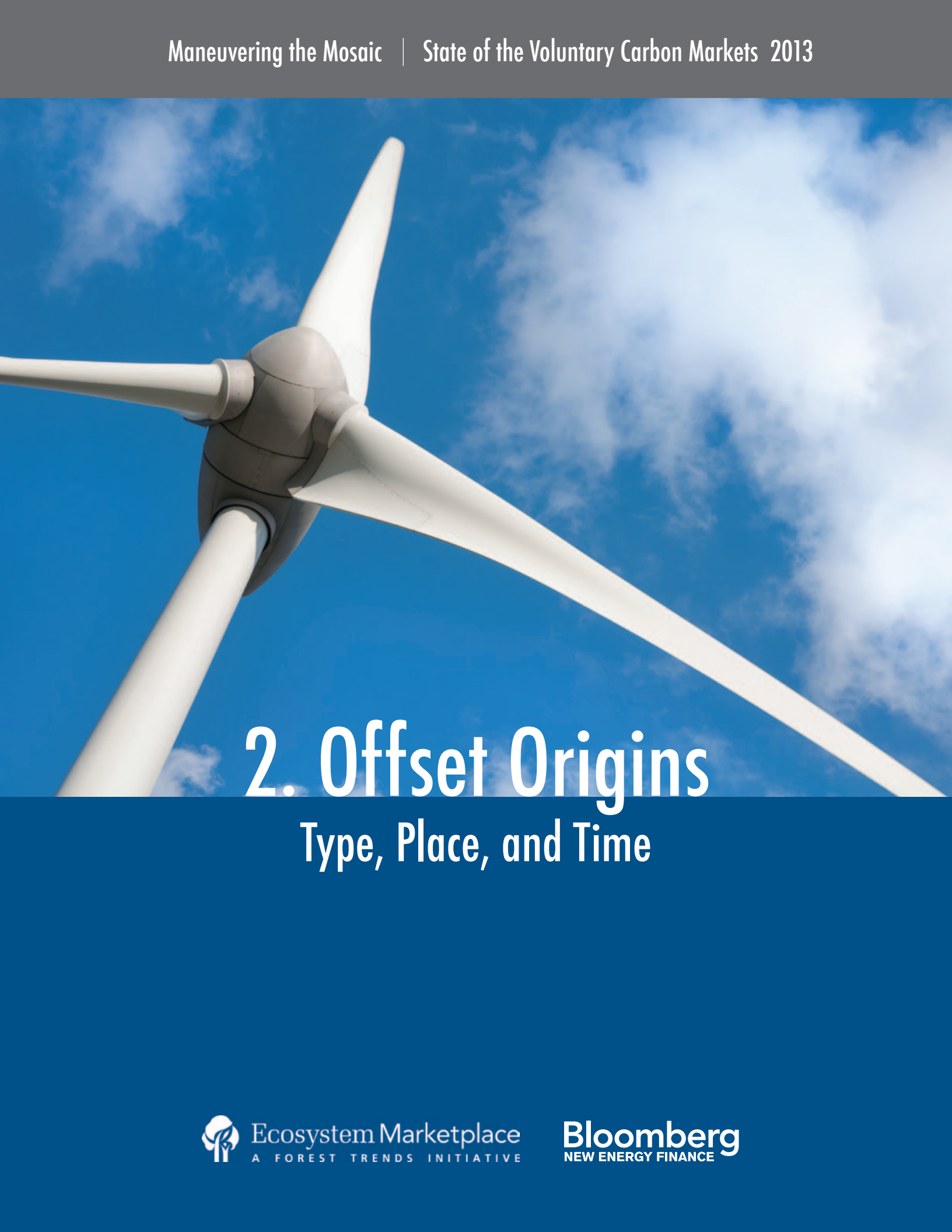




2. Offset Origins

Type, Place, and Time



Ecosystem Marketplace
A FOREST TRENDS INITIATIVE

Bloomberg
NEW ENERGY FINANCE

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Cover, layout, and graphics by Eszter Szöcs of Visilio Design (www.visilio.com).

2. Offset Origins: Type, Place, and Time

2.1 Project Type: Technologies and Techniques

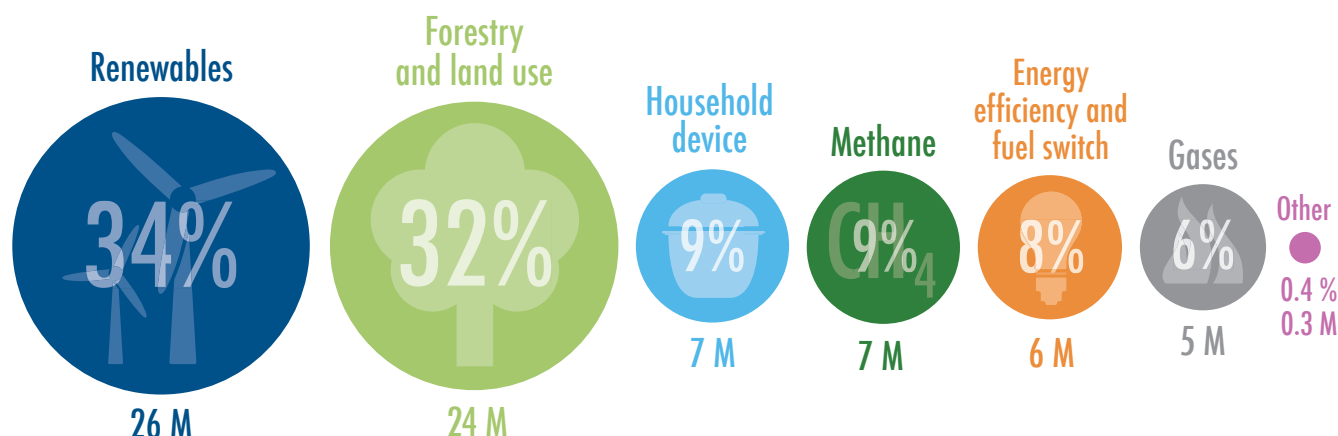
Initiatives that reduce or avoid carbon emissions are the source of offsets in the voluntary carbon markets. Each project is differentiated by its technology, location, and potential environmental and social contributions (“co-benefits”). Voluntary buyers emphasize these details – the story behind the offsets – to make their purchase decisions. An ever-expanding variety of emissions reduction projects reflects voluntary buyers’ diverse tastes and motivations. This section describes the origins of offsets transacted OTC in 2012: the project types, locations, and other factors that begin to

differentiate each offset from the next – and ultimately determine their appeal to end buyers.

