdepots.com.

[43] http://www.ghgregistries.ca/cleanprojects/index_e.cfm.

[44] http://www.markit.com.

[45] http://www.nyseblue.com.

systems for the Gold Standard Registry, the Reserve, and the NYSE Blue VCS registry – one of the three registries in the VCS Registry System. In addition, NYSE Blue's Environmental Management Account provides a platform for clients to manage their environmental liabilities and assets, and its Portfolio Access service offers a single aggregated view and integrated transaction platform across REC and voluntary carbon credit registries.

Traceable VER Registry[46]

The Traceable VER Registry was created by the project-verification company TÜV NORD in 2007 to serve as a registry for any "credible VER standard." Credits listed on the registry are then designated "T-VERs" for Traceable VERs. Apart from certain mandatory information, credit owners may choose which project information they would like to make public to potential buyers and which information to disclose only to certain clients. T-VERs may be credits verified by any verification entity, although all projects currently listed on the Traceable VER Registry have been verified by TÜV NORD.

[46] http://traceablevers.mh5.projektserver.de.

Annex C: Overview of Voluntary Market Exchanges and Platforms

Annex C.1 Existing VER Exchanges and Platforms

Carbon Trade Exchange (CTX)[47]

The CTX is the world's first online electronic platform for spot trading VERs. Bid and offer information is made available and trades are cleared instantaneously. In addition, the exchange offers complete project information for all member participants via the Markit registry account that's tied to their CTX membership. CTX and Markit launched this link between the registry and platform in March 2010. Late last year, CTX signed agreements with the Gold Standard and ACR to offer the third-party standards' credits to exchange members. In spring 2011, CTX formally launched an interface with Westpac bank as the first bank partner to support transactions end-to-end.

China Beijing Environmental Exchange (CBEEX)[48]

CBEEX was launched in August 2008, sponsored by China Beijing Equity Exchange, the New Energy Investment Ltd. of China National Offshore Oil Corp., China Guodian Corp., and China Everbright Investment Management Corp. CBEEX offers its members – who include domestic and international entities – services including legal consulting, auctioning and Internet bidding. CBEEX accommodates trading of most international VERs, including VCS, Gold Standard and Panda Standard credits.

Climex[49]

Launched in 2003 as an emissions-trading auction platform, Climex entered the market in October 2007 as the first platform to execute VER auctions. In 2008, Climex hosted the first exchange-traded transaction of Gold Standard credits, and was the first exchange to integrate registry transfers into VER auctions. In April 2009 it was also the first exchange to offer a "reverse auction" for VERs. In May 2011, Climex announced that it would continue to accommodate VER auctions, even as it shut the doors on its spot trading services.

Montréal Climate Exchange (MCeX)[50]

The Montréal Climate Exchange (MCeX) is a joint venture between the Montréal Exchange and ICE, created in 2006 to provide an electronic trading platform for companies to trade emissions offsets and help industry meet their own reduction targets. Futures contracts on Canadian CO_2e units were first listed on the Exchange in May 2008. A federally mandated emissions trading program that would utilize these contracts – for which the initial compliance year was expected to be 2010 – has not yet been approved.

Tianjin Climate Exchange (TCX)[51]

In September 2008, the Tianjin Climate Exchange (TCX) formally launched as a joint venture between China National Petroleum Corporation Assets Management, the Tianjin Property Rights Exchange and the Chicago Climate Exchange (now ICE). TCX was created to service Tianjin Binhai New Area's local energy intensity scheme – the Tianjin Energy Efficiency

[47] http://www.carbontradexchange.com/about-ctx.php.

[48] http://www.cbeex.com.cn/article/en/

[49] http://www.climex.com.

[50] http://www.mcex.ca/aboutUs_overview_en.

[51] http://www.chinatcx.com.cn/templet/default/index_en.jsp.

Market – and hosts GHG and other major pollutant credits on its exchange. The exchange's voluntary credit initiatives focus on VER trades and comprehensive carbon neutral services for any entity complying with national regulations and policies.

World Green Exchange[52]

The World Green Exchange, launched in 2008, provides the platform for RGGI auctions and has partnered with Gold Standard, Markit, SOCIALCARBON Standard and the CSA. In early 2009, World Green Exchange re-branded itself as a "shopping mall" for carbon credits that provides a detailed view of all available projects searchable by over ten criteria. Last year, World Green Exchange was tapped for an exclusive agreement with a Brazilian market maker to sell over 15 MtCO2e reducing emissions from deforestation and degradation (REDD) credits certified by the BMV Standard.

