1. Market Overview Volume and Value





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1. Market Overview: Volume and Value

In 2012, voluntary actors contracted 101 million tonnes of carbon offsets ($MtCO_2e$) for immediate or future delivery – 4% more than in 2011. The vast majority of these offset transactions (98 $MtCO_2e$) occurred bilaterally, or "over the counter" (OTC) rather than on any formal exchange.

This represents the second highest level of OTC market activity ever tracked. The OTC market's "biggest" year was in 2010, when the market was boosted by a sizable transaction of offsets generated through the voluntary Chicago Climate Exchange (CCX) – which wound down operations in the same year. Despite the formal program's closure, its influence is still felt in the North American carbon markets, where voluntary actors transacted 8.3 MtCO₂e of CCX offsets in 2012 – pushing the voluntary market as whole over the onehundred-million-tonne mark. The volume of offsets traded on exchanges hovered around 2 MtCO₂e, similar to the level activity reported by exchanges for the last four years. All of the platforms that reported activity in 2012 – including the Carbon Trade Exchange (CTX), Climex, and the Santiago Climate Exchange (SCX) – are return respondents, most of which saw modest growth last year. No new voluntary offset exchanges were tracked in 2012.

While offset demand grew, market value decreased 11% to \$523 million⁴ as offset prices fell slightly for most project types. The sizeable demand for CCX offsets transacted at an average of \$0.1/ tCO_2e , which did not aid market value. As with offset volumes, the majority of this value was generated by OTC offset contracts (\$516 million) while exchange-traded offsets were valued at a total of \$6.3 million.

2012 KEY FINDINGS

- In 2012, voluntary actors contracted 101 million tonnes of carbon offsets (MtCO₂e) for immediate or future delivery 4% more than in 2011. Market value decreased 11% to \$523 million.
- 2012's voluntary actors paid a volume-weighted average price of \$5.9/tCO₂e down 5% from 2011, but significantly higher than the United Nations' regulatory Clean Development Mechanism (CDM) recent record low carbon offset price of \$0.16/tCO₂e.
- Over all of the years of market activity tracked in this report series, voluntary buyers have funded 763 $MtCO_2e$ in emissions reductions worth \$3.7 billion and at an average historical price of \$5.9/tCO₂e equivalent to the 2012 market-wide average offset price.
- Offset project registries report that voluntary actors retired a record volume of offsets in 2012, totalling close to 20 MtCO₂e across all certification programs. This is in keeping with the ever-growing volume of offsets that have been verified by auditors and "issued" by registries (66 MtCO₂e newly issued in 2012 alone) and so are eligible for retirement.
- In 2012, private sector offset suppliers transacted 86% of market volumes (or 81 MtCO₂e) regaining ground lost to non-profit organizations in 2011.
- Project developers were responsible for generating and selling almost half of all offset volumes in 2012 valued at \$184 million, or about 18% the size of the primary market for offsets in the CDM in 2012 (\$1,047 million see Box 1). Overall, retailers bought *or* supplied a total of 50 MtCO₂e valued at \$230 million in 2012, roughly 51% of all transacted offsets and 45% of market value.
- In 2012, our survey tracked less that 1 MtCO₂e of CERs sold to voluntary buyers mostly from unique projects and locations, at prices similar to those paid to traditional voluntary projects.

⁴ See Methodology section for an explanation of how volume-weighted average prices and value are calculated throughout this report.

A substantial portion of market value (64% of all volumes reporting contract types or \$170 million) was paid to offset sellers at the point of transaction (rather than on delivery) – primarily via spot contracts (35.6 MtCO₂e, up 25% from 2011) and pre-payment

for future delivery (8.7 $MtCO_2e$, down 1% from 2011). Another \$97.5 million will be paid in future years – if and when the projects under contract deliver verifiable reductions. This dynamic is discussed in greater detail in Section 4.6.



Figure 13: Historical Offset Demand by Transacted Volume, All Voluntary Carbon Markets

Notes: Based on 763 MtCO₂e of offsets transacted and reported to Ecosystem Marketplace over 7 survey years. Source: Forest Trends' Ecosystem Marketplace. *State of the Voluntary Carbon Markets 2013*.

