

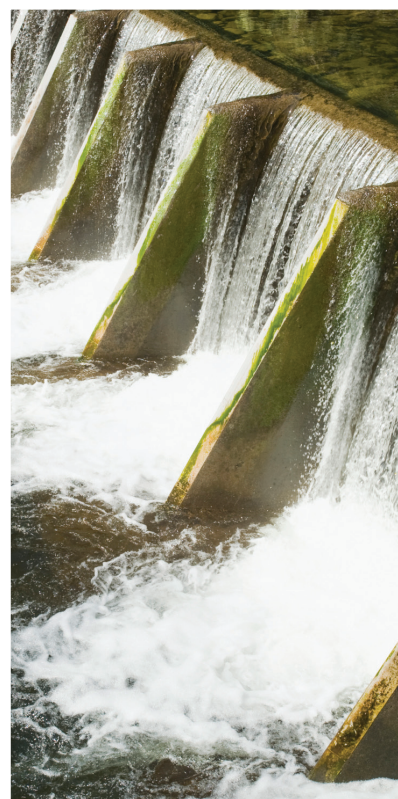
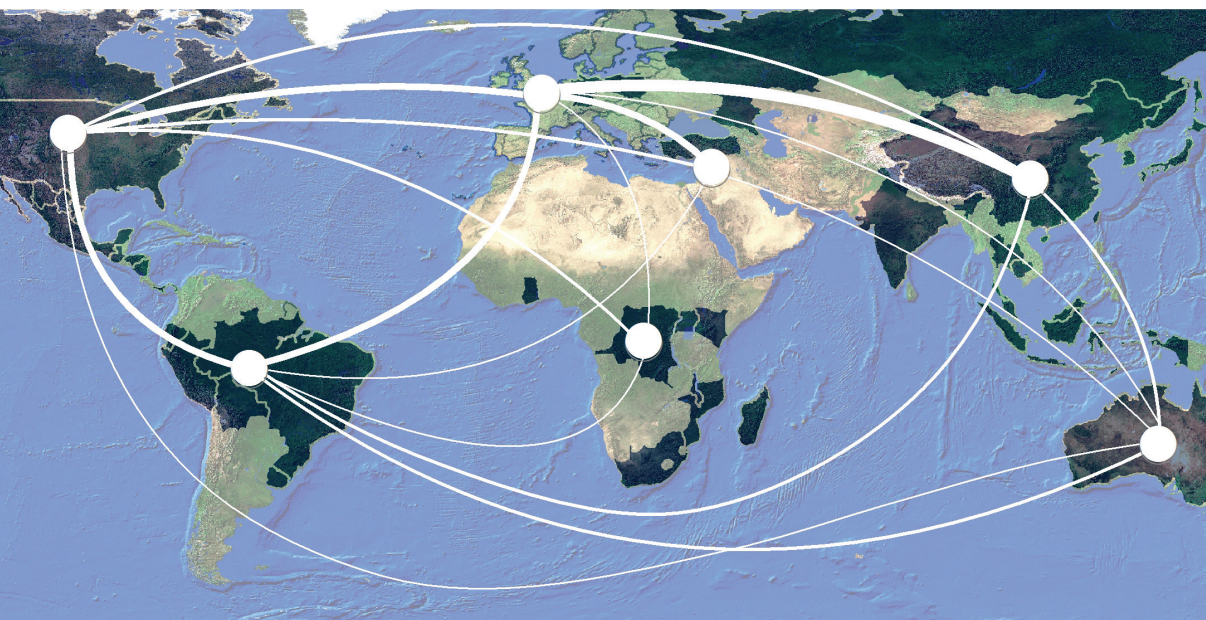


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# Building Bridges

## State of the Voluntary Carbon Markets 2010



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# Building Bridges: State of the Voluntary Carbon Markets 2010

**A Report by Ecosystem Marketplace &  
Bloomberg New Energy Finance**

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June 14, 2010

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# Executive Summary



The year of 2009 was a tumultuous one for the voluntary carbon markets. First, the economic recession had a marked impact on the number of companies offsetting greenhouse gas (GHG) emissions. At the same time, unfolding new climate legislation in the United States led the actors engaged in the voluntary carbon markets to pursue their interest in generating credits viable under new compliance programs despite the markets' highs and lows.

Throughout the year, while voluntary carbon market transaction volumes remained relatively small, the marketplace thrived as an incubator of innovative protocols, registries, alliances, and project types. In the context of the regulated markets, the voluntary carbon markets proved they could be “the size of a mouse but have the roar of a lion.” For example, proposed federal climate legislation in the United States and federal offset programs in Australia referenced standards developed in the voluntary carbon markets. Also, reduced emissions from deforestation (REDD), a project type still exclusive to the voluntary carbon markets, took center stage at the international climate negotiations in Copenhagen at the end of 2009.

Last year, many entities engaged in the voluntary carbon markets solely as a warm-up for the compliance big league. However, half the marketplace remains driven by “pure” voluntary buyers seeking to offset emissions. These buyers grew increasingly sophisticated, seeking specific credit types from specific locations. Despite the recession, numerous companies initiated offset programs or continued to commit to offsetting goals. However, the concept of offsetting has not lost its controversial edge, and many stakeholders continued to emphasize the importance of reducing internal emissions before purchasing offsets.

Amidst the highs and lows, the marketplace continued to mature at a sprint pace, building infrastructure to ensure accountability and quality, incubating carbon market innovation and developing new GHG emissions reduction projects.

## Trades Collected from over 200 Suppliers

This fourth annual “State of the Voluntary Carbon Markets” report is designed to give a market-wide perspective on trading volumes, credit prices, project types, locations, and the motivations of buyers in this market. Findings are based on data voluntarily reported by 200 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.

## Voluntary Carbon Market Transactions Declined to 94 MtCO<sub>2</sub>e

In 2009, suppliers reported a total volume of 93.7 MtCO<sub>2</sub>e transacted in the global voluntary carbon markets. Compared to the 126.6 MtCO<sub>2</sub>e transacted in 2008, volumes declined by 26%, although 2009 market volumes were still 39% above 2007 levels.

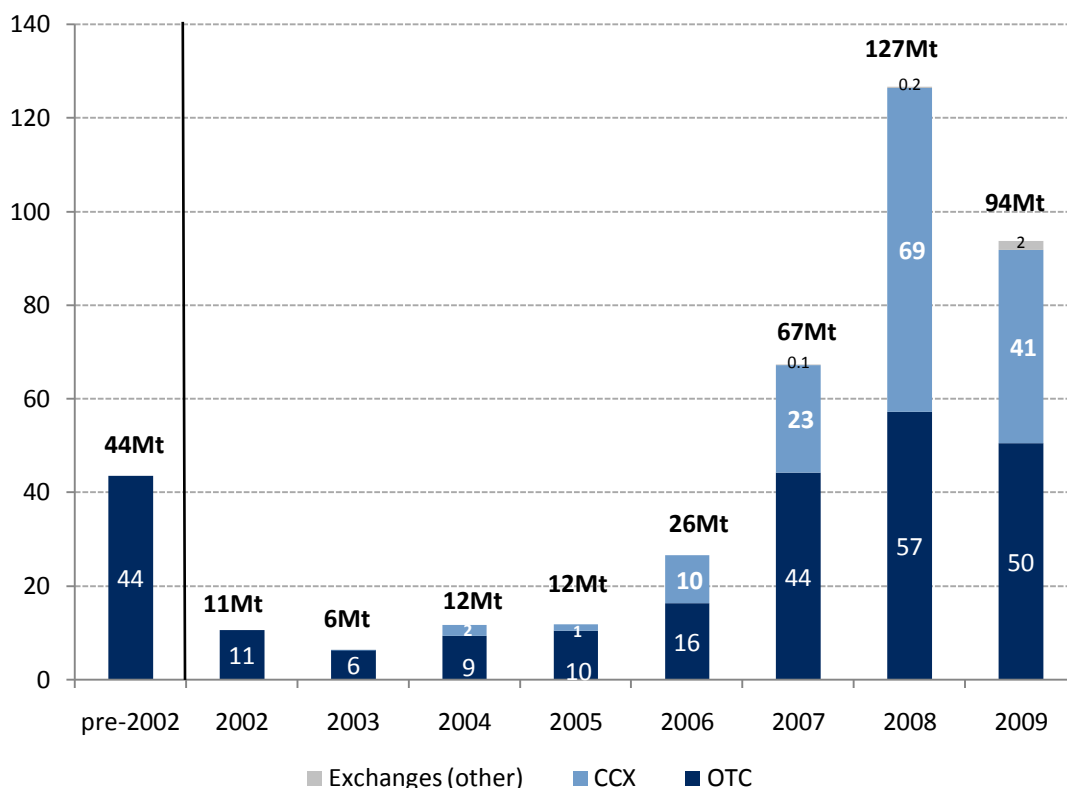
This drop in volume can be attributed to two major challenges. In response to the global financial crisis, companies cut back on discretionary funding for corporate social responsibility initiatives, including offsetting emissions. At the same time, the prospects for new compliance demand remained uncertain. In the United States, the American Clean Energy and Security Act of 2009 (Waxman-Markey) was approved by the House of Representatives in June and then stagnated in the Senate during the second half of the year. Uncertainty also surrounded the Australia Carbon Pollution Reduction Scheme (CPRS). On the United Nations Framework Convention on Climate Change (UNFCCC) front, negotiators continued to hammer out the details of financing REDD and its role within the carbon markets.

Almost half the voluntary market, 41.4 MtCO<sub>2</sub>e was transacted through the Chicago Climate Exchange (CCX) in the form of Carbon Financial Instruments (CFIs). In contrast to 2008, when CCX traded volumes grew by 202%, exchange-traded deals dropped 40% in 2009. The decrease was a result of a drop in speculative activity as well as a shift to the OTC market via privately negotiated transactions as buyers demanded specific offset credits in lieu of standardized CFIs. Looking at the overall CCX cap and trade system, i.e. both privately negotiated and exchange-traded deals, total trading volumes declined by 33% to 47 MtCO<sub>2</sub>e in 2009.

The other half of transaction volumes, 50.5 MtCO<sub>2</sub>e, was traded on the over-the-counter (OTC) market. Transaction volumes dropped 12% from 2008. For the purpose of this report, we consider the OTC market to represent all transactions related to offset project credits that have been negotiated bilaterally, i.e., outside of any exchange. This figure therefore also includes CCX credits that were transacted bilaterally, which contributed approximately 5.5 MtCO<sub>2</sub>e (11%) to the overall OTC volume.

OTC market volumes also include transactions tracked on other trading platforms such as the Chicago Climate Futures Exchange and Climex. Such trading platforms for credits generated specifically for the voluntary carbon markets gained traction last year, contributing 1.8 MtCO<sub>2</sub>e, or 2% of total transaction volumes in 2009—up tenfold from 0.2% in 2008.

**Figure 1: Transaction Volume Growth for the Voluntary Carbon Markets**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: CCX bilateral trades included in the OTC volume.

Overall, the voluntary carbon markets remain a small fraction (1%) of the size of the regulated markets. In 2009, the regulated carbon markets grew 7% and transacted 8,625 MtCO<sub>2</sub>e, valued at \$144 billion. While the voluntary carbon markets did not grow at the same rate as the regulated markets they still had a greater value than Joint Implementation or the New South Wales Greenhouse Gas Abatement Scheme.

## Total Market Value Decreased 47% to \$387 Million

The voluntary carbon markets transacted \$387.4 million in 2009. Values dropped about 47% from 2008 when the market value was estimated at \$728.1 million. The OTC market represented 84% of market value at \$325.9 million. Transactions on the CCX equaled \$49.8 million or 13% of the market.

Since OTC and CCX transaction volumes were roughly similar, this discrepancy in value was mostly due to significantly lower prices for credits transacted on the CXX. The average credit price on the OTC market declined by 12% from \$7.3/tCO<sub>2</sub>e to \$6.5/tCO<sub>2</sub>e. However, the CCX experienced a 73% drop in price from an average \$4.4/tCO<sub>2</sub>e in 2008 to \$1.2/tCO<sub>2</sub>e. Together with the volume decline, this diminished the CCX market value by 84%. Across the marketplace, credits transacted for as low as \$0.3/tCO<sub>2</sub>e and as much as \$111.0/tCO<sub>2</sub>e during 2009.

Table 1: Transaction Volumes and Values, Global Carbon Market, 2008 and 2009				
Markets	Volume (MtCO <sub>2</sub> e)		Value (US\$ million)	
	2008	2009	2008	2009
Voluntary OTC	57	51	420	326
CCX	69	41	307	50
Other Exchanges	0.2	2	2	12
<b>Total Voluntary Markets</b>	<b>127</b>	<b>94</b>	<b>728</b>	<b>387</b>
EU ETS	3,093	6,326	100,526	118,474
Primary CDM	404	211	6,511	2,678
Secondary CDM	1,072	1,055	26,277	17,543
Joint Implementation	25	26	367	354
Kyoto [AAU]	23	155	276	2,003
New South Wales	31	34	183	117
RGGI	62	813	241	2,667
Alberta's SGER	3	5	34	61
<b>Total Regulated Markets</b>	<b>4,713</b>	<b>8,625</b>	<b>134,415</b>	<b>143,897</b>
<b>Total Global Markets</b>	<b>4,840</b>	<b>8,719</b>	<b>135,143</b>	<b>144,284</b>

Source: Ecosystem Marketplace, Bloomberg New Energy Finance, World Bank.

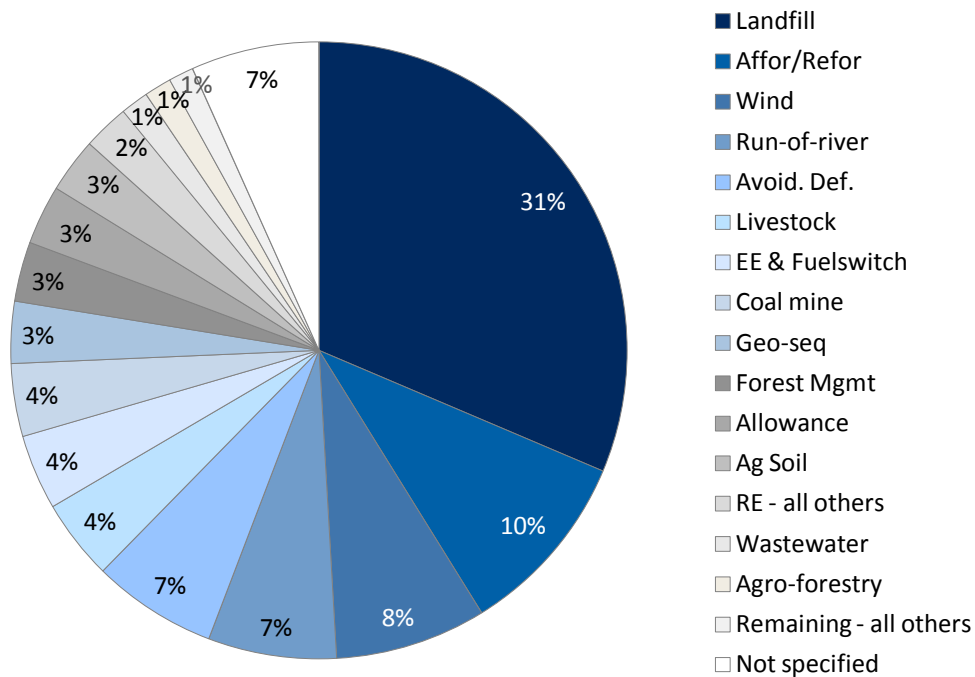
Note: Figures may not add up due to rounding.

## Methane Credits Were the Most Popular Project Type in OTC

The vast majority of credits in the voluntary OTC market originate from offset projects. In 2009, methane destruction projects captured 41% of OTC market transactions, followed by forestry projects (24%), and renewable energy (17%). Compared to 2008, methane and forestry projects roughly doubled their market share at the expense of renewable energy.

Much like 2008, the bulk of credits originating from methane destruction came specifically from landfill projects, which constituted 31% of the market volume. Popular forestry projects included afforestation/reforestation (10%), reduced emissions from deforestation and degradation (7%) and improved forest management (3%). The bulk of renewable energy projects were split fairly evenly between wind developments (8%) and hydro projects (7%), most of which was run-of-river hydro.

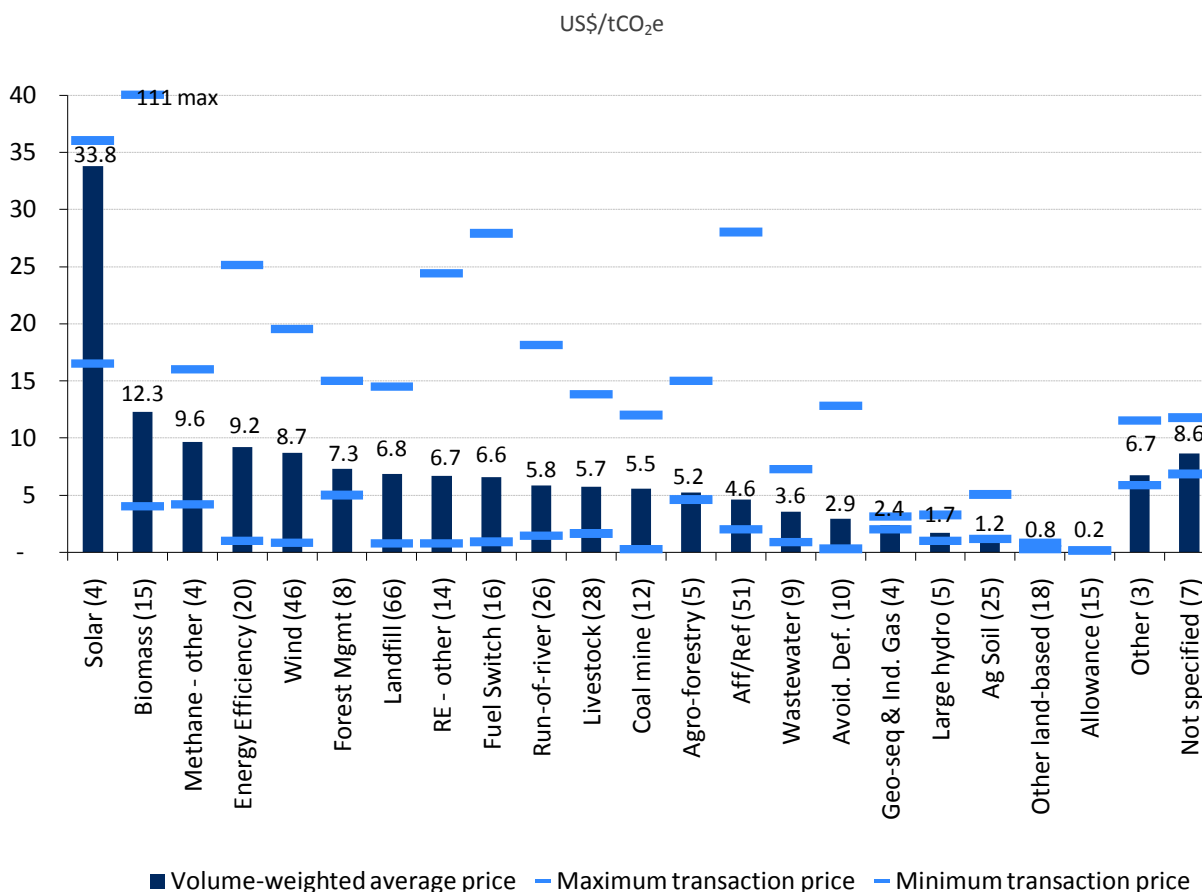
**Figure 2: Transaction Volume by Project Type, OTC 2009**



*Source: Ecosystem Marketplace, Bloomberg New Energy Finance.*

Consistent with previous years, prices within project types varied significantly for individual transactions due to variables such as transaction size, standards and sellers' position in the supply-chain. Overall, price trends by project type were very similar to those observed in 2008. The five highest-earning (by average credit price) project types on the market were predominantly renewable energy activities: solar (\$33.8/tCO<sub>2</sub>e), biomass (\$12.3/tCO<sub>2</sub>e), methane – other (\$9.6/tCO<sub>2</sub>e), energy efficiency (\$9.2/tCO<sub>2</sub>e) and wind (\$8.7/tCO<sub>2</sub>e). These project types traditionally earn above-average prices because of their high costs of production and particular appeal to voluntary market buyers.

Figure 3: Average Credit Price and Price Range by Project Type, OTC 2009



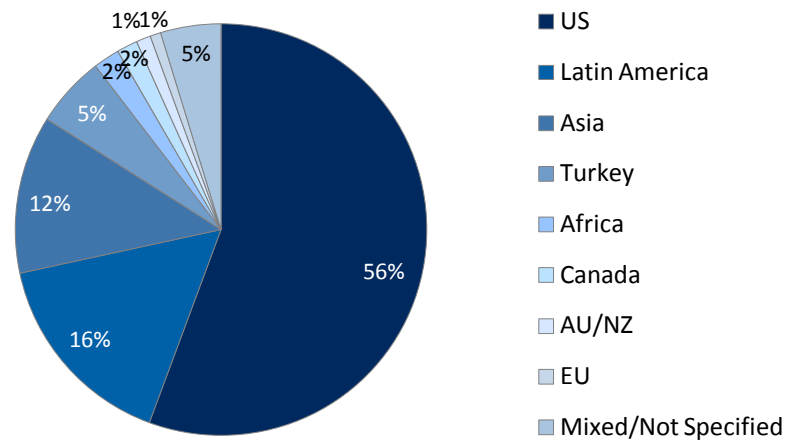
Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 410 observations.

## Supply Shifts to the US as the Dominant Credit Source

With regard to regional credit origination in 2009, North America took the lead for the first time since 2006 with 56% of OTC transaction volume (up from 28% in 2008). In 2007 and 2008, Asia was the home of the most credits transacted. North America's regained foothold can be attributed to strong pre-compliance activity in the US. The United States once again supplied more volume (24.2 MtCO<sub>2</sub>e, up from 15.0 MtCO<sub>2</sub>e in 2008) than any other single country. Following far behind was Latin America, which captured 16% (6.8 MtCO<sub>2</sub>e) of market share in 2009. Asia, which was the most common source of credits in 2008, found itself in third place (12%) for 2009 market share by volume, with India and China leading the Asian pack with 2.9 MtCO<sub>2</sub>e and 1.7 MtCO<sub>2</sub>e, respectively. Both nations have historically dominated Asian origination of verified emissions reductions (VERs) as well as Certified Emissions Reductions (CERs).

**Figure 4: Transaction Volume by Project Location, OTC 2009**

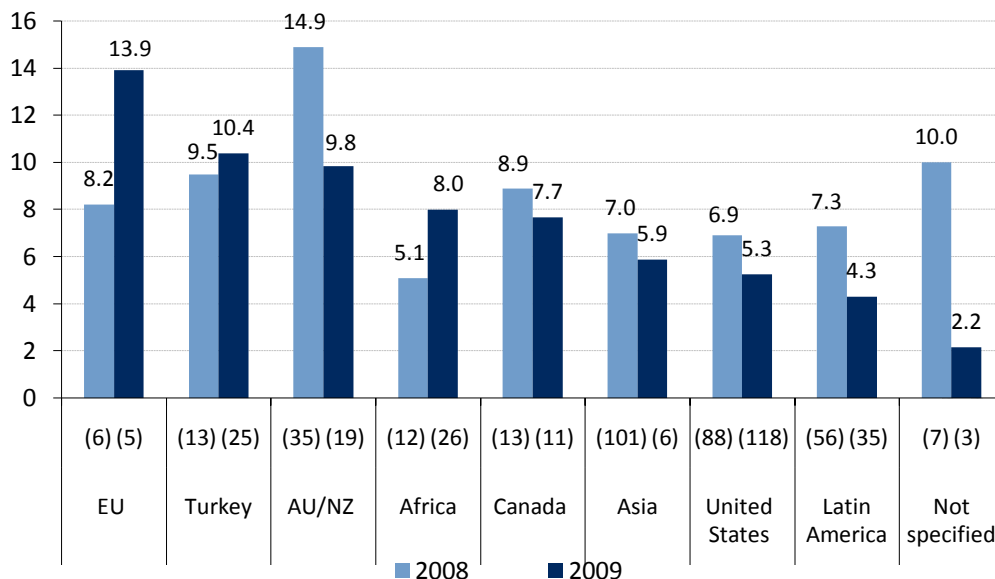


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

In 2009, leading standards solidified their market positions and settled into the voluntary carbon markets' mainstream. Last year, much like in 2008, over 90% of credits transacted adhered to a third-party standard. About 18 third-party standards are currently active in the marketplace.

Standards, registries and exchanges have become critical tools for assuring quality and transparency. Last year saw many of these tools coalesce as standards and other infrastructure providers partnered to increase efficiency and liquidity across these platforms. Standards also developed a variety of new methodologies and reached out to new regions.

**Figure 5: Average Credit Price by Region, OTC 2008 vs. 2009 (US\$/tCO<sub>2</sub>e)**



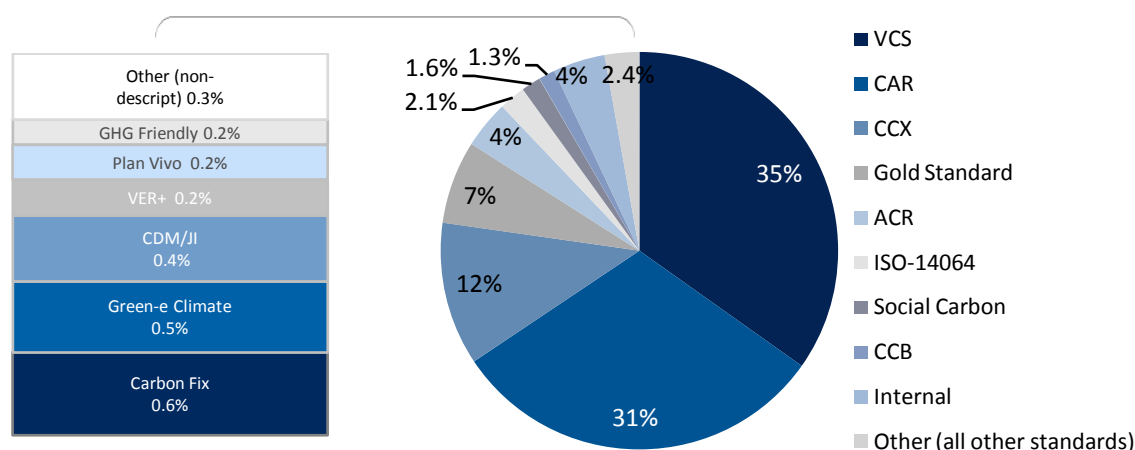
Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Much like for project type, prices varied significantly by project location. Overall, the highest average prices were credits originating in the European Union, Western Asia (represented solely by Turkey), Oceania and Africa. On average, the least expensive credits originated in Latin America and North America (the US in particular). Only three regions saw prices increase from 2008 to 2009— the EU (up 69%), Turkey, (up 9%) and Africa (up 57%). The biggest loss was seen in Latin America, where the price dropped 41% to \$4.3/tCO<sub>2</sub>e, garnering the lowest average price among regions. Oceania (-34%) and the US (-23%) also saw lower prices in 2009.

## The Voluntary Carbon Standard Fortified Its Market Lead, While CAR Played Pre-Compliance Lookout

The preferred third-party standards in 2009 were the Voluntary Carbon Standard (VCS) with 35% of transactions volume, followed by the Climate Action Reserve (CAR) at 31% and the CCX with another 12%. Together, the top three standards of 2009 had a larger piece of the market at 77% than the top three in 2008 (VCS, CAR and Gold Standard), which cornered 69% of the market. This trend confirms the consolidation that has been observed in the market for the past few years.

Figure 6: Standard Utilization, OTC 2009

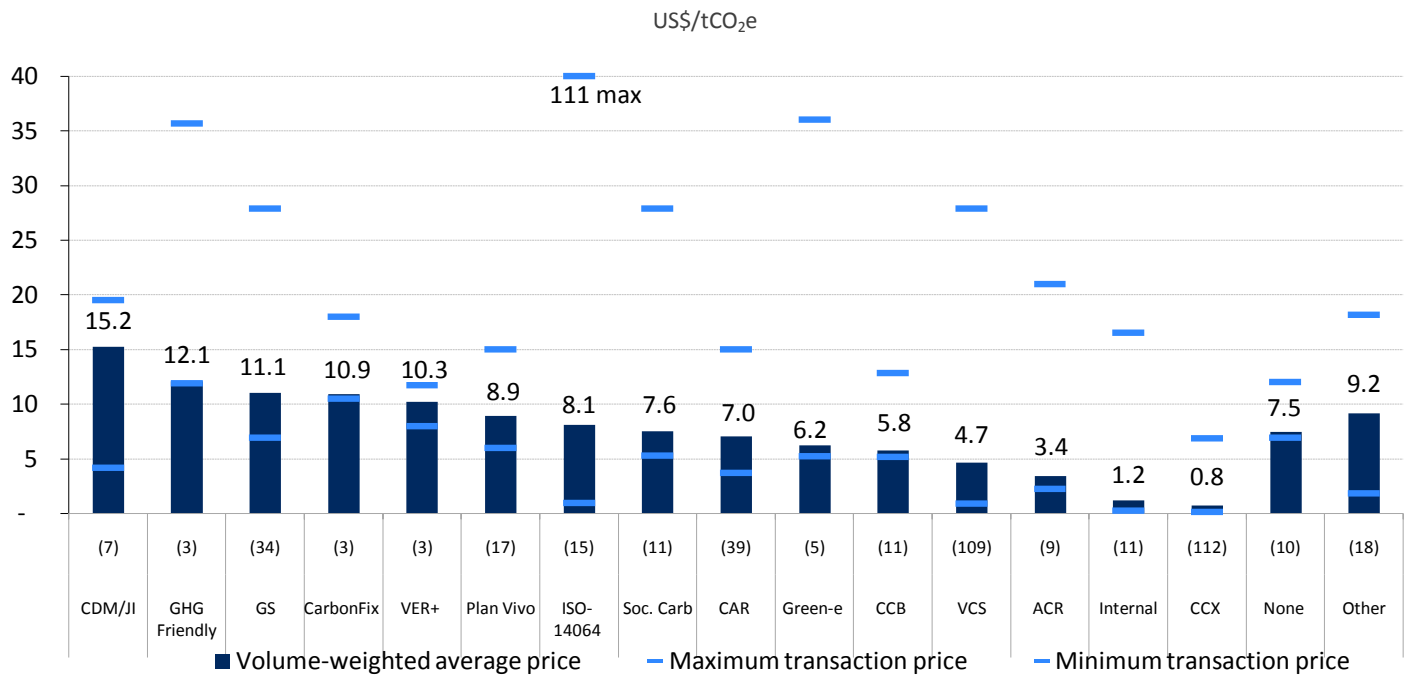


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Every standard fetched a wide range of prices, varying roughly as much by standard as by project type. CDM/JI credits sold to voluntary buyers topped the list at \$15.2/tCO<sub>2</sub>e, more than doubled the market-wide average OTC price in 2009, but nevertheless 29% less than in 2008.

Greenhouse Friendly credits garnered the next-highest average prices at \$12.1/tCO<sub>2</sub>e. Also reaping above-average prices were Gold Standard (\$11.1/tCO<sub>2</sub>e), as well as CarbonFix (\$10.9/tCO<sub>2</sub>e) and Plan Vivo (\$8.9/tCO<sub>2</sub>e), two standards developed solely for forestry projects. **SOCIALCARBON credits stacked with VCS saw a slightly increased average price in 2009 (\$7.6/tCO<sub>2</sub>e), which was again above-average due to buyers' willingness to pay a premium for social and environmental co-benefits.**

Figure 7: Average Price by Standard, OTC 2009



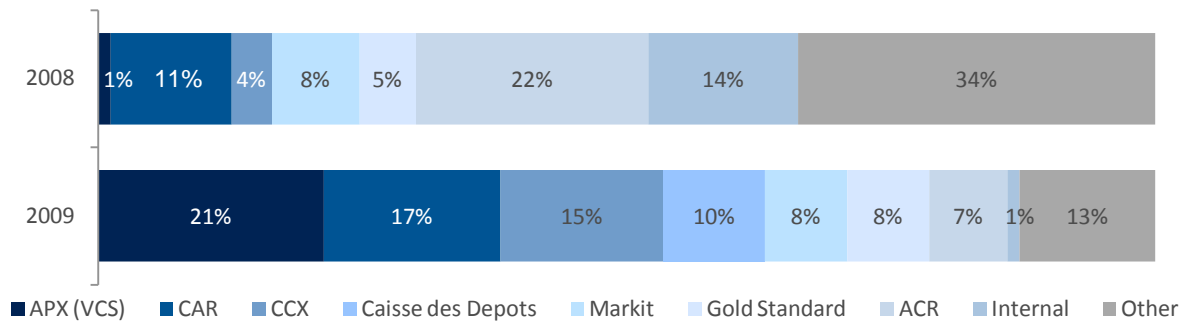
Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

## Registry Uptake Grows in 2009

Over the past three years, tracking ownership and credit issuance through a third-party registry has become increasingly essential for promoting liquidity and transparency in the voluntary market. By the end of 2009, most major standards were linked with a registry.

The voluntary market continued to consolidate around a few major registries that pursued partnerships and acquisitions to expand their market share—and in turn bolster buyers' confidence in the quality of carbon offsets as financial instruments. As of the publication of this report, there are at least 17 third party registries serving the voluntary carbon markets. In 2009, 51% of credits transacted were tracked in a registry, which represents a near doubling of the credits tracked in a third-party registry over 2008, when only 29% of credits were third-party registered.

Figure 8: Transaction Volume by Registry, OTC 2008 vs. 2009



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

With the uptake of registries, this year we analyzed respondents' transacted credits issued by different registries as well as individual registry reports of credits issued, but not necessarily transacted.

Figure 8 illustrates *survey respondents'* registry usage by transacted volume in 2009. As standard-specific registries came online in 2009, the market share of these registered credits fairly accurately reflected the standards' overall 2009 market share. For example, in March 2009, the VCS Registry System was launched which consists of three separate infrastructure providers—APX, Caisse des Depots and Markit. These registry providers saw considerable growth in 2009.

Suppliers reported that 21% of transacted credits were listed in the APX VCS registry. As with transaction volume, the CAR registry, serviced by APX, was a few percentage points behind with 17% (4.4 MtCO<sub>2</sub>e) of transacted credits in last year's market (up from 12% in 2008). Another 10% were reported to have transacted via the Caisse des Depots VCS registry, and 8% via Markit (formerly TZ1) which services several standards such as VCS, SOCIALCARBON and Plan Vivo.

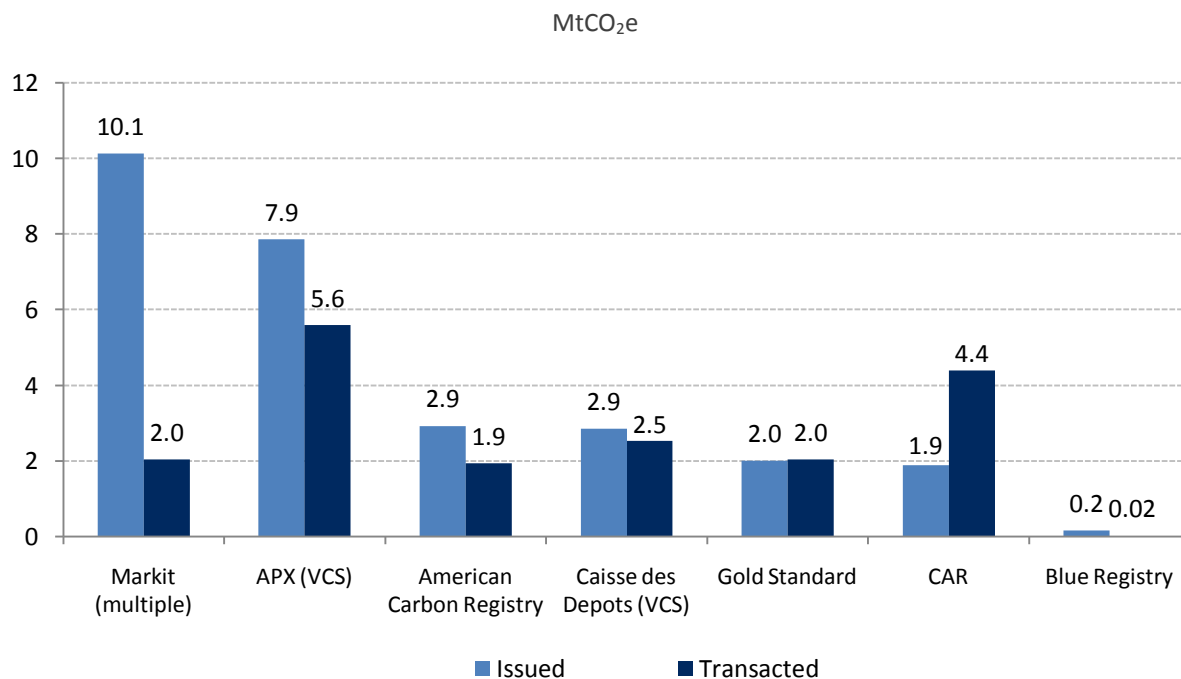
Within the OTC market, CCX saw sizeable growth in 2009 as CCX-registered credits claimed 15% of credits transacted via a registry in 2009, up from 4% in 2008. The CCX's increased importance is a confluence of the greater availability of CCX bilateral trade data that informed this report (although this was minimal in previous years).

Alternatively, the American Carbon Registry fell from the top ranking in 2008 (24% market share) with only 7% of credits transacted through a registry in 2009. Behind the American Carbon Registry, the CDM/JI registry also saw a small market share (4% in both 2008 and 2009) despite the fact that registered volumes grew by 74% over the course of the year.

Since issuance is another key means of measuring the market share of registries, we also examined the total volume of credits issued, but not necessarily transacted, by several major registries in 2009. In this case, Markit took the lead with 10.1 MtCO<sub>2</sub>e issued by multiple standards, followed by the APX VCS registry (7.9 MtCO<sub>2</sub>e) and then Caisse des Depots (1.9 MtCO<sub>2</sub>e), and Gold Standard (2.0 MtCO<sub>2</sub>e)<sup>1</sup>.

<sup>1</sup> Serviced by APX.

**Figure 9: Transaction Volume vs. Issuance by Registry, OTC 2009**



*Source: Ecosystem Marketplace, Bloomberg New Energy Finance.*

Suppliers described the voluntary carbon market in 2009 as a buyers' market—where buyers grew increasingly savvy about navigating the oversupplied alphabet soup of credits. A significant chunk of credits transacted in 2009 went to pre-compliance buyers focused on buying credits that might be eligible in a future compliance market. The other side of the market was driven by pure voluntary buyers focusing on charismatic carbon and/or offsetting on a budget.

Pure voluntary buyers with the intent to immediately retire the credits again took the lead as the main driver of transactions in 2009, capturing 48% of the market share (24 MtCO<sub>2</sub>e). This is up from 2008 when suppliers reported 32% of credits sold for retirement. Increased importance was seen for non-profit sector offsetting (at 7%, up from 1% in 2008) and businesses buying with a pre-compliance motive (23%, up from 1%).

Buyers in the United States supplanted European buyers as the dominant source of demand in the voluntary market in 2009. Respondents reported that the two regions combined purchased 90% of all offset credits, with European buyers (41%) falling behind US buyers (49%). In 2009, the US constituted the greatest market share of demand and supply (56%), reaffirming the important role that the pre-compliance market took on during the year. New Zealand and Australian buyers came in a very distant third to take home 4% of credits—most of these from domestic projects. The percentage of buyers in developing countries increased from 1% in 2008 to 4% in 2009.

## Market Participants Expect Continued Growth in Voluntary Carbon Markets

In 2010, the prospects for US federal climate change legislation have declined significantly, while the economic recovery seems to be well underway. As a result, this year may see a relative shift away from the pre-compliance market and back towards the ‘pure’ voluntary markets, as was the case in previous years.

Survey respondents were highly positive about the prospects for the global voluntary markets and collectively believe transactions will increase to approximately 400 MtCO<sub>2</sub>e in 2012, 800 MtCO<sub>2</sub>e in 2015 and 1,200 MtCO<sub>2</sub>e in 2020. Whether this growth will actually be achieved remains to be seen, yet it does demonstrate a strong sense of optimism for future activity in the voluntary marketplace.

With respect to standards, most respondents intend to use the VCS (64%), followed closely by Gold Standard (42%), the Climate Action Reserve (34%) and the CDM (33%). This generally suggests a continuation of the trend of the past few years although the expected usage of the CDM is remarkable with the emergence of popular voluntary standards. Projected registry use largely follows standards, with the most popular choices being two of the three registries in the VCS Registry System—APX (43%) and Markit (36%)—followed by the Gold Standard (36%), CAR (33%) and the CDM/JI registry (26%).