Annex C.2 New and Upcoming Exchanges for Voluntary Credits

Africa Carbon Credit Exchange (ACCE)[53]

The Africa Carbon Credit Exchange (ACCE) is an African-owned and -managed marketplace established in 2009 by Lloyds Financials Limited to help enable Africa's participation in the global carbon markets. Products and services include the Trading Platform; the Green Knowledge Institute for building of technical and financial expertise; and the Low Carbon Africa Fund Portfolio that provides financing and technical expertise to jump-start low-carbon projects with offset potential. Currently the Exchange is working with brokers in Uganda, Rwanda, Kenya, Togo, Senegal and Zambia to establish a pan-African network that will develop a steady supply of credits for the trading platform.

The Africa Carbon Exchange (ACX)[54]

The Africa Carbon Exchange (ACX) is the newest African-owned and –managed marketplace for environmental commodities and derivatives, soft launched in March 2011. Based in Nairobi, the exchange aims to further unlock Africa's potential for carbon market participation and provide a one-stop-shop for emission reduction or sequestration projects. The ACX trading system includes the ACX Registry, the ACX Trading Platform and the Clearing and Settlement Platform. Although the exchange is still testing its wings, trading is expected to begin before long.

Caribbean Basin Climate Exchange (CBCX)[55]

The Caribbean Basin Climate Exchange (CBCX) is a platform launched by the Dominican Institute for Integral Development (IDDI) to encourage carbon market participation in the Dominican Republic (both CDM and voluntary). CBCX services include project identification, project development, training, consulting, carbon credit generation and issuance. It aims to identify opportunities and stimulate investment in renewable energy projects and other clean technologies with the potential to reduce GHG emissions.

The Green Exchange (GreenX)[56]

The Green Exchange (GreenX) is a consortium of banks, brokers, trading firms, and exchanges approved by the US Commodity Futures Trading Commission as a designated contract market in July 2010. The GreenX environmental marketplace provides electronic trading and clearing of commodity-based futures and options contracts through CME Clearing. In February 2010, GreenX added Reserve futures and options contracts to its list of environmental contracts that are currently listed for trading, alongside EUAs, CERs, Regional Greenhouse Initiative (RGGI) allowances, NOx and SO_2

[52] http://www.worldenergy.com/wgexchange/default.cfm.

[53] http://www.africacce.com/vision.html.

[54] http://africacarbonexchange.com.

[55] http://www.cbcxchange.com.

[56] www.nymex.greenfutures.com.

futures and options emissions allowances. In 2011, GreenX is one of several infrastructure providers currently developing exchange contracts for ARB-approved offsets under the Reserve.

The Santiago Climate Exchange (SCX)[57]

The Santiago Climate Exchange (SCX) was formally launched in April 2011, in cooperation with Latin American financial services group Celfin Capital, *Fundación Chile* (a nonprofit foundation launched more than 30 years ago by the Chilean government and technology giant ITT) and 10 other partners from the private sector. SCX will list projects that conform to a number of internationally recognized voluntary standards as well as offsets recognized under the Kyoto Protocol's CDM. Offsets listed on the exchange will also come from all sectors. In May 2011, *Fundación Chile and the VCS announced their partnership to* develop local carbon markets expertise and SCX hopes to launch trading in summer 2011.

