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TAKING STOCK OF THE ROLE OF OFFSETS IN CORPORATE CARBON STRATEGIES



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Forest Trends' Ecosystem Marketplace

1203 19th Street, NW

4th floor

Washington, DC 20036

info@ecosystemmarketplace.com

www.ecosystemmarketplace.com

www.forest-trends.org

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Author

Allie Goldstein

Senior Associate

Ecosystem Marketplace

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Layout and new graphics by Clarise Frechette Design, LLC (www.clarisefrechette.com)



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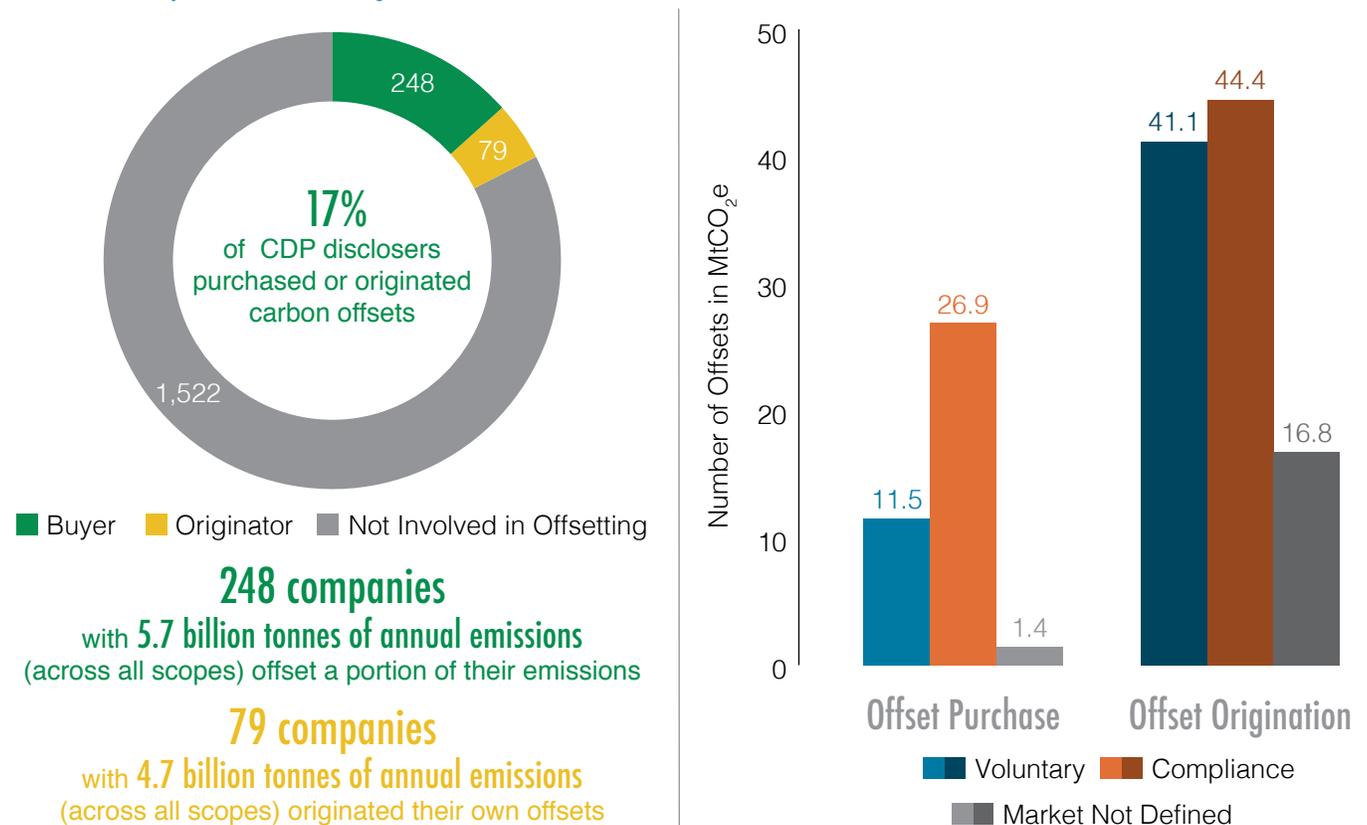
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Offset-Inclusive Carbon Management: An Introduction

Imagine you're a sustainability manager at a company. Maybe your business is to brew beverages or make carpets, or develop new medications, or generate electricity, or drill for oil. Wherever you sit, it's likely that climate change is on your mind – and its effects can probably be felt right outside your window, too. You might be worried about whether the raw materials you use to make your products will still grow well where they used to grow, or whether a major storm is now more likely to shut down your operations, or even whether some of your invested assets may be “stranded” – left behind as the world shifts to renewable energy. You're feeling increasing pressure from your customers, shareholders, and employees (especially the younger ones), and the leadership of your company is taking notice after attending the Paris climate talks.

You have an emissions reductions plan in place, and you're well on your way to meeting it, having already implemented the “low-hanging fruit,” such as installing energy efficiency measures in your buildings, tweaking product design, or investing in a cleaner transportation fleet – all measures that saved more than they cost. But you know that addressing climate change at a globally relevant scale will require a deep decoupling of economic output and greenhouse gas emissions. You want to be at the leading edge of this transition, and so you begin to look for emissions reductions opportunities beyond the obvious – beyond your company's direct emissions and perhaps even beyond those emissions you have indirect control over through your purchasing power or supply chain.

Figure 1: Market Snapshot: Number and Percentage of Reporting Companies That Engage in Offsetting and Number of Offsets They Purchase or Originate



Notes: Based on 39.8 MtCO₂e in offset purchases by 248 unique buyers in 2014 as well as 102.3 MtCO₂e in offset origination by 79 unique companies. “All scopes” refers to emissions in Scopes 1, 2, and 3. See Figure 7 on p. 15 for more detail.
Data source: CDP public disclosure, reporting year 2015.

One way to do this is through purchasing or originating carbon offsets, financing emissions reductions that would not have occurred otherwise. Turns out you wouldn't be the first sustainability manager to suggest this. **In fact, out of 1,896 companies that disclosed emissions data to CDP (formerly the Carbon Disclosure Project; we refer to these companies as “reporting companies” throughout the report) in 2015, 17% (or 314 companies) engage in offset-inclusive carbon management.** Most of them (248) companies are offset buyers, meaning they purchase offsets (defined as a tonne of carbon dioxide equivalent, or tCO₂e) either voluntarily or because they fall under one of the world's regulatory carbon pricing programs. Another 79 companies are offset originators, meaning they generate emissions reductions within their own operations or supply chain, either to meet their own voluntary or compliance goals, or to sell those originated offsets to others. Thirteen companies did both.

Collectively, companies reporting to CDP purchased 39.8 MtCO₂e and originated another 102.4 MtCO₂e in 2014 (amounts that were disclosed the following year, in CDP's 2015 questionnaire). Together, these offsets have a tangible impact on the carbon dioxide in the atmosphere: they have the equivalent climate impact of *not* burning 16 billion gallons of gasoline or of taking 30 million passenger vehicles off the roads for one year. Offsets come from real projects on the ground, from installing new renewable energy capacity, to capturing and destroying global-warming gases released through manufacturing, to conserving endangered forests.

This report investigates offsetting from a business perspective, considering how companies incorporate offsetting into comprehensive carbon management strategies and how they make the business case for doing so. Building on a previous report by Forest Trends' Ecosystem Marketplace, *The Bottom Line: Taking Stock of the Role of Offsets in Corporate Carbon Strategies*,¹ this year's edition explores how companies' offsetting programs and their overall efforts to invest in emissions reductions have evolved over time. It also explores new topics, including reducing emissions from deforestation, “insetting” emissions reductions within company supply chains, and engaging with carbon pricing policies. The report is chock-full of examples and includes two longer case studies that dive into the *why* and *how* of offsetting, from the perspectives of sustainability leaders that built their companies' programs.

We hope that this report will be informative to project developers and retailers engaged in carbon offset development – giving them a glimpse into buyers' motivations, preferences, and concerns. And we especially hope that it is useful to sustainability managers designing their companies' climate mitigation strategies – whether those strategies currently incorporate offsetting or not.

Carbon Offsetting 101

A carbon offset represents one tonne of carbon dioxide equivalent (tCO₂e) sequestered or prevented from entering the atmosphere. Unlike carbon allowances, which are permits to pollute, carbon offsets derive from real-life activities on the ground. Examples might include a tree-planting project that sequesters emissions as the trees grow or a wind energy project that avoids emissions by displacing fossil fuel energy on the grid. All carbon offsets are based on the principle of additionality – the emissions reductions must have occurred as a result of the implemented activities (e.g., it would not have been possible without the carbon finance that made them possible). Because carbon dioxide is a global pollutant (a tonne emitted from a factory in China has the same effect on the atmosphere as a tonne emitted through deforestation in Brazil), carbon offsets may be bought and sold globally.

Carbon offsets may be exchanged on either voluntary or compliance carbon markets. In voluntary carbon markets, buyers are typically motivated by corporate social responsibility – they are concerned about climate change and have set a target to reduce their emissions, outside of or ahead of regulation. In compliance carbon markets, buyers are motivated to purchase offsets when they offer a more cost-effective way to meet their requirements to cut emissions under the law – for instance, if the price of offsets falls below the cost of allowances or the carbon tax (as it does when the market is functioning as intended). Over the years, carbon market infrastructure has developed so that there are clear, robust standards for monitoring and verifying offsets and a fairly uniform process for issuing and retiring offsets on carbon registries.

¹ Goldstein, Allie. *The Bottom Line: Taking Stock of the Role of Offsets in Corporate Carbon Strategies*. Washington, DC: Forest Trends, 2015.

What We Did: Methodology

About the Data

For the last decade, CDP has asked thousands of the world's largest companies to calculate and disclose their greenhouse gas emissions. Last year, CDP put out this call for disclosure on behalf of requests from 822 institutional investors with over \$95 trillion in assets.² In 2015, 1,896 companies answered this call and *publicly* disclosed climate change information to CDP. This report draws mainly on these 2015 public disclosures, but we also refer and compare these analyses to earlier CDP disclosures from 2014 and 2013. (See our previous report, *The Bottom Line: Taking Stock of the Role of Offsets in Corporate Carbon Strategies*.)

The CDP questionnaire obtains detailed information on corporations' emissions reductions targets, strategies for driving investment in emissions reductions activities, perceived climate change risks, and engagement with carbon pricing policy. It also asks companies whether and how much they offset. CDP survey results complement the annual surveys of Ecosystem Marketplace, which has conducted research and reporting on voluntary carbon offset demand for the past 11 years. While Ecosystem Marketplace tracks demand by surveying carbon offset suppliers (offset project developers and retailers), CDP collects data directly from buyers, tracking how many offsets were purchased, from which projects, and for what purpose. Ecosystem Marketplace purchased the CDP data "as is" and did not have a say in CDP's data collection or methodology – though we analyzed the data in a fresh way, as described below.

About the Analysis

Much of the analysis in this report hinges on a comparison of companies that include offsetting as part of their carbon management strategy and those that don't, as determined by analyzing CDP disclosures by both respondent types. The majority of this analysis focused on those companies that purchased offsets. However, we do have a special section on offset "origination" which looks at companies that created verified emissions reductions within their operations or supply chain, either to count internally against their own emissions or to sell to another party. We excluded companies that reported an offset purchase but did not specify a volume.

Examples used throughout this report were obtained from companies' write-in responses to the CDP questionnaire about the risks they face, how they drive investment in emissions reductions activities, how they engage with policymakers, and more. The two case studies – of Novartis and L'Oréal – were developed specifically for this report and are based on interviews with the person in charge of offset purchases or origination, as noted.

This report focuses more heavily on buyers active in the voluntary carbon markets. Because these buyers fall outside of regulation, information about their motivations and processes is scarcer (in compliance markets, it is easy to find out which companies may be potential offset buyers because regulated entities are typically listed). This focus also fits with Ecosystem Marketplace's historic reporting: We are the only organization that provides comprehensive, transparent information about the voluntary carbon markets.