In 2012, offsets developed from renewable energy projects were the most popular among voluntary offset buyers. These projects were the source of 26 MtCO₂e or 34% of all transacted offsets that were associated with a project type. Forestry and land-use activities were close behind as the source of another 24 MtCO₂e, a volume 22% greater than in 2011. This year, Ecosystem Marketplace added a new category, “Household Device Distribution” – where we tracked significant growth both in the number of projects and demand for offsets

2012 KEY FINDINGS

- In 2012, offsets from renewable energy projects were the most popular among voluntary offset buyers, as the source of 26 MtCO₂e or 34% of transacted offsets that were associated with a project type. Wind energy was behind 15.3 MtCO₂e of transacted offsets – 35% less than in 2011, as some buyers turned their attention to other inexpensive offsets sourced from large hydropower projects. Forestry and other land-use projects were close behind, supplying another 24 MtCO₂e, a volume 22% greater than in 2011.
- REDD offsets that were (or aim to be) certified to both the VCS and CCB Standards more than tripled their transaction volume in 2012. VCS REDD projects that have already issued offsets can potentially generate and transact 9.6 MtCO₂e annually. Only 5.6 MtCO₂e of this volume has ever been issued.
- Transactions of clean cookstove offsets were valued at \$65.3 million in 2012 – 54% more than in 2011. Over time, the value of private sector support for clean cookstove carbon projects is estimated to be \$145 million. This has enabled the distribution of 4 million stoves from the 45 projects tracked so far in this survey – 99% of these stoves were delivered to users below their respective national poverty lines.
- Last year, the market extended voluntary carbon finance to 4 new country locations, making for a total of 65 countries represented in this year’s data. Asia supplied the largest volume of transacted offsets (29 MtCO₂e) from a growing variety of project types.
- Project uniqueness (understood by number of available standards, project locations, offset suppliers, and project size) is an important contributor to steady market growth. Project types that generate smaller annual volumes from a larger number of project locations, standards, and offset suppliers have seen more sustained demand over time.
- While buyers have an ever-growing buyer interest to engage closely or exclusively with a projects, few buyers expressed demand to support multi-year, exclusive engagement with large- or mega-sized projects. 98 of 113 transactions of future offset vintages – and 25 out of 40 multi-year forward contracts signed in 2012 – were for offsets from micro- to medium-scale projects. In 2012, our survey tracked less than 1 MtCO₂e of CERs sold to voluntary buyers, mostly from unique projects and locations, at prices similar to those paid to traditional voluntary projects.

Figure 23: Transacted Volume by Project Category, OTC 2012 (MtCO₂e and % Share)

Notes: findings pertain to the 75.5 MtCO₂e associated with a response to this question, including “N/A” and “Other”.

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

generated from the distribution of clean cookstoves and water filtration devices in developing countries.

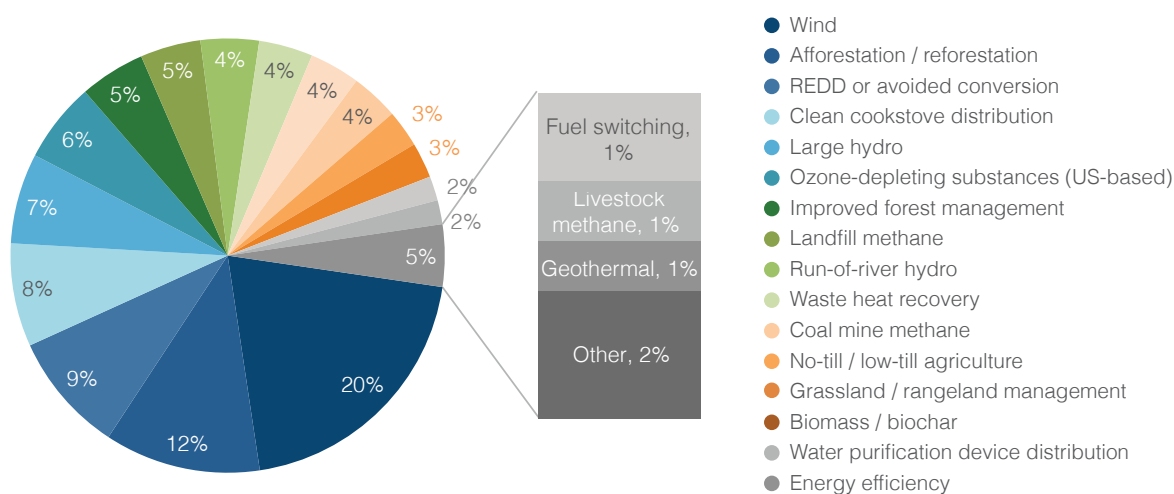
In other categories, demand for offsets from US-based landfill methane projects declined last year as, without some source of a regulatory price signal, low prices for landfill methane offsets were an insufficient incentive for project developers to continue generating and transacting offsets. The category for projects that destroy other potent GHGs – primarily ozone-depleting substances (“ODS”) – expanded their market share due to intensifying demand for the offset type among future California carbon market participants.

Forestry regains ground while renewable energy offsets stay on top

Looking at specific project types within each of these categories (Figure 24), wind energy offsets remained popular in 2012 due to their straightforward “story” and the voluntary market’s abundant supply of inexpensive wind offsets.

“Wind offsets are a simple, linear option and the investment isn’t likely to be detrimental to the buyers’ public profile, explains UK broker Armajaro’s Gareth Turner. It may not be an exotic choice, but it’s safe.”

Figure 24: Market Share by Project Type, OTC 2012



Notes: Findings pertain to the 75.5 MtCO₂e associated with a response to this question, including “N/A” and “Other”.

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

These projects were behind 15.3 MtCO₂e of transacted offsets, which is a 35% drop from 2011, as some buyers turned their attention to other inexpensive offsets sourced from large hydropower projects. More attention was also paid to other project types that feature additional environmental and social benefits, beyond the 2.3 MtCO₂e transacted from Gold Standard wind projects demonstrating sustainable development contributions.

Enter forestry projects, where offsets suppliers reported some regrowth in demand following a tough 2011. Across all sequestration approaches, afforestation/reforestation (“A/R”) remained the second most popular activity in the voluntary offset marketplace, as the source for 8.8 MtCO₂e of transacted offsets.

Like wind energy, tree planting activities owe their steady year-on-year growth to buyers’ familiarity with reforestation, along with a diversity of project locations and standards utilized, and typically small project size. All of these variations enable buyers to make unique claims about their ultimate impact on project viability and to potentially support A/R activities as a project’s sole offset buyer. See Section 2.4 for more on this topic.

A/R projects were also behind 1/3 of all survey responses in which offset suppliers sold more than one year’s worth of estimated carbon reductions. This reflects their need to cover the high up-front costs incurred from tree planting and forest monitoring activities.

As in 2011, projects that reduce emissions from deforestation and forest degradation (“REDD”) were buyers’ third most popular choice as an offset source, transacting 6.8 MtCO₂e or 8% less than the previous year. This decline occurred exclusively in the categories of projects that did not utilize a third-party standard to certify their carbon reductions or that utilized a “domestic”, country-specific standard like Brasil Mata Viva.