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## Glossary:

AAU	Assigned Amount Units
AB 32	Assembly Bill 32: California's Global Warming Solutions Act
ACR	American Carbon Registry
ACX	Australian Climate Exchange
ACX	Asia Carbon Exchange
AES	AES Corporation
BoNY	Bank of New York Mellon
CAR	Climate Action Reserve
CARB	California Air Resources Board
CCAR	California Climate Action Registry
CCB	Climate, Community and Biodiversity Standards
CCBA	Climate, Community and Biodiversity Alliance
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)
CFTC	Commodities Futures Trading Commission
CO <sub>2</sub>	Carbon dioxide
CPRS	Carbon Pollution Reduction Scheme
CRC	Carbon Reduction Commitment Energy Efficiency Scheme (United Kingdom)
CRT	Climate Reserve Ton
DOE	Designated Operational Entity
ECX	European Climate Exchange
EPA	US Environmental Protection Agency
EPA CL	US Environmental Protection Agency Climate Leaders
ETS	Emissions Trading Scheme
EUA	European Union Allowance
EU ETS	European Union Emission Trading Scheme
ERU	Emission Reduction Unit
FTC	US Federal Trade Commission
GE	General Electric
GF	Greenhouse Friendly
GHG	Greenhouse Gas
GS	Gold Standard
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
ISO	International Standards Organization
JI	Joint Implementation
J-VER	Japan Verified Emission Reduction

## Glossary (cont'd):

KWh	Kilowatt-hour
MAC	California Market Advisory Committee
MCeX	Montreal Climate Exchange
MGGRA	Midwestern GHG Reduction Accord
MtCO <sub>2</sub> e	Millions of tonnes of carbon dioxide equivalent
MW	Megawatt
MWh	Megawatt-hour
NGAC	New South Wales Greenhouse Abatement Certificate
NGO	Non-Governmental Organization
NO <sub>x</sub>	Nitrogen oxides
N <sub>2</sub> O	Nitrous oxide
NREL	US National Renewable Energy Laboratory
NSW GGAS	New South Wales Greenhouse Gas Abatement Scheme
NZ ETS	New Zealand Emissions Trading Scheme
NZU	New Zealand Units
OTC	Over-the-Counter (market)
RE	Renewable Energy
REC	Renewable Energy Credit
REDD	Reducing Emissions from Deforestation and Degradation
RGGI	Regional Greenhouse Gas Initiative
SGER	Specified Gas Emitters Regulation
SO <sub>2</sub>	Sulfur dioxide
tCO <sub>2</sub> e	Tonne of carbon dioxide equivalent
TREC	Tradable Renewable Energy Credit
UNFCCC	United National Framework Convention on Climate Change
VAT	Value Added Tax
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Units
VER	Verified (or Voluntary) Emission Reduction
VERR	Verified Emission Reductions-Removals
VOS	Voluntary Offset Standard
WBCSD	World Business Council for Sustainable Development
WCI	Western Climate Initiative
WRI	World Resources Institute
WWF	World Wildlife Fund

# 1. Introduction



*State of the Voluntary Carbon Market 2010: Building Bridges* is the fourth edition of an analysis Ecosystem Marketplace and Bloomberg New Energy Finance first teamed up to create in 2007. In response to a “black hole” of information, the report was developed to elucidate trends, transaction volumes, prices, project types and actors shaping the relatively opaque voluntary carbon market. Since the first report was released, we have followed sales, headlines and stakeholders while witnessing this dynamic and often controversial marketplace as it rapidly matures. As the arena becomes more sophisticated and in the context of the past years’ financial crisis, transparency and access to information is more important than ever.

Surveying last year’s market, a key theme was stakeholders building bridges to facilitate the flow of information and finance, as well as developing new projects in an expanding number of locations. Such linkages are fundamentally altering the landscape of the voluntary carbon markets.

On the infrastructure front, standards gained stability and facilitated liquidity by partnering with registries and in some cases opening their doors to other competing but compatible standards. Also, exchanges expanded the boundaries of the voluntary carbon market by connecting buyers with new products and means of accessing credits. The flow of knowledge also began to shift from voluntary markets tagging along with compliance markets’ methodologies and protocols, to regulated markets in some cases citing lessons learned from innovative voluntary market projects, standards and registries.

At the same time, project developers reached out to new regions of the world. In particular, consumer demand for offset projects with sustainable development components helped push new carbon finance to the continent of Africa. In 2009, VCM finance stretched to projects in 39 countries.

Like its predecessors, the *State of the Voluntary Carbon Markets 2010* is based on a survey of suppliers across the marketplace. More than 200 suppliers voluntarily contributed data and dozens took the time to share insights through interviews. Despite this huge outreach, we remain acutely aware that it is not possible to track every trade and acknowledge the pitfalls that accompany survey-based analysis. Hence, we caution readers to consider our reported numbers to be conservative and to understand the methodology behind the numbers. Despite imperfections, this approach has enabled us to document market trends, transactions and drivers, helping participants to better understand the current market landscape and emerging developments.

We thank suppliers that contributed data for their time, information and other contributions to this report that we hope will continue to foster a more transparent and effective marketplace.

Both Ecosystem Marketplace and Bloomberg New Energy Finance will continue to track this marketplace through 2010 via original news coverage, newsletters, a Voluntary Carbon Index 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](mailto:vcarbonnews@ecosystemmarketplace.com) and [sales.bnef@bloomberg.net](mailto:sales.bnef@bloomberg.net).



## 2. Capturing the Data: Methodology



### Summary Points

- This report is based on data shared by 200 offset suppliers and intermediaries, as well as 8 registries and exchanges in the voluntary carbon markets. Approximately 493 individual transactions were tracked.
- Suppliers were headquartered in 34 different countries. Most respondents were based in the United States, followed by Australia, United Kingdom, Canada, Germany and France, in descending order.

In this report “voluntary carbon markets” refers to all purchases of carbon credits not driven by an existing regulatory compliance obligation. This includes transactions involving credits created specifically for the voluntary markets (such as Verified Emission Reductions or Carbon Financial Instruments), as well as transactions in which suppliers sold regulatory market credits (such as Certified Emission Reductions) to buyers seeking to voluntarily offset their emissions.

This report largely encapsulates 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 transaction value of the overall market. We also collected retirement data to account for the end-consumption of offsets, at which point a credit can no longer be resold.

### 2.1 Data Collection

This report is based on data collected from offset project developers, wholesaler/aggregators, 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 OTC voluntary carbon market. The survey was posted publicly between January 12 and April 15, 2010. It was sent to a list of more than 500 possible suppliers and was distributed through the Ecosystem Marketplace V-Carbon Newsletter and Climate-L list serve.

We complemented the survey data with data provided by major brokerage firms such as Tullett Prebon, Evolution Markets, MF Global, CantorCO<sub>2</sub>e and TFS Green as well as registries and exchanges, including: the American Carbon Registry (ACR), Markit, APX, the BlueRegistry, the Chicago Climate Exchange, Chicago Climate Futures Exchange, Montreal Climate Exchange and Climex. Additional data collected from Ecosystem Marketplace’s *State of the Forest Carbon Markets 2009* report was also included.

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. Because the disclosed CCX bilateral transaction data only includes transactions from August 4 to December 31, 2009, survey responses were utilized to capture any CCX bilateral trades prior to August 3, 2009. This year we also increased our outreach to CCX suppliers; all 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 200 organizations that supplied carbon offsets to voluntary buyers in or before 2009. We were able to attain data for five more offset suppliers via the American Carbon Registry, bringing the total to 205 suppliers. For a list of names and websites of non-anonymous survey respondents that classified themselves as carbon offset sellers, see Appendix A.

From our list of identified suppliers 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. Many suppliers were especially reticent to share price and volume data, and as a result only 65% of respondents chose to share volume data.

Because many of the calculations in this report are weighted by respondents' transaction volumes, responses from suppliers who did not disclose 2009 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 supplier's transaction information.

We also chose to provide a country-breakdown for only 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). This year's survey collected transaction-specific information, which provided us with more granular data than in previous years when we collected only the aggregate sum of transactions of credit types and then disaggregated by price, currency, volume, standard utilized, project type and location.

## 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 or verify data shared through third-party registries. However, we did follow up with dozens of respondents to confirm or clarify survey responses.

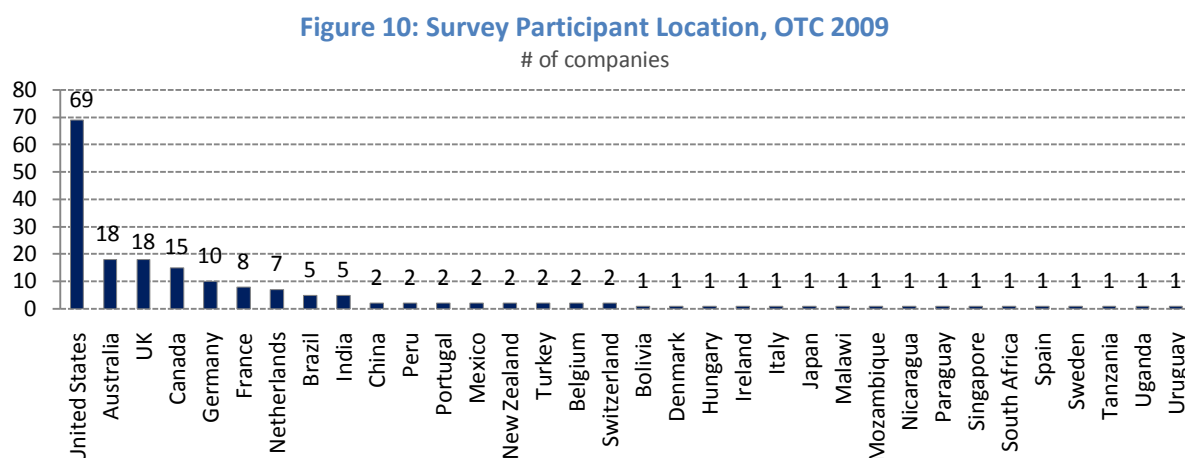
Because we collected data from brokers and registries as well as suppliers, we risked counting some transactions twice. To minimize the chance of “double-counting”, we asked respondents to specify whether they utilized a broker to sell credits or transacted credits listed in a registry or over an exchange. When we identified an overlap, the transaction was counted only once.

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<sub>2</sub>e).

## 2.5 Response Distribution

As in previous years, the majority of survey respondents were based in the US (35%). After the US, the country with the second most respondents was Australia, followed by the United Kingdom (UK), Canada, and Germany. This response distribution seems to match the OTC marketplace trends at the retailer, broker and wholesaler levels. For example, given the absence of national regulated markets in the US and Australia, it should be expected that carbon offset providers to voluntary buyers are particularly prevalent in these two countries.

While the locations of respondents match the locations of the bulk of intermediary sellers in the marketplace, 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 intermediaries in the survey and hence Figure 10 does not represent the distribution of projects.



Source: Ecosystem Marketplace, Bloomberg New Energy Finance. Based on 189 survey respondents.



# 3. Voluntary Carbon Markets 101



## Summary Points

- The voluntary carbon markets can be divided into two segments: the Chicago Climate Exchange (CCX) and the voluntary “Over-the-Counter” (OTC) offset market.
- The Chicago Climate Exchange is the world’s only voluntary cap-and-trade system.
- This report primarily focuses on the voluntary offset market, which is based on bilateral deals and is therefore referred to as the OTC market.
- A small but growing fraction of independent exchanges transacted offset credits in 2009.
- At least four governments have instituted national voluntary offset programs.

The worldwide carbon markets can be divided into two segments: the voluntary markets and the regulatory (compliance) markets. As the name implies, the voluntary carbon markets include all carbon credit trades that are not required by regulation. The voluntary carbon markets themselves have two components: the Chicago Climate Exchange (CCX), a voluntary but legally binding cap-and-trade system, and the broader, non-binding “Over-the-Counter” (OTC) offset market. The categories overlap in that numerous CCX-validated offsets have actually been traded outside the exchange in OTC deals.

## 3.1 Chicago Climate Exchange

The CCX defines itself as “the world’s first and North America’s only voluntary, legally binding, rules-based greenhouse gas emission reduction and trading system.”<sup>2</sup> It is driven by a membership-based cap-and-trade system. Members voluntarily join the CCX and agree to its legally-binding reductions policy. Like the Kyoto markets, the CCX trades six types of greenhouse gas (GHG) emissions converted into one common unit denominated in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e).

The CCX’s unit of trade is the Carbon Financial Instrument (CFI), which represents 100 tCO<sub>2</sub>e. CFIs may be either *allowance-based credits*, issued to emitting members in accordance with their emissions baselines and the exchange’s reduction goals, or *offset credits* generated from qualifying emissions-reduction projects. Offset-based credits can be used to offset up to 50% of the total program’s emissions reduction requirement (there is no limit on an entity level), but currently only 15% of reduction requirements are achieved by CCX members through offsets. The vast majority of reductions (85%) are achieved through mitigation efforts that companies make at their facilities to reduce emissions.<sup>3</sup>

<sup>2</sup> <http://www.chicagoclimatex.com>.

<sup>3</sup> [http://www.chicagoclimatex.com/docs/offsets/CCX\\_General\\_Offset\\_Program\\_Provisions\\_Final.pdf](http://www.chicagoclimatex.com/docs/offsets/CCX_General_Offset_Program_Provisions_Final.pdf).

Both buyers and suppliers of CCX credits must be members of the exchange. Entities committed to tracking their own emissions include full members, associate members and registry participant members.

**Full members** are entities with significant direct GHG emissions that have committed to reducing their emissions 1% per year from a baseline determined by their average emissions from 1998 through 2001. The current goal (Phase II) is for members to reduce their total emissions to 6% below the baseline through 2010. As of January 2010, there were 110 full members of the CCX. Some full members are also **registry participant members** that elect to establish a CCX Registry account of their emissions and undergo data verification.

**Associate members** are entities with negligible direct GHG emissions. Associate members commit to report and fully offset 100% of their indirect emissions associated with energy purchases and business travel from year of entry through 2010. As of May 2010, 37 companies were participating as associate members.

Other Members that do not conduct internal GHG inventories but do buy or sell credits as participant members are:

- **Offset providers:** Owners of title to qualifying offset projects that sequester, destroy or reduce GHG emissions. Offset providers register and sell offsets directly on the CCX.
- **Offset aggregators:** Entities that serve as the administrative representative, on behalf of offset project owners, of multiple offset-generating projects.
- **Liquidity providers:** Entities or individuals who trade on CCX for purposes other than complying with the CCX Emission Reduction Schedule, such as market makers and proprietary trading groups.
- **Exchange participants:** Entities or individuals who purchase CFI contracts and retire them to offset emissions associated with special events or other specified activities.

As of May 2010, there were 217 participant members and 36 exchange participants in the CCX.

In April 2010, Intercontinental Exchange announced an offer to purchase the Climate Exchange Plc group of companies, which owns the CCX as well as the European Climate Exchange (ECX), the Montreal Climate Exchange, Envex (Australia and Asia-Pacific) and the Tianjin Climate Exchange. The India Climate Exchange (ICX) is currently in development as a pilot cap-and-trade program in India.

### 3.2 The Voluntary “Over-the-Counter” (OTC) Market

Outside of the CCX, one finds a wide range of voluntary transactions that make up a voluntary market not driven by any sort of emissions cap. Because this market is not part of a cap-and-trade system, almost all carbon credits purchased in this voluntary market originate from emissions reduction projects and are thus offsets. Additionally, because the majority of transactions do not occur on a formal exchange, we have labeled it the voluntary “Over-the-Counter” (OTC) market.

Credits sourced specifically for the OTC market are often generically referred to as Verified (or Voluntary) Emission Reductions (VERs), or simply as carbon offsets.<sup>4</sup> However, OTC buyers may also voluntarily purchase credits from compliance markets such as the Clean Development Mechanism (CDM) or the Regional Greenhouse Gas Initiative.

The OTC market is driven by “pure voluntary” and “pre-compliance” buyers. Pure voluntary buyers purchase credits to offset their own emissions and are driven by ethical or corporate social responsibility motivations. Hence, the demand curve for these pure voluntary offset purchases has as much in common with the markets for Fair Trade or organic cotton as it does with the regulated carbon markets.

Pre-compliance buyers purchase VERs with one of two goals in mind: 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 compliance cap-and-trade scheme. Companies with the first goal are entities likely to be regulated, while companies with the second goal are largely financial firms.

### 3.3 Examples of Government Voluntary Offset Programs

In several cases, governments have instituted voluntary emissions-reduction and carbon offset-purchasing programs. When deciding whether to include these programs in this analysis of the voluntary carbon markets, we screened and categorized these programs based on whether they contributed to a country’s regulatory requirements or supported pure voluntary buys. For example:

**Japan’s Keidanren Voluntary Action Plan on the Environment** is one aspect of Japan’s Kyoto commitment to reduce GHG emissions to 6% below its 1990 levels within the first commitment period from 2008 to 2012. The Plan encompasses 61 different Japanese business associations and corporations representing 35 industries. Member companies in the Plan have committed to reducing their average emissions from 2008 to 2012 to below 1990 levels. Despite a lack of legally binding emissions reduction requirements, the Keidanren Voluntary Action Plan is positioned as a Kyoto Protocol Target Achievement Plan.<sup>5</sup> Offset credits are, in theory, purchased voluntarily. However, the only viable offsets are Kyoto credits or credits generated through Ministry of Economy Trade and Industry Domestic Credit Program. All purchases are accounted for in a national registry system and used to meet Kyoto commitments.

This program can be considered “semi-mandatory.” Since meeting the target is not required by law, emissions reductions are calculated in Japan’s Kyoto commitments and most companies are compelled to meet the target at a reputational level. Hence, its emissions and participants are not included in this report. We have attempted to track any credits purchased in Japan outside these systems, including those certified through the Certification Center on Climate Change’s J-VER scheme. The Japanese government aims to incorporate these various small scale emissions trading schemes into the voluntary

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<sup>4</sup> 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.

<sup>5</sup> <http://www.kiconet.org/english/publication/archive/keidanren-vap.pdf>.

Experimental Integrated ETS, launched in 2008 and operational throughout 2009 with 715 participating organizations, 521 of which have committed to targets.

**The US EPA Climate Leaders<sup>6</sup>** program encourages industrial partners to develop comprehensive climate change strategies by completing a corporate-wide inventory of their greenhouse gas emissions based on a quality management system, setting aggressive reduction goals, and annually reporting their progress to the US Environmental Protection Agency (EPA). Companies that meet their reduction targets through internal emissions reductions in combination with voluntary offset and renewable energy credit purchases receive public recognition from the EPA, similar to the EPA's Energy Star program. In 2009, the program welcomed 60 new participants, bringing the total to more than 250 partners. EPA Climate Leaders released its voluntary offset guidance in 2008, a set of performance-based standards for seven offset project types. Currently, four projects have been approved for use by those partners that are able to reduce their carbon emissions through offsetting.

**The Canadian GHG Clean Start Registry,<sup>7</sup>** north of the US border, provides similar opportunities to Canadian businesses seeking to gain recognition for their greenhouse gas-reduction efforts while ensuring that those claims are made in a transparent and standardized way. The program, instantiated in early 2009, requires conformation to ISO 14064 standards for emissions calculations and internal reduction efforts, and allows for companies wishing to make a claim of full carbon neutrality to purchase carbon offsets that have been: (a) registered on a public registry, (b) certified by a third-party, and (c) serialized and retired.

**Australia's Greenhouse Challenge Plus** program was created in 1995 to help Australian companies improve energy efficiency and reduce GHG emissions. Like the US EPA Climate Leaders program, this government program included emissions-reduction progress reporting and technical assistance. The program ended in July 2009, but had more than 700 organizations participate throughout its lifetime. A particularly unique aspect of the Greenhouse Challenge Plus program is the Greenhouse Friendly Initiative, set to expire in mid-2010 to make way for Australia's National Carbon Offset Standard (NCOS). Greenhouse Friendly certifies credits from emissions abatement programs as well as "carbon neutral" claims. Although this initiative formed part of a government program, the program is based on purchases made by non-regulated entities and is thus purely voluntary. Furthermore, the program allows entities to utilize credits that are not part of a regulatory system.

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<sup>6</sup> <http://www.epa.gov/stateply/>.

<sup>7</sup> [http://www.ghgregistries.ca/cleanstart/index\\_e.cfm](http://www.ghgregistries.ca/cleanstart/index_e.cfm).

## 4. The Regulatory Context

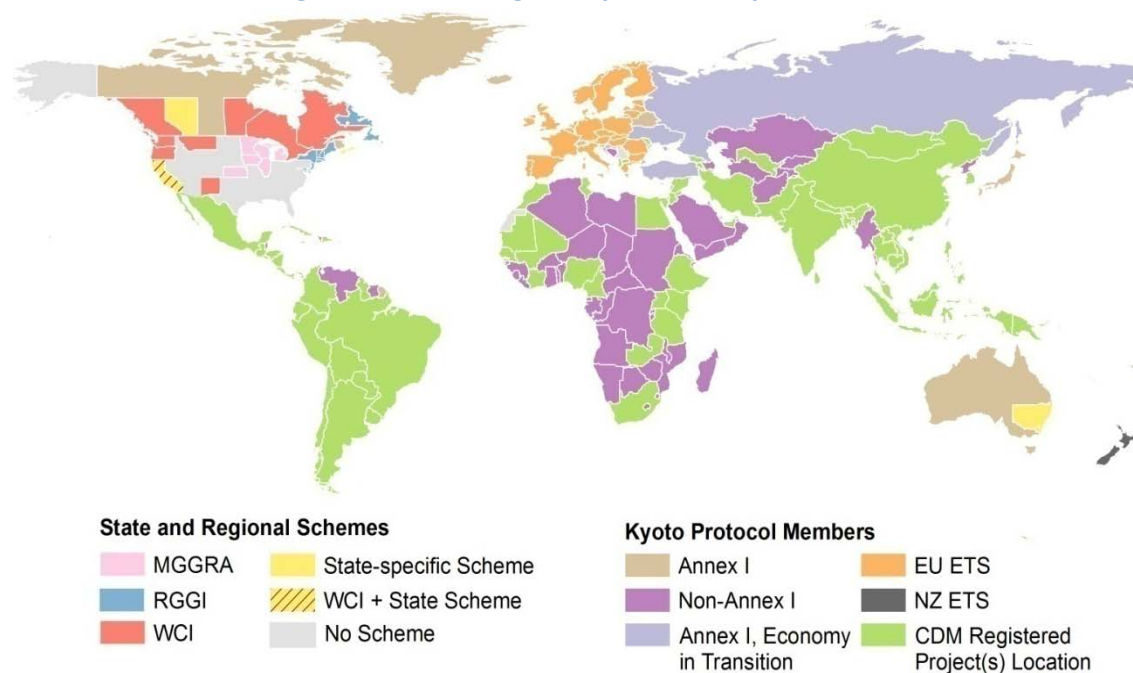


### Summary Points

- The Kyoto Protocol (Kyoto) is the legally binding international agreement that launched the largest carbon market in the world. As of April 2010, 190 countries had signed up, with 37 industrialized countries having agreed to a target of reducing emissions by an average of 5.4% below 1990 levels over the period 2008-2012.
- Countries that ratified Kyoto can achieve their targets via three “flexibility mechanisms”: Emissions Trading, Joint Implementation (JI) and the Clean Development Mechanism (CDM).
- Although the US did not ratify Kyoto, many legally-binding state and regional American GHG reduction initiatives exist or are coming into existence including: the Regional Greenhouse Gas Initiative (RGGI), California’s Global Warming Solutions Act (AB 32), the Western Climate Initiative (WCI), and the Midwestern GHG Reduction Accord (MGGRA).

As the name suggests, voluntary carbon credit transactions are defined by the lack of a regulatory driver. They do, however, operate alongside their regulated market cousins and are heavily influenced by them. Hence, understanding the basics of the regulatory markets is key to exploring the voluntary side of carbon trading. Below is a brief outline of these regulated markets.

**Figure 11: Select Regulatory Schemes by Location**



Source: UNFCCC, WCI, RGGI websites; created by Molly Peters-Stanley for Ecosystem Marketplace and Bloomberg New Energy Finance, 2010.

## 4.1 The Kyoto Protocol: Setting the Stage

The Kyoto Protocol is a legally binding agreement under which 37 industrialized countries<sup>8</sup> (as of late April 2010) have agreed to reduce their collective GHG emissions to an average of 5.4% below their 1990 emissions levels over the period 2008-2012. It is under the Kyoto regime, which came into effect in 2005, that the world's largest GHG markets have evolved.<sup>9</sup> These markets are based on a cap-and-trade model with three major “flexibility mechanisms:” Emissions Trading, Joint Implementation, and the Clean Development Mechanism (CDM). These mechanisms are the foundation of the regulated international Kyoto carbon market:

- **International Emissions Trading** is a system where parties that have exceeded their emission reduction commitments under the Kyoto Protocol may sell excess “assigned amount units” (AAUs). Other parties may meet their own emissions reductions by purchasing these AAUs or offset credits from developing countries. The mechanism has resulted in several national and regional trading schemes, including the **European Union Emission Trading Scheme** (EU ETS).
- **Joint Implementation (JI)** allows emitters in developed countries (referred to as Annex-I countries under the Kyoto Protocol) to purchase carbon credits via “project-based” transactions (meaning from greenhouse gas-reduction projects) implemented in either another developed country or in a country with an economy in transition. Credits from these JI projects are referred to as Emission Reduction Units (ERUs).
- **The Clean Development Mechanism (CDM)**, like JI, is a project-based transaction system through which industrialized countries can accrue carbon credits. Unlike JI, however, CDM credits are acquired by financing carbon-reduction projects in developing countries, making this mechanism the critical link between developed and developing countries under Kyoto. Carbon offset credits originating from registered and approved CDM projects are called Certified Emission Reductions (CERs). CERs and ERUs can also be sold in the voluntary markets and CDM methodologies have influenced several offset project standards in the voluntary carbon markets.

### North America

The development of regulated carbon markets in North America continues to be disjointed and regional. The US did not ratify the Kyoto Protocol and federal climate legislation has not been passed. However, regional programs continue to develop.

Canada and Mexico, though both parties to the Kyoto Protocol, also have yet to create national-level carbon-trading schemes but participate across borders in several US regional schemes. Under the Kyoto Protocol Mexico is a developing country without targets and can therefore participate in the CDM.

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<sup>8</sup> United Nations Framework Convention on Climate Change (UNFCCC), “Kyoto Protocol Status of Ratification.” <http://unfccc.int/playground/items/5524.php>.

<sup>9</sup> Six GHGs are regulated under the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons.

On the bi-lateral front, US President Barack Obama and Mexican President Felipe Calderon established the US-Mexico Bilateral Framework on Clean Energy and Climate Change in April 2009. Later in the year, high ranking US and Canadian officials also initiated the Clean Energy Dialogue to encourage collaborative action on climate change.

## United States

As a stop-gap solution to a federal climate bill, the US Environmental Protection Agency (EPA) announced in spring 2010 that it would regulate greenhouse gases beginning in 2011. The EPA will act on its “endangerment finding” to phase in permit requirements for polluters with annual GHG emissions exceeding 75,000 tCO<sub>2</sub>, as well as some mobile emissions sources. As of April 2010, the EPA has yet to confirm if the regulatory framework will include a permit-trading scheme.

On the East Coast, ten states (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont) developed the **Regional Greenhouse Gas Initiative (RGGI)**, a mandatory regional strategy to reduce CO<sub>2</sub> emissions from the electricity sector through a cap-and-trade system. RGGI is the only active market in the US; it launched in September 2008 and has conducted seven successful allowance auctions to date, with three more scheduled for the remainder of 2010. The seven auctions sold 204.1 million allowance credits raising \$582.3 million for energy efficiency, renewable energy and other consumer benefit programs in the ten RGGI states.<sup>10</sup> Currently more than 90% of the permits are sold at auctions, representing approximately 154 MtCO<sub>2</sub>e/yr.<sup>11</sup>

RGGI participants can account for up to 3.3% of their emissions by purchasing offsets from approved domestic projects. If the average allowance price tops \$7.0/short tCO<sub>2</sub>e, offsets can be used for up to 5% of emissions, and if prices rise above \$10.0/short tCO<sub>2</sub>e, participants can offset 10% of their emissions. In this last case, offsets may be used from the Kyoto Protocol’s CDM.<sup>12</sup>

On the opposite coast, the **Western Climate Initiative (WCI)** announced a partnership between 11 North American jurisdictions in 2007—Arizona, California, Montana, New Mexico, Oregon, Utah and Washington in the US, and British Columbia, Manitoba, Ontario and Quebec in Canada—to collectively reduce greenhouse gas emissions to approximately 15% below 2005 levels by 2020. Six other US states, six Mexican states, and Canadian states Saskatchewan and Nova Scotia participate as observers. The WCI plans to implement a cap-and-trade scheme in 2012 that will cover companies in the electricity generation sector and industrial polluters that emit more than 25,000 tCO<sub>2</sub>e annually. In 2015, coverage will also incorporate fuels and industrial combustion below the 25,000 tCO<sub>2</sub>e threshold.

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<sup>10</sup> Regional Greenhouse Gas Initiative, Inc. “RGGI CO<sub>2</sub> Auctions Yield Millions for Investment in Clean Energy, Job Creation.” [http://www.rggi.org/docs/Auction\\_7\\_Release\\_MM\\_Report\\_2010\\_03\\_12.pdf](http://www.rggi.org/docs/Auction_7_Release_MM_Report_2010_03_12.pdf).

<sup>11</sup> Gardner, Timothy. “Regional U.S. cap-trade proceeds fund efficiency” Reuters UK, March 24, 2010. <http://uk.reuters.com/article/idUKN2454138920100324>.

<sup>12</sup> Regional Greenhouse Gas Initiative, Inc. “States release results for third RGGI auction.” <http://www.rggi.org/docs/Auction%203%20News%20Release%20MM%20Report.pdf>.

The scheme will also incorporate offsets generated from a number of protocols focused on agriculture, forestry and waste management,<sup>13</sup> but stated in March 2010 that credits from other carbon markets will account for no more than 49% of reductions to meet their goal.<sup>14</sup>

Though Arizona contributed to the original WCI and is technically still a member, in 2009 Arizona Governor Jan Brewer rescinded the state's agreement to participate in the WCI's cap-and-trade program, fearing its potential economic impact.<sup>15</sup> Arizona was the first state to defect from the WCI's trading scheme, but not the last. In April 2010, Utah Governor Gary Herbert's office confirmed that the state would be following Arizona's lead and would not enact the legislation essential for Utah to take part in the regional cap-and-trade scheme. Montana, Oregon and Washington states also expect delays for enabling legislation through 2012.

California's **Global Warming Solutions Act (AB 32)** is the first U.S. statewide program to cap all GHG emissions from major industries and include penalties for non-compliance. Under the Act, California's State Air Resources Board (CARB) is required to create, monitor and enforce a GHG-emissions reporting and reduction program, aiming to reduce the state's GHG emissions to 1990 levels by 2020. The California Market Advisory Committee (MAC) was created in December 2006 to provide recommendations on the implementation of the Act. Participation in the WCI is one of the MAC's recommendations, and the state is one of the leading partners in the Initiative.<sup>16</sup>

The Act may be challenged in November 2010, pending sufficient support for a ballot measure that would suspend the implementation of AB32 until the state's unemployment rate falls to 5.5%.<sup>17</sup>

A third regional cap-and-trade program is also in the making—the **Midwestern Regional GHG Reduction Accord** (MGGRA). This program consists of the following members: Iowa, Illinois, Kansas, Manitoba (Canada), Michigan, Minnesota and Wisconsin. Indiana, Ohio, Ontario (Canada) and South Dakota are program observers. The MGGRA was signed in November 2007 and sets an approximate emissions target of 16% below 2005 levels. Its current Draft Design Recommendations follow the structure and format of the RGGI. The program is scheduled to start in 2012, with a regional cap-and-trade system covering most sectors of the economy—approximately 1,107 MtCO<sub>2</sub>e/yr by 2012—making it slightly larger than the WCI.<sup>18</sup> Like the WCI, implementation is contingent on the authorization of member states. As of mid-2010, the prospect of legislative authorization varied by state ranging from Wisconsin, where draft legislation was introduced, to Kansas, where no move had yet been made to authorize the MGGRA.

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<sup>13</sup> ECOS, "Regional Cap-and-Trade Programs," March 2009.

[http://www.ecos.org/files/3529\\_file\\_March\\_2009\\_ECOS\\_Green\\_Report.doc?PHPSESSID=9eefab6e98ee58e170c96ac4a64d0f5c](http://www.ecos.org/files/3529_file_March_2009_ECOS_Green_Report.doc?PHPSESSID=9eefab6e98ee58e170c96ac4a64d0f5c).

<sup>14</sup> Western Climate Initiative, "WCI Releases Recommendations for Implementing its Offset Limit," March 2010.

<http://www.westernclimateinitiative.org/news-and-updates/102-wci-releases-recommendation-for-implementing-its-offset-limit>.

<sup>15</sup> <http://www.azcentral.com/arizonarepublic/news/articles/2010/02/11/20100211climate-brewer0211.html>.

<sup>16</sup> California Environmental Protection Agency, "Expert Advisors Release Final Cap-and-Trade Report: Recommendations Intended to Complement California's Ongoing Efforts to Reduce Emissions," 29 June 2007. [http://www.climatechange.ca.gov/notices/news/2007-06-29\\_MAC\\_FINAL\\_RELEASE.PDF](http://www.climatechange.ca.gov/notices/news/2007-06-29_MAC_FINAL_RELEASE.PDF).

<sup>17</sup> New York Times, "Battle Over Calif. Climate Change Law Takes Shape as Warring Parties Reveal Funding Sources," March 16, 2010. <http://www.nytimes.com/gwire/2010/03/16/16greenwire-battle-over-calif-climate-change-law-takes-sha-53612.html>.

<sup>18</sup> Midwestern Greenhouse Gas Reduction Accord <http://www.midwesternaccord.org/index.html>.

## State/Provincial Programs

In 1997, Oregon enacted the **Oregon Standard**, the first regulation of CO<sub>2</sub> in the US. The Oregon Standard requires that new power plants built in Oregon reduce their CO<sub>2</sub> emissions to a level 17% below those of the most efficient combined cycle plant, either through direct reduction or offsets. Plants may propose specific offset projects or pay mitigation funds to the Climate Trust, a non-profit organization created by law to implement projects that avoid, sequester, or displace CO<sub>2</sub> emissions.<sup>19</sup> In 2003, **Washington State** followed suit and began regulating CO<sub>2</sub> emissions from power plants larger than 25MW. Plants are required to offset 20% of emissions over a 30-year period.

## Canada

North of the border, Canada's top environmental officials say that the country is prepared to enact a national cap-and-trade scheme when and if federal regulations are enacted in the US. As of April 2010, the Canadian government expressed doubt that a US climate bill would pass within the year, but remained open to the prospect.

Regional schemes in Canada continue to move forward, as British Columbia, Quebec and Ontario all have passed enabling legislation for cap-and-trade schemes. Saskatchewan also aims to finalize a regulatory scheme by late 2010, following the lead of the Alberta-based **Specified Gas Emitters Regulation (SGER)**, which has been in effect since 2007. SGER requires entities in the energy, chemical, and electricity sectors that emit more than 100,000 tCO<sub>2</sub>e/year to reduce their GHG intensity by a one-off 12% relative to the baseline. Affected companies have four mechanisms for compliance: internal efficiency improvements; purchasing Alberta-based offset credits (Verified Emission Reduction Removals or VERRs); paying into the Climate Change and Emissions Management Fund; or purchasing Emission Performance Credits from covered facilities exceeding their emission-intensity reduction target.

Companies that choose to purchase offsets for compliance must do so from projects following the Alberta Offset Protocols, which consist of 30 quantification protocols based on the ISO 14064-2 standards, along with 7 draft protocols under "closed review" and 6 protocols in the review pipeline.<sup>20</sup> The protocols are increasingly being viewed as pre-compliance standards for an impending Canadian federal scheme, especially considering that many Alberta protocols are listed in Canada's "Fast Track" offset program, which aims to advance a ramp-up of offset supply for the early stages of a Canadian federal cap-and-trade system.

The Alberta Offset System features a public offsets registry known as the Alberta Emissions Offset Registry, a partnership between Climate Change Central and the Canadian Standards Association's GHG CleanProjects Registry. As of April 2010, 44 projects had been registered and 6.7 MtCO<sub>2</sub>e reductions had been achieved.

Across the continent, Nova Scotia's government imposed on regional electricity generators a declining cap on emissions—almost 50% of which are generated by one regional producer. The province's new

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<sup>19</sup> The Climate Trust, "About Us," <http://www.climatetrust.org/history.html>.

<sup>20</sup> Carbon Offset Solutions website, "Approved Alberta Protocols" <http://carbonoffsetsolutions.climatechangecentral.com/offset-protocols/approved-alberta-protocols>.

regulations went into effect this year and are intended to help the region achieve its emissions reduction target of 10% below 1990 levels by 2020.<sup>21</sup> The scheme currently does not allow trading, but legislation introduced in April 2010 would create a Voluntary Carbon Emissions Offset Fund. Through the fund, private project developers would deliver emissions-reductions credits to the fund, which would then be available for purchase by voluntary buyers.

## Europe

The EU ETS, which involves all EU member states including Norway, is currently the world's largest multinational GHG-emissions trading scheme. Credits traded under the system are called European Union Allowances (EUAs). The EU ETS is in its second of three trading periods, and Phase III begins January 2013, purportedly with greater auctioning of permits and inclusion of airline industry emissions. Entities can bank Phase II permits for use in Phase III, which steadied allowance prices in 2009 despite the recession-driven surplus of EUAs.

The market battled a new foe in 2009, as fraudsters were discovered swindling billions from EU ETS member nations by selling compliance credits and dodging Value Added Tax (VAT) payments. In fact, analysts at Bloomberg New Energy Finance theorize that up to 13% of global carbon trades in 2009 were fraudulent VAT trades, an artificial inflation of market volumes and values that may be all too evident by the close of 2010. In early 2010, EU ETS participant governments approved several methods to combat VAT fraud—including a reverse charge mechanism that shifts the VAT payment from supplier to buyer.

Even amidst the upheaval, the EU ETS market traded 5,499 MtCO<sub>2</sub>e in 2009, up 86% from 2008. The market was valued at \$108,000 million, seeing a scant 5% increase over 2008 as recession and lack of demand drove down EUA prices.<sup>22</sup>

Drilling down a level, the **United Kingdom** launched its Carbon Reduction Commitment Energy Efficiency Scheme (CRC) on April 1, 2010. The CRC aims to cover emissions sources not already covered under the EU ETS or other climate agreements, as directed in the *Climate Change Act 2008*. The CRC caps about 10% of national emissions from an initial 5,000 large public and private sector organizations.<sup>23</sup> The scheme includes a market mechanism for entities to trade permits, but does not allow offsets. The scheme is revenue neutral, meaning that all proceeds will be returned to scheme participants annually based on their ranking in the scheme's league table that ranks participants' energy performance.

## Oceania

This year, **New Zealand** will also kick off its domestic intensity-based emissions trading scheme to meet its Kyoto obligations—the New Zealand Emissions Trading Scheme (NZ ETS). The NZ ETS was introduced in 2008 and amended in 2009 to delay agriculture's entry into the scheme until 2015. Compliance begins July 2010 for stationary energy, industrial processes and upstream transportation fuels, and the scheme permits are fully linked with international Kyoto units. In July, the scheme will enter a trial period until

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<sup>21</sup> Climate Change Nova Scotia <http://www.climatechange.gov.ns.ca/Content/What%20NS%20Is%20Doing>.

<sup>22</sup> Bloomberg New Energy Finance. "The global carbon market increases by 5% in 2009". [www.newenergyfinance.com/Download/pressreleases/107/pdf/107.pdf](http://www.newenergyfinance.com/Download/pressreleases/107/pdf/107.pdf)

<sup>23</sup> [http://www.decc.gov.uk/en/content/cms/what\\_we\\_do/lc\\_uk/crc/crc.aspx#more\\_about\\_CRC](http://www.decc.gov.uk/en/content/cms/what_we_do/lc_uk/crc/crc.aspx#more_about_CRC).

December 31, 2012, during which the price of New Zealand Emissions Units (NZUs) will be capped at NZ\$25, while emissions will not be capped—firms must purchase permits when they exceed their free allocation of permits. Firms will initially be allowed to surrender one NZU for two tonnes of carbon emissions. This “buy one, get one free” policy effectively caps compliance costs at NZ\$12.5/tCO<sub>2</sub>e.

The NZ ETS is predated by another scheme in the Oceania region—the Australian state **New South Wales** operates the NSW Greenhouse Gas Reduction Scheme (NSW GGAS). Established in 2003, this state-level program is aimed at reducing greenhouse gas emissions associated with the production and use of electricity.<sup>24</sup> It establishes annual statewide GHG reduction targets and requires electricity retailers and other traders to meet the progressively tougher targets based on their share of the electricity market.

In 2006, the NSW government decided to extend the GGAS to 2021 or until the establishment of a national emissions trading scheme, indicating its intention to terminate GGAS once a national emissions trading scheme is implemented. The delay of the federal government’s emissions trading scheme, the Carbon Pollution Reduction Scheme (CPRS),<sup>25</sup> has created uncertainty about the scheme’s future and the number of new GGAS accreditations tapered off in 2009 as a result of the Australian senate’s continued rejection of CPRS legislation.

## Asia

2009 saw a flurry of activity in Asia, where CO<sub>2</sub> heavyweights China, India and Japan suggested non-binding national emissions targets for the sake of international agreements but remained mum on the outlook for national schemes to achieve those targets.

Following up on the 2008 launch of the Tianjin, Beijing and Shanghai environment exchanges, **Tianjin** was the first of the cities to pilot a small-scale energy intensity trading scheme, which saw a pilot trade in February 2010. China’s first market-based scheme was established by the Tianjin Climate Exchange (supported by the China National Petroleum Corp., Tianjin Property Rights Exchange and the Chicago Climate Exchange) and carbon credit trader Arreon Carbon Ltd. The scheme initially covers heat supply firms and hospitals. Three heat supply firms generated and sold Carbon Emission Allowances (CEAs) equivalent to approximately 4,500 tonnes of coal for \$73,250 in the scheme’s first pilot sale to buyers Citigroup Global Markets and Gazprom.

In Japan, **Tokyo** is testing cap-and-trade waters by phasing in a metropolitan region cap-and-trade scheme for downstream heavy emitters. The regional scheme is intended to help the city slash carbon emissions by 25% off the 2000 baseline by 2020. The scheme affects around 1,400 of the city’s largest emitters—accounting for only 1% of Japan’s total carbon emissions but 20% of metropolitan emissions and 91% of industrial entities. Launched in April 2010, the scheme will begin its first trading phase in 2011 through 2014, when entities will be required to reduce emissions by 6%-8% from a 2002-2007 high average baseline. While banning the use of international offsets, credits originating from small and

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<sup>24</sup> New South Wales Greenhouse Gas Reduction Scheme <http://www.greenhousegas.nsw.gov.au/>.

<sup>25</sup> Australian Government Department of Climate Change, “Forestry and the Carbon Pollution Reduction Scheme” <http://www.climatechange.gov.au/government/initiatives/cprs/who-affected/reforestation.aspx>.

medium-size Enterprises (SMEs) outside the Tokyo area can account for up to 1/3 of an organization's compliance portfolio, and the scheme allows unlimited use of locally-generated renewable energy certificates.