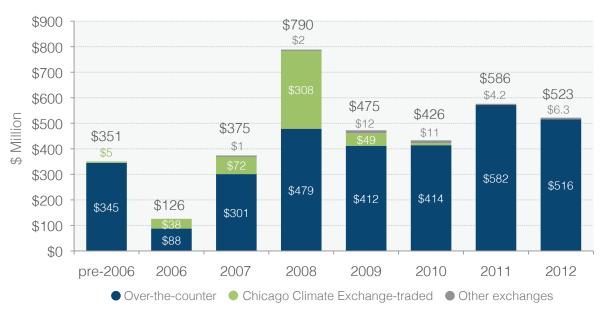


Figure 14: Historical Offset Demand by Market Value, All Voluntary Carbon Markets

Notes: Based on \$3.6 billion in voluntary offset market value transacted and reported to Ecosystem Marketplace over 7 survey years.

Source: Forest Trends' Ecosystem Marketplace. State of the Voluntary Carbon Markets 2013.

In 2012, voluntary actors paid a volume-weighted average price of $$5.9/tCO_2e - down 5\%$ from 2011's $$6.2/tCO_2e$, but significantly higher than the United Nations' regulatory Clean Development Mechanism (CDM) carbon offset price of less than a $$1/tCO_2e$ as of mid-2013. As demonstrated throughout this report, last year's lower average price for voluntary offset transactions is the aggregation of close to 1,000 reported price points that vary greatly by project standard, location, and technology – ranging from less than $$.1/tCO_2e$ to over $$100/tCO_2e$ in 2011.

Declining prices for voluntary offsetting were most apparent in the high-priced offset range $(\$10+/tCO_2e)$ where the volume of offsets contracted at these prices fell by 46%. On the other hand, transacted volumes of offsets at less than $\$5/tCO_2e$ grew by 19%. This trend is illustrated in Figure 15 which depicts the volume of offset transacted for every dollar between $\$0-\$30/tCO_2e$. Suppliers say this downward trend was primarily a function of perceived offset oversupply and knock-on effects of the collapse of the EU carbon price.

Over all of the years of market activity tracked in this report series, voluntary buyers have funded 763 $MtCO_2e$ in emissions reductions worth \$3.7 billion and at an average historical price of \$5.9/tCO₂e – equivalent to the 2012 market-wide average offset price.

1.1 Offset Retirement: Walking the Talk

Organizations seeking to neutralize their carbon emissions must ideally "retire" the offsets they purchase – so that offsets can no longer be onsold to other market participants and claimed more than once. Offset registry systems execute this process, tracking individual offsets as they enter the market, change ownership, and are ultimately retired in their systems. See Voluntary Offsetting 101 for more about this process.

Offset project registries report that voluntary actors retired a record volume of offsets in 2012, totalling close to 20 MtCO₂e across all certification programs. This is in keeping with the ever-growing volume of offsets that have been verified by auditors and "issued" by registries and so are eligible for retirement. As of January 1, 2013, registries had issued over 66 MtCO₂e across all programs – another market record.

A sizable portion of retired offsets $(12.2 \text{ MtCO}_2\text{e})$ was certified to the Verified Carbon Standard (VCS) program, which also saw the largest volume of newly issued offsets (34.4 MtCO₂e). This finding is discussed in greater detail in Chapter 3.

The survey that informs this report also tracks the subset of offsets that suppliers reported selling and also retiring in 2012 – totaling 12.7 MtCO₂e in 2012.