Timing of the data. Because CDP disclosures typically cover the previous year's activities, the emissions and emissions reductions activities discussed in this report occurred mainly in 2014. However, companies' reporting periods do not always align with the calendar year. For the purposes of this analysis, we "counted" the emissions and offsetting activities if at least six months of the reporting period fell within 2014. This was the case for the majority of companies (1,836). The time lag between the data and this analysis is because: the CDP disclosure data is not available until late in the following calendar year, and it then takes us additional time to analyze it. Still, the public CDP disclosures represent the most detailed information available on corporate offsetting, as reported in the context of companies' overarching emissions reductions strategies. Wherever possible, we put the analysis

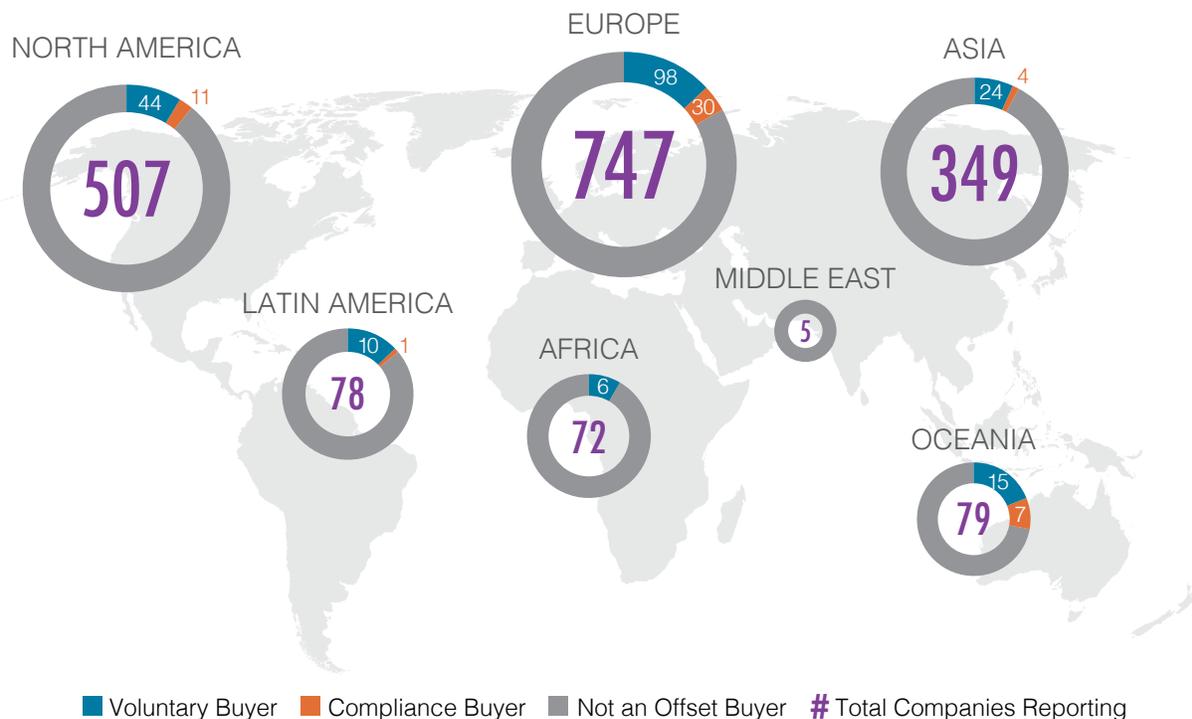
² All prices are in US dollars unless otherwise noted. Prices or investments reported to CDP in other currencies were converted to US dollars using the average conversion rate for 2014 (the reporting year of the data) found at <https://www.oanda.com/currency/historical-rates/>.

in the context of emerging trends and market dynamics, and we included a handful of recent examples and case studies to place the report solidly in 2016.

Comprehensiveness of the data. This analysis is exclusively focused on the subset of offsetting companies that *publicly* disclose to CDP, unless otherwise noted. **As such, the information in this report offers a snapshot of corporate offsetting in the context of CDP disclosures, but it represents only a portion of total offset demand.** On the voluntary side, reporting companies purchased 11.5 MtCO₂e in 2014, representing an estimated 38% of total voluntary primary market demand, as tracked through Ecosystem Marketplace's *State of the Voluntary Carbon Markets 2015 report*.³

On the compliance side, reporting companies purchased 26.9 MtCO₂e in 2014, but there is no comprehensive annual estimate on total compliance demand for offsets globally. For instance, now that the first compliance period of the California cap-and-trade market is over, we know that compliance entities purchased 12.8 MtCO₂e in compliance offsets during 2013 and 2014; however, due to confidentiality requirements, reporting companies mostly did not report tonnes eligible for the California cap-and-trade market. We do, however, have a sense of what percentage of compliance-driven demand for Clean Development Mechanism (CDM) offsets is captured by companies disclosing to CDP: The World Bank's *State and Trends of Carbon Pricing 2015* report notes that 60 MtCO₂e of compliance-grade Certified Emissions Reductions (CERs) were traded under the CDM in 2014⁴ – reporting companies reported purchasing 23% of those (13.8 MtCO₂e). See Figure 13 on p. 26 for more information on compliance markets that include offsetting.

Figure 2: Number of Companies Publicly Disclosing to CDP in 2015, by Region and Engagement with Offsetting



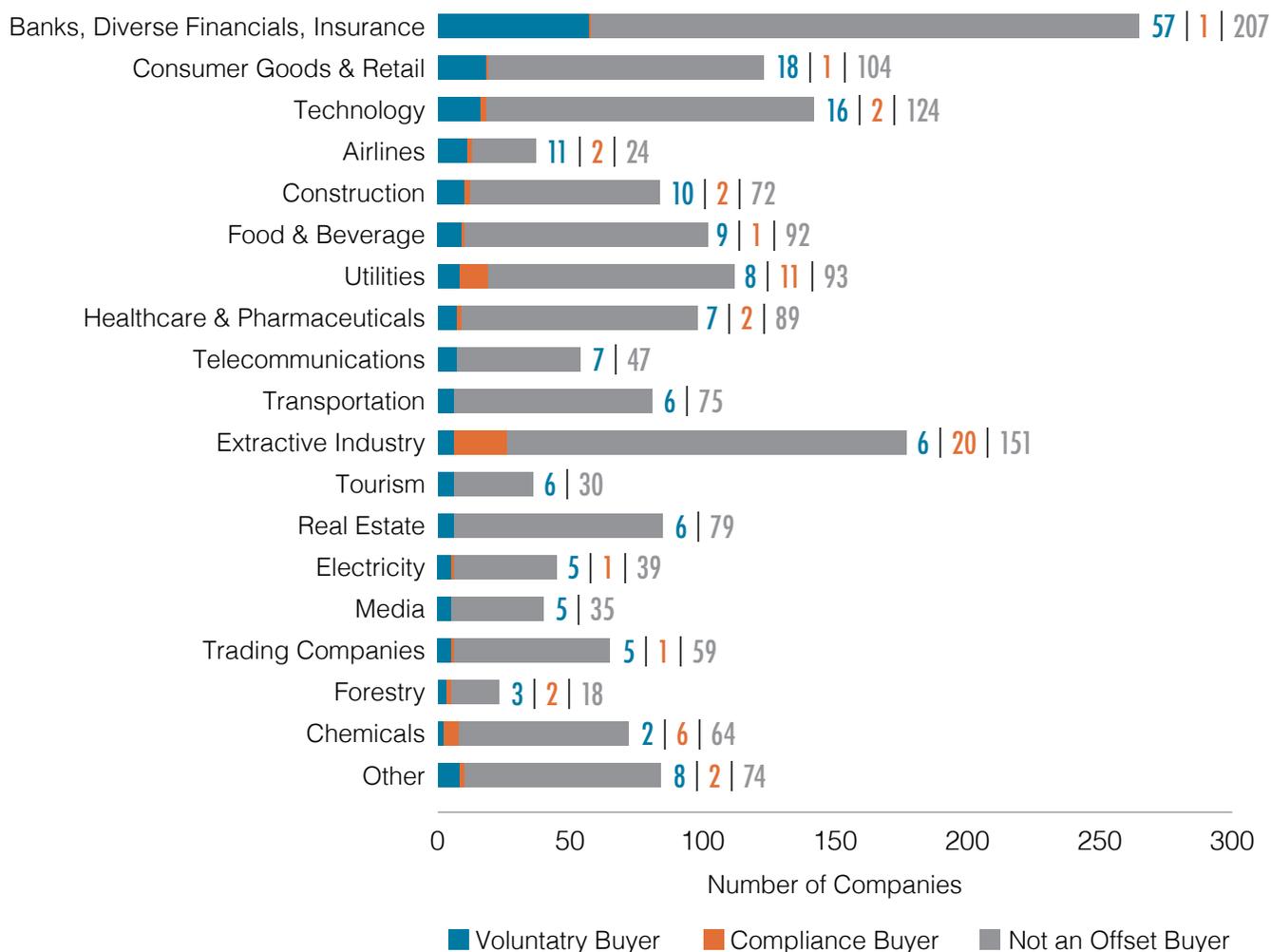
Notes: Based on 1,836 companies' public disclosures to CDP in 2015. Companies were reporting on 2014 data; 1,896 companies total publicly disclosed to CDP in 2015 but 60 companies whose reporting periods fell mostly outside of 2014 were excluded from this report's analysis.

Data source: CDP public disclosure, reporting year 2015.

³ In 2014, project developers (comprising the primary market) transacted at least 29.3 MtCO₂e. We say "at least" because not all transactions could be broken down by primary versus secondary market.

⁴ This was a 70% drop from 2013, and it is expected to drop further during a period of uncertainty for the CDM as negotiators hammer out the rules for the new market mechanism under the Paris Agreement. For more detail, see World Bank and Ecofys. *State and Trends of Carbon Pricing 2015*. Washington, DC: World Bank, 2015.

Figure 3: Number of Reporting Companies by Business Sector and Engagement with Offsetting



Notes: Based on 1,724 disclosures associated with a business sector. The sectors listed are a slightly consolidated version of the “industry group” reported to CDP, with combinations made at the discretion of the author.

Data source: CDP public disclosure, reporting year 2015.

About the Reporting Companies

Companies headquartered in 53 countries across all regions disclose to CDP, although the majority of reporting companies are headquartered in developed economies in Europe, North America, and Asia, where offset buyers composed 14%, 11%, and 8% of all companies in that region reporting to CDP, respectively (Figure 2).

Disclosers also hailed from a variety of sectors (Figure 3), though their likelihood to offset differed according to sector. There were voluntary buyers in every sector, but by far the most were from the financial sector, where one in five financial companies voluntarily purchased offsets in 2014. Sectors that rely on a positive reputation with consumers, including consumer goods & retail, technology, and airlines, were also common voluntary offset buyers. On the compliance side, things looked very different: predictably, the sectors with the most emissions liability under carbon pricing programs – namely extractive industry, utilities, and chemicals – were the most likely to offset.

There were voluntary buyers in every sector, but by far the most were from the financial sector, where one in five financial companies voluntarily purchased offsets in 2014.

In Good Company: Who is Buying Offsets, and How Many Emissions Reductions Are They Financing?

For the year 2014, 248 companies disclosed offset purchases to CDP. The majority of them – 197 companies – purchased offsets voluntarily, while 53 bought offsets for compliance. Two companies engaged in both voluntary and compliance offsetting.

The top voluntary carbon offset buyers have remained fairly consistent over the last three years of CDP reporting (Figure 4). Carmaker **General Motors** remained the top offset buyer in 2014 as it specifically neutralized emissions associated with Chevrolets as part of a campaign to tint its brand image a bit greener. The company set a goal of offsetting 8 MtCO₂e over five years, with a budget of \$40 million – and they officially retired those tonnes at the end of 2015. To put that in perspective, General Motors' purchases alone are nearly 1% of the total transaction volume that Ecosystem Marketplace has tracked on the voluntary markets to date.

Delta Air Lines, the second top voluntary offset buyer in 2014, decided to gain experience in the carbon markets ahead of international aviation regulation, as the International Civil Aviation Organization negotiates a market-based mechanism poised to begin in 2021. For the purpose of the experiment, Delta chose 2012 as their baseline year for carbon-neutral growth and achieved this practice target in 2014 through a combination of efficiency initiatives and carbon offsetting, with a portfolio of offsets from landfill gas, avoided deforestation (REDD+), and clean cookstoves projects. Another airline, **Qantas** in Australia, also made it into the top 20 list, purchasing 200,000 tonnes in 2014.

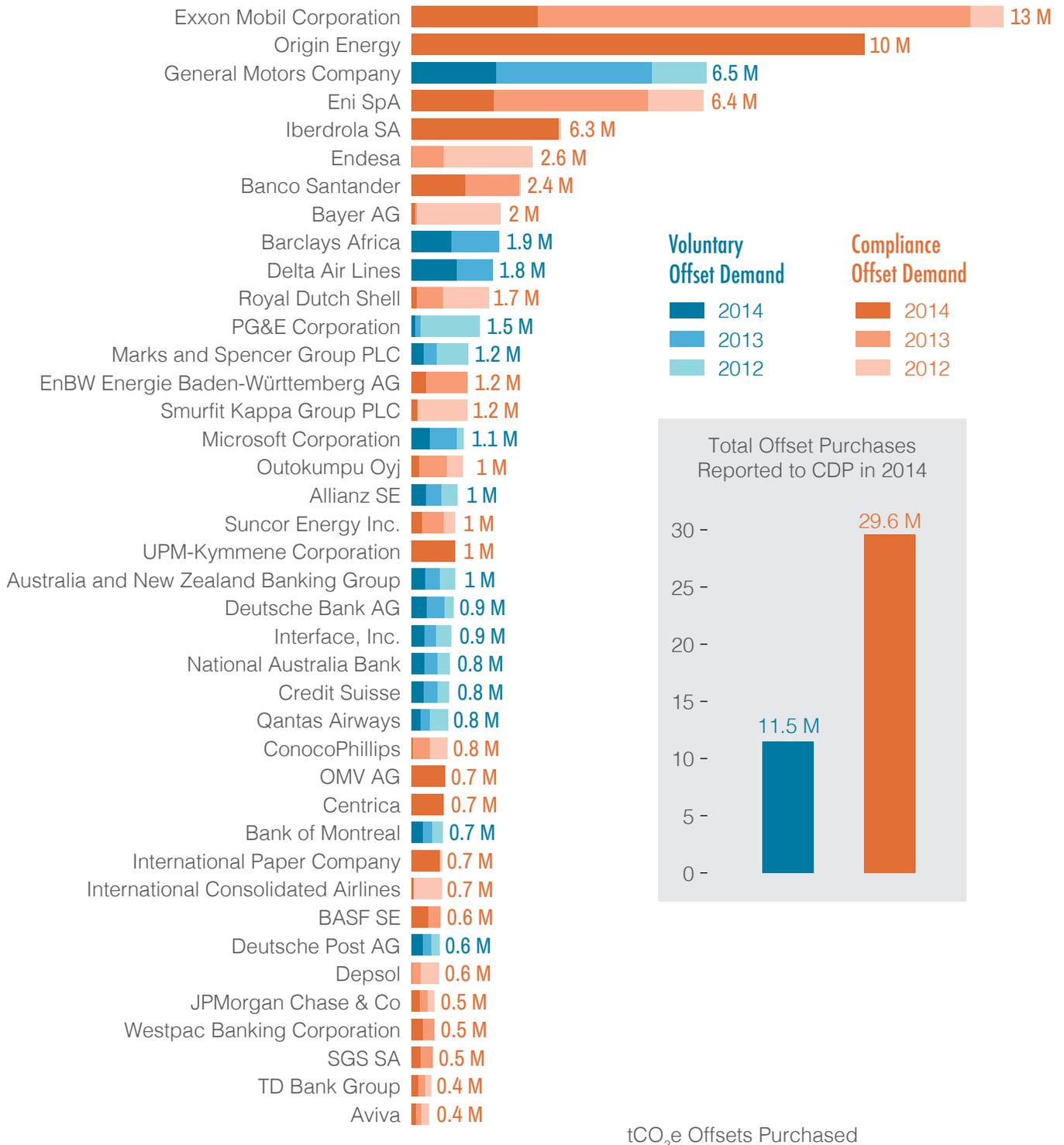
Other top offset buyers include several financial institutions. **Barclays Africa**, a South Africa-headquartered bank with operations in 12 African countries, voluntarily purchased offsets from a landfill gas-capturing project in Indonesia and an avoided deforestation project in Kenya, among others. **Deutsche Bank** (Germany) purchased offsets from a portfolio of carbon projects, including one that installed solar arrays in India and another that facilitated the switch to renewable biomass in a ceramics factory in Brazil, to meet its “climate-neutral” business claims. **Credit Suisse**, the Swiss financial services firm that is increasingly involved in conservation finance, purchased offsets from a portfolio of renewable energy projects in China, Honduras, India, and Turkey. American financial services firm **JPMorgan & Chase** focused its offsetting activities locally, buying from landfill gas-capturing projects in the US South.