## 5. Size and Growth in 2009



### Summary Points

- Suppliers reported 93.7 MtCO<sub>2</sub>e valued at \$387.4 million transacted in the voluntary carbon markets in 2009. Even in the voluntary carbon markets the economic recession has left its mark as, relative to 2008, volumes declined by 26% and value by 47%.
- The largest volume of transactions occurred in the OTC marketplace (54%), with most of the remainder on the CCX (45%, or 41.4 MtCO<sub>2</sub>e). Other exchanges have become more popular, but still contribute only marginally to the overall market.
- The volume-weighted average price of a voluntary carbon credit transacted on the OTC market declined from \$7.3/tCO<sub>2</sub>e in 2008 to \$6.5/tCO<sub>2</sub>e in 2009, still 5% above 2007 prices. In contrast, CCX average prices declined from \$4.4/tCO<sub>2</sub>e in 2008 to only \$1.2/tCO<sub>2</sub>e in 2009. As a result of this price divergence the OTC market value only declined by 22% whereas the CCX value dropped by 84%.
- The total volume of retired credits tracked was 11.7 MtCO<sub>2</sub>e in 2009, less than the 14.2 MtCO<sub>2</sub>e retired in 2008. This is 20% of transacted volumes in the OTC market and is expected to be an underestimate.

### 5.1 Hanging in: Size of the Voluntary Markets

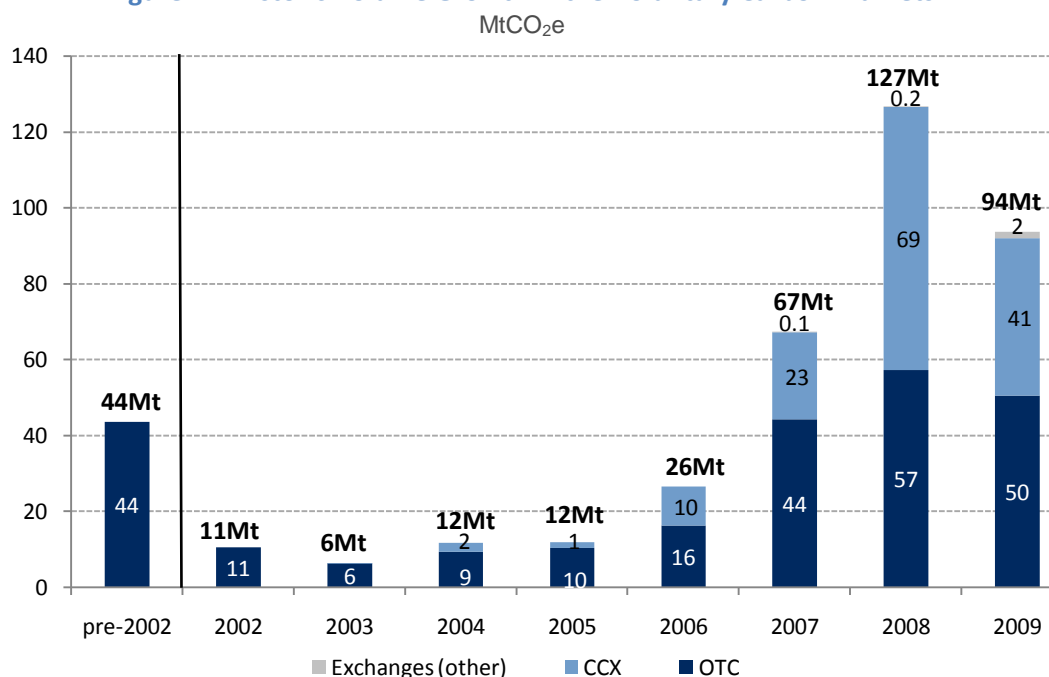
In 2009, we tracked a total volume of 93.7 MtCO<sub>2</sub>e transacted in the global voluntary carbon markets. This represents a 26%-drop in volume from 2008. The second half year was harrowing for much of the carbon market, to the extent that one broker suggested as this report's title, "State of the Voluntary Carbon Markets: Where Has the Market Gone?" This drop in volume can largely be attributed to the global economic crisis as well as uncertainty surrounding US legislation and UN negotiations. The recession led numerous companies to cut back on discretionary funding for corporate social responsibility initiatives, including offsetting emissions. However, looking back over the past several years, 2009 volumes continued to be relatively buoyant at 40% above 2007 levels.

More than half of transacted volume, 50.5 MtCO<sub>2</sub>e, was traded on the OTC market, and the remaining 41.4 MtCO<sub>2</sub>e went through the CCX. In 2009, CCX exchange-traded volumes shrank by 40% while the OTC market contracted 12%. Activity on the CCX waned in response to many of the same signals that slowed trading in the OTC market. The exchange also saw some trading shift toward the OTC market via bilateral transactions of CCX offsets, as buyers increasingly demanded specific offset types rather than standardized CFIs. In addition, transactions tracked on other trading platforms such as the Chicago Climate Futures Exchange (CCFE) and Climex gained traction last year, contributing 1.8 MtCO<sub>2</sub>e (2%) of total transaction volumes in 2009, up from 0.2% in 2008.

In 2009, the volume-weighted average price of a voluntary carbon credit transacted on the OTC market was \$6.5/tCO<sub>2</sub>e, a decline of 12% from \$7.3/tCO<sub>2</sub>e in 2008. Given the large variety of project types and

diversity of buyers in the market, prices continued to range dramatically from as low as \$0.1/tCO<sub>2</sub>e to as high as \$111.0/tCO<sub>2</sub>e.

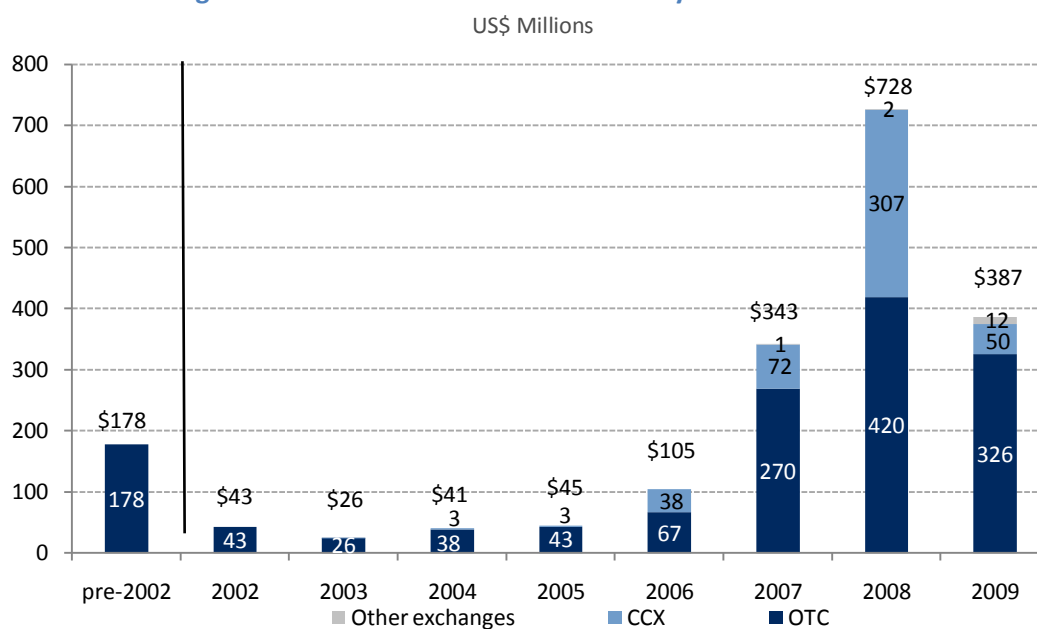
**Figure 12: Historic Volume Growth in the Voluntary Carbon Markets**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Notes: Based on 149 survey respondents. Annual totals may not equal sum of categories due to rounding.

**Figure 13: Historic Values in the Voluntary Carbon Markets**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance. Notes: Based on 107 survey respondents.

Using the volumes and prices stated above, we estimate the value of the voluntary carbon markets to be at least \$387.4 million in 2009 (Figure 13), which represents a little more than half of the total market value in 2008 (46% decline), when the voluntary markets transacted an estimated \$728 million.

Transactions on the OTC market dropped to \$325.9 million, down 22%. CCX value dropped 84% to \$49.8 million. The OTC's average price and volumes were relatively stable compared to the CCX, where declining volumes and prices (from an average \$4.43 in 2008 to \$1.20 in 2009) diminished the CCX market value.

While both OTC market and CCX transactions declined in value in 2009, the value of transactions on non-CCX trading platforms totaled \$11.6 million, up 594% from 2008 (at \$1.7 million).

As noted in the methodology section, 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.

Year	Transactions Recorded in 2008 (MtCO <sub>2</sub> e)	Transactions Recorded in 2009 (MtCO <sub>2</sub> e)	Change (MtCO <sub>2</sub> e)
2008	54.0	57.2	+3.2
2007	43.1	44.2	+1.1
2006	14.8	16.2	+1.4
2005	9.5	10.4	+0.9
2004	8.5	9.3	+0.8
2003	5.5	6.3	+0.8
2002	10.4	10.5	+0.1
Pre-2002	41.7	43.3	+1.6

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

## 5.2 Market Milieu: The Voluntary Markets in Context

In 2009 the international carbon markets transacted 8,719 MtCO<sub>2</sub>e, valued at \$144 billion.<sup>26</sup> The voluntary markets contributed a small fraction of volume and value to this growth (about 1.1% of volume, 0.3% of value), the rest of which was seen in the regulated markets.

<sup>26</sup> Bloomberg New Energy Finance

In 2009, the regulated markets continued to grow but at a decelerating rate, due to the recession-driven decline in demand for carbon credits. Traded volumes in the regulated market grew by 83% from 2008, but the value of those trades only grew 7%. Regulated markets were also challenged by regulatory uncertainty in the lead-up to Copenhagen, and following the climate summit's abysmal outcome. Even so, some regulated markets saw growth in 2009 that defied the market's trend of decelerating growth, including the EU ETS, Kyoto market for AAUs and RGGI—but even these markets saw downward pressure with respect to their carbon prices. Though the EU ETS saw a decent volume growth rate in 2009 (105% versus 43% growth from 2007-2008), an estimated 13% of this activity was inflated by fraudulent VAT-related trading. Trading increased only slightly in New South Wales as participants awaited the fate of the government's proposed federal emissions trading scheme (now delayed until 2013). RGGI trades skyrocketed in 2009 when the allowances were tapped for potential grandfathering into a compliance scheme.

Table 3: Transaction Volumes and Values, Global Carbon Market, 2008 and 2009				
Markets	Volume (MtCO <sub>2</sub> e)		Value (US\$ million)	
	2008	2009	2008	2009
Voluntary OTC	57	51	420	326
CCX	69	41	307	50
Other exchanges	0.2	2	2	12
<b>Total Voluntary Markets</b>	<b>127</b>	<b>94</b>	<b>728</b>	<b>387</b>
EU ETS	3,093	6,326	100,526	118,474
Primary CDM	404	211	6,511	2,678
Secondary CDM	1,072	1,055	26,277	17,543
Joint Implementation	25	26	367	354
Kyoto [AAU]	23	155	276	2,003
New South Wales	31	34	183	117
RGGI	62	813	241	2,667
Alberta's SGER	3	5	34	61
<b>Total Regulated Markets</b>	<b>4,713</b>	<b>8,625</b>	<b>134,415</b>	<b>143,897</b>
<b>Total Global Markets</b>	<b>4,840</b>	<b>8,719</b>	<b>135,143</b>	<b>144,284</b>

Source: Ecosystem Marketplace, Bloomberg New Energy Finance, World Bank.

Note: Totals may not add up due to rounding.

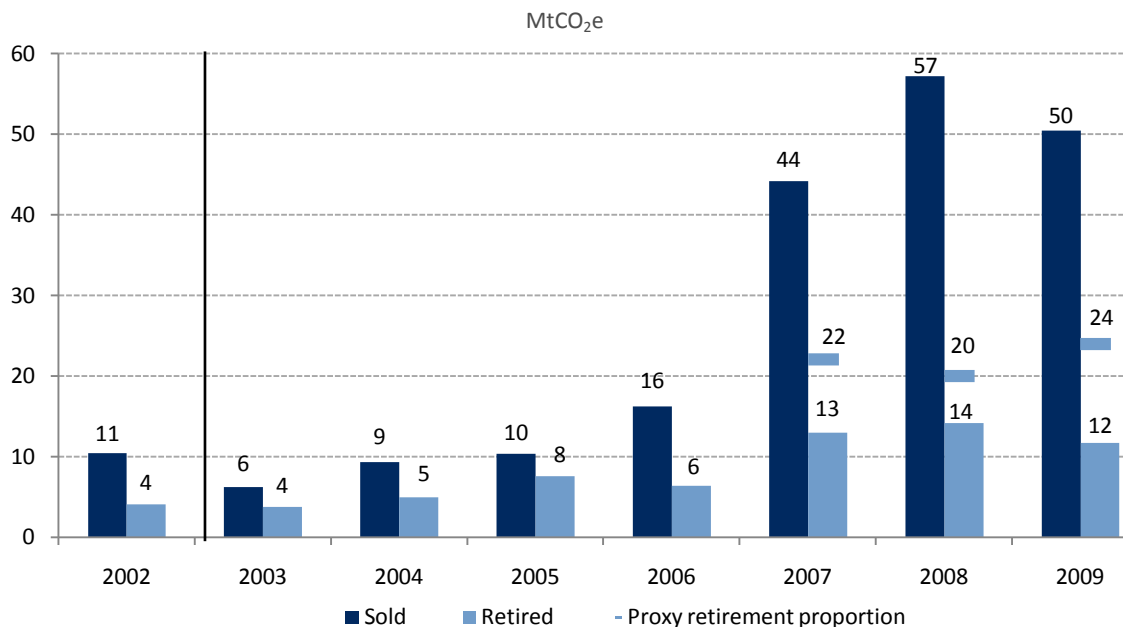
## 5.3 Retirement: The Final Frontier

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. When an entity purchases carbon credits to offset its

emissions, the carbon credit must be retired and cannot re-enter the marketplace—or the atmosphere. Retirement is critical in the voluntary markets because it represents the impact of the market from an environmental perspective and relates to the fundamental demand in the market for offsetting GHG emissions.

Of the 200 survey respondents, we accounted for retired credits from 103 entities (52%). In 2009, a mere 11.7 MtCO<sub>2</sub>e were reportedly retired by voluntary buyers compared to 14.2 MtCO<sub>2</sub>e in 2008. However, this number is expected to be an underestimate as many buyers and brokers cannot confirm the fate of credits sold. For example, in response to another survey question regarding customer motivations, suppliers noted that 48% of OTC credits sold to voluntary buyers were bound for retirement. Using this percentage figure, we can derive that a possible 24.0 MtCO<sub>2</sub>e were retired in 2009, 20% more retired volume than in 2008. In fact, our estimate shows that those buyers who managed to overcome hurdles to purely voluntary purchasing in 2009 retired the largest volume of credits seen since we began tracking retirement trends.

**Figure 14: Historic Transaction and Retired Volumes, OTC Market**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Retirement data based on 103 survey respondents, volume data based on 149 survey respondents.

This concept of the number of times a credit “passes hands” before it is retired is commonly called the *churn rate*. Despite 2009’s lower retirement volumes, the churn rate remained largely unchanged from 4.0 in 2008 to 4.3 in 2009. In other words, the proportion of retired credits stayed roughly the same from 2008 (25%) to 2009 (23%), even though 2009’s reported retirement volumes dropped. However, if we take into account that many suppliers cannot confirm if credits are retired and so also consider suppliers’ estimate that at least 48% of credits transacted were purchased for retirement—our proxy measurement for retirement—the 2009 churn rate was most likely lower, at 2.1. Overall, either estimated churn rate is higher than before 2006. Between 2002 and 2005 the average churn rate was 1.8.

## 5.4 Firm Foundations: Suppliers in the Market

Suppliers in the voluntary carbon market include retailers selling offsets online, conservation organizations, developers of potential Clean Development Mechanism (CDM) projects with credits that cannot currently be sold into the CDM market, project developers primarily interested in generating VERs, aggregators of credits and brokers. Depending on their position in the supply chain, sellers can be categorized into four major types:

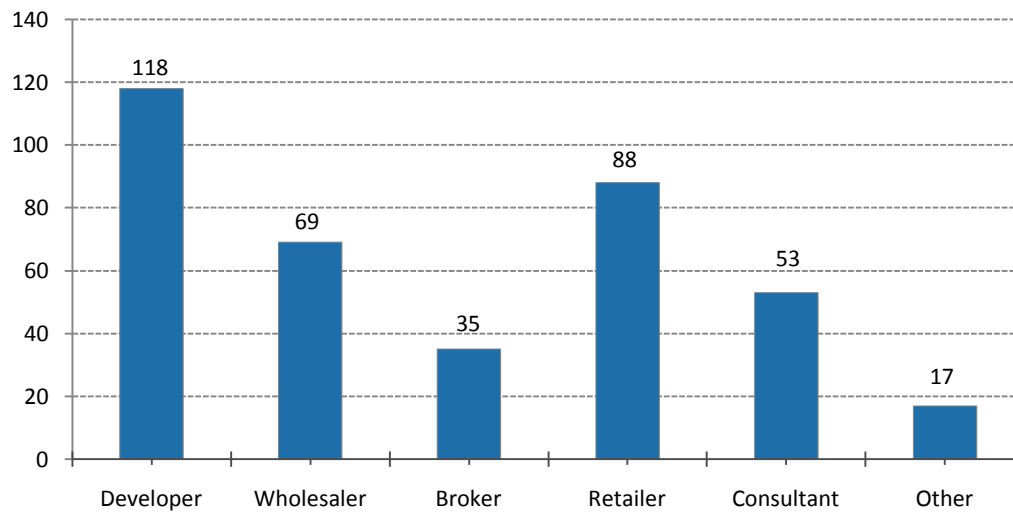
1. **Project Developers:** Develop GHG emissions-reduction projects and may sell the credits to aggregators, retailers, or final customers.
2. **Wholesalers:** Only sell offsets in bulk and often have ownership of a portfolio of credits.
3. **Retailers:** Sell small amounts of credits to individuals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

Organizations are increasingly vertically integrated and frequently operate in more than one of these categories. Many suppliers are also engaged in business activities other than selling VERs. For example, most major brokerage firms dealing in VERs also transact in regulated markets or in other emissions markets as well as in energy markets. Alternatively, for several major non-profits supplying offset credits, the voluntary carbon market is only one of numerous financial streams enabling conservation projects.

In order to further understand transactions throughout the supply chain, we asked suppliers to identify their role. 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 as government advisors and agencies, community programs, facilitators, NGOs and several other business types.

Figure 15 illustrates the total number of organizations operating in each business category that responded to our 2009 survey. Because respondents could tick more than one of the boxes, the total number of organizations across the supply chain exceeds both the number of survey respondents and the number of suppliers that exist. Similar to previous years, the number of companies operating as project developers and/or retailers is larger than any of the other categories. Brokers constitute the smallest group, as this category is generally dominated by a few large companies.

**Figure 15: Suppliers by Self-Categorized Business Activities, 2009**



*Source: Ecosystem Marketplace, Bloomberg New Energy Finance.*

*Notes: Based on 169 survey respondents.*

Figure 16 illustrates the distribution of transaction volume across supplier categories in 2008 and 2009. In our survey, suppliers are asked to select one or several business activities along the supply chain, but are not required to provide volume transacted for each role. In this section, therefore, we present a proxy of business activity by proportions and not by volume transacted.

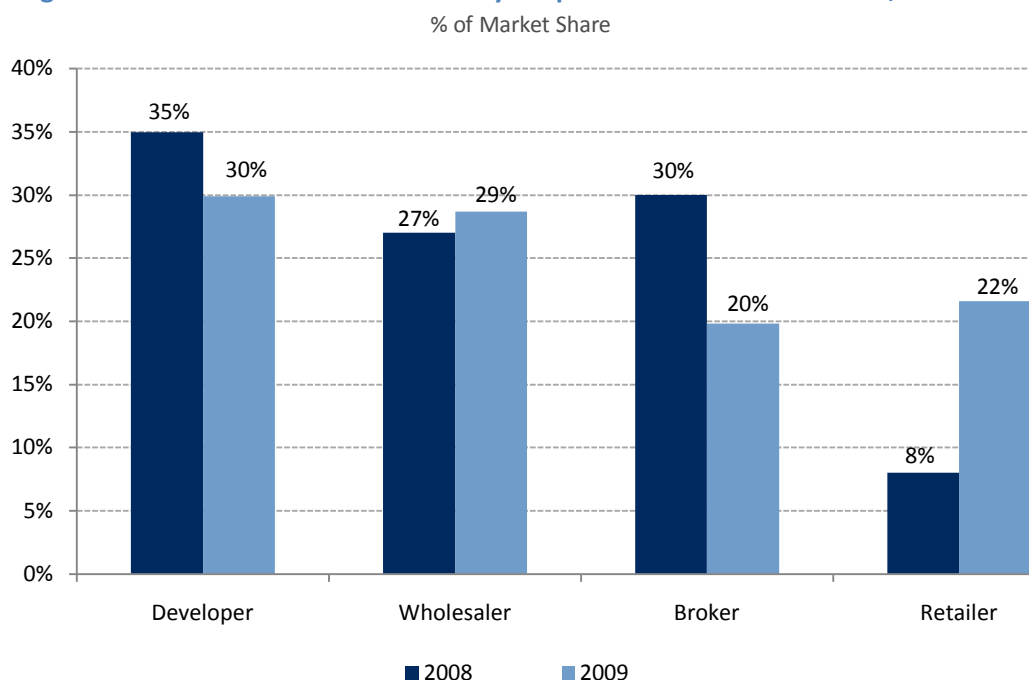
In 2009, transaction concentrations were increasingly evenly dispersed across the supplier categories, with developers narrowly surpassing wholesalers in transacted volume. Traditionally, retailers have made small contributions in terms of transaction volume, explained by the fact that their average transactions are very small relative to those of project developers, wholesalers and brokers. In 2009, however, companies with a retailer component saw the largest increase in market share along the value chain, as volume increased 14 percentage points over 2008.

Companies with a retailer component gained ground for several reasons, not the least of which being the fact that some of the largest retailers were also some of the largest project developers and/ or wholesalers. Of the 20 retailers that reported the largest volumes in 2008, 9 also made the list for the largest project developers or wholesalers; in 2009, this number increased to 12, partly explaining why the top five retailers in 2009 captured the same market volume as the top 20 retailers in 2008. Hence, it appears that some of the market's largest participants have become mutually supply- and buy-side savvy, possessing both the retail relationships and an easily accessible pipeline of credits.

Larger retail transactions were marked by a concentration of three of the major project types (forestry, landfill methane and wind) that were moderately priced and medium- to very large-scale. In contrast, 2008's top retailers reported a plethora of project types, ranging from energy efficiency to agricultural methane to RECs sold as offsets, many of which were high-priced and small-scale.

Seeing the greatest declines in volume were firms that identified as brokers. Volume transacted by brokers fell ten percentage points to comprise the smallest market share of any business type in 2009. One broker posited that the market has matured to the point where buyers and sellers are well enough acquainted to pick up the phone and do deals directly, rather than through the brokerage that initially introduced them. In some cases, developers also required a higher price point for their credits than could be obtained through brokers, choosing instead to deal directly with the final buyer. One developer explains, “After the financial crisis in 2009, we just couldn't offer them [brokers] a price that matched their clients’ expectations.”

**Figure 16: Transaction Concentration by Respondent Business Activities, OTC 2009**



*Source: Ecosystem Marketplace, Bloomberg New Energy Finance.*

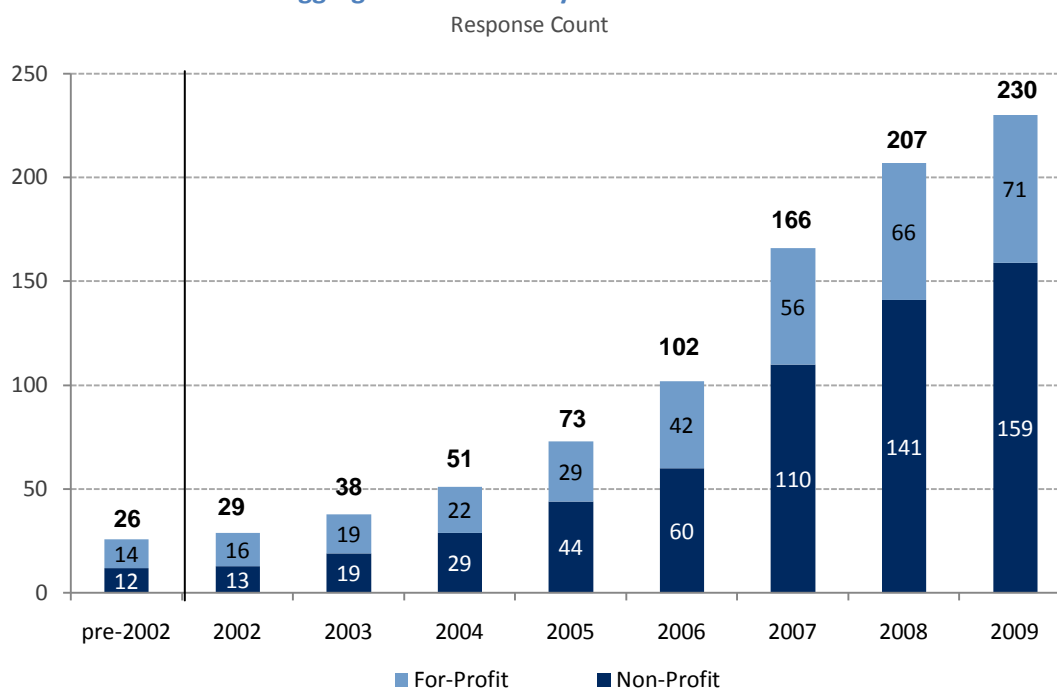
*Note: Based on 135 survey respondents.*

## 5.5 Non-Profit vs. For-Profit Suppliers

As a market driven by entities choosing to minimize their climate impact on their own accord, the voluntary carbon market uniquely unites the realms of philanthropy and commodity. In this arena, both non-profit and for-profit organizations supply carbon offsets. While non-profit organizations were the pioneer voluntary offset suppliers, since 2006 they have been outnumbered by private firms. In 2009, however, the voluntary market saw the first increase in market share transacted by non-profit organizations since before 2002.

The proportion of for-profit entities in the market outweighed non-profit suppliers since 2004. This trend continued in 2009, when 18 new for-profit entities entered the market but only 5 non-profit organizations. Of the 192 organizations that specified a profit status in this year's survey, the vast majority were for-profit companies.

**Figure 17: Cumulative Suppliers by Profit vs. Non-Profit Organization Type, Aggregated over Survey Years 2006-2009**

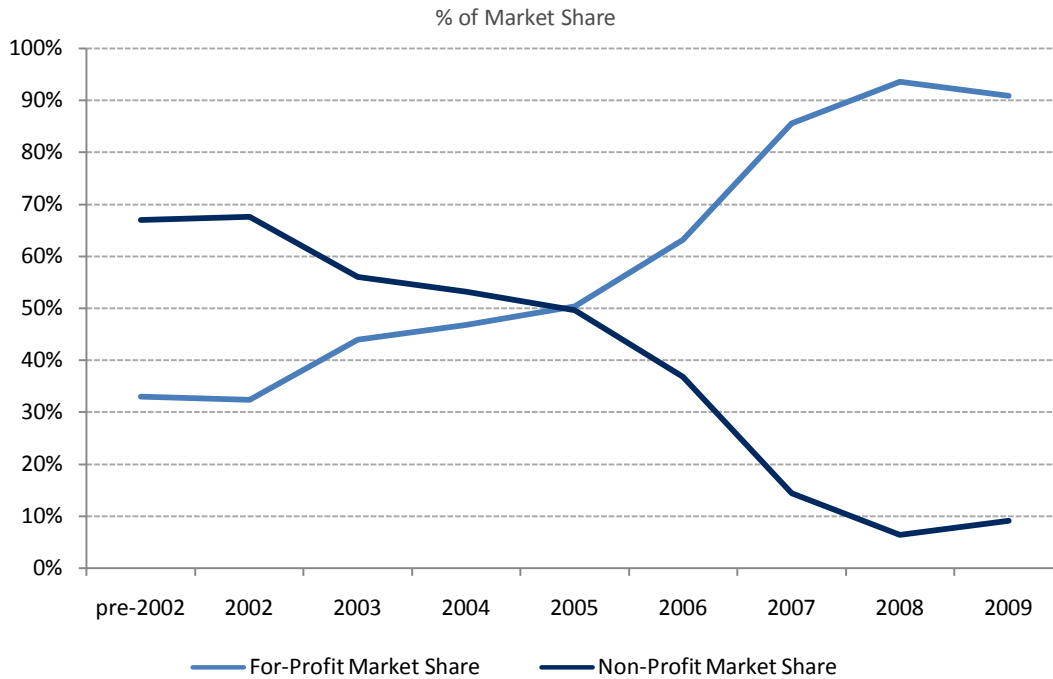


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 298 survey respondents from previous four years, does not double-count supplier status.

While non-profits did not see a tremendous growth in number in 2009, they did see a comeback in market activity. Though for-profit firms in the voluntary markets continue to dominate transaction volumes, their market share fell from 94% in 2008 to 91% in 2009. The growth in non-profit market share was reciprocal, increasing from 6% of transaction volume in 2008 to 9% in 2009.

**Figure 18: Historical Market Share of Transaction Volume  
by Profit vs. Non-Profit Suppliers**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 110 survey respondents.

Increased non-profit market activity can be attributed to the renewed demand for forestry-based offsets — non-profits engaged in the marketplace have historically preferred and continue to prefer this credit type. Forestry-based offsets comprised 70% of non-profit sales in 2009, with 44% of those forestry offsets transacted by US-based non-profits. Offsets transacted by non-profits sold at a volume-weighted average of \$3.5/tCO<sub>2</sub>, 46% cheaper than the market average of \$6.5/tCO<sub>2</sub>. It should be noted that the non-profit volume-weighted average price was biased downward due to two large-scale avoided deforestation transactions that sold for well below \$1.0/tCO<sub>2</sub>, which after omission increases the average price to \$5.3/tCO<sub>2</sub>.

Overall, non-profits were twice as likely as for-profit organizations to confirm credits retired. Of the organizations that provided a profit status, non-profit organizations reported retiring 52% (2.4 MtCO<sub>2</sub>e) of their transacted volume in 2009, while private organizations confirmed retirement of only 20% (9.3 MtCO<sub>2</sub>e) of their transaction volume. To some degree, this reflects the differing motivations of suppliers. Though both profit types cited that retirement was the end goal for the largest percentage of their buyers, for-profit organizations attributed a larger proportion of their sales to for-profit resale and pre-compliance purposes than did non-profits.

## 6. Origin of an Offset



### Summary Points

- The top three project types by market share were landfill gas (31%), afforestation/reforestation (10%) and wind projects (8%). The remaining proportion of the transaction volume was shared between more than fourteen different technologies.
- Almost all landfill gas credits (96%) were sourced from projects located in the US.
- Market share shifted away from renewable energy projects which captured 51% of the market share in 2008, down to 17% in 2009.
- Breaking with previous years' trends, the US surpassed Asia as the dominant offset location with a transaction share of 56% in 2009. In second place was Latin America, which produced 16% of transacted 2009 credits, 80% of which originated from forest carbon projects.
- Project type was again one of the most significant factors influencing price. The highest average prices were obtained by solar (\$33.8/tCO<sub>2</sub>e) and biomass renewable energy projects (\$12.3/tCO<sub>2</sub>e). The credits with lowest average prices originated from large hydropower projects (\$1.7/tCO<sub>2</sub>e) and agricultural soil credits (\$1.2/tCO<sub>2</sub>e).

The vast majority of credits in the voluntary OTC market originate from offset projects (as opposed to standardized allowances). Offset projects are spread across the globe and vary from industrial gas destruction to forest conservation to renewable energy projects. Compared to the CCX or the EU ETS, where customers purchase a commoditized GHG reduction, one unique theme for the OTC voluntary carbon markets continues to be the emphasis on the story behind the credit. The following section is focused on where OTC credits came from: the project type, location, size, and vintage as well as financing structures to deliver the credits.

### 6.1 From Landfills to Land Use: OTC Project Types

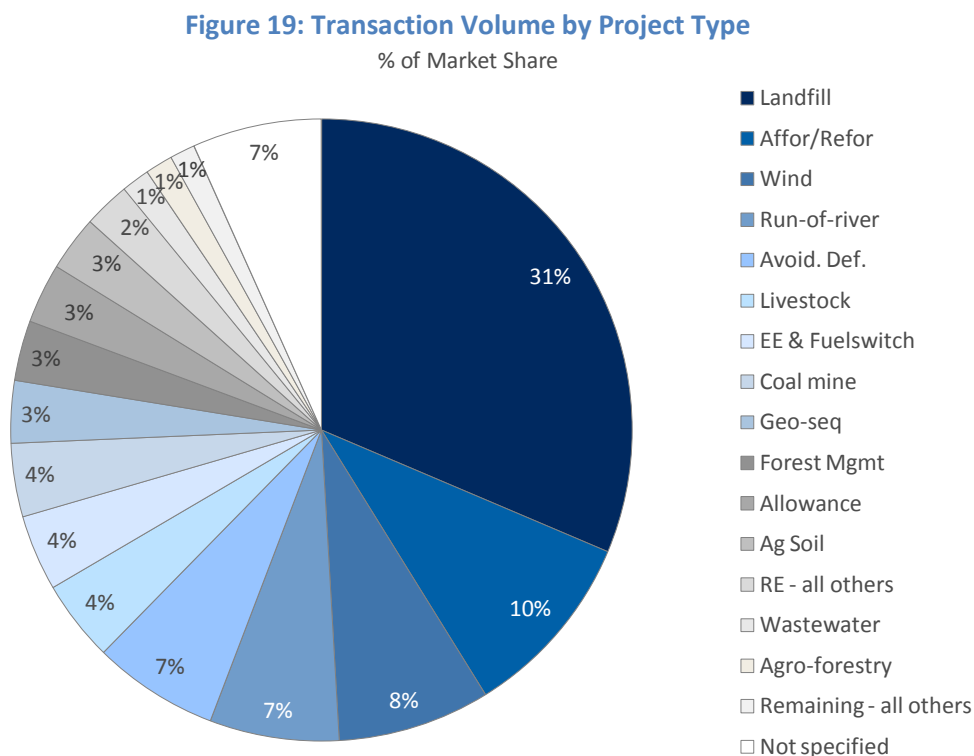
In 2009, the project types producing top volumes were landfill methane (13.7 MtCO<sub>2</sub>e), afforestation/reforestation (4.3 MtCO<sub>2</sub>e) and wind (3.4 MtCO<sub>2</sub>e). Several themes explain the availability of and preference for different project types.

As the VER supply pipeline widened, numerous stakeholders emphasized that 2009 was a buyer's market. Buyer demands ran on several paths. Taking the scenic route were some pure voluntary buyers, who typically sought credits from projects imparting community co-benefits, increasingly with stacked third-party standards. Others with tightened budgets sought lower-cost options.

Many took the pre-compliance route. Optimism regarding future federal cap-and-trade programs, especially in the United States, led pre-compliance buyers to create and trade emissions reductions that

were likely offsets in a compliance regime. At the same time, forestry's prominent role in international negotiations led to an increased interest in and acceptance of land-based credits.

Figure 19 shows the breakdown of 2009 transaction volume by project type. When these project types are grouped into larger categories, methane projects come out on top, capturing 41% of market transactions. Forestry and other land-based credits came in second place taking 24% of market share, followed by 17% for renewable energy, 4% for energy efficiency and fuel-switching, 3% for geologic sequestration and industrial gas, 3% for allowances (mostly bilateral traded CFIs), and 7% in the mixed/not specified category.

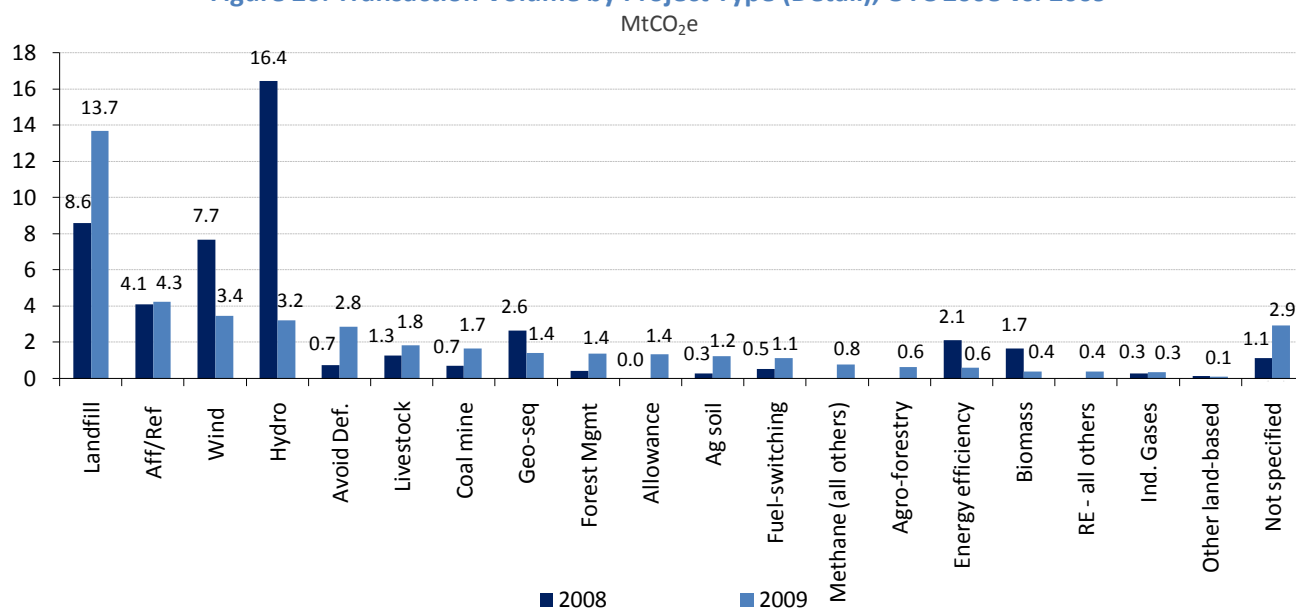


*Source: Ecosystem Marketplace, Bloomberg New Energy Finance.  
Notes: Based on 412 observations.*

Compared to 2008, 2009 saw several striking shifts in transaction volumes by project type. Hydro projects experienced the most significant market share losses, dropping from 32% to 7% (16.4 to 3.2 MtCO<sub>2</sub>e); wind, from 15% to 8% of the market (7.7 to 3.4 MtCO<sub>2</sub>e); and energy efficiency from 4% to 1.4% (2.1 to 0.6 MtCO<sub>2</sub>e).

Most often, individually reported transaction volumes are relatively small in this market. Therefore, a couple of large deals undertaken can easily swing market share in favor of a particular variable. For example, excluding one bulk transaction of hydropower from last year's survey would reduce the 2008 market share of renewable energy projects from 51% to 33%, which makes its loss of market share in 2009 appear much less drastic.

**Figure 20: Transaction Volume by Project Type (Detail), OTC 2008 vs. 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: 2009 figures based on 412 observations, 2008 figures based on 335 observations.

### 6.1.1 Trashing the Party: Methane

Methane projects supplied the majority (41%) of credits transacted in the OTC market in 2009. Sitting under the methane umbrella are three different project types: livestock, landfill and coal mine. Each of these project types require the capture and combustion of methane from their respective sources—from waste from agricultural operations involving livestock, landfill emissions and methane gas vented from coal mines.

Credits from landfill methane were at the top of the project type heap, sourcing over three quarters of methane-based VERs and 31% of the entire market. Significantly, more than 96% of credits are from landfill gas projects that were based in the US. Overall, the volume of credits sourced from methane projects grew by 300% from 2007 to 2009 (4.5 MtCO<sub>2</sub>e to 17.9 MtCO<sub>2</sub>e).

Livestock and coal mine methane projects were tied for second place, comprising 10% and 9% of all methane-based VERs, respectively, and each grabbing 4% of overall market share (up from 3% and 1% in 2008). The category for credits generated by collecting and flaring methane from wastewater treatment plants was a newcomer to our survey this year, and generated only 3% of methane-based VERs.

Methane's steady trek to the top is attributed to pre-compliance activity in the US, where a federal cap-and-trade market was expected to come into play, and in which methane projects would likely be eligible for compliance. This is further evidenced by the fact that most of these projects were verified to the Climate Action Reserve (CAR), widely considered to be one of the key pre-compliance offset standards. In 2009, 79% of landfill and 55% of livestock credits tracked were verified to CAR's protocols. CAR also saw what one supplier described as a "land rush" of landfill methane projects seeking project

registration before the November 2009 cutoff for grandfathering of landfill methane projects with early online dates from 2001 forward.

In addition to its pre-compliance potential, methane projects also fit the bill for pure voluntary buyers seeking locally originated credits. For example, Google recently announced it will meet its carbon neutral goals through a set of initiatives including a purchase of carbon credits generated by a landfill gas-to-energy project in Berkeley County, South Carolina, where it runs a data center. Eric Wages, operations manager for the data center, noted, “Google travels the globe searching for projects that meet its sustainability requirements and I’m proud that a project was found right here in Berkeley County.”<sup>27</sup>

From a practical perspective, landfill methane projects are relatively easy to measure and monitor, use mature and commercially deployable equipment, have a feasible grid connection, and benefit from a number of existing protocols and procedures for designing the project and bringing it to market. Also, because of methane’s high global warming potential (23 times that of carbon dioxide), methane-based carbon credits are relatively inexpensive to generate. Finally, the projects are appealing because in some cases they generate two sets of revenue streams: carbon offsets and electricity generation.

#### **6.1.2 Renewables: Low Flow**

As methane offset sales climbed steadily upward, renewable energy’s grip on market share slipped in 2009. Last year, renewable energy projects—including solar, wind, hydro and biomass—fell from supplying 51% of credits to a mere 17%. Figure 21 illustrates the rise and fall of renewable energy transactions in the voluntary market juxtaposed with the gradual growth of methane-related offsets.