[57] http://www.scx.cl/

Annex D: Suppliers Directory

Organization Name	Retailer	Wholesaler	Broker	Developer
3Degrees	Retailer	Wholesaler	-	-
3GreenTree Ecosystem Services Ltd.	-	Wholesaler	Broker	Developer
A & J Administraço de Holding Florestal Ltda a Bioamazon	-	Wholesaler	-	Developer
Adept Forest Carbon	-	-	-	Developer
African Wildlife Foundation	-	-	-	Developer
AgraGate Climate Credits	-	Wholesaler	-	Developer
AgRefresh	-	-	-	Developer
Ambiental PV	-	-	-	-
Atlantic County Utilities Authority	Retailer	-	-	-
AusCarbon Pty Ltd	-	Wholesaler	-	-
Balance Carbon Pty Ltd	-	-	-	-
Berkeley Air Monitoring Group	-	-	-	-
Bio Assets Ativos Ambientais Ltda.	-	-	-	Developer
Bioforest Peru	-	-	-	Developer
Bischoff & Ditze Energy GmbH	-	Wholesaler	-	-
Bonneville Environmental Foundation	Retailer	Wholesaler	-	-
Borealis Carbon Offsets Ltd.	-	-	-	Developer
Bosques Amazonicos	-	-	-	Developer
BP Target Neutral	Retailer	-	-	-
Brasil Mata Viva (BMV) Standard	-	Wholesaler	-	Developer
Brighter Planet	Retailer	-	-	-
Brokers Carbon	-	-	Broker	-
California Bioenergy LLC	-	-	-	Developer
California Department of Parks and Recreation	-	-	-	-
Camco	Retailer	Wholesaler	-	Developer
CantorCO2e	-	-	Broker	-
Carbon Advice Group Plc	Retailer	-	Broker	-
Carbon Clear	Retailer	Wholesaler	-	Developer
Carbon Friendly Solutions Inc.	Retailer	Wholesaler	-	Developer
Carbon Retirement	Retailer	-	-	-
CarbonBrake Limited	Retailer	-	-	Developer
Carbonfund.org Foundation, Inc.	Retailer	Wholesaler	-	Developer
CarbonTree, LLC	-	-	Broker	Developer
CARBONyatra	Retailer	Wholesaler	Broker	Developer

carboNZero programme, Landcare Research	Retailer	-	-	-
Carbosur	-	-	Broker	Developer
CARE CA	-	-	-	Developer
Caspervandertak Consulting USA	-	-	Broker	Developer
C-Green	-	-	-	Developer
Chaire eco-conseil, Universite du Quebec; Chicoutimi	Retailer	Wholesaler	-	Developer
ClearSky Climate Solutions	Retailer	Wholesaler	-	Developer
climat mundi	Retailer	-	-	-
Climate Bridge	-	Wholesaler	-	Developer
Climate Clean, Inc.	Retailer	Wholesaler	Broker	-
Climate Friendly Pty Ltd	Retailer	Wholesaler	-	-
Climate Neutral Group B.V.	Retailer	Wholesaler	-	Developer
ClimateCare	Retailer	Wholesaler	Broker	Developer
COLBUN S.A.	-	-	-	Developer
Colorado Carbon Fund	-	-	-	-
CommonWealth Resource Management Corporation	-	Wholesaler	-	Developer
Community Energy, Inc.	Retailer	-	-	-
Conservation International	-	-	-	Developer
Conservation International Brazil	-	-	-	Developer
Cool NRG International Pty Ltd	-	-	-	Developer
Cool Planet	Retailer	-	-	-
CoolClimate Holding, Inc.	-	Wholesaler	Broker	Developer
Cosain, Irish Carbon Trading Platform	-	-	-	-
CPS Carbon Project Solutions Inc.	-	-	-	Developer
Degree Celsius	-	-	-	Developer
Delta Institute	Retailer	Wholesaler	-	Developer
Demirer Holding	Retailer	Wholesaler	-	Developer
Dep. LEAF (Land, Environment, Agriculture and Foretsry) of the University of Padova	-	-	-	Developer
Dinamica de Procesos S.A.	-	-	Broker	Developer
Ducks Unlimited, Inc	-	-	-	Developer
Durania LLC	-	-	-	Developer
E.Value - Estudos e Projectos de Ambiente e Economia, S.A.	Retailer	-	-	-
E+Co	-	-	-	Developer
Earth Givers, Inc	Retailer	-	-	Developer
East Central Solid Waste Commission	-	-	-	Developer
EcoAct	Retailer	-	Broker	Developer
Eco-Carbone	-	Wholesaler	-	Developer
EcoLogic Development Fund	-	-	-	Developer
Ecological Restoration Capital	-	Wholesaler	-	Developer
EcoRessources Carbone	-	Wholesaler	Broker	Developer