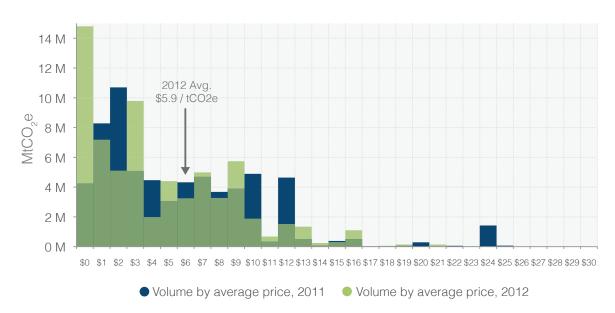


Figure 15: Transacted Volume by Average Price, 2011-2012

Notes: Based on 1,142 reported transaction prices associated with 74 MtCO₂e. Source: Forest Trends' Ecosystem Marketplace. *State of the Voluntary Carbon Markets 2013.*

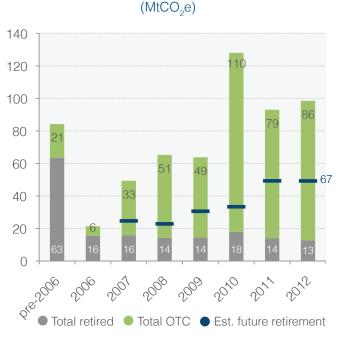


Figure 16: Historical Voluntary Offset Retirements

Source: Forest Trends' Ecosystem Marketplace. State of the Voluntary Carbon Markets 2013.

While this number is lower than total retirement volumes reported by registries, it is also important to note that offset suppliers often will not retire offsets in the same year that they are transacted – either because the offsets have not yet been issued or because they prefer to retire offsets on behalf of clients all at once, in bulk. Thus, some proportion of registry-reported retirements capture offsets that were transacted before 2012 and only recently issued and retired.

Another question in our survey's Buyers section asks suppliers about their buyers' motivations to determine the volume of offsets purchased for purely voluntary purposes that might be retired in the future. In 2012, 47% of offsets were transacted by purely voluntary offset end users. This is illustrated in Figure 16 as the "estimated future retirement figure", totaling 67 MtCO₂e.

1.2 Profit Status: Suppliers by Sector

Carbon offset suppliers are challenged to juggle both environmental and financial outcomes in this marketplace, which uniquely unites the realms of philanthropy and commodity. In this arena, organizations from all sectors – private, public, and non-profit – supply carbon offsets.

Of the 336 respondents that reported a profit status in our 2013 survey, private sector suppliers vastly outnumbered non-profit suppliers – as they have since 2005. Suppliers that identified as public sector organizations were again few in number in 2012, but represented many levels of government worldwide.

In 2012, private sector offset suppliers transacted 86% of market volumes (or 81 $MtCO_2e$) – regaining ground lost to non-profit organizations in 2011. Non-profit market share fell from 20% to 14%, even as voluntary



Figure 17: Cumulative Response Count by Supplier Profit Status, All Survey Years

Source: Forest Trends' Ecosystem Marketplace. State of the Voluntary Carbon Markets 2013.

Notes: Based on 324 organization responses.

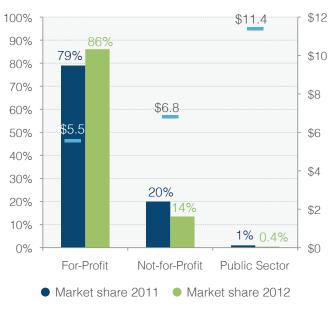
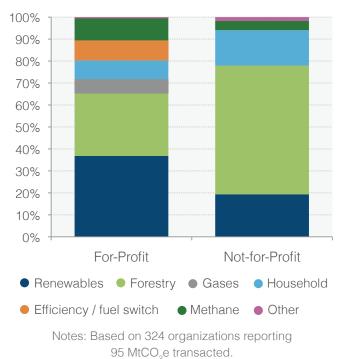


Figure 18: Market Share and Average Price by Offset Supplier Profit Status, OTC 2012 (% Share and \$/tCO₂e)

> Notes: Based on 324 organizations reporting 95 MtCO₂e transacted.

Source: Forest Trends' Ecosystem Marketplace. State of the Voluntary Carbon Markets 2013.





Source: Forest Trends' Ecosystem Marketplace. State of the Voluntary Carbon Markets 2013. demand for forest carbon offset projects grew. As seen in Figure 19, forestry has always been and remains a key component of non-profit offset suppliers' portfolios.

