



View from the Understory

State of Forest Carbon Finance 2016

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State of Forest Carbon Finance 2016

October 2016

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Acknowledgments

This report is a compilation of the insights of a wide range of individuals across several continents. It would not be possible without the hundreds of individuals who shared critical information about their organizations (see the Directory for the list of organizations who participated in our survey and chose to be listed). This report is publicly available thanks to the generous financial contributions from our institutional supporters, Good Energies and the MacArthur Foundation, and our report sponsors: Althelia Ecosphere+, New Forests, GreenTrees, Infinite Earth, and Baker McKenzie.

The production of this report has required insights, time, and support from dozens of people. Reviewers offered invaluable feedback on the content of various sections of the report and its representation: Utkarsh Agarwal, Simon Bird, Carolyn Ching, Erin Connor, Stefano De Clara, Mary Grady, Jason Gray, Kelley Hamrick, Owen Hewlett, Long Lam, John Nicholson, Marigold Norman, Katie O'Gara, Elisabeth Brinch Sand, Brian Schaap, Gustavo Silva-Chávez, Naomi Swickard, Simon Whitehouse, Zubair Zakir, and Sheldon Zakreski.

Several other people supported the creation of this report by sharing their particular expertise on forest carbon finance or their on-the-ground experience: Kahlil Baker, Jonah Busch, Julian Ekelhof, Natalie Farrell, Christopher Hakes, Ben Keogh, Rhey Lee, Sarah Leugers, Kate Levin, Sarah McDonough, Joseph Pallant, Michael Sahn, Eva Schoof, Chris Stephenson, and Claire Willers.

Mahmood Rahimi designed our proprietary survey platform and provided invaluable technology support. Cynthia Jensen guided the editing of the report from start to finish and managed its production. Anne Thiel and William Tucker offered communications support.

A special thank you also to Eric Swanson and Michael Jenkins for their continued leadership and guidance at Forest Trends.

Branding, basic layout, and graphic design by Eszter Bodnar, Visilio (www.visilio.com)



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



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Foreword

Last year around this time we were preparing to attend the Paris climate negotiations, waiting to know whether countries would reach the first truly global agreement on climate change and whether that agreement would recognize the critical role of forests in meeting our scientifically non-negotiable, emissions reductions targets. On October 4, 2016, the threshold for entry into force was achieved, and the agreement will enter into force on November 4, 2016—earlier than even some of the most optimistic onlookers predicted.

The Paris Climate Agreement is just 32 pages long, but nestled within the pared-down document, a mere two paragraphs have big implications for forests worldwide and for those working to create new mechanisms and incentives to channel finance towards forest protection. Article 5 sends a strong signal for managing and protecting global forests, and in particular to the policy proposal known as Reducing Emissions from Deforestation and forest Degradation (REDD+), by encouraging parties to “take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases...including through results-based payments.”

The slightly longer Article 6 establishes a broad framework for “collaborative approaches” that allow for the use of carbon markets. It also lays the foundation for “voluntary cooperation” among parties that might want to transfer “mitigation outcomes” as part of an international carbon market that both reduces emissions and promotes sustainable development. Also earlier this month, the International Civil Aviation Organization, representing airlines, which fall outside of the Paris Agreement, reached a parallel agreement to limit emissions from international flights through a market-based mechanism that could potentially include carbon offsets from forests and land-use.

Although these two policy developments signal a possible turning point in the scale of results-based finance flowing to landscapes, forest carbon finance is already a reality for governments, companies, and individuals who pay for verified emissions reductions from avoided deforestation, tree-planting, improved forest management, and other carbon-storing land-use activities. Our data indicate that forest carbon projects are protecting 28 million hectares of forest. Historically, sales of emissions reductions have occurred mostly in “voluntary” markets, but also in “compliance” markets, and increasingly in non-market “payments for performance.” Taken together, these finance channels resulted in nearly \$900 million in *new* payments for forest-based emissions reductions in 2015.

We at Forest Trends’ Ecosystem Marketplace have been tracking these developments and publishing this report series since 2009, when a forests-inclusive global climate agreement seemed a far-off ambition. Covering the value of last year’s results-based forest carbon payments, this report describes the perspective of the growing “understory”—the fruitful bottom-up efforts that ground-truth the idea that forests’ contribution to curbing dangerous climate change can be robustly measured and monitored and that forests-inclusive climate policy can indeed target capital towards altering unsustainable land-use practices while contributing towards our Sustainable Development Goals.

The title of this year’s report, *View from the Understory*, acknowledges the years of effort on-the-ground by people testing out how forests, when left standing, can be critically important in slowing climate change while improving the quality of peoples’ lives—at the local level and in the here-and-now. Results-based approaches, first tested in the voluntary carbon market, are now being considered in compliance carbon markets and in large-scale, non-market agreements among governments and even the private sector. Spurred by bottom-up sub-national movements, jurisdictional approaches are gaining traction in the wake of slower-moving national and supranational policies and testing again how we can value forest carbon. The current momentum is resulting in hectares conserved, people benefitted, species protected, and tonnes of carbon dioxide kept out of the atmosphere.

We are, as always, grateful to the hundreds of practitioners from across the globe who disclosed 2015 forest carbon data and the dozens of individuals that contributed their expert views to this research process.



Michael Jenkins
Founding President and CEO
Forest Trends

Table of Contents

Introduction

State of Forest Carbon Finance in 2016: An Overview	1
Key Findings	3
Historical Forest Carbon Finance Commitments Top \$6 B	4

Market Overview

Market Actors Paid \$173 M for 27.3 M Forest Carbon Offsets in 2015 while Australia's Government Contracted 60.7 MtCO ₂ e	5
Voluntary Market Demand and Offset Prices Falter Despite Strong Policy Signals to Protect Forests	7
California Companies Spent \$63 M on Domestic Forest Carbon Offsets in 2015 as the State Mulls an International Linkage	8
"Carbon Farming" Offsets Dominate Australia's Emissions Reduction Fund	10

Details of the Deals

Location: Projects Across 44 Countries Transacted Offsets in 2015, with Policy Signals Driving Finance in the US and Australia	11
Project Type: REDD+ Reigns on Voluntary Markets While Compliance Buyers Pick Up Forest Management Tonnes	13
Standards: More Than 99% of Offsets Sold in 2015 Were Third-Party Verified	15
Buyers: Private Sector Drives 94% of Voluntary Market Demand	16

Market Dynamics

Forest Carbon Offset Issuances and Retirements Both Reach Record Highs	18
Buyers Pay More to Support Early-Stage Projects, Though Most Contracts Are for Emissions Reductions Achieved in the Past	19
Projects Often Access a Mix of Finance Sources; Carbon Revenues in Turn Flow to Multiple On-the-Ground Actors	20

Beyond-Carbon Impacts

Nearly Half of 2015 Forest Carbon Offset Buyers Engaged in the Markets Primarily Because of Co-Benefits	22
Impacts by the Numbers: 376 Endangered Species Protected; 7,700 People Employed; and More	23
Twenty-one Carbon Projects Worked to Clarify Land Tenure in 2015; Many Others at the Forefront of Defining Carbon Rights	25

Non-market Approaches

Pledged Results-Based Finance Reaches \$4 B; of That, Governments and Multilaterals Have Paid Out \$1.2 B	27
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Inflection Points

At Least 80 MtCO ₂ e Remains Unsold or Undeveloped as Suppliers Await Higher Offset Prices or Local Compliance Signals	32
Growing Pains as Projects "Nest" Within Jurisdictional Efforts—and Bring Their Experience with the Private Sector Along	34
Eleven Existing Carbon Markets Accept Forest Carbon Offsets, with South Africa and Ontario on the Way	36

Looking Ahead

Developments to Watch 40

Methodology 41

Directory of Forest Carbon Offset Suppliers 43

Appendix 1 48

Figures and Tables

Figures

Figure 1: Comparison of Types of Results-Based Finance by Country in 2015 1

Figure 2: Historical Market-based Payments for Forest-Based Emissions Reductions:
Transaction Volumes and Values 5

Figure 3: Voluntary Volume Transacted by Offset Price (Left) and Market (Right) 7

Figure 4: Illustration of Greenhouse Gas Emissions Caps and Potential Offset Demand
in Western Climate Initiative Markets 9

Figure 5: Number of Projects Currently Operational or under Development by Location and Standard 12

Figure 6: Volume of Demand for Forest Carbon Offsets by Project Type, All Markets, Historical 13

Figure 7: Transacted Volume and Average Price by Project Type, 2015 14

Figure 8: Market Share and Average Price by Independent Standard, 2015 15

Figure 9: Buyer Analysis by Profit Status, Location, Type, Experience, and Motivation, 2015 17

Figure 10: Historical Issued and Retired Offset Volumes, pre-2009 to 2015 18

Figure 11: Percentage and Price of Offsets Transacted by Past, Current, and Future
Vintages, 2010–2015 19

Figure 12: Market Share by Contract Type (Left) at Time of Transaction, 2015 19

Figure 13: Sources and Amounts of Revenue Projects Accessed in 2015 (Left) and
Where Revenue from Carbon Offset Sales Flowed (Right) 21

Figure 14: Primary Co-benefits that Motivated Buyers by Project Count and Level of Motivation 22

Figure 15: Forest Carbon Project Co-benefits: Key Impacts in 2015 24

Figure 16: Number of Projects and Land Area Associated with Different Land Tenure Arrangements
(Top) and Number of Projects Associated with Different Carbon Rights Arrangements (Bottom) 25

Figure 17: Various Estimates of Market Reality and Future Finance Needs 33

Figure 18: Pilot Projects Reporting Progress Integrating with Public REDD+ Programs, 2012–2015 34

Figure 19: Amount of Finance Tracked to Jurisdictional REDD+ Programs (Top 20) and
Number of Existing Projects within Each Jurisdiction 35

Figure 20: Map of Current and Soon-to-Come Compliance Carbon Markets that Include an
Offsetting Mechanism – and Whether Forestry is Included 38

Tables

Table 1: Summary of Types of Forest Carbon Finance, 2015, 2014, and All Years* 4

Table 2: Overview of Market-based Payments for Emissions Reductions in 2013, 2014, and 2015 6

Table 3: Overview of Forest Carbon Offset Demand by Primary Versus Secondary Market 6

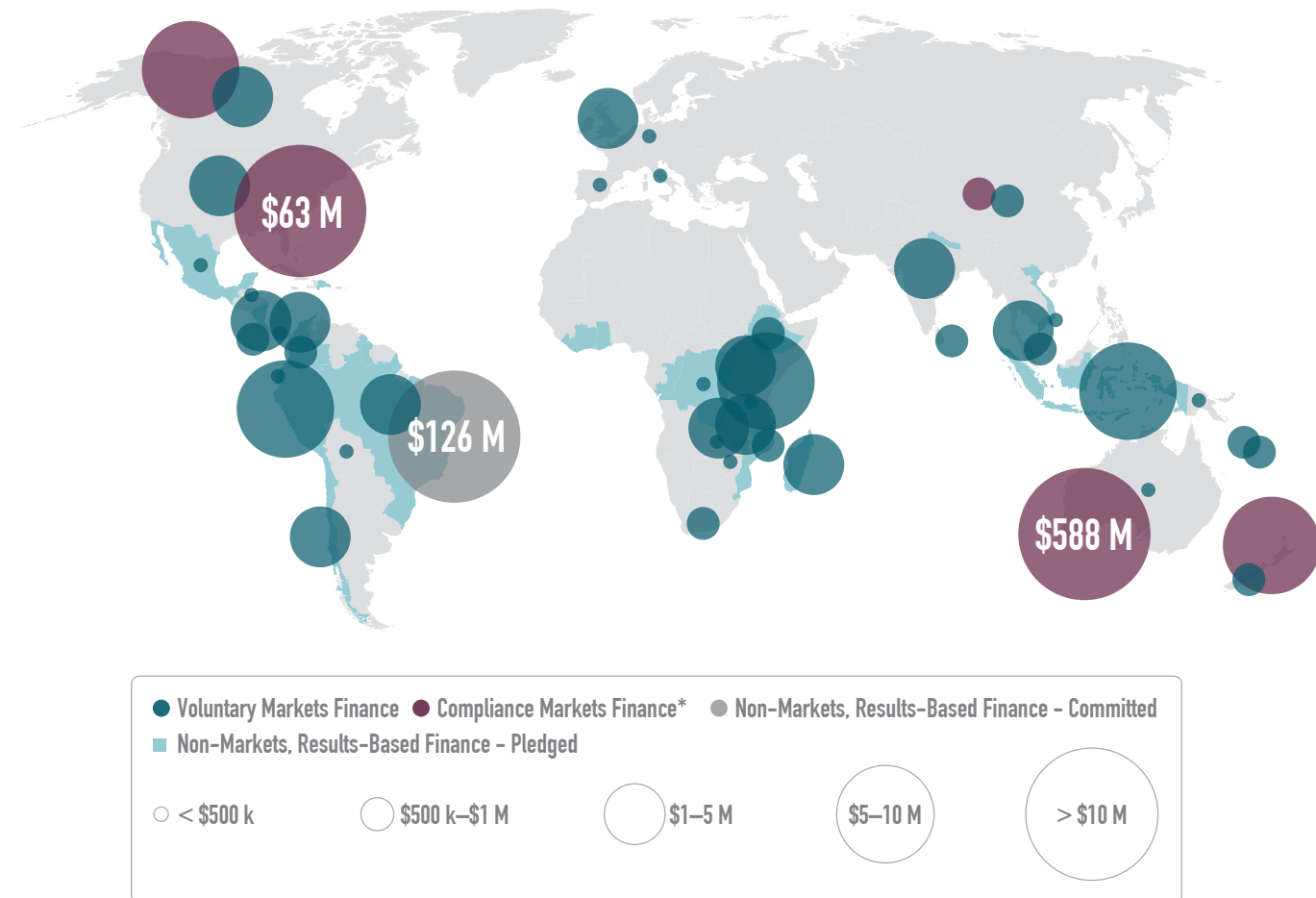
Table 4: Demand for Forest Carbon Offsets by Activity Location, 2015 11

Table 5: Pledged Results-Based Payments for Reducing Deforestation 29

State of Forest Carbon Finance in 2016: An Overview

The recent ratification of the Paris Climate Agreement heralds in a new era in the global fight against climate change, with nearly every country in the world now implementing a plan to limit greenhouse gas emissions. The historic agreement recognizes forests and land-use as an essential piece of the climate puzzle—indeed, we will not be able to reach the 2-degree-Celsius temperature-rise limit, let alone the 1.5-degree-Celsius ambition, without addressing the 3 billion tonnes of carbon dioxide (BtCO₂e) emissions annually from deforestation. (The Paris Agreement sets the global carbon budget at a maximum of 40 BtCO₂e annually by 2030.) Recognizing the significance of forests to dodging the most severe impacts of climate change, companies, governments, and individuals channeled a record amount of results-based finance to forests in 2015. However, forest carbon finance has yet to top \$1 billion (B) annually, meaning we still value the carbon content of the world’s forests at less than the market valuation of hundreds of companies, from Uber to Airbnb to Snapchat. The State of Forest Carbon Finance 2016 digs into the details of recent payments for forest carbon emissions reductions within the context of recent efforts to scale up finance and impact.”

Figure 1: Comparison of Types of Results-Based Finance by Country in 2015



Notes: Based on \$888 M in value of the forest carbon emissions reductions newly contracted through and outside of markets in 2015.

* Australia’s Emissions Reduction Fund and British Columbia’s Carbon Neutral Commitment are included in the compliance markets category even though they don’t totally function like markets (there is only one buyer, the government, in both cases).

More specifically, this report describes the state of forest carbon finance in 2015 by examining the year's results-based, financial transactions and commitments to reducing carbon emissions from forestry and land-use practices. This includes market-based (voluntary and compliance) transactions and nonmarket-based commitments.¹ Like other reports in this Ecosystem Marketplace series, our results are based on our annual global survey of forest carbon project offset suppliers, and other sources such as the project registries of project standards, data published by governments, and interviews with market (and non-market) actors (see p. 41 for more details).

In 2015, Ecosystem Marketplace tracked \$888 million (M)² in new results-based finance for forests — the largest influx ever tracked in this report series. Of this committed money, \$88 M flowed through voluntary markets; \$73 M flowed through compliance markets including California's and New Zealand's; \$588 M flowed through Australia's Emissions Reduction Fund; and \$126 M flowed through non-market agreements (Figure 1). Voluntary markets channeled money into emissions reductions in at least 44 countries, while compliance markets—or those mandated by law—channeled money to domestic initiatives in the United States (through the California cap-and-trade program), New Zealand (through its government Emissions Trading System), and Canada (through the British Columbia government's Carbon Neutral Commitment). On the non-markets side, Norway, Germany, and the Brazilian oil company Petrobras paid Brazil \$126 M for reducing deforestation in the new and growing form of results-based payments. Pledges to 20 additional countries are “on the table.”

The *State of Forest Carbon Finance 2016* documents a time of transition. Developers of forest carbon projects for the voluntary carbon markets are struggling to make their projects profitable from carbon finance alone while also trying to understand how they fit into a post-Paris world, in which every country that is party to the UNFCCC has climate commitments. Those governments that are designing or growing carbon markets also face post-Paris conundrums: How will their bottom-up efforts fit into (and influence) the international rules for trading emissions-reduction units being developed under Article 6? How will tropical forest governments implement the kinds of reforms needed to attract results-based payments? Will those payments be adequate enough to navigate a development path that conserves rather than destroys their forests?

¹ In past reports, we included “REDD+ readiness” finance, which covers money that lays the groundwork for results-based finance and includes activities such as stakeholder engagement and institutional capacity-building. For this data we drew on the Forest Trends' REDDX initiative; however, the REDDX initiative did not track readiness commitments last year, so we do not have a 2015 update. Nevertheless, last year's *State of Forest Carbon Finance 2015* report already documented a marked trend of readiness finance dwindling as countries moved towards implementation, and we expect that this trend has continued into 2016.

² In this report, all monetary values are in US\$ (\$), unless otherwise noted.