A total of 48 companies newly reported voluntary offset purchases in 2014; of these, 33 appear to be companies that are new to offsetting while 15 represent companies that are new to the CDP disclosure process (at least in the last three reporting years). The “new” voluntary offsetting companies include: **Biogen**, a US biotechnology company; **Intuit**, the maker of TurboTax; and **Desjardins**, a Canadian financial group. On the other side of the coin, 73 companies that reported offset purchases in 2012 or 2013 dropped off this list in 2014. In most cases, it is impossible to determine whether these companies stopped purchasing offsets or simply chose not to report them, although we do know that **Disney** would appear in the top 20 buyers if they reported a volume to CDP.⁵ A handful of previously major offset buyers, including Natura Cosméticos, Bombardier, Entergy, and British Sky Broadcasting, did not report climate data to CDP in 2014, thus we cannot determine the extent of their continued offsetting programs.

On the compliance side, the top offset buyers reporting to CDP over time include oil and gas giants **Exxon Mobil** (headquartered in the US), **Origin Energy** (Australia), and **Eni SpA** (Italy), as well as two large Spanish electrical utilities, **Iberdrola SA** and **Endesa**. However, the CDP compliance data on offsetting for compliance purposes should be taken with an extra grain of salt because, unlike the top 20 list on the voluntary side, the top 20 compliance offset buyers reporting to CDP have shifted dramatically over the last three years (Figure 4). This likely reflects inconsistent reporting more than actual shifts in compliance markets. Still, even this partial list gives us a sense of the types of companies that purchase offsets as a cost-effective way to meet regulatory requirements – predictably, they are large emitters from countries with carbon pricing policies

⁵ Since 2009, Disney has invested \$48 million (more than General Motors) in carbon offset projects, but the company does not disclose its purchase volumes. We do know that the company *retired* 531,970 tCO₂e in 2014.

Figure 4: Top 20 Voluntary and Compliance Offset Purchasers by Volume, 2012–2014



Notes: Based on offset volumes reported by reporting companies in the last three reporting years (2015, 2014, and 2013, reporting on the previous year's data respectively).

Data source: CDP public disclosure, reporting years 2013–2015.

Beyond Climate Resolutions: What Motivates Companies to Offset?

Beyond using offsets to meet an emissions reduction target, companies engage in offset-inclusive carbon management for a variety of reasons, and they may derive value from their offset portfolio in myriad ways. Many buyers specifically look for co-benefits, or the “beyond climate” impacts that may be associated with a tonne of avoided emissions. **Companies primarily concerned with co-benefits often seek highly charismatic projects such as those that protect critical (and photogenic) ecosystems or provide benefits to vulnerable people.** In its CDP disclosure, logistics company **UPS** emphasized the habitat and watershed protection provided by the two Conservation Fund projects from which the delivery service purchases offsets. British life and health insurance provider **Aviva** highlighted its offset purchases from projects that provide clean water, including one that distributes gravity-fed water filters in Kenya and another that repairs boreholes in Rwanda.

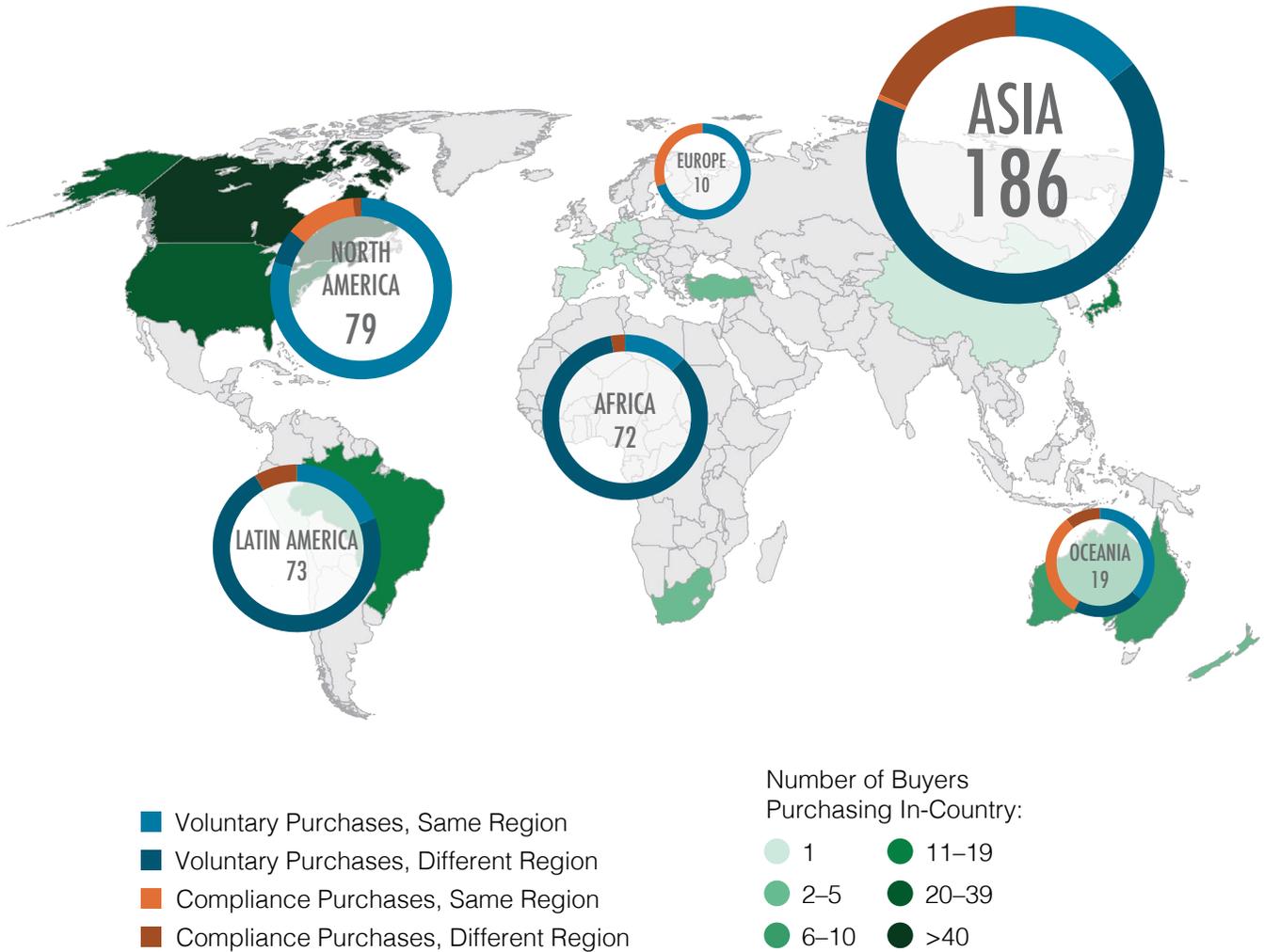
Offset buyers commonly engage their customers or employees in their programs in order to reap the reputational benefits they hope will be associated with a proactive stance on climate change. In some instances, companies provide the infrastructure for offsetting (by screening the projects, for instance) but allow their customers to drive the actual purchases. **Deutsche Post**, the German postal service, offers its customers the option to neutralize the emissions of their shipments for a nominal fee, and this customer-driven offset program has grown every year for the past three, reaching 240,000 tonnes in 2014. Trusted NGO partners also often have a hand in guiding offset purchases. Swiss retailer **Coop Genossenschaft** works closely with WWF Switzerland to select its offset portfolio, for instance.

Offset buyers commonly engage their customers or employees in their programs in order to reap the reputational benefits they hope will be associated with a proactive stance on climate change.

Buyers also often pay close attention to location when selecting offset projects. **Offsetting close to home may help companies communicate their impact to their customers and contribute to their “social license to operate” within a certain country or region.** Among the voluntary offset transactions disclosed to CDP in 2014, 127, or about a quarter of the transactions for which project location could be discerned, involved a buyer purchasing offsets from a project located in the same region as its headquarters. With regards to compliance transactions, a slightly smaller percentage (11%, or 20 transactions) flowed to projects on the same continent. Region-specific demand was particularly common in North America, where Canadian and American buyers such as **TD Bank** and **Waste Management Inc.** sought tonnes from within the continent.

However, there were also several offset buyers headquartered in the Global South – 11 from Latin America and 6 from Africa – and many of these companies sought offsets close to home. Brazilian electronic payments company **Cielo** purchased offsets from the Florestal Santa Maria forestry project in Mato Grosso, the country’s deforestation frontier. Similarly, **Nedbank** of South Africa has been a long-time supporter of carbon projects in Africa and in 2014 purchased 130,000 tonnes from the Lifestraw water filtration project and the Rukinga REDD+ project, both in Kenya.

Figure 5: Buyer Preference for Offset Location in Relation to Buyer Headquarters



Notes: Based on 439 transactions in 2014 in which the project region, the buyer region, and the buyer motivation could all be identified, and 442 transactions in which the both the project country and the buyer country could be identified. Data source: CDP public disclosure, reporting year 2015.

SPECIAL SECTION ON OFFSET ORIGINATION

Do-It-Yourself: Which Companies Are Engaging in Offset Origination, and Why?

Seventy-nine companies disclosing to CDP in 2015 reported that they “originated” offsets – a total of 102.4 MtCO₂e. **Some companies chose to originate offsets in order to participate in carbon markets on the supply side.** If they reduce emissions above and beyond regulation and economic incentives and then verify those tonnes as “additional,” they can sell those offsets to other companies at a profit. **But some companies originated offsets as a means of verifying emissions reductions within their operations or supply chain for the purpose of meeting an internal greenhouse gas target, with no intention of transferring those tonnes.** This is known as “insetting,” and in some cases, companies may choose to skip the official (and sometimes expensive) verification process for these originated tonnes.

Because Ecosystem Marketplace reporting is focused on tracking carbon market dynamics and traces offsets at the point of sale, our data does not capture originated tonnes unless they are transacted. Thus, the CDP disclosures give us a window into a different kind of corporate engagement with offsetting. Originators hailed from 25 countries but were mostly industrial emitters such as power plants and extractive industries located in high-emitting regions such as the United States (13 originators), Canada (9 originators), Japan (7 originators), and South Korea (6 originators).

About two-thirds (67.9 MtCO₂e) of the tonnes originated in 2014 were developed under the international compliance offset protocols created by the Kyoto Protocol: the Clean Development Mechanism (CDM; for projects in developing countries) and Joint Implementation (JI; for projects located in transitioning economies). These originated projects are mainly located in China, India, Mexico, Taiwan, and Ukraine. CDM originators mainly reported that they intended to use these tonnes for their own compliance purposes (accounting for 32.9 MtCO₂e) or to voluntarily offset their emissions (20.1 MtCO₂e) – sometimes as part of a corporate social responsibility initiative. For instance, in their CDM program, **Eskom**, the utility that provides electricity to 95% of South Africans, has distributed more than 30 million compact fluorescent lamps to South African households since 2007, generating more than 7 MtCO₂e in emissions reductions. Companies also originated about 10 MtCO₂e in CDM/JI offsets with the intention of selling those tonnes.

Companies may also originate offsets in anticipation of upcoming carbon regulation. According to CDP disclosures, a handful of Taiwanese companies originated offsets (a total of 17.4 MtCO₂e) in 2014 under the country’s domestic greenhouse gas standards, which were established for “early-action” trading ahead of the country’s cap-and-trade program, expected to be introduced before the end of the decade. Half a dozen Korean companies, including electronics conglomerate **Samsung** and petrochemicals company **LG Chem**, also originated offsets for early action, ahead of the start of Korea’s Emissions Trading System in 2015.