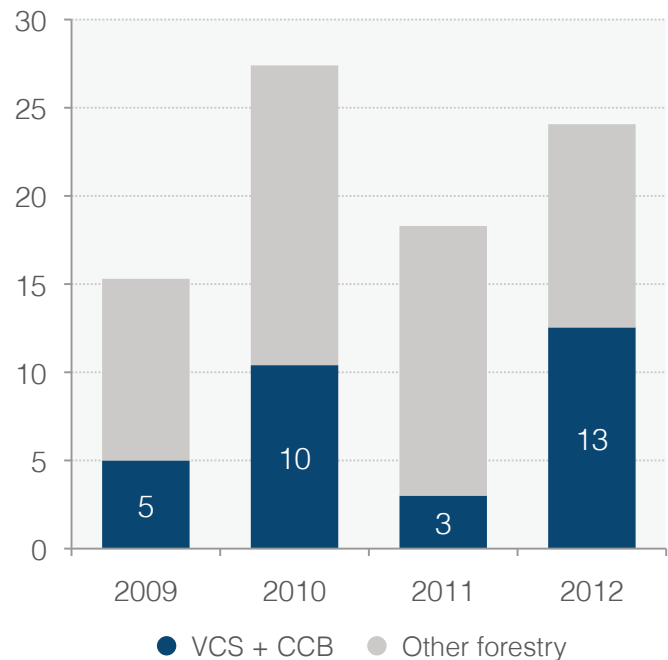
On the other hand, 2012 was a significant year for REDD offsets that were (or aim to be) certified to both the VCS and CCB Standards – which more than tripled their transaction volume (Figure 25). Overall, REDD offset suppliers reported a larger number of transactions of offsets sourced from a larger diversity of projects than ever before.

As REDD projects increasingly demonstrated their ability to verify climate and community benefits and issue offsets, buyers were more willing to support

projects at all stages of development. Around 82% of all VCS forestry offset transactions were from projects that had not yet achieved offset verification or issuance. End use buyers were more likely than retailers to support projects at these stages, albeit at a lower average price (see Section 4.6).

Despite these overall “wins” for conservation forestry – and for VCS REDD projects in particular – suppliers still recount their ongoing struggle to compete for buyer attention with less expensive renewable energy offsets. As the pipeline of VCS REDD projects and offsets (Verified Carbon Units - or “VCUs”) continues to grow, they also express concern for the future price of the asset class. Table 4 summarizes this dynamic, where REDD projects that have demonstrated their ability to issue VCUs have the potential to generate and transact 9.6 MtCO₂e annually – only 5.6 MtCO₂e of which has ever been issued. Of this volume, almost half were issued in 2012 alone, and a smaller proportion was actually transacted in 2012. A full 96% of REDD VCUs issued in 2012 were from four VCS+CCB projects – the Kenyan Kasigau Corridor project (Phases I and II), the Mai Ndombe Project in the Democratic Republic of the Congo (“DRC”), and the Alto Mayo Project in Peru – all of which are additionally certified to the CCB Standards.

Figure 25: Historical Transaction Volumes, VCS+CCB and Other Forestry Standards (MtCO₂e)



Notes: Findings pertain to 85 MtCO₂e associated with historical, voluntary forest carbon offset transactions in 2009-2012.

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

Table 4: Historical Transaction Volumes, VCS+CCB and Other Forestry Standards (MtCO₂e)

9.6 Mt	Potential annual reductions from VCS REDD projects that have previously issued offsets
5.6 Mt	REDD VCUs issued, all years
3 Mt	REDD VCUs issued in 2012
1.8 Mt	Issued REDD VCUs transacted in 2012

Notes: 2012 transaction findings pertain to 6.8 MtCO₂e of REDD offsets transacted.

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

Project developers point to these large numbers to illustrate the idea that the market's significant efforts to develop technical capacity around REDD should now transition to identifying sufficient demand to support and refinance projects.

"It will be very challenging for voluntary private sector buyers to purchase enough credits from already verified vintages to sufficiently satisfy project needs, even if they buy really substantial offset volumes," explains retailer Forest Carbon Group's Michael Sahm. ***"This is why we've begun exploring how to engage institutional or country-level buyers that want to engage in REDD purchase programs or bilateral agreements that can achieve a greater scale of demand."***

REDD offset suppliers expressed mixed feelings about the development of jurisdictional REDD programs that will account for and issue offsets as a region, rather than exclusively at the project level. Ultimately, they acknowledge that offsets issued in accordance with these programs – all of which are currently being developed to the VCS Jurisdictional Nested REDD (JNR) requirements – may be best placed to secure bilateral or multilateral support.

On the other hand, regional programs generating JNR VCUs pose a much larger source of REDD offset

supply that begs questions like, "Will voluntary offset end use buyers engage in transactions with a domestic government?", "Will governments allow project developers to issue and monetize their own offsets – or what does the private sector need to demonstrate to governments in order to gain their confidence in this approach?", "How can progress be demonstrated to the private sector?", "Will offsets from these large programs affect the market's perception of supply and influence prices, or will they be sufficiently differentiated from project-level activities?"

While the market and JNR program developers grapple with these questions, private initiatives like the Code REDD campaign (first introduced in last year's *State of the Voluntary Carbon Markets* and *State of the Forest Carbon Markets* reports) attempt to position existing REDD projects in the public eye, even as Code REDD itself eyes opportunities to unite projects with jurisdictional efforts.

Support for clean household device distribution projects heats up

Voluntary offset buyers funneled \$80 million to offsets from projects that distribute clean cookstoves and water filtration devices – that burn fuel more efficiently or not at all, thus reducing greenhouse gas emissions while sparing households from harmful smoke inhalation. In this category, clean cookstove projects were the market's fourth most popular greenhouse gas mitigation activity – transacting 5.8 MtCO₂e, or 80% more than in 2011. Water filter distribution captured another 2% of market share.

These project approaches debuted in our data in 2010-2011 and have seen continued uptake from voluntary buyers in 2012 as project developers brought a larger number of projects and verified tonnes to the voluntary offset market. Most offsets from this category (89%) were transacted from late-stage projects that had verified tonnes, compared to 34% in 2011.

As project developers and their local partners continue to expand their technical capacity and device distribution channels (i.e., the means by which they sell or distribute devices to end users), they report struggling with issues similar to those facing forest project developers.

Examples of some of these issues are: "How does one quantify the improvement of community well-being and health over the life of the project?", "How can private sector projects and stakeholders better engage with donor-based sustainable development financing

BOX 2: The Market for Offsets from Clean Cookstove Distribution: Some Like It Hot

From the first registered clean cookstove offset project in 2007 to record transaction volumes in 2012, the voluntary offset market has watched climate actors worldwide get behind this popular approach to carbon reductions and sustainable development. This year, Forest Trends' Ecosystem Marketplace teamed up with the Global Alliance for Clean Cookstoves to survey cookstove project developers regarding their projects' transactions, devices and inputs, distribution channels and, ultimately, the populations they impact. This section brings you the preliminary results of this jointly administered research project, with key findings that include:

- Voluntary demand for clean cookstove offsets was valued at \$65.3 million in 2012 – 54% more than in 2011. Around 61% or \$40 million of this value arose from transactions reported by a project developer. The remaining value resulted from offset resale.
- Over time, the value of private sector support for clean cookstove carbon projects is estimated to be \$145 million. This has enabled the distribution of 4 million stoves from the 45 projects tracked so far in this survey – 67% of which were distributed in 2012 alone.
- In 2012, carbon finance for clean cookstove distribution reached 15 country locations on three continents. The most prominent project locations included Peru, Ghana, Mozambique, and Kenya.
- The average price for offsets from clean cookstove projects was \$11.3/tCO₂e. This is the aggregation of 67 unique prices reported for this project type and represents a 15% fall in price from 2011's \$13.2/tCO₂e. This difference is a function of both the growing volume of available cookstove project offset supply and lack of clarity regarding CER demand in the EU ETS – another source of demand for some clean cookstove offsets.
- Clean cookstove distribution directly connected carbon finance to the rural and urban poor, as 99% of stoves were delivered to users below their respective national poverty lines. Of these, 64% of stoves went to users in rural communities. Projects tracked so far reported 1,662 local employees – 27% of which are women – working for local partner organizations or in-country offices.
- Approximately 3 out of 4 stoves were assembled in the country where they were distributed to meet users' cooking specifications. Offsets sold from projects where stoves were assembled in-country (as opposed to imported stoves) saw a 17% higher average price (\$11.7/tCO₂e versus \$10/tCO₂e).
- Only 2% of projects that reported contracting offsets in 2012 engaged in stove “give-aways” – the majority of projects charged users between \$2 and >\$140/device. Lower prices were sometimes associated with projects that only distributed clean ignition devices, versus a whole stove, while others only charged a nominal cost to ensure that the stove user had some “buy-in” with regard to stove use over time.
- In a survey section that asked offset suppliers to identify the polluting activities that the more efficient or clean cookstoves would address, the most commonly cited “business-as-usual” fuel source was charcoal that user populations would purchase.
- Almost half of the projects distribute cookstoves based on the side-feeding “rocket” stove design – combusting biomass fuel sources efficiently by harnessing a natural draft. Efficient charcoal stoves were the second most popular stove/fuel type.
- 83% of cookstove project offsets transacted in 2012 were certified to the Gold Standard, the carbon market's most popular program based on its many available methodologies and projects, and volume of issued and transacted offsets. A smaller proportion of offsets were certified to the VCS, most of which were issued and sold or re-sold from one long-running project in Asia. A small volume of transacted cookstove project offsets were developed under the CDM and additionally certified to the Gold Standard. This volume may grow as a number of CDM project developers look to voluntary buyers for more sustainable offset prices – adding their CERs to the mix of over 80 Gold Standard VER projects that rely exclusively on the voluntary market for demand. *(Continued on next page.)*

Box 2: Continued

- Gold Standard certified offsets were priced at an average \$11/tCO₂e. The price for CDM Gold Standard offsets was close to this level but cannot be reported due to a small number of data points. On average, suppliers estimated that The Gold Standard issued 2.98 tCO₂e (or roughly three offset tonnes) per device distributed.
- The majority of Gold Standard projects that have verified and issued offsets were developed for voluntary buyers. As of April 2013, only one CDM Gold Standard project had issued offsets. However, more new project applicants will pursue both CDM and Gold Standard certification than those that will generate Gold Standard VERs. Overall, Gold Standard clean cookstove projects at various stages and in both markets could reduce an estimated 6.4 MtCO₂e annually from 143 unique projects.

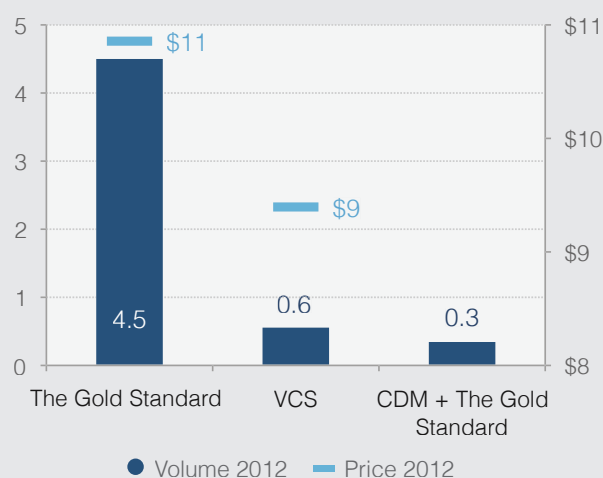
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Table 5: Number of Gold Standard Projects and Estimated Annual Reductions by Project Region

Region	Project Count	Estimated Annual Reductions (MtCO ₂ e / Year)
Latin America	15	0.7
Asia	53	1.7
Africa	75	3.7
Total	143	6

Source: The Gold Standard, as of April 2013.

Figure 26: Transacted Volume and Average Price by Cookstove Carbon Project Standard, 2012



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

Table 6: Number of Gold Standard Projects and Estimated Annual Reductions by Stage

Status	Gold Standard Voluntary Market Projects (GS VERs)		Gold Standard CDM Projects (GS CERs)	
	Project Count	Estimated Annual Reductions (MtCO ₂ e / Year)	Project Count	Estimated Annual Reductions (MtCO ₂ e / Year)
Listed	30	1.1	18	0.6
Registered	20	0.8	5	0.4
Validated	3	0.3	2	0.05
Inactive	10	0.4	–	–
New Project Applicant	17	0.9	22	1.1
Issued	15	0.8	1	0.06

Source: The Gold Standard, as of April 2013.

models?”, “How can baselines (which describe business as usual scenarios or “BAU”) and future emissions scenarios be accurately estimated to fairly credit projects for avoided emissions while preserving project and market integrity?”, “Which organizations or institutions have sufficient offset demand to support multi-year contracts?”

Regarding these questions about future market challenges and development related to REDD and clean cookstove projects, Ecosystem Marketplace invites experts to share their insights and expertise via a new insight series to be published monthly through our news service beginning in July 2012.

Other project types

Suppliers also reported transacting 5.1 MtCO₂e in offsets from large hydropower projects in China, India and Turkey. Most offsets from this project type (75%) were sold by project developers to offset retailers, primarily based in the United Kingdom. In 2012, large hydro projects were also the most common project type in the CDM project pipeline, though the New Zealand Emissions Trading Scheme banned large hydro project CERs – as well a few other industrial gas project types – from use under its domestic scheme. While the EU has considered banning large hydro CERs in recent years, currently projects are only required to undergo an independent assessment of their compliance with the World Commission on Dams quality criteria. A few voluntary offset suppliers have raised the question of whether carbon industry associations, standards or other market players could take steps to limit the use of offsets from such controversial and large scale projects, given that they potentially raise reputational risks to the voluntary carbon market – which is not centrally regulated and also perceived to be oversupplied.

Demand for other popular project types was driven by buyers' preparations for the California compliance carbon market. Here, ODS, livestock methane and improved forest management (“IFM”) projects developed to ARB-approved Early Action Quantification Methodologies and California's compliance offset protocols are eligible for use. This is discussed in greater detail in the California market-specific section (Box 3). Also in North America, this year's survey tracked a large volume of offsets supplied from agricultural land management projects. Almost all of these offsets were certified to the CCX offset protocols.

2.2 Offset Price by Project Type

In 2012, the market-wide average price for offsets was \$5.9/tCO₂e. This finding is the aggregation of hundreds of individually reported prices across over 30 offset project types. Forestry projects saw the most dramatic decrease in prices, where across all forest carbon project types the average price fell 25% to \$7.8/tCO₂e from \$10.5/tCO₂e in 2011, as buyers sought larger offset volumes for future delivery from projects in their earlier stages (see also Section 3.4). Project developers also found it necessary to lower their offset price from forestry's 2011 high in order to compete with other forestry projects and project types experiencing similar price pressures.