Key Findings

- Since the beginning of this report series, Ecosystem Marketplace has tracked a collective \$6.0 billion (B) in forest carbon finance committed by governments, multilateral institutions, companies, and individuals, intended to fight climate change by conserving and managing critical landscapes that sequester carbon.
- More than 800 forest and land-use projects are currently operational or under development around the world, with the vast majority in two countries that have signaled compliance-driven markets—namely, Australia (428) and the United States (217).
- In 2015, we tracked \$888 M in new forest carbon finance commitments—\$173 M of that via markets, \$588 M through Australia’s (semi-market) Emissions Reduction Fund, and \$126 M via non-market payments for performance. (An “other” category, worth \$11 M, included, for instance, carbon neutral government purchases.)
- The bulk of the commitments came through the compliance initiatives of California and Australia, each of which set records in terms of volume and value. In California, volume was 6.5 MtCO₂e valued at roughly \$63 M; in Australia volume was 60.7 MtCO₂e valued at roughly \$588 M, although the Australian offsets were contracted by the government through the Emissions Reductions Fund that replaced the country’s carbon tax. Average prices were higher in compliance programs than in the voluntary market—averaging \$9.7/tonne in California and \$9.7/tonne for “carbon farming” offsets in Australia.
- The voluntary carbon market faltered slightly last year, with voluntary buyers contracting 18.2 million tonnes of carbon dioxide equivalent (MtCO₂e) at a value of \$88 M—the lowest level of voluntary demand tracked since 2009. The average price fell to \$4.9/tonne.
- Outside of compliance markets, Peru, Brazil, Kenya, and Uganda were the most common project locations.
- Beyond emissions reductions, voluntary forest carbon projects that reported on co-benefits in 2015 employed almost 8,000 people, protected habitat for 376 endangered species, provided benefits to vulnerable groups, contributed to water security, built resilience to climate change impacts, and helped to clarify land tenure.
- While existing forest carbon offset supply comes almost entirely from individual projects, compliance markets such as California’s as well as emerging government-to-government agreements are signaling a demand for offsets produced at the jurisdictional scale. Some projects are actively working to “nest” their activities within jurisdictional processes and baselines, although only a few have made progress since last year.
- The Paris Agreement allows for verified emissions reductions to be transferred between countries as Internationally Transferrable Mitigation Outcomes (ITMOs), but it is not clear how forest-carbon units will be treated.
- Forest carbon finance may be increasingly channeled through compliance markets, as 15 current and future compliance markets include an offsetting mechanism, and 11 of those have developed protocols for land-use and forestry offsets. The International Civil Aviation Organization (ICAO) is also in the process of designing a global market-based measure that may include forests.
- The only non-market payments for forest-based emissions reductions made to-date have flowed from the Amazon Fund (Norway, Germany, and the Brazilian oil company Petrobras) to Brazil; from the REDD+ Early Movers program (Germany, Norway, and the United Kingdom) to Colombia and the Brazilian state of Acre; and from the Norwegian government to Guyana. The growing, results-based finance pipeline is likely to flow through the World Bank’s Carbon Fund and through continued bilateral agreements. The Green Climate Fund also could serve as a major catalyst for forest carbon emissions reductions, if it chooses to.

Historical Forest Carbon Finance Commitments Top \$6 B

Since we began this report series, Ecosystem Marketplace has tracked a collective \$6.0 B in forest carbon finance. We track “commitments” at the point of contract between parties, regardless of whether the counterparties are private or public (see p. 41 for more details). This 2016 report tracks newly committed finance for forest carbon emissions reductions within two major categories: *market-based payments* and *non-market-based payments* (Table 1).

Market-based payments can be broken into two types: voluntary and compliance, with voluntary payments being made by buyers who act of their own volition and compliance payments being made by those who act because they are legally required to do so. In both cases, the buyers take ownership of verified emissions reductions either to “offset” their own emissions or to resell the tonnes to end-users. Because transparent information on demand for forest carbon offsets, particularly among voluntary buyers, is scarce outside of this report, we focus much of the real estate in this report on describing market dynamics (see p. 18–21). (In fact, this report used to be called the State of Forest Carbon *Markets* not *Finance*.)

Ecosystem Marketplace began tracking non-market payments two years ago when it became clear that the new types of agreements emerging between governments did not quite fit the definitions we used previously. In short, non-market payments are bilateral or multilateral agreements (so far, these have been forged mostly between governments) to pay for emissions reductions; however, the entity making the payment does not usually take ownership of the emissions reduction or “count” it against their own climate footprint. As in markets, however, the payments only flow if the emissions reductions are verifiably achieved and are thus “results-based.” Unlike markets, these tonnes are not necessarily transferred to the financier and they don’t enter a “marketplace” with multiple sellers and buyers. (The distinction between market and non-market payments is discussed in more detail on p. 27.)

Beyond the new contracts signed in 2015, an additional \$4.4 B was pledged to tropical forest governments for results-based payments to reduce deforestation. These pledges will convert to commitments if and when a contract is signed.

Table 1: Summary of Types of Forest Carbon Finance, 2015, 2014, and All Years*

Type of Finance	2015	2014	All Years
REDD readiness commitments**	Not tracked	\$229 M	\$2,758 M
Market-based payments for emissions reductions	\$762 M***	\$257 M	\$2,035 M
Non-market-based payments for emissions reductions	\$126 M	\$219 M	\$1,264 M
Total	\$888 M	\$705 M	\$6,057 M

* Ecosystem Marketplace has been tracking forest carbon finance annually since 2009 but our data goes back as far as the early 2000s, when payments for forest-based emissions reductions were just beginning. “All years” refers to the total finance that we know of to date.

** Note that REDD Readiness Commitments are drawn from REDDX data covering 13 countries, while Market-based Payments for Emissions Reductions data are drawn from a wider range of countries (59). Total global REDD Readiness Finance across all years is therefore significantly larger than \$2.76 B sample estimate provided here.

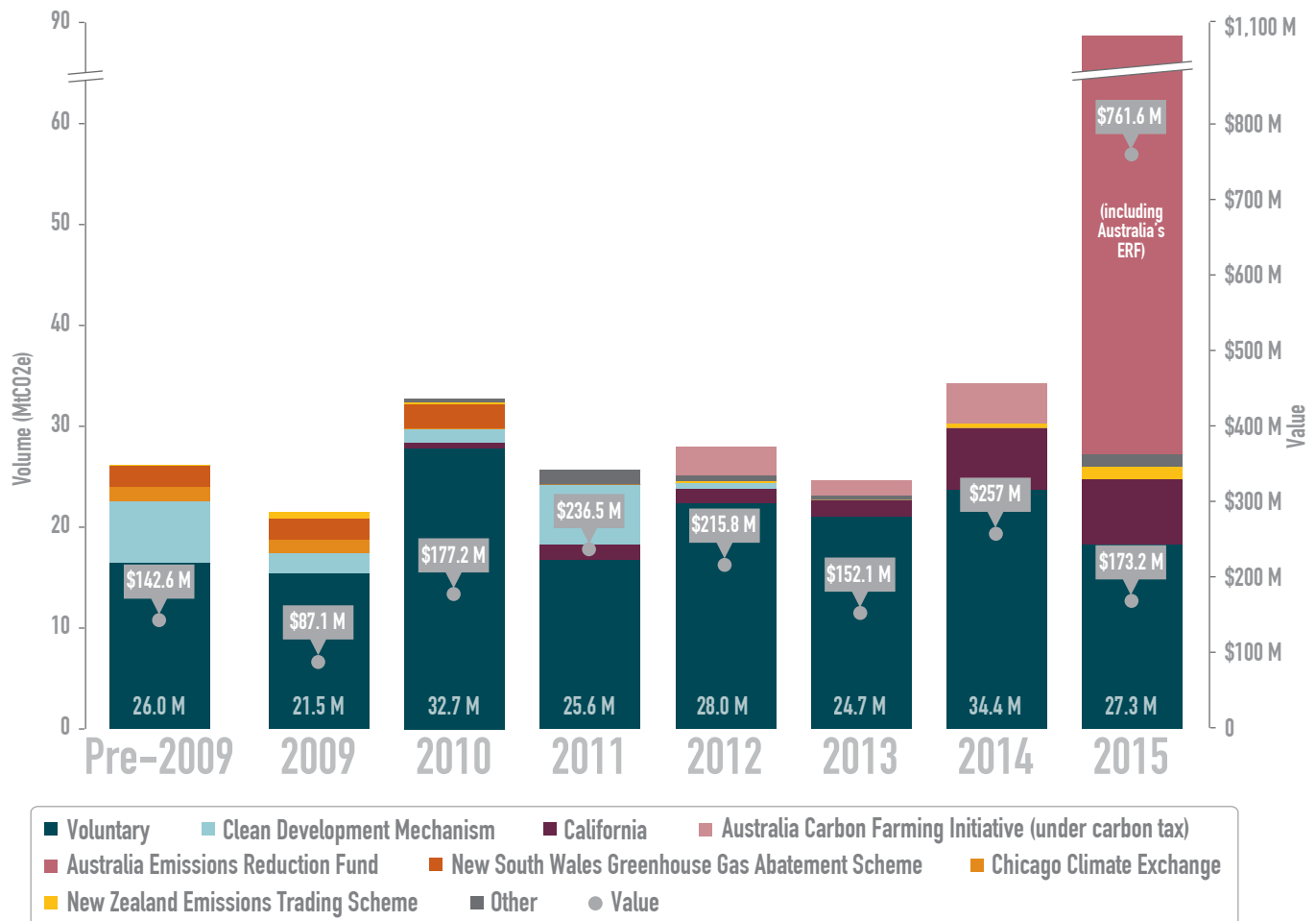
*** This market value includes Australia’s Emissions Reduction Fund’s payments for land-use offsets, worth an estimated \$588 M in 2015. We counted this finance as market-based because contracts are awarded through a competitive auction; however, there is currently only one buyer: the government. Without the Australia value, market-based payments in 2015 were \$173 M. See p. 6 for a detailed breakdown of market-based payments.

Market Actors Paid \$173 M for 27.3 M Forest Carbon Offsets in 2015 while Australia's Government Contracted 60.7 MtCO₂e

Last year, companies, governments, and individuals contracted 27.3 MtCO₂e in forest and land-use emissions reductions through voluntary and compliance carbon markets (aside from Australia's), at a total value of \$173.2 M.

The market-driven volume (Figure 2) includes voluntary transactions (18.2 MtCO₂e), California and Québec's linked cap-and-trade market (6.5 MtCO₂e), and New Zealand's Emissions Trading Scheme (1.3 MtCO₂e). The latter saw increased transaction volumes last year after a rule change in May 2015 that no longer allowed regulated entities to use international units to meet their obligations. Other compliance or pre-compliance markets have come and gone over the years: the Chicago Climate Exchange was active when US buyers expected nation-wide cap-and-trade legislation to pass in 2009, and the New South Wales Greenhouse Gas Abatement Scheme in Australia operated between 2003 and 2012. **Going forward, South Africa's proposed carbon tax, China's emissions trading system, South Korea's emissions trading system, and other markets may post transaction volumes — if they make room for forestry offsets** (see p. 36).

Figure 2: Historical Market-based Payments for Forest-Based Emissions Reductions: Transaction Volumes and Values



Notes: Based on 289 MtCO₂e in market-based transaction volume over time.

Bars represent volume (scale to left). Bubbles represent value (scale to right).

In addition, the Australian government contracted 60.7 MtCO₂e in land-use-based carbon farming offsets through its Emissions Reduction Fund (ERF), at a total value of \$588 M.³ The ERF replaced Australia's compliance carbon tax in 2014 and in some ways functions like a market—with reverse auctions held to contract offsets from competitive suppliers—but in some ways doesn't, since the government is the only buyer. In this report, we include the Australian market with compliance markets, but keep the data disaggregated for clarity.

Table 2: Overview of Market-based Payments for Emissions Reductions in 2013, 2014, and 2015

		Volume (tCO ₂ e)			Value (\$ M)			Average Price (\$/tonne)		
		2013	2014	2015	2013	2014	2015	2013	2014	2015
Voluntary markets		21 M	23.7 M	18.2 M	\$100 M	\$128 M	\$88 M	\$4.7	\$5.4	\$4.9
Compliance markets	California-Quebec cap-and-trade	1.7 M	6.1 M	6.5 M	\$16 M	\$55 M	\$63 M	\$9.4	\$8.9	\$9.7
	Australia carbon tax/ERF*	1.5 M	4 M	60.7 M	\$32 M	\$71 M	\$588 M	\$20.8	\$17.7	\$9.7
	New Zealand ETS	–	–	1.3 M	–	–	\$10 M	–	–	\$3.1
Other		0.4 M	0.5 M	1.3 M	\$3.9 M	\$4 M	\$11 M	–	–	–
Total		24.7 M	34.3 M	87.9 M	\$151.9 M	\$257 M	\$762 M	\$35	\$32	\$27.4

* In 2013 and 2014, Australia's carbon tax created a compliance market for land-use-based emissions reductions. The 2013 and 2014 values in this table represent activity under this carbon tax. The tax was repealed in 2014 and replaced with an Emissions Reduction Fund (ERF) through which a single buyer (the Australian government) contracted emissions reductions through a reverse auction. The ERF is not quite a compliance carbon market but is included here for comparison. The 2015 values in this table represent activity under the ERF. Australia's case is discussed in more detail on p. 10.

Across both voluntary and compliance markets, secondary market actors (those that acquire offsets from project developers in order to market them to end-users) continued to play an important role and were behind at least 9.2 MtCO₂e in transaction volume in 2015

Table 3: Overview of Forest Carbon Offset Demand by Primary Versus Secondary Market

	Volume (tCO ₂ e)		Value (\$ M)		Average Price (\$/tonne)	
	2015	All Years	2015	All Years	2015	% Change in Price from 2014
Primary market	19.2 M	192 M	\$129.2 M	\$1,090 M	\$7.2	-6%
Secondary market	9.2 M	32.3 M	\$44.9 M	\$209 M	\$5.6	17%

Notes: Based on \$174.1 M in results-based payments for 28.4 MtCO₂e of forest-based emissions reductions that could be traced back to a primary versus secondary market actor in 2015. Australia's Emissions Reduction Fund is excluded from the numbers above.

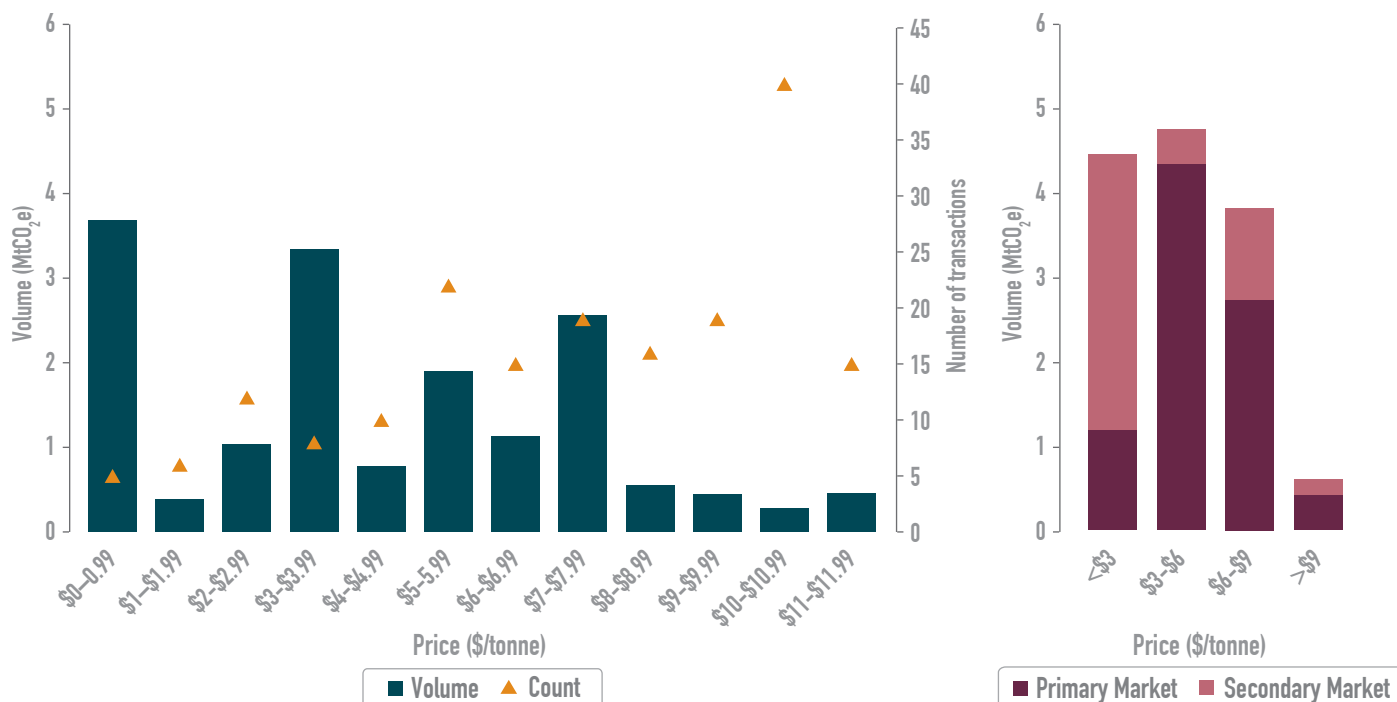
³ Converted to US dollars from AU\$792 M. All prices and values cited in this report have been converted to US dollars using average exchange rates in 2015 unless otherwise noted.

Voluntary Market Demand and Offset Prices Falter Despite Strong Policy Signals to Protect Forests

In 2014, scores of governments, companies, NGOs, and indigenous organizations endorsed the New York Declaration on Forests,⁴ as corporate zero-deforestation commitments began to proliferate in the lead-up to the historic climate negotiations in Paris at the end of last year. However, the uptick in private sector interest in cleansing supply chains of deforestation did not necessarily translate into reducing emissions through forest protection: In fact, **trading of voluntary forest-carbon offsets fell 23% in volume and 31% in market value as average prices dropped from \$5.4/tonne in 2014 to \$4.9/tonne last year.**⁵ Prices for voluntary forest carbon offsets, however, were still above the 2015 average price for voluntary offsets of all project types, \$3.3/tonne (see Ecosystem Marketplace’s *Raising Ambition: State of the Voluntary Carbon Markets 2016*).

In voluntary markets, prices are usually negotiated on an individual basis, and they range widely depending on factors such as project size, project location, project type, and market type. **Voluntary prices were somewhat “clustered” around different price points** (Figure 3), with a handful of high-volume transactions taking place at very low prices (less than \$1/tonne), other transactions taking place around the \$3–\$4/tonne and the \$7–\$8/tonne price points, and with the greatest number of transactions taking place above the \$8/tonne mark. These high-end transactions, however, tended to be smaller in size (see p. 14 for related information on how prices differ by project type). The examination of prices that primary market actors (project developers selling directly to end-users) versus secondary market actors (retailers) received last year reflects this differentiation; retailers typically acquired and re-sold lower-cost tonnes.

Figure 3: Voluntary Volume Transacted by Offset Price (Left) and Market (Right)



Notes: Based on 16.5 MtCO₂e in voluntary transaction volume associated with a price.

⁴ The New York Declaration on Forests is a “non-legally binding political declaration that grew out of dialogue among governments, companies and civil society” which articulates the goal to “cut natural forest loss in half by 2020, and strive to end it by 2030.” A large number of governments, 30 of the world’s biggest companies, and more than 50 civil society and indigenous organizations have endorsed it.

⁵ All prices reported in this report are volume-weighted.

California Companies Spent \$63 M on Domestic Forest Carbon Offsets in 2015 as the State Muled an International Linkage

In 2015, Ecosystem Marketplace tracked 6.5 MtCO₂e in California compliance demand for forestry tonnes at a total value of \$63.2 M. This represents a 6% increase in volume over 2014 demand and a 16% increase in value as the average price for forestry offsets on the California-Québec cap-and-trade program rose from \$8.9/tonne in 2014 to \$9.7/tonne last year. In purchasing offsets, entities can choose from different offset types; however, forestry-based offsets have dominated California issuances. The tracked demand, however, represents only a fraction of the *potential* demand for offsets in California. Compliance entities may use offsets to cover up to 8% of their cap. Last year's cap topped 394.5 MtCO₂e, setting potential demand for offsets at more than 30 MtCO₂e. Market participants and regulators say that California offset demand may see a "bump" towards the end of 2017 when the second compliance period draws to a close and regulated entities seek to true up on their emissions obligations.