On the purely voluntary side, companies originated at least 7.8 MtCO₂e under standards such as the American Carbon Registry (ACR), the Climate Action Reserve (CAR), the Gold Standard, and the Verified Carbon Standard (VCS). In some cases, the possibility of selling the offsets creates the business case for an emissions reductions measure that might otherwise not be economically feasible. Through its Trees and Trains program, **Norfolk Southern Corporation** has paid project developer GreenTrees \$5.6 million to reforest 10,000 acres of native cottonwood and hardwood trees in the Mississippi Delta, where many of its rail routes run. By selling the 1.1 million offsets the project is eventually expected to generate annually, Norfolk Southern hopes to recoup its upfront investment.

In other cases, **offset origination may serve multiple purposes for companies – for instance, helping them to meet a voluntary greenhouse gas target while also improving relationships with suppliers or creating resilience within their supply chains.** In a clear example of insetting, chocolate-maker **Hershey** is looking to originate their own offsets by using macadamia shells leftover from chocolate production as a biomass fuel source in their boilers, slashing emissions but also reducing the need to buy fuel. Similarly, **Starbucks** worked with Conservation International to develop an agroforestry offset project in Chiapas, Mexico. The company reported that their coffee farmers were then able to sell the offsets from the project, generating incremental income beyond the coffee sales.

CONTINUED

Figure 6: Map of Offset Origination by Country Headquarters, Project Location, Motivation, and Standard

Locations of Companies Originating Offsets and Locations of Projects

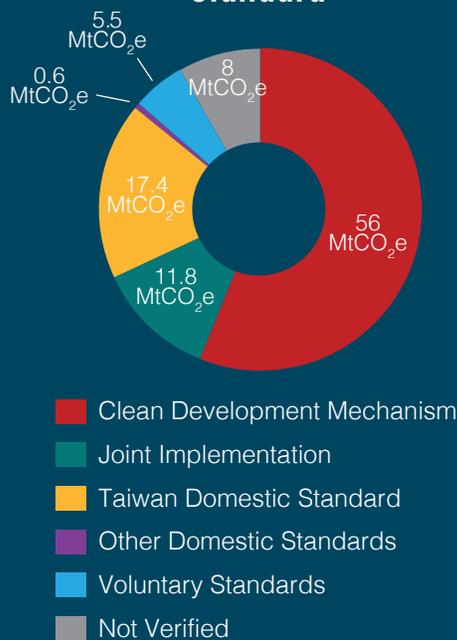


Motivation for Origination



79 companies originated **102.4 MtCO₂e** either to meet their own greenhouse gas targets (compliance or voluntary) or to resell

Standard



Two-thirds of these offsets were originated under the **Clean Development Mechanism or Joint Implementation**

Notes: Based on 79 companies originating 102.4 MtCO₂e in 2014.
Data source: CDP public disclosure, reporting year 2015.

CASE STUDY

L'Oréal: Beauty from Within

Began offsetting in: 2016, after a 2015 commitment in Paris to become a “carbon balanced company.”

Impact by the tonne: First carbon gains will be reported in 2016. L'Oréal estimates that it will be progressively insetting about 400,000 tCO₂e per year by 2020 to counterbalance its unavoidable emissions as well as emissions associated with downstream transportation.

Projects: A clean cookstoves project in Burkina Faso; an agroforestry project in Indonesia; and a low-carbon farming project in Bolivia.

What makes the program unique: All of L'Oréal's carbon projects are “inset” within their supply chain. In Burkina Faso, the cookstoves are distributed to women who boil shea nuts for the shea butter used in more than 1,200 of L'Oréal's products. In Sumatra, Indonesia, the carbon project promotes intercropping cinnamon trees and patchouli (an herb used in perfumes and other products). And in Bolivia, L'Oréal works to restore soils and lower the fertilizer use associated with growing quinoa (the extract of the husk is used in cosmetics).



In 2015, 30,000 women in Burkina Faso harvested and processed nuts used to produce the shea butter that makes its way into L'Oréal creams and cosmetics. A project to distribute clean-burning cookstoves will save the emissions associated with deforestation. | Photo courtesy of L'Oréal.

What motivated them: L'Oréal has set a goal of reducing the direct emissions of their production by 60% by 2020, from a 2005 baseline. In 2015, the Group already reached a 56% reduction, ahead of schedule. They began the insetting program because they wanted to support suppliers to make deeper emissions cuts. Behind it all is Jean Paul Agnon, L'Oréal's CEO, who “really was the person who challenged and pushed the initiative,” says Rachel Barre, the company's Carbon Balanced Program Manager.

Standards used: Internally developed. Because L'Oréal plans to value its offsets internally (not sell them), the company is opting out of the usual certification and issuance processes associated with using a carbon standard. However, Barre says that its projects are all based on robust methodologies, inspired and adapted from existing standards. Independent experts help them devise carbon methodologies specific to their supply chain, and all the projects will be independently verified.

The business case: L'Oréal's insetting projects may help the company build resilience along the supply chain of its key ingredients by solidifying relationships with suppliers, tackling traceability, price volatility, and intermittent availability of some feedstocks. “For us, it's about fostering climate change adaptation within the supply chain,” says Barre.

The “fit”: Insetting fits in with several of L'Oréal's other corporate social responsibility initiatives: its “Science-Based Target” to reduce emissions; its “Solidarity Sourcing” program that opens calls for tender to small companies that employ economically vulnerable people; and its commitment to 100% “deforestation-free” raw material sourcing by 2020. Barre says that the company's emissions reductions efforts are “absolutely” connected with its no deforestation goals, and it is scoping more carbon projects in Indonesia and Malaysia, where deforestation risks are high.

Looking ahead: L'Oréal has jumpstarted its first insetting projects, but it will need more than 20 total in order to meet its “carbon balanced” goal by 2020, Barre says.

CASE STUDY

Novartis: Growing Its Own Medicine for the Climate

Began offsetting in: 2007, beginning with their Argentina and Mali projects.

Impact by the tonne: About 67,000 tCO₂e in 2014, or 4.2% of Novartis' baseline 2010 emissions. *Total* offsets from the company's four projects are expected to reach 4 MtCO₂e over the next 30 years or 130,000 tCO₂e per year on average.

Projects: The Sichuan Forestry project in China; the Jatropha Mali Initiative in Mali; the Santo Domingo Estate project in Argentina; and the Hacienda El Manantial project in Colombia.

What makes the program unique: Novartis' projects are an example of offset origination, but the company is not "insetting" these tonnes within its supply chain. Instead, the company is finding reduction opportunities for emissions completely outside of its sphere of influence. This strategy manifests in different ways. In Argentina and Colombia, Novartis purchased land and now works with local forestry operators to plant native tree species, with an eye towards commercializing the timber from sustainable harvests and using the verified offsets against its own emissions. In China and Mali, the company helped to initiate reforestation and agroforestry projects and agreed to purchase the offsets generated by these initiatives as a form of upfront financing.

In Argentina and Colombia, Novartis purchased land and now works with local forestry operators to plant native tree species, with an eye towards commercializing the timber from sustainable harvests and using the verified offsets against its own emissions. In China and Mali, the company helped to initiate reforestation and agroforestry projects and agreed to purchase the offsets generated by these initiatives as a form of upfront financing.

What motivated them: Novartis wanted to be seen as a leader on climate within the pharmaceuticals industry. The company set a goal of reducing emissions 30% under 2010 levels by 2020, and 50% by 2030, estimating that a portion of these emissions reductions (8–10%) would come from their forestry projects.

Standards used: The China, Argentina, and Colombia projects were developed under the CDM; the Mali project is developed under the Verified Carbon Standard. Beyond the carbon standards, which are primarily used as a quality check, Novartis' Argentina project is certified with the Forest Stewardship Council and the Rainforest Alliance, and its China project also uses the Climate, Community & Biodiversity Standards, a co-benefits certification.

The business case: Novartis' Argentina and Colombia projects are sustainable harvesting projects designed to eventually offer a return on investment. "When we achieve break-even, we'll share the profit 50/50 with the forestry contracting partners, the project developers," said Markus Lehni, Novartis Group Global Head of Environment and Energy. The projects in China and Mali are focused on benefiting poor farmers as well as Novartis' net emissions.

The "fit": Forestry offsets are a logical fit for a pharma company like Novartis since so many of the active ingredients in medicines – the Chinese artemisia herb used in Novartis' Coartem to treat malaria, to give just one example – come from forests. Much of Novartis' products' packages comes from tree fibers, too.

Looking ahead: "I don't talk about offsets anymore because people think of it as continuing to emit," said Lehni. Instead, the program is framed as "carbon-sink forestry" and as an integral part of the company's emissions reduction strategy.



The Sichuan Forestry Project. | Photo courtesy of Novartis.

Scoping It Out: How Does Offsetting Fit Into Companies' Overall Emissions Reductions Strategies?

Climate change is a wicked problem because its principal cause – anthropogenic greenhouse gas emissions – is so ingrained in the day-to-day operations of most businesses, from retailers to airlines to utilities. Even more wicked is the fact that the majority of companies' emissions fall outside of Scope 1, or the emissions under their direct control, instead appearing in Scope 2 (indirect emissions associated with energy use) or Scope 3 (indirect emissions associated with the use of sold products or transportation, for instance).⁶ Overall, CDP disclosers reported an emissions liability of nearly 25 billion tonnes in 2014 – about three-quarters of which were attributed to Scope 3 emissions. Offset buyers were behind 5.7 billion of these emitted tonnes.

Overall, CDP disclosers reported an emissions liability of nearly 25 billion tonnes in 2014 – about three-quarters of which were attributed to Scope 3 emissions.

However, CDP disclosers' Scope 1 and 2 emissions *would have been* 15% higher had it not been for the direct emissions reductions activities (not including offsetting) that they undertook in 2014, pictured in Figure 7. Offsets went beyond these direct emissions reductions activities to reduce another 105 MtCO₂e. Compliance offsetting is conceptually “counted” against direct emissions since companies either purchase offsets to mitigate their regulated Scope 1 footprint, or they originate projects within their fence-line. Meanwhile, voluntary offsetting logically applies to Scope 3 emissions, since companies usually voluntarily offset only *after* they have made efforts to reduce emissions internally (also see the next section, “Tonne by Tonne”). Some ahead-of-the-curve companies are even considering offset purchases as “Scope 4” as they seek to finance emissions reductions completely outside of their sphere of influence.

In the short-term, offsets are a way to address Scope 3 – the emissions “elephant in the room” – more immediately.

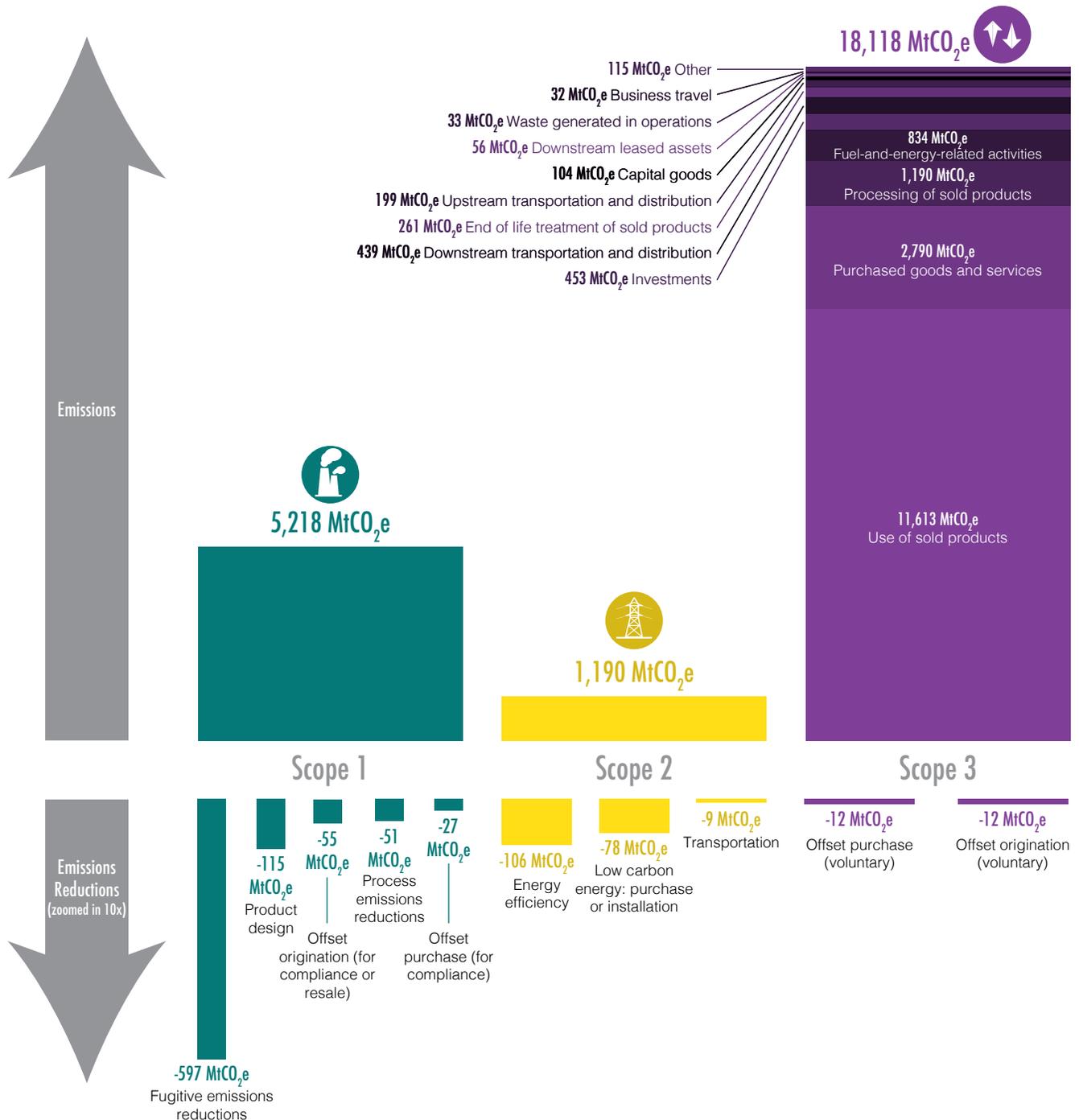
Though Figure 7 is only meant to be illustrative (specific emissions and emissions reductions activities may fall under different scopes, depending on the company), it does indicate the reality that companies' options for addressing their indirect emissions are often on a longer time horizon, since reducing Scope 3 emissions may involve working with suppliers to change raw material sourcing practices, doing life-cycle analyses of products, and even working towards transforming the energy grid so customers are drawing

power from cleaner sources. In the short-term, offsets are a way to address Scope 3 – the emissions “elephant in the room” – more immediately.