ecosur America	-	Wholesaler	Broker	Developer
Ecosystem Services LLC	-	Wholesaler	Broker	Developer
Ecotrust	-	Wholesaler	Broker	Developer
Ecotrust Forest Management, Inc.	-	-	Broker	Developer
EKO Asset Management Partners	Retailer	Wholesaler	-	Developer
Emergent Ventures International (EVI)	-	-	Broker	Developer
Emission Securities LLC	-	-	-	Developer
Emiti Nibwo Burola	-	-	-	Developer
Environmental Capital LLC	-	-	-	-
Environmental Credit Corp.	-	-	-	Developer
Environmental services of Oaxaca	Retailer	-	-	Developer
Envirotrade	-	-	-	Developer
Equator LLC	Retailer	Wholesaler	-	Developer
ERA Carbon Offsets	Retailer	Wholesaler	Broker	Developer
Evolution Markets	-	-	Broker	-
Face the Future	-	Wholesaler	Broker	Developer
Finite Carbon Corporation	-	-	-	Developer
First Climate Markets AG	Retailer	Wholesaler	-	Developer
First Record Carbon, LLC	-	-	-	Developer
Forecon Inc.	-	-	Broker	Developer
Forest Carbon Offsets LLC	-	-	-	Developer
Forest Credits	Retailer	-	-	Developer
Forest Trends/Katoomba Incubator	-	-	-	Developer
ForestFinance Service GmbH	Retailer	Wholesaler	-	Developer
Forests NSW	-	Wholesaler	-	-
ForestSense - JustGreen	-	-	-	Developer
Fortune Oriental Environment & Resources Co., Ltd	-	-	Broker	-
Friili Venezia Giulia Region	-	-	-	Developer
Fundação Amazonas Sustentável - FAS	-	-	-	Developer
GAIA Carbon Finance	-	-	Broker	Developer
GERES / CO2Solidaire	Retailer	Wholesaler	-	Developer
GET-Carbon	Retailer	Wholesaler	Broker	Developer
GFA ENVEST	-	-	-	Developer
Global Carbon Group	-	-	-	Developer
Global Conservation Standard e.V.	-	-	-	-
Global Multipurpose Development Organization	-	-	-	Developer
Global Sustainable Group Ltd.	-	Wholesaler	Broker	Developer
Goodplanet	Retailer	-	-	Developer
Green Light New Orleans	Retailer	-	-	-
Green Markets Ltda	-	-	-	Developer
Green Pass	Retailer	-	-	-

Green Resources AS	-	-	-	-
Greenfleet	Retailer	Wholesaler	-	Developer
Greenhouse Balanced	-	-	-	Developer
Greenoxx	Retailer	Wholesaler	-	Developer
GreenTrees	-	-	-	Developer
Impact Carbon	-	Wholesaler	-	Developer
ItzamÃ S.r.l	Retailer	-	-	-
Jain Plantation	-	-	-	Developer
Jomini Environmental Inc.	-	-	-	Developer
Just Green BV	-	-	-	Developer
Karbone	-	-	Broker	-
Kinome	-	-	Broker	Developer
KIPCCF of Korea Forest Service	-	-	-	Developer
Klima ohne Grenzen Gemeinnützige *GmbH*	Retailer	-	-	Developer
La Cruz Habitat Protection Project, Inc.	-	-	-	-
LANXESS Indústria de Produtos Quimicos e Plásticos, Ltda	-	-	-	-
London Bike Company	-	-	-	Developer
Less Carbon	-	-	-	Developer
Less Emissions Inc.	Retailer	-	-	-
LivClean Carbon Offsets	Retailer	-	-	-
Mavi Consultants	-	-	-	Developer
Maya Nut Institute (formerly The Equilibrium Fund)	-	-	-	Developer
Meridian Asia/Pacific Pty Ltd	-	Wholesaler	-	-
MF Global	-	-	Broker	-
MGM Innova, LLC	-	-	-	Developer
Mountain Association for Community Economic Development	Retailer	Wholesaler	-	Developer
myclimate - the Climate Protection Partnership	Retailer	Wholesaler	-	Developer
NC GreenPower	Retailer	-	-	-
Nexus, Carbon for development	-	-	-	-
Nordjysk Elhandel A/S	Retailer	Wholesaler	Broker	-
North Coast Resource Management (NCRM)	-	-	-	Developer
Northwest Natural Resource Group	-	-	Broker	Developer
OAXACA ENVIRONMENTAL SERVICES	-	-	-	Developer
Oberallmeindkorporation Schwyz	Retailer	-	-	-
Offsetters Clean Technology	Retailer	Wholesaler	Broker	Developer
ONF International	-	-	-	Developer
PACE	Retailer	-	-	Developer
Patrick Wood	-	-	-	Developer
Pax Natura Foundation	-	-	-	Developer
PEAR Carbon Offset Initiative, Ltd.	-	-	-	Developer