In addition to our survey-based data on 2015 transactions, we looked at California Air Resource Board (ARB) data on its first compliance period (2013–2014) to get an understanding of the extent to which regulated California companies officially "surrendered" forest carbon offsets to meet their obligations under the regulation. Overall, compliance entities surrendered 12.8 million offsets in the first compliance period, 46% of which (5.9 MtCO₂e) were forestry-based. **Compliance entities including Chevron, Tesoro Refining & Marketing, Calpine Energy Services, and others purchased and surrendered offsets from a total of 20 compliance forestry projects,** with top volumes coming from Blue Source's Bishop project in Michigan (901,000 tonnes), Coastal Ridges' Willits Woods project in California (877,000 tonnes), Finite Carbon and the Forestland Group's project in Connecticut (816,000 tonnes), and the Yurok Tribe's project in California (671,000 tonnes). However, as our 2015 market data also indicated, the ARB data confirms that compliance entities did not take advantage of the full 8% that they were allowed to meet with offsets in this period, which would have been roughly 25.7 MtCO₂e.

A look at offset issuances in California indicates that supply is picking up; there are now several dozen US forestry projects registered for the California market which together have issued 15.6 million compliance tonnes, in addition to the 12.6 MtCO₂e that were issued for early action. **Currently, domestic forestry makes up more than two-thirds of the total tonnes issued for potential compliance.** Market participants are expecting many more forestry tonnes to be issued in the coming years now that the forestry protocol has been extended to Alaska. Furthermore, changes to the forestry protocol that went into effect in November 2015 caused a rush of forestry projects to list with the ARB by the end of October—so that they could be grandfathered in under the old rules. If those projects reach maturity, there could be a corresponding rush of forestry issuances in a year or two.

Going forward, however, the California market is facing some critical questions. An ongoing lawsuit by the state Chamber of Commerce and Morningstar Packing Co. claims that the Air Resource Board's auctions are an "invalid tax," and a decision in favor of the Chamber of Commerce could undermine the price signal that underpins the market aspect of the program. (Auctions set allowance reserve prices—most recently at \$12.7/tonne—that also serve as a signal for offset prices, which typically fall just under the allowance price mark.)

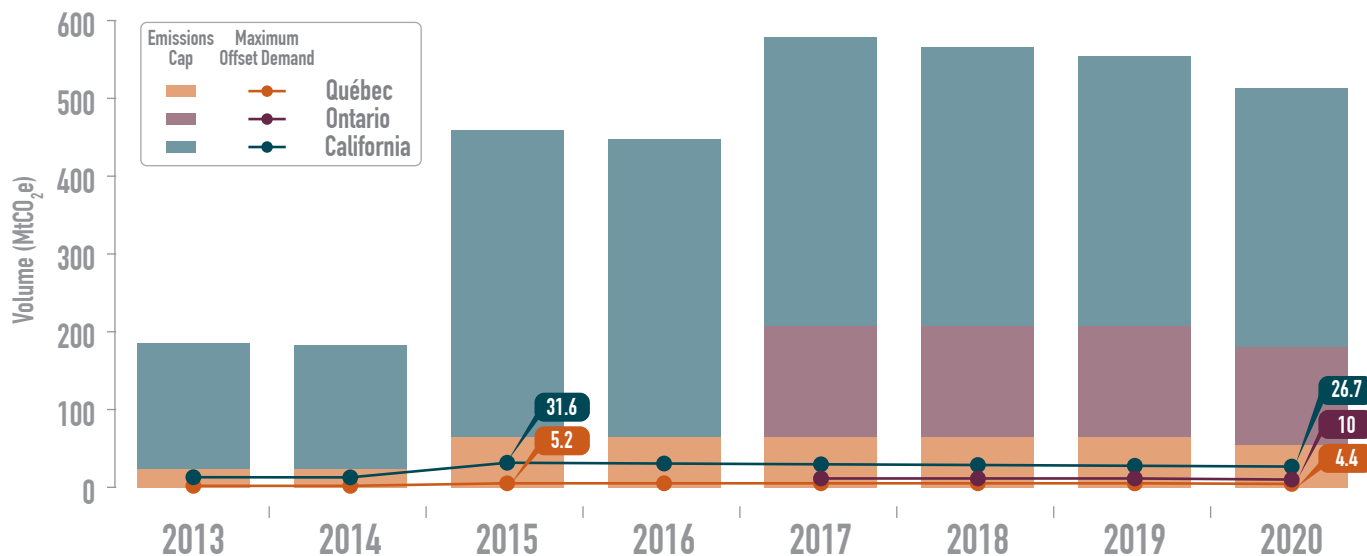
Meanwhile, the current cap-and-trade program expires in 2020, and it is unclear whether the ARB has the legal authority to extend it, although the California state Assembly and Senate approved a bill that requires California agencies take steps to reduce greenhouse gas emissions by 40% in 2030, compared with 1990 levels. The ARB has begun an administrative process to set a new target of reducing industrial emissions by the same amount, but Governor Jerry Brown and leaders of the State Senate Assembly cannot agree on a legislative path forward.

Assuming these legal issues are resolved, **the Air Resources Board may consider allowing sector-based international REDD+ offsets into the compliance program for the first time⁶ in a jurisdictional linkage with the state of Acre, Brazil.** This would be similar to the jurisdictional linkage the state currently has in place with

⁶ International offsets would be allowed for up to 4% of compliance entities' obligations, not the total 8%.

Québec, except that Acre would be engaging only on the supply side rather than both the supply and demand side (as in the case with Québec). Tropical forest offsets were not included in proposed amendments to the cap-and-trade program that ARB released in August 2016, but ARB has signaled that such offsets could be included by the start of the third compliance period in January 2018.

Figure 4: Illustration of Greenhouse Gas Emissions Caps and Potential Offset Demand in Western Climate Initiative Markets



A note on Québec: Québec began its cap-and-trade program in 2013 and linked with California’s in 2014. As in California, compliance entities in Québec may use offsets for up to 8% of their emissions, creating a *potential* demand for 32.5 MtCO₂e between 2013 and 2020, or about 5 MtCO₂e per year starting in 2015.⁷ However, Québec is not expected to be a big offset supplier, and to date it has not developed any forestry protocols. However, because of the linkage, Québec companies may purchase offsets approved by the California Air Resources Board. However, Ecosystem Marketplace has not tracked Québec demand for California-grade forestry offsets to date.

A note on Ontario: Ontario plans to begin its carbon market in 2017 and link with the California-Québec market starting in 2018. Compliance entities in the province could demand 42.7 MtCO₂e between 2017 and 2020 if they use offsets up to their full potential (again, 8%). It remains to be seen what offset protocols Ontario’s government will approve, but if the 2018 linkage goes forward, Ontario companies would at least be eligible to purchase forestry tonnes approved by California.

⁷ This is calculated based on the tightening cap; Québec’s economy is much smaller than California’s and therefore both its cap and its offset demand potential is lower.

“Carbon Farming” Offsets Dominate Australia’s Emissions Reduction Fund

Australia implemented and then abandoned a pioneering compliance forest carbon market, replacing it with a new plan that in some ways defies classification. The government repealed the country’s short-lived carbon tax in July 2014, replacing it with a “Direct Action Plan” that includes an Emissions Reduction Fund (ERF), which has a current budget of AU\$2.55 B, determined through the government’s budgetary process. The ERF pays Australia-based projects for verified emissions reductions through scheduled reverse auctions: projects bid in the lowest price per tonne that they can accept, and the government buys the offsets (known as Australian Carbon Credit Units, or ACCUs) starting at the lowest bid price and working their way up until the government fulfills its desired volume.

Demand for forest carbon made up
66%
of total offset demand in 2015

In 2015, the government purchased 60.7 MtCO₂e in land-use carbon offsets from vegetation and savanna burning projects⁸ at a value of US\$588 M.⁹ **Many of the land-use projects that contracted offsets to the Australian government were first developed under the Carbon Farming Initiative and funded under the country’s carbon tax.**¹⁰ In the first auction of 2016 in April, land-use played an even larger role in the ERF than in 2015: the government contracted 45.8 MtCO₂e in carbon farming offsets, which made up 90% of the total. However, the average price fell from AU\$13.95/tonne (US\$10.3/tonne) in the first auction to AU\$10.25/tonne (US\$7.8/tonne) in the third auction as project developers bid in at lower and lower prices in hopes of securing contracts through the reverse auction.

While Ecosystem Marketplace tracks financing of forest and land-use based emissions reductions at the point of contract, it is important to note that all ERF contracts are “payment on delivery,” meaning the carbon payments will flow as the land-use activities are carried out and as the results are achieved. **Now that two-thirds of the ERF’s total funds are under contract, secondary market activity in Australia is expected to pick up** as retailers aggregate tonnes or step in when a landowner experiences a reversal and must meet their contract with the government by acquiring tonnes elsewhere.

104 MtCO₂e
in vegetation and savanna burning
offsets have been issued to date

One big question going forward is whether the ERF’s set budget will be replenished in the future. Another uncertainty is whether the ERF’s Safeguard Mechanism, which kicked in on July 1, 2016, will create *de facto* compliance demand for ACCUs.

Last year, we noted that because compliance entities do not pay into the ERF, these auctions should not be considered a compliance market per se. However, the Safeguard Mechanism—which is meant to “safeguard” against the possibility that

the emissions reductions funded through the ERF would be undermined by increases in emissions elsewhere within Australia—now requires emitters of more than 100,000 tonnes annually to report their emissions. These companies must purchase ACCUs if they exceed their established baselines, but those baselines are set at the company’s highest emissions between 2009 and 2014—arguably too high for the Safeguard Mechanism to be triggered in a meaningful way.

⁸ Savanna-burning projects involve controlled burns early in the fire season to mitigate larger, carbon-releasing burns later.

⁹ Individual contract prices are kept confidential, but because carbon farming offsets accounted for two-thirds of the total contracted volume in 2015, this report assumes that the average price for land-use offsets was similar to the average price for *all* offsets: AU\$13.95 in the April 2015 auction and AU\$12.25 in the November 2015 auction (about US\$10.3/tonne and US\$9.1/tonne, respectively). The value of Australian land-use projects contracting tonnes to the ERF in 2015 can be thus estimated at US\$588 M.

¹⁰ Compliance entities were required to “true up” on their compliance obligation under the tax by February 2015, so there theoretically could have been some last-minute compliance demand in that calendar year. However, market participants noted that, in fact, most compliance entities settled their books before the end of 2014.

Location: Projects Across 44 Countries Transacted Offsets in 2015, with Policy Signals Driving Finance in the US and Australia

Forest and land-use based offsets were transacted on the voluntary and compliance markets in 44 countries from every region (Figure 1). As in prior years, **voluntary offset buyers continued to seek out tonnes that supported the protection of highly biodiverse rainforests such as those in the Amazon, Indonesia, and the Congo Basin while also supporting sustainable development.** In 2015, voluntary buyers transacted at least 12.7 MtCO₂e from developing countries—versus 1.6 MtCO₂e in voluntary demand for forest carbon offsets sourced from developed countries. Africa, Asia, and in particular Latin America, all saw decreased transaction volumes in 2015, mostly due to smaller volumes of offsets transacted from REDD+ projects last year. However, survey respondents behind nearly 4 MtCO₂e in voluntary transaction volume in 2015 did not report at the level of project region.

Meanwhile, the growing demand for offsets based in North America and Oceania was largely driven by the California-Québec cap-and-trade market and Australia's ERF, respectively. Still, voluntary demand for forest-based offsets originating in the U.S. or Canada made up 1.2 MtCO₂e of the region's volume and \$11.3 M of its value. (Voluntary demand for Australian tonnes was relatively scarce.)

Table 4: Demand for Forest Carbon Offsets by Activity Location, 2015

	Volume (tCO ₂ e)		Value (\$ M)		Average Price (\$/tonne)	
	Voluntary	Compliance	Voluntary	Compliance	Voluntary	Compliance
Africa	3 M	–	\$19.5 M	–	\$6.6	–
Asia	5 M	–	\$13.1 M	–	\$2.6	–
Europe	0.3 M	–	\$4.8 M	–	\$26.5	–
Latin America	4.6 M	–	\$21 M	–	\$4.8	–
North America	1.2 M	6.5 M	\$11.3 M	\$63.2 M	\$10.1	\$9.7
Oceania	0.3 M	62 M	\$1.8 M	\$589.9 M	\$5.6	\$9.1

Notes: Based on 82.9 MtCO₂e in transactions associated with a project region. North America includes the United States and Canada; Mexico is categorized as Latin America. Oceania includes Australia, New Zealand and the islands of central and southern Pacific; however, Ecosystem Marketplace has only tracked offset sales from Australia and New Zealand.

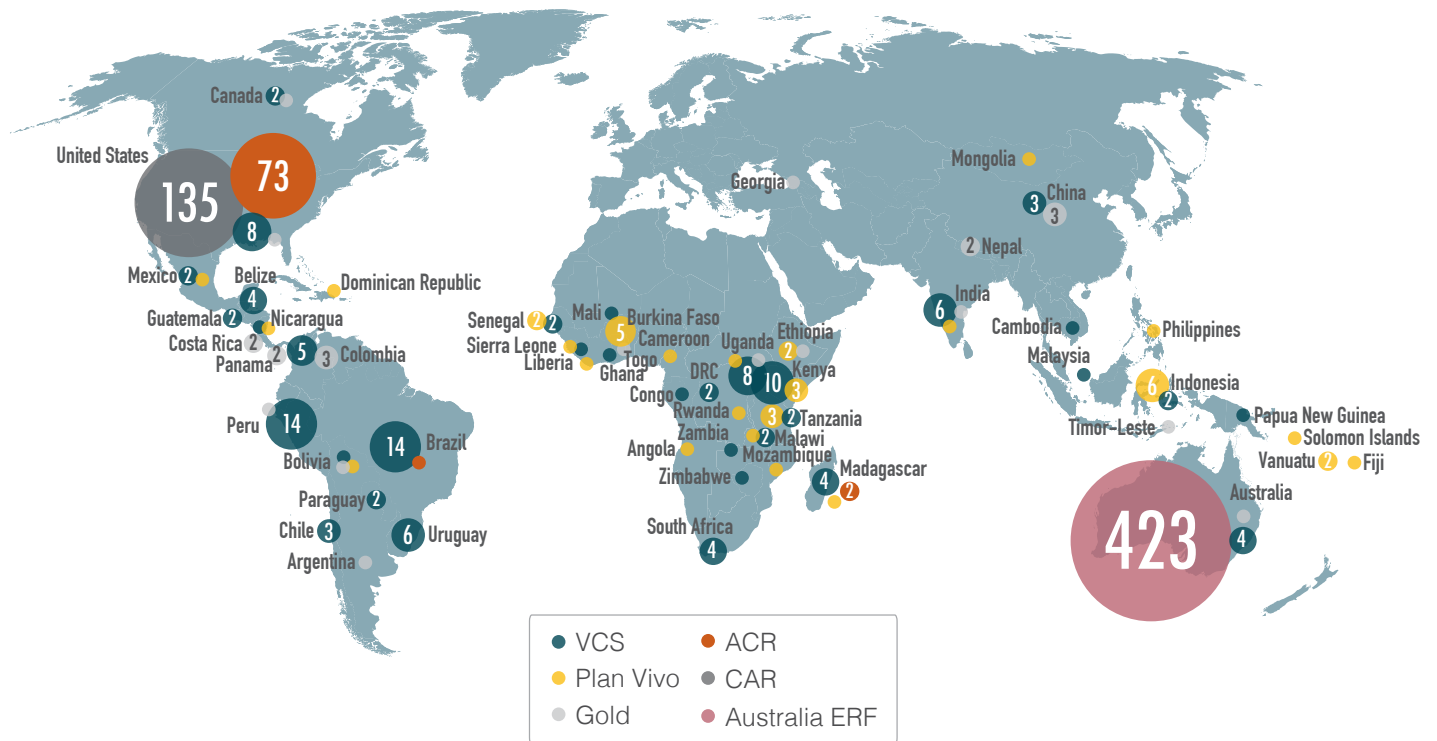
Overall, offset suppliers reported project development activities across 52 countries in 2015, 44 of which saw carbon offset transactions last year. In five developing countries—Burkina Faso, Guinea, Mauritius, Solomon Islands, and Timor-Leste—Ecosystem Marketplace tracked project development activities for the first time. Of course, the total “universe” of forest and land-use carbon projects globally is larger than the number of projects that both contract emissions reductions annually *and* report them to Ecosystem Marketplace (see p. 20 for insight as to how projects that *don't* receive carbon finance regularly fund themselves).

However, **Figure 5 attempts to capture all forest and land-use projects (more than 800 of them) that are currently operational or under development.** These projects are listed on the websites of the major carbon standards, as well as on Australia's project registry. As is apparent from the numbers, California's compliance market and Australia's Emissions Reduction Fund have spurred rapid project development in the United States and Australia, respectively, with 217 forest carbon projects (mostly improved forest management) now listed in the United States under the Climate Action Reserve (CAR, 135 projects), the American Carbon Registry (ACR, 73 projects) and the Verified Carbon Standard (VCS, 8 projects). Australia's projects are all “carbon farming” ones

through which land-owners restore forestland, avoid conversion of agricultural land, or conduct early burns on savannas to mitigate bigger carbon-releasing fires later.

Among forest carbon projects angling for voluntary buyers (at least for now), Peru, Brazil, Kenya, and Uganda were the most popular project locations. Overall, VCS's list contains 122 projects (many of them REDD+), CAR's has 135, ACR's 76, Plan Vivo's 43 (many of them relatively newly in the pipeline), and Gold Standard's 21 (all tree-planting projects).