Furthermore, more than half of scope 1 emissions reductions (a total of 597 MtCO₂e) collectively reported by reporting companies in 2014 came from cutting “fugitive” emissions – essentially unintended leaks from industrial processes. Almost all of these fugitive emissions reductions came from companies that *don't* offset. Offset buyers hailing from sectors such as finance, consumer goods, and technology typically have fewer (if any) fugitive emissions to reduce and must look further into their sphere of influence to achieve emissions reductions.

⁶ The terms “Scope 1, 2, and 3 Emissions” were introduced in the GHG Protocol which was developed by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) and which sets the global standard for how to measure, manage, and report greenhouse gas emissions. See <http://www.ghgprotocol.org>.

Figure 7: Total Scope 1, 2, and 3 Emissions and Total Emissions Reductions in 2014, from Companies Reporting to CDP



Notes: Based on 5.2 billion tonnes of scope 1 emissions reported by 1,718 companies; 1.2 billion tonnes of scope 2 emissions reported by 1,729 companies, and 18.2 billion tonnes of scope 3 emissions reported by 1,426 companies (not all companies reported emissions across all scopes). Companies reported a total of 1.1 billion tonnes of emissions reductions in 2014; 118 Mt in emissions reductions categorized as “behavioral change” and “other” did not fit into this schema and were thus excluded. Though not analyzed in depth in this report, Renewable Energy Certificates (or “RECs”) are folded into the “low carbon energy purchase” category that is counted against Scope 2 emissions.

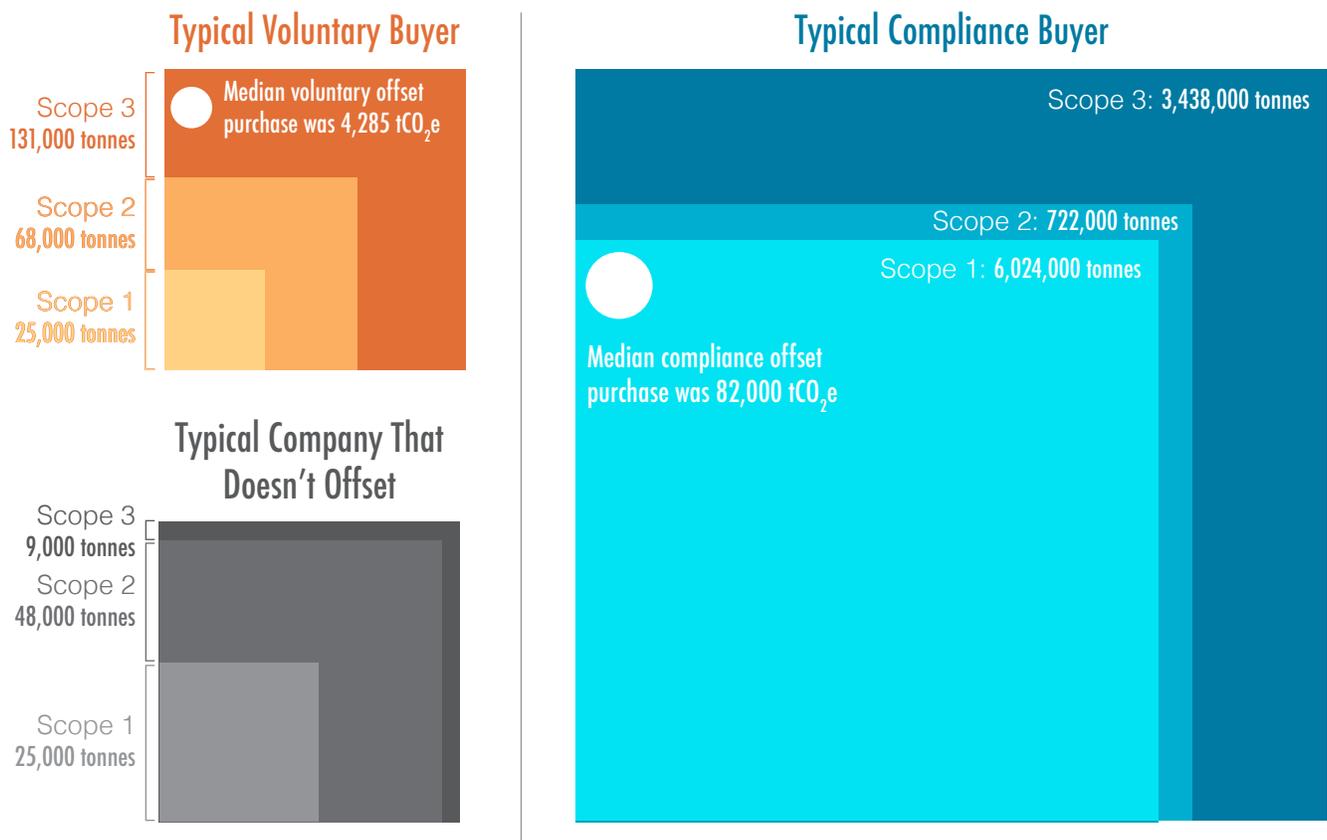
Data source: CDP public disclosure, reporting year 2015.

Tonne by Tonne: Does Offsetting Make a Dent?

To get a sense of the “typical” company that purchases offsets and the “typical” company that does not purchase offsets, we looked at the median values of emissions and offset purchases. While the typical voluntary offset buyer had similar direct emissions compared to the typical company that didn’t purchase offsets (about 25,000 tCO₂e for both), voluntary buyers reported a much larger Scope 3 emissions liability: about 131,000 tCO₂e, compared to just 10,000 tCO₂e for the typical company that didn’t purchase offsets. This finding is in line with the logic that voluntary buyers come from sectors such as consumer goods, technology, and food & beverage in which most of the emissions occur in Scope 3 – either upstream in the company’s supply chain or downstream in the distribution or use of their goods and services. These Scope 3 emissions are difficult to address without completely rethinking supply channels or the life cycle emissions of products.

While the typical voluntary offset buyer had similar direct emissions compared to the typical company that didn’t purchase offsets (about 25,000 tCO₂e for both), voluntary buyers reported a much larger Scope 3 emissions liability: about 131,000 tCO₂e, on average, compared to just 10,000 tCO₂e for the typical non-buyer.

Figure 8: Scale of the Typical Voluntary Offset Buyer’s Emissions and Emissions Reductions, All Scopes, 2014



Notes: Based on *median* emissions and emissions reductions to get an idea of the *typical* voluntary and compliance offset buyer. Numbers are rounded to the nearest 1,000.

Data source: CDP public disclosure, reporting year 2015.

Conceptually, voluntary buyers are usually offsetting against these indirect emissions, even as they may work towards the deeper transformation needed to reduce them. The median voluntary offset purchase was 4,285 tCO₂e. This number is small compared to total Scope 3 emissions because voluntary buyers often use offsets to address just one aspect of Scope 3 emissions – employee air travel, for instance, or the emissions associated with a particular product that they want to market as “carbon neutral.” A parent company may target its offset purchases for one of its eco-conscious subsidiaries: **Clorox** reported offset purchases for its Burt’s Bees brand but noted that these products make up less than half of one percent of the company’s total emissions. As they move further along in their greenhouse gas commitments, voluntary buyers may offset more comprehensively. The carpet-maker **Interface** calculates the lifetime emissions of its carpets, including through vacuuming and recycling, and offsets it all.

Voluntary buyers often use offsets to address just one aspect of Scope 3 emissions – employee air travel, for instance, or the emissions associated with a particular product that they want to market as “carbon neutral.”

Because compliance offset buyers are, by definition, those companies that emit enough greenhouse gases to be captured under the “caps” of carbon regulations, the typical compliance buyer had a much larger carbon footprint compared to other companies: about 10 MtCO₂e. For the typical compliance buyer, most (59%) of these emissions fell under Scope 1, 7% under Scope 2, and 34% under Scope 3. The typical offset purchase was much larger, too: 82,000 tCO₂e. When it comes to compliance buyers, offset purchases should usually be considered against the direct emissions that fall under the regulation. Compliance buyers use offsetting as a cost-containment mechanism: They’ll purchase offsets to fulfill their obligation as long as offset prices fall under allowance prices.



Not Buying Their Way Out of the Problem: How Do Offset Buyers' Emissions Reductions Targets and Activities Compare to Those of Other Companies?

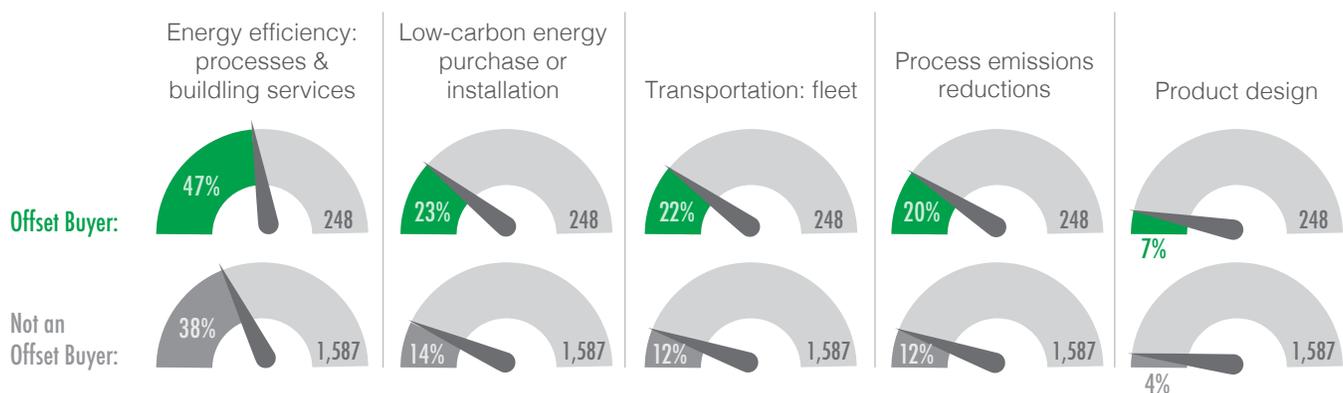
Though offset buyers have sometimes been criticized for “buying their way out of the problem” instead of implementing direct emissions reductions, Ecosystem Marketplace’s analysis of CDP data previously debunked this myth, finding that offset buyers had more ambitious greenhouse gas reduction targets and did *more* across the board to directly reduce emissions compared to companies that don’t offset. This year’s findings substantiated this again.

Overall, 88% of voluntary offset buyers and 92% of compliance offset buyers reported an emissions reductions target to CDP – slightly higher than the 76% for companies that did not purchase offsets. **Offset buyers are also more likely to have an absolute emissions reductions target in place** (meaning they aim to cut emissions by a certain percentage under a baseline year) rather than an intensity target (meaning they aim to cut emissions per a certain unit of output, such as electricity generated or products produced). Sixty-five percent of voluntary buyers and 58% of compliance buyers had absolute targets, compared to 44% of companies that didn’t purchase offsets.

An absolute climate target may lend itself more to offsetting, since these internal targets essentially create a “cap” – a specific number of emissions that a company is aiming for in the target year. **Many offsetting companies have also signed onto the “Science Based Targets” initiative as they aim to align their corporate emissions reductions goals with a (maximum) 2-degrees Celsius temperature rise pathway.**⁷ Of the 163 companies that have set Science-Based Targets as of June 2016, 113 disclose to CDP and of those, 23 reported offset purchases in 2014. (See the Annex for a list of which ones.)

In order to meet their targets, offset buyers consistently implemented direct emissions reductions activities such as installing energy efficiency measures, greening their transportation fleet, or designing lower-carbon products at a higher rate compared to companies that didn’t purchase offsets (Figure 9).

Figure 9: Percentage of Reporting Companies Engaging in Emissions Reductions Activities



Notes: Based on emissions reductions activities reported by 248 companies that purchased offsets in 2014 and 1,587 companies that didn’t. Respondents could select multiple emissions reductions activities.

Data source: CDP public disclosure, reporting year 2015.

⁷ The initiative is a partnership among CDP, the UN Global Compact, the WRI, and WWF.