Permanent Forests International Ltd	Retailer	-	Broker	Developer
Place	-	-	Broker	Developer
Plan Vivo Foundation	-	-	-	-
Planetair	Retailer	-	-	-
PrimaKlima -weltweit- e.V.	Retailer	-	-	Developer
Pronatura Mexico A.C.	-	-	-	-
PT Rimba Makmur Utama	-	-	-	Developer
Pure Interactions UK	-	-	-	Developer
Rainforest Alliance Inc.	-	-	-	Developer
RECAST ENERGY	-	-	-	Developer
Redd Forests	-	-	-	Developer
Reforest the Tropics, Inc.	Retailer	-	-	Developer
Regione Veneto	-	-	-	Developer
Renewable Choice Energy	Retailer	Wholesaler	-	-
Repay International's ClimaCount Program	Retailer	-	-	-
River Forest Carbon Inc.	-	-	-	Developer
Sempervirens Fund	-	-	-	Developer
Shift2Neutral	Retailer	Wholesaler	Broker	Developer
Sierra Gorda Alliance for Conservation	-	-	-	Developer
Silva Tree Panama	-	Wholesaler	-	Developer
Socio-eCO2nomix-Global	-	-	-	Developer
South East Carbon Management LLC	Retailer	Wholesaler	Broker	Developer
South Pole Carbon Asset Management Ltd.	Retailer	Wholesaler	Broker	Developer
SunOne Solutions	-	-	-	Developer
Sustainable Carbon - Projetos Ambientais	-	-	-	Developer
Taking Root	-	-	-	Developer
Terra Global Capital, LLC	-	-	-	Developer
The CarbonNeutral Company	Retailer	Wholesaler	-	-
The Eco Products Fund, L.P.	Retailer	Wholesaler	-	Developer
The Green Ticket	-	Wholesaler	-	Developer
The Nature Conservancy	-	-	-	Developer
The Pacific Forest Trust	Retailer	-	-	Developer
The Tree Hub	Retailer	-	Broker	-
The Trust for Public Land	-	-	-	Developer
The World Land Trust	Retailer	-	-	Developer
Treedom srl	Retailer	-	-	Developer
Treeflights	Retailer	-	-	-
Tropical Offsets Pty Ltd	-	-	-	Developer
Tullett Prebon	-	-	Broker	-
UNICORPOCA	-	Wholesaler	-	Developer
U'yool'che A.C.	-	-	-	Developer

VEDA Climate Change Solutions Ltd	-	-	-	Developer
Verus Carbon Neutral	Retailer	Wholesaler	Broker	Developer
Viridor Carbon Services	-	-	-	Developer
Voltalia	Retailer	-	Broker	-
Wildlife Conservation Society (WCS)	-	-	-	Developer
Woodrising Consulting Inc.	-	-	-	Developer
World Land Trust	Retailer	-	-	Developer
Yale Community Carbon Fund	-	-	-	Developer

Appendix E: Volume of tCO_2 by Project Type and Region

Table 7: Volume of tCO_2 by Project Type and Region					
	Forestry/Land Use	Methane	Renewable Energy	Energy Efficiency & Fuel-Switching	Other/Not specified
US	6,562,193	10,276,751	389,839	6,332	4,219,261
Latin America	15,802,448	27,294	546,460	827,309	208,000
Asia	1,756,957	538,887	6,827,561	849,504	93,257
Europe (non-EU, incl. Turkey)	-	1,487,775	3,643,369	-	-
Africa	2,029,788	50,900	503,900	67,472	437
Canada	1,109,762	39,907	112,537	21,000	-
AU/NZ	25,000	21,807	61,555	450	-
EU	173,563	31,182	-	-	8,541
Mixed/Not specified	176,500	84,590	462,180	40,000	2,056,511

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Premium Sponsors

The Carbon Trade Exchange (**http://www.carbontradexchange.com**) provides a trusted marketplace where businesses can buy credits with confidence in the quality and origin of the products being sold. The platform allows buyers to search for credits based on credit standard, project type, vintage, and country of origin. It provides full price transparency by tracking an offset from its generation and verification, through to its transfer and eventual retirement within the Markit Environmental Registry.