Figure 5: Number of Projects Currently Operational or under Development by Location and Standard



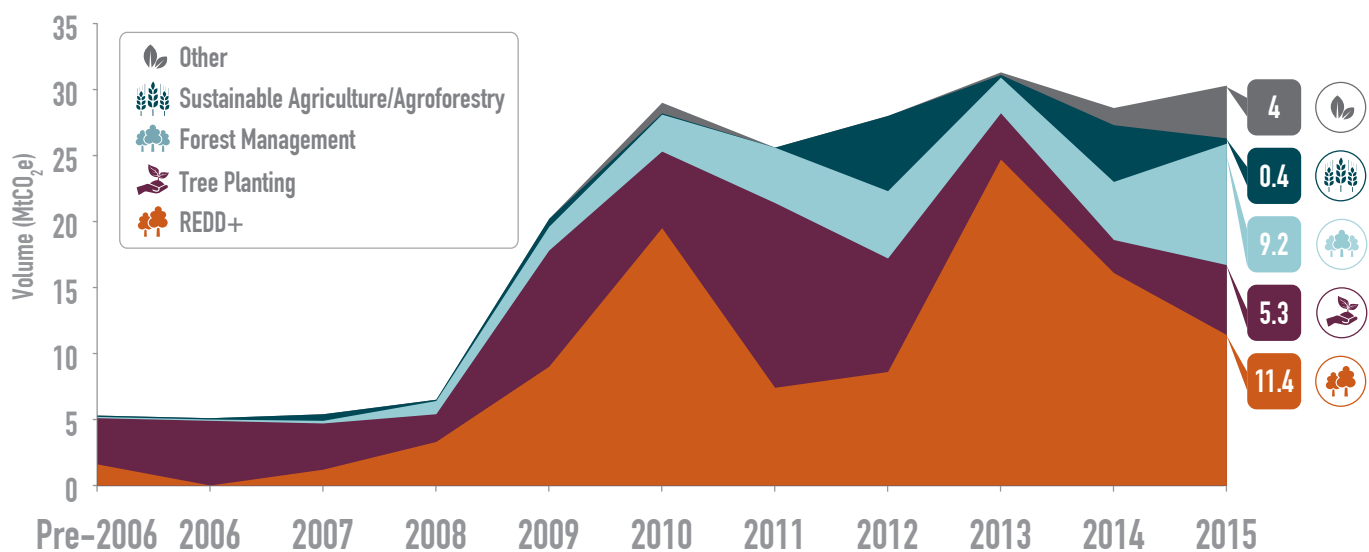
Notes: Project count by country is based on public project lists available from the major voluntary and compliance carbon standards: the American Carbon Registry, Australia Emissions Reduction Fund, California Air Resources Board, Climate Action Reserve, Gold Standard, Plan Vivo, and Verified Carbon Standard.

Project Type: REDD+ Reigns on Voluntary Markets While Compliance Buyers Pick Up Forest Management Tonnes

There are currently dozens of land-use methodologies available under major carbon standards, but they fall under four broad categories: Tree-planting projects add trees to a landscape that was previously forest-less (in this case, the planting is called “afforestation”) or deforested (in this case, the planting is called “reforestation”). Forest management projects typically alter existing harvesting and planting plans to maximize for carbon storage. Sustainable agriculture and agroforestry projects, include planting crops alongside trees, managing grazing lands for increased carbon storage, and other activities. Finally, Reducing Emissions from Deforestation and forest Degradation (REDD+) projects seek to reduce deforestation and degradation against a baseline by addressing their drivers. Depending on what those deforestation drivers are, this may involve training forest guards, creating economic alternatives for communities that clear forests, working to secure land tenure for forest dwellers, etc.

REDD+ is not yet included in any compliance markets, but it has been the most sought-after offset type since 2012 (Figure 6) and accounted for 11.4 MtCO₂e last year — all of it from voluntary buyers. Still, that represents a drop of nearly one-third from 2014 and the lowest level since 2012. It should be noted, however, that a single large REDD+ project may sell several million tonnes in a given year, and a few large transactions (or their absence) can dramatically impact volume—as happened in 2015.

Figure 6: Volume of Demand for Forest Carbon Offsets by Project Type, All Markets, Historical



Notes: Based on 26.3 MtCO₂e in 2015 transaction volume associated with a project type, alongside historical data. This figure excludes offsets transacted by Australia’s Emissions Reduction Fund in 2015, which were all either vegetation or savanna burning projects.

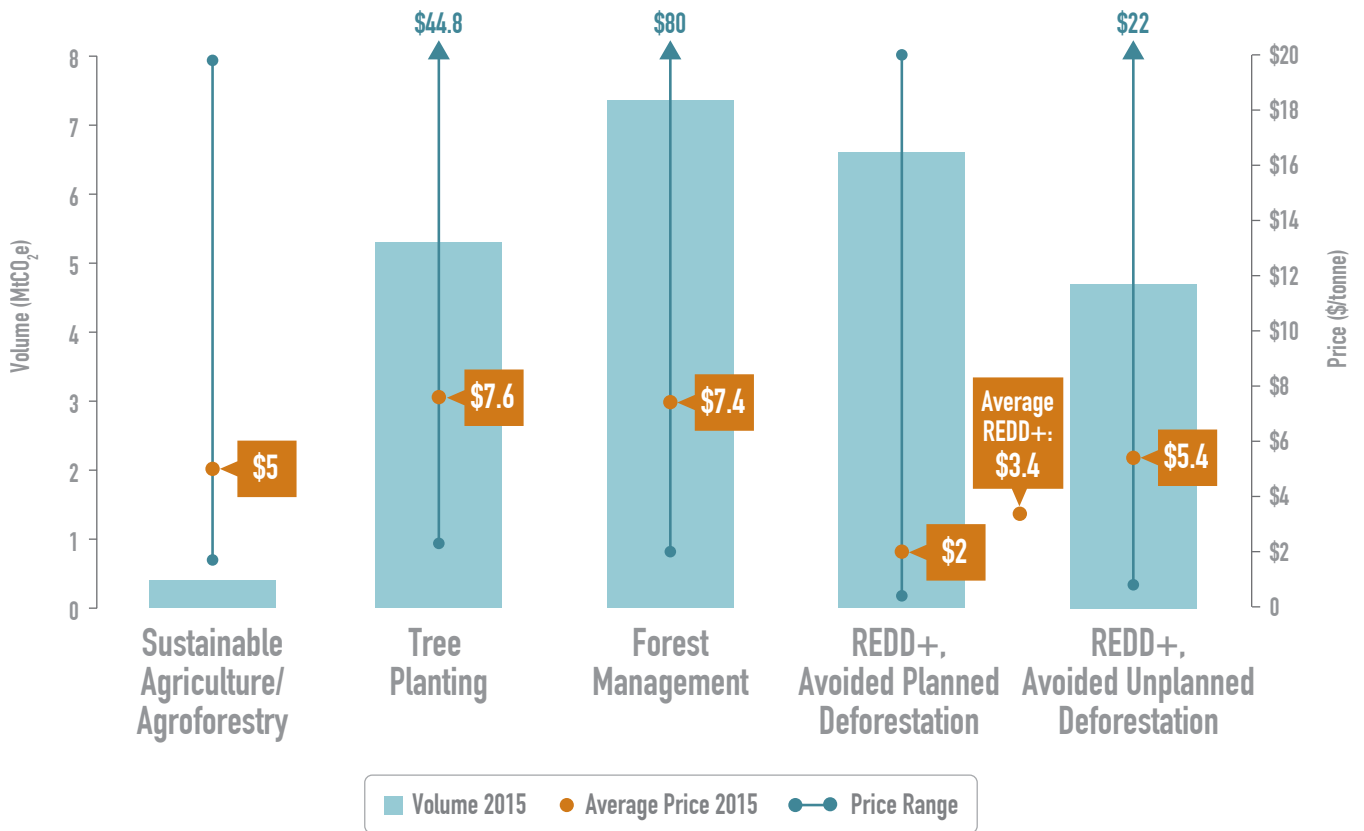
Meanwhile, demand for tree-planting and forest management offsets more than doubled last year, to 5.3 MtCO₂e and 9.2 MtCO₂e, respectively. The increased demand for forest management offsets was largely driven by California compliance buyers. The “other” category includes offset transactions such as wetlands/mangroves and soil carbon that either don’t fit neatly into the four main categories or saw too-small transaction volumes in 2015 to call out separately.

As in past years, **offset prices varied within and across project types, ranging from as low as \$0.2/tonne to as high as \$80/tonne,** but *average* prices by project type in 2015 were fairly similar to average prices in 2014, with buyers paying higher prices for tree-planting (\$7.6/tonne) and forest management (\$7.4/tonne) offsets than

for REDD+ offsets (\$3.4/tonne), perhaps because of their inclusion in compliance programs—although REDD+ projects also tend to be larger and aim for economies of scale, which reduces price.

The price for REDD+ offsets continued to fall along with all voluntary offsets, from \$4.2/tonne in 2013 to \$3.7/tonne in 2014 and, finally, last year’s \$3.4/tonne. As in previous years, REDD+ prices diverged between projects that addressed “unplanned” deforestation caused by subsistence agriculture and illegal activities and “planned” deforestation by altering a planned harvest cycle or concession. Because avoiding “unplanned” deforestation often involves engaging more stakeholders and changing a complex set of socio-economic conditions that leads to forest clearing, these REDD+ projects typically require (and receive) higher prices—an average of \$5.4/tonne in 2015.

Figure 7: Transacted Volume and Average Price by Project Type, 2015



Notes: Based on 25.4 MtCO₂e in 2015 transaction volume associated with a project type and price.

Standards: More Than 99% of Offsets Sold in 2015 Were Third-Party Verified

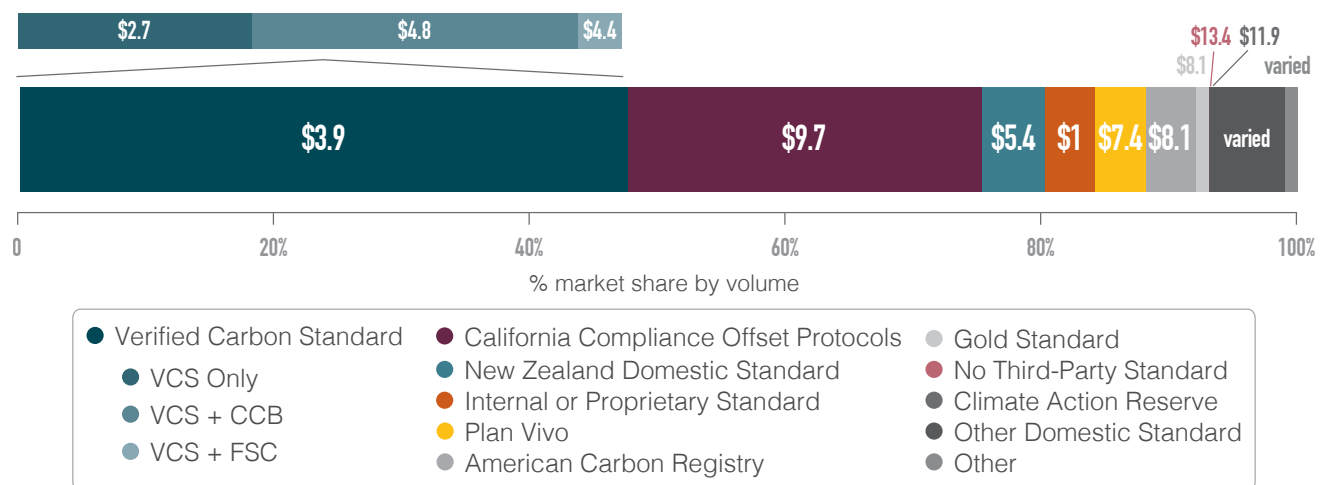
Third-party standards have now become, well, *standard practice* among voluntary offset project developers and buyers; less than 1% of offsets transacted in 2015 did *not* use third-party verification. In compliance markets, standards are a “must.” All offsets contracted by California buyers must meet the state’s compliance protocols, for instance, and the Australian government contracts only Australian Carbon Credit Units (ACCUs). (Australia volumes are excluded from Figure 8 below.)

The Verified Carbon Standard (VCS) accounted for 11 MtCO₂e (or 48%) of voluntary forest carbon offsets transacted last year. That is a drop of more than five million tonnes from 2014 levels, and its average price of \$3.9/tonne is lower than that of other standards—largely because VCS is the standard of choice for REDD+ projects, which achieve economies of scale by reducing large volumes of emissions over large land areas.

Voluntary transaction volumes under the American Carbon Registry (ACR) and the Climate Action Reserve (CAR) both dropped last year as these two standards continued to transition projects over to the California compliance market. This made way for the smallholder-focused standard Plan Vivo, which grew its transaction volume nearly 50% over 2014 volumes to 0.9 MtCO₂e in 2015. **Both Plan Vivo and Gold Standard offsets earned higher prices per tonne, on average, in part because these two standards tie in “beyond-carbon” benefits (co-benefits are discussed in more detail on p. 22) and safeguards and in part because they’re focused on tree-planting projects, which have greater finance needs.**

More than half of VCS offsets sold were labeled with an additional co-benefits standard or land-use certification: 6.1 MtCO₂e were labeled with the Climate, Community & Biodiversity (CCB) Standards, and 0.8 MtCO₂e added on Forest Stewardship Certification (FSC). (These co-benefits standards were also occasionally used in conjunction with carbon standards other than VCS, but there were too few of these transactions to report on here.) VCS+CCB offsets transacted at higher prices in 2015—an average of \$4.8/tonne compared to \$2.7/tonne for VCS “only.” However, it is not clear yet whether this “price premium” for co-benefits is a new trend or an anomaly. A look at Ecosystem Marketplace’s pricing data over time has shown no clear evidence that verified co-benefits are a significant factor in driving (higher) prices; other factors such as project size, type, and location are often much better predictors of price than whether a project delivers verified co-benefits.

Figure 8: Market Share and Average Price by Independent Standard, 2015



Notes: Based on 23.2 MtCO₂e in 2015 transaction volume associated with a standard. The 60.7 MtCO₂e contracted to Australia’s government in 2015 are not included in this figure but are all Australian Carbon Credit Units (ACCUs).

Buyers: Private Sector Drives 94% of Voluntary Market Demand

In compliance systems such as California’s compliance cap-and-trade market and Australia’s Emissions Reduction Fund, the specific buyers of forest carbon offsets are relatively easy to track and understand.

In Australia, the only compliance buyer of ACCUs in 2015 was the Australian government (though, outside of this, some Australian companies did engage in voluntary offsetting). In California (or, more accurately, “California-Québec” because the markets are linked) compliance buyers are regulated private-sector entities such as power companies. Information on specific California-based offset buyers is made available by the state’s Air Resources Board *after* each compliance period. During the first compliance period (2013–2014), 101 regulated entities purchased offsets as a means of meeting their compliance obligation, and of these, 42—including top overall offset buyers Chevron, Tesoro Refining & Marketing, Calpine Energy Services, Southern California Edison Company—purchased forestry tonnes. Information on the use of offsets in California’s second compliance period (2015–2017) will be made available in 2018.

On the voluntary markets side, understanding the who’s who of offset buyers is more difficult, however, responses to Ecosystem Marketplace’s 2016 annual survey gave us a general impression of the types of buyers that engaged in forest carbon offsetting and what motivated them—though survey respondents did not disclose specific buyers.

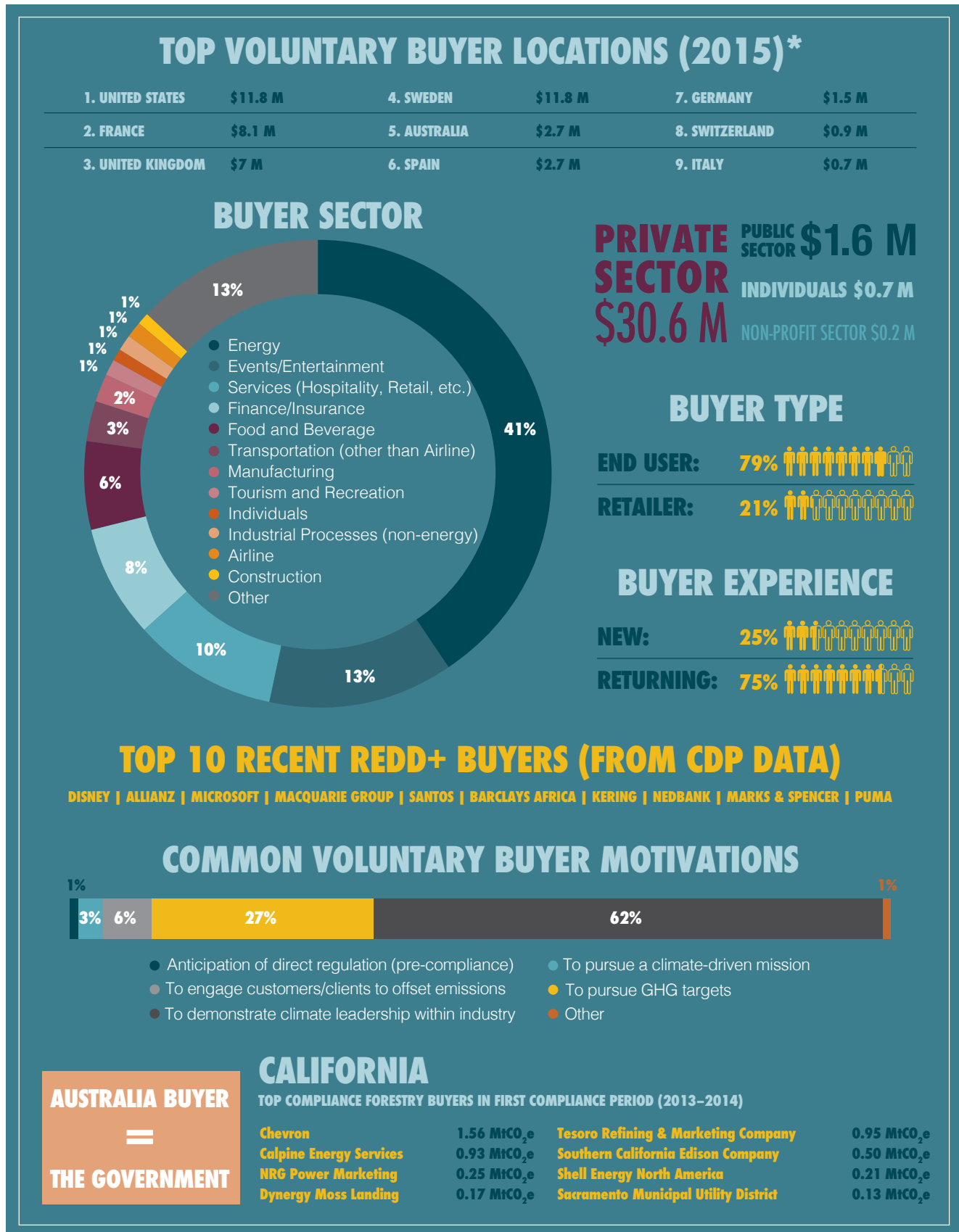
Among the survey respondents that reported a buyer type, 94% transacted forest carbon offsets to private sector buyers—mostly to domestic corporations (48%) but also multinational ones (44%) and a few small-to-medium enterprises (1%). Emerging online platforms such as Stand for Trees and Cool Effect also aim to facilitate forest carbon offset sales to individuals, promoting grassroots support for these efforts—though sales to individuals hovered around 1% of total demand, by volume. Subnational governments in European countries also bought forest carbon offsets voluntarily in 2015.

Private sector voluntary buyers typically hail from sectors that rely on a positive reputation in order to do business – events/entertainment, services (such as hotels and retailers), and food and beverage – or those with large indirect (Scope 3)¹¹ emissions footprints – energy and transportation. Many companies in the financial sector such as banks and insurance also engage in offsetting, perhaps because they are in the business of assessing risk and they see climate change as a major one (and perhaps also to gain experience with the markets ahead of regulation).

Ecosystem Marketplace’s July 2016 report, *Buying In: Taking Stock of the Role of Offsets in Corporate Carbon Strategies* analyzed corporate climate disclosures to CDP (formerly the Carbon Disclosure Project) and provided a comprehensive benchmark as to how and why major companies are engaging in offsetting. The report found that, over the last three years, 146 of the more than 1,800 companies reporting to CDP have purchased forest carbon offsets. **The top forest carbon offset buyers historically include the Walt Disney Company, Allianz SE, Microsoft, Macquarie Group, Santos, Barclays Africa, Kering, and Nedbank.** While many buyers continued to be “familiar faces” that engage in offsetting over several years, our 2015 survey data indicated that suppliers did report at least 32 transactions to “new” forest carbon buyers in 2015.