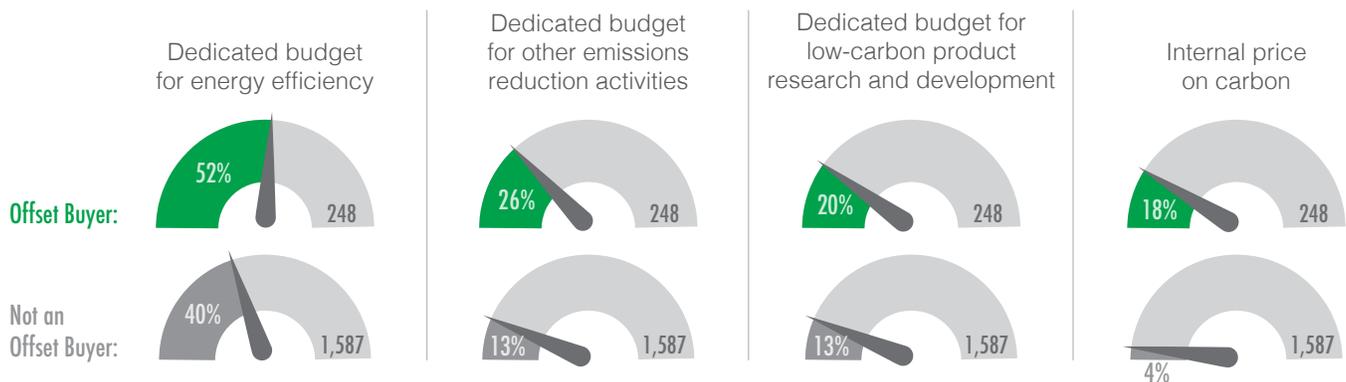
Predictably, this resulted in offset buyers achieving more emissions reductions as a proportion of their Scope 1 & 2 emissions. **The median voluntary offset buyer reduced 2.8% of its Scope 1 & 2 emissions through efforts such as installing energy efficiency measures, greening their transportation fleet, designing lower-carbon products, etc., compared to the median emissions reduction achievement of 1.0% for companies that didn't purchase offsets.** (Compliance buyers were in between the two, with achieved emissions reductions adding up to 1.7% of their scope 1 & 2 emissions in 2014, on average.)

These reductions required upfront investments, though previous Ecosystem Marketplace has shown that these pay off fairly quickly, with efforts such as energy efficiency, in particular, saving companies money in the medium-term. The typical voluntary offset buyer spent more than \$1 million on emissions reductions activities in 2014 – about ten times the investment of the typical company that didn't purchase offsets. (The typical compliance buyer spent even more: \$3.5 million, on average.) As was the case in previous years, **offset buyers also reported the methods they used to drive investment in emissions reductions at a higher rate, across the board** (Figure 10).

The typical voluntary offset buyer spent more than \$1 million on emissions reductions activities in 2014 – about ten times the investment of the typical company that didn't purchase offsets.

Dedicated budgets – for energy efficiency, for designing lower carbon products, and for other activities such as building maintenance, electric vehicle charging stations, and carbon footprint analyses – were common. A handful of companies, including the British clothing brand **Ted Baker Plc**, the Dutch wealth management company **Van Lanschot NV**, and the Chinese tech company **Lenovo Group** reported having a dedicated budget for carbon offset purchases. More than half of offset buyers – 37 compliance buyers, but also 100 voluntary ones – reported that compliance with regulatory requirements or standards was one of the motivations for raising money to reduce emissions.

Figure 10: Methods Used by Reporting Companies to Drive Investment in Emissions Reductions



Notes: Based on responses about investments by 248 companies that purchased offsets in 2014 and 1,587 companies that didn't. Respondents could select multiple methods.

Data source: CDP public disclosure, reporting year 2015.

The Price Is Right: How Many Companies Are Assigning An Internal Price on Carbon, and How Do Those Prices Compare to Other Metrics?

Offset buyers were nearly five times more likely than companies that didn't purchase offsets to use an internal price on carbon to drive investment in emissions reductions: 57 voluntary buyers and 34 compliance buyers had such an internal price. This finding mirrors that of Ecosystem Marketplace's 2015 *The Bottom Line* report, however, it should be considered weightier this year because of the recent runaway rise in the number of companies using internal carbon pricing. Across all companies reporting to CDP last year, 435 companies have now implemented a price on carbon – more than triple the number that had a price on carbon in 2014. Another 583 said they planned to implement a price on carbon in the next two years. Among offset buyers, the number that internally priced carbon more than doubled.

The upsurge of internal carbon pricing among major companies represents a sea change in how businesses are accounting for climate risk. Rather than considering risk abstractly, they are attempting to quantify it and enter it into their balance sheets. The carbon price they set could have a material impact on day-to-day decisions and future investments. Some companies use the internal price on carbon as a shadow price, entering it into cost-benefit analyses to get a sense of climate risk.

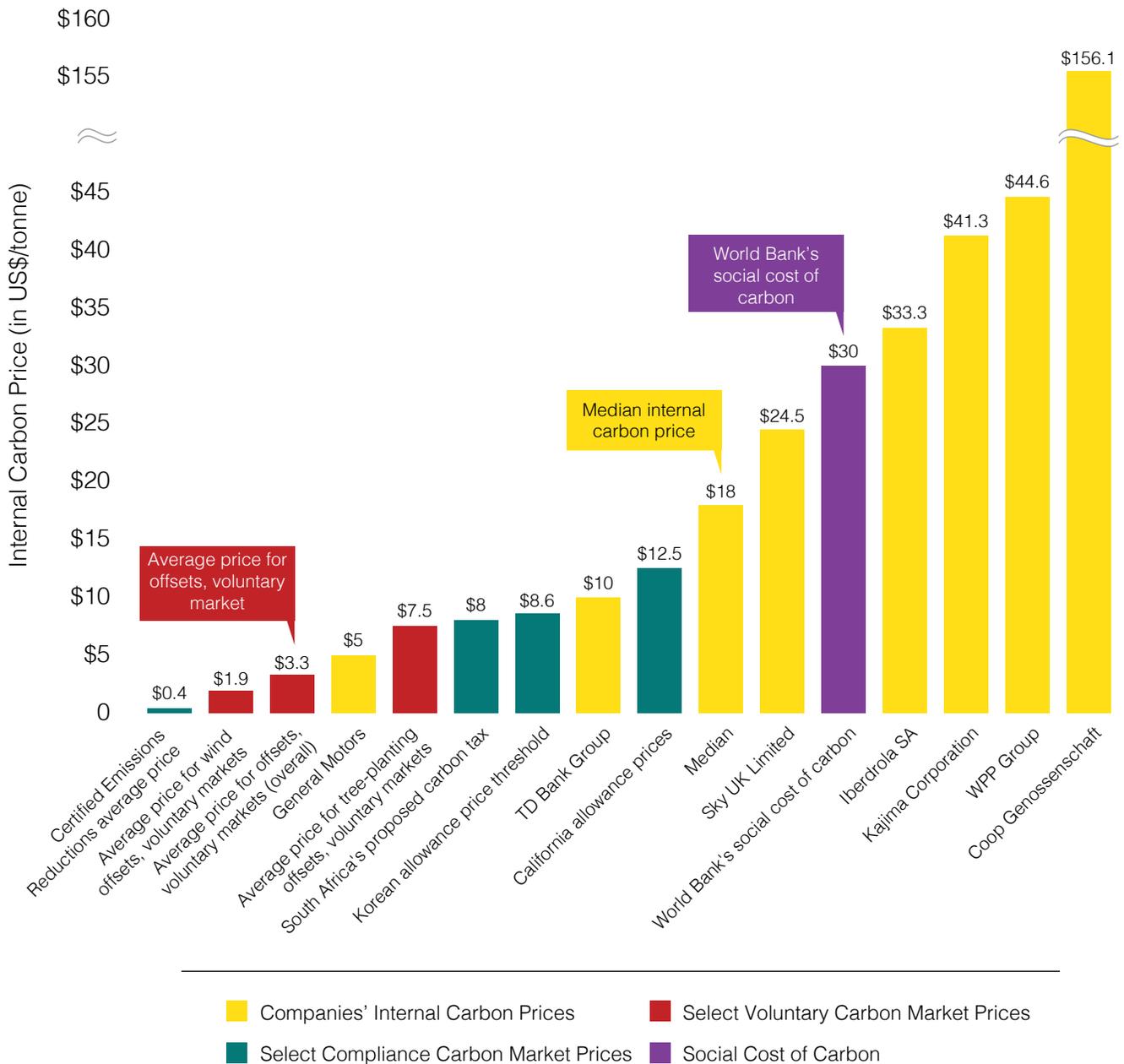
Perhaps the most advanced way of using an internal price on carbon is to actually implement that price as a fee, charging business divisions according to their emissions. This can incentivize divisions to find emissions reductions opportunities at their source while also raising a pot of money that can then be reinvested – sometimes in offsets. Major offset buyers including **Barclays**, **Disney**, **Microsoft**, and **Swiss Re** already do this. For example, the Disney Climate Solutions Fund has spent \$48 million on carbon offset projects to date and is made possible by the fees from the carbon price, which flow directly into the fund.

Perhaps the most advanced way of using an internal price on carbon is to actually implement that price as a fee, charging business divisions according to their emissions.

Overall, out of the 435 companies that said they currently have a price on carbon, 120 reported what that price was. It ranged widely, from just \$0.3/tonne to more than \$150/tonne. Companies often determined these prices based on current or upcoming regulation. Companies based in the European Union or California often used current allowance prices on those cap-and-trade markets as a benchmark. Dozens of South African companies cited the proposed carbon tax of 120 Rand per tonne (about \$8/tonne) as their internal carbon price. However, companies may also choose prices based on expectations about rising carbon prices globally or on research they trust. British communications firm **WPP Group** – which voluntarily purchased about 100,000 offsets in 2014 – set an internal price on carbon of £29.2/tonne (\$44.6/tonne) based on the Stern Review on the Economics of Climate Change.

Figure 11 below illustrates the internal carbon prices of select offset buyers alongside various carbon pricing benchmarks. It shows that, **among companies that internally price carbon, current offset prices may be considered a deal: The average price for offsets on the voluntary carbon markets last year (\$3.3/tonne) was about a sixth of the median internal carbon price set by companies: \$18/tonne.** Offset prices also come in lower than the “social cost” of carbon, or the estimated economic damages associated with an emission of one tonne of carbon dioxide. In 2014, the World Bank began using a social cost of carbon for its projects starting at \$30/tonne in 2015 and increasing to \$80/tonne (in real terms) by 2050.

Figure 11: Select Companies' Internal Carbon Prices Compared to Example Offset and Allowance Prices



Notes: Internal carbon prices are based on 120 specific prices companies reported to CDP in 2014. Voluntary carbon offset prices are based on Ecosystem Marketplace's *State of the Voluntary Carbon Markets 2016* report. Compliance offset and allowance prices are based on: Intercontinental Exchange futures pricing for CERs, California Carbon Info (allowance price data from time of publication), the International Carbon Action Partnership (ICAP) reporting (for Korean allowance price threshold and the South African government's draft carbon tax bill).

Data source: CDP public disclosure, reporting year 2015.

Feeling the Heat: What Climate Change Risks Do Offset Buyers Face?

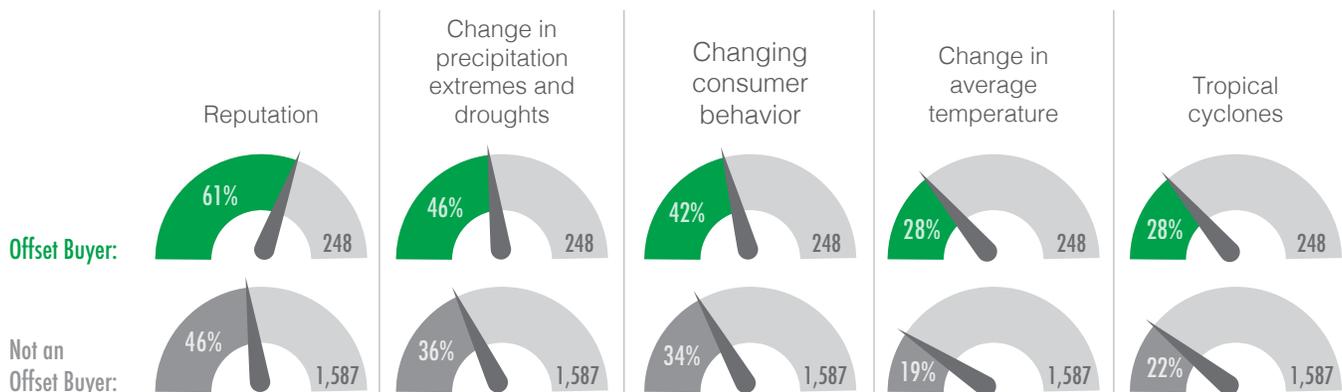
Companies that offset are more likely to recognize climate change as a risk than companies that do not offset. As was the case in Ecosystem Marketplace's previous analysis of CDP disclosures, **offset buyers last year reported climate risks at a higher rate compared to companies that didn't offset**. Again, reputation was the most commonly reported climate risk, mentioned by 153 offset buyers (60%). Financial institutions said they are feeling the pressure directly from shareholders. **TD Bank** faced direct civil action against its investment in the Keystone XL pipeline and notes "the potential for customer or investor loss" associated with fossil fuel development. Other companies are attuned to their reputation with their own employees.

For many companies, reputational risks hinge on the preferences of customers, who may decrease their demand for a key product or brand if a company is not proactive in addressing climate change. More than 100 offset buyers identified "changing consumer behavior" as a risk. Consumer behavior could change, as consumers use a pocketbook approach to address their concerns. For example, hotels may lose business if they do not offer "green" conferencing options. But customers could also switch their habits due to the changing climate itself. **Coca-Cola**, which buys offsets from forestry and cookstoves projects, notes that unusually rainy summer weather could decrease customers' demand for its cool beverages.

For many companies, reputational risks hinge on the preferences of customers, who may decrease their demand for a key product or brand if a company is not proactive in addressing climate change.

Among the physical risks of climate change, companies were most concerned about precipitation extremes and drought, followed by temperature shifts and tropical cyclones. Sportswear manufacturer **PUMA** worries that temperature extremes could affect its cotton farmers. **Google** and **Microsoft** are preparing for increased cooling costs in their data centers. **Delta Air Lines** anticipates that since higher temperatures decrease air density, climate change may increasingly force their planes to carry lighter loads. And an increase in the frequency of tropical cyclones could be a game-changer for any company with assets or people in the storms' paths.