2012 saw a slightly smaller proportion of offsets transacted by public sector actors hosting domestic offset programs – at .4 MtCO₂e last year. These actors reported the highest per-tonne offset prices, however, at an average of \$11.4/tCO₂e, reflecting the typical above-average price paid to public programs. At the other end of the spectrum, private sector suppliers contracted offsets at an average of \$5.5/tCO₂e while non-profits reported an average offset price of \$6.8/tCO₂e. This is a departure from 2011, when average prices did not differ between private-sector and non-profit offset suppliers.

1.3 Value Chain: From Supplier to Buyer

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

Project developers: Develop emissions reduction projects to generate and sell offsets to offset retailers or end buyers.

Retailers/wholesalers: Take ownership of a portfolio offsets to sell to offset end users (companies or individuals). In addition to offset sales, they may also engage in other carbon management advisory and communications services.

Brokers: Do not own offsets, but facilitate transactions between sellers and buyers (either retailers or offset end users).

This report also occasionally draws a distinction between primary and secondary market transactions. **Primary transactions** are defined in this report series as the initial sale of offsets from the project developer – into the **"secondary market"** of retailer intermediaries or to offset end users. The secondary market represents transactions reported by retailers/ wholesalers that are transacted amongst themselves or (more commonly) sold to offset end users.

In order to understand suppliers' activities throughout the supply chain, we asked them to identify their role in each offset transaction. Overall, we find that project developers were responsible for generating and selling almost half of all offset volumes in 2012 – valued at \$184 million, or about 18% the size of the primary market for offsets in the CDM in 2012 (\$1,047 million – see Box 1). Developers contracted a total of 37.4 MtCO₂e. 5

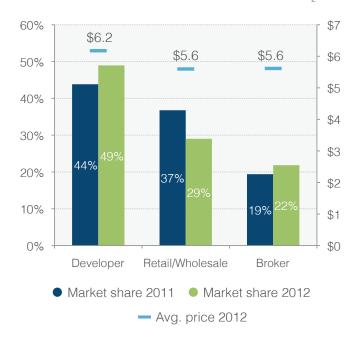


Figure 20: Market Share by Supplier Role, 2011-2012, and Average Price, 2012 (% Share and \$/tCO₂e)

Source: Forest Trends' Ecosystem Marketplace. *State of the Voluntary Carbon Markets 2013.*

Retailers were responsible for another 29% (22 $MtCO_2e$) of offsets transacted in 2012 – considerably down from 2011's 29 $MtCO_2e$. This is partly due to the fact that in 2012, a larger volume of offsets were sold from project developers working with project types that have not traditionally taken the retail route to market, but instead sold directly to offset end users, like clean cookstove and forestry offset projects. At the same time, 2012 saw several instances of mergers or acquisitions between project developers and retailers, thus blurring the lines between roles.

A slightly larger proportion of volumes were reported as brokered between parties instead of being sourced directly from a project developer or retailer. All told, brokers were responsible for facilitating 16.7 MtCO₂e of offsets in 2012. Offsets that were obtained to prepare for California's impending cap-and-trade program were the primary source of growth in this market segment, where brokers long active in the US carbon markets were sought to navigate the year's tumultuous offset policy and pricing developments.

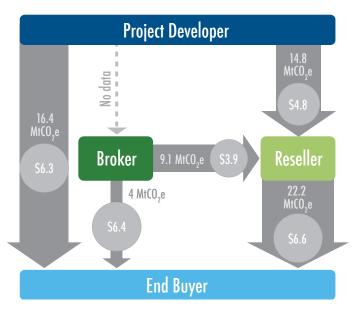
Project developers' reported average price of 6.2/ tCO₂e was slightly lower than in 2011 ($7/tCO_2e$) –

but remained higher than for other offset suppliers types. Prices associated with transactions that were facilitated by brokers increased from $4.9/tCO_2e$ – tied to the rising price of California-facing offset contracts.

Figure 21 provides a more complete picture of these dynamics, though it only captures data from suppliers that reported offset transaction volume, price, and buyer (67 MtCO₂e total). In 2012, project developers sold 15 MtCO₂e to retail offset providers, to then offer to their offset end use clients. Another 16 MtCO₂e were sold by project developers directly to offset end users – in direct competition with retailers and for a slightly lower average price than that offered by retailers to end users (\$6.3/tCO₂e versus \$6.6/tCO₂e).