¹¹ Scope 3 emissions are those emissions that fall outside of a company’s direct control, either upstream in their supply chain or downstream in customers’ use of their products, waste, etc. 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 9: Buyer Analysis by Profit Status, Location, Type, Experience, and Motivation, 2015



Details of the Deals

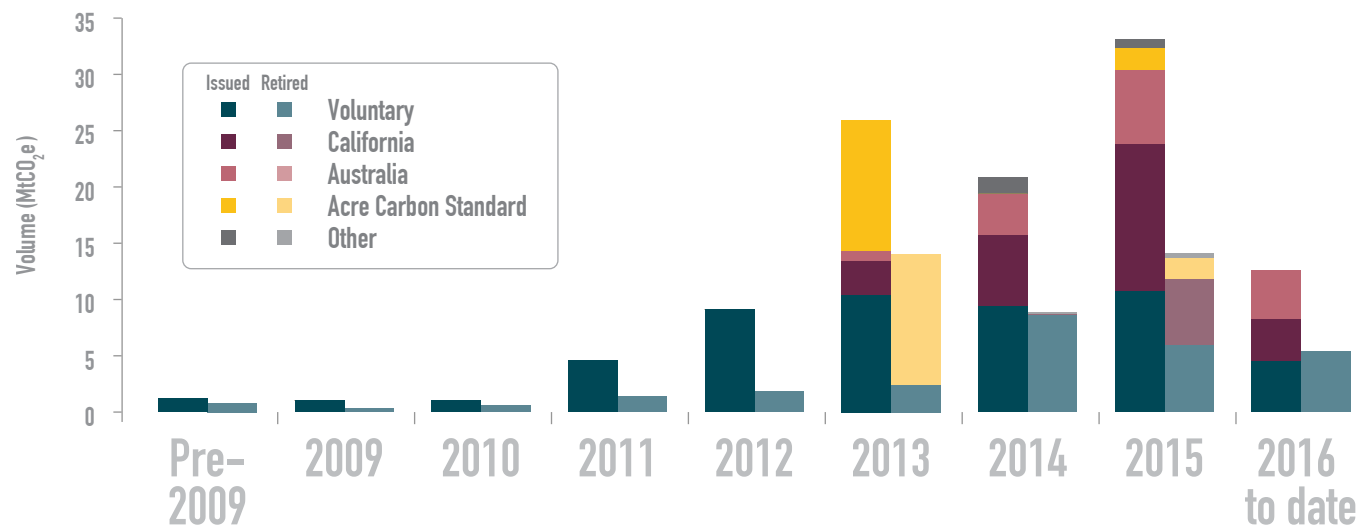
* Excludes countries with fewer than 3 buyers reported.

Forest Carbon Offset Issuances and Retirements Both Reach Record Highs

This report series focuses on transactions as the key measure of year-on-year demand for forest carbon offsets, but we also examine supply by looking at issuances and retirements on offset registries.

An offset is “issued” when it’s listed on a registry such as Markit or APX or a compliance registry. (Listing on a registry prevents double-counting.) Issued offsets generally represent available supply from mature projects; however, some project developers won’t list until they have a willing buyer (because there are fees), so issuances may also be an indication of demand. **In 2015, forest carbon offset issuances reached a record high of 33.1 MtCO₂e.** Despite relatively weak demand signals on the voluntary markets, voluntary issuances reached their own record-high issuance of 10.7 MtCO₂e last year, as projects—many of them begun several years ago—reached maturity. VCS led voluntary issuances with 8.3 MtCO₂e, followed by Gold Standard (1.4 MtCO₂e), ACR (0.7 MtCO₂e), and Plan Vivo (0.3 MtCO₂e). However, most of the offsets CAR and ACR issued last year are destined for compliance buyers on the California market: ACR issued 5.3 MtCO₂e in California-eligible tonnes, and CAR issued 7.8 MtCO₂e (including some “early action” offsets/issuances).¹² Ecosystem Marketplace also tracked 6.7 MtCO₂e of Australian Carbon Credit Units that were issued from land-use projects last year, though no similar data for ACCU retirements is available.

Figure 10: Historical Issued and Retired Offset Volumes, pre-2009 to 2015



Notes: This figure tracks land-use project registry data reported for the Acre Carbon Standard, ACR, Australia Emissions Reductions Fund, CAR, California Compliance Offset Protocols, Gold Standard/CarbonFix, ISO 14064/65, the Pacific Carbon Standard, New Zealand Permanent Forest Sink Initiative, Plan Vivo, VCS, and the Woodland Carbon Code.

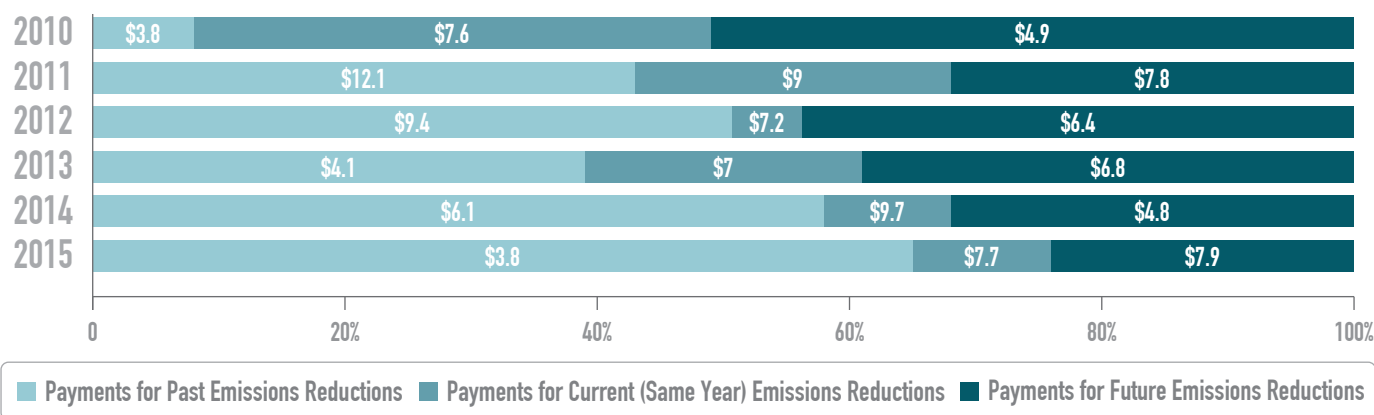
An offset is “retired” when it’s officially “counted” against emissions and removed from available supplies. Retirements may be an indicator of demand as well, but not a leading one, because many buyers fail to retire their offsets in a timely manner. **In 2015, retirements reached a record high of 14.1 MtCO₂e, driven in part by the 5.9 MtCO₂e that compliance buyers in California used to meet their first compliance period emissions reductions.** The German development bank Kreditanstalt für Wiederaufbau (KfW) retired another 1.9 MtCO₂e from Acre, Brazil (through a bilateral results-based agreement, discussed in more detail on p. 27). Meanwhile, voluntary retirements fell 32%, to 5.9 MtCO₂e in 2015, largely driven by a drop in VCS retirements.

¹² ACR and CAR issue California-eligible offsets on their registries (called “Registry Offset Credits” or ROCs). These tonnes are then cancelled and re-issued for compliance as “Air Resources Board Offset Credits” or ARBOCs. Though there may be a time lag between these two issuance events, we only count the ROC issuances (to avoid double-counting the same tonnes).

Buyers Pay More to Support Early-Stage Projects, Though Most Contracts Are for Emissions Reductions Achieved in the Past

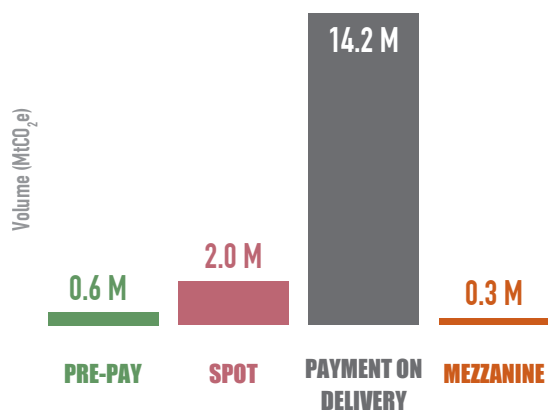
Buyers’ demand for past, current, and future offset vintages¹³ has shifted gradually over the years. In 2010, more than half of all transactions involved “future” vintages from projects that had already been approved by recognized standards, but for emissions reductions to be achieved later. By 2015, nearly 70% were for emissions reductions that had already occurred, but not necessarily because buyers preferred them. Rather, **the build-up of old supply pushed prices for early-vintage forestry offsets down to the 2010 low of \$3.8/tonne, while average prices for future vintages were more than double that – reflecting the willingness of some buyers to pay higher prices to support early-stage projects.** Current and future vintages may also be rarer on the marketplace due to the time it takes to actually verify and issue tonnes, and the reluctance of project developers to pay issuance fees without a willing buyer in the wings.

Figure 11: Percentage and Price of Offsets Transacted by Past, Current, and Future Vintages, 2010–2015



Notes: Based on \$71.3 M in payments for offsets associated with a vintage in 2015.

Figure 12: Market Share by Contract Type (Left) at Time of Transaction, 2015



Notes: Based on 17.6 MtCO₂e associated with a contract type. A mezzanine contract is one that mixes payment on delivery and pre-pay finance.

These demand-side dynamics in terms of offset vintages are also mirrored in the fact that the vast majority of contracts signed in 2015 were for tonnes already issued on a registry. In the past, “pre-pay” contracts for offsets at earlier stages in the process (for instance, from projects in the design phase or still undergoing validation) were more common. Last year, however, most contracts were structured so that payment occurs when the tonnes are delivered and not before.

¹³ For the purpose of this report, a vintage is the year the emissions reduction occurred (sometimes a vintage refers to a specific verification period). A buyer may contract past (pre-2015, in the context of this report), current (2015), or future (post-2015) vintage offsets. Often, past or current vintages are already issued on a registry while future vintages—for instance, from trees that have been planted and will sequester carbon each year as they grow—are by definition not yet verified or issued.

Projects Often Access a Mix of Finance Sources; Carbon Revenues in Turn Flow to Multiple On-the-Ground Actors

Amid an enduring imbalance of supply and demand and uncertainty in existing and emerging compliance markets, selling forest carbon offsets is consistently a tough business. **This year, Ecosystem Marketplace’s annual survey asked project developers more detailed questions about their 2015 project finances — including where their 2015 revenue came from, how revenue from carbon offset sales flowed, and their confidence in being able to sustain themselves in 2016.** Overall, we received detailed project-level information from 94 projects, 58 of which sold offsets in 2015. Of those, the majority (55) engaged with voluntary buyers in 2015, so this analysis is most relevant for voluntary carbon project finance—offering insight as to how projects operating without a compliance demand signal stay afloat (or don’t).

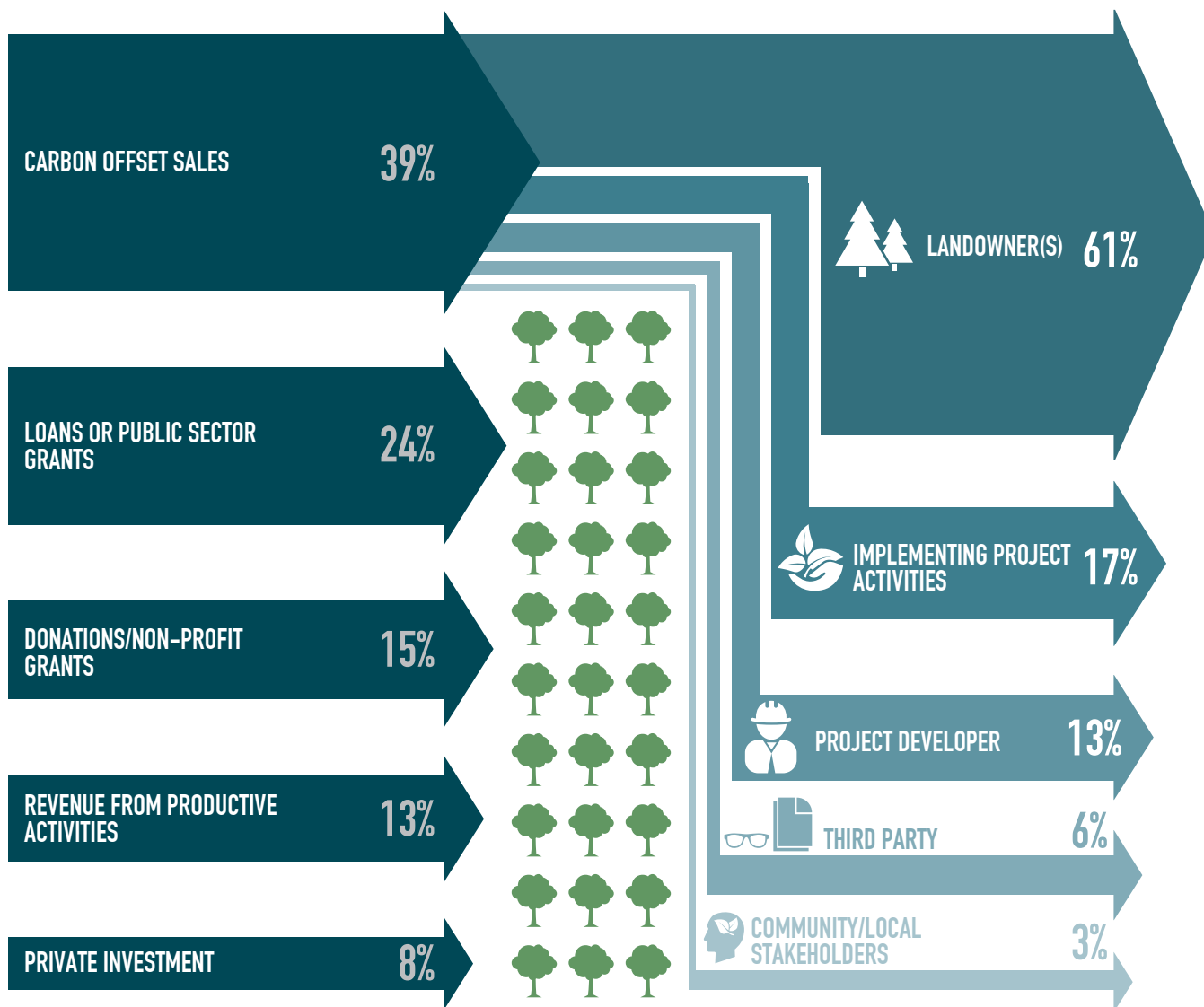
Overall, **49 projects (nearly half of those that answered the question) said that carbon offset sales were their sole source of finance in 2015.** Another 45 projects reported revenues from a mix of sources, including loans or public sector grants (12 projects accessed an estimated \$19.9 M in loans and grants in 2015), donations (21 projects accessed an estimated \$12.5 M), revenue from productive activities (11 projects reported earning an estimated \$11 M), and private investments not tied to offset ownership (18 projects accessed an estimated \$6.8 M). A few respondents offered more detail on these sources of revenue. Loans and grants ran the gamut from commercial to national to international. Donations came from non-governmental foundations, philanthropies, and individuals. Productive activities for which projects earned money last year included food products such as honey, nuts, vanilla, and acai berries as well as wood or biomass products, including furniture, charcoal, pulp, and tree saplings (that were sold to a nursery). Finally, at least a third of the private investments reported came from equity funds.

Interestingly, 17 projects reported that 100% of their 2015 finance came from a source *other* than carbon offset sales—with nine projects fully financed by donations or non-profit grants last year. Because of the dearth of upfront carbon finance these days (see the analysis of transactions by offset vintage on p. 19), **some of these projects may be using alternative finance sources early on in project development with the aim of earning revenue from carbon offset sales down the line.** Others, however, may be struggling to sell verified offsets to the extent that they are moving away from the payment-for-performance model in order to make ends meet.

Among those projects that signed new contracts to deliver offsets last year, 57 reported on where that revenue flowed. For most projects, the money flowed to a mix of actors and activities. The majority of projects (46) paid out at least some of the revenue to the project developer, but this flow amounted to 13% of the pie. Twenty-five projects earmarked a portion of the carbon revenue (61%) to the landowner(s) who, as outlined on p. 25, may be the government, a group of smallholders, a private entity, or another group. Thirty-five projects reinvested carbon offset sales (17%) into project activities—the things that make the project actually work, like planting trees, training forest guards, or purchasing additional land—and 29 spent 6% of the carbon revenue on third-party activities, most likely the auditing required to verify tonnes. (It is possible that the “first flow” tracked by the question is just the beginning: for instance, money initially going into the project developers’ pocket could have later been reinvested in project activities.)

The fewest projects (14 of the 57 reporting) said that a portion of their carbon revenues flowed to communities or local stakeholders. This may be partly because not all of the benefits communities receive come from the offset revenue itself: for instance, salaries from employment or the value of new infrastructure or income streams facilitated by the project are not captured here. It may also reflect the fact that some of the flows documented in Figure 13 go towards “fixed” costs (maybe paying the landowner is part of the contract, and also the auditing costs that are unavoidable) whereas the money spent on implementing project activities and paying communities is based on how much is left over once fixed costs are met. In this case, the latter may especially suffer when offset prices drop.