A slew of factors explain the decrease of renewable energy offset transactions. One reason for the seemingly steep decline was that 2008 saw a number of transactions involving (anomalously) large renewable energy projects that were not replicated in 2009. The vast majority of these projects were located in India, Turkey and China and involved both hydro and wind projects. One project in India, for example, sold 9 MtCO<sub>2</sub>e of credits, and various wind and hydro projects in Turkey sold a total of 8 MtCO<sub>2</sub>e in 2008. As these transactions were generally associated with the one-off sale of the stream of emissions, reductions from these projects these did not see a repeat in 2009.

On the demand side, renewable energy projects of all types and sizes were negatively impacted by the global financial crisis, during which many companies cut or froze their discretionary spending coffers—but not necessarily their budgets for risk management. Therefore, while methane projects flourished as companies hedged against regulatory risk, renewable energy projects suffered the loss of pure voluntary buyers in 2009.

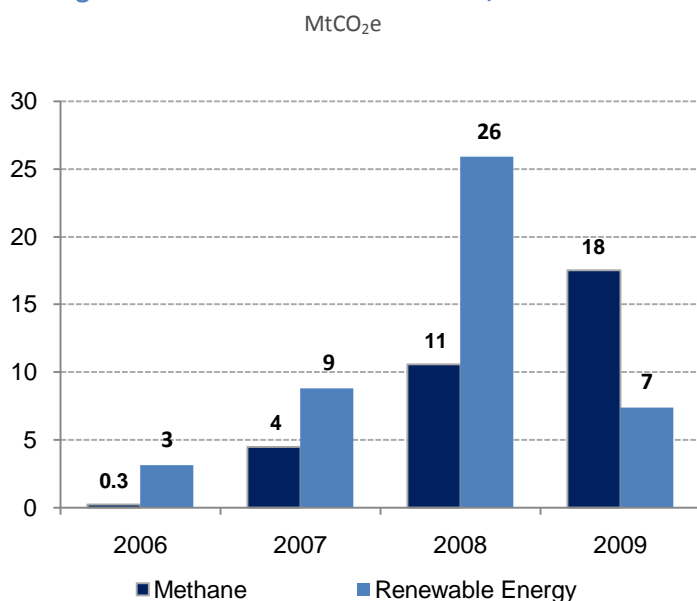
Though credits from wind power still managed to blow away other renewable projects’ volumes (8% of overall market), wind project volumes fell by more than half (57%) from 2008 to 2009.

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<sup>27</sup> <http://www.businessgreen.com/business-green/news/2263997/google-invests-landfill-energy>.

Renewable energy projects' traditionally above-average prices were also a barrier to pure voluntary purchasing in 2009's capital-challenged climate, with the exception of moderately priced hydropower projects. Here, public relations risk and buyer preferences for other project types dampened demand. In contrast to 2008, when credits from hydro projects dominated all other types, 2009 saw mounting consumer concerns regarding the additionality and environmental risks of large-scale Asia-based hydro projects. This, combined with pure voluntary buyers' increasingly picky demand for non-commercial "charismatic" carbon, outweighed the allure of hydro's inexpensive credits. Demand for these offsets was largely driven by customers seeking low cost credits.

**Figure 21: Methane vs. Renewables, 2006-2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance

Note: 2009 figures based on 225 observations.

Developing new renewable projects is also challenged by pending or existing regulation, such as renewable portfolio standards, emerging regional energy-intensity schemes and the release of economic stimulus funds specifically dedicated to renewable energy deployment. As a result, it has become increasingly difficult for project developers to prove that a project is truly additional.

The interface between different programs financing renewable energy is highlighted by the overlapping Renewable Energy Certificate (REC) and carbon offset markets in the US. Markets for these assets operate separately from the carbon markets in places such as the US, Canada, Europe, and Australia.

Conversion from RECs to carbon offsets has stirred electric debate. This year we did not specifically ask suppliers if any carbon credits had been converted from RECs. Instead, such transferred credits are included in overall renewable energy project type calculations.

However, the annual National Renewable Energy Lab US Green Power Status report is tracking such transactions. Preliminary findings are that 398,528 tCO<sub>2</sub>e of carbon offsets converted from RECs, equivalent to 574,181 megawatt-hours, sold in the US in 2009. About 62% of these offsets were certified by Green-e which currently is one standard designed to include specialized requirements for RECs as offsets.

### 6.1.3 Terrestrial Carbon: A Growth Spurt

Forest carbon offsets jumpstarted the global carbon offset market in the late 1990s. Since 2004, however, forest carbon steadily lost market share in proportion to the overall market through an increased diversification of project types and different buyer preferences. In 2009, forestry and other land-based projects staged their comeback, benefitting from an emerging consensus around forest carbon project protocols and procedures, as well as mounting political recognition of the importance of forests in halting rapid deforestation and deploying carbon finance to developing nations.

Forestry figured prominently in both the United Nations Convention on Climate Change (UNFCCC) negotiations as well as in proposed US climate bills. This burgeoning attention propelled forestry-based credits to a market share of 24% (10.4 MtCO<sub>2</sub>e) of all credits transacted in 2009. This is up from 2008 when the overall volume of forestry credits was 5.7 MtCO<sub>2</sub>e and its market share 11%.

Table 4: Land-Based Credits Sold OTC, 2008 vs. 2009				
Project Type	Volumes of Land-based Credits (ktCO <sub>2</sub> e)		Market Share of Land-based Credits Relative to the Total	
	2008	2009	2008	2009
Afforestation/Reforestation	4,091	4,253	8%	10%
Avoided Deforestation (REDD)	730	2,846	1%	7%
Forest Management	431	1,349	1%	3%
Agricultural Soil	267	1,250	0.5%	3%
Agro-Forestry	--	625	--	1%
Other Land-Based projects	130	109	0.3%	0.3%
<b>Total</b>	<b>5,650<sup>28</sup></b>	<b>10,432</b>	<b>11%</b>	<b>24%</b>

Source: Ecosystem Marketplace and Bloomberg New Energy Finance.

For a list of forestry projects visit Ecosystem Marketplace's Forest Carbon Portal, [www.forestcarbonportal.com](http://www.forestcarbonportal.com).

<sup>28</sup>Total numbers for land based credits are higher than 2008 volumes listed in the Ecosystem Marketplace State of the Forest Carbon Market report because the addition of agricultural soil and other land-based project categories.

Afforestation/Reforestation (AR) transactions stood out from other forest carbon project types in 2009, as AR projects contributed almost half of forest credits transacted and 10% (4.3 MtCO<sub>2</sub>e) of the total market. This is in line with their historic share of 59% (average across survey years pre-2002 to second quarter 2009), according to Ecosystem Marketplace's *State of the Forest Carbon Markets 2009* report.<sup>29</sup>

Quickly gaining ground are REDD credits, which made an impressive leap from 1% in 2008 to 7% of OTC market share (0.7 to 2.8 MtCO<sub>2</sub>e). This brings the volume of REDD credits transacted in 2009 just shy of the volume from all previous years combined (3.1 MtCO<sub>2</sub>).<sup>30</sup> This is not surprising given the world's intensifying focus on REDD deployment after the 2007 UNFCCC Bali negotiations reached a global consensus on the need to halt deforestation.

This investment began translating into transactions in 2009. From 2008 to 2009, REDD transactions increased by 289%, despite the fact that many hurdles still hamper REDD project development—including the limited availability of approved REDD methodologies and uncertainty about a global REDD finance mechanism.

Improved Forest Management (IFM) benefitted from the popularity of CAR and its accommodation for IFM projects and grew from a project type with only 0.4 MtCO<sub>2</sub>e in 2008 to 1.3 MtCO<sub>2</sub>e in 2009. Agroforestry saw a similar increase, from zero takers in 2008 to 4 new projects and 0.6 MtCO<sub>2</sub>e in 2009. Agroforestry's small volume reflects not only its newness, but also its current confinement to boutique and small project sizes.

Between 2008 and 2009, the volume of agricultural soil transactions increased from 0.2 MtCO<sub>2</sub>e to 1.3 MtCO<sub>2</sub>e (3% of total market share). Over the past few years, this project type has mostly been transacted through the CCX but, as CCX prices plummeted in 2009, an expanding volume of soil carbon credits were CCX credits transacted privately on the OTC market where suppliers could obtain higher prices. Despite significant interest in new soil methodologies we've yet to see soil carbon credits verified outside the CCX.

#### **6.1.4 Industrial Gas Revs Engine, Geologic Sequestration Hits the Brakes**

Industrial gas projects involve capturing and destroying gases such as ozone-depleting chlorofluorocarbons (CFCs) and halons contained in older appliances, refrigeration systems and other "banks" not regulated by the Montreal Protocol's ODS phase-out. Industrial gas projects—particularly the destruction of ozone-depleting substances—have a very large greenhouse gas potential and can therefore generate a large number of credits for relatively low cost. However, much of the industrial gas "low-hanging fruit" has already been captured, and the projects do not have the charismatic public image sought after by voluntary buyers.

Hence, industrial gas projects remain a minor proportion of the market, but did see a very slight increase in volume (0.3 MtCO<sub>2</sub>e in 2009 from 0.2 MtCO<sub>2</sub>e in 2008). These volumes are a significant shift from

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<sup>29</sup> [http://moderncms.ecosystemmarketplace.com/repository/moderncms\\_documents/SFCM\\_2009\\_smaller.pdf](http://moderncms.ecosystemmarketplace.com/repository/moderncms_documents/SFCM_2009_smaller.pdf).

<sup>30</sup> State of the Forest Carbon Markets report 2009, REDD project type, OTC.

2006, when 2 MtCO<sub>2</sub>e represented 20% of the marketplace. Likewise, since 2006 volumes of industrial gas credits have continued to drop under the CDM.

Geologic sequestration involves capturing and injecting CO<sub>2</sub> into a stationary geologic formation, though in practice generally refers to Enhanced Oil Recovery (EOR) whereby CO<sub>2</sub> is injected into oil reservoirs in order to increase the quantity of crude oil extracted from an oil field. In order to qualify as an offset project the amount of CO<sub>2</sub> injected for oil recovery-related purposes must go beyond the amount of CO<sub>2</sub> emitted. Geologic sequestration projects lost some ground, falling from 5% of market share in 2008 to 3% (1.4 MtCO<sub>2</sub>e) in 2009. Despite its capacity to produce a huge supply of credits at low cost, developers are mainly constrained by a lack of demand for this more controversial project type, as additionality is a major concern.

### 6.1.5 Energy Efficiency and Fuel-Switching Switch Places

Since 2007, the voluntary market has dimmed the lights on energy efficiency projects, with market share dropping precipitously from 18% in 2007 to 4% in 2008 and to 1.4% in 2009 (0.6 MtCO<sub>2</sub>e). Even so, energy efficiency proved to be one of the most diverse project types in 2009, with projects hailing from every region of the world, and prices ranging from \$1.0/tCO<sub>2</sub>e to \$25.0/tCO<sub>2</sub>e. Most of these projects, however, reported very small project volumes.

The market for fuel switching, on the other hand, switched directions last year as its market share crept back up to 3% (1.1 MtCO<sub>2</sub>e), from 1% in 2008. Several fuel switching projects were priced above-average and verified to stacked SOCIALCARBON and VCS standards, making them particularly appealing to voluntary buyers.

## 6.2 The Costs of Cutting Carbon: Prices by OTC Project Type

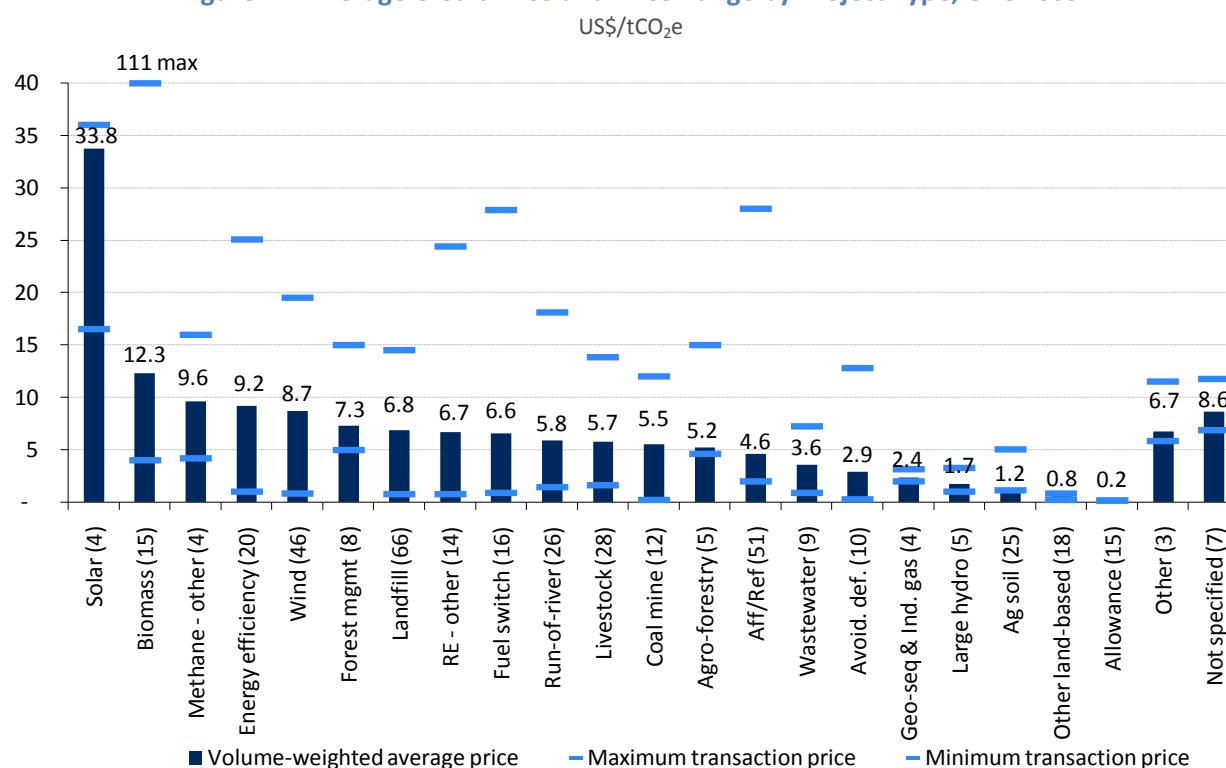
In 2009, credits transacted for as low as \$0.3/tCO<sub>2</sub>e and as much as \$111.0/tCO<sub>2</sub>e. In addition to being highly correlated with factors like a credit's vintage year and project size, prices differed significantly by project type. The difference in credit prices reflects many factors including the heterogeneity of abatement costs; the desirability of particular project types to different buyers; at what stage in a credit's life it was sold; and a range of optional features such as utilizing third-party standards and registries. For instance, solar VERs often sell for higher prices because they have high production costs, whereas industrial gas credits are relatively inexpensive to produce. Additionally, credit prices reflect a buyer's assignment of value to certain co-benefits beyond the emissions reductions themselves, such as biodiversity, cultural or community benefits.

This year prices for project types generally separated into the following three tiers:

1. **Expensive** (>\$8/tCO<sub>2</sub>e): solar, biomass, energy efficiency, wind and other methane projects.
2. **Moderate** (\$4-8/tCO<sub>2</sub>e): methane and forestry-related projects such as landfill gas and forest management.
3. **Inexpensive** (<\$4/tCO<sub>2</sub>e): avoided deforestation, agricultural land-based, wastewater, large hydropower, enhanced oil recovery and industrial gas.

Consistent with previous years, prices within project types varied significantly for individual transactions due to variables such as transaction size, standards and one's position in the supply-chain.

**Figure 22: Average Credit Price and Price Range by Project Type, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 326 observations.

Overall, price trends by project type were very similar to those observed in 2008. As in 2008, the four highest-earning project types on the market (by average credit price) were predominantly renewable energy activities: solar (\$33.8/tCO<sub>2</sub>e), biomass (\$12.3/tCO<sub>2</sub>e), “other” methane project types (\$9.6/tCO<sub>2</sub>e), and energy efficiency (\$9.2/tCO<sub>2</sub>e). These project types earn above-average prices because of their high costs of production and particular appeal to voluntary market buyers.

Solar offsets transacted at the highest average price for a second straight year, up 43% over last year's price of \$22.0/tCO<sub>2</sub>e. Solar's high price point may be attributed to solar offset scarcity, micro-scale project sizes and often higher production costs. Solar projects fetch higher prices regardless of their project location or standard utilized, which points to solar's overall environmental appeal and/or level of buyer comfort with the familiar project type.

Biomass projects fetched the second highest price. Part of the high average price for biomass projects can be attributed to premiums paid for standards used for these projects: 38% of biomass credits sold were CDM or Gold Standard. However, VCS led in biomass with 44% of transacted volumes. These projects sold at a much lower average price for biomass offsets (at \$5.5/tCO<sub>2</sub>e), which was nonetheless

17% higher than the average price for VCS credits. This premium within the VCS has been attributed to their “exotic” classification among buyers—typically small- to micro-scale, community-based projects in unique locations like Guatemala and Thailand. Similar to biomass, relatively high prices for energy efficiency (\$9.2/tCO<sub>2</sub>e) were correlated with the use of the Gold Standard and fuel switching (\$6.6/tCO<sub>2</sub>e) with SOCIALCARBON plus VCS stacked credits.

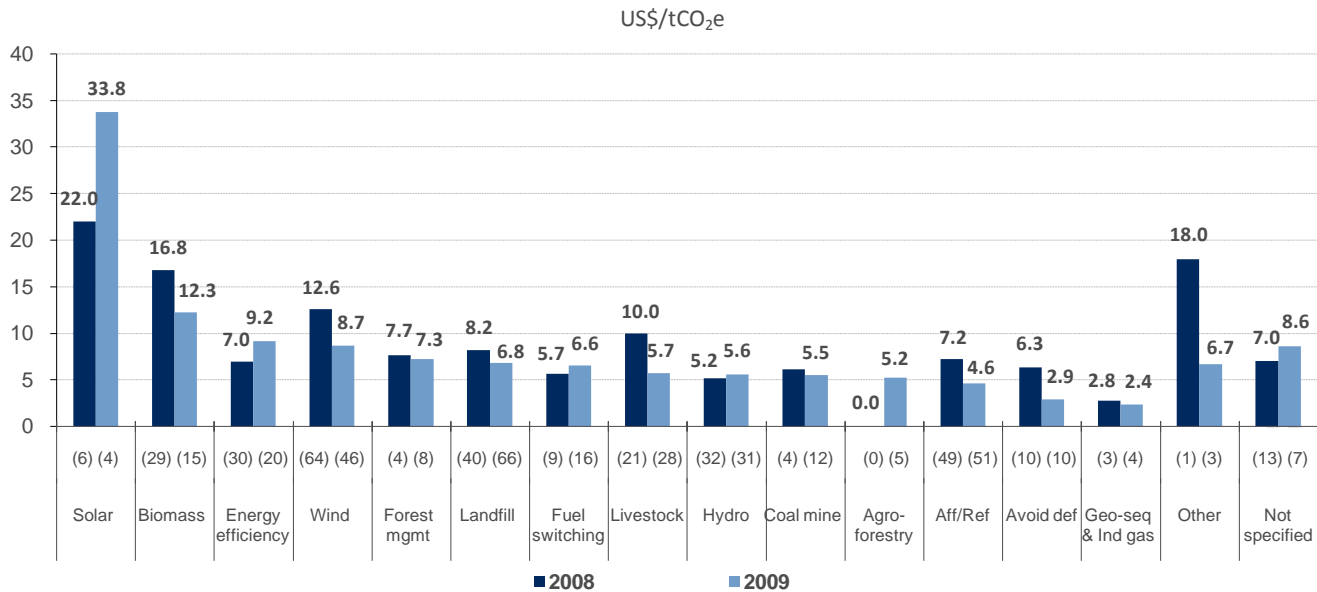
Among the project types that fetched moderate prices (\$4-8/tCO<sub>2</sub>e) in 2009 were run-of-river hydro, wind, landfill gas methane, coal-mine-methane and improved forest management. This year’s survey data differentiated between run-of-river and large hydro projects, revealing a substantially higher price point for run-of-river offsets (\$5.8/tCO<sub>2</sub>e) than for large hydro (\$1.7/tCO<sub>2</sub>e), which was near the bottom end of the lowest price tier. Combined into a single project category, hydro prices increased from \$5.2/tCO<sub>2</sub>e in 2008 to \$5.6/tCO<sub>2</sub>e in 2009, benefitting from Gold Standard run-of-river credits from small and medium projects.

Weighed down by lower prices for CCX bilateral trades, methane prices fell across the board, even with continued price support from CAR. The average price for agricultural methane credits, which increased by 54% from 2007 to 2008, fell back in 2009 to \$5.7/tCO<sub>2</sub>e (-43%); landfill methane was down 17% to \$6.8/tCO<sub>2</sub>e; and coal mine methane down 10% with an average price of \$5.5/tCO<sub>2</sub>e.

Forest carbon offset prices also decreased. REDD prices fell 54% to \$2.9/tCO<sub>2</sub>e, as did the average price for A/ R credits, to \$4.3/tCO<sub>2</sub>e (-41%). IFM projects managed to limit their decline, dropping by only a slight percentage (-5%) from \$7.68/tCO<sub>2</sub>e to \$7.31/tCO<sub>2</sub>e. Their continued presence at the top of the “moderate” price bracket is primarily associated with IFM pre-compliance eligibility under CAR and VCS standards, as well as IFM credits’ typically small project size.

The most inexpensive voluntary carbon credits included the usual suspects: waste-water methane credits (\$3.6/tCO<sub>2</sub>e), geological sequestration credits and industrial gas credits (together at \$2.4/tCO<sub>2</sub>e), and agricultural soil credits (\$1.1/tCO<sub>2</sub>e). All of the agricultural soil offsets we tracked in the OTC market originated from the CCX, where exchange-traded credits (i.e., CFIs) sold for an average of \$1.2/tCO<sub>2</sub>e in 2009, comparable to agricultural soil’s average price of \$1.2/tCO<sub>2</sub>e and 83% below the 2009 OTC average of \$6.5/tCO<sub>2</sub>e.

**Figure 23: Average Credit Price by Project Type, OTC 2008 vs. 2009**

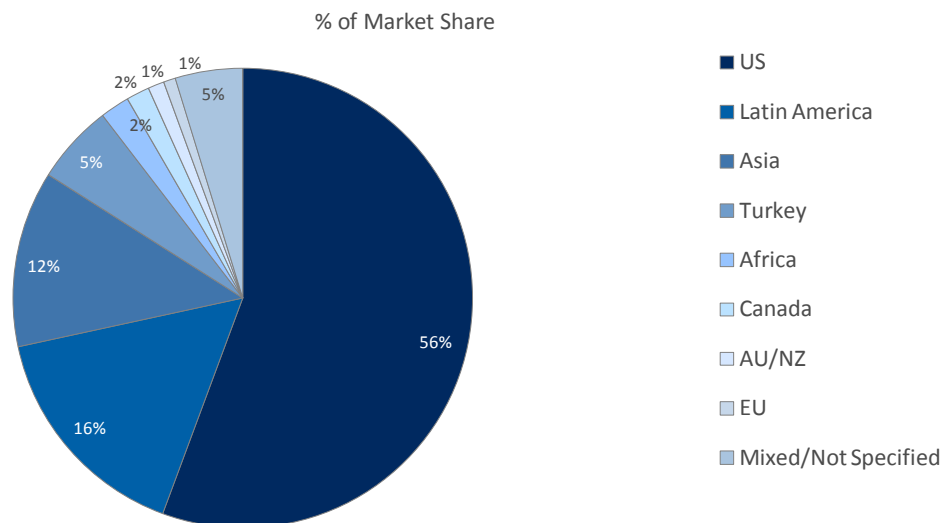


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.  
 Note: 2009 figures based on 326 observations, 2008 figures based on 330 observations.

### 6.3 From Texas to Turkey: OTC Project Locations

Offset projects are implemented around the globe.<sup>31</sup> Overall we tracked projects in 39 countries.

**Figure 24: Transaction Volume by Project Location, OTC 2009**



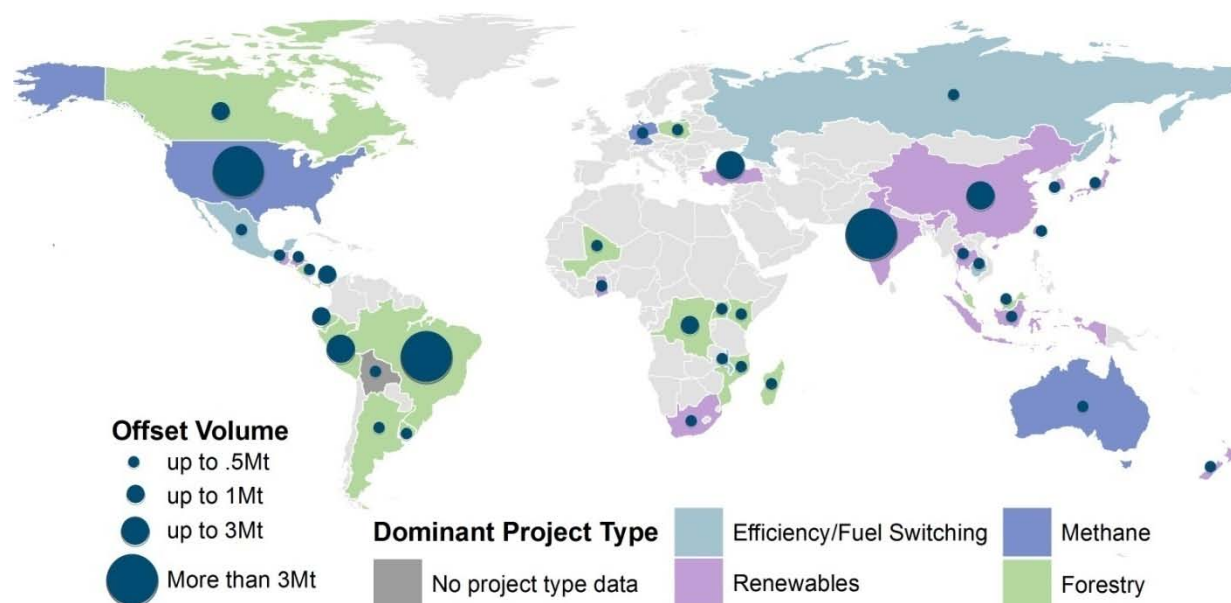
Source: Ecosystem Marketplace, Bloomberg New Energy Finance. Note: Based on 394 observations.

<sup>31</sup> Regions divided using United Nations classifications: <http://unstats.un.org/unsd/methods/m49/m49regin.htm#asia>.

With regard to credit origination, North America took the lead in 2009 to generate 58% of OTC transaction volume (up from 28% in 2008). The US and Asia continued their tango for the top spot, with the US again taking the lead it lost to Asian projects after 2006. This can again be attributed to the strong pre-compliance activity in the US. As in previous years, the US supplied more volume (24.2 MtCO<sub>2</sub>e, up from 15.0 MtCO<sub>2</sub>e in 2008) than any other single country. Following far behind was Latin America, which captured 16% (6.8 MtCO<sub>2</sub>e) of market share in 2009. Asia found itself in third place last year, with India and China leading the Asian pack with 2.9 MtCO<sub>2</sub>e and 1.7 MtCO<sub>2</sub>e, respectively. Both nations have historically dominated Asian origination of VERs as well as CERs.

Trends in regional distribution of sales can be attributed to factors on the supply-and-demand fronts. On the supply side, factors such as country-level policies, risk, infrastructure, availability of project types and environmental attributes all influenced the choice of project location. At the same time, many buyers tended to have specific preferences with respect to project location.

**Figure 25: Transaction Volume and Project Type by Location**



*Source: Ecosystem Marketplace, Bloomberg New Energy Finance.*

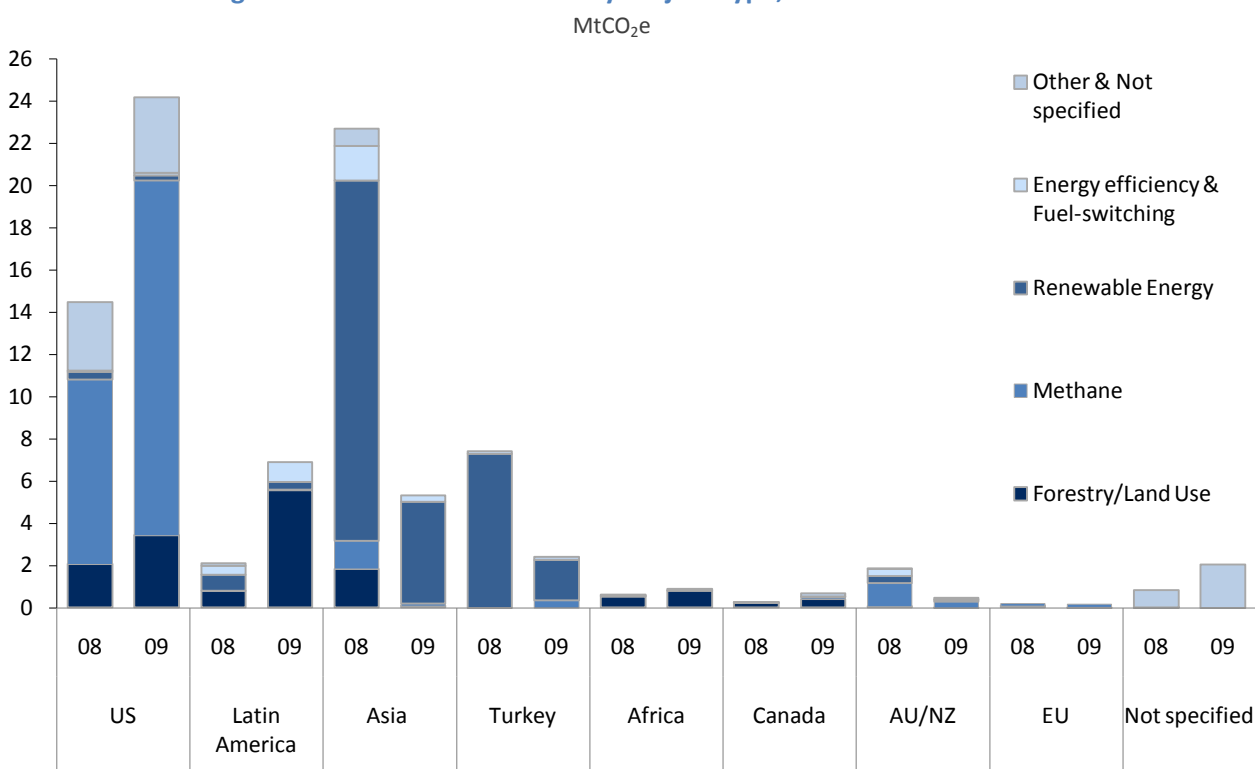
*Note: Based on 394 observations. "Dominant project type" classified as type associated with largest volume by country.*

Over the past several years, the voluntary OTC market also often reflected project location and type trends in the CDM. However, in 2009 the voluntary market increasingly followed trails other than those blazed by the regulated markets. This evolving credit origination pattern may be partially due to limited project finance, verification delays and uncertainty on CDM demand post-2012, which limited projects in the CDM pipeline. However, numerous stakeholders emphasized that in a marketplace flush with credits but not with consumers, buyer preferences are the main factor shaping the face of marketplace transactions.

“Some of the voluntary carbon market activity is starting to disassociate itself from the CDM, partially because of verification and finance hampering supply... but in this buyers’ market demand is what is really shaping the marketplace,” noted Lenny Hochschild at Evolution Markets.

Figure 26 illustrates that the bulk of North America’s and Latin America’s growth was centered on a single project type (methane and forestry, respectively), while the Asian and Turkish markets lost market share primarily due to renewable energy. The US and Latin America nevertheless managed to maintain an assortment of other project types that would appeal to different buyer profiles, while a less diverse mix of project types was reported for Asian and Turkish projects.

**Figure 26: Transaction Volume by Project Type, OTC 2008 vs. 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 394 observations.

Both Latin America and Africa were the source of a roughly consistent number of credits from 2006 to 2008, but had consistently lost market share—until last year. In 2009, both regions experienced growth. Last year saw tremendous growth in the importance of Latin America as a regional player, particularly in the forest carbon markets. Africa, too, saw a (slight) increase from 1% to 2%, also dominated by a growth in forest carbon projects.

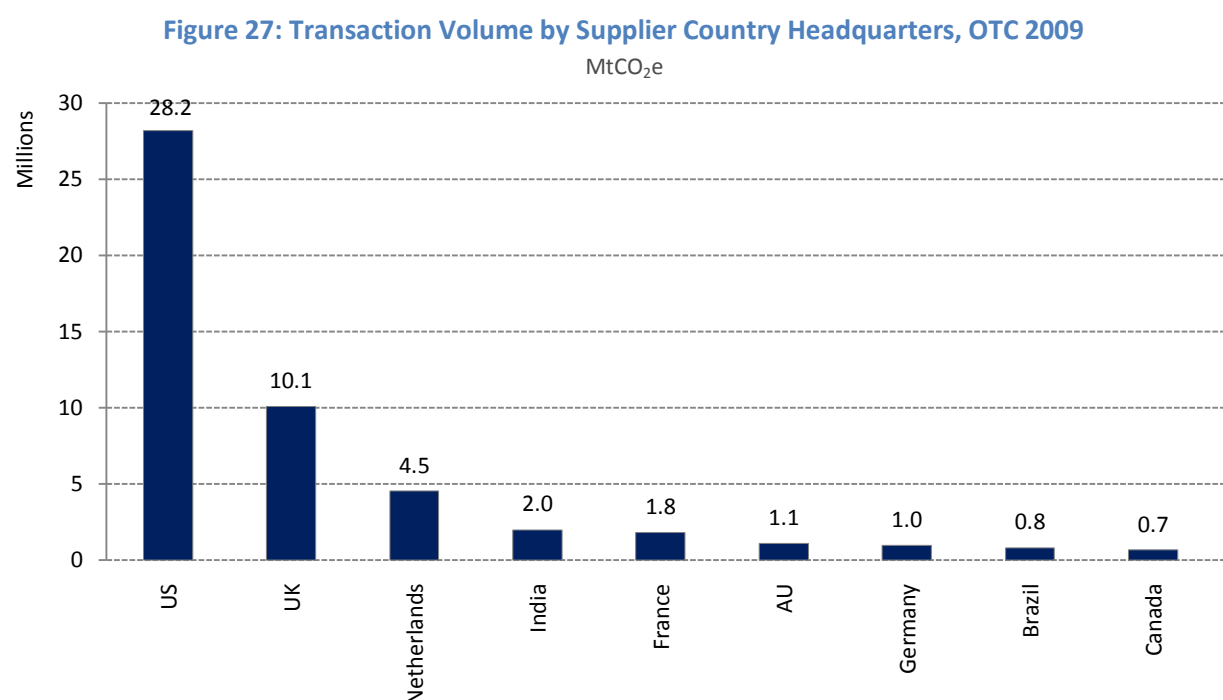
Not surprisingly, the EU, Australia and New Zealand almost disappeared from the origination map in 2009. The EU maintained less than 1% of VER market share, while the Oceanic countries were right at

1% in 2009 (down from 4% in 2008). The EU's continued decline in credit origination was due to double-counting concerns related to the Kyoto Protocol's accounting rules. The same was true in Australia/ New Zealand, but was coupled with regulatory uncertainty surrounding the Australian government's proposed emissions trading scheme.

Project volume by supplier headquarters (as opposed to project location) provides a snapshot from a different angle. In line with credit origination, companies headquartered in the US supplied the majority (55% or 28.2 MtCO<sub>2</sub>e) of credits transacted in 2009.

EU-based suppliers brought another 35% of credits to the market (18.1 MtCO<sub>2</sub>e). Not surprisingly, due to the existence of a mandatory regime, these numbers stand in stark contrast to the percentage of offset credits that actually originate from projects in the EU (less than 1%).

While China and India vied for the top Asian project location, India clearly came out on top as the host country for supplier headquarters—India-based firms orchestrated 4% (2 MtCO<sub>2</sub>e) of all VERs brought to market in 2009. Further down the list is Brazil, the only Latin American nation to host companies originating a significant volume of offsets (0.8 MtCO<sub>2</sub>e).



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 123 survey respondents.

### 6.3.1 North America: Pre-Compliance Power Play

North America (which consists of the US and Canada in our analysis, with Mexico included in Latin America) supplied the greatest share of OTC transaction volume, at 23.6 MtCO<sub>2</sub>e (57% of the OTC market). The United States supplied 97% of this volume, the bulk of which originated from landfill methane (70% or 16.4 MtCO<sub>2</sub>e) and forest carbon projects (14% or 3.3 MtCO<sub>2</sub>e).

Interest in credit development in the US was driven by pre-compliance expectations and in particular the American Clean Energy and Security Act of 2009, which set a mandatory economy-wide cap-and-trade scheme designed to reduce emissions from 17% below 2005 levels by 2020.<sup>32</sup> The Waxman-Markey bill allowed for up to 2 billion tonnes of offsets per year divided between domestic and international projects.

The bill passed in the US House of Representatives in June 2009, spurring a flood of interest in domestic offsets, specific standards, and project types. Despite hopes that a bill would be passed by international negotiations in Copenhagen, it languished in the Senate throughout the second half of the year. “The year started with a bang and ended with a fizzle,” sighs Eron Bloomgarden of Equator Environmental. While the rise of North American credits can mostly be attributed to pre-compliance demand, these buyers are not the exclusive source of demand. Pure voluntary buyers also continued to purchase credits from this region. Most credits were sourced to US-based buyers, though credits were also purchased by Europeans who cited low political and country risk, as well as interest in stimulating carbon reductions in the region.

In the US in 2009, landfill gas methane projects produced more VERs (13.1 MtCO<sub>2</sub>e, or 54% of the US OTC market) than any other project type. The change in focus toward landfill gas illuminated the burgeoning interest in US pre-compliance offsets, of which landfill gas is seen to be a likely pick for eligibility because waste was generally treated as an uncovered sector in the various US cap-and-trade proposals (with the notable exception of the original draft version of Waxman-Markey).

Land-based projects solidified their position as a mainstay of the North American market, generating 14% (3.4 MtCO<sub>2</sub>e) of US-sourced volume and 59% of Canadian-sourced volume (0.4 MtCO<sub>2</sub>e). The bulk of these credits originated from improved forest management (6%) and agricultural soil (5%) projects. Transactions from geologic sequestration, while dropping considerably from 18% of the North American-based OTC transaction volume in 2008, continued to represent 6% of its volume in 2009.

Canada experienced a 40% growth in voluntary transactions, from 0.5 MtCO<sub>2</sub>e in 2008 to 0.7 MtCO<sub>2</sub>e in 2009. Quite opposite to its neighbor to the south, most of Canada’s credits (59%) came from A/ R projects and landfill methane (14%). Canadian suppliers reporting customer location sold 64% of their volume to pure voluntary buyers in Europe. Holger Mayer, Director of the German utility company HSE, which founded the Forest Carbon Group explains, “We invest in Canada because it is an attractive country from an ecological and forestry point of view. Its forest ecosystems especially along the Pacific coast can safely store huge amounts of carbon for a long time. And, investment and project risks are low.”

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<sup>32</sup> <http://www.edf.org/article.cfm?contentID=9854>.

At the regional level, Alberta's energy intensity-based program is currently up and running, sourcing local offsets for compliance that might otherwise be available to the voluntary market. A similar compliance scheme is in the works in Saskatchewan, and analysts speculate that the scheme will also include a provision for offsets "made in Saskatchewan."

### 6.3.2 Eastern and Southern Asia: Hydro Running Its Course

Within Eastern and Southern Asia (simply noted as Asia in all figures), we tracked transactions involving VERs from India, China, Thailand, Indonesia, Cambodia, Taiwan, Korea, and Japan (in order of greatest to least transaction volume). Of the 5.4 MtCO<sub>2</sub>e, 55% (2.9 MtCO<sub>2</sub>e) came from Indian projects—the same proportion as in 2008—another 32% from China (1.7 MtCO<sub>2</sub>e), and 6% from Thailand (0.3 MtCO<sub>2</sub>e).

Asia's historic dominance as a preferred project location was lost to the US and Latin America in 2009. OTC transaction volume from Asian projects fell dramatically (-77%) between 2008 and 2009, from 22.7 MtCO<sub>2</sub>e to 5.4 MtCO<sub>2</sub>e. Volumes were less than half of Asia's 2007 volume of 11.1 MtCO<sub>2</sub>e. Asian project developers decried buyers' unwillingness to pay the premiums they once offered up for high-quality pre-CDM credits, probably linked to the oversupply of credits as well as the cost-cutting impact of the recession. In addition, the large volume in 2008 was the result of a number of anomalously large transactions that were not repeated in 2009.

By far, the most common Asian project type was renewable energy, likely caused by the significant RE development that is happening throughout the Asian continent. In 2009, hydropower represented 51% of all Asian transactions and 58% of transactions in China and India. In contrast to 2008, however, a mere 9% of volume came from large hydro projects, as the popularity of these projects declined due to their ill-reputed environmental impact. Instead, run-of-river came into favor and delivered the remaining 91% of credits. In China, wind power stepped up as the dominant project type, comprising 57% of Chinese credits (as compared to hydro's 34%-share in China). In fact, 30% of credits across Asia were sourced from wind power.

Energy efficiency and fuel switching debuted as major project types in the region to supply 6% of Asian credits. Increased interest in energy efficiency may relate to Asia's growing number of regional energy intensity and efficiency schemes.

Despite significant potential for REDD in countries like Indonesia, forestry projects all but fell off the map in Asia in 2009, slipping from 1.8 MtCO<sub>2</sub>e to 0.09 MtCO<sub>2</sub>e.

### 6.3.3 In the Middle of It All: Turkey

Western and central Asia was solely represented by Turkey, which fell from 7.5 MtCO<sub>2</sub>e to 2.4 MtCO<sub>2</sub>e (6% market share, down from 15% in 2008).