Servicing many different markets in the carbon world, the exchange platform makes the process of trading carbon easier than ever before. We work with an array of businesses, large corporate companies, traders, brokers and originators. Security, transparency and instantaneous transactions are just some of the key features on offer. First launched in 2010, the Carbon Trade Exchange has now an integration with the Markit Environmental carbon registry and Westpac Bank. The integration with Westpac means any Westpac customer can trade directly in and out of their own bank account and even use their credit card, a world first.

Sponsors

Emergent Ventures International (**http://www.emergent-ventures.com**) is an Integrated Climate Change Consultancy founded in 2004 with a twin mission to accelerate the fight against Climate Change and foster Sustainable Development. EVI is a leading offset provider, providing high quality sustainable offsets across all the major carbon standards. We have so far helped our customers to offset over 15 million tonnes of carbon emissions from a whole range of technologies across multiple geographies. EVI works with over 200 clients, across Asia, Africa, Australia, Europe and The USA, helping them with services ranging from carbon measurement & reporting, carbon reduction, offset strategy and broader sustainability strategies.

Det Norske Veritas (**http://www.dnv.com**) is a global provider of services for managing risk, helping customers to safely and responsibly improve their business performance. Established in 1864, the company has a global presence with a network of 300 offices in 100 countries, and is headquartered in Oslo, Norway. DNV has continually been at the forefront of the climate change response, starting in 2004 with its recognition as the first Designated Operational Entity (DOE) to be accredited under the Kyoto Protocol by the UNFCCC. DNV is accredited by ANSI to perform validation and verification services for the validation/verification of project level GHG assertions. Our core climate change services include validation and verification of GHG off-set projects and verification of GHG inventories. DNV is the global market leader in the validation and verification of CDM projects and is fully accredited to provide the complete range of validation and verification services under requirements established by UNFCCC, the Verified Carbon Standard (VCS) association, Gold Standard, the California Air Resources Board (CARB), the Climate Action Reserve (CAR), the American Carbon Registry (ACR) and the governments of British Columbia and Alberta, Canada.

ClimateCare (**http://www.jpmorganclimatecare.com**) was founded in 1997 and is the leading Emissions Reduction project developer and carbon credit offset retailer operating in the Voluntary carbon market. We manage large scale voluntary offset schemes for Organisations as well as originating and sourcing carbon credits on behalf of large Corporates, NGOs, and Sovereigns. ClimateCare develops projects that sit on the emerging nexus between private sector finance and the climate/development/aid sector (For example - we are now at the forefront of developing scale carbon credits from projects to distribute clean water across sub saharan Africa). We develop and consult on Emission Reduction projects in Sub-Saharan Africa and throughout the LDCs for both the compliance and voluntary markets and our focus is on innovation and sustainable development. Every project we develop is designed to contribute towards fulfilling the Millennium Development Goals (MDGs). Our expertise lies in renewable energy, energy efficiency, low carbon appropriate technologies and water purification projects and we have been active in every stage of the carbon life-cycle over the last decade: from the launch of the first Gold Standard efficient cook-stoves project, through trading and risk management, to full service client management.

Climate Friendly (**https://climatefriendly.com**) is a pioneer in providing innovative carbon management solutions to businesses and households around the world who are ready to act to prevent climate change and help move the world toward a clean energy future. At Climate Friendly we spend all day, every day thinking about the best way businesses and households can take voluntary action and create an engaging story around their action. We are always talking to global suppliers, policy makers and those already acting to ensure you gain best practice information from around the world. Our policy insight, marketing expertise and skill in identifying the highest quality and most interesting projects will ensure that buyers gain maximum benefit from their carbon management program. Climate Friendly has earned a reputation as one of the most respected providers of climate change services in the world. We provide carbon management solutions for some of the world's leading brands.

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Marine Ecosystem Services Program
MARES

Using innovative financing to promote the conservation of coastal and marine ecosystem services

Ecosystem Marketplace

A global platform for transparent information on ecosystem service payments and markets

Forest Trade & Finance

Bringing sustainability to trade and financial investments in the global market for forest products

the katoomba group

Building capacity for local communities and governments to engage in emerging environmental markets

BBOP

Business and Biodiversity Offsets Program, developing, testing and supporting best practice in biodiversity offsets

CHESAPEAKE FUND

Building a market-based program to address water-quality (nitrogen) problems in the Chesapeake Bay and beyond

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Linking local producers and communities to ecosystem service markets

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