Figure 13: Sources and Amounts of Revenue Projects Accessed in 2015 (Left) and Where Revenue from Carbon Offset Sales Flowed (Right)



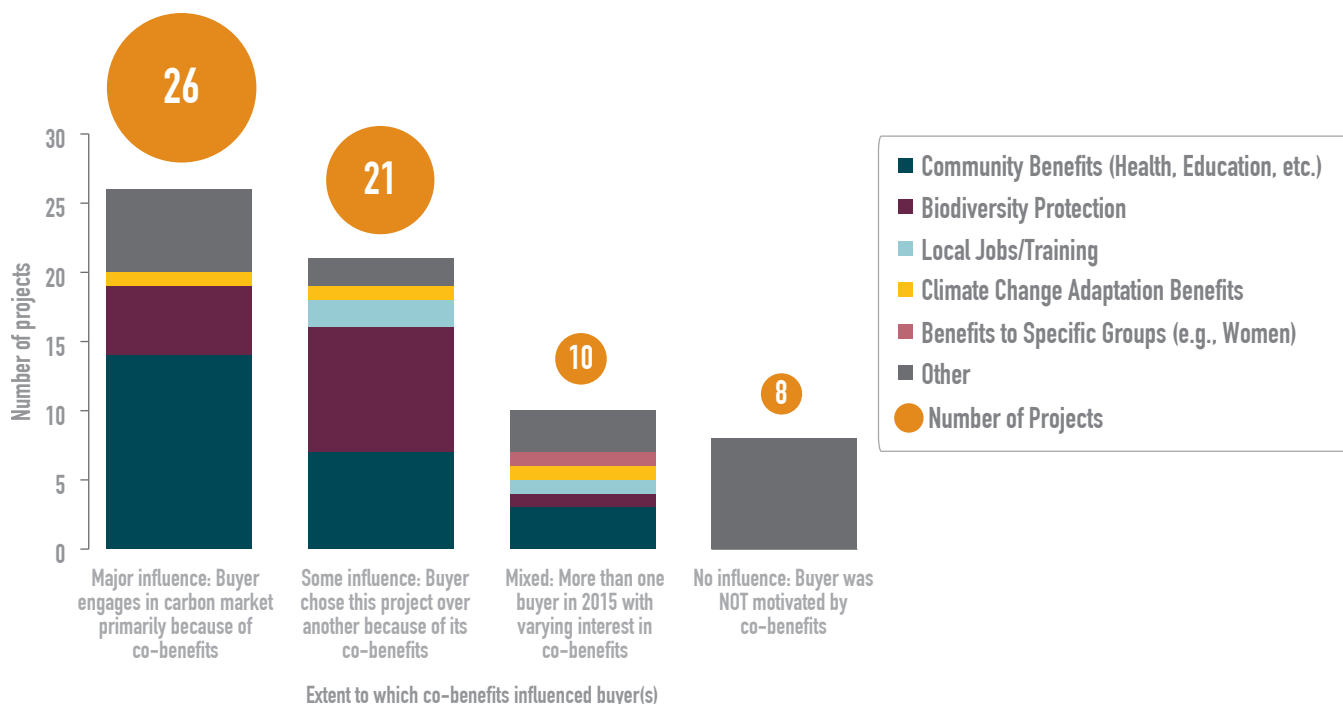
Notes: The revenue portion of the figure is based on 94 projects with \$35.3 M in 2015 carbon offset value that reported on sources of revenue in 2015. The flow portion of the figure is based on 57 projects that reported on carbon revenue flows in 2015.

Nearly Half of 2015 Forest Carbon Offset Buyers Engaged in the Markets Primarily Because of Co-Benefits

For the third year running, Ecosystem Marketplace’s carbon survey asked forest and land-use project developers to answer a detailed set of questions about the impacts of their on-the-ground activities beyond the emissions reductions historically tracked in this report series. Their responses painted a picture of the creative and diverse ways that project developers are working to sequester carbon or curb the drivers of deforestation, from setting up women-led microfinance cooperatives, to training forest rangers to stop wildlife poachers, to investing in the equipment for green charcoal production or honey-making. **Though they’re called “co-benefits” in the context of carbon markets, these beyond-carbon impacts are integral to actually achieving the emissions reductions — and they’re often one of the main reasons why suppliers and many buyers are engaged in the markets in the first place.**

In the context of a competitive market, co-benefits are also sometimes used as a differentiator and marketing tool. More and more project developers have realized that voluntary buyers in particular seek out the charismatic and colorful aspects of the projects and the story that can be told around them. **Ecosystem Marketplace’s survey shows that according to the project developers, co-benefits were often the determining factor that motivated buyers to either chose one project over another (32%) or engage in forest carbon offsetting to begin with (40%).**

Figure 14: Primary Co-benefits that Motivated Buyers by Project Count and Level of Motivation



Notes: Based on 65 projects reporting which co-benefit (if any) primarily influenced their buyers’ decision to purchase offsets.

When asked *which* co-benefits their buyers sought, carbon offset suppliers said that community benefits such as health and education were the top choices, followed by biodiversity protection. Other sought-after co-benefits were local jobs and training and climate change adaptation benefits. However, these benefits seemed to be a “nice-to-have” instead of being the determining factor for a buyer to commit. Buyers’ apparent preference for certain co-benefits over others could be due in part to the fact that some co-benefits are easier to quantify and communicate than others (see Impacts, p. 23).

Impacts by the Numbers: 376 Endangered Species Protected; 7,700 People Employed; and More

While the unit of transaction for forest carbon projects remains one tonne of carbon dioxide equivalent (tCO₂e), buyers sometimes require different performance indicators to track the co-benefits. **Overall, 92 projects responding to the survey reported that they are monitoring and/or evaluating at least one co-benefit other than carbon sequestration, but the degree of verification varied.** Not all respondents answered all questions, but 42 of them said their buyers simply asked for the monitoring and reporting of co-benefits, while 22 said that their buyers requested *verification* of co-benefits by a third party, usually against a standard such as the Climate, Community & Biodiversity Standards (see p. 15 for information on current demand for the CCB Standards). Six reported that, in addition to monitoring and verification by a third party, their buyer(s) required a specific outcome (other than carbon) in the contract to purchase emissions reductions.

Biodiversity and community benefits were the most commonly tracked impacts on the ground. Seventy-eight projects tracked biodiversity impacts, many of which (42 projects) kept track of High Conservation Value (HCV)¹⁴ landscapes within their project area—in fact a “do no harm” approach for HCV areas is a requirement of the CCB Standards. Many projects also sought to specifically protect habitat for endangered or threatened species, sometimes conducting biodiversity surveys or using charismatic mega fauna as the “face” of their project. **In 2015, survey respondents reported on habitat protection for 376 endangered species,** and one single project in Ecuador counted 92 threatened or endangered species.

Seventy-five projects tracked community benefits. Forty targeted their benefits specifically to poor and/or marginalized groups, while others provided benefits to indigenous peoples or women. **Fifty-three projects reported on jobs and training, with 7,700 people employed and 5,000 trained.** Roughly 63% of the jobs were seasonal or part-time, as is often the case in forestry, and the percentage of jobs going to women increased but still remained in the minority. Training focused on agroforestry and sustainable agriculture techniques, as well as forest fire management, biodiversity monitoring and business skills. Beyond any income they received from direct employment and through ownership of the carbon offsets themselves (discussed in more detail on p. 25), community members also received direct payments valued at \$1.7 M—from 17 projects that reported on this. Fifteen projects also gave a monetary estimate of other community benefits such as a new school building or road system, and the total value of these benefits was \$7.8 M—slightly higher than last year.

Projects also reported on watershed protection (42 projects), climate change adaptation (31 projects), and land tenure reform (26 projects). For water benefits, some projects mentioned qualitative observations (such as improved water quality or availability) or referenced scientific literature. **Within critical watersheds — and especially in the context of increasing climate extremes — forests often play the role of regulating climate.** For example, one project in Nicaragua was designed to increase water security for communities by prioritizing critical watersheds in its tree-planting plan, thus reducing the probability of flooding in the wet season while at the same time increasing water retention in the dry season. Of the 31 who evaluated adaptation impacts, 21 said they did so by protecting habitats of species affected by climate change. Other spheres of action included improved flood and erosion control and active forest fire management in preparation for a climate when floods and fires are more extreme.

The current state of monitoring and reporting on co-benefits is discussed in more detail in Ecosystem Marketplace’s March 2016 report on the topic: *Not So Niche: Co-benefits at the Intersection of Forest Carbon and Sustainable Development*.¹⁵ **The report also documents the considerable overlap between the metrics projects use to track co-benefits and the indicators for the Sustainable Development Goals**—a synergy that the Gold

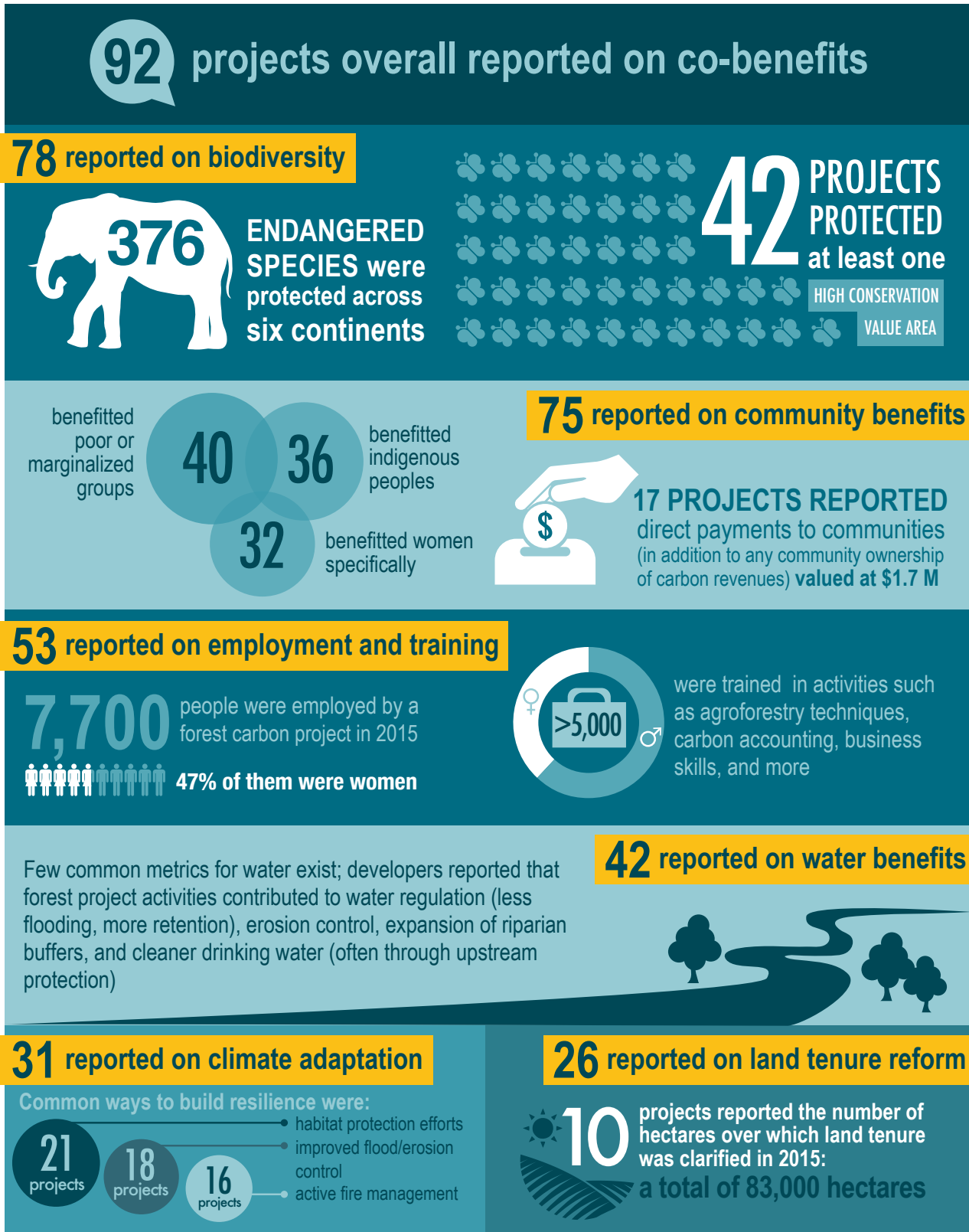
¹⁴ An HCV area is an area of significant biological, ecological, social, or cultural importance at the national, regional, or global scale. More information about HCVs is available through the HCV Resource Network: <https://www.hcvnetwork.org/>.

¹⁵ Goldstein, Allie. *Not So Niche: Co-benefits at the Intersection of Forest Carbon and Sustainable Development*. Washington, DC: Forest Trends, 2016. Accessed October 20, 2016. <http://forest-trends.org/releases/p/not-so-niche>

Standard in particular aims to capture with its version 3.0, which aims to quantify gender, water, health, and other benefits, and market them as additional project outcomes, alongside the verified emissions reductions.

Figure 15: Forest Carbon Project Co-benefits: Key Impacts in 2015

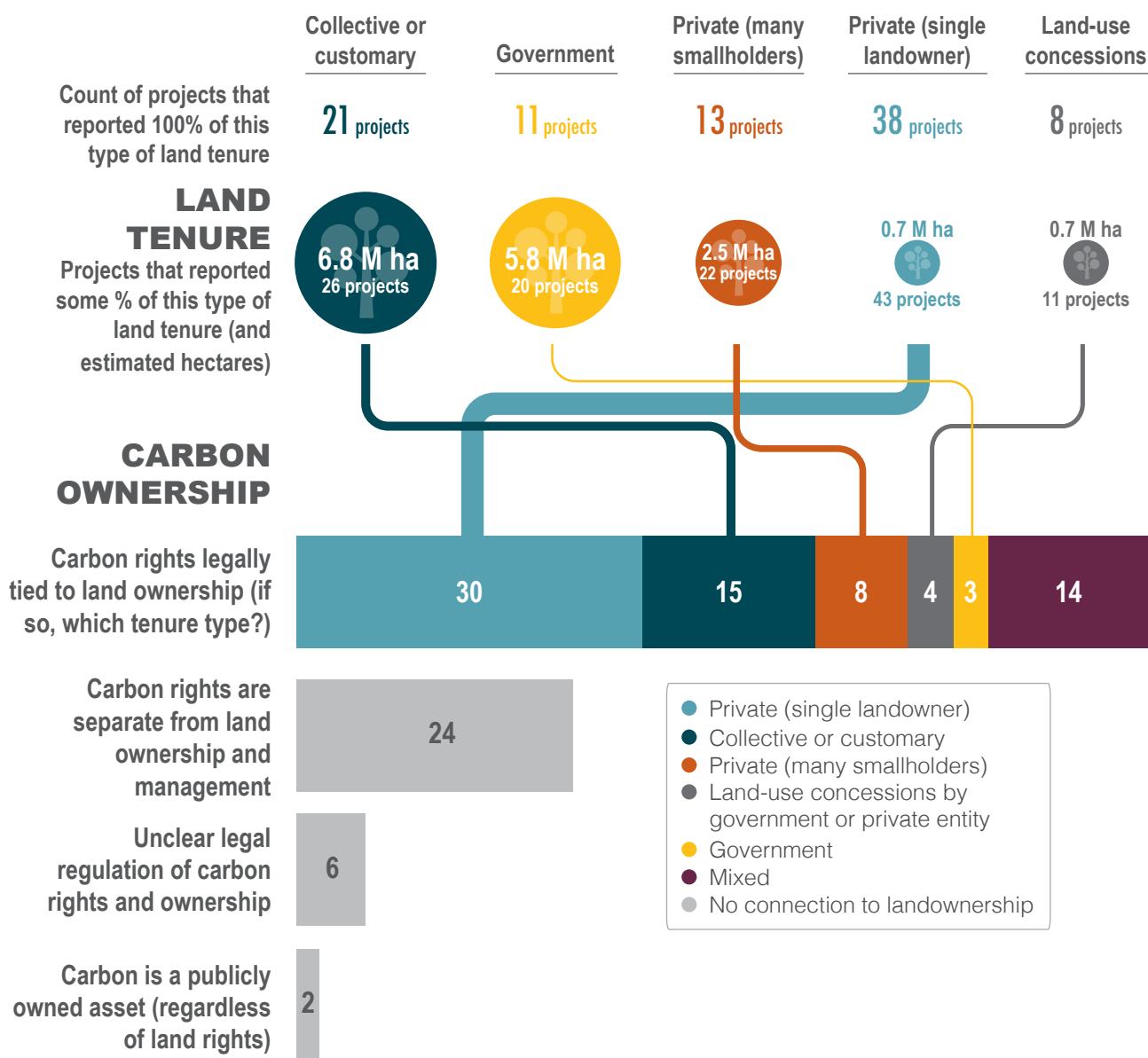
Beyond-Carbon Impacts



Twenty-one Carbon Projects Worked to Clarify Land Tenure in 2015; Many Others at the Forefront of Defining Carbon Rights

Active forest carbon projects now cover at least 28 M hectares — an area slightly larger than Burkina Faso — while jurisdictional programs are poised to scale up avoided deforestation efforts over ever larger land areas. On the project-level side, the survey asked developers to report on land ownership arrangements within their project area (see Figure 16) as well as on who owns the carbon rights. Carbon rights and land tenure do not necessarily correlate: one entity may own the land on which the trees grow, but the right to the carbon sequestered by these trees may not be theirs.

Figure 16: Number of Projects and Land Area Associated with Different Land Tenure Arrangements (Top) and Number of Projects Associated with Different Carbon Rights Arrangements (Bottom)



Beyond-Carbon Impacts

Notes: Based on 104 projects that reported on land tenure (they could select more than one land tenure type) and 105 projects that reported on carbon ownership.

Because carbon has only recently emerged as an asset with value, few countries to date have defined carbon rights at the national level,¹⁶ and individual project developers are sometimes at the cutting edge of figuring out how carbon and land rights relate. Among the projects reporting to Ecosystem Marketplace last year, 104 reported on land tenure and 106 on carbon ownership. Only six said that for their project, carbon rights were not regulated in a clear way. The majority of projects (74) reported that carbon rights were legally tied to land ownership—and a common scenario was for *both* the land and the carbon to be privately owned by a single landowner (30 projects) or collectively owned (15 projects). For 24 projects, carbon rights were separate from land ownership and management. For instance, one project in Canada reported that the government owned the land but the project developer owned the right to sell the carbon asset. The same is the case for an afforestation project in Spain. Other projects reported that carbon rights belonged to the project developer, whereas the project took place on privately owned land.

In 2015, 21 projects reported that they helped to clarify land tenure (and sometimes also carbon rights) in their project area. For example, one project secured official land titles for local smallholders, another made sure that stakeholders were informed about their existing land rights, and several others facilitated meetings with local authorities regarding community land tenure.



¹⁶ A 2014 review by the Rights and Resources Initiative assessed the laws of 23 countries implementing REDD+ readiness and found that only two—Mexico and Guatemala—had national laws addressing carbon rights. See Fernanda Almeida, Alexandre Corriveau-Bourque, and Annie Thompson. *Status of Forest Carbon Rights and Implications for Communities, the Carbon Trade, and REDD+ Investments*. Washington, DC: Rights and Resources Initiative, 2014. Accessed on August 26, 2016. http://rightsandresources.org/wp-content/uploads/ForestCarbon_Brief_web.pdf

Pledged Results-Based Finance Reaches \$4 B; of That, Governments and Multilaterals Have Paid Out \$1.2 B

Non-market, results-based REDD+ payments are slowly beginning to flow to national and sub-national jurisdictional efforts. We call these “non-market” payments because they don’t flow through a “marketplace” comprised of competitive buyers and sellers; and they don’t generate transferable emissions reductions that can be used to offset emissions elsewhere. Instead, they flow through bilateral or multilateral institutions like the World Bank, but they are “results based” in that the recipients must demonstrate verifiable results drawing on the same science and accounting that govern market-based transactions. So far, governments and multilaterals have *pledged* \$4.4 B in results-based REDD+ finance and *contracted* roughly one-third of that (Table 5).

We track a “pledge” when finance is designated through a Letter of Intent (LOI), Memorandum of Understanding (MOU), or similar document to pay for a specific result. (We also capture announcements, but they are not counted as pledges until the finance has been designated to a specific country.) Pledged finance becomes “contracted” when the pledge becomes binding, as will happen when the World Bank contracts its first Emissions Reductions Payment Agreement (ERPA), or when the money flows after results are achieved.