Although Turkey ratified the Kyoto Protocol, it is ineligible to generate CDM or JI credits, and the voluntary markets therefore remain its main niche until 2013, the end of the Kyoto Protocol. The majority of credits were from renewable energy projects (72%), not surprising given the Turkish government's feed-in tariffs for wind projects that attracted many project developers to the region in

2008. Wind projects generated more than half (64%) of Turkish credits in 2009. Most of the remainder, 15%, came from methane projects.

Regarding Turkey's loss of market share in 2009, sources pointed out that Turkey was not immune to the global financial crisis and that, without access to CDM financing, the government's existing feed-in tariff rates alone are insufficient to support cash-strapped projects. Ecosur's Timothée Lazaroo noted that a dearth of available project finance and uncertainty about integration into the Kyoto Protocol framework were major barriers to market entry in 2009. "The main barriers remain local—the Turkish administration must make clear its position towards the Kyoto Protocol or future agreements to replace the Kyoto Protocol, and bring more incentives to project developers... we all need more visibility and clarity."

While these barriers suggest long-term challenges to the Turkish VER market, other regional players assert that 2009 was a year of *oversupply* coupled with a lack of demand from pure voluntary buyers in Europe—traditionally Turkey's target market for credits. Adds Lazaroo: "Some buyers see credits from this country flooding the voluntary market and seek originality in order to go public with unique offsets. In a market where scarcity creates value, the high number of recently developed Turkish projects brings a misleading message to the market."

#### **6.3.4 Latin America: Re-Finding Forestry**

Last year saw tremendous growth in the importance of Latin America, particularly in the forest carbon markets. From 2008 to 2009, the number of credits sourced from Latin America more than tripled. We tracked voluntary projects from eight Latin American and Caribbean countries: Brazil, Peru, Ecuador, Panama, Mexico, Guatemala, Honduras, Argentina, Nicaragua and Uruguay. However, the majority of Latin American credits originated in Brazil (56%) and Peru (23%). We did not track any credits in the Caribbean.

Brazil's market share mirrors that of 2008, while Peru took the second-place spot from Mexico. Peru's lead results from a very large REDD project as well as several A/R and run-of-river hydro projects. Project developers cite the increased global focus on REDD deployment, as well as national governments' receptiveness and desire to showcase forest carbon projects internationally as catalysts for the region's growth.

In 2009, forest carbon represented 80% of the country's mix. Energy efficiency and fuel switching took most of the remaining market share (14%), while biomass and hydro projects generated very small volumes.

#### **6.3.5 Australia and New Zealand: Down under Downer**

Within the region of Oceania, all credits came from New Zealand and Australia. The countries' origination volume continued to fall from 7% (2 MtCO<sub>2</sub>e) in 2007 to 4% (1.6 MtCO<sub>2</sub>e) in 2008 to 1.2% in 2009 (0.5 MtCO<sub>2</sub>e). This decline was observed despite the sizable number of suppliers that participated from these countries and is expected to be the direct result of uncertainty surrounding Australia's Carbon Pollution Reduction Scheme (CPRS) and New Zealand's Emissions Trading Scheme (NZ ETS). Firms headquartered in Australia still transacted 1.1 MtCO<sub>2</sub>e, mostly from Asian projects.

The evolution of the Australian government's voluntary Greenhouse Friendly program is one example of the impact of the CPRS on the voluntary carbon market. The program ceased accepting new offset providers in May 2009 and will shut out new carbon-neutral products and service providers in July 2010. Though Greenhouse Friendly credits sold for a premium in 2009, providers attribute this to a large number of small, high-priced retail sales rather than increased demand for the credits, which are not fungible offsets under the CPRS or National Carbon Offset Standard (NCOS) schemes.

Throughout 2009, many Australian offset providers awaited the details of early-action crediting through the CPRS, as well as guidance from the government about how it would accommodate voluntary action in light of the nation's Kyoto commitment. By year's end, the government had provided some specifics about project eligibility under the new NCOS and enabled the purchase of VCS and Gold Standard VERs and Kyoto units to demonstrate carbon neutrality. The government's decision to delay the CPRS until 2012 (at the earliest), and thus delay further guidance for pre-compliance actors, may further depress Australian-sourced VER purchases in 2010. "It's uncertainty that's destroyed the business environment. Project developers are gutted, absolutely gutted... They've been hanging on expecting something to happen and now they're looking at least three more years. The delay of the ETS and the release of the NCOS have changed the rules yet again it is difficult to get long-term projects going when the rules keep changing," laments Ben Keogh from Australian Carbon Traders.

Across the Tasman Sea, the NZ ETS comes into effect on July 2010. Forest landowners were the first sector admitted into the scheme in 2008, receiving credits (New Zealand Units or NZUs) for forest carbon projects. The NZ ETS currently features a Kyoto-linked forestry credit provision that allows forest owners to convert their NZUs into AAUs for the international Kyoto market. Consequently, 2009 did not see any New Zealand forest carbon credits on the voluntary market.

Survey respondents instead reported credits sourced from energy efficiency, landfill methane and wind energy projects. Unlike in the United States, the NZ ETS currently only accepts Kyoto compliant credits, and it is unlikely New Zealand will accept "pre-compliance" VERs. Some suppliers say that continued lack of clarity from the government about early action crediting and the scheme's permanence is causing some to wait until trading begins to reengage the market. One respondent, Josh Rea from Green Carbon, notes, "There are two groups of people—those leading and thinking this thing isn't going away, and those who are holding back and wondering where the ETS is going to go. I'm not entirely sure how it's going to go or how our companies are going to respond to the ETS, but it will be clearer from July onward."

### **6.3.6 REDD to the Rescue: African VER Market Shaping up**

Africa is the "plateau continent" no more—at least not as far as VERs are concerned. Benefitting from buyer demand for offsets with sustainable development benefits along with NGO and international agency investments, Africa managed a slight gain in volume and market share (0.9 MtCO<sub>2</sub>e or 2%, up from 1% in 2008). While this may seem small, it represents Africa's first growth in market share since 2006, buoying hopes that the voluntary carbon market is finally delivering more finance to protect

Africa's valuable ecosystems. This growth coincides with increased volumes from African CDM projects, which doubled their market share up to 7% of global transactions.<sup>33</sup>

Projects were developed in eight African countries: Mozambique, Uganda, Mali, Malawi, Madagascar, Ghana, South Africa and the Democratic Republic of the Congo.

In 2009, 90% of African VERs were sourced from forest carbon projects, which ranged in project size from micro (< 5,000 tCO<sub>2</sub>e/year) to very large (>500,000 tCO<sub>2</sub>e/year). REDD was Africa's dominant project type in 2008, as well, though project variety grew in 2009 to include A/R and agro-forestry.

Limitations in other project types were due to the region's longstanding challenges of country risk, lack of industrialization and low participation in the CDM. Yet, project developers are cautiously optimistic about the prospect of an expanded pipeline of African VERs. Lucy Goodman, a technical expert for Envirotrade, says the region's governments are "starting to foster the conditions necessary for carbon project investment," to tackle the sovereign risk associated with African projects.

Several major retailers counter that the greatest setback for African VERs is that there simply are not enough of them to meet buyers' demand for the unique credits. Conservation International's Chris Tuite describes the appeal of African VERs to voluntary buyers: "When you're over the Congo Basin, all you see is the second largest block of moist tropical forest in the world and so as a conservation target it is hugely important... and has things like gorillas associated with it, so from a marketing point of view it is very attractive. As well as the human stories too, the poverty elimination." African project developers say that most of this demand originates in Europe, but that we should expect to see the emergence of at least a small domestic voluntary market for VERs among African firms in the future.

### 6.3.7 Europe: Growth Is Relative

Voluntary credits from Europe saw a slight growth in market share in 2009 (to 1%)—relative to its already diminished volumes, which shrank from 13% in 2007 to 0.5% in 2008. Europe's growth in market share was not due to increased volume (which shrank by 16% from 2008) but to generally lower volumes in other markets. The region's depressed volumes continued due to issues around double-counting a voluntary emissions reduction as a compliance reduction in a country's Kyoto inventory. The double-counting issue is based on the concern that a VER generated in a Kyoto country would free up an Assigned Amount Unit (AAU), requiring the country to cancel an AAU, if the VER is sold. Concern over how to account for a voluntary emissions reduction achieved in a country with Kyoto (or other) compliance obligations has led several countries, including the Netherlands, to forbid domestic offset sales to foreign entities unless an AAU is also retired. This cost-prohibitive policy has had the effect of limiting voluntary project development in Europe. Survey respondents filled out transaction information on European projects from Germany, Poland and the Russian Federation. European projects selling VERs in 2009 fell exclusively into two general project categories: afforestation/reforestation 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 double-counting issue.

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<sup>33</sup> World Bank State and Trends of the Carbon Markets 2010.

[http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State\\_and\\_Trends\\_of\\_the\\_Carbon\\_Market\\_2010\\_low\\_res.pdf](http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_of_the_Carbon_Market_2010_low_res.pdf).

## 6.4 Product Placement: Price Trends by Project Location

Mirroring 2009's lower average market price, most project locations experienced a drop in average price. There were some notable exceptions like Mozambique (\$10/tCO<sub>2</sub>e), Turkey (\$9.6/tCO<sub>2</sub>e), and Germany (\$9/tCO<sub>2</sub>e) that consistently obtained above-average prices.

Only three regions saw prices increase from 2008 to 2009—the EU (up 69% from 2008), Turkey (up 9% from 2008), and Africa (up 57%). Credits originating from projects in the EU garnered the highest average prices in 2009 (\$13.9/tCO<sub>2</sub>e), despite representing mostly older vintages. This can be attributed to their relative scarcity in the marketplace, producing credits that ranged from the moderate to expensive categories—but all weighted by very small volumes.

Credits from Turkey achieved the second-highest average prices in 2009, gaining \$0.9/tCO<sub>2</sub>e over its 2009 average. Turkey's share of inexpensive hydro projects fell from 34% in 2008 to 14% in 2009, replaced by higher priced methane and Gold Standard renewable energy types that also buoyed the 2009 price.

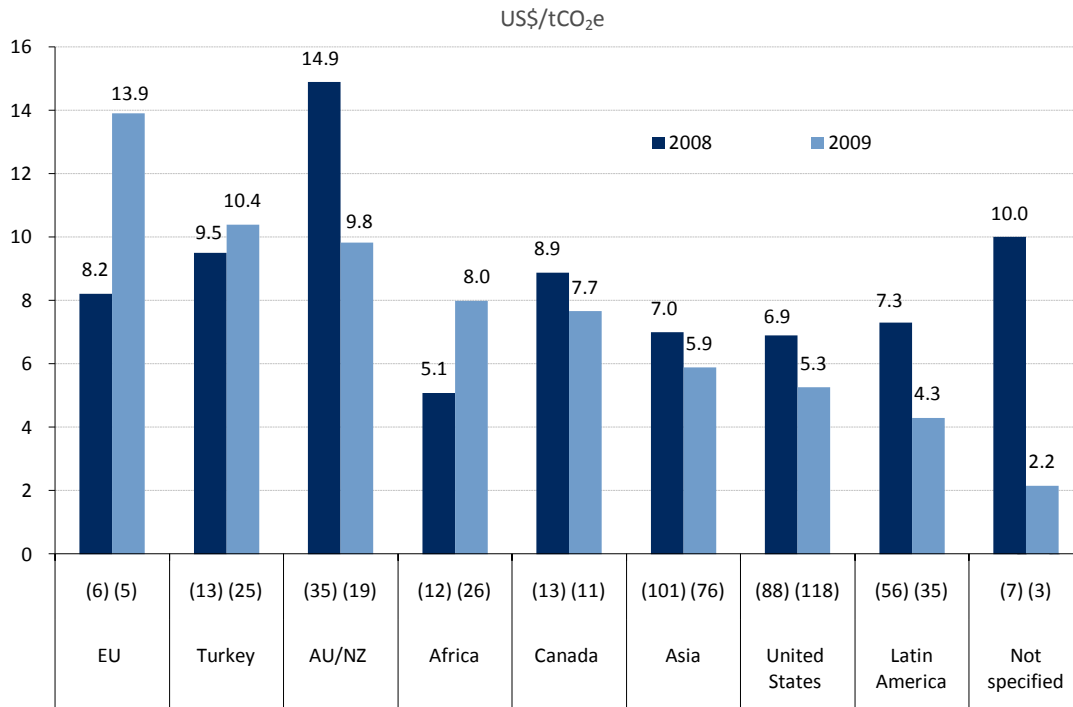
Not surprisingly, Africa also saw an increased average carbon price (from \$5.1/tCO<sub>2</sub>e in 2008 to \$8.0/tCO<sub>2</sub>e in 2009), with every project location obtaining above-average prices. Prices increased for Africa-based offsets due to a number of offsets certified to the Gold Standard and boutique forestry standards such as Plan Vivo and the Climate Community and Biodiversity Standard (CCB). These high-quality standards coupled with Africa's non-traditional project locations and co-benefits attracted premiums from pure voluntary buyers.

Credits from Australia/New Zealand again fetched high prices, similar to previous years. This price premium can be explained by the fact that most survey respondents from the region identified themselves as retailers, i.e., at the expensive end of the value chain. Also, a large number of Australian suppliers transacted Greenhouse Friendly and compliance grade (NSW GGAS) credits, which commanded higher prices. Though Oceania's average prices remained high, the region nevertheless experienced a drop in average price in 2009.

Other regions that transacted lower average prices in 2009 include Canada (\$7.7/tCO<sub>2</sub>e), Asia (\$5.9/tCO<sub>2</sub>e), the US (\$5.3/tCO<sub>2</sub>e) and Latin America (\$4.3/tCO<sub>2</sub>e). In Asia, Taiwan boasted the region's highest average credit price of \$11.7/tCO<sub>2</sub>e, while credit prices in China and India were weighed down by inexpensive hydro credits. A handful of expensive boutique biomass and energy efficiency projects sourced from "exotic" locations like Thailand and Cambodia could not compensate for the large volumes of inexpensive hydro credits, so that Asia's average price fell by 16% in 2009 to \$5.9/tCO<sub>2</sub>e.

The biggest loss, however, was seen in Latin America, where the price dropped 41% to \$4.3/tCO<sub>2</sub>e, garnering the lowest average price among regions. This is mainly due to a number of large-scale forestry transactions that weighed down the average price, despite premiums obtained by a handful of projects in Mexico. The average carbon price in the US also fell by approximately a quarter in 2009 to \$5.3/tCO<sub>2</sub>e. Outweighing what could have been a gold rush for credits perceived to be eligible for use in a future compliance scheme, bilaterally traded CCX offsets drove down the average US credit price average.

**Figure 28: Average Credit Price by Location, OTC 2008 vs. 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

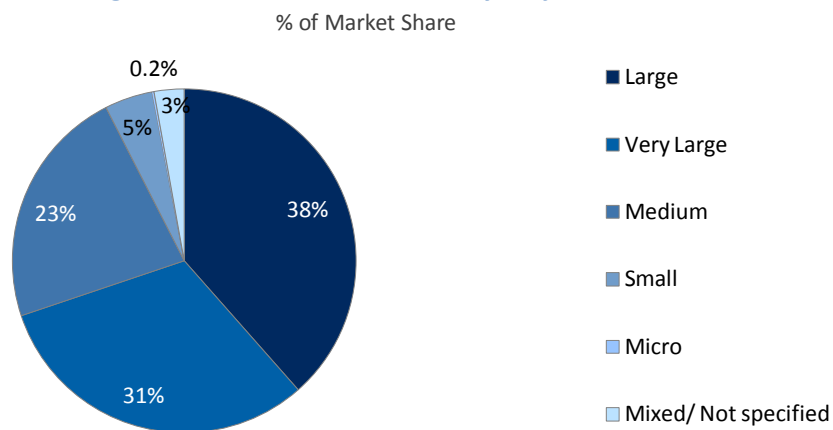
Note: Based on 318 observations, numbers on x-axis indicate the number of observations per data point.

## 6.5 Stepping on the Scale: Project Size

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

- Micro (less than 5,000 tCO<sub>2</sub>e/year)
- Small (5,000 to 19,999 tCO<sub>2</sub>e/year)
- Medium (20,000 to 99,999 tCO<sub>2</sub>e/year)
- Large (100,000 to 500,000 tCO<sub>2</sub>e/year)
- Very large (greater than 500,000 tCO<sub>2</sub>e/year)

**Figure 29: Transaction Volume by Project Size**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 244 observations.

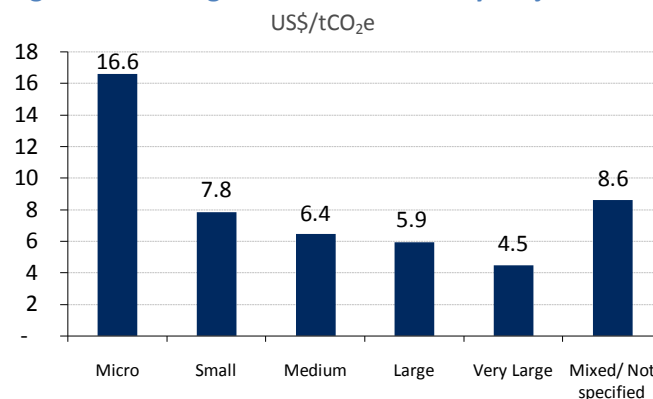
Not surprisingly, the bulk of credits transacted in 2009 were sourced from projects that generated over 100,000 tCO<sub>2</sub>e/year. The breakdown follows a pattern similar to previous years. The percentage of transactions from “very large” projects dropped 15% due to a particularly large renewable energy transaction that was recorded in 2008 (also mentioned previously). The share of credits sourced from “large” projects increased 21 percentage points over 2008 and actual volumes increased 9% to capture 38% of market share. “Medium”-sized projects accounted for most of the remainder (23%). The subtle rise of medium and large transactions correlates with increased demand for methane and avoided deforestation.

The percentage of transaction volume from small projects dropped from 9% in 2008 and 2007 to 5% in 2009. The drop may be due to a buyer preference for less expensive credits in light of tightening budgets. The percentage of credits from micro-sized projects fell from 3% in 2008 to 0.2% in 2009, despite suppliers’ continued references to buyer preference for boutique, non-commercial projects.

As might be expected, price is the inverse of project size, reflecting economies of scale—the smaller the project from which the credits were sourced, the higher the credit price.

Topping off the relatively consistent price trend, micro or “boutique” projects acquired the highest prices in 2009 with an average of \$16.6/tCO<sub>2</sub>e, while the largest projects commanded an average \$4.5/tCO<sub>2</sub>e. Micro projects’ high prices are attributable to very small, expensive solar projects that skewed the price to the high end. The difference in average prices between medium (\$6.4/tCO<sub>2</sub>e) and very large projects is \$1.9/tCO<sub>2</sub>e—a narrow spread compared to the difference between medium and micro project sizes (\$10.2/tCO<sub>2</sub>e).

**Figure 30: Average Transaction Price by Project Size**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 215 observations.

## 6.6 Project Vintage: Where Current Is King

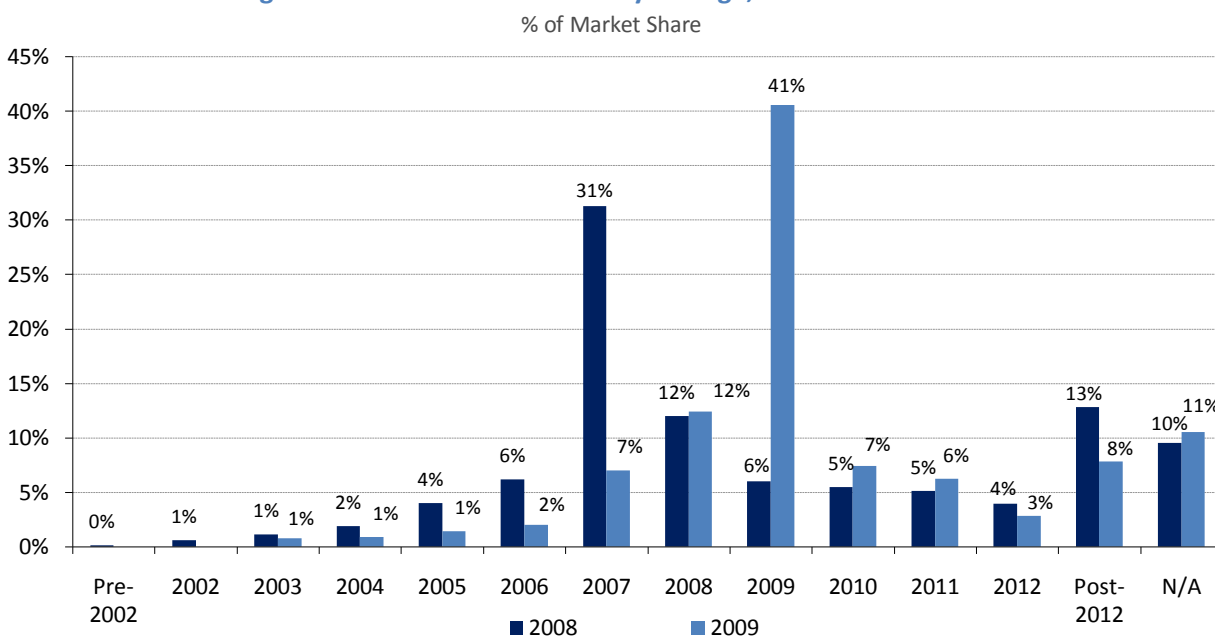
A credit's vintage refers to the year in which the emissions reduction occurred. Last year broke several patterns from previous years with respect to project vintage. Whereas in 2008, the credits with a 2007 vintage were the hottest commodity on the market, transactions in 2009 were heavily focused on the present year vintage, i.e., 2009.

Credits issued in 2008 were the second most popular vintage (12%). Together, vintages 2008 and 2009 claimed over half of the 2009 OTC transaction volume. Demand for these vintages was a mix of pre-compliance and pure voluntary purchases.

The 2008 and 2009 vintages were sourced from a variety of standards dominated by the VCS, ISO-14064 and internal standards. CAR credits comprised only 5% of the 2008 vintages, but 21% of 2009 vintages. This was largely due to pre-compliance activity in response to the Waxman-Markey bill, which specified 2009 as the cut-off date for credits that can be imported into the program on a one-to-one basis as early offset credits. For later vintages (2010 to post-2012), 54% of all transactions reported by vintage were also verified by CAR for similar reasons. Another 16% of forward transactions were verified to an internal standard and 9% from Gold Standard.

Over the past three years future vintages were responsible for a quarter to a third of transacted credits. Again in 2009, 35% of transaction volume originated from ex-ante credits (before reductions actually occurred)—up from 33% in 2008. This was partly due to pre-compliance demand for future vintages—the perception being that the later the vintage year, the more likely it is that cap-and-trade will be implemented by that time.

**Figure 31: Transaction Volume by Vintage, OTC 2008 vs. 2009**



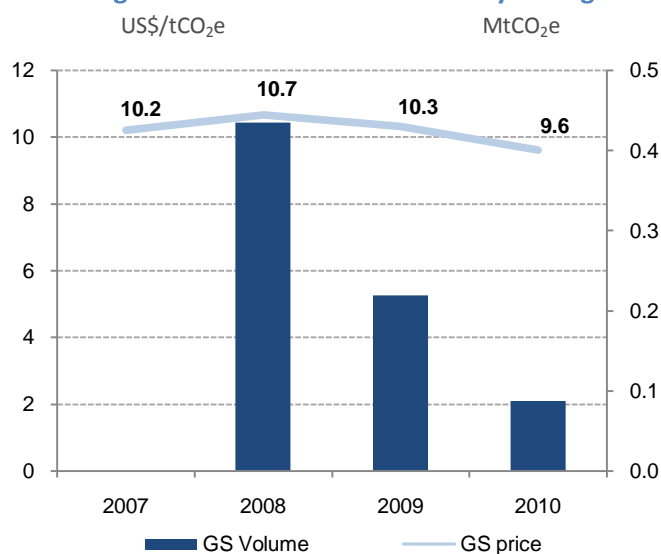
Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 332 observations.

### 6.6.1 Carbon In-Contango: Pure Voluntary vs. Pre-Compliance Credit Pricing

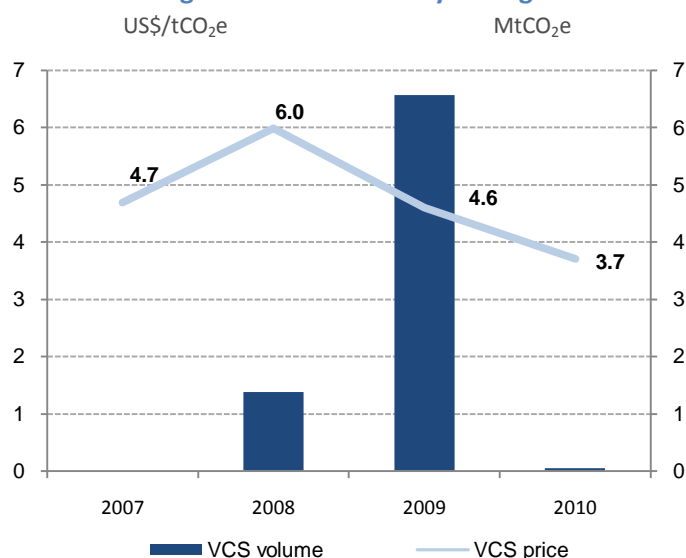
In both the pure and compliance sides of the market buyers prefer more recent vintages. However, the two segments seem to have different willingness to pay for future vintages. Figures 32 and 33 demonstrate a lower preference for the future vintages of Gold Standard and VCS credits. These standards dominated the pure voluntary market in 2009 though are also considered pre-compliance standards. Pure voluntary buyers prefer current vintages because they can be immediately retired—retirement being the motivation for 41% of offset buyers—rather than using future vintages, which they cannot yet use.

**Figure 32: Gold Standard Prices by Vintage**



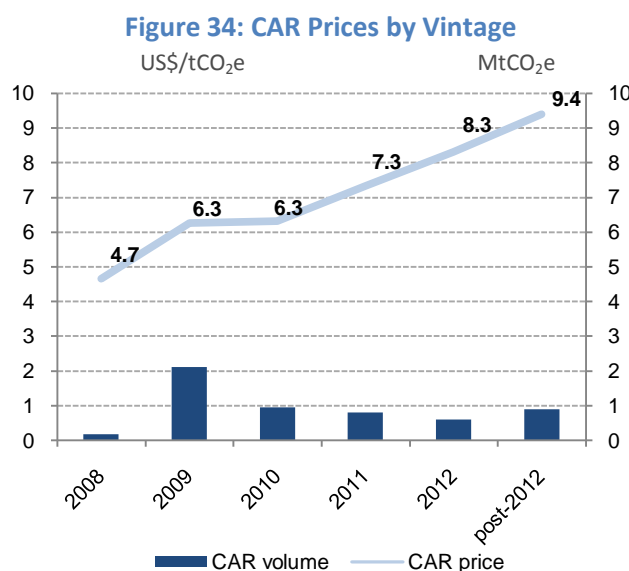
Source: Ecosystem Marketplace, Bloomberg New Energy Finance.  
Note: Based on 40 observations.

**Figure 33: VCS Prices by Vintage**

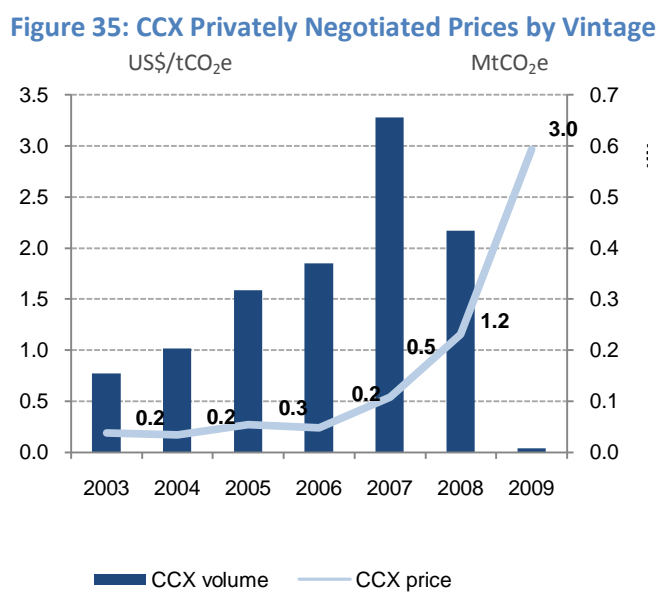


Source: Ecosystem Marketplace, Bloomberg New Energy Finance.  
Note: Based on 101 observations.

Pre-compliance buyers, on the other hand, seem to place a higher value on future vintages due to their more likely eligibility and therefore higher anticipated payoff in a future compliance scheme. Figures 34 and 35 illustrate this point by looking at prices for CAR and CCX credits. CAR prices for future vintages exhibited an average annual growth of 11%, even post-2012. 2009 vintage credits transacted bilaterally on the CCX also traded at particularly high levels. Such trades were likely a response to the Congressional climate change proposals regarding the 2009 vintage cut-off for early offset eligibility.



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.  
Note: Based on 36 observations.



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.  
Note: Based on 25 observations and CCX disclosed bilateral transactions.

## 6.7 Sign on the Dotted Line: OTC Contract Structures

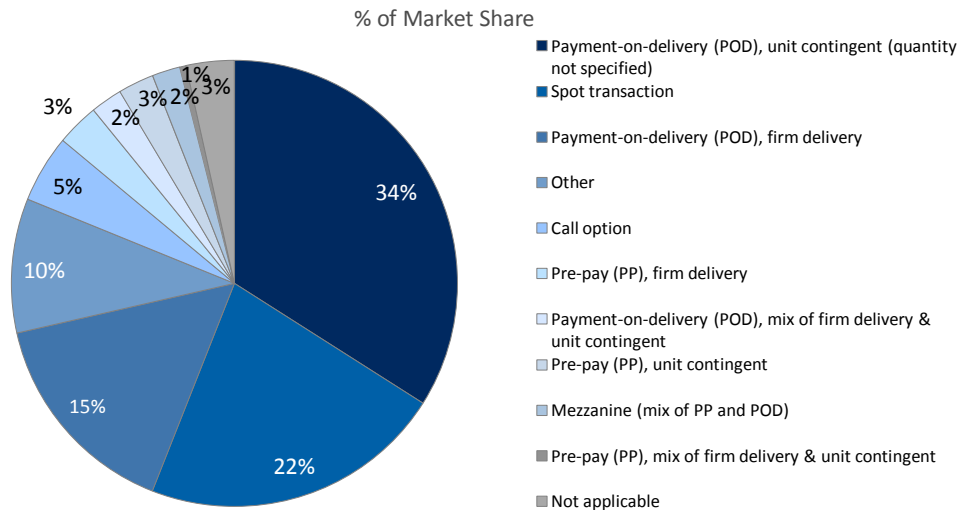
In this year's survey, respondents chose from several contract structures to describe their transactions. The key terms are explained as follows:

- Pre-pay (PP): payment is made in advance of credit delivery;
- Payment-on-delivery (POD): a payment is made as the credits are verified and delivered; unit-contingent means that delivered credit volumes are not exactly specified in the contract, but dependent on how many are produced;
- Firm delivery: quantities contracted for delivery are exactly specified;
- Spot transaction: the credit has already been produced and the delivery and payment are made instantaneously.

Similar to last year's survey, three main contract structures were used to execute the majority of transactions in the voluntary OTC market: (1) payment-on-delivery, unit-contingent; (2) spot transactions; and (3) payment-on-delivery, firm delivery. The proportion of these to other contract structures, however, dropped from 91% in 2008 to 72% in 2009.

Contracts involving payment-on-delivery (POD) and unit-contingent still comprised a large proportion of transaction volume in 2009 (34%), though this was down from 51% in 2008. Most of these transactions are likely associated with the 65% of forward sales, i.e., vintages sold for 2009 and beyond. Forward sales are often structured as POD unit-contingent contracts, as many sellers cannot or will not take on full delivery risk, i.e., promise firm delivery. In addition, forward sales are frequently structured as a full off-take whereby the purchaser agrees to buy all offsets generated.

**Figure 36: Transaction Volume by Contract Type, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

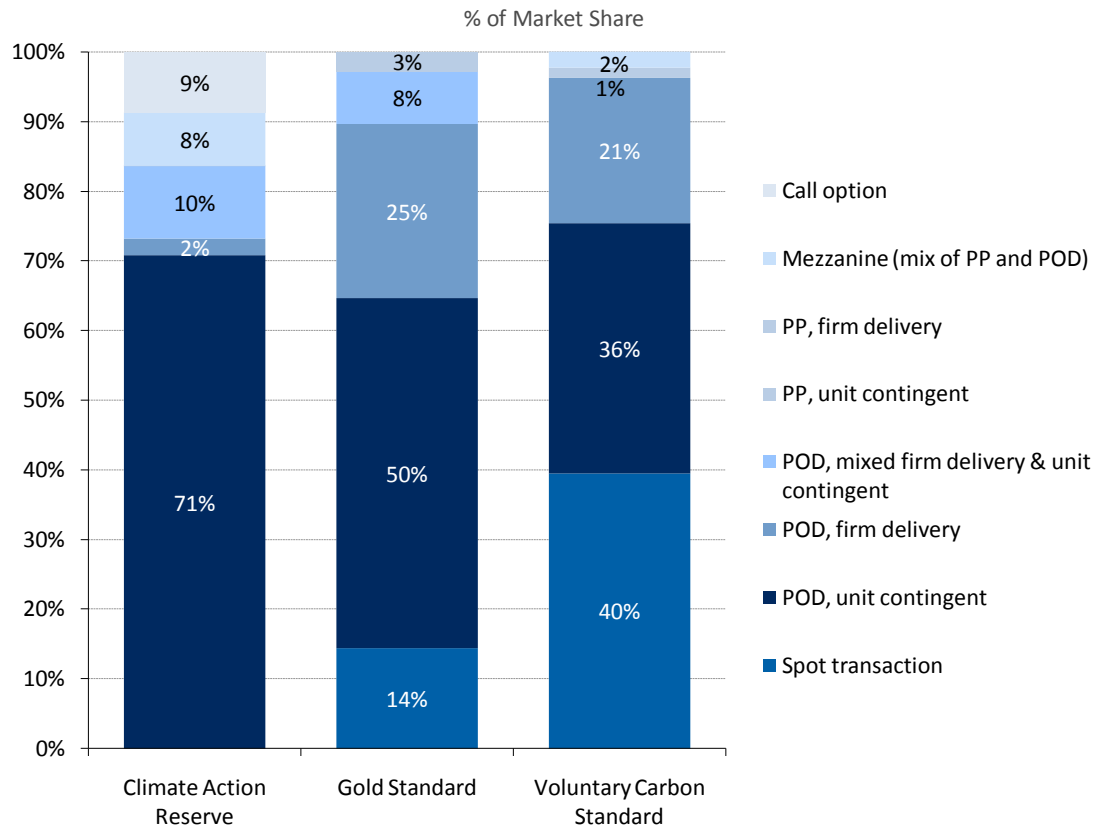
Note: Based on 237 observations.

The share of spot transactions actually increased by 4 percentage points from 18% to 22% due to the larger availability of issued credits. Firm delivery contracts declined from a share of 22% to 19%, potentially as a result of higher delivery risk. Project developers can only provide ballpark figures for the quantity of offsets that their project(s) will generate. As a result, some forward contracts entail partially specified quantities whereby counterparties agree to a minimum or maximum amount, but with options built into the contract to allow the purchaser or seller to trade above or below that quantity.

Buyers rarely enter pre-pay contracts (5%) or even a mix of pre-pay and POD—mezzanine contracts (2%). Uncertainty and asymmetric information typify the voluntary markets to the extent that counterparties rarely engage in contracts that entail payments upfront.

The POD, unit contingent contract type was nevertheless the clear winner for executing CAR, VCS and Gold Standard transactions. While only 2% of CAR credits were transacted as POD firm delivery transactions, Gold Standard and VCS credits saw higher volumes of this contract type due to the standards' higher volume of (smaller) retail transactions. The fact that the VCS had a significant share of spot transactions was purely due to the standard's increased issuances in 2009. By the end of 2009 the VCS had issued more than 20 MtCO<sub>2</sub>e of credits, versus less than 2 MtCO<sub>2</sub>e for both CAR and the GS. Nevertheless, Gold Standard too saw increased use of spot transactions in 2009—as with VCS, Gold Standard buyers prefer issued credits representing immediate reductions that can be applied to voluntarily offset emissions. In contrast, CAR credits buyers seeking future vintages have no need for immediate delivery of the credits and so executed primarily POD, unit-contingent contracts.

**Figure 37: Contract Type by Standard, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 134 observations.



# 7. Solidifying Standards: Verification & Quality Assurance



## Summary Points

- The majority (93%) of credits sold to voluntary buyers adhered to third-party standards active in 2009.
- Consolidation of standards has continued with the top three standards grabbing 78% of the total market: 35% of all credits transacted in 2009 were verified to the VCS, followed by the Climate Action Reserve (31%) and the CCX (12%). Nevertheless, several smaller standards experienced absolute growth relative to a decline in the overall market.
- Credits verified to the CDM averaged as the highest priced credits purchased by voluntary buyers at \$15.2/tCO<sub>2</sub>e. Above-average premiums were also paid for Greenhouse Friendly, Gold Standard, VER+, CarbonFix, Plan Vivo, SOCIALCARBON and ISO 14064.
- The dominant standards in the market were transacted at average prices with CAR at \$7.0/tCO<sub>2</sub>e and VCS at \$4.7/tCO<sub>2</sub>e. CCX credits were the least expensive in the market at an average of \$0.8/tCO<sub>2</sub>e. All experienced a decline in price relative to 2008. Similar to previous years credits verified to the ACR, internal standards and CCX were at the low end of the price spectrum, averaging less than \$4/tCO<sub>2</sub>e.

## 7.1 Standards and Recent Trends

Three years ago when the market was embracing the concept of consistent protocols guiding offset development, we deemed 2007 the “year of the standard.” Since then, leading standards solidified their market positions and settled into the mainstream of the voluntary carbon markets. Last year, much like in 2008, more than 90% of credits transacted in the voluntary carbon marketplace adhered to a third-party standard. A couple of project developers noted that credits not verified to a standard were verified to an internal standard while appropriate methodologies were being developed by third-party standards.

Though third-party verification to a public standard has become the norm, concerns around the effectiveness and legitimacy of the intangible carbon offset product continue to plague the markets. On the regulated market front, the CDM Executive Board’s suspension of several verifiers in 2009 and 2010 reignited conversation among the media, environmental groups and decision makers about the credibility of the carbon-offsetting infrastructure. This type of criticism has spurred and continues to drive the refinement of the methodologies, protocols and processes that ensure offsets’ credibility as a comparable alternative to internal emissions abatement.

One particularly visible step standards continued to take to assure accountability was forging formal and informal linkages with registries and, in some cases, exchanges. For example, in March 2009, the Voluntary Carbon Standard (VCS) launched its partnership with three market infrastructure firms to run the VCS Registry System for VCU. Other standards also unveiled standard-specific registries in 2009, including Plan Vivo, and CarbonFix.

Several standards also directly partnered with exchanges. Standard-exchange partnerships included the Gold Standard's cooperation with World Green Exchange provider World Energy to expand the list of arenas in which buyers could purchase Gold Standard credits, announced January 2009. The following month, the CCX launched a program to trade Climate Action Reserve future credits (known as Climate Reserve Tons, or CRTs) to be transacted on its Chicago Climate Futures Exchange (CCFE).

Additionally, the last few years have continued to see more linkages between standards themselves. For example, VCS endorsed offset projects designed to Climate Action Reserve (CAR) methodologies as eligible for VCS accreditation, while the American Carbon Registry (ACR) also accepts VCS and EPA Climate Leaders projects on a case-by-case basis. Additionally, standards like Social Carbon, Climate Community, and Biodiversity Standard, as well as the new Carbco Platinum Standard, are designed for compatibility with broad-based standards like VCS and CCB, to "stack" community, environmental and other co-benefit requirements on top of traditional carbon accounting methodologies.

In 2009, standards broadened the scope of their programs to engage previously untapped or restricted markets. For example, VCS revised its requirements placed on locations with Kyoto targets. In the past, Gold Standard and VCS required that AAUs be retired in equal measure to the number of credits generated by projects in Kyoto-compliance countries, in order to avoid double-counting. Last year, VCS revoked this requirement in Canada, which had no federal regulatory framework for pursuing its Kyoto commitment and therefore did not pose much of a double-counting risk. Gold Standard still does not accept credits developed in the region.

Last year also saw standards extend their programs to new geographies. The China Beijing Environment Exchange (CBEE), BlueNext, CFEX and Winrock International introduced the Panda Standard that focuses exclusively on the Chinese VER market. Across the pond in North America, CAR extended its landfill and livestock project protocols to Mexico in July 2009, and also expanded the coverage of its forest project protocol from California to the rest of the United States. CAR is currently looking to extend its protocols to Canadian projects and is investigating the feasibility of implementing its reforestation protocol in Mexico.

At the same time, standards also expanded into new project types. A number of standards expanded or refined their list of other protocols for forestry, coal mine methane, and destruction of ozone-depleting substances, among other project types.

In few other aspects of voluntary market activity were customer motivations more evident than in buyers' choices of offset standards. Pure voluntary buyers were most likely to source credits from projects with storytelling appeal and looked to standards like SOCIALCARBON, Gold Standard and CCB.

“Our demand comes from companies seeking credits that have strong social and environmental benefits which complement most companies’ sustainability strategies,” explains Stefano Merlin, CEO of Sustainable Carbon, a supplier of SOCIALCARBON credits.

However, in the current economy not all buyers were “boutique” shoppers. Suppliers also noted that, in response to tightening CSR budgets, some suppliers still committed to carbon neutrality claims sought bargain credits.

Pre-compliance buyers had different needs and sought out credits and standards speculated to be awarded “early-action credit” in future compliance markets in the US and Canada. For instance, the California Air Resources Board endorsed a number of CAR-verified offset protocols as eligible in its cap-and-trade scheme scheduled to take effect in 2012 (commonly referred to as “AB 32”) although it later withdrew this blanket adoption.