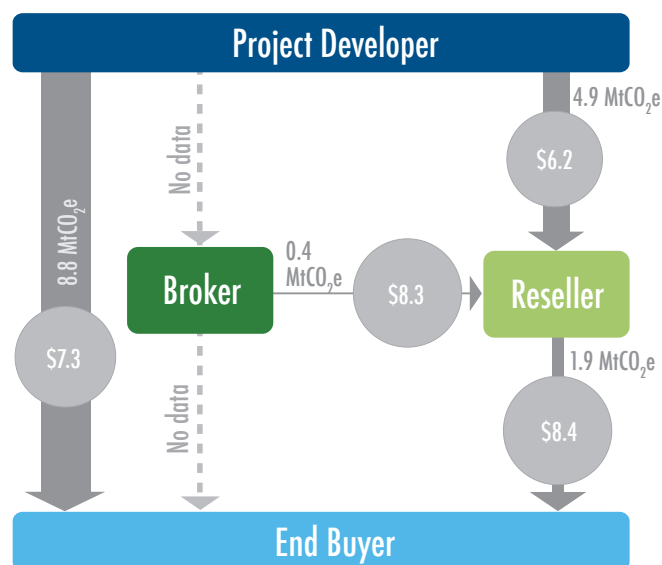
Along the carbon market value chain, forest carbon offset prices primarily fell for offsets sold to retailers (from \$9.4/ tCO₂e in 2011 to \$6.2/ tCO₂e in 2012) who were unable to expand the volume of offsets they ultimately sold to end users. Project developers alternatively grew the volume of offsets they sold directly to end users while reducing their average price by only \$0.2/ tCO₂e.

Prices for renewable energy offsets remained relatively stable in 2012, particularly for offsets from wind projects which did not see a significant change. This finding also captures a substantial difference in price between primary and secondary transactions. For example, retailers paid project developers an average of \$2/ tCO₂e and sold renewable energy offsets to end buyers for an average price of \$4.6/tCO₂e (removing Gold Standard renewable energy offsets from this equation, retailers' average sell price dropped to \$3.5/tCO₂e).

Retailers explain that this price spread reflects their common use of a “basket” or “portfolio” approach. This sometimes involves assembling and pricing a portfolio of offsets types that imposes a larger markup on inexpensive offsets in order to sell more expensive offset types at cost or even a loss in order to meet the average portfolio price clients are willing to pay.. Retailers say that if the portfolio approach was not possible, the overall price at which they sell to end buyers would be significantly higher for those who want offsets from more expensive categories, like forestry or clean cookstoves – but in lesser quantities.

Sometimes retailers are compelled to sell offsets at a lower price than what they paid to compete with project developers that sell offsets to end buyers at lower prices than they sell to retailers. This is evident in both the VCS REDD and household device delivery categories. Retailers say that increasingly narrow margins for charismatic project types will

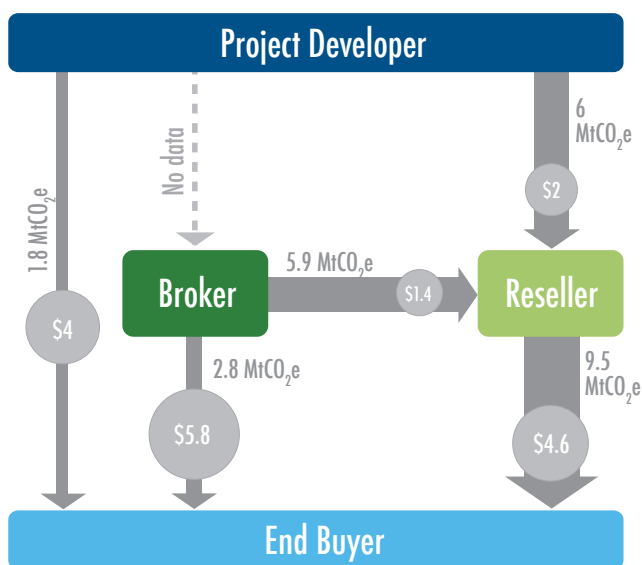
Figure 27: Transacted Volume and Average Price by Buyer and Seller Types, Forestry Offsets, 2012 (MtCO₂e and \$/tCO₂e)



Notes: Findings based on 16 MtCO₂e associated with forestry offsets and a response to both transaction-level and buyer-type questions.

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

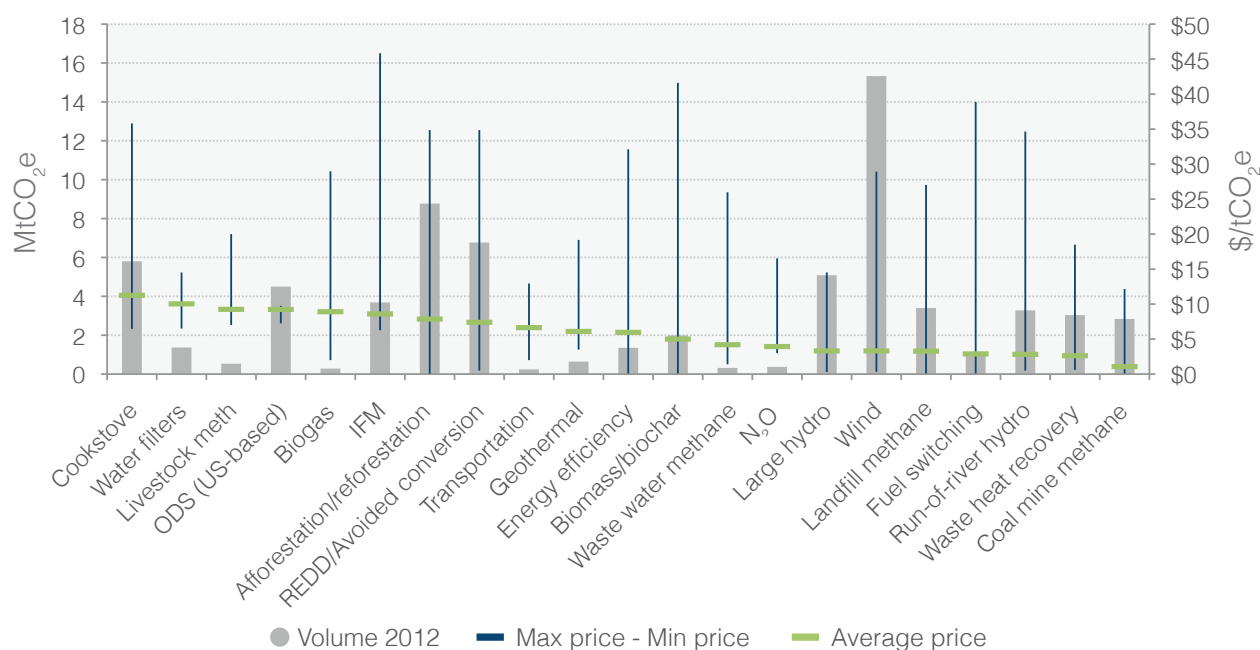
Figure 28: Transacted Volume and Average Price by Buyer and Seller Types, Renewables Offsets, 2012 (MtCO₂e and \$/tCO₂e)



Notes: Findings based on 26 MtCO₂e associated with renewable energy offsets and a response to both transaction-level and buyer-type questions.