So far, no ERPAs have been contracted, but **roughly \$1.1 B (or less than one-third of the total pledged finance) has actually flowed to forest-based initiatives that have reduced emissions by at least 214.8 MtCO₂e**. More than \$1 B of that has been channeled through Brazil’s Amazon Fund,¹⁷ with smaller amounts flowing through Norway’s bilateral agreement with Guyana (\$70 M paid out to date) and the REDD+ Early Movers (REM) program’s pledges to Acre, Brazil (\$26.5 M paid out to date) and Colombia (\$6 M paid out to date). Of these totals, **the total tracked in 2015 is \$125.7 M, with \$120.9 M funding 27.2 MtCO₂e of reductions through Brazil’s Amazon Fund and roughly \$4.8 M funding slightly less than 1 MtCO₂e of reductions in Acre, Brazil**. Table 5 provides a detailed overview of non-market results-based finance for REDD+ to date.

Important developments for results-based REDD+ finance in 2015–2016 include:

Moving towards ERPAs: The **Carbon Fund** of the **World Bank’s Forest Carbon Partnership Facility (FCPF)** has provided REDD+ readiness funding (or “preparation grants”) to 38 governments, 14 of which have progressed far enough to sign LOIs that can evolve into ERPAs. In 2016 to date, donors to the FCPF’s Carbon Fund pledged an additional \$284 M, bumping the total pot of money to \$749 (as of August 24, 2016) and facilitating six new LOIs signed this calendar year: with Cote D’Ivoire, Dominican Republic, Madagascar, Mozambique, Nicaragua, and Peru. LOIs provide a signal for up to how many emissions reductions the Carbon Fund investors will pay for, but only in Costa Rica’s case does the LOI specify the maximum dollar amount. None of the 14 countries that have LOIs in place have yet reached the stage of signing an ERPA with the World Bank, though it looks as if Costa Rica and the Democratic Republic of Congo may be the closest to doing so. Both countries reached an important milestone in June 2016 when the FCPF Carbon Fund Participants provisionally selected the emissions reductions programs from Costa Rica and DRC into the Carbon Fund portfolio.

A \$5-billion carrot: At the Paris climate talks last December, Norway, the United Kingdom, and Germany entered into a joint agreement to provide \$5 B in REDD+ finance over the six-year period from 2015 to 2020—around \$800 M a year—with the goal of reaching \$1 B a year by 2020. Much of this will be in the form of results-based payments, including pledges of \$339 M to the Carbon Fund, more than \$100 M to Colombia through the REDD+ Early Movers program, and a pledge from Norway to continue its support of Brazil’s Amazon Fund.

¹⁷ Note that while international donors provide finance to the Amazon Fund based on results (Brazil reducing its deforestation-related emissions), the way the Amazon Fund manages, monitors, and provides finance to projects—as non-reimbursable investments and disbursements based on project spending—is not results-based. See more in Norman, Marigold and Smita Nakhoda. *The State of REDD+ Finance*. Center for Global Development, Climate and Forest Paper Series No. 5. 2015 Accessed on August 28, 2016. <http://www.cgdev.org/sites/default/files/CGD-Norman-Nakhoda-Climate-Forests-5-REDD-Finance.pdf>

A green-thumbed Green Climate Fund: The **Green Climate Fund (GCF)**, the main operating entity of the UNFCCC, is supposed to funnel a minimum of \$100 B climate-change mitigation and adaptation funding per year from developed to developing countries, and an impact assessment published last February¹⁸ identified forests as one of five potential investment priorities—with an emphasis on results-based finance in a few jurisdictions that show momentum. A results framework to track and incentivize investments in REDD+ consistent with the Warsaw decisions on a REDD+ instrument has also been established, although currently, the GCF is yet to approve any REDD+ proposals.

A new fund for the DRC: Norway bilaterally pledged \$200 M in results-based REDD+ finance to the DRC through the **Central African Forest Initiative (CAFI)** in April 2016. CAFI was first announced in September 2015 after the African Development Bank confirmed that it will wind down the Congo Basin Forest Fund due to the multi-faceted challenges of operating in an unstable region, including low-capacity project implementers and, at times, minimal political buy-in.¹⁹

A look at the evolution of non-market results-based finance over time reveals a few key takeaways:

Behind-the-scenes: a shift towards results-based finance, even for readiness. In past years, our *State of Forest Carbon Markets/Finance* reports tracked REDD+ “readiness” finance, which is meant to help developing countries develop the processes and institutions needed for performance-based payments to flow. This early-stage readiness finance tended to be disbursed upfront or based on a schedule, much like traditional development aid, but most *new* readiness funding is to be disbursed on a results-based basis. This is best observed through Norway’s bilateral pledges, which often earmark a certain amount to pay for specific readiness activities and a certain amount to pay for emissions reductions (the breakdown gives a sense of how “ready” Norway perceives the recipient to be). In Liberia, for example, readiness payments are contingent on the implementation of a moratorium on new industrial logging concessions, while Guyana’s is contingent on the establishment of a REDD+ governance development plan.

Money only flows if results are achieved. Norway got the non-market, results-based train rolling in 2008, when it pledged \$1 B to Brazil (through its Amazon Fund) over a 5-year period, but only if the country slowed deforestation enough to bring forestry-driven greenhouse gas emissions below a 10-year average (1996–2005). As a result of meeting this target, Brazil received Norway’s full original pledge—while also attracting additional pledges to continue the Amazon Fund beyond 2015. In 2010, Norway entered into a similar agreement with Indonesia, but the country has not met the phased approach set out in the Norway-Indonesia agreement and therefore received very minimal finance and no payments for emissions reductions. While this is not a success story for Indonesia’s forests, it is a success story for the concept of results-based payments: no results, no money.

Emissions reductions are often estimated with conservative proxies. Because they cover a broader area and don’t generate tradeable offsets, non-market REDD+ payments don’t require the detailed, site-specific carbon accounting that market-based payments do. The Amazon Fund, for example, uses Brazil’s annual deforestation rate as a reference level and assumes that each hectare saved sequesters 485 tCO₂e, which is a conservative number based on national averages rather than a detailed inventory. A similar approach has been applied to Guyana, but only until the country establishes a more sophisticated carbon accounting system. Overall, it seems that scaled-up REDD+ payments will also require less granular carbon counting, while more localized initiatives seeking higher or market-based payments will require more detailed carbon accounting.

A value signal of \$5/tonne has emerged. The Amazon Fund, the FCPF’s Carbon Fund, and the REDD+ Early Movers program have all been entering into agreements based on \$5/tonne. This is neither an official global price nor a “price signal” in the markets sense, because it does not come from competitive bidding, but it does provide

¹⁸ Green Climate Fund. Analysis of the Expected Role and Impact of the Green Climate Fund. 2015. Accessed August 26, 2016. https://www.greenclimate.fund/documents/20182/24949/GCF_B.09_06_-_Analysis_of_the_Expected_Role_and_Impact_of_the_Green_Climate_Fund.pdf/d0dec00c-1424-4670-8cff-0465b5dd8ee5?version=1.1

¹⁹ See Norman, Marigold. Where has funding for forest protection in Central Africa gone wrong? Thompson Reuters News Foundation. 2015. Accessed August 26, 2016. <http://news.trust.org/item/20151110104943-jew41/>

insight into the amount of performance-based funding currently available to help tropical forest governments steer towards a low-carbon, pro-forests development pathway—although REDD+ finance is usually just one of many factors.

Private sector engagement is scarce. Private-sector entities generally prefer market-based payments so they can reduce their own carbon footprints (See Forest Trends' recent report *The Implications of the Paris Climate Agreement for Private Sector Roles in REDD+* for more information²⁰), but there are two exceptions: the Brazilian oil company Petrobras, which to date has paid \$6.8 M for 1.3 MtCO₂e reduced through the Amazon Fund, and BP Technology Ventures, which has pledged \$5 M to FCPF's Carbon Fund. The private sector is largely sitting on the sidelines of results-based payments outside of carbon markets in part because of policy uncertainty and a lack of sufficient incentives, and in part because companies are waiting for an asset they can buy (emissions reductions). Emissions reductions are available to companies now through bilateral contracts with individual project developers or the retailers that work with them—explaining the greater private sector participation in carbon markets. Engaging with governments is a different animal, and at this point the only jurisdictional-level emissions reductions that have been issued on a registry are from Acre, Brazil.

Table 5: Pledged Results-Based Payments for Reducing Deforestation

Amazon Fund				
Donors: Norway (\$1,002 M), Germany (\$28.3 M), and the Brazilian oil company Petrobras (\$6.8 M) have pledged to the fund.¹				
Recipient	Potential Payment	Expected Result	Agreement Date	Finance Flows to Date
Brazil (mostly the Amazon biome)	\$1,037 M	Reducing deforestation. An emissions reductions equivalent is calculated by converting the number of hectares saved (against a baseline) to tCO ₂ e.	Original agreement with Norway in 2008, followed by several addenda. Summary available here.	\$1,037 M for an estimated 207.4 MtCO ₂ e (In 2015 specifically: \$120.9 M for 27.2 MtCO ₂ e)
Overall: The original pledge from Norway was \$1 B for Brazil to reduce deforestation between 2009 and 2015; Brazil received all the money because it successfully reduced deforestation. Last year, Germany and Norway announced an additional \$708 M in <i>pending</i> pledges to continue the Amazon Fund beyond 2015. These include: \$108.8 M by Germany in August 2015 and \$600 M by Norway in Paris in December 2015. However, Germany and Norway have not yet signed official addenda to their agreements with the Amazon Fund.				
Forest Carbon Partnership Facility Carbon Fund (FCPF)				
Donors: The governments of Australia (\$18.4 M), Canada (\$5 M), France (\$5 M), Germany (\$126.2 M), Norway (\$300.9 M), Switzerland (\$10.8 M), the United Kingdom (\$205.2 M), and the US (\$14 M) have pledged to the Carbon Fund, as has the European Commission (\$6.7 M), BP Technology Ventures (\$5 M), and The Nature Conservancy (\$5 M).				
Recipient	Potential Payment	Expected Result	Agreement Date and Link	Finance Flows to Date
Chile	Not specified	Up to 5.2 MtCO ₂ e	August 2014, Letter of Intent	Not yet
Costa Rica	\$63 M	Up to 12 MtCO ₂ e	September 2013, Letter of Intent	Not yet
Cote D'Ivoire	Not specified	Up to 16.5 MtCO ₂ e	November 2015, Letter of Intent	Not yet
Dominican Republic	Not specified	Up to 7.5 MtCO ₂ e	June 2016, Letter of Intent	Not yet
DRC	Not specified	Up to 10 MtCO ₂ e	June 2014, Letter of Intent	Not yet

²⁰ Graham, Peter and Gustavo Silva-Chávez. *The Implications of the Paris Climate Agreement for Private Sector Roles in REDD+*. Washington, DC: Forest Trends, 2016. Accessed August 26, 2016. http://www.forest-trends.org/documents/files/doc_5305.pdf

Forest Carbon Partnership Facility Carbon Fund (FCPF) Con't				
Recipient	Potential Payment	Expected Result	Agreement Date and Link	Finance Flows to Date
Ghana	Not specified	Up to 18.5 MtCO ₂ e	September 2014, Letter of Intent	Not yet
Madagascar	Not specified	Up to 16.4 MtCO ₂ e	November 2015, Letter of Intent	Not yet
Mexico	Not specified	Up to 8.7 MtCO ₂ e	November 2014, Letter of Intent	Not yet
Mozambique	Not specified	Up to 8.7 MtCO ₂ e	November 2015, Letter of Intent	Not yet
Nepal	Not specified	Up to 14 MtCO ₂ e	June 2015, Letter of Intent	Not yet
Nicaragua	Not specified	Up to 11 MtCO ₂ e	January 2016, Letter of Intent	Not yet
Peru	Not specified	Up to 6.4 MtCO ₂ e	March 2016, Letter of Intent	Not yet
Republic of Congo	Not specified	Up to 11.7 MtCO ₂ e	September 2014, Letter of Intent	Not yet
Vietnam	Not specified	Up to 10.3 MtCO ₂ e	December 2014, Letter of Intent	Not yet

Overall: \$702 M currently in the fund; LOIs to date add up to potential payments for up to 156.9 MtCO₂e.

BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL)				
Donors: The governments of Germany (\$43.5 M), Norway (\$115.6 M), the United Kingdom (\$169.6 M), and the US (\$25 M) have pledged to the fund.				
Recipient	Potential Payment	Expected Result	Agreement Date	Finance Flows to Date
Ethiopia (Oromia region)	\$68 M	\$18 M for mobilization grant and up to \$50 M for emissions reductions	September 2015, Letter of Intent [not available online]	Not yet

Overall: \$360 M currently in the fund. In addition to the LOI with Ethiopia, an LOI with the Orinoquia region of Colombia for \$67 M (\$17 M for technical assistance and \$50 M for emissions reductions) is in the works. ISFL is also developing a program in Zambia and has identified Indonesia as a target country.

REDD Early Movers (REM) ⁱⁱ				
Donors: REDD Early Movers is an initiative of the German Official Development Assistance. The program is implemented jointly by the German development bank KfW and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). Germany, Norway and the United Kingdom decided to join forces and work together through REM via delegated mandates.				
Recipient	Potential Payment	Expected Result	Agreement Date and Link (if available)	Finance Flows to Date
Acre, Brazil	\$28.2 M (based on current exchange rates, original commitment of 25 M €)	8 MtCO ₂ e (based on \$5/tonne price)	2012	23.5 M € (US \$26.5) for 6.2 MtCO ₂ e (In 2015 specifically: estimated \$4.8 M for 1 MtCO ₂ e) ⁱⁱⁱ
Colombia	~\$100 M	20 MtCO ₂ e (based on \$5/tonne price)	December 2014, Memorandum of Understanding	First payment flowed in 2016: ~\$6 M for 1.2 MtCO ₂ e
Ecuador	~\$50 M	10 MtCO ₂ e (based on \$5/tonne price)	December 2014, Memorandum of Understanding	Not yet

Norway's Bilateral Agreements				
Donor: These are each bilateral agreements, though Norway's funding for the DRC will flow through the Central African Forest Initiative (CAFI), its funding for Guyana will flow through the Guyana REDD+ Investment Fund (GRIF), and its funding for Liberia and Peru is expected to flow through the World Bank.				
Recipient	Potential Payment	Expected Result	Agreement Date and Link (if available)	Results-based Finance Flows to Date
DRC	\$200 M	All funding is performance-based, but for metrics other than emissions reductions.	April 2016, Letter of Intent	Not yet
Colombia	\$173 M (plus \$50 M through REM, not double counted here)	\$135 M reserved for payments for emissions reductions	November 2015, Joint Declaration of Intent (with Germany and the United Kingdom)	First payment flowed in 2016; see REM
Guyana	\$250 M	Emissions reductions and other deliverables.	November 2009, Memorandum of Understanding	\$70 M has been transferred to the Guyana REDD+ Investment Fund (GRIF) ^{iv}
Indonesia	\$1 B	Readiness money available in 2010–2013; payments for emissions reductions beginning in 2014.	May 2010, Letter of Intent	\$80 M paid out for readiness activities ^v
Liberia	\$150 M	\$70 M for readiness and \$80 M for emissions reductions	2014, Letter of Intent	Not yet
Peru	\$300 M ^{vi}	\$50 M for readiness and \$250 M for emissions reductions	2014, Letter of Intent	Not yet

TABLE SUMMARY

\$4,350 M in results-based payments pledged; of those **\$1,139 M have been paid out** for achieved emissions reductions; and of that **\$125.7 M paid for emissions reductions** in 2015 specifically.

All hyperlinks can be found in Appendix 1 p. 48.

ⁱ Documentation is available at: http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en/Esquerdo/doacoes/ Amounts were converted to US\$ according to the exchange rate of the Central Bank of Brazil on the dates the funds were transferred.

ⁱⁱ REM pledges are made in terms of currency, not tonnes, and are dependent on exchange rate fluctuations. Specifically, the Colombia agreement is comprised of pledges of up to 10.5 M euros (by Germany), 400 M kroner (by Norway), and 29 M £ (by the United Kingdom). The Ecuador agreement is so far comprised of pledges of up to 11 M € (by Germany) and 300 M Norwegian kroner (by Norway). This report series previously tracked the REM-Acre pledge as US \$40 M (the estimated value when it was signed), but as the Euro has depreciated, the 25 M € agreement is worth less in US dollars.

ⁱⁱⁱ The total payment to date was acquired directly from KfW. The estimated amount in 2015 was calculated based on public retirement data from the Acre Carbon Standard (here) and a price of \$5/tonne.

^{iv} This information was gathered by the report authors through direct communication with the Norwegian Ministry of Climate and Environment in August of 2016.

Our 2015 report listed Norway's total results-based payment to Guyana at \$190 M. The number has been downgraded based on updated information from Norway that allowed us to separate REDD+ payments from other results-based money.

^v According to the original agreement, Indonesia would be eligible to receive up to \$200 M as "contribution-for-delivery" of initial preparation and transformation activities (Phases 1 and 2 agreed in the Letter of Intent), and up to \$800 M as a "contribution-for-verified-emissions reduction" during the third and final phase of the Partnership. Because Indonesia was unable to achieve the significant progress aimed for in the agreement, by August 2016 Norway had released approximately \$80 M in total funding earmarked for the first two phases of the agreement. This information was gathered by the report authors through direct communication with the Norwegian Ministry of Climate and Environment in August of 2016.

^{vi} This information was gathered by the report authors through direct communication with the Norwegian Ministry of Climate and Environment in August of 2016. The currency of the agreement is in Norwegian kroner. US\$ equivalents may change based on future exchange rates.