Likewise, given the importance placed on state-sanctioned offsets in the Waxman-Markey bill, CAR was seen as particularly attractive to US pre-compliance buyers in 2009 and influenced demand for specific standards. However, an “offsets amendment” introduced by Senator Lisa Stabenow in November 2009 expanded the criteria laid out in the Waxman-Markey bill to include a broader array of “compliance-grade” voluntary offset standards eligible for compliance including VCS, CCX, Gold Standard and ACR.

This language has now largely been inserted in the Kerry-Lieberman bill. Criteria for offset standard eligibility includes the use of a public consultation or peer review process; that offsets be measurable, additional, verifiable, enforceable, permanent and verified by an accredited third-party independent verification entity; and that each tCO<sub>2</sub>e must be identified by a serial number and issued through a publicly accessible registry.

## 7.2 What’s in a Standard: Overview of Voluntary Market Standards and Certification Programs

As of the publication of this report, we identified 18 public voluntary offset standards and certification programs. In 2009, two new standards were launched, the Panda Standard, a regional standard for China and the Carbco Platinum Carbon Standard for forest projects. Generally, the standards are focused on carbon credit development, but three of the programs certify suppliers and standards themselves (the UK Quality Assurance Scheme for Carbon Offsetting, Green-e Climate and the Australian National Carbon Offset Standard).

### 7.2.1 Examples of Voluntary Carbon Offset Project Standards

#### American Carbon Registry Standard<sup>34</sup>

The American Carbon Registry (ACR) is a non-profit enterprise of Winrock International and was founded in 1997 as the GHG Registry by the Environmental Defense Fund and Environmental Resources Trust (ERT). Before 2008, ERT served as an independent registry for the early voluntary carbon market. After

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<sup>34</sup> <http://www.americancarbonregistry.org>.

becoming the American Carbon Registry, it now has its own set of standards while serving primarily as a voluntary and U.S. pre-compliance offsets registry, but also as a voluntary emissions-reporting registry. Its standards include a Forest Carbon Project, and the first US oil and natural gas sector methodology for fugitive methane emissions reductions through the retrofit of pneumatic valves. ACR is in the process of publishing a Forest Carbon Project Standard v2.0, a Livestock Waste Management Standard and various methodologies including for Improved Forest Management and international REDD projects, N<sub>2</sub>O fertilizer application optimization and landfill methane, all of which will be approved for use on ACR this year. ACR also accepts offsets verified to its own standards that use CDM methodologies and other (select) ACR-approved methodologies from VCS and EPA Climate Leaders that appear on an ACR-positive list as long as they comply with American Carbon Registry Standards. All listed credits must be third-party verified by an approved ACR verification body. ACR will require that all verification bodies be ANSI-certified by December 2010.

### **The Climate Action Reserve Protocols<sup>35</sup>**

In 2008, the Climate Action Reserve (Reserve) was established by (and is now the parent organization of) the California Climate Action Registry (CCAR). The Reserve is a non-profit carbon offset registry and standards-setting body. Created by California statute in 2001, CCAR is a GHG 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, urban forestry (Urban Forest Project Protocol v1.1 is now available), landfill methane (US and Mexico), livestock methane (US and Mexico), coal mine methane, nitric acid, organic waste digestion, and destruction of ozone-depleting substances and is developing many others, including protocols for composting and reforestation projects in Mexico. The Reserve is also planning on developing protocols for use in Canada.

### **The Carbco Platinum Carbon Standard<sup>36</sup>**

Launched in Copenhagen on December 14, 2009 by C-Questor's partner company Carbco, the Carbco Platinum Carbon Standard applies to forestry-related carbon projects. Seeking to integrate carbon, biodiversity, and other environmental safeguards into a single certificate, projects are required to meet standards that ensure transparency and sustainability along with meeting a number of flexible criteria, assessed on a points-based system, to further protect biodiversity, assist local development, provide sustainable local energy needs, prevent or reduce pollution, monitor data aimed at demonstrating continuing protection of the forest and provide research information that assists conservation and meteorological data to increase understanding of climate change. The Standard is designed to meet VCS and CCB Standards, and has unique additions like providing, for example, publicly available camera and satellite feeds to demonstrate compliance. Currently, projects exist in Africa, Brazil, and Southeast Asia, with one project in Indonesia with ten million Pending Issuance Units. Projects will be registered solely on Markit's Environmental Registry.

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<sup>35</sup> <http://www.climateactionreserve.org>.

<sup>36</sup> <http://www.cquestor.com/index.php/c-questor-news-archive/carbco-launches-the-platinum-carbon-standard.html>.

### **The CarbonFix Standard<sup>37</sup>**

The CarbonFix Standard (CFS) was developed in 2007 by the organisation CarbonFix, an independent non-profit organization. The CarbonFix Standard involves projects regarding afforestation, reforestation and agro-forestry which have a demonstrated commitment to socio-economic and ecological responsibility. Presently, over 60 different organizations have contributed to the further development of its criteria. Project developers using the standard must use the ClimateProjects platform for their certification processes. This not-for-profit platform allows project developers to manage their project documentation and also allows for the uploading of pictures, videos and Google Maps. Through the ClimateProjects platform, project developers can also issue their carbon credits in Markit—the official credit registry of CarbonFix. The CFS allows projects to use the standard in combination with FSC- and/or CCBA-certification. Currently, there are three registered projects and five under pre-validation.

### **Chicago Climate Exchange Offsets Program<sup>38</sup>**

The Chicago Climate Exchange (CCX) has its own set of standardized rules for issuing credits for offset projects accepted into the voluntary cap-and-trade system. To screen applicants, the exchange has standardized rules for 12 general types of projects, but other project types may be approved on a case-by-case basis. Requirements for each project type are outlined on the CCX website. All projects must undergo verification by a third-party verifier, and verification reports are reviewed by the Financial Industry Regulatory Authority (FINRA) for completeness. The Chicago Climate Exchange maintains a registry for CCX offsets, which may be sold on the exchange by an Offset Provider or an Offset Aggregator. Many offsets on the CCX are sold via aggregators. Offsets must be listed on the CCX registry before they may be sold on the Exchange.

### **Climate, Community, and Biodiversity Standards<sup>39</sup>**

The Climate, Community, and Biodiversity Standards (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 and are frequently applied with a carbon-accounting standard like the CDM or VCS. CCBA requires that projects be validated and then verified by approved independent third-party auditors to demonstrate that they produce not only emissions reductions, but also community and biodiversity benefits. In 2009, in response to burgeoning interest in national and other government-led REDD+ programs or strategies, the CCBA and CARE facilitated development of the REDD+ Social and Environmental Standards through a participatory process with stakeholders from countries where REDD would be implemented to identify REDD+ programs that generate significant social and biodiversity co-benefits. The second public comment period ended in April 2010, and the standards will be implemented in pilot countries from mid-2010 on.

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<sup>37</sup> <http://www.climateactionreserve.org>.

<sup>38</sup> <http://www.chicagoclimatex.com>.

<sup>39</sup> <http://www.climate-standards.org>.

### **EPA Climate Leaders Offset Guidance**<sup>40</sup>

The U.S. Environmental Protection Agency (EPA) Climate Leaders program is an industry-government partnership that works with companies to develop comprehensive climate change strategies. In August of 2008, the program stepped into the carbon market arena by releasing “Offset Module Overview guidance,” which takes a performance-based approach to carbon accounting and is viewed as a potential US pre-compliance standard for a future US regulatory market. The Climate Leaders program has approved offset methodologies for seven project types: afforestation/reforestation, captured methane end-use, landfill methane, livestock methane, commercial boiler, industrial boiler, and transit bus efficiency. Under development are methodologies for coal mine methane and forest management. Quantification protocols are consistent with the WBCSD/WRI GHG Protocol for Project Accounting. The program is not currently linked with a specific registry, although companies who participate in the Climate Leaders program must agree to voluntarily report their emissions to EPA, and any offsets purchased are accounted for as an adjustment to that company’s required annual emissions inventory.

### **Greenhouse Gas Services Standard**<sup>41</sup>

Greenhouse Gas Services (GHGS) is a joint venture of General Electric (GE) Energy Financial Services and the AES Corporation (AES). Established in 2007, the GE AES Greenhouse Gas Services Standard was originally designed to build capacity in sectors where methodologies were not available. With the assistance of industry experts and guidance from governmental agencies, 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. Some of these methodologies were used in the formation of protocols for CAR and other high quality standards. Each of the GHGS methodologies is based on the ISO 14064 Standard and the WRI/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**<sup>42</sup>

The Gold Standard is a non-profit foundation supported by 60 NGOs that provides methodologies for renewable energy and energy efficiency offset projects that also contribute significantly to sustainable development. The Gold Standard certifies offset projects generating VERs for: biogas digesters, energy efficient cooking stoves and water treatment technology (e.g., water filters), biomass fuel, efficient light bulb and showerhead products, and biodiesel from waste oil/fat. Three other VER methodologies are currently under development. The Gold Standard maintains a registry specifically for Gold Standard VERs (managed by the private firm APX) as well as a project database for projects selling Gold Standard-verified CDM and JI credits.<sup>43</sup>

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<sup>40</sup> <http://www.epa.gov/stateply/resources/optional-module.html>.

<sup>41</sup> [http://www.ghgs.com/ghgs/index?page=home&view=GHGS\\_VIEW](http://www.ghgs.com/ghgs/index?page=home&view=GHGS_VIEW).

<sup>42</sup> <http://www.cdmgoldstandard.org>.

<sup>43</sup> <http://goldstandard.apx.com/>.

The Gold Standard released Gold Standard Version 2.1 in July 2009, which incorporates the decisions of the Gold Standard Technical Advisory Committee, rule updates, a new fee structure and feedback from the market.

### **Greenhouse Friendly/ National Carbon Offset Standard<sup>44,45</sup>**

Greenhouse Friendly (GF) was the Australian government's voluntary carbon offset program for encouraging GHG-emissions reductions by, among other things, "providing businesses and consumers with the opportunity to sell and purchase greenhouse-neutral products and services." Anticipating a future federal emissions trading scheme, the Greenhouse Friendly program is being phased out and replaced by a National Carbon Offset Standard on July 1, 2010. Offset projects generating emissions reductions after this date will not be eligible to be sold with the Greenhouse Friendly certification; however, emissions reductions that occurred before this date will still be able to be sold after the start of the government's proposed emissions trading scheme.

### **ISO 14064/65 Standards<sup>46</sup>**

The ISO 14064/14065 Standards are part of the International Organization for Standardization (ISO) family of standards. Released in 2006 and 2007, 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.

### **The Panda Standard<sup>47</sup>**

The Panda Standard is the first voluntary standard specifically tailored to the Chinese market, aiming to fit China's national conditions and at the same time keep pace with international practices. Founded by The China Beijing Environment Exchange (CBEEX) and BlueNext, and co-founded by the China Forestry Exchange (CFEX) and Winrock, the Standard went public in talks at a side event at the Copenhagen Conference of Parties, December 2009. China has committed to voluntarily reduce its carbon intensity 40-45% by 2020 (against 2005 levels), and the Panda Standard was created to pursue this goal, supporting market infrastructure for a robust Asian VER market. The Panda Standard Association, consisting of a Board, Secretariat, Technical Committee and Registry will be established as a non-profit pending approval and registration. The standard-specific registry will issue, transfer and retire Panda Standard Credits and maintain the Panda Buffer Pool to ensure permanence. All projects must be located within the People's Republic of China. The Panda Standard will first focus on rural China, with the development of new methodologies in agriculture and forestry as well as pilot projects expected in 2010.

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<sup>44</sup> <http://www.greenhouse.gov.au/greenhousefriendly>.

<sup>45</sup> <http://www.climatechange.gov.au/en/government/initiatives/carbon-offset.aspx>.

<sup>46</sup> [http://www.iso.org/iso/catalogue\\_detail?csnumber=38381](http://www.iso.org/iso/catalogue_detail?csnumber=38381).

<sup>47</sup> <http://www.pandastandard.org/>.

### **Plan Vivo**<sup>48</sup>

Plan Vivo is a program designed for community-based forest management and agroforestry payments for ecosystem services projects. The system was created twelve years ago by the Edinburgh Center for Carbon Management (ECCM) and is now developed and overseen by the Scottish charity, the Plan Vivo Foundation. There are currently four fully operational Plan Vivo projects in Mexico, Uganda, Mozambique, and Tanzania and several upcoming projects in developing countries including Malawi, Cameroon, Ethiopia, Nepal and Nicaragua. The program emphasizes capacity building, long-term carbon benefits, diversifying livelihoods and protecting biodiversity. Plan Vivo maintains a listing of projects on its website and lists credits (Plan Vivo Certificates) on the Markit Environmental Registry.

### **SOCIALCARBON Standard**<sup>49</sup>

The SOCIALCARBON Standard is a certification program created and owned by the Brazilian NGO Ecológica Institute. The Standard is based on the sustainable livelihoods approach focused on improving “project effectiveness by using an integrated approach which values local stakeholders’ potential and resources.” SOCIALCARBON is strictly a “stacking” standard, meaning that it accounts for stakeholder co-benefits of projects that are also verified through a voluntary carbon-accounting standard like VCS or CAR. Its registry has been managed by Markit since 2008. Project developers must apply the Standard’s indicators that point to degrees of sustainability and are correlated to six aspects of the project: social, human, financial, natural, biodiversity and carbon. Thus far, the SOCIALCARBON Standard has only verified projects in Brazil, but its application is expanding globally. Sustainable Carbon (formerly SOCIALCARBON Company) is the main developer of projects certified under both the VCS and SOCIALCARBON although any project developer may apply the Standard.

### **VER+ Standard**<sup>50</sup>

VER+ 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, such as projects from countries that have not ratified the Kyoto Protocol or are awaiting CDM registration. Launched in 2007, it focuses purely on voluntary offset projects. The standard notably excludes credits from nuclear energy and large hydroelectricity projects, and projects wishing to receive VER+ accreditation may only be validated and verified by UNFCCC-accredited DOE 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 Voluntary Carbon Standard**<sup>51</sup>

The Voluntary Carbon Standard (VCS) was first launched in November 2007 by The Climate Group, the International Emissions Trading Association, the World Economic Forum and the World Business Council

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<sup>48</sup> <http://www.planvivo.org>.

<sup>49</sup> <http://www.socialcarbon.org/>.

<sup>50</sup> [https://www.netinform.de/KE/Beratung/Service\\_Ver.aspx](https://www.netinform.de/KE/Beratung/Service_Ver.aspx).

<sup>51</sup> <http://www.v-c-s.org>.

for Sustainable Development to bring standardization to the voluntary offset market. Credits verified and issued under the VCS Program are called Voluntary Carbon Units (VCUs). Version 1 of the VCS was released in March 2006 as both a consultation document and a pilot standard for use in the market. Version 2 of the standard was launched in October 2006, and the current version of the standard is VCS 2007.1. VCS projects can use methodologies approved under the CDM and the Climate Action Reserve, as well as VCS methodologies approved through the VCS double-approval process.

### 7.2.2 Offset Provider Certification and Codes of Best Practices

#### Green-e Climate<sup>52</sup>

Green-e Climate was launched in early 2008 as a sister program of Green-e Energy, which has been certifying renewable energy for over a decade. Green-e Climate was developed to provide consumer protection through the certification of retail offset products. This program requires that suppliers sell credits certificated by one of four voluntary standards (CDM, Gold Standard, VCS, and the Green-e Climate Protocol for Renewable Energy), and will decide in 2010 whether or not to endorse the Climate Action Reserve program. Additionally, retail offset providers must undergo an annual independent audit of their supply and sales to safeguard against the double-selling of offsets and a twice-annual marketing compliance review to guarantee accurate disclosures are made to customers. Green-e Climate's independent certification program ensures that carbon offsets are additional and verified, and it requires that sellers disclose relevant information about sources and follow accurate accounting procedures. As of January 2010, Green-e Climate has certified 14 retail offset products sourced from 23 carbon offset projects.

#### Japan's Certification Center on Climate Change<sup>53</sup>

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 third-party verification of offset-related goods and services. 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 offset products according to the ISO-14600 series standards. The first certification was reported the following month and as of February 2010 had certified 10,777 tCO<sub>2</sub>e from 3 projects that are tracked in the J-VER registry.

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<sup>52</sup> <http://www.green-e.org>.

<sup>53</sup> <http://www.4cj.org/english/4CJ-Eng.pdf>.

### **Quality Assurance Scheme for Carbon Offsetting<sup>54</sup>**

The Quality Assurance Scheme for Carbon Offsetting (QAS) is a UK-government standard for offset retailers. The program was launched in March 2009 and is being run by AEA Group plc, an independent company appointed by the UK Department of Energy and Climate Change. Retailers approved by the QAS are awarded a “Quality Mark” for their products (as opposed to the retailers themselves). The aims of the scheme are to direct consumers to high-quality offsets and to educate consumers about the role offsets can play in tackling climate change. The scheme lists suppliers whose offsets have been approved on its website. As of September 2009, Version 1.3 approves only CERs, ERUs, and phase-2 EUAs, but the government expects to include VER projects in the future.

### **The Australian National Carbon Offset Standard<sup>55</sup>**

The National Offset Standard, finalized in early 2009 and officially released in January 2010, is akin to other offset quality assurance schemes, providing guidance on offset additionality, carbon neutrality, and requirements for verifying and retiring voluntary carbon offsets. The Standard is based on Australian Standard ISO 14064, ISO 14040, the GHG Protocol, and the National Greenhouse and Energy Reporting Act 2007. According to the Department of Climate Change and Energy Efficiency, “the NCOS clarifies for businesses and providers of offsets and carbon neutral products what constitutes a credible carbon offset and carbon neutral claim within the context of the CPRS (Carbon Pollution Reduction Scheme)” and particularly provides farmers with the opportunity to create carbon offsets. Eligible offsets include AEU (Australian Emissions Units from the proposed CPRS), ERUs, RMUs, CERs and offsets verified by Gold Standard and VCS. Greenhouse Friendly offsets and NSW GGAS certificates do not count toward NCOS.

### **The International Carbon Reduction and Offset Alliance<sup>56</sup>**

The International Carbon Reduction and Offset Alliance (ICROA) is a non-profit alliance of carbon reduction and offset providers headquartered in the UK that advocates for strong industry standards. The 11-member alliance was founded in 2008 by Carbon Clear, the CarbonNeutral Company, ClimateCare, Climate Friendly, co2balance, Native Energy and BP targetneutral. 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. The ICROA Code highlights CDM/JI, CAR, the Gold Standard, and VCS as those standards that it considers high quality. New standards may be accepted if they meet the Offset Standard Review Criteria.

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<sup>54</sup> <http://offsetting.defra.gov.uk>.

<sup>55</sup> <http://www.climatechange.gov.au/en/government/initiatives/carbon-offset.aspx>.

<sup>56</sup> <http://www.icroa.org/faq.html>.

**Table 5: Offset Standards in the Voluntary Carbon Markets, 2009**

Standard	Description	Co-Benefits Req'd?	Registry	Geographic Scope	Total Projects Registered	Total VERs Verified <sup>1</sup>
American Carbon Registry Standard	Certification program for offsets, and an emissions reporting registry	No	Registry incorporated	Global	23	30.3 MtCO <sub>2</sub> e ERTs issued
CarbonFix	Certification program for forestry offset projects	Yes	Registry incorporated with Markit	International	1	0.23 MtCO <sub>2</sub> e
Chicago Climate Exchange Offset Program	Internal system for offset credits verified to CCX standards	No	Registry incorporated with trading platform	International	323	82.2 MtCO <sub>2</sub> e
Climate Action Reserve	Registration and verification program for offsets and a registry	No	Registry incorporated; powered by APX	US and Mexico currently; Canada soon	25	2.3 MtCO <sub>2</sub> e issued; 0.5 MtCO <sub>2</sub> e retired
Climate, Community & Biodiversity Standard	Validation & verification program for land-based offset projects	Yes	Projects on website; and a CCB label can be added to VCU on VCS registries when verified.	International	20	VERs not issued
EPA Climate Leaders Offset Guidance	Guidance for companies on voluntary offset use	No	No	International	4 approved projects	None
GE/AES Greenhouse Gas Standard	Certification program for offsets and project developers	No	Yes	US; Canada soon		0.4 MtCO <sub>2</sub> e
Gold Standard	Certification for offset projects & carbon credits	Yes	Yes; powered by APX	International	311	2.2 MtCO <sub>2</sub> e ; 1.1 MtCO <sub>2</sub> e retired
Green-e Climate	Certification program for offset retailers	No	Registry incorporated	International	23	168,125 MtCO <sub>2</sub> e
ISO 14064	Certification program emissions reporting, offset projects, and carbon credits	No	No	International	Unknown	Unknown
Plan Vivo	Validation and verification program for forestry and agro forestry PES projects	Yes	Markit	International	4	0.75 MtCO <sub>2</sub> e issued and retired
Quality Assurance Scheme for Carbon Offsetting	U.K. government certification program for offset retailers	No	Not Applicable	International	None	9 retailers certified
SOCIALCARBON Standard	Validation program for offset projects	Yes	Markit registry	South America & Portugal	33	1.4 MtCO <sub>2</sub> e issued; 0.09 MtCO <sub>2</sub> e retired
VER+	Certification program for offset projects and carbon neutral products	No	TÜV SÜD BlueRegistry	International	32	3.7 MtCO <sub>2</sub> e
Voluntary Carbon Standard	Certification for offset project & carbon credits	No	Project Database; Registries provided by Markit, APX, and Caisse des Depots	International	386 (345 public + 41 private) validated and registered	30.1 MtCO <sub>2</sub> e
J-VER	Verification and certification scheme for offset projects	No	J-VER	Japan	3	10,777 tCO <sub>2</sub> e

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

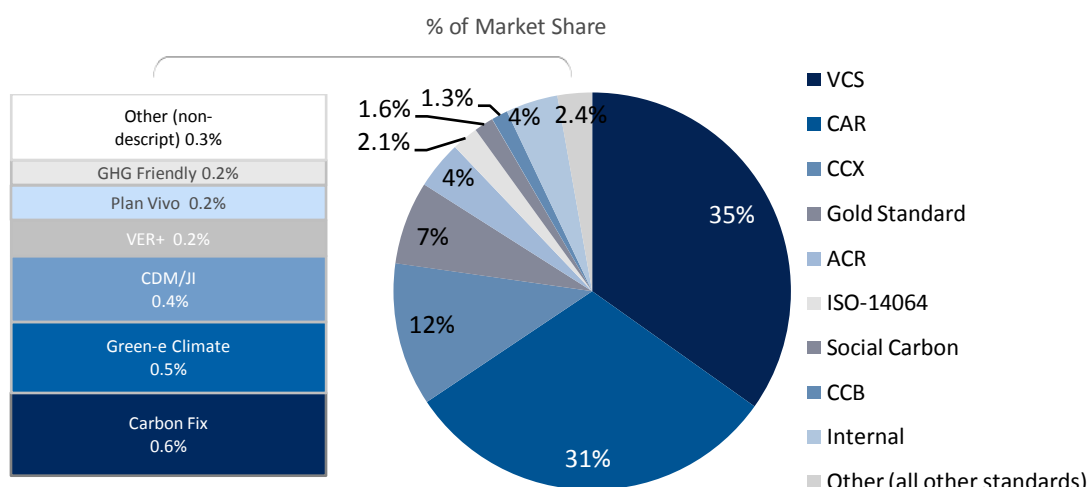
Note: Data in table is accurate as of April 2010.

<sup>1</sup> Total refers to the entire volume of VERs verified during the existence of the standard, as of April 2010, except where otherwise noted.

### 7.3 Sizing up Standards: Third-Party Standards Analysis

The top slot for the dominant third-party standard in 2009 was taken by the Voluntary Carbon Standard (35%), followed closely by the Climate Action Reserve (31%). Credits verified by the CCX transacted half the volume of the top two standards to pull in another 12% of market share. Together, the top three standards verified 78% of credits on the market in 2009, showing further consolidation relative to the 69% market share that the top three had last year (VCS, CAR and Gold Standard).

**Figure 38: Transaction Volume by Standard, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

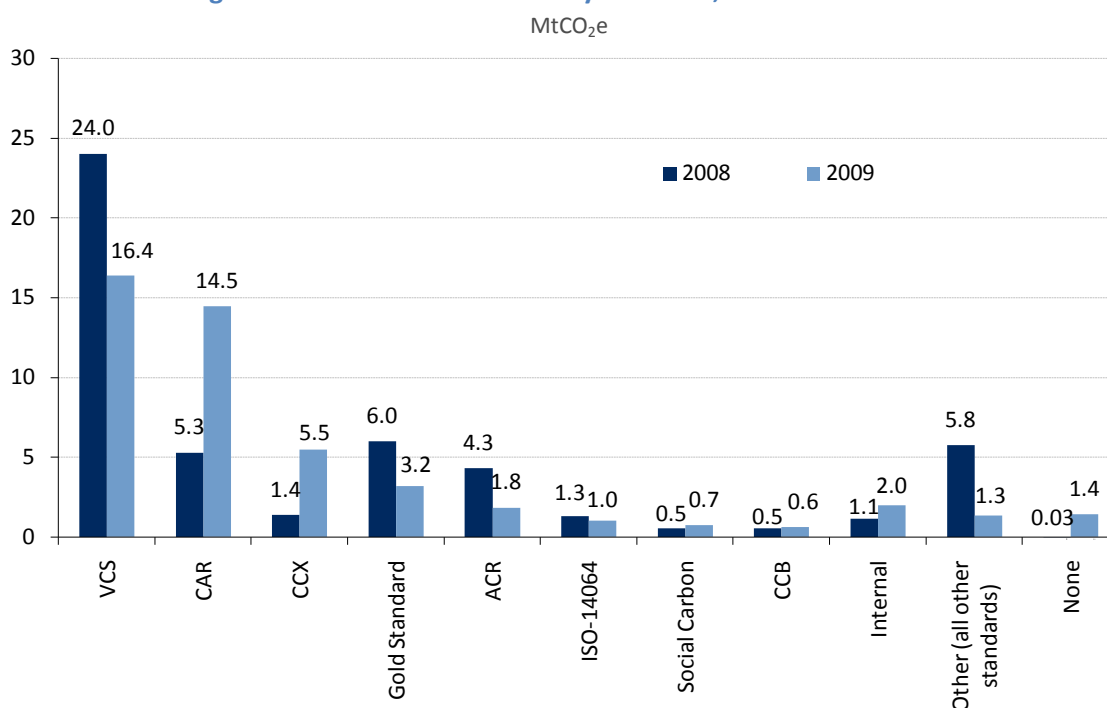
Although the VCS retained its status as the most popular standard in the voluntary markets, its share declined from 48% in 2008 to 35% in 2009. While this decline represents a 13%-loss in transacted volume of VCS credits from 2008 to 2009, the standard is still king of the voluntary market. VCS managed to maintain its appeal through diverse project types and non-traditional project locations. In 2009, VCS, along with Gold Standard, was also listed as an approved standard by the Australian National Carbon Offset Standard.

The second-most popular standard, CAR, was close to taking the top spot from the VCS with 31% of 2009 market share (up from 10% in 2008), appearing to gain some of the percentage points that VCS lost. Gary Gero President of the Climate Action Reserve, says, “We really had to keep a tight hold of the reins of a program that is galloping, which has been very positive and exciting.” This can be largely attributed to the perception that CAR was among the best bets for eligibility for a future regulatory cap-and-trade program.

Several suppliers also noted that, pre-compliance motives aside, they chose to use CAR because of a preference for the performance based standards, which CAR has pioneered. Izzet Bensusan, Executive Director at Karbone, explains that performance-based standards, which establish set technologies or processes to determine additionality as opposed to addressing the issue with a project by project approach, “literally take the guesswork out of developing carbon credits.”

The CCX as a standard also saw substantial growth in 2009 in the OTC space as its market share in OTC offset deals grew from 3% to 12%, due to a rise in off-exchange and bilaterally-traded offsets. Much of this growth resulted from the low prices for exchange-traded CFIs seen throughout 2009, which propelled offset suppliers to seek buyers off-exchange. Buyers also became increasingly picky in 2009, seeking US-based forestry, landfill and agricultural CCX offsets that might be eligible under a future compliance scheme. These offsets could only be obtained off-exchange where they could be differentiated from generic CFIs.

**Figure 39: Transaction Volume by Standard, OTC 2008 vs. 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.  
 Note: Based on 507 observations (both graphs), 2008 data based on 335 observations.

These three developments bumped Gold Standard offsets out of the top three by transaction volume in 2009 (down 45%). Gold Standard offsets are traditionally sought out by pure voluntary buyers, whose budgets tightened in 2009 as the global economic crisis stalled spending for corporate social responsibility. Gold Standard's drop in market share also correlated with a drop in transaction volumes for their predominant project types (renewables) and locations (Asia and Turkey).

Among other trends, CCB maintained a 2%-share of the market, whereas ACR ceded some of its market share decreasing by 5 percentage points (from 9% to 4%), while a small proportion of the market saw absolute growth in 2009. Among these were Carbon Fix and Plan Vivo, which both capitalized on the popularity of forest carbon offsets. Suppliers utilizing ISO-14064 were primarily based in Canada.

Alex Langer from the Canadian company ERA Ecosystem Restoration Associates notes that the popularity of ISO-14064 is driven by two factors. First the Canadian government announcement that it would use ISO-based protocols in a future regulated market and that the majority of buyers have a strong understanding of the ISO protocol, as they already use it to measure and monitor their own carbon footprints. "By utilizing ISO-14064, companies that offset don't need to re-learn another standard." He also adds that in some cases suppliers are looking to stack ISO-14064 with other standards like CCB because clients "like the community and biodiversity aspect of the programming, so it isn't just about the carbon numbers."

SOCIALCARBON managed a slight increase in its market share (from 1% to 1.3%), and all SOCIALCARBON credits transacted were stacked with VCS verification. Greenhouse Friendly, CDM/JI and VER+ all saw continued declines in transaction volumes; combined, they captured less than 1% of the market.

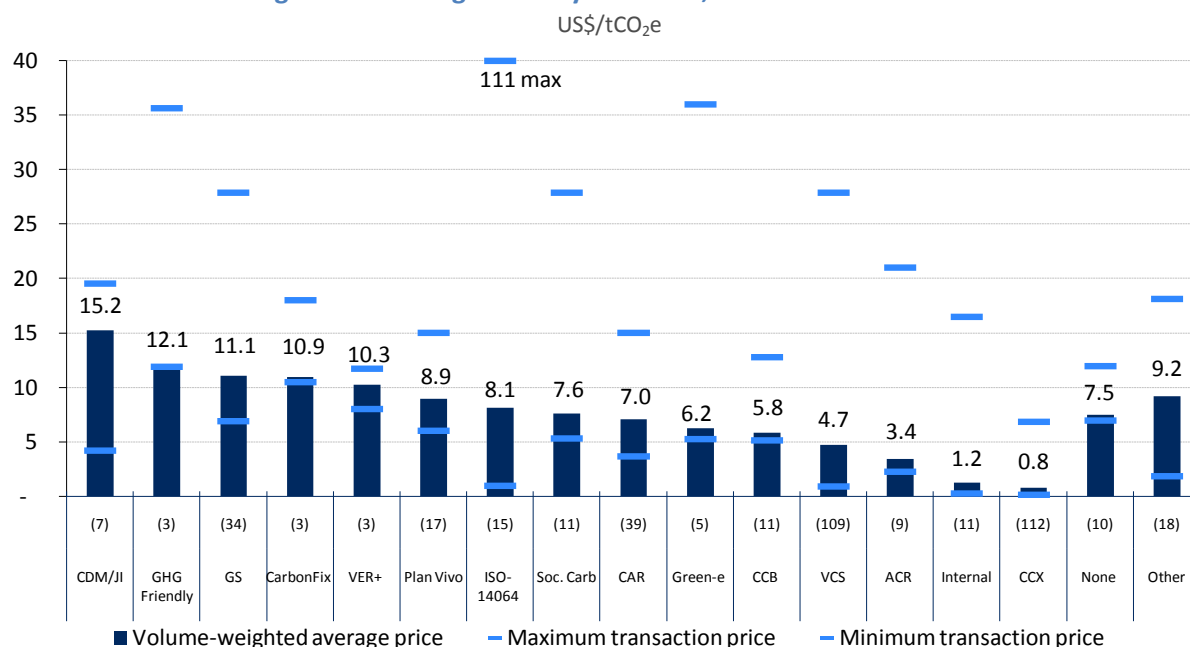
With the emergence of less expensive, good quality voluntary standards with broad appeal to the market, voluntary transactions of CDM/JI credits continued to decrease in 2009. VER+ also lost substantial market share since 2007 (from 9% to 0.3%), though the few VER+ credits transacted in 2009 obtained a premium over similar projects.

The "other" category also lost volume in 2009, down to 0.3% of the market from 4% in 2008. "Other" write-in standards included the EPA Climate Leaders program, which some buyers perceived to be a good pre-compliance bet. Another popular write-in were New South Wales Greenhouse Gas Abatement Certificates sold as offsets to voluntary buyers in the region.

## 7.4 Prices According to Standard Utilized

As already shown in our previous reports, standards are an important determinant for transaction prices with volume-weighted average prices ranging from \$0.8/tCO<sub>2</sub>e for the CCX to \$15.2/tCO<sub>2</sub>e for CDM/JI credits. However, every standard fetched a wide range of prices, and credit prices varied roughly as much by standard as they did by project type.

**Figure 40: Average Price by Standard, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

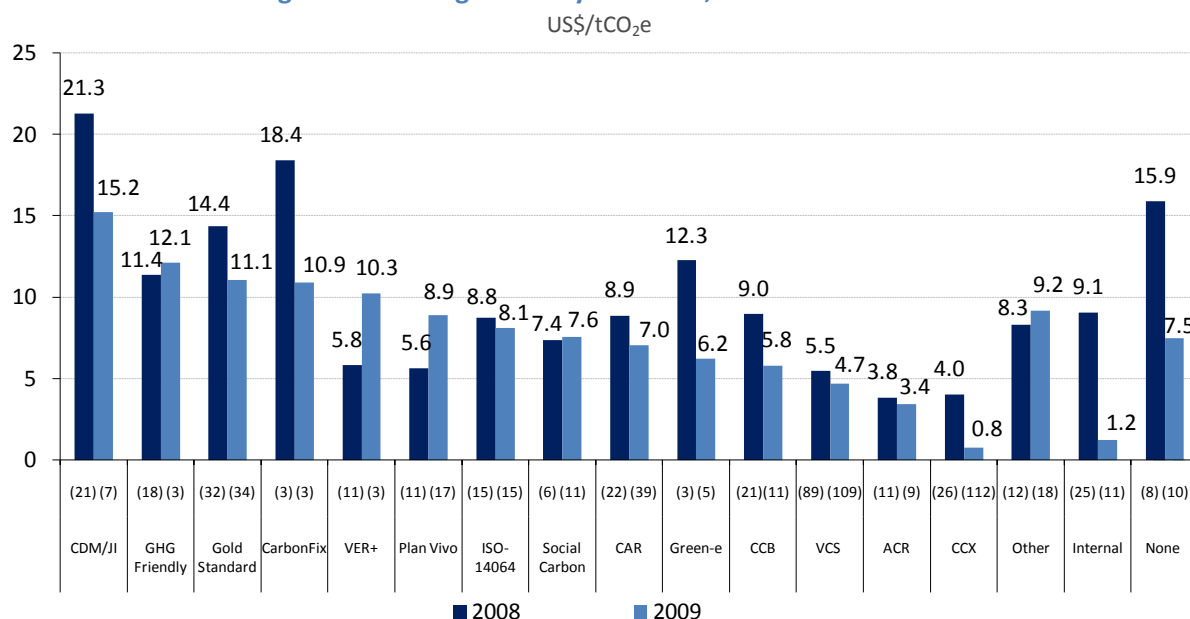
Note: Based on 417 observations.

The more expensive standards—such as CDM/JI, Gold Standard, SOCIALCARBON, Green-e and CarbonFix—are primarily focused on pure voluntary buyers and can obtain higher prices for their additional project characteristics. As in previous years, CDM/JI offsets topped this list at \$15.2/tCO<sub>2</sub>e, double the market-wide average OTC price in 2009, but slightly lower than the average price of CERs sold to regulated buyers at \$15.20/tCO<sub>2</sub>e.<sup>57</sup> This price decline was in line with the one experienced by the overall regulated CDM market as the recession significantly reduced demand for emission reductions.

Greenhouse Friendly credits garnered the next-highest average price at \$12.1/tCO<sub>2</sub>e. Considering its phase-out and low volumes, Greenhouse Friendly's price premium is due to its mostly retail-level transactions. Gold Standard credits typically carry a price premium, but also fell in price (down 23% from \$14.4/tCO<sub>2</sub>e to \$11.1/tCO<sub>2</sub>e). Also reaping above-average prices were CarbonFix (\$10.9/tCO<sub>2</sub>e) and Plan Vivo (\$8.9/tCO<sub>2</sub>e), which represent boutique forestry carbon offset programs with small client bases willing to pay a premium for certification tailored to their needs. CarbonFix credits (though still expensive) lost an average \$7.5/tCO<sub>2</sub>e in 2009, while Plan Vivo saw a 58%-increase in prices.

<sup>57</sup> [http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State\\_and\\_Trends\\_of\\_the\\_Carbon\\_Market\\_2010\\_low\\_res.pdf](http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_of_the_Carbon_Market_2010_low_res.pdf).

**Figure 41: Average Price by Standard, OTC 2008 vs. 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 418 observations.

ISO-14064 credits prices fell to \$8.1/tCO<sub>2</sub>e in 2009 (-7%). Less expensive but still obtaining moderate prices around the \$5-8.0/tCO<sub>2</sub>e range were the popularly priced standards such as CAR, CCB and VCS.

Prices for VCS-stacked SOCIALCARBON credits increased slightly, up 3% from 2008 to an average \$7.6/tCO<sub>2</sub>e in 2009. The price premium for these credits can be attributed to buyers' willingness to pay a premium for social and environmental co-benefits, which are associated with SOCIALCARBON's certification.

VCS prices have historically been lower due to the large availability of credits, particularly from pre-registration CDM projects, and the fact that suppliers were also unloading older vintage VCS (VCSv1) industrial gas offsets. Although the average CAR price was also below the market average, it still sold at 37% higher than the average US-based offset (\$7.0/tCO<sub>2</sub>e vs. \$5.1/tCO<sub>2</sub>e), where CAR volumes through 2009 originated. The price premium for CAR relative to other US-based offsets is related to its pre-compliance characteristics.

At the lower end of the spectrum, ACR (\$3.4/tCO<sub>2</sub>e), internal standards (\$1.2/tCO<sub>2</sub>e) and the CCX (\$0.8/tCO<sub>2</sub>e) claimed the lowest-average OTC prices. Internal standards saw a dramatic drop in prices (from \$9.1 in 2008), stemming from a few large internally-verified forest carbon projects that generated credits at less than \$1.0/tCO<sub>2</sub>e. CCX credits, on the other hand, have consistently traded at a discount to the average price given the market's ongoing concerns about additionality and integrity, and the fact that exchange-traded CFIs sold for less than \$1.0/tCO<sub>2</sub>e for much of 2009.

It is important to remember that while credits verified to a third-party standard tend to sell for a premium on the voluntary market, they are also costlier to produce. Validation, verification and credit issuance can range from several thousand to hundreds of thousands of dollars depending on the standard used and the size of the project.



# 8. Registries and Transaction Platforms:

## If You Build It, They Will Come



### Summary Points

- In 2009, respondents reported that transacted credits also issued in third-party registries nearly doubled to 51% from only 29% in 2008.
- As far as credits *issued* by registries in 2009 (but not necessarily transacted), Markit took the lead with 10.1 MtCO<sub>2</sub>e issued by multiple standards, followed by the APX VCS registry (7.9 MtCO<sub>2</sub>e), Gold Standard (2.0 MtCO<sub>2</sub>e)<sup>58</sup> and Caisse des Depots (1.9 MtCO<sub>2</sub>e).
- Suppliers *reported* 21% of *transacted* VERs as issued to the APX VCS registry, 17% in the Climate Action Reserve, 15% in the CCX Registry, 10% in Caisse des Depots, 8% in the Gold Standard registry and 8% in Markit.
- Reported transacted credits in registries-usage tracked the use of standards in 2009, with the top three registries (VCS, CAR and CCX) also topping the list for third-party standard utilization.

### 8.1 Registries: A Place for Everything

Over the past three years, the use of registries to track ownership and issue carbon credits has continued to grow due to increased market actor emphasis on transparency and clarity of ownership. By the end of 2009, most major standards were linked with a registry, which facilitated tracked issuances. The voluntary market continued to consolidate around a few major registries providers that pursued partnerships and acquisitions to expand their market share—as well as buyers’ confidence in the quality of carbon offsets as financial instruments.

Facilitated by the inroads made by standards, registries are unveiling more publicly accessible information about individual credits and projects—and educating buyers about the supply side of the carbon market. Katherine Graham, registry manager at APX, explains, “Prior to registry technology infrastructure, the market didn’t have visibility into the origination of credits. Registries provide the necessary technology for various carbon standards to implement their programs in a way that’s transparent to the market regarding projects meeting the standard, having issuance and retirement.”

The term GHG-“registry” covers a broad array of systems. For the purpose of analyzing the carbon markets we have focused completely on credit-accounting registries.<sup>59</sup> Credit-accounting registries are

<sup>58</sup> Serviced by APX.

<sup>59</sup> Another type of GHG registry is emissions-tracking registries. These systems track organizations’ GHG emissions and reductions but do not issue serialized carbon credits. These registries help entities establish baselines, account for emission reductions, and are a critical tool for regulated or voluntary cap-and-trade systems. Emission-tracking registries include: the Canadian Standards Association’s Canadian Clean Start and CleanProjects Registries, the Carbon Disclosure Project, the American Carbon Registry and the Climate Registry. A few of these emissions-tracking registries also have systems for registering actual carbon credit transactions.

designed specifically to issue and track carbon credits. Accounting registries track only verified emissions reductions or allowances after they have become carbon credits, often utilize serial numbers as an accounting tool, and generally incorporate screening requirements such as third-party verification to a specific offset standard. They typically do not track company emissions or reductions disclosures.

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. Registry companies also serve as infrastructure providers for standard or exchange-specific registries, while others serve as infrastructure providers without hosting independent registries of their own.

As of mid-2010, we have identified 15 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.