Figure 12: Climate-Related Risks Reported by Companies



Notes: Based on 248 companies that purchased offsets in 2014 and 1,587 companies that didn't. Respondents could select multiple physical climate risks.

Data source: CDP public disclosure, reporting year 2015.

SPECIAL SECTION ON REDD+

Saving Standing Forests: How Could the Private Sector Scale Up Efforts to Halt Deforestation?

The inclusion of results-based payments to Reduce Emissions from Deforestation and forest Degradation (REDD+) as an article in the Paris Agreement sent a strong signal to governments that the mechanism first conceived of at the Bali climate negotiations in 2007 has finally come to fruition. Because deforestation and forest degradation is responsible for up to 15% of global emissions, halting it is essential to keeping global temperature rise to no more than 2 degrees Celsius.

To date, developed country governments have paid at least \$1.1 billion for REDD+ emissions reductions in tropical forest countries and spent another \$2.8 billion on “readiness” activities that help countries to prepare for results-based payments. Last December in Paris, Norway, Germany, and the UK made the largest results-based pledge towards REDD+ to date, putting \$5 billion “on the table” to be disbursed if tropical forest countries successfully reduce deforestation.

However, current financing for REDD+ falls far short of what is needed to curb deforestation. While it is nearly impossible to come up with an accurate price tag, the estimates for what it would cost to halve deforestation globally range from \$17 billion to \$60 billion annually – many times current financing.⁸ **REDD+ advocates argue that increased private sector finance is sorely needed in order to scale up avoided deforestation efforts globally.**

Table 1: Top 20 REDD+ Offset Buyers Disclosing to CDP, 2013–2015

1. Walt Disney Company	11. Old Mutual plc
2. Allianz SE	12. Delta Air Lines
3. Microsoft Corporation	13. Catlin Group Ltd
4. Macquarie Group	14. State Street Corporation
5. Santos	15. TUI Group
6. Barclays Africa	16. Barclays
7. Kering	17. Insurance Australia Group
8. Nedbank Limited	18. Banco Santander Brasil
9. Marks & Spencer	19. Qantas Airways
10. PUMA	20. Intuit Inc.

Ecosystem Marketplace reporting has previously documented the reasons why forest carbon (and in particular REDD+) offsets are popular among private sector voluntary buyers: they’re often associated with rich co-benefits such as employment and biodiversity protection; they’re relatively easy to explain to customers; and they may connect a company to conservation in a beloved part of the world.⁹ The CDP disclosures offer further insight into which companies are engaged in financing emissions reductions in forests and what motivates them to do so. **Over the last three years of available CDP disclosures, 146 companies have purchased 8.2 MtCO₂e of forest carbon offsets,** giving us detailed demand data for 9% of the total forest carbon offset transactions tracked by Ecosystem Marketplace during those years. Of those, 3.3 MtCO₂e were REDD+ offsets while an additional 4.8 MtCO₂e were other forest activities that some countries consider to be a part of the “+” in avoided deforestation (agroforestry, tree-planting, and improved forest management).

⁸ See Eliasch, Johan. *Climate Change: Financing Global Forests*. London, Office of Climate Change, 2008. and Morris, D. and Stevenson, A. *REDD+ and International Climate Finance: A Brief Primer*. Washington, DC: Resources for the Future, 2011.

⁹ See Goldstein, Allie. *Not So Niche: Co-benefits at the Intersection of Forest Carbon and Sustainable Development*. Washington, DC: Forest Trends, 2016.

CONTINUED

In 2014, 41 companies reported REDD+ offset purchases to CDP. Here are a few examples:

- Brazilian telecommunications company **Tim Participações S.A.** bought tonnes from the Jari Amapá REDD+ project in Brazil in an effort to support avoided deforestation efforts close to its headquarters and customer base.
- The bank **Barclays Africa**, which has operations in 12 African countries, also invested in avoided deforestation close to home by buying tonnes from the Kasigau Corridor REDD+ project in Kenya.
- **Royal Wessanen**, the Dutch sustainable food brands, bought offsets from a REDD+ project in San Martin, Peru close to where one of its subsidiaries sources its cocoa for chocolate.
- Financial firm **SURA Peru** purchased REDD+ offsets from Peru's own Alto Mayo project.
- Australian supply chain logistics company **Brambles** bought offsets from Acre, Brazil, when customers opted for carbon-neutral shipping; forestry is intimately connected to the company's core business, which involves making and repairing reusable wooden pallets for shipping.

While these examples represent cases in which investments in avoided deforestation projects align with companies' voluntary environmental and social goals, they don't represent the scale of private sector finance needed for REDD+. To date, private sector companies have spent a total of \$1 billion on forest carbon offsets,¹⁰ transacting 171.1 MtCO₂e on the voluntary carbon markets. While the voluntary carbon markets saw 10% growth last year, offset prices are dropping – and REDD+ project developers are thinking about how to “nest” (integrate) their projects into REDD+ programs at the state or country level as governments move forward with scaled-up efforts. In the future, private sector REDD+ demand could grow through various initiatives outside of the voluntary carbon markets. These include:

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Compliance carbon markets. The California Air Resources Board is considering linking its cap-and-trade program with Acre, Brazil, to source REDD+ offsets from the tropical forest state in time for their third compliance period, starting in 2018. It would be the first compliance market for REDD+ offsets in the world, and it would open up an entirely new source of private sector finance: namely, the large California emitters that are subject to regulation.

A market-based mechanism for aviation. The International Civil Aviation Organization (ICAO) is in the process of designing a market-based mechanism to reach its goal of carbon-neutral growth starting in 2020. Some environmental groups, including Ecosystem Marketplace's publisher Forest Trends, are pushing for the inclusion of REDD+ offsets in ICAO's market, which is projected to create a demand for hundreds of millions of tonnes annually. In 2014, CDP disclosers **Delta**, **Finnair**, **Qantas**, and **International Consolidated Airlines Group** reported purchasing 1.2 MtCO₂e ahead of the regulation.

Supply chain commitments. Over the past few years, 366 companies that source palm, soy, cattle products, or timber – the “big four” commodity drivers of deforestation – have made pledges around supply chain sustainability. Of these, 15 companies are offset buyers reporting to CDP, and six purchase REDD+ offsets specifically (a total of about 220,000 tCO₂e in the last two years). In the future, “demand” for avoided deforestation may flow not necessarily through offset purchases, but through commitments to source commodities from deforestation-free regions. **Marks & Spencer** and **Unilever**, the co-chairs of the influential Consumer Goods Forum, made this pledge at the climate negotiations in Paris, but it's unclear whether companies' no-deforestation pledges are directly related to their corporate emissions reductions goals. Marks & Spencer is a REDD+ offset buyer, but Unilever reported only compliance-grade, non-forestry offset purchases to CDP.

¹⁰ For reference, this value represents about one fifth of the total cumulative value of the voluntary carbon markets, across all offset categories (including renewable energy, methane reduction, etc.). Over the last several years, REDD+ has consistently been among the most sought-after project types by private sector offset buyers.

On the Horizon: How Will Major Companies Engage In Future Carbon Markets?

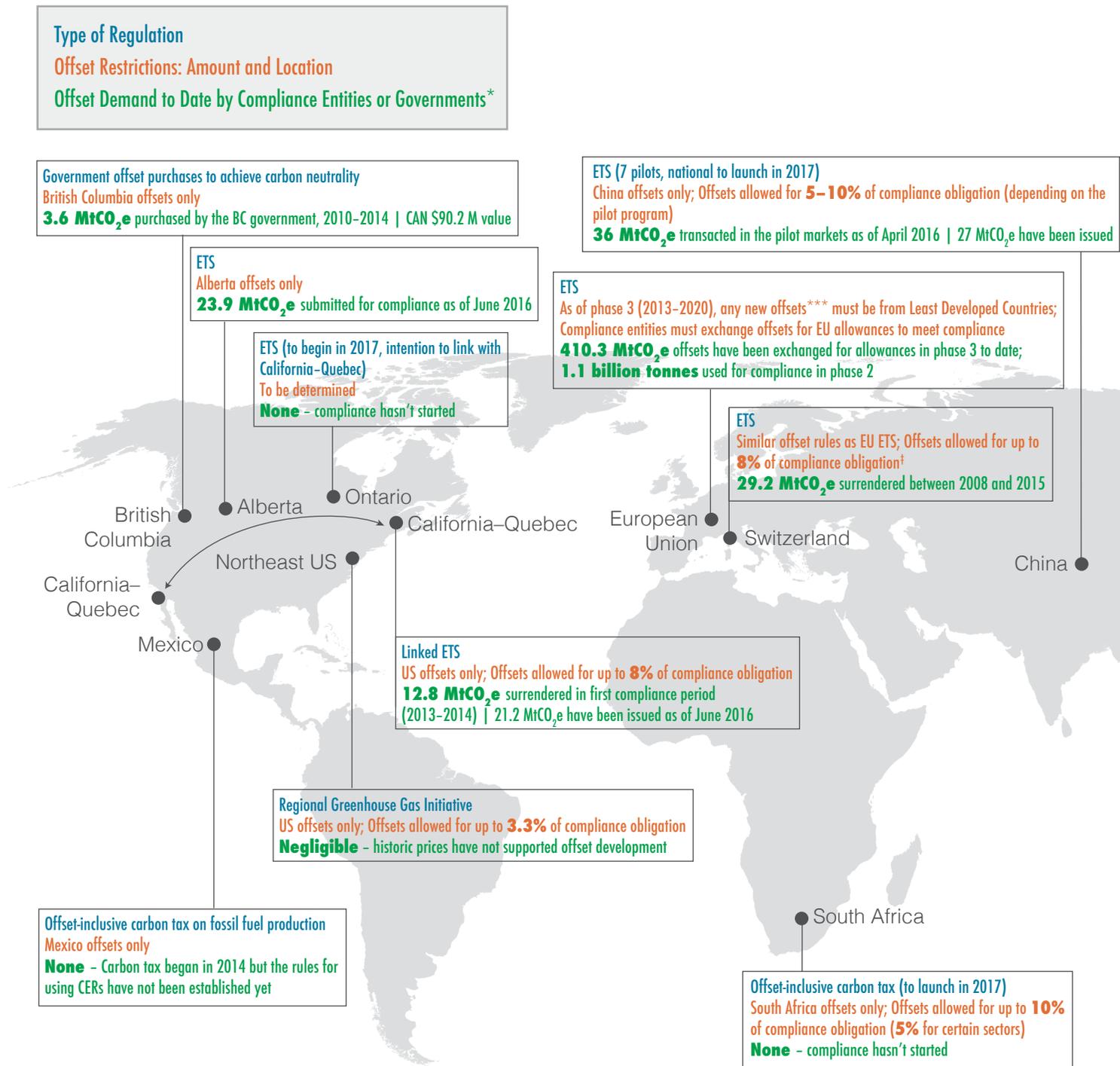
From China to California, 38 jurisdictions that cover 12% of global emissions now have carbon pricing instruments. In April 2016, economic leaders, including the World Bank and the International Monetary Fund, called on governments to expand carbon pricing to cover at least 25% of global emissions by 2020. Support was strong among CDP disclosers, with 85% of companies saying they support carbon pricing policies fully or with just minor exceptions. Among the policy options, 229 companies expressed support for mandatory carbon pricing, followed by cap-and-trade (156 companies), carbon finance (94 companies), and a carbon tax (71 companies). The preference for cap-and-trade over a carbon tax may be a positive signal for offsetting programs, which have been more readily adopted within cap-and-trade programs – though carbon taxes may be offset-inclusive, too.

Three out of five CDP disclosers are either currently participating in an Emissions Trading System (ETS) (757 companies) or expect to be in the next two years (325 companies). Nearly all compliance offset buyers participate in or anticipate an ETS, but a third of voluntary buyers (57 companies) do, too. By far the most reporting companies (274 companies) participated in the European Union's ETS, which covers about 45% of the EU's emissions and has served as the primary source of demand for CDM offsets from developing countries – primarily China, India, Brazil, and Mexico – since it began in 2005. Twenty-five companies reported participating in California's cap-and-trade program, creating demand for offsets originated in the United States. Seventeen reporting companies participated in Alberta's ETS and 16 were covered by China's seven pilot ETS's, with both systems creating demand for domestically sourced offsets. Figure 13 shows all of the current and soon-to-be-implemented offset-inclusive carbon markets in the world, highlighting the potential for offset demand.