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

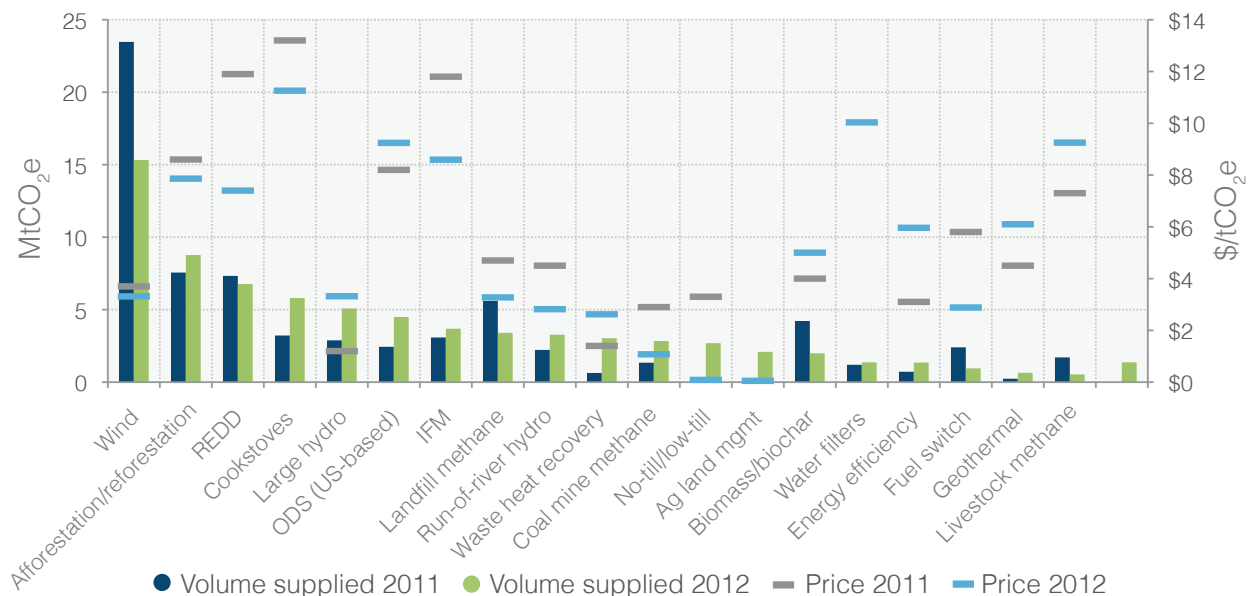
Figure 29: Transacted Volume and Average Price by Project Type, 2012



Notes: Findings based on 77 MtCO₂e associated with transaction-level price, volume, and project type.

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

Figure 30: Change in Transacted Volume and Average Price by Project Type, 2011-2012



Notes: Findings based on 77 MtCO₂e associated with transaction-level price, volume and project type.

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

ultimately jeopardize their ability to continue adding value to the marketplace, where between their purchases and sales they contributed almost half of market-wide value (\$247 million). At the same time, project developers note (and our data shows) that retailers were less likely than offset end users to sign on to multi-year, large-volume contracts. Retailers say that last year's lower volume of forward-sold offsets reflects some avoidance of risk associated with exposing clients to prices that are trending downward. It also doesn't reflect the offset quantities that clients have committed to buy on annual basis via multi-year contracts with retailers.

Figures 29 and 30 show that offsets from clean cookstove and water filtration device projects commanded above-average prices, though slightly lower than in 2011. Clean cookstove offset prices varied highly by project stage, as is also discussed in Section 3.4.

Offsets that will be eligible for use in the California cap-and-trade program were also in the market's above-average category, including IFM, ODS and livestock methane projects. Alongside these project types, the price of forestry offsets including A/R (\$7.9/tCO₂e) and REDD (\$7.4/tCO₂e) fell in 2012 but remained above-average. Project developers say that their prices have remained at this level because, as the forestry sector matures, they have better insight into project costs – from the upfront costs of tree planting to costs

associated with local community engagement, and regularly adjusting project specifications to “fit” with several VCS forestry and land-use program updates. Notes one Latin American forest carbon project developer, **“all of this unexpected additional time to implement the project begins to add up, and so do the costs. And so, so does the eventual offset price to compensate for those costs.”**

2.3 Project Location: Offsets at Home and Abroad

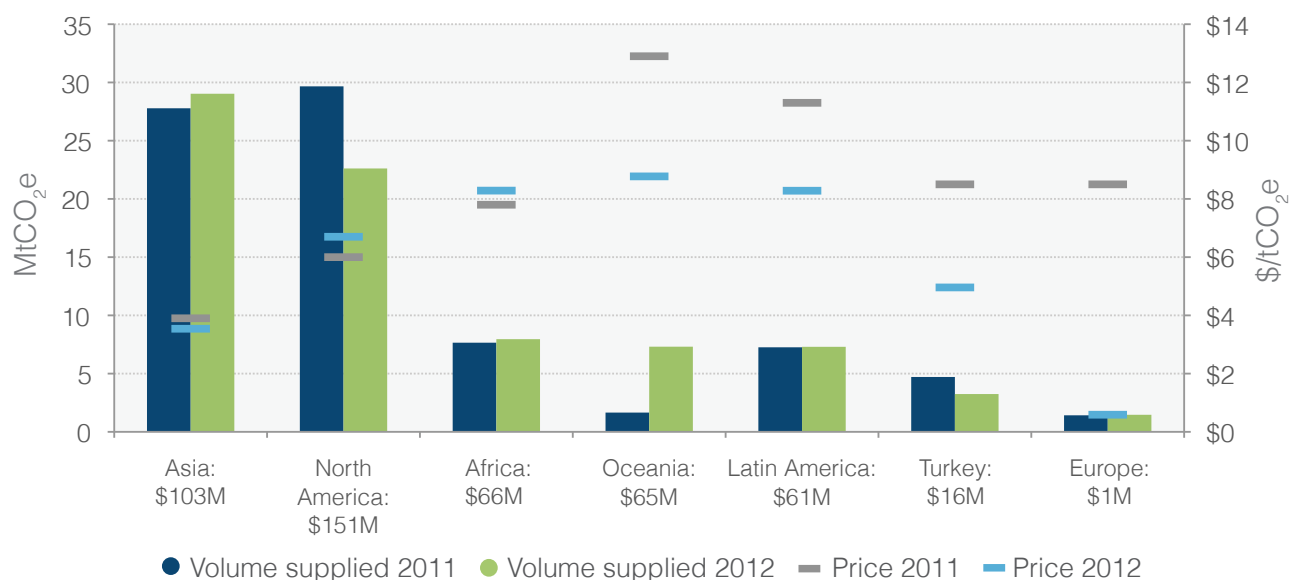
Last year, the market extended voluntary carbon finance to 4 new country locations, making for a total of 65 countries represented in this year's data. This section provides an overview of project location-based findings, while Chapter 5 presents detailed findings by region.

Asia, Oceania markets grow on trees

In addition to the continued predominance of renewable energy offsets flowing from major supplier countries China and India, Asia saw forestry, energy efficiency, and fuel switching offsets grow significantly in market share. Overall, the region saw a 4% increase in the volume of offsets supplied, though the region's average offset price fell by 9% to \$3.5/tCO₂e.