We can also assume that a large volume of offsets brokered to offset end users or retailers were sourced from project developers, though we have no means of confirming the source of volumes reported by brokers. We do find that the price of offsets brokered to end users ((4.4)/tCO₂e) is very similar to offsets sold directly to end users by project developers. Retailers obtained the lowest-priced offsets in the market when sourcing them through a broker – the story for 9 MtCO₂e sold at (3.9)/tCO₂e.





Notes: Based on 324 organizations reporting 66 MtCO₂e associated with business roles and buyer types.

Source: Forest Trends' Ecosystem Marketplace. *State of the Voluntary Carbon Markets 2013.*

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Notes: Notes: Based on 324 organizations reporting 77 MtCO₂e transacted

BOX 1: Make or Break - Implications of CDM Market Developments for Voluntary Offset Supply and Demand

Historically, compliance-driven demand for carbon offsets from the UN Clean Development Mechanism (CDM) has far outpaced voluntary offset demand – thanks to a substantive carbon price and offset demand from the world's largest regulatory carbon market, the European Emissions Trading Scheme (EU ETS). In 2012, however, the EU ETS was a market in severe distress. Bloomberg New Energy Finance estimates that while traded volumes for CERs jumped 16% in 2012, market value for CERs (primary and secondary market) fell from an estimated \$22 billion in 2011 to \$6.5 billion this past year. Throughout 2012-2013, CDM offset ("CER") prices fell precipitously, falling to a record low of \$0.16/tCO₂e.

Within this context, the voluntary market has begun and may continue to take some supply of offsets already developed for and targeted toward compliance buyers with obligations under the EU ETS or broader Kyoto Protocol targets, as well as other markets with prices linked to these. Some developers may consider the voluntary markets' historical average pricing to be comparable or favorable compared to current compliance market prices, which have been driven to record lows by policies that have not corrected for oversupply and provide insufficient price signals for compliance market-facing offsets.

But while the relative stability of voluntary offset demand and pricing may be appealing to CDM project developers and CER suppliers, it's important to recognize that this report's findings capture a large volume of offset sales from project types that are not eligible under the CDM (like projects that reduce emissions from deforestation and forest degradation or "REDD" – or all offsets generated in developed countries).

Table 3 details 2012 offset transactions that are relevant to CDM project developers (see Notes), as they come from relevant project types developed under the CDM, VCS, or The Gold Standard. Here, we see that 43% (42 MtCO₂e) of all offsets sought by voluntary buyers in 2012 were from "CDM-relevant" projects – valued at \$172 million or one third of overall voluntary market value. Prices for these offset types, at an average of \$4.5/tCO₂e, were 23% less than the overall voluntary markets' average of \$5.9/tCO₂e. Excluding high-priced Gold Standard offsets from the mix (a total of 9.3 MtCO₂e), this price falls to \$3.3/ tCO₂e. (*Continued on next page.*)

| | Clean Development Mechanism | | | Voluntary Carbon Offsets | | |
|-------------------|----------------------------------|-----------------------|---------------------------------------|--|-----------------------|---------------------------------------|
| | Volume (MtCO ₂ e) | Value (\$ Million) | Avg. Price (\$/tCO ₂ e) | Volume (MtCO ₂ e) | Value (\$ Million) | Avg. Price (\$/tCO ₂ e) |
| Primary Markets | 339 Mt | \$1,047 M | \$3.1/t | 20 Mt | \$86 M | \$5/t |
| Secondary Markets | 1,686 Mt | \$5,451 M | \$3.2/t | 22 Mt | \$87 M | \$4.2/t |
| TOTAL 2012 | 2,025 Mt | \$6,498 M | \$3.2/t | 42 Mt | \$172 M | \$4.5/t |
| Rulemaking Body | UNFCCC/ Executive Board (CDM EB) | | | Independent third-party standards guide projects; no central regulatory body | | |
| Geographic Scope | Non-Annex I Countries | | | Global | | |
| Trading Platform | Exchange or Over-the-Counter | | | Over-the-Counter | | |
| Price Setter(s) | Kyoto Compliance Markets | | | Voluntary Buyers | | |

Table 3: Transacted Volume, Market Value, and Average Price, UN Clean Development Mechanismand "CDM-Relevant" Voluntary Carbon Offset Types, 2012

Notes: Non-Annex I countries are Kyoto Protocol signatories that are not obligated to set and achieve emissions reductions targets, but are typically developed country participants that are eligible to host CDM projects.