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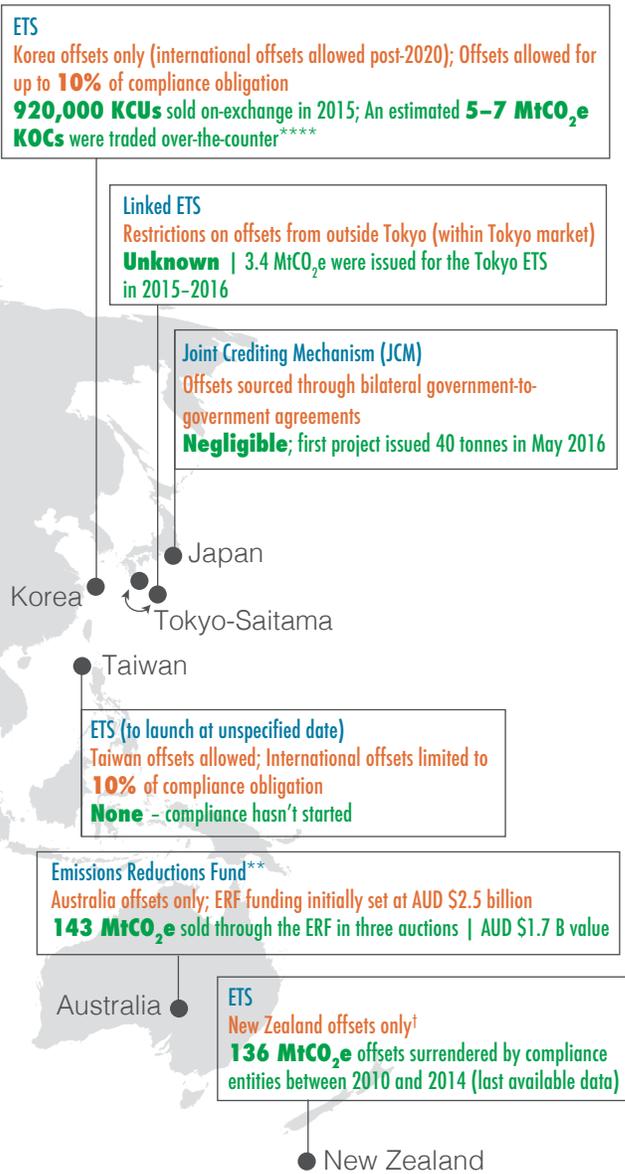
Figure 13: Map of Current and Soon-to-Come Compliance Carbon Markets that Include an Offsetting Mechanism



* Where available, we specify offset “demand” as the number of offsets surrendered by compliance entities to meet their emissions reductions obligations. In the case of public sector programs such as Australia and B.C., the “demand” reported is the number of offsets purchased by the government to date. For some markets (China and Korea), we were only able to find current data on transaction volumes; since offsets may be traded more than once, these numbers are likely overestimates of the number that will ultimately be surrendered for compliance. Where it is relevant for context, we also included the number of offsets issued to date.

** Currently Australia’s Emissions Reduction Fund (ERF) includes only government offset purchases, but a Safeguard Mechanism that essentially caps large emitters will begin on July 1, 2016, creating semi-compliance demand for offsets from regulated entities.

*** The European Emissions Trading Scheme (EU ETS) has historically allowed international offsets developed under two United Nations mechanisms developed under the Kyoto Protocol: the Clean Development Mechanism (CDM) and Joint Implementation (JI). The former generates Certified Emissions Reductions (CERs) from developing countries and the latter generates Emissions Reduction Units (ERUs) from industrialized countries that are not party to the Kyoto Protocol. Now that countries are working to operationalize the Paris Agreement, which does not draw the same distinction between developing and developed nations, rules for an international carbon market are being re-negotiated.



**** Korean Offset Credits (KOCs) must be converted to Korean Carbon Units (KCU) before they can be used for compliance in Korea. The trading volume of KOCs is included here as an indicator of future compliance demand.

† International offsets were restricted in New Zealand as of May 2015, though a revision of the country's ETS is ongoing.

‡ Switzerland and the EU agreed to link their ETSs in January 2016 but the agreement needs to be ratified before implementation.

Sources:

Excellent sources for information on carbon markets include the World Bank Group and Ecofys Carbon Pricing Watch 2016 (available at: http://www.ecofys.com/files/files/world-bank-group_ecofys-carbon-pricing-watch_160525.pdf), and the International Emission Trading Association's (IETA) global case studies (available at: <https://ieta.wildapricot.org/The-Worlds-Carbon-Markets>). Long Lam of Ecofys and Stefano De Clara of IETA contributed their insights to this figure. Additional links to sources used to create the map above include:

Alberta: <http://aep.alberta.ca/climate-change/programs-and-services/industrial-emissions-management.aspx>

Australia: <http://www.cleanenergyregulator.gov.au/ERF/Auctions-results> & <https://www.environment.gov.au/climate-change/emissions-reduction-fund/publications/factsheet-erf-safeguard-mechanism>

British Columbia: <http://www2.gov.bc.ca/gov/content/environment/climate-change/reports-data/carbon-neutral-action-reports/carbon-offset-projects>

California-Quebec: <http://www.arb.ca.gov/cc/capandtrade/2013-2014compliance-report.xlsx>

China: <http://www.ecofys.com/en/news/carbon-pricing-watch-2016-governments-raise-more-revenues-from-carbon-pricing>

European Union: http://www.ieta.org/resources/Resources/Case-Studies_Worlds_Carbon_Markets/euets_case_study_may2015.pdf & http://ec.europa.eu/clima/policies/ets/credits/index_en.htm & http://ec.europa.eu/clima/news/articles/news_2016050201_en.htm

Japan: <https://japancredit.go.jp/english/>

Korea: <http://carbon-pulse.com/14215/>

Mexico: https://ieta.wildapricot.org/resources/Resources/Case-Studies_Worlds_Carbon_Markets/mexico_case_study_may2015.pdf

New Zealand: <http://www.epa.govt.nz/e-m-t/reports/ets-reports/annual/Pages/default.aspx>

Northeast US (RGGI): <http://www.ecosystemmarketplace.com/market-watch/carbon/north-america/>

Ontario: <https://www.ontario.ca/page/cap-and-trade-program-overview>

Switzerland: https://ieta.wildapricot.org/resources/Resources/Case-Studies_Worlds_Carbon_Markets/switzerland_case_study_may2015.pdf; <https://www.emissionsregistry.admin.ch/crweb/public/reporting/surrendering/list.do>

South Africa: <http://www.treasury.gov.za/public%20comments/CarbonTax-Bill2016/Explanatory%20Note%20Carbon%20Offset%20Regulation.pdf>

Taiwan: http://www.ieta.org/resources/Resources/GHG_Report/2015/Articles/Taiwan_laying_the_foundation_for_a_carbon_market_HChien_RShi_WHu.pdf

Tokyo: http://www.ieta.org/resources/Resources/Case-Studies_Worlds_Carbon_Markets/tokyo_case_study_may2015.pdf & http://www.kankyo.metro.tokyo.jp/climate/large_scale/trade.html

The Last Word: Key Takeaways

Offsetting is buying your way into the problem – not out of it. Companies engaged in offset-inclusive carbon management implemented emissions reductions measures at a higher rate compared to companies that did not include offsetting in their strategy. Collectively, the 314 reporting companies engaged in offsetting spent \$42 billion on direct emissions reductions in 2014 – more than the \$41 billion spent by the much greater number of companies (1,522) that did not purchase or originate offsets. As a result, companies engaged in offsetting mitigated a greater proportion of their greenhouse gas emissions, on average.

Offsetting is cost-effective mitigation. More than 1,000 companies reporting to CDP in 2015 either have, or soon plan to implement, an internal price on carbon. Offset buyers are nearly five times more likely to have an internal carbon price. And for good reason: the median internal carbon price companies set was \$18/tonne, many times the average prices of offsets on the voluntary carbon market. If internal carbon prices represent the risk associated with emitting one tonne of carbon dioxide, offsets represent very cost-effective mitigation.

Offsetting is risk management. Companies engaged in offset-inclusive carbon management report more climate change risks, on average, compared to companies that don't offset. They're concerned about physical risks such as hotter temperatures and more destructive storms, but also the reputational risks that come if customers, employees, and shareholders perceive them as inactive on addressing climate change. Offset purchases represent a way for companies to address these risks by financing real-world emissions reductions immediately. Offset origination similarly addresses climate risks, but sometimes does so inside the fence line – for instance, if a company “insets” an emissions reduction project within its supply chain.

Offsetting is avoided deforestation. Over the last three years, nearly 150 companies reporting publicly to CDP have purchased 8.2 million forest carbon offsets, more than half of which are from projects that reduce emissions from deforestation and forest degradation (REDD+). Advocates for tropical forests say that scaled-up private sector finance is sorely needed to leverage the many billions of dollars in results-based finance needed annually to halt tropical deforestation, which is the culprit for up to 15% of global greenhouse gas emissions. Offsetting has the potential to provide a portion of this needed REDD+ finance – such as through REDD+'s possible inclusion in California's cap-and-trade market and in the International Civil Aviation Organization's upcoming market-based mechanism for airline emissions.

Offsetting is only a slice. Though they did more than other companies to reduce emissions, the typical offset buyer purchased enough tonnes to neutralize just under 2% of its total emissions. This is partly because about three-quarters of CDP disclosers' collective emissions fell outside of their direct control, for instance upstream in their supply chain or downstream in customers' use of their products – a phenomenon that was pronounced for voluntary offset buyers from sectors such as consumer goods, retail, technology, and food & beverage. Many offsetting companies start small – for instance, by neutralizing the emissions of employee travel – but as they become more ambitious, they may choose to take responsibility for a larger percentage of their emissions – by offsetting the entire life cycle emissions of a product, for example.

Annex: Top 100 Voluntary Offset Buyers As Reported to CDP in 2015

● Supply-Chain Commitment ● Science-Based Target ● Forestry Buyer

adidas AG	Exelon Corporation	PUMA SE ●●
Afren ●	FedEx Corporation ●	Qantas Airways ●
Aimia Inc. ●	Gas Natural SDG SA	Reynolds American Inc. ●
Allianz SE ●	General Motors Company	Royal Mail Group ●
AMP ●	Goldman Sachs Group Inc.	Royal Wessanen NV ●
Australia and New Zealand Banking Group	Google Inc.	S.C. Johnson & Son, Inc. ●●
Aviva	Grupo Fleury	Sappi
Banco Santander Brasil ●	Hess Corporation	SGS SA ●●
Bank of Montreal	Hilton Worldwide, Inc. ●	Shiseido Co., Ltd. ●
Barclays Africa ●	Hiscox	Sky UK Limited
Barloworld	Insurance Australia Group ●	Solstad Offshore
Biogen Inc. ●	Interface, Inc.	Sompo Japan Nipponkoa Holdings, Inc
BM&FBOVESPA	Intuit Inc. ●	Sony Corporation ●
BNP Paribas ●●	JPMorgan Chase & Co.	Sopra Steria Group ●
Brambles ●	Kering ●●●	St.James Place ●
Canon Inc. ●	Koninklijke KPN NV (Royal KPN) ●●	State Street Corporation ●
Cap Gemini ●	Kuehne + Nagel International AG	Swiss Re
Capital One Financial	Lenovo Group	TAV HAVALIMANLARI HOLDING A.Ş.
Capital Power Corporation	Lojas Renner S.A.	TD Bank Group ●
Catalyst Paper Corporation ●●	Macquarie Group ●	Telekom Austria AG
Catlin Group Ltd ●	Magyar Telekom Nyrt.	The Coca-Cola Company ●●
Coop Genossenschaft ●	Marks and Spencer Group plc ●●	The Hershey Company ●●
Credit Agricole ●●	Microsoft Corporation ●	Tim Participações S.A. ●
Credit Suisse	Mondi PLC	Toyota Motor Corporation ●
Danone ●●●	National Australia Bank	TUI Group
Danske Bank A/S	Nedbank Limited ●	UniCredit
Delta Air Lines ●	Northrop Grumman Corp ●	UPS ●
Desjardins Group ●	Novartis ●●	Walt Disney Company ●
Deutsche Bank AG	Office Depot, Inc.	Westpac Banking Corporation
Deutsche Post AG ●	Old Mutual Group	World Bank Group
Deutsche Telekom AG	ORIX Corporation	WPP Group
DNB ASA	Österreichische Post AG	Zurich Insurance Group ●
Ecorodovias Infraestrutura e Logística S.A	Pearson ●●	
Estee Lauder Companies Inc.	PG&E Corporation ●	

Disclaimer: This list was compiled from companies' public disclosures to CDP in 2015. While Ecosystem Marketplace made reasonable efforts to confirm the information, it is not a comprehensive nor a verified list of voluntary offset buyers.

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Good Energies Foundation (<http://www.goodenergies.org>) supports sustainable systems that can prevent poverty and disruption caused by climate change in the Global South. Good Energies Foundation was established in 2007 and founded as an integral part of Good Energies Inc., a private equity company specialized in investing in the renewable energy and energy-efficiency industries. Good Energies Foundation's historical mission is the alleviation of future poverty in the Global South by mitigating climate change. Good Energies Foundation initially leveraged its know-how in solar photo-voltaic to provide access to clean energy, especially in the area of rural electrification. At a later stage, climate-change related solutions were added to the portfolio, including sustainable reforestation models. As temperatures rise, we believe that innovative solutions are urgently needed to prevent the future displacement and impoverishment of the world's most vulnerable populations.

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InfiniteEARTH is dedicated to Sustainability Solutions that go Beyond Carbon Neutral & Sustainable. We are committed to the development of economically viable solutions to climate change and environmental degradation by addressing the underlying driver of deforestation – poverty. InfiniteEARTH's projects focus on the preservation of Endangered Species Habitat, High Conservation Value (HCV) and High Carbon Stock (HCS) Forests, and the protection of National Parks through the creation of social and physical buffer zones. Additionally, our projects are designed to meet the UN Sustainable Development Goals by funding sustainable development in rural communities through capacity building and technology transfer of low impact technologies such as solar, fuel-efficient cookstoves, aquaponics, agro-forestry ("jungle crop" model) and social benefits programs such as health care and early childhood education materials.

InfiniteEarth is the developer of the Rimba Raya Biodiversity Reserve, the world's largest initiative to protect and preserve HCV, lowland peat swamp forests – one of the most highly endangered ecosystems in the world. The Rimba Raya Biodiversity Reserve aims to reduce Indonesia's greenhouse gas emissions and protect the endangered Borneo Orangutan by preserving 64,977 hectares of tropical peat swamp forest. More information can be found at <http://infinite-earth.com/>.



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