While the bulk of the region's offsets flowed to overseas buyers in keeping with previous years, 2012 saw a significant increase in the purchase of Asian offsets by

Figure 31: Change in Transacted Volume and Average Price by Project Region, 2011-2012



Notes: Findings based on 79 MtCO₂e associated with transaction-level price, volume, and project location.

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

Asian buyers – a growing trend as emissions trading schemes and domestic offset initiatives are set to develop over the next several years in China, South Korea, Thailand, and Vietnam.

Further south, while still attracting some support from both domestic and overseas buyers, New Zealand's forestry-dominated market fell by over 50% in voluntary transaction volume in the shadow of its struggling compliance market. Australian suppliers, awaiting clarity on future demand for offsets generated through the Carbon Farming Initiative ("CFI"), nevertheless saw domestic demand for offset more than double to 5.6 MtCO₂e, owing to some pre-compliance activity as well as purely voluntary transactions of offsets through the National Carbon Offset Standard ("NCOS"). The NCOS is Australia's government-administered program defining acceptable offset programs from which domestic companies can purchase offsets to make carbon reductions and neutrality claims.

Cookstoves, forestry on Africa's front burner

Kenya-based projects stood their ground in 2012 as the world's fourth largest supplier country, responsible for over half of Africa's 8 MtCO₂e total transaction volume – the largest-ever volume of offsets voluntarily contracted from the region.

In addition to attracting corporate support for REDD efforts, Kenya and other countries including Ghana,

Mozambique, Uganda, and the Democratic Republic of the Congo saw international demand for offset from projects delivering clean cookstoves and water purification devices. Kenya saw the first large-scale offset issuance using The Gold Standard's suppressed demand approach for social entrepreneur Vestergaard Frandsen's mega-sized LifeStraw project water filter distribution project.

CCX legacy offsets, California carbon market boost North American offsetting

North America's biggest surprise in 2012 materialized in the over 8.3 MtCO₂e of offsets transacted through the Chicago Climate Exchange offsets registry program, where new offset generation has more or less come to a halt, but domestic buyers continue to transact offsets at sub-dollar rates to replenish their voluntary offset portfolios.

The total value of offsets generated in North America was \$151 million, with 60% of overall value contributed by pre-compliance buyers preparing for California's cap-and-trade program. By volume, however, 56% or 12 MtCO₂e of North American offset purchases were motivated by purely voluntary action. Buyers in the United States together purchased more offsets than buyers in any other single country, supporting \$143 million worth of offsets in 2012.

Domestic programs make (or break) offset supply in Latin America, Europe

Demand for offsets generated in Latin America was relatively stable in 2012 at 7.2 MtCO₂e, with forestry still driving the bulk of domestic project development. Seeds of growth were planted in the region, with governments in Acre (Brazil), Colombia, and Chile signing agreements with VCS to establish stronger frameworks for their domestic carbon markets; and Mexico passing a law to pursue a domestic emissions trading scheme. Latin American projects contracted the bulk of their offsets to European buyers, with still only a smattering of domestic offset buyers in the game.

Regulated under the EU ETS and broader Kyoto Protocol commitments, projects in EU member states supplied a modest 1.4 MtCO₂e of offsets in 2012 to voluntary buyers in the United States – primarily offsets from coal mine methane projects in Germany whose certification precedes the Kyoto Protocol start date. Otherwise, the EU continued for the most part to be a source of voluntary offset demand rather than supply. On the demand side, buyers in the United Kingdom and other major European countries continued to show a strong appetite offsets from abroad, securing a total of 43.4 MtCO₂e offsets in 2012, with over half of those offsets sourced from projects in Asia.

2.4 Offset Uniqueness: Other Dimensions of Demand

Because every offset project and their ultimate buyers differ slightly to significantly from the next, data in this relatively small marketplace is also too differentiated to conduct much meaningful multivariate analysis. We can, however, informally compare information about a few of the market's most popular project types to shed light on a key driver of demand described by offset suppliers over time and in 2012 – that of offset “uniqueness.”

Sizing up emissions reductions

Offset projects reduce, sequester, or avoid emissions every year at volumes ranging from less than 5,000 tCO₂e to over 1 MtCO₂e annually. Project size is and has always been a key determinant of offset price, as seen in Table 7 for 2012. This finding has seen little change throughout our State of report series, and reflects not only buyers' willingness to pay more to support “boutique”, small-scale projects where they can potentially afford exclusivity, but also the higher marginal abatement cost associated with smaller, community-based efforts. Suppliers also point out that very large scale projects tend to sell to any buyer that

Table 7: Transaction Volume and Average Price by Projects' Estimated Annual Reductions (i.e., “Project Size”), 2012

Reductions / Year	Volume (MtCO ₂ e)	Response Count	Average Price (\$/tCO ₂ e)
Micro (<5ktCO ₂ e)	0.7	51	\$10
Small (5-20 ktCO ₂ e)	1.8	76	\$8.7
Med (20-100 ktCO ₂ e)	13.8	185	\$6.2
Large (100-500 ktCO ₂ e)	15.3	97	\$6.1
Very Large (500 ktCO ₂ e – 1 MtCO ₂ e)	7	20	\$5.6
Mega (> 1 MtCO ₂ e)	11.4	30	\$5.8

Notes: Based on 50 MtCO₂e associated with a project size.

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

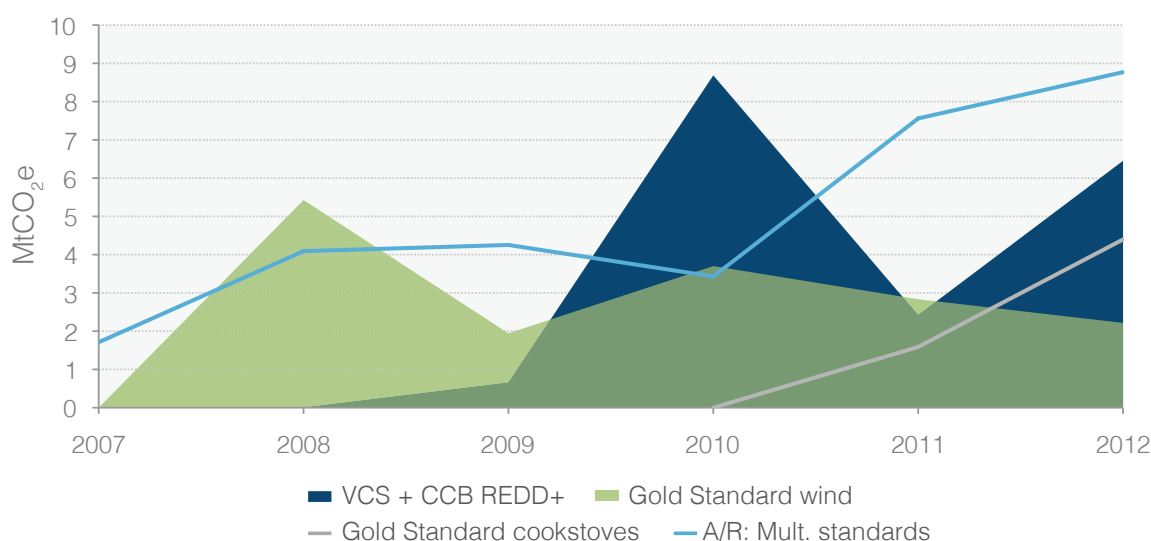
shows interest in the project, and thus they or their retailers find their prices being undercut by the same supply from different sources – sources that may not have paid anything to secure commercialization rights.