Source: Forest Trends' Ecosystem Marketplace. *State of the Voluntary Carbon Markets 2013.* Bloomberg New Energy Finance, CDM market analysis, 2013.

Box 1: Continued

Despite voluntary offset supplier concerns that traditional CDM market players will channel an oversupply of CERs into the voluntary markets, in 2012 **our survey tracked less than 1 MtCO**₂**e of CERs sold to voluntary buyers** – mostly from unique projects and locations, at prices similar to those paid to traditional voluntary projects. In contrast, 8.3 MtCO₂e were sold from CCX projects to North American buyers at an average \$0.1/tCO₂e, representing a far larger source of inexpensive offsets that nevertheless did not collapse the US voluntary offset price. This highlights the fact that voluntary offset demand is highly stratified according to buyer tastes and offset supplier relationships, hence the demand for unique and atypical CERs, roughly half of which were also Gold Standard-certified.

CER suppliers considering a position in the voluntary offset market will face a host of challenges and important considerations – including the longer time required to identify a voluntary offset buyer; opaque supply information; additional registry fees; and voluntary offset suppliers' historic effort to distance their products from the CER market.

Finally, 24.3 MtCO₂e were sold by retailers to offset end users at an average price of \$6.6/tCO₂e. While this price is higher than for offsets transacted by other types of suppliers, it does not imply that retailers necessarily achieved a significant margin as some of the volumes transacted may have been contracted from project developers in previous years and at a higher price.

Overall, these findings mirror other findings in our Buyers and Contracts section that pin the retail offset market as the single most common type of buyer in the voluntary carbon markets.

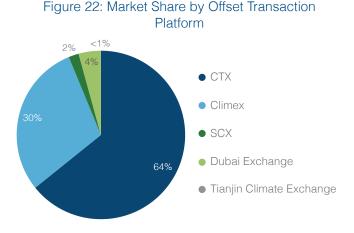
1.4 Other Supplier Types: Exchanges and Auctions

As seen in Figure 22, voluntary offset exchanges and auctions have reported small but steady volumes for four years. Throughout this report series, we have tracked the rise and market exit of several platforms – however, all platforms active in 2012 were also tracked in previous years and have evolved their business models as they seek sure footing in this recognizably opaque marketplace.

CTX facilitated the transaction of 1.5 MtCO₂e in 2012, making it the most active of these platforms. Last year and into 2013, CTX set its sights on the US offset market – seeking a boost in activity from a new relationship with California protocol-setter the Climate Action Reserve (CAR) and parenting the Texas Climate and Carbon Exchange to target buyers preparing for compliance under California's cap-and-trade program.

Auction platform and voluntary market veteran Climex saw smaller transaction volumes pass through its platform in 2012, and in early 2013 introduced collective purchase auctions as a new arrangement aiming to provide market access to buyers demanding offset volumes under 10,000 tCO₂e from Gold Standard projects.

All other exchanges reporting 2012 activities were based in developing countries – particularly in Asia and Latin America. Here, SCX continued working to build domestic business capacity for offsetting with the support of a VCS regional office in Santiago. SCX was the third largest voluntary offset purchase platform in 2012. Last year, VCS also announced its collaboration with Colombia's Fundacion Natura to support projects that will ultimately underpin the region's voluntary carbon market – facilitated by a domestic exchange still under development.



Notes: Based on 33 supplier responses and data provided directly by three platforms – altogether representing 2 MtCO₂e transacted.

Source: Forest Trends' Ecosystem Marketplace. State of the Voluntary Carbon Markets 2013.



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