Table 6: Carbon-Accounting Registries Serving the Voluntary Carbon Markets		
Independent	Standard-Specific	Infrastructure Providers
Markit CleanProjects Registry Traceable VER Registry	American Carbon Registry BlueRegistry Gold Standard Registry for VERs VCS Registry System Climate Action Reserve Social Carbon Registry Plan Vivo Registry CCB Standard Registry CarbonFix Registry	Markit APX Caisse des Depots

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

## 8.2 Rounding up Registries: An Overview

The following section provides an overview of independent registries and registry infrastructure providers.

### 8.2.1 Examples of Independent Credit-Accounting Registries and Registry Infrastructure Providers

#### **APX**<sup>60</sup>

APX is a privately-held energy and environmental markets infrastructure provider that develops and manages registries for several voluntary carbon market standards. It is the system behind the Climate Action Reserve and Gold Standard registries, as well as one of the three registries in the VCS registry system and provider of the central VCS Project Database. The company also serves as the infrastructure provider for all North American renewable energy markets for compliance and voluntary REC issuance, tracking, purchasing and retirement, launching its latest registries in 2009 for the states of Michigan, Missouri and North Carolina. In early 2010, APX launched the Environmental Management Account (EMA), a platform for clients to manage their environmental liabilities and assets. EMA's Portfolio Access service provides a single aggregated view and integrated transaction platform across REC and voluntary carbon credit registries. In the second half of 2010, Portfolio Access will include some compliance registries for RGGI, CDM and JI credits.

#### **BlueRegistry**<sup>61</sup>

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). Although the BlueRegistry accepts various voluntary carbon market standards, the majority of credits listed on the registry are from the VER+ Standard (also created by TÜV SÜD). The registry also lists renewable energy certificates. 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 and tonnes available.

#### **Caisse des Depots**<sup>62</sup>

Caisse des Depots was one of three registries initially chosen in 2008 by the VCSA to host the VCS registry system. The CDC VCS registry is managed by its affiliate CDC Climat. It manages all aspects of VCU: 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.

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<sup>60</sup> <http://www.apx.com/environmental/carbon-market-infrastructure.asp>.

<sup>61</sup> <http://www.blue-registry.com>.

<sup>62</sup> <http://www.vcsregistry.caissedesdepots.com/>.

### **GHG CleanProjects Registry<sup>63</sup>**

Launched in 2007, the Canadian Standards Association's GHG CleanProjects™ Registry was developed to list and de-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 greenhouse gas 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) expressed in tonnes of CO<sub>2</sub>e (tCO<sub>2</sub>e). Users do not have to create an account to view the registry and may search by different criteria including project or proponent name.

### **Markit<sup>64</sup>**

The Markit Environmental Registry Service provides registry platforms for all forms of environmental assets, including carbon credits, water and biodiversity certificates. Markit operates its own independent registry and also provides registry services for a full range of credit standards, including the VCS registry system, SOCIALCARBON, the MER Meta Registry, Brasil Mata Viva, ISO, Plan Vivo and the CCBA (Climate Community and Biodiversity Alliance). The registry provides full settlement services through an alliance with the Bank of New York Mellon, and connections to many trading facilities including the new Carbon Trade Exchange for clients to buy and sell registered credits. Organizations listing information on the registry may choose the level of transparency in their accounts. 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.

### **Traceable VER Registry<sup>65</sup>**

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.

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<sup>63</sup> [http://www.ghgregistries.ca/cleanprojects/index\\_e.cfm](http://www.ghgregistries.ca/cleanprojects/index_e.cfm).

<sup>64</sup> <http://www.markitenvironmental.com/>.

<sup>65</sup> <http://traceablevers.mh5.projektserver.de>.

## 8.2.2 Standard- and Exchange-Specific Registries

Standard providers are increasingly creating their own registry infrastructure or linking with infrastructure providers to issue and track credits. Likewise, many exchanges have created their own or have linked with external registries. While the general concept of linkage is similar across registries, the set-up of the infrastructure systems and the rules governing each system vary between different standards' registries.

Tables 7 and 8 summarize some of the different registry infrastructure providers, standard- and exchange-specific registries. For detailed descriptions of standards and exchanges that maintain their own registries, see Sections 7 and 8.5.

Registry or Infrastructure Provider	Market Position	Entities Served (in case of Infrastructure Provider)	Transparency	Total Projects Listed (as of May 2010)	Total VERs Issued (as of May 2010) <sup>1</sup>
APX	Infrastructure	VCS, Gold Standard (GS), Climate Action Reserve	Project info public; Account info public; Listing eligibility requirements clear	706	16 MtCO <sub>2</sub> e
BlueRegistry	Quasi-independent	VER+ and others	Project info public; List of account holders public; Listing eligibility requirements clear	32	3.7 MtCO <sub>2</sub> e
Caisse des Depots	Infrastructure	VCS	No public info	11	2,863,072 VCUs
GHG Clean Projects Registry	Independent	Not applicable	Project information public; List of account holders public; Listing eligibility requirements clear	62	Serialized VERRs: 0.91 MtCO <sub>2</sub> e
Markit Environmental Registry (formerly TZ1)	Infrastructure / Independent	VCS, Brasil Mata Viva; Carbon Fix; CCB Standards; Cosain; ISO 14064; Permanent Forest Sink Initiative; Plan Vivo; Social Carbon; VCS	Most project info public; Some account info public; Listing eligibility requirements clear	243 (public only)	75 MtCO <sub>2</sub> e

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

<sup>1</sup> Total refers to the entire volume of VERs or projects registered during the lifetime of the registry as of April 2010, except where otherwise noted.

**Table 8: Standard- and Exchange-Specific Registries**

Registry	Affiliated Standard/ Exchange	Infrastructure Provider	Transparency	Total Projects Registered (as of May 2010)	VERs Registered <sup>2</sup> (as of May 2010)
American Carbon Registry	American Carbon Registry Standard	Internal	Project info public; All account info public; Listing eligibility requirements clear	23	30.3 MtCO <sub>2</sub> e
CarbonFix Registry	CarbonFix	Markit	Project info public; Some account info public; Listing eligibility requirements clear	1	34,000 tCO <sub>2</sub> e (2008 only)
CCB Standards Project Registry	CCB	Projects listed on CCBS website; CCB label can be added to VCU's on VCS registries for CCB Verified projects	Project info public; Some account info public; Listing eligibility requirements clear	20	Not Applicable; CCB Standards does not issue VERs
Climate Action Reserve	Climate Action Reserve	APX	Project info public; List of account holders public; Listing eligibility requirements clear	184	3.2 MtCO <sub>2</sub> e
CCX Offsets <sup>66</sup> Registry	CCX	Internal	Some project info public; Some account info public; Listing eligibility requirements clear	323	82.2 MtCO <sub>2</sub> e
Gold Standard Registry for VERs	Gold Standard	APX	Project info public; Most account info public; Listing eligibility clear	311	2.2 MtCO <sub>2</sub> e
Plan Vivo Registry	Plan Vivo	Markit	Project info public; Some account info public; Listing eligibility requirements clear	4	0.75 MtCO <sub>2</sub> e issued and retired
SOCIALCARBON® Registry	SOCIALCARBON® Standard	Markit	Project info public; Some account info public; Listing eligibility requirements clear	37	1.52 MtCO <sub>2</sub> e issued
VCS Registry System	VCS	APX, Markit, Caisse des Depots	Full transparency on all project and VCU information	399	33.1MtCO <sub>2</sub> e total / APX: 10.6 MtCO <sub>2</sub> e / Markit: 17.8 MtCO <sub>2</sub> e VCUs/ Caisse des Depots: 2.7 MtCO <sub>2</sub> e

Source: Ecosystem Marketplace, Bloomberg New Environmental Finance.

<sup>1</sup>Fee information availability varies among standards; only publicly available information is presented in this table.

<sup>2</sup>Total refers to the entire volume of VERs or projects registered during the lifetime of the registry as of April 2009, except where otherwise noted.

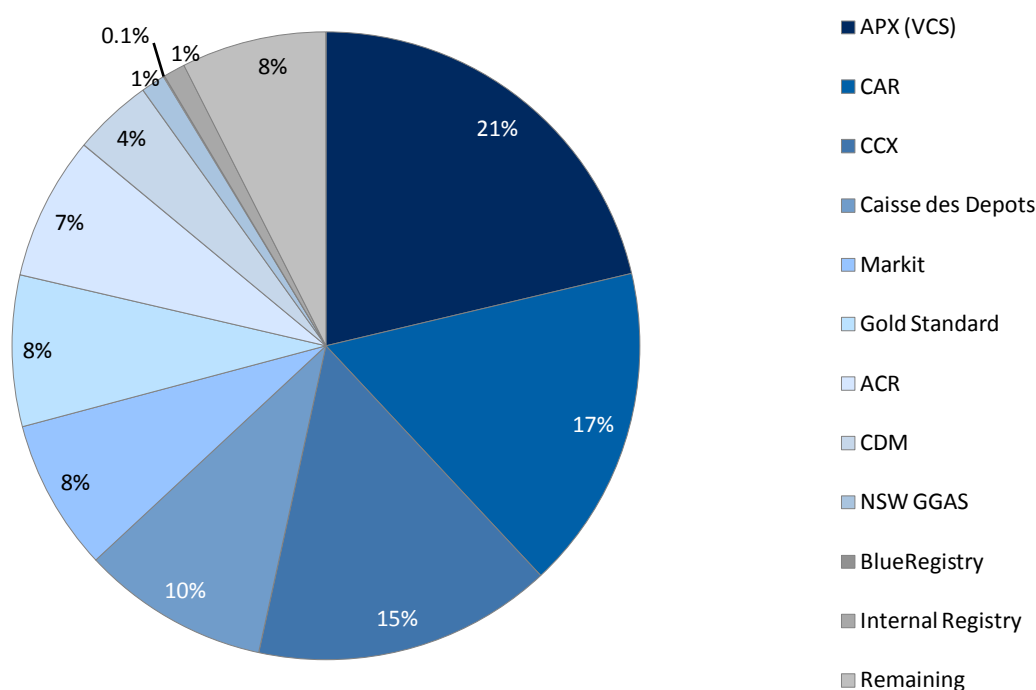
<sup>66</sup> Includes offset credits transacted on the exchange and privately negotiated.

### 8.3 Registry Usage in 2009: Swapping Serials

The market share of different registries can be measured at a variety of levels. In this section we examine two different pools of information. First, the number of transacted credits issued by various registries as reported by suppliers as well as credits issued as reported by registries. The key difference between the analyses is the source of data and that issued credits are not necessarily transacted.

Figure 42 illustrates survey respondents' registry usage by transacted volume in 2009. According to supplier responses in 2009, 51% of credits transacted were tracked in a third-party registry. This represents a near doubling over 2008, when only 29% of credits were third-party registered. The figure depicts only those volumes that, according to suppliers, were transacted in 2009 and does not include the 49% of transacted credits that suppliers did not report as listed in a registry.

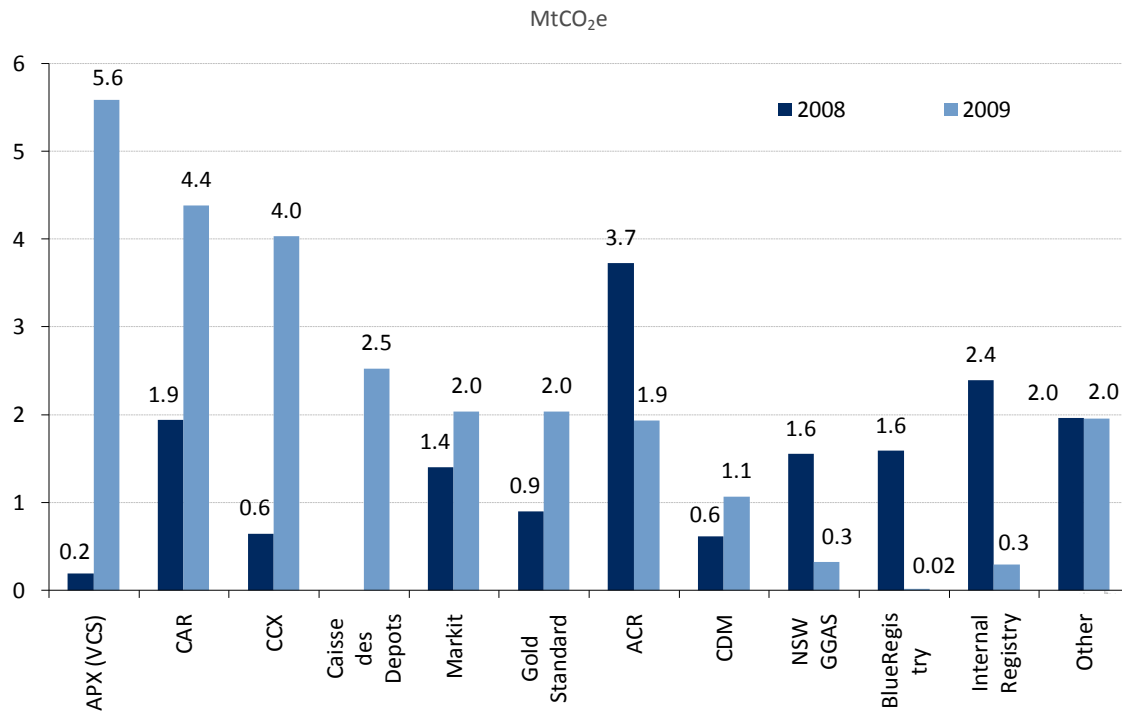
**Figure 42: Transaction Volume by Registry Utilized, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: This figure excludes the volume of OTC credits (49%) that were reported as not tracked in registries. Based on 103 survey respondents.

**Figure 43: Transaction Volume by Registry, OTC 2008 vs. 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 103 survey respondents

As many standard specific registries came online in 2009, the transactions of these registered credits mirrors the standards' overall 2009 market share. Such cohesion reflects the increased sophistication of the marketplace compared to previous years. In 2007, suppliers' description of nascent registry use was highly disjointed with their use of standards. Responses were more synced in 2008, but the lack of a VCS registry ensured chunks of non-registered credits.

In March 2009, the VCS Registry System was launched and consists of three separate infrastructure providers—APX, Caisse des Depots and Markit. Jerry Seager of the VCS explains the choice to utilize multiple registries. “The idea was to provide a scalable system that could be region-specific and to create a competitive environment that would provide the best service to the market.”

Not surprisingly, the three VCS registries saw increased transactions in 2009. APX (VCS) was the home of 21% (5.6 MtCO<sub>2</sub>e) of transacted credits listed in a registry. Caisse des Depots saw its share of transactions grow from none in 2008 to 10% in 2009. Markit stayed at 8%-market share, with 2 MtCO<sub>2</sub>e of Markit-registered credits transacted in 2009, an absolute increase of 45%. Some of Markit's volume comprised VCS transactions, though this number also includes credits issued to a variety of standards served by Markit.

However, increases in the transactions of credits listed in registries were not all only due to VCS. CAR (also administered by APX) saw growth in 2009 (up from 12% in 2008) as the standard broadened its scope and pre-compliance activity helped buoy registry activity. Even though Gold Standard lost some of

its overall OTC market share in 2009, respondents reported increased use of the registry with transaction volumes more than doubled (from 0.9 MtCO<sub>2</sub>e in 2008 to 2.0 MtCO<sub>2</sub>e in 2009).

CCX saw sizeable growth in 2009 in transactions of CCX-registered credits sold bilaterally. These credits claimed 15% of all registered transacted credits in 2009, up from 4% market share in 2008. The CCX's increase of bilateral trades is partly due to its decision to publicly disclose CCX-bilateral trade data beginning in August 2009, which provided more transparent information for this report.

In turn, the American Carbon Registry fell from the top ranking in 2008 (24% market share) to registering only 7% of transacted credits last year. Registered volumes also fell by half (from 3.7 MtCO<sub>2</sub>e to 2 MtCO<sub>2</sub>e), which is in line with ACR's 58%-drop in reported overall transaction volumes. Mary Grady, of ACR, attributes some of ACR's slowdown to financial and legislative uncertainty seen in 2009, but also to internal restructuring within ACR that forced them to wait until 2010 to step up production and approval of new methodologies.

A noteworthy development in 2009 was the lower use of internal registries, which fell from a sizable 15% of the market in 2008 to 1% in 2009, in response to the increased availability of actual registries. Moreover, "other" refers to responses to our survey and also a number of registries that took very small market shares, less than 0.1% (namely BlueRegistry, Greenhouse Friendly and the CSA's GHG Clean Projects Registry). As further evidence of the voluntary market's consolidation of registries, there were no reported volumes for Triodos Climate or TÜV NORD registries.

Throughout the year, as standards linked with various registries, this infrastructure provider arena was highly competitive. The benefit of this competition may be the enhancement of services, flexibility for market participants and the focus on financial markets' connectivity provided by registries. Such services may benefit not only the voluntary carbon markets but also provide lessons learned for the regulated markets.

"The infrastructure of many compliance registries is run by governments for whom continued investment and market-focused operations (as opposed to regulatory-focused) can be challenging given priorities and available resources. So we are certainly seeing a demand from countries and state governments to utilize voluntary market registry design and market-based post-trade infrastructure in these emerging compliance schemes," explains Joanna Silver from Markit.

## 8.4 The Tip of the Iceberg: Credits Issued by Registry

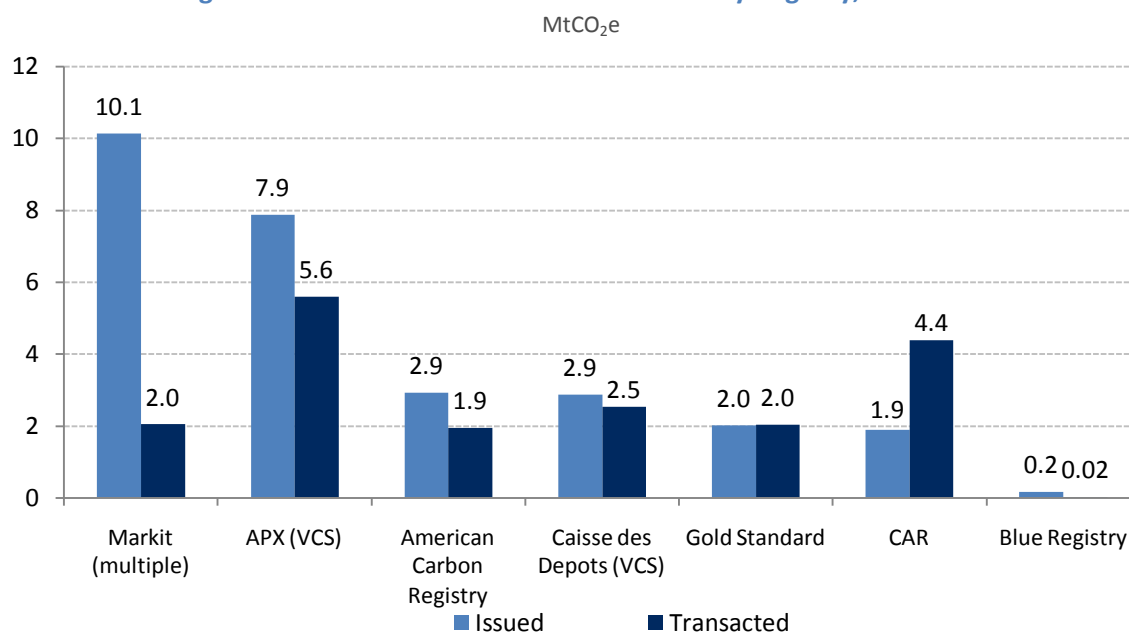
While the above analysis dissects registered volumes that were transacted in 2009, for some registries this is just the tip of the iceberg. Behind the scenes and often publicly, registries track credits from cradle to grave (i.e. from registration to issuance to retirement). Since issuance is how most registries measure their market share, we also examined the total volume of credits issued by several major registries in 2009. In this case, Markit took the lead with 10.1 MtCO<sub>2</sub>e issued by multiple standards, followed by the APX VCS registry (7.9 MtCO<sub>2</sub>e), Caisse des Depots (1.9 MtCO<sub>2</sub>e), and Gold Standard (2.0 MtCO<sub>2</sub>e).<sup>67</sup>

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<sup>67</sup> Serviced by APX.

Comparing transactions with issuances highlights the point that credits are not always transacted the year they are issued and that an issued credit can be transacted multiple times. Notably Markit's list of issued credits is significantly lower than reported transacted credits. Alternatively, more suppliers reported CAR credits transacted in 2009 than were actually issued in the same year.

**Figure 44: Transaction Volume vs. Issuances by Registry, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 103 observations as well as registry data.

## 8.5 Trading Platforms: Online Match-Making

For the voluntary carbon markets, the Chicago Climate Exchange has historically been the only exchange game in town. With the exception of CCX, all voluntary offset transactions have traditionally operated outside of any formal exchange—the reason we have deemed this the “Over-the-Counter” (OTC) market. Facilitated by the inroads paved by standards and registries, however, a growing number of independent transaction platforms have also begun to emerge in the “OTC” marketplace. In 2009 and 2010, the voluntary market saw the emergence of a handful of exchanges that accommodate or explicitly target voluntary offset transactions. Such 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. These platforms are different from the CCX in that they are not imbedded within a cap-and-trade program.

Within the marketplace, the term “exchange” is utilized to describe a variety of products. This section details exchanges operating in the voluntary sphere—that is, trading platforms that actively list and transact carbon credits certified to a voluntary standard. While some buyers purchase compliance-grade credits directly from emissions-trading schemes’ official exchanges (like the European Climate Exchange), it is impossible to distinguish between credits purchased for voluntary purposes and those

purchased to meet compliance obligations. Therefore, we do not include an analysis of exchanges that exclusively clear compliance-grade credits (like CERs).

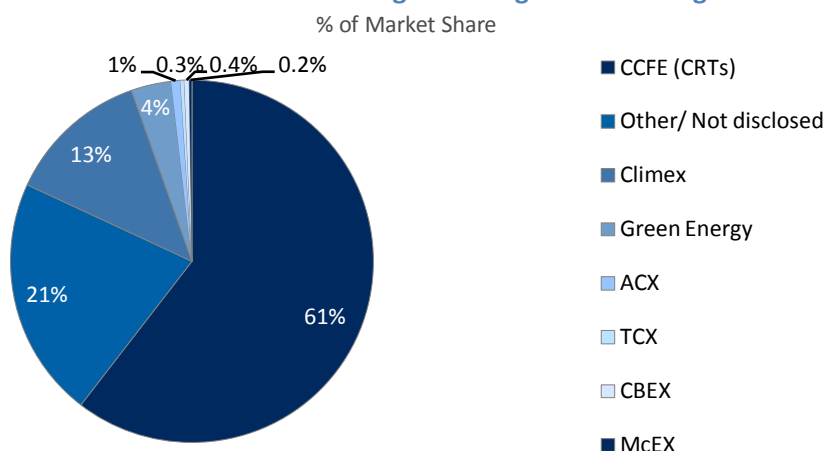
Credits transacted on non-CCX exchanges increased to 2% of voluntary market transaction volumes, up from 0.2% in 2008. Volumes transacted on non-CCX platforms may seem small in comparison to their regulated cousins, but a great deal of innovation and anticipated growth underlies some of the developments that surfaced in 2009.

For example, the largest exchange-traded volumes (61%) were Climate Reserve Tonnes (CRT) futures traded on the Chicago Climate Futures Exchange, a trading platform for environmental derivatives (futures and options) that began trading CRT futures in 2009. Interestingly, while traded volumes on the CCX fell by 31% in 2009, there was an 808% increase in trading on the CCFE.<sup>68</sup>

This newfound interest in arguably complex contract structures may be yet another sign of the voluntary carbon markets' growing maturity as a commodity market. CCX representative Nathan Clark says that any young commodity market tends to evolve from primarily spot and cash trades to more complex derivatives as market participants become more sophisticated. "Even in the voluntary sense, you've seen some move towards futures and options—at least relative to the past and particularly exchange trade products given their transparency and regulatory rigor."

Credits hosted on the Climex platform were a distant second at 13% of non-CCX exchange traded credits. Climex is advantaged by its veteran status as the first VER exchange in the voluntary carbon market. In 2009, Climex reasserted its leadership role by testing the waters in the first VER "reverse" auction. This mechanism enables buyers to name their desired project type, standard and other credit details—and then suppliers bid against one another on the price. Such a move accommodated the emerging buyers' market for credits in 2009.

**Figure 45: Transaction Volume of VERs through Exchanges and Trading Platforms, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 29 respondents and 5 trading platforms.

<sup>68</sup> "Climate Exchange Plc Trading Update 2009," January 15, 2010.

[http://www.climateexchangeplc.com/downloads/337\\_Trading%20Update%2015-01-10.doc](http://www.climateexchangeplc.com/downloads/337_Trading%20Update%2015-01-10.doc).

Reflecting our finding that nontraditional locations—for supply and demand—are scaling up their role in the voluntary market, some trading platforms and exchanges are targeted toward region-specific capacity building and emerging markets. The largest of these is the Australian Climate Exchange (ACX), which was reported in survey to have facilitated 1% of the non-CCX exchange traded volume in 2009. The ACX was nonetheless disadvantaged by general market uncertainty in the Oceania region, as market participants warily eyed governments’ proposed emissions trading schemes.

Among the market’s newest exchanges is the China Beijing Environment Exchange (CBEE), which partnered on its platform with BlueNext in 2009 and reported some volume transacted in the same year. The Tianjin Climate Exchange is another exchange in China that is tied to a local energy-intensity scheme, as well a platform for entities that comply with national regulations and policies to trade VERs and pursue carbon neutrality through its services. It executed its first VER trade in November 2009. We were also able to capture response data for the Montreal Climate Exchange (McEX), which is intended to test the waters and refine its platform in anticipation of regional regulated emissions trading. The McEX, TCX, ACX and CBEE each facilitated less than 1% of non-CCX trades in 2009.

The last year saw several exchanges re-brand their platforms to reach out to new participants. The World Green Exchange introduced its “shopping mall” for credits in early 2009, an interface that allows a birds-eye view of the details of its available credits. In early 2010, CarbonTradeXchange also announced its partnership with Markit to offer the first online platform for executing spot trades of voluntary carbon credits.

Respondents who noted that Africa has a long way to go to attract sustained VER activity may soon be able to look to the Africa Carbon Credit Exchange for transparency in this emerging market. The ACCX received initial funding from the Government of Norway and USAID to launch an African exchange that will facilitate the transfer of both CERs and voluntary credits and is expected to launch in mid-2010.<sup>69</sup>

### 8.5.1 Examples of Trading Platforms for Voluntary Carbon Credits

#### Carbon TradeXchange<sup>70</sup>

Carbon Trade Exchange (CTX) and Markit launched Carbon TradeXchange in March 2010, creating a bridge between users’ Markit registry accounts and the trading platform, enabling participants to select VERs in their registry account for sale on a “spot” basis on the exchange, the first of its kind. Bid and offer information is made available immediately and trades are cleared instantaneously. In addition, the exchange aims at transparency by offering complete project information for all member participants, who receive a registry account as part of their membership.

#### Chicago Climate Exchange (CCX)<sup>71</sup>

The Chicago Climate Exchange is the exchange platform for the first cap-and-trade system in North America and is the heart of the largest voluntary cap-and-trade scheme globally. The exchange is

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<sup>69</sup> <http://www.africacce.com/intro.html>

<sup>70</sup> <http://www.carbontradexchange.com/about-ctx.php>.

<sup>71</sup> <http://www.chicagoclimateexchange.com>.

exclusive to CCX members. Not all transactions of CFIs take place on the trading platform—the volumes tracked in this report, for example, represent CCX transactions that occurred as privately negotiated transactions. The volume of these transactions increased in 2009, while the volume of transactions on the trading platform fell from 69.2 MtCO<sub>2</sub>e in 2008 to 41.4 MtCO<sub>2</sub>e in 2009. As of April 2010, 110 companies were Full Members of the registry and 37 were Associate Members. The Chicago Climate Exchange maintains an internal registry that tracks all CFIs from allocation and origination to retirement.

### **China Beijing Environment Exchange (CBEEEX)**

CBEEEX was launched in August 2008, sponsored by China Beijing Equity Exchange (CBEX), the New Energy Investment Ltd. of China National Offshore Oil Corp., China Guodian Corp., and China Everbright Investment Management Corp. CBEEEX implemented a membership system that includes services like legal consulting, auctioning and Internet bidding—membership requires compliance with national policies and rules but is not restricted to a Chinese audience. The CBEEEX platform’s emissions trading service function enables the trade of CERs and most international VERs, including VCS, Gold Standard and Panda Standard credits. To date, nearly 1.0 MtCO<sub>2</sub>e has been traded on the exchange—mostly VCS credits—and CBEEEX recently announced plans to launch an online VER platform in June 2010.

### **Climex<sup>72</sup>**

Launched in 2003, as an emissions-trading auction platform, Climex entered into the voluntary carbon market in October 2007 as the first platform to execute VER auctions with the auction of 350,000 VERs (a mixture of pre-CDM VCS II from three projects accredited to the VCS standard) on the Climex Auction Platform. In 2008, Climex expanded its offerings as a voluntary carbon market infrastructure provider: auctioning over 215,000t CO<sub>2</sub>e, hosting the first exchange-traded transaction of Gold Standard credits, and linking with BlueSource registry to facilitate VER credit-tracking from seller to buyer—becoming the first exchange to integrate registry transfers into VER auctions. In April 2009 it was the first exchange to offer a “reverse auction” for VERs, selling in May at €2.78 and 2.89, and in September 2009, it became the first exchange to trade ERUs in the first cleared spot transaction. By March 2010, the third Austrian auction offered 300,000 EUAs and closed at €12.78.

### **Montréal Climate Exchange (MCeX)<sup>73</sup>**

MCeX is a joint venture between the Montréal Exchange (MX) and the Chicago Climate Exchange (CCX) and was 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 Canada CO<sub>2</sub>e units were first listed on the Exchange in May 2008. The Canadian government’s trading system as proposed in 2008 is a baseline and credit system with the initial compliance year set as 2010; businesses can achieve their targets by buying offsets or regulated emitters’ credits through Canada’s domestic market, contributing to a technology fund, or purchasing CERs.

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<sup>72</sup> <http://www.climex.com>.

<sup>73</sup> [http://www.mcx.ca/aboutUs\\_overview\\_en](http://www.mcx.ca/aboutUs_overview_en).

### **Tianjin Climate Exchange**<sup>74</sup>

In September 2008, the TCX formally launched as a joint venture between China National Petroleum Corporation Assets Management, the Tianjin Property Rights Exchange and the Chicago Climate Exchange. TCX is based out of the Tianjin Binhai New Area and will service a local mandatory energy intensity scheme—the Tianjin Energy Efficiency Market—as well as hosting both GHG and other major pollutant credits on its exchange. The exchange is also engaged in market building around some credit types, including the CDM. The exchange’s voluntary credit initiatives focus on VER trades and comprehensive carbon neutral services, and any entity complying with national regulations and policies can utilize TCX’s settlement and other services. TCX executed its first VER trade in November 2009, facilitating Shanghai-based Pacific Millennium (China) Packaging & Paper Industries to achieve carbon neutrality through the purchase and retirement of 6266 VCUs generated by a hydro project in Xiamen, China.

### **World Green Exchange**<sup>75</sup>

The World Green Exchange grew out of World Energy’s experience with the electricity, natural gas and Renewable Energy Credit (REC) markets in North America launched in January of 2008. The World Green Exchange has since provided the platform for the Regional Greenhouse Gas Initiative auctions and partnered with Gold Standard, market infrastructure provider Markit, SOCIALCARBON Standard and the Canadian Standards Association (developer of the GHG CleanProjects Registry). In early 2009, World Green Exchange re-branded itself as a “shopping mall” for carbon credits, allowing a detailed view of all available projects—searchable by over ten criteria—including supplier, commodity type, certification standard, volume, vintage, and price. Key documentation specific to each project, such as the project design documents, verification reports and contracts, is attached to each project record.

## **8.5.2 New and Upcoming Exchanges for Voluntary Credits**

### **The Green Exchange**<sup>76</sup>

The Green Exchange LLC, which recently applied for Designated Contract Market (DCM) status to the US Commodity Futures Trading Commission (CFTC) intends, following designation, to list the environmental commodity futures and options contracts that are currently listed, traded and subject to the rules and regulations of the New York Mercantile Exchange (NYMEX). The Green Exchange LLC, once approved as a DCM, will be an environmental marketplace where commodity-based futures and options contracts can be electronically traded and cleared. The environmental futures and options contracts that are currently listed for trading on the NYMEX trading platform and cleared through CME Clearing include Climate Action Reserve CRTs as well as EUA, CERs, RGGI, NO<sub>x</sub> and SO<sub>2</sub> futures and options emissions allowances.

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<sup>74</sup> [http://www.chinatcx.com.cn/templet/default/index\\_en.jsp](http://www.chinatcx.com.cn/templet/default/index_en.jsp).

<sup>75</sup> <http://www.worldenergy.com/wgexchange/default.cfm>.

<sup>76</sup> [www.nymex.greenfutures.com](http://www.nymex.greenfutures.com).

### **Africa Carbon Credit Exchange (ACCE)<sup>77</sup>**

The Africa Carbon Credit Exchange 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. ACCE was launched in Copenhagen during the COP15 and is focused on creation of a transparent and risk-mitigated trading platform for African-generated CERs and voluntary market credits. 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. To further support offset development, ACCE is creating the Green Knowledge Institute for building of technical and financial expertise, as well as a "Low Carbon Africa Fund" that will provide financing and technical expertise to jump-start low-carbon projects with offset potential. The current pipeline includes mini-hydroelectric power, biofuels, agro forestry, biomass energy generation and industrial emissions reduction projects awaiting implementation.

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<sup>77</sup> <http://www.africacce.com/vision.html>.

**Table 9: 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)
Chicago Climate Exchange	Climate Exchange Plc	CCX CFIs, RGGI futures, CRT futures, US GHG compliance futures, REC futures (vol. & compliance), Dow-Jones Sustainability Index futures	Climate Action Reserve, Regional Greenhouse Gas Initiative	2003	Exchange trading: \$0-\$5/CFI per side; Block trades or buy-side of cash transactions: \$5/CFI; Intra-company transfer: \$5/CFI; EU transfers: \$5/CFI
China Beijing Environment Exchange	China Beijing Equity Exchange	VERs (multiple standards)	None	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
Tianjin Climate Exchange	Climate Exchange Plc 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)	2008	Brokerage fee: 1-1.5% of total transaction per side

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Information is accurate as of April 2010.

# 9. Buyer Breakdown: Voluntary Market Customers



## Summary Points

- An estimated 70% of transacted credits likely found a final buyer in 2009, as 48% of transacted credits were purchased for immediate retirement and 23% for pre-compliance end-use purposes. Credits purchased with intent for resale comprised only 26% of transacted credits.
- Private firms continued to purchase the bulk of offsets (at least 87% of volume) with purchases for retirement the largest overall motivation (38%), followed by resale (26%) and pre-compliance end-use (23%).
- Voluntary purchases by NGOs increased from 1% in 2008 to 7% last year. Respondents attributed purchases from individuals (2.5%) and governments (0.7%) as relatively limited sources of demand.
- European buyers ceded their top buyer position to the US in 2009, taking 41% and 49% of the market, respectively. Australia and New Zealand buyers came in at a distant third place with a combined market share of 4%.
- Similar to previous years, sellers continue to perceive that corporate responsibility/ branding was the most prevalent motivation for buyers in 2009, followed by offsets' convenience, price and "other" motivations.

Over and over again, suppliers described the voluntary carbon market in 2009 as a buyers' market—where consumers grew increasingly savvy about navigating the oversupplied sea of credits. Last year, buyers worked the system to obtain credits that met their specifications—and left an altered market landscape in their wake. Rishi Seth, head of business development for Emergent Ventures India remarked, "Whatever demand was out there, buyers were in a very interesting situation where they could pretty much pick and choose their projects. And they could also pretty much name their price."

Not all buyers wanted the same thing, however, fostering a diverse marketplace. In particular, pure voluntary buyers had a range of preferences for offsetting their emissions. "There's still no 'usually.' Some people want forestry. Some people want anything but forestry... Some want brutal efficiency and the lowest-cost portfolio possible. Others will maybe identify a small project from which they can purchase all the output. They then may cut the cost per ton by including something cheaper in the portfolio," explains Neil Braun, CEO of CarbonNeutral Company, an organization primarily serving pure voluntary buyers.

At the same time, pre-compliance buyers focused on obtaining credits that might mitigate future regulatory risk and sought fairly consistent products. To gain insight into these and other buyer types, we asked suppliers about the sectors, locations and motivations of their off-takers.

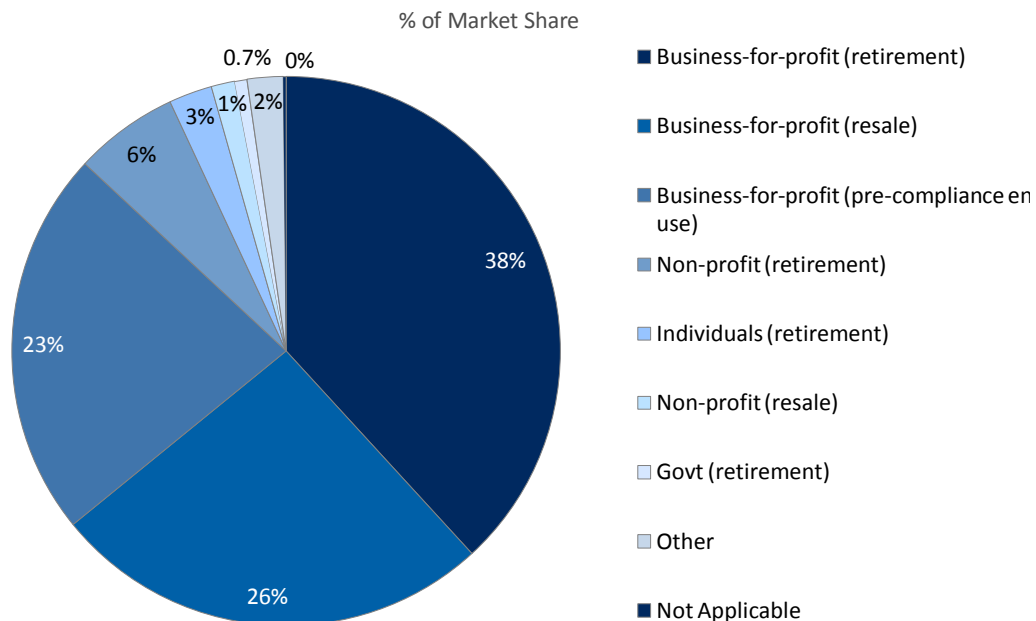
## 9.1 Obtaining Offsets: Who's Buying?

A wide variety of organizations as well as individuals produce the demand for carbon offsets. To identify the types of customers purchasing offsets, survey respondents categorized their customers by the percentage of credits sold to each type.

The options provided were:

- Business for profit (for retirement, without pre-compliance motive)
- Business for profit (for resale)
- Business for profit (for pre-compliance)
- Governments (for retirement)
- NGOs/non-profit organizations (for retirement)
- NGOs/non-profit organizations (for resale)
- Individuals (for retirement)
- Not applicable
- Other

**Figure 46: Transaction Volume by Type of Buyer, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 99 survey respondents.

Offset purchases motivated by the intent to immediately retire credits to offset emissions, captured 48% of the market share or roughly 24 MtCO<sub>2</sub>e. This is an increase from 2008 when suppliers reported 32% of credits were sold for retirement (roughly 20 MtCO<sub>2</sub>e).

The continued emphasis on offsetting was a remarkable trend given the global economic recession. “Offsets are a luxury good... and from the corporate marketplace, it very easy for them to say, we’ll put that off until next quarter,” added Erin Craig, Vice President of Carbon Management Services at Terrapass. Another supplier noted, “It’s hard to convince someone to buy offsets when they’re still laying staff off.”

Despite the recession, many continued to meet offsetting commitments, and multitudes of new entities joined the fold. Last year a huge range of entities like the World Bank, Walt Disney Company, the office supply company Staples and the department store chain Kohls initiated or expanded programs to offset internal emissions. The 2010 Olympics announced plans to become the first carbon-neutral games. Others like Duke Energy, the shipping company UPS, several rental car companies and the San Francisco airport launched options for their customers to purchase offsets bundled with their products.

However, the carbon neutral trend cooled in some cases, when companies that had made offsetting commitments in the past stopped buying credits due to budget cuts or changing GHG management strategies to focus on “insetting.” For example, both Yahoo and Nike publicly announced the end of their offset programs. “Reducing our carbon footprint has always been a priority and we’ve decided to focus all our energy and investment on that philosophy. We will no longer purchase carbon offsets as announced in 2007. Instead, we’ll focus our resources on reducing our carbon impact while helping the rest of the industry do the same,” Yahoo’s co-founder David Filo explains.<sup>78</sup>

Suppliers reported transacting credits not only to final buyers but also to intermediary companies creating a portfolio for resale. Last year saw a slight decline in the share of credits purchased by intermediaries for resale (26%, down from 35% in 2008). These intermediaries may sell credits to both pure voluntary or compliance buyers. At the same time, though, a dramatic increase was seen among respondents who cited that their transactions flowed directly to pre-compliance buyers, 23% in 2009 from 1% in 2008. This is in line with other findings that point to the increased importance of pre-compliance activity.

The percentage of individuals seeking to offset their personal carbon footprints increased marginally to 2.5% (1.0 M tCO<sub>2</sub>e) in 2009. In general, due to the relatively small size of each transaction, individuals’ offsetting represents a small percent of the market. Moreover, some bundled offset purchases by individuals, such as airline tickets or electricity, may not be accounted for by survey respondents. Governments seeking to retire credits for the purposes of public outreach or government carbon neutrality targets lost market share, from 1% in 2008 to 0.7% in 2009, some looking to instead reduce emissions internally.

One important difference in the results this year compared to last was that in 2008 around 29% of sellers chose the “not applicable/I don’t know” category. This year, we changed the category to simply “not applicable” and in turn suppliers attributed a mere 0.2% to this option. As a result, the share of all other categories (including retirement) automatically increased.