“We do sometimes see sellers coming to market in a way that can erode price because the chosen route is uncoordinated, in a market which is of limited size,” says The CarbonNeutral Company's Zubair Zakir. “Sellers that only offer a portion of their volumes more selectively, may see higher prices and possibly improve value overall.”

Over time, the market has seen a few highly anticipated mitigation approaches emerge from such large-scale (500,000 – 1 MtCO₂e/year) to even “mega-sized” (>1 MtCO₂e/year) activities, like the first Gold Standard wind project offsets in 2008 or VCS plus CCB Standard-certified REDD projects in 2010. Both of these project types saw intense demand when the projects (or even just the methodologies in the case of REDD) first entered the market – only to see transactions level off in subsequent years.

On the other hand, project types that generate smaller annual volumes from a larger number of project locations, standards, and offset suppliers have seen more sustained growth over time. The most obvious of these cases are offsets sold from A/R projects, which over time have contracted most of their volume from

Figure 32: “Uniqueness” Preference: Comparison of Historical Transaction Volumes from Popular Project Types



Notes: Based on 28 MtCO₂e associated with survey responses that report project type, location, and transaction volume.

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

micro- to medium-scale projects and have grown their transaction volumes in all but one year (2010).

As can be seen in Figure 32 and Table 8, clean cookstove projects may follow a similar trend. Future market tracking will reveal whether or not cookstove offset projects will continue this trajectory, however, as many cookstove projects optimize stove distribution

and thus grow in project size and the volume of issued offsets generated over the life of the project.

The popularity of project types capable of deployment to many locations, via several standards and methodologies, and (critically) at multiple scales, speaks to what suppliers describe as an ever-growing buyer interest to engage closely – and ideally, exclusively – with a project.

Table 8: “Uniqueness” Preference: Annual Change in Volume, Price, Number of Transactions, Project Locations and Most Common Project Size for Popular Project Types

TYPE	Volume 2011	Volume 2012	Price 2011	Price 2012	# Transactions 2011	# Transactions 2012	# Locations 2011	# Locations 2012	Common Size 2011	Common Size 2012
VCS + CCB REDD	2.4 M	6.5 M	\$8/t	\$7/t	19	23	6	9	“Mega” Project	“Mega” Project
Gold Standard Wind	2.6 M	2.2 M	\$10/t	\$7/t	32	24	7	3	Medium	Large
Gold Standard Cookstoves	1.6 M	4.4 M	\$14/t	\$11/t	24	36	12	15	Medium	Medium
Affor. / Refor.	7.6 M	8.8 M	\$9/t	\$8/t	81	53	31	20	Macro	Medium

Notes: Based on 28 MtCO₂e associated with survey responses that report project type, location, and transaction volume.

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

However, most buyers in this resource-constrained economic environment don't have the balance sheet to provide multi-year, exclusive project financing or offtake to large- or mega-scale projects.

Indeed, 98 of 113 transactions of future offset vintages (i.e., support for future project activities) were for offsets from micro- to medium-scale projects. Of the 40 multi-year forward contracts signed in 2012, 25 were for offsets from micro- to medium-scale projects, with another 9 reported for large projects. The remainder is of unknown size.

Location(s) count

As a market, VCS REDD projects saw increased offset demand in 2012, but growth occurred primarily in the category of offsets sold from new project locations that did not report significant transaction volumes in 2011. Gold Standard wind offsets originated from some by-now-familiar locations and projects (primarily from Turkey) and are constrained by the comparably small number of country locations that present opportunities for wind project installation.

Both A/R and clean cookstove projects, on the other hand, represented a large number of project locations and unique transactions relative to other project types. Cookstove offset project developers and suppliers continued to rapidly add new project locations to the map and identify buyers for a growing volume of issued offsets. A/R projects, implemented on every relevant continent, also expanded market activity in 2012, though the number of A/R project locations and transactions fell as attention shifted from micro-scale projects (27% of all projects that commercialized offsets in 2011) to medium-sized projects (40% of all reported projects in 2012).

This partly reflects decreased demand for both Plan Vivo and CarbonFix program A/R offsets – a traditional source of offsets from “boutique” tree planting and agro-forestry projects. The trend may see a reversal in coming months, however, as the CarbonFix program is integrated into The Gold Standard, which acquired CarbonFix in 2012 and will make its micro-scale scheme available to smallholders under its emerging land-use program.

Unique implications

At a high level, these trends speak to the offset demand side's sometimes conflicting interests in GHG mitigation, sustainable development, and public image and communications. Over time, other survey

findings have revealed that corporate risk mitigation – in the form of pre-compliance and now (to a still-limited extent) supply chain risk management – is the dominant incentive for large-scale, multi-year transactions. While a few prominent voluntary buyers engage in large-scale transaction activities with single projects, such cases are rare.

This reality is currently driving some large- to mega-scale project developers and their representative standards bodies to engage bilateral and multilateral institutions and large donors in an emerging discussion about how VERs can be incorporated into “results-based” but potentially non-market-based mitigation funding programs like the Forest Carbon Partnership Facility or the Green Climate or Adaptation Funds. It is also forcing voluntary offset market participants to realistically assess the private sector's ability to support large-scale mitigation, absent the presence of a strong carbon price signal from governments.

In an effort to drive private sector voluntary demand, a few market participants and their buyers have begun to describe and leverage offset project activities as tools that financially incentivize their producers to “climate-proof” their supply chains in a measurable way – thus potentially tapping into corporate's less public-facing and more substantial risk management budgets.

Others have considered “parceling out” specific sections of large project areas to individual buyers to offer buyers more of a direct connection to the project and, potentially, to the community being impacted by their contribution. Rather than measuring and reporting separately for each parcel, this would be done symbolically. Even so, suppliers point out that the method leads to tricky issues such as: “*Which land areas and communities are offered first?*”, “*From an ethical marketing standpoint, can such an approach be taken without undertaking MRV for unique project areas?*”

Most large-scale REDD and renewable energy project developers interviewed for this report believe that their market success will require harnessing a combination of these concepts. They also stress that the original motivation for “scaling” up these activities was to dramatically disrupt business-as-usual in favor of large-scale GHG mitigation, biodiversity protection, and social benefits to the extent that one corporation alone could not accomplish, but the combined resources of many actors could.

2. Offset Origins: Type, Place, and Time

“While some people in this market are now looking to governments to scale up demand for our actions, political will and public money are not always present and won’t be enough without the participation of the private sector,” says Wildlife Works founder Mike Korchinsky.

“As a market, we have to do a better job of communicating the fact that climate change and biodiversity and forest loss are a large scale problem that requires large scale solutions,” he adds. “The scale of both problem and solution means that the private and public sectors need to find a way to go down this path together.”



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