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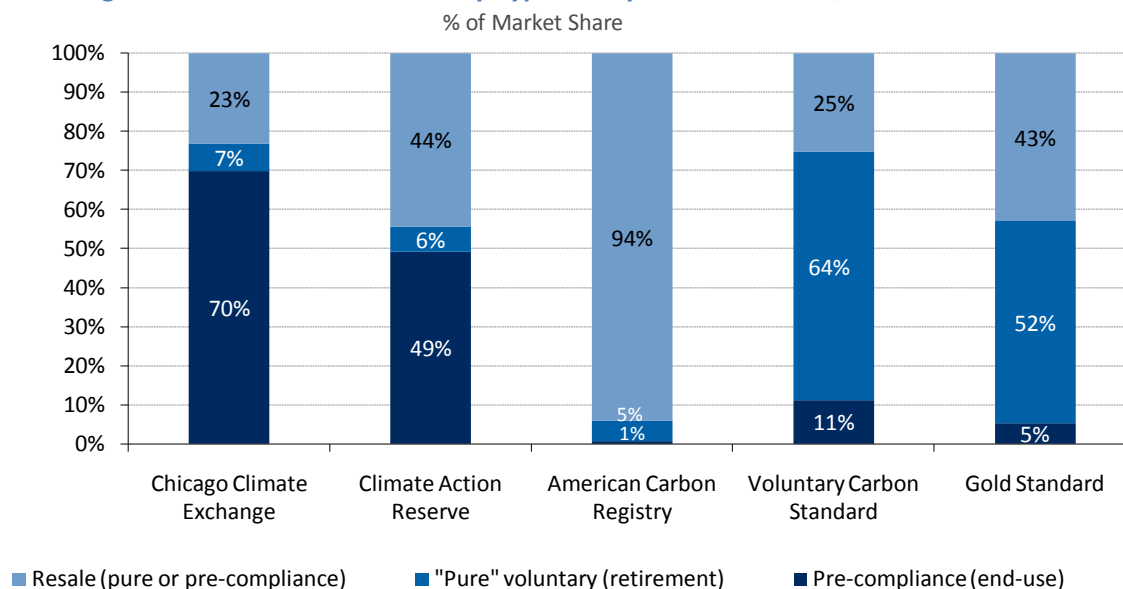
<sup>78</sup> <http://ycorpblog.com/2009/06/30/serving-up-greener-data-centers/>.

### 9.1.1 Savvy on Standards: Customer Preferences

Customer type was also clearly delineated by buyers' choice of standard. By assuming that supplier-cited customer preferences are evenly distributed across transactions, we made some proxy calculations to determine if certain buyers preferred specific standards. Roughly 64% of buyers sought VCS credits for retirement (i.e., pure voluntary demand), with another 25% of VCS credits bound for resale and only 11% transacted by pre-compliance buyers.

At the opposite end of the spectrum are CCX and CAR credits, for which pre-compliance buyers comprised the majority (70% and 49%, respectively) and pure voluntary demand was very small. ACR credits were primarily in the resale category (94%) and can therefore either go to voluntary or pre-compliance buyers. As many of these credits were generated in the US, similar to CAR and the CCX, the credits may become eligible in a possible future compliance regime in that country.

**Figure 47: Transaction Volume by Type of Buyer and Standard, OTC 2009<sup>79</sup>**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 99 observations.

## 9.2 Customer Location

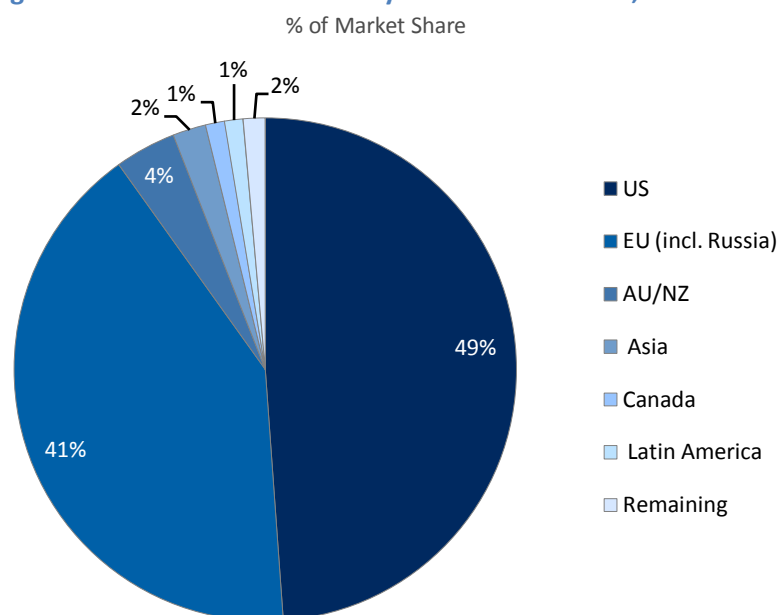
Last year, buyers in North America, in particular the United States, supplanted European buyers as the dominant source of demand in the voluntary market, resembling trends not seen since 2007 when 68% of credits went to US buyers. Because regulatory risk management draws from a different budget pool than discretionary spending, pre-compliance demand was an outlet for demand that shielded the US

<sup>79</sup> In order to discern customer type by buyers' choice of standard we assume transaction-specific data is evenly distributed according to customer type, therefore these figures are approximations.

market share from the impacts of the economic recession seen in regions dominated by pure voluntary buyers—like Europe.

In previous years, Europe accounted for the lion's share of voluntary OTC purchases, demonstrating that the voluntary offset markets fill a unique niche alongside mandatory compliance trading schemes. However, in 2009 Europe's status as top buyer declined to 41%, as its appetite for voluntary carbon was muted by the global recession. This pure voluntary demand is dependent on discretionary spending and, as corporate budgets tightened in response to the economic downturn, so did Europe's market share of demand for voluntary carbon.<sup>80</sup>

**Figure 48: Transaction Volume by Customer Location, OTC 2009**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 110 survey respondents.

Demand from Canada, Australia and New Zealand continued to decline as their collective market share was halved from 8% in 2008 to 5%. In contrast, organizations in Asia stepped onto the carbon stage in 2009 to purchase 2% of transacted credits, up from less than 1% in 2008. This is likely the result of Asian governments' intensifying focus on pilot emissions trading programs and emerging Asia-specific voluntary market infrastructure.

The "rest of the world", including Latin America, Asia and Africa, constituted 2% of demand, up from less than 1% in 2008. Stories of small pockets of offset demand in these regions continue to crop up. One retailer notes, "it's not high volume, but it's enough that we're definitely working hard to develop that market, and we've had some success with certain categories." This trickle of activity includes the South African bank Nedbank, which announced plans to go carbon neutral by purchasing CDM credits. In Asia,

<sup>80</sup> <http://www.nuevomundowines.com/en/de-martino-lanza-primer-vino-de-carbono-neutro-de-sudamerica/>.

a Shanghai-based auto insurance company plans to go carbon neutral, the Chinese "Green Carbon Fund" was launched by the State Forestry Administration and China Green Foundation markets offsets to individuals and companies nationally. In Latin America, several small airlines bundle offsets with flights and a Chilean wine claims to be the first carbon-neutral wine in South America.

### 9.3 Why Buy: Customer Motivations

To further understand the incentives of voluntary buyers, we asked respondents to rank from 1 to 5 (5 being the most important) the purchasing motivations of their customers. The list of proposed responses in this year's survey varied slightly from last year's. Seeking to refine the questionnaire we combined "Corporate Social Responsibility (CSR)/Environmental Ethics" with "Public Relations/Branding" and dropped the option "Climate change-affected business model."

The options were as follows:

- Investment/ Resale
- Pre-compliance
- Corporate Responsibility/ Public Relations
- Offsets less expensive/ more feasible than internal abatement
- Other (write-in)

Unlike in previous sections, responses are not volume-weighted and instead each supplier's response is weighted evenly.

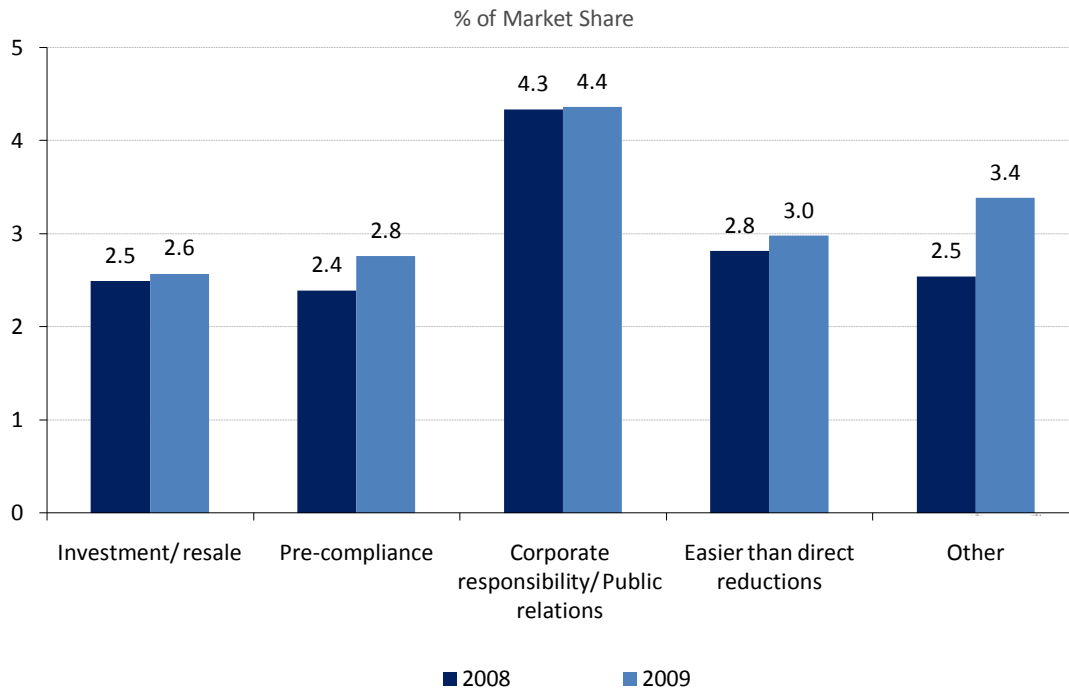
Consistent with previous years' surveys, suppliers indicated that "Corporate Responsibility/Public Relations" were by far the primary motivations for voluntary offset purchases, as companies sought to offset emissions for goodwill, both of the general public and their investors.

The motivation "offsets less expensive/more feasible than internal abatement" ranked as the second greatest perceived motivation for buyers and was slightly more popular in 2009 than 2008.

Surprisingly, considering recent emphasis on compliance, respondents on average ranked the pre-compliance motive at 2.8, contrary to most of our other findings that speak to increased importance of pre-compliance credits—such as the response that 50% of buyers were for-profit firms pursuing pre-compliance or investment/resale. Investment/resale was the lowest-ranking option at 2.6.

Respondents were also given a write-in, "other" option to further explain their perceptions of customer motivations. These comments revealed that, especially among final retailers, customers are often motivated to purchase offsets in the pursuit of personal carbon neutrality. Another often-cited motivation was the desire among buyers to invest in the offset projects' co-benefits like "pro poor" and sustainable development, natural resource protection and indigenous community engagement.

**Figure 49: Customer Motivations, OTC 2009**



*Source: Ecosystem Marketplace, Bloomberg New Energy Finance.*

*Note: Based on 136 survey respondents.*



# 10. Uncertainty is the Only Certainty: Projections



## Summary Points

- Survey respondents were optimistic about the prospects for the global voluntary markets and on average estimated they will increase to approximately 400 MtCO<sub>2</sub>e in 2012, 800 MtCO<sub>2</sub>e in 2015 and 1,200 MtCO<sub>2</sub>e in 2020.
- With respect to standards, most participants intend to use the VCS (68%), followed closely by Gold Standard (45%), the Climate Action Reserve (36%) and the CDM (35%).
- Projected registry use largely follows projected standards use, with the most popular choices being the APX VCS Registry (voted for by 43% of respondents) and Markit (36%) followed by the Gold Standard (36%), CAR (33%) and the CDM/JI registry (26%).

## 10.1 Stepping into the Present: The Voluntary Carbon Market in 2010

While our data collection and analysis focuses on 2009, over the past five months of 2010 the voluntary carbon markets have continued to evolve. With the combination of low demand, low prices and perceived oversupply of credits, some suppliers find themselves still stuck in the same situation as in 2009, with project finance and origination at “a screeching halt.” Still others have overcome (or seized upon) last year’s positive trends to see tremendous growth in the first two quarters of 2010.

On the pre-compliance front, the outlook for federal carbon legislation in the United States as well as Australia has been dim relative to the situation in 2009. For pure voluntary buyers, much of the marketplace is still under the cloud of the global financial crisis that overshadowed investment in offset projects and cut firms’ and individuals’ discretionary spending budgets.

Several stakeholders have cited concerns that companies’ budgetary decisions made in the middle of the recession last year may continue to restrain offset demand. MF Global’s Grattan MacGiffin fears that a slow recovery could “stymie the flow of new people getting into offsetting,” negatively impacting the market growth in 2010 and in the long run.

Others say they can already see a break in the clouds. Indeed, press releases highlighting carbon-neutral commitments continue to cross the wires and new carbon offsetting companies are emerging.

With respect to pre-compliance, climate legislation in the US has experienced set-back after set-back with the health care bill dominating the Congressional agenda, the balance of political party power trending conservative as a Republican took the Massachusetts Senate seat, and the key Republican supporter of the climate change effort, Senator Lindsey Graham, abandoning compromise bill

negotiations shortly before the bill's public debut. In response, several offset providers closed their US carbon desks and others have focused on diversifying their business model beyond carbon.

However, it is still being decided how to bring the Kerry-Lieberman bill onto the Senate floor and the Obama Administration maintains public support for the effort. "The market is in the process of unraveling as we speak... but it is premature to conclude there is no way we're going to get cap-and-trade this year. I still think we have a unique window of opportunity here," emphasizes Richard Saines of Baker and McKenzie.

Suppliers and buyers in the market for pre-compliance credits say that continued growth in this area depends entirely on sustained progress in legislative and negotiations processes. When and if regulation becomes a reality, participants like America Carbon Registry's Mary Grady say, the offsets market will require all hands on deck to meet the explosive demand. "Really, you need every single high-quality market player out there working at 200%, and it will still be a challenge to create enough offsets for the demand that's going to happen."

On the infrastructure side, 2010 has already seen a flurry of activity from registries, exchanges and standards, as they refine and expand their products, protocols and partnerships. Whether or not progress among well-positioned suppliers and infrastructure providers will translate into resumed growth for the market as a whole depends on the pace of financial recovery in the next year. However, many market players are cautiously optimistic about the prospects for economic recovery, emergence of new regional markets for both supply and demand of credits, and emissions regulation in the US and internationally. Markit's Helen Robinson describes a determined "can do" attitude that seems to be driving suppliers and buyers to participate despite continual delays in governmental action.

To merge these varying perspectives into a bird's eye view through the smog of the outlook for 2010 and beyond, we asked respondents not only about their 2009 performance, but also about their plans and predictions for the future.

## 10.2 Hope Springs Eternal: Supplier-Projected Size and Volume

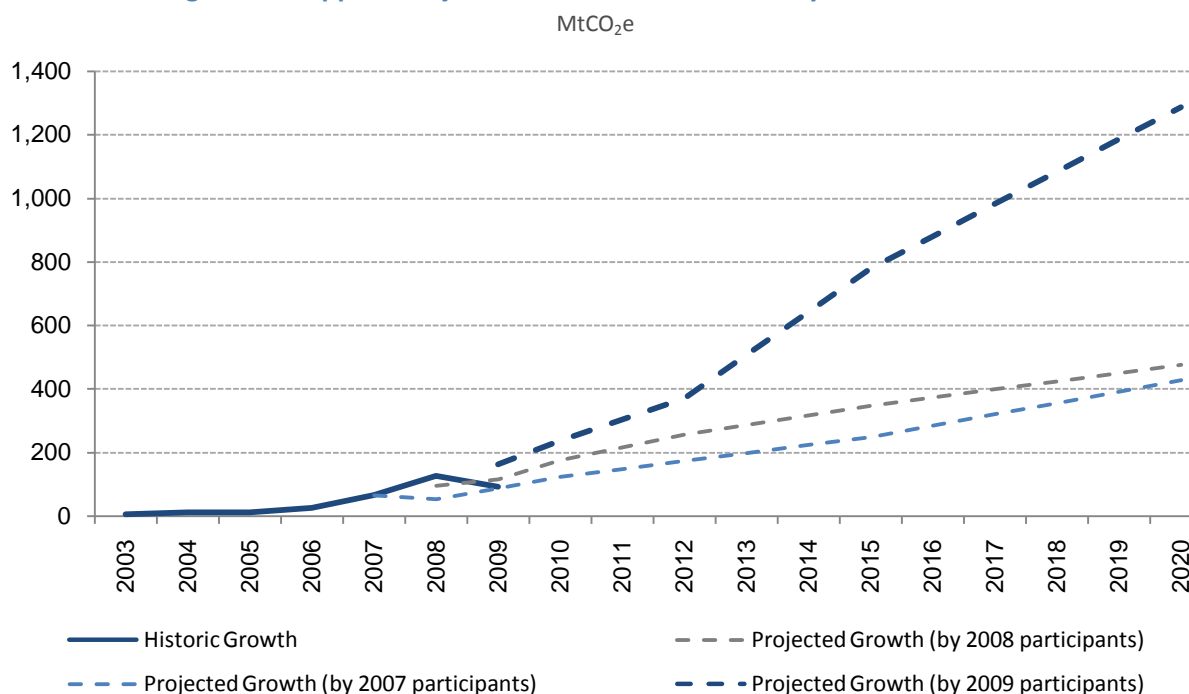
Survey respondents were asked to project the size of the voluntary markets through to 2020, and 136 respondents gave us their best guess for future voluntary market outputs. All responses were weighted evenly. This year's respondents were much more optimistic for future growth than previous years, which is somewhat perplexing considering last year's decline in transacted volumes. The respondents projected future transaction volumes in the voluntary carbon market to increase at an annual growth rate of 21% from now until 2020, which amounts to an increase of 102 MtCO<sub>2</sub>e/year (more than the current size of the whole market) from 2010 to 2020. The market would be as large as 1,200 MtCO<sub>2</sub>e in 2020.

Via the survey process respondents predicted final transaction numbers for the current year. In the past three years' reports, respondents' predictions have been significantly more conservative than actual numbers tracked. However, suppliers responding to the survey in 2009 predicted that the market would grow to 118 MtCO<sub>2</sub>e last year, which is 25 MtCO<sub>2</sub>e more than the tracked traded volume of 94 MtCO<sub>2</sub>e. This year's respondents were even further from the mark, predicting that the market would grow to 165

MtCO<sub>2</sub>e, or 72 MtCO<sub>2</sub>e more than was actually transacted. The most accurate forecast for 2009 transaction volumes dates back to 2007, which pinpointed 2009 transaction volume at 89 MtCO<sub>2</sub>e, only 5% less than transacted in 2009.

Though respondents have historically overestimated the real market size, their responses do tell us something about the general attitude toward the future. For example, last years' respondents predicted low growth in 2009 relative to future years, anticipating a pause in activity as the recession impacted both prices and VER demand—and predicted a resurgence of activity in 2010 (50% growth over 2009). This year's respondents, already engaged in the first quarter 2010, were optimistic about the new year and predicted roughly the same growth rate (45%) between 2009 and 2010.

**Figure 50: Supplier-Projected Growth in the Voluntary Carbon Markets**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

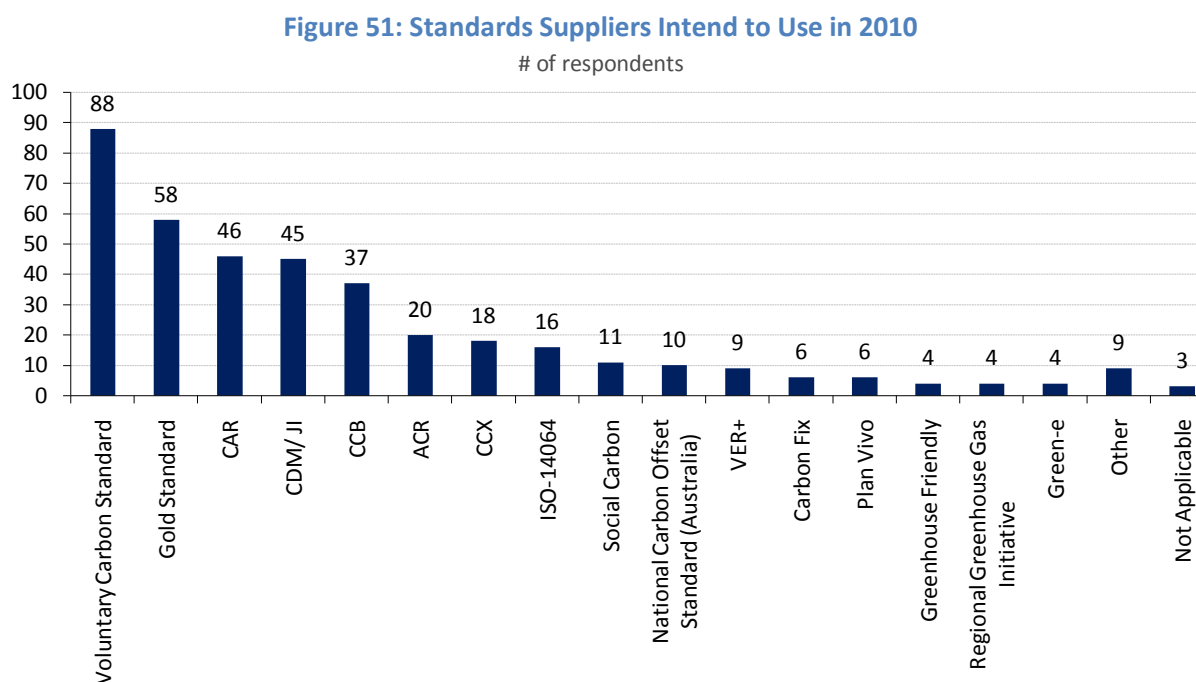
Note: Based on 136 survey respondents.

## 10.3 Geared for Guidance: Future Standard Utilization

Perhaps one of the most powerful tools for sculpting the shape of the market is standards. To get a sense of suppliers' standards of choice we asked participants which standards they would most likely use in 2010. Suppliers were given the option of selecting an unlimited number of standards, as well as the option to select "internally created standard" or to write in the name of one that had not been included on our list. Each respondent was given equal weight regardless of its transaction volume. Figure 51 reflects each standard's share of the total number of survey participants who answered this question.

The VCS won the crown of most popular standard, which 88 companies or 68% of respondents said they plan to use in the future. Gold Standard was runner-up, voted for by 54 companies (45%) and followed by the Climate Action Reserve, which was chosen by 46 companies (36%). The use of CDM or JI standards was also a popular choice, since many respondents also transact in the regulated markets—though it is unclear which suppliers intend to use such standards in the voluntary carbon markets.

Because the responses are not volume-weighted, popularity does not necessarily transact to equal ratios of sales.



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 129 survey respondents.

In this and last year's surveys, CCX credits did not make the top of the list, although this year they did capture a significant share of transacted volume (12%). This is likely due to the fact that our survey saw more large-volume (>100,000 MtCO<sub>2</sub>e) CCX transactions than with other standards, though the actual

number of firms reporting CCX transactions was comparable to other standards. The opposite is true of standards like CCB and Gold Standard where, though buyer and supplier interest in the credits is high, actual market share is pulled down by smaller transactions.

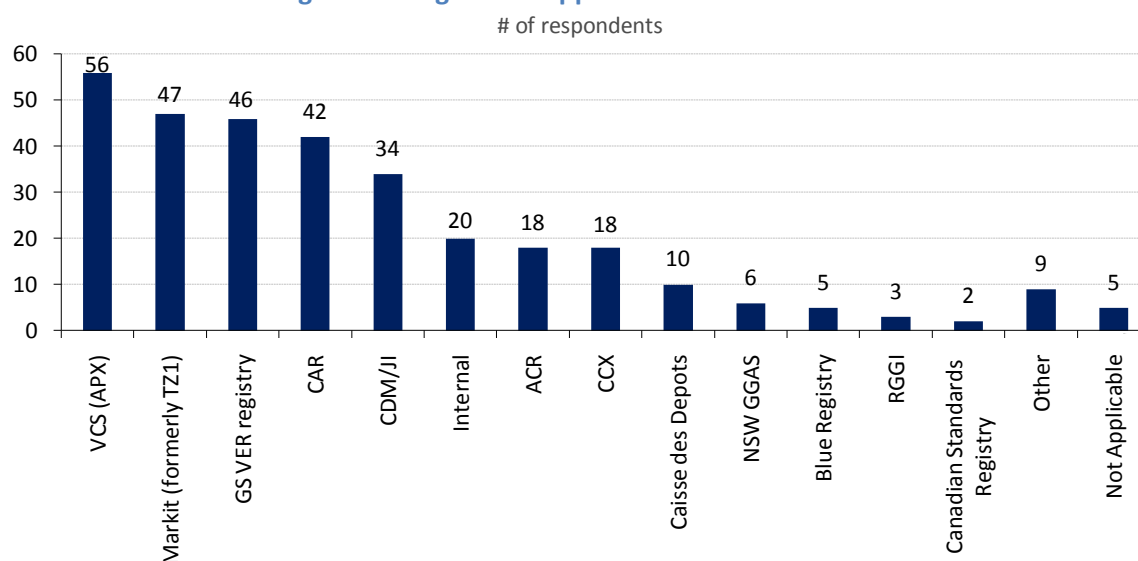
This year's predictions for VCS usage are in line with previous years, though stronger in 2010 than ever before (up from 52% that planned to use VCS in 2008). Our survey also saw a heightened interest in Gold Standard looking to 2010, as 45% of respondents ranked it as a contender for use in the coming year (up from 32% in 2008). The continued popularity of CAR is consistent with its market share in 2009 and the persistence of pre-compliance motives into 2010. Other notable differences between 2008 and 2009 include a significantly greater interest in ACR credits (16%, up from 5% in 2008), as well as for SOCIALCARBON, which gained 5 percentage points over 2008. Interest in credits verified to the VER+ fell again in 2009, in line with its steadily decreasing market share.

## 10.4 Sought-after Serials: Future Third-Party Registry Utilization

As standards have become the tools shaping the market place, registries have stepped up as support structure. The rise of registries in 2008 and 2009 was a key theme. Convincing suppliers and standards to utilize (and pay for) this new service along with the choice to have multiple registries led to tight competition.

As with standards, we asked market suppliers which registries they planned to use in 2010. Suppliers were given the option to select an unlimited number of registries from among 13 options of third-party infrastructure providers, independent registries and standard- and exchange-registries, as well as the option to select "internal registry" or to write in the name of one that had not been included on our list.

**Figure 52: Registries Suppliers Plan to Use in 2010**



Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

Note: Based on 129 survey respondents.

The expected registry usage for 2010 follows roughly the same pattern as respondents' intended standard usage—no doubt due to the linkages between standards and registries that were reinforced in 2009. Here, the APX VCS Registry (43%) and Markit (36%) led, with the Gold Standard (36%) and CAR (33%) registries close behind. In line with its expected usage, the CDM registry is number five in the list. Surprisingly, a still large number of respondents indicate that they will use their own internal registry, despite the continued market uptake and increased user-friendliness of registries—not to mention the severe drop in the use of internal registries seen in 2009.

Comparing this and last year's responses, this year's choices were quite similar to last year. The top five remained the same—though CDM/JI dropped from second to fifth choice. American Carbon Registry gained a following, with 18 respondents in 2009 compared to 11 in 2008.

## 10.5 Looking ahead

So what does all of this mean for the future of the voluntary carbon markets?

Despite the setbacks experienced by the legislative efforts on climate change in the US, Australia and Canada, we expect the bifurcation between the pure voluntary and pre-compliance markets to remain in place over the next several years. Even if nothing is decided on the federal level in 2010, states and provinces will continue their efforts to put in place mandated carbon reductions. With the issue of climate change not expected to disappear, the threat of federal action remains present.

The outlook for 2010 is binary. On the one hand, if federal US legislation is not passed within the next few months, the limited pre-compliance activity that was observed in the beginning of this year will continue to subside. The only activity seen will be for potential regional programs, although this will be limited. On the other hand, if legislation is successful, a flurry of activity will kick off. It should be mentioned, though, that this part of the market will eventually transform into a compliance market akin to the CDM and will cease to be part of the voluntary markets.

The 'pure' voluntary market is likely to follow a more predictable path, as this segment of the market is driven by different demand factors. With most economies on the growth path again, we anticipate that pure voluntary demand will remain steady throughout 2010 and 2011—although growth will still be limited by discretionary spending budgets set in the midst of the recession. In addition, despite the skepticism on climate change amongst the general public, companies are still increasingly using their green image as a marketing tool, which may result in a more prominent position for carbon offsetting depending on the perceived value of corporate social responsibility programs.

Amidst uncertainty, at least in immediate term, the voluntary carbon markets will invariably continue to be fertile ground for new methodologies, project types, infrastructure and concepts. One supplier noted, "We need the voluntary space. How else will we test new ideas?" The question remains, which forces of demand will feed such innovation and, in turn, to what extent the marketplace can develop to impact climate change mitigation.

# Appendices

## Appendix A. Respondent List

Table 10: Respondent List					
Organization Name	Retailers	Wholesalers	Brokers	Project Developers	Consultants
AgraGate Climate Credits Corp	-	Wholesaler	-	-	-
Ambiental PV Ltd	Retailer	-	-	Developer	Consultant
Anadarko Petroleum Corporation	-	Wholesaler	-	-	-
Atlantic County Utilities Authority	Retailer	-	-	-	-
Balance Carbon Pty Limited	Retailer	-	-	-	Consultant
Blue Source, LLC	-	Wholesaler	-	Developer	-
Blue Ventures Carbon Offset	Retailer	-	-	-	-
Bonneville Environmental Foundation	Retailer	-	-	-	-
Bosque Sustentable, A.C.	-	-	-	Developer	-
Brighter Planet	Retailer	-	-	-	-
California Bioenergy LLC	-	-	-	Developer	-
Camco Global	Retailer	Wholesaler	-	Developer	Consultant
CantorCO2e, LP	-	-	Broker	-	-
Carbon Balanced Consulting	Retailer	-	-	-	-
Carbon Life Ltd.	Retailer	Wholesaler	Broker	Developer	Consultant
Carbon Planet Limited	Retailer	Wholesaler	Broker	Developer	Consultant
Carbon Tanzania	Retailer	-	-	Developer	-
CarbonFootprint360.com	Retailer	Wholesaler	-	-	-
Carbonfund.org Foundation, Inc.	Retailer	Wholesaler	-	Developer	-
Carbonica Limited	Retailer	Wholesaler	Broker	Developer	-
Carbonzero	Retailer	Wholesaler	-	Developer	Consultant
Casella Waste Systems, Inc.	-	-	-	Developer	-
Chair of research on Eco-Adivsinl	Retailer	-	-	Developer	-
City of Aspen	Retailer	-	-	Developer	-
Clear	Retailer	-	-	-	-
ClearSky Climate Solutions	Retailer	Wholesaler	Broker	Developer	Consultant
CLIMAT MUNDI	Retailer	-	-	-	Consultant
Climate Friendly	Retailer	Wholesaler	-	-	-
Climate Neutral Group B.V.	Retailer	Wholesaler	-	Developer	-
CO2 Operate BV	-	Wholesaler	-	Developer	-
CO2logic	Retailer	-	-	Developer	Consultant
CO2OL	Retailer	Wholesaler	-	Developer	-
Community Energy, Inc.	Retailer	-	-	-	-
Conservation International	Retailer	Wholesaler	-	Developer	-
Cool Earth	Retailer	-	-	Developer	Consultant
CoolClimate Holding, Inc.	-	Wholesaler	Broker	Developer	Consultant
Coolplanet	Retailer	-	-	-	-
Delta Institute	Retailer	Wholesaler	-	-	-
Demirer Enerji	-	-	-	Developer	-
E.Value - Estudos e Projectos de Ambiente e Economia, SA	Retailer	-	-	Developer	-
East Central Solid Waste Commission	-	-	-	Developer	-
ECOACT	Retailer	Wholesaler	-	Developer	Consultant
ecosur	-	Wholesaler	Broker	Developer	-

Ecosystem Services LLC	-	Wholesaler	Broker	Developer	Consultant
Ecotrust	-	-	-	Developer	-
Emergent Ventures	-	-	-	-	Consultant
Energy Mad	-	-	-	Developer	-
Environmental Capital LLC	-	-	-	-	-
Environmental Credit Corp	-	Wholesaler	-	Developer	-
Envirotrade	Retailer	-	-	Developer	Consultant
ERA Ecosystem Restoration Associates	Retailer	-	-	Developer	-
Essent Trading International S.A.	-	Wholesaler	-	-	-
Finite Carbon Corporation	-	-	-	Developer	-
First Climate (Germany) GmbH	Retailer	Wholesaler	-	Developer	Consultant
GERES - Groupe Energies Renouvelables Environnement et Solidarités	Retailer	Wholesaler	-	Developer	-
Global Tan Energy	Retailer	-	-	Developer	-
Goodplanet /Action Carbone	-	Wholesaler	-	-	-
Greenoxx NGO	-	-	-	Developer	Consultant
Hess Corporation	Retailer	Wholesaler	-	-	-
Iniciativa Verde	Retailer	-	-	Developer	Consultant
Just Green BV	-	-	-	Developer	-
Less Emissions Inc.	Retailer	-	-	-	-
LivClean	Retailer	-	-	-	-
Live Climate	Retailer	-	-	-	-
LMS Generation Pty LTD	-	Wholesaler	-	-	-
MF Global	-	-	Broker	-	-
MGM International	-	Wholesaler	-	Developer	Consultant
myclimate Foundation	Retailer	Wholesaler	-	Developer	Consultant
Nordjysk Elhandel A/S	Retailer	Wholesaler	Broker	Developer	-
off7	Retailer	-	-	-	Consultant
Offsetters Clean Technology Inc	Retailer	Wholesaler	Broker	Developer	Consultant
ORBEO	-	Wholesaler	-	Developer	-
Planetair	Retailer	-	-	-	-
PrimaKlima -weltweit- e.V.	Retailer	-	-	Developer	-
PURE the Clean Planet Trust	-	-	-	-	-
Renewable Choice Energy	Retailer	Wholesaler	-	-	-
Sempervirens Fund	-	-	-	Developer	-
SKG SANGHA	-	-	-	Developer	-
South Pole Carbon Asset Management	-	Wholesaler	-	Developer	-
Southeast Carbon	-	Wholesaler	-	Developer	-
Sustainable Carbon (previously: Social Carbon Company)	-	-	-	Developer	-
TerraPass	Retailer	Wholesaler	-	-	-
TFS Energy	-	-	Broker	-	-
The CarbonNeutral Company	Retailer	Wholesaler	-	-	-
The Eco Products Fund, L.P. (Equator and New Forests)	Retailer	Wholesaler	-	Developer	-
The Nature Conservancy	-	-	-	Developer	-
The PACE Centrer	Retailer	-	-	Developer	-
The Trust for Public Land	-	-	-	Developer	-
Tricorona	Retailer	Wholesaler	-	Developer	-
TULLETT PREBON	-	-	Broker	-	-
Verus Carbon Neutral	Retailer	Wholesaler	-	Developer	Consultant
VOLTALIA	Retailer	-	Broker	Developer	Consultant

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.

## Appendix B. Volume of tCO<sub>2</sub> by Project Type and Region

Table 11: Volume of tCO <sub>2</sub> by Project Type and Region					
	Forestry/Land Use	Methane	Renewable Energy	Energy Efficiency & Fuel-Switching	Other/Not specified
US	3,439,183	16,811,090	245,249	123,838	3,552,022
Latin America	5,567,061	49,475	338,316	961,323	-
Asia	93,950	132,092	4,790,539	312,058	-
Turkey	-	356,976	1,915,662	-	152,248
Africa	803,214	-	51,095	42,284	-
Canada	418,244	108,000	-	15,830	167,000
AU/NZ	13,073	304,934	75,700	97,797	-
EU	25,000	158,097	-	-	-
Mixed/Not specified	-	-	-	-	2,058,855

Source: Ecosystem Marketplace, Bloomberg New Energy Finance.



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**ERA Ecosystem Restoration Associates** ([www.eraecosystems.com](http://www.eraecosystems.com)) is a Canadian pioneer in forest restoration and conservation carbon offset projects. The company's "Community Ecosystem Restoration Program" located in the Lower Fraser Valley, British Columbia, began in September 2005 in the District of Maple Ridge, and has now grown to include five communities, including Metro Vancouver. ERA is currently developing projects in Central Africa and the Hawaiian Islands. To date, ERA has delivered over 1,000,000 tonnes of carbon offsets to the voluntary market, and is now preparing to supply the pre-compliant market. ERA's clients and product users include Air Canada, Catalyst Paper, HSE – Entega, Rolling Stone Magazine, Shell Canada Limited, The Forest Carbon Group, and The Globe Foundation of Canada. ERA's offset products are being validated and verified to the ISO 14064-2, CCBA, and VCS standards.



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**The Forest Carbon Group** ([www.forestcarbongroup.de](http://www.forestcarbongroup.de)) has a vision to make the world a place in which the economy and ecology are mutually beneficial. By investing in large-scale forestry projects world-wide, the Forest Carbon Group enables the protection of intact forest ecosystems and restoration of those that have been degraded. These projects give value to forests' environmental services and provide many social co-benefits to involved communities. The Forest Carbon Group offers companies tailor-made solutions for becoming more sustainable and carbon neutral using the mechanisms of the voluntary carbon market. As investors in and co-developers of forestry projects, the Forest Carbon Group actively engages in ensuring their long-term success and offers VERs that are technically approved, audited and monitored by internationally renowned third parties. The Forest Carbon Group was founded in 2009. Its team consists of specialists who share the vision and are internationally experienced in carbon markets, climate protection, forestry, project development, financing, marketing and environmental law. Recently, the Forest Carbon Group has partnered with ERA Ecosystem Restoration Associates Inc. of Vancouver, Canada, as its favored project developer.



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## BAKER & MCKENZIE

**Baker & McKenzie** ([www.bakernet.com](http://www.bakernet.com)) has been at the forefront of the development of global carbon markets and climate law and policy for more than a decade. With particular strength in the developing countries of Latin America and Asia as well as established markets in Europe and the US, we have represented and continue to advise governments, multi-laterals and the market makers on market-leading deals. Trusted for our expertise and valued for our experience, we regularly work on transactions with our clients that are first-to-market, including being among the first to draft carbon contracts and establish carbon funds and serving as lead counsel on the largest public and private carbon transactions the market has seen.

## ECO SECURITIES

**EcoSecurities** ([www.ecosecurities.com](http://www.ecosecurities.com)) has spent the last 13 years focusing on climate change mitigation activities and is now one of the leading organisations in the business of sourcing and developing greenhouse gas emission-reduction projects. EcoSecurities' portfolio covers a wide range of emission-reduction standards (Gold Standard, Clean Development Mechanism, Voluntary Carbon Standard, and Climate Action Reserve), technology types, and geographical locations. EcoSecurities also provides clients with carbon management services that help them understand and respond to an increasingly carbon-constrained world.



**Evolution Markets** ([www.new.evomarkets.com](http://www.new.evomarkets.com)) structures transactions and provides brokerage and merchant banking services for the global green markets and the clean energy sector. We excel in developing innovative, cost effective strategies. Clients come to Evolution Markets to get deals done quickly, creatively, and cost-effectively because we understand that success in the environmental and energy marketplace is about speed, innovation, and knowledge. Using a unique approach called EvoFinance™ we provide a single source for comprehensive financial services solutions. A global company, Evolution Markets has over 80 brokerage and merchant banking professionals worldwide, and offices in New York, London, San Francisco, Calgary and Buenos Aires.



**Karbhone** ([www.karbhone.com](http://www.karbhone.com)) is a leading environmental finance, credit brokerage, and carbon advisory firm. Karbhone was founded on the principle of helping clients exceed their business objectives in the environmental marketplace. The Karbhone team, with offices in New York and London, is composed of a unique combination of professionals with experience in environmental finance, credit trading, business strategy, sustainability and regulatory affairs. The breadth and depth of the team's backgrounds allows Karbhone to provide innovative yet efficient deal structures and solutions in a variety of environmental markets and financing sectors.



**orbeo** ([www.orbeo.com](http://www.orbeo.com)) was created in 2006 and is the joint-venture between Rhodia and Société Générale that combines industrial, environmental and financial expertise dedicated to greenhouse gas emission reductions. From project to market, the company covers the whole carbon value chain. **Orbeo** is among the leading participants of the CO<sub>2</sub> markets, and a recognized developer of greenhouse gas emission reduction projects. Recently, to further enlarge its offer to its customers, **orbeo** has extended and diversified its portfolio of VER (Verified Emission Reduction). Focusing on the highest possible quality of Verified Emission Reductions such as the Gold Standard premium credit (**orbeo** has 36% of all issued GS VER credits worldwide), our projects include large sustainable development benefits, which corresponds to our willingness to professionalize and legitimate the voluntary market going forward.



**Sustainable Carbon** ([www.sustainablecarbon.com](http://www.sustainablecarbon.com)) is a co-developer of greenhouse gas emission reduction projects that bring substantial social, environmental and financial benefits to all of the stakeholders involved in our projects. Sustainable Carbon is the leading project developer in the voluntary market in terms of the number of Voluntary Carbon Standard (VCS)-validated projects that are registered on the Markit™ Environmental Registry. As experts in renewable energy and biomass, we have vast, on-the-ground experience in developing projects that reduce carbon dioxide and methane emissions. Sustainable Carbon is the first project developer licensed to use the SOCIALCARBON® Standard, rated by the International Carbon Reduction and Offset Alliance as a Co-Benefit Standard of Best-Practice when attached to VCS projects. By the end of 2010, Sustainable Carbon will have over 49 projects in four countries that will be VCS and SOCIALCARBON® Standard-validated. This translates into thousands of people who will benefit from the social, environmental and economic aspects our projects bring to the businesses and communities where our projects take place.





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