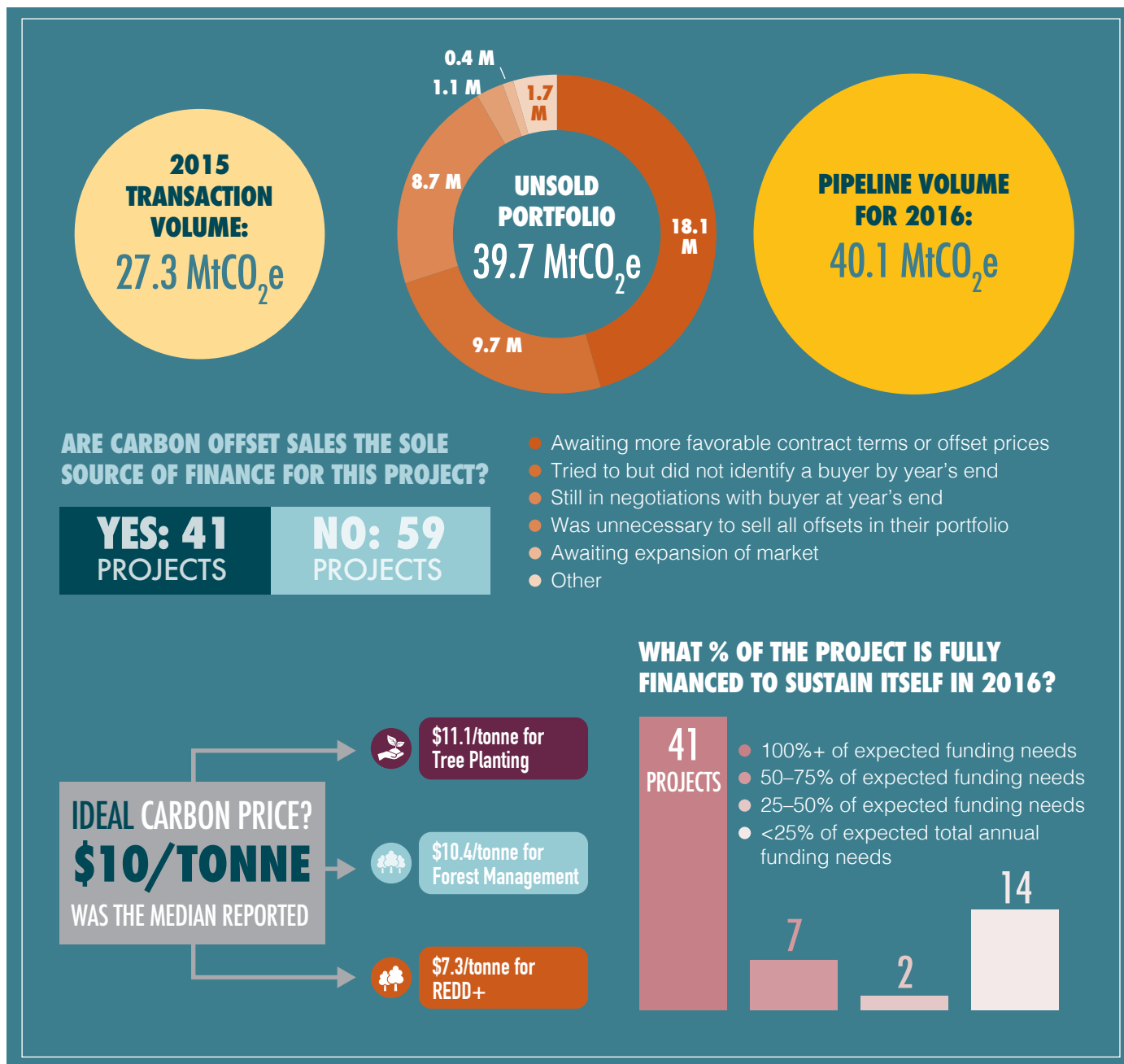
At Least 80 MtCO₂e Remains Unsold or Undeveloped as Suppliers Await Higher Offset Prices or Local Compliance Signals

Project developers reported an unsold portfolio of 39.7 MtCO₂e in 2015 — meaning that for every offset that found a buyer last year, another 1.6 remained sitting with suppliers. However, unlike in 2014 when suppliers most commonly reported that they *tried* to sell their portfolio tonnes, suppliers reported that they purposefully held onto 18.1 MtCO₂e in 2015—preferring to wait until market conditions, in particular prices, improved. This wait-and-see approach is especially applicable to suppliers scoping out compliance markets. Suppliers' collective “pipeline” volume—the offsets they plan to bring to market in 2016, *if* carbon finance is available—was similar to the portfolio volume, but based on fewer responses and therefore considered a minimum estimate. This echoes a rapid ramp-up in offset development we tracked in the United States in response to the compliance demand signal in California, and it is possible that a similar supply-side response could occur if, for instance, the International Civil Aviation Organization comes up with clear guidance on what offset types and standards will be accepted within the market-based mechanism airlines are designing.

In the meantime, 41 projects (composing about two-thirds of those that answered the question) said that they were fully financed to sustain themselves in 2016, while 23 projects said they had met 75% or less of their funding needs. Of these, at least 14 projects were seriously struggling, with less than 25% of their 2016 finance needs met. Unsurprisingly, **almost all project developers reported that the *ideal carbon price per tonne was more than the price they received in 2015.* The median ideal carbon price reported was \$10/tonne, more than twice the average price on the voluntary forest carbon markets last year.** The ideal carbon price reported did vary slightly among project types: tree-planting developers said they needed slightly more (a median of \$11.1/tonne) while REDD+ projects—which are often much larger, creating economies of scale—said they needed slightly less (a median of \$7.3/tonne).



Figure 17: Various Estimates of Market Reality and Future Finance Needs



Notes: Portfolio and pipeline volumes are based on 120 project developers that reported on their unsold portfolio volumes in 2015 and 58 that reported on their pipeline volumes for 2016. Finance needs data is based on 100 project developers that reported on whether carbon offset sales were the sole source of project finance, 69 that reported on an ideal carbon price, and 64 that reported on the percentage of their 2016 finance needs that had been met.

Growing Pains as Projects “Nest” Within Jurisdictional Efforts—and Bring Their Experience with the Private Sector Along

The Paris Climate Agreement encourages parties to the United Nations Framework Convention on Climate Change (UNFCCC) to “implement and support” REDD+, “including through results-based payments,” and it also allows for “international transfers of mitigation outcomes”, or international offsets—but **it’s not clear how forest-carbon projects will “nest” within jurisdictional programs for compliance purposes.** From a carbon-accounting perspective, market-oriented projects are generally more rigorous than are state or national inventories, but they would have to demonstrate site-specific results that both warrant higher payments and account for “leakage,” which is what happens when deforestation avoided in one spot moves someplace else. On top of that, offsets transferred internationally would have to be deducted from the exporting country’s emissions reductions—and many developing countries have demonstrated an unwillingness to do that, preferring instead to see any forest-carbon offsets used by their own domestic industrial emitters.

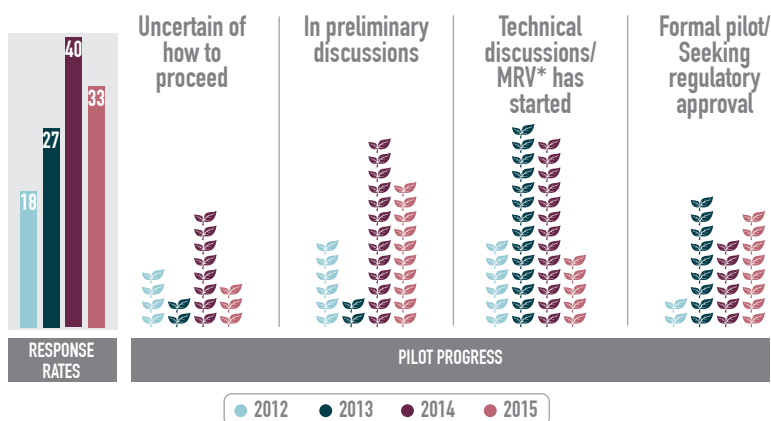
Despite these impediments, **participants in the voluntary carbon markets assert that REDD+ projects have a lot to offer to governments by way of lessons learned.** For instance, REDD+ projects have pioneered brand new land rights arrangements and worked through years-long community engagement processes. They’ve also engaged the private sector in a way that few larger-scale REDD+ efforts have been able to do. A recent Ecosystem Marketplace analysis of CDP disclosures found that at least 146 companies have purchased REDD+ offsets on the voluntary carbon markets over the last three years, compared to just two private sector actors that have engaged in jurisdictional REDD+ through the Amazon Fund (Petrobras) and the Carbon Fund (BP Technology Ventures).²¹

Reconciling project-level and jurisdictional REDD+ will be one of the pivotal challenges of the next few years. **The Verified Carbon Standard, which is behind the first REDD+ methodologies for the voluntary carbon markets and whose projects have the most at stake, has been leading the conversation on how REDD+ projects might nest into subnational or national efforts.** VCS developed a Jurisdictional Nested REDD+ (JNR) framework and in 2013 received a \$1.8 M grant from the Norwegian government to pilot it at the national level

in Costa Rica and at the subnational levels in Acre, Brazil; San Martín, Peru; Madre de Dios, Peru; and Mai Ndombe, DRC. A recent guidance document on REDD+ nesting by Winrock International (with input from VCS and Fundación Natura Colombia) presents a kind of Goldilocks approach: some accounting and risk-allocation frameworks too heavily favor jurisdictions, while others prioritize projects; a “just right” compromise emerges somewhere in the middle.²²

Ecosystem Marketplace data shows that REDD+ projects may indeed be in need of guidance as they move through preliminary conversations with governments to technical discussions to seeking regulatory approval (Figure 18). **Of those projects that reported progress with REDD+ nesting over both**

Figure 18: Pilot Projects Reporting Progress Integrating with Public REDD+ Programs, 2012–2015



Notes: Based on 33 projects that reported nesting progress in 2015, 40 in 2014, 27 in 2013, and 18 in 2012.

*MRV = Measuring, Reporting, and Verification.

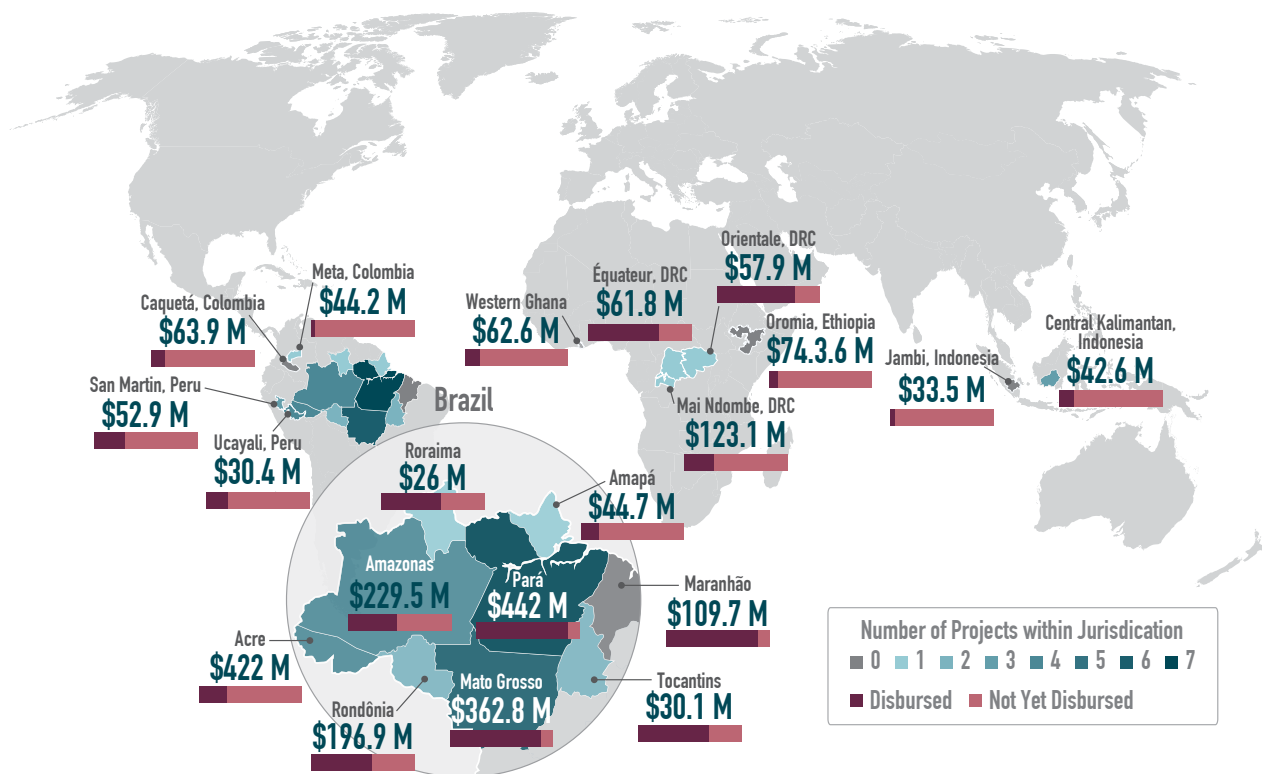
²¹ See Goldstein, Allie. *Buying In: Taking Stock of the Role of Offsets in Corporate Carbon Strategies*. Washington, DC: Forest Trends, 2016. Accessed August 26, 2016. http://www.forest-trends.org/documents/files/doc_5294.pdf

²² See Pearson Timothy, Felipe Casarim, and Anna McMurray. *Guidance Document: Options for Nesting REDD+ Projects*. Winrock. Commissioned by Fundación Natura Colombia, 2016. Accessed August 26, 2016. http://www.v-c-s.org/wp-content/uploads/2016/07/Nesting-Options-1-Jul_Eng_final.pdf

of the last two years, we found that 10 were stalled at the same stage as in 2014, four had advanced, and four had backslid (they reported further progress in 2014 than they did in 2015). All of the “backsliding” projects were in Brazil, where the national government’s climate plan (known as an Intended Nationally Determined Contribution, or INDC) submitted to the UNFCCC indicates that Brazil does not intend to transfer any of its emissions reductions units to other countries—a position that calls into question whether states such as Acre will be able to transfer REDD+ offsets once the Paris Agreement kicks in.

Meanwhile, the number of Jurisdictional REDD+ (or “J-REDD”) programs—defined as subnational governments working with initiatives such as the Governors’ Climate and Forests Task Force, the FCPF’s Carbon Fund, or the BioCarbon Fund’s ISFL—is slowly growing, and some REDD+ pledges are beginning to reach the subnational scale. A recent study by Forest Trends’ REDDX²³ initiative found that, of the \$5.9 B in total REDD+ finance committed to 10 tropical forest countries (Brazil, Colombia, the DRC, Ethiopia, Ghana, Indonesia, Liberia, Mexico, Peru, and Tanzania), more than half—\$3 B—was earmarked for specific regions or provinces within a country. Figure 19 shows the top 20 jurisdictions on the receiving end of REDD+ commitments and the percentage of finance that has been disbursed as of the end of 2014 (the most current data available through REDDX). Within these 20 J-REDD programs, Ecosystem Marketplace has tracked at least 40 projects.

Figure 19: Amount of Finance Tracked to Jurisdictional REDD+ Programs (Top 20) and Number of Existing Projects within Each Jurisdiction



Notes: Based on a total of \$3 B in REDD+ finance committed between 2009 and 2014 that was traced to the jurisdictional level, by Forest Trends’ REDDX initiative. The number of existing projects by jurisdiction is from Ecosystem Marketplace data and public sources.

²³ For subnational commitments that were made to more than one jurisdiction within a country, the REDDX authors estimated the percentage of finance going to each jurisdiction based on a deforestation-area weighting technique. The authors relied on statistical analysis to identify this as the most accurate method of estimating the distribution of funding committed to multi-jurisdiction programs. See Wolosin, Michael, Jessica Breitfeller, and Brian Schaap. *The Geography of REDD+ Finance: Deforestation, Emissions, and the Targeting of Forest Conservation Finance*. Washington, DC: Forest Trends, 2016. Accessed August 26, 2016. http://www.forest-trends.org/documents/files/doc_5334.pdf

Eleven Existing Carbon Markets Accept Forest Carbon Offsets, with South Africa and Ontario on the Way

Compliance carbon markets are on the rise. However, forest carbon and land-use projects have historically been under-represented in compliance carbon markets. The key question for forest and land-use projects is whether these new markets and the change of regulations in existing ones will include forestry and open up markets around the world. **Currently, 11 compliance markets across North America, Oceania, Africa, and Asia accept forest carbon offsets as an eligible way of reducing emissions.** Several markets that are still in the design stage—Mexico, Ontario, Taiwan, and the airlines industry—may up this number in the future. See the map on the next two pages for details.

Sources for the Map:

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/2013-2014compliancereport.xlsx>

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

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/marketwatch/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/CarbonTaxBill2016/Explanatory%20Note%20Carbon%20Offset%20Regulation.pdf>

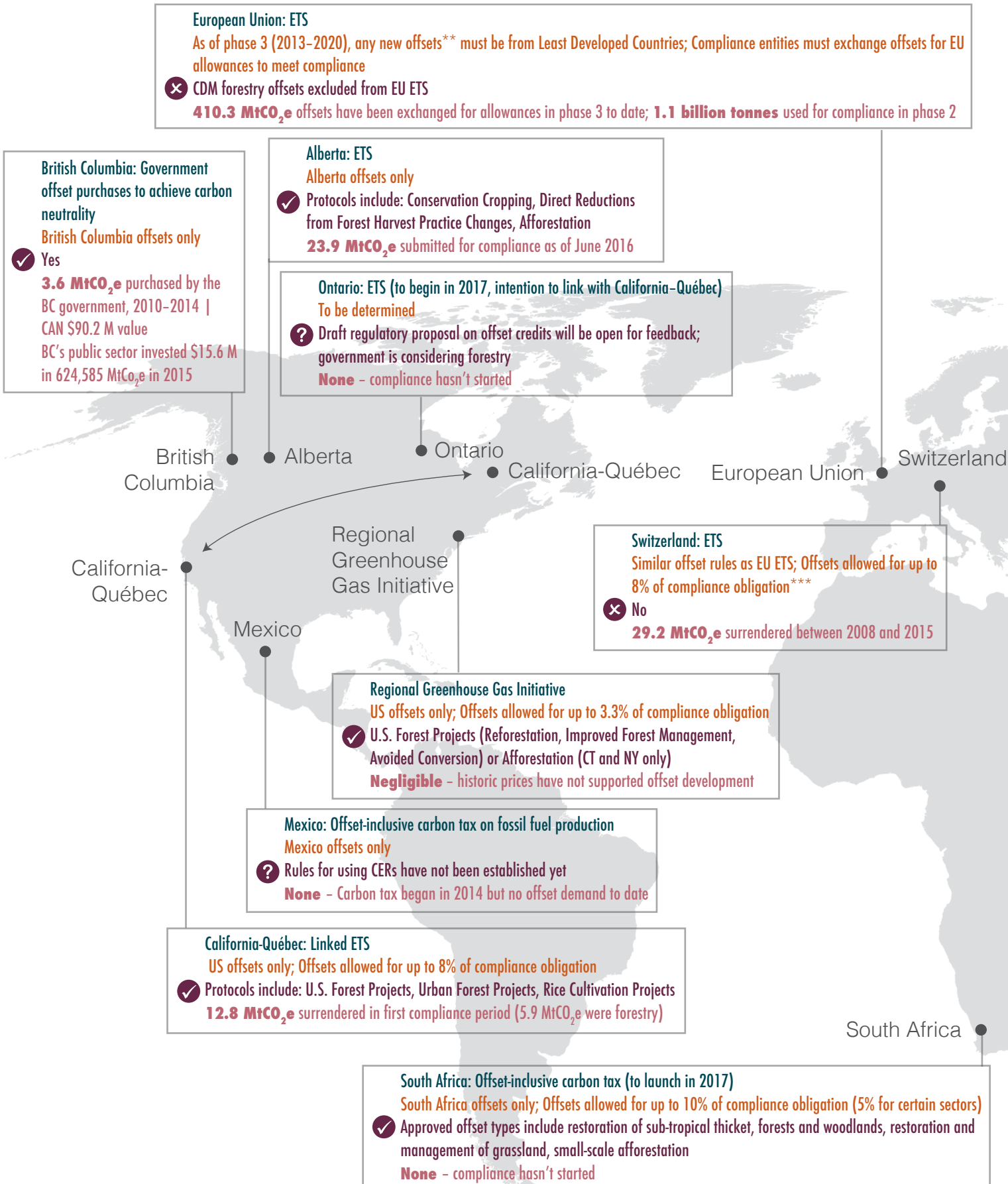
Taiwan: http://www.ieta.org/resources/Resources/GHG_Report/2015/Articles/Taiwan_laying_the_foundation_for_a_carbon_market_HChien_RShi_WHu.pdf

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

Map Notes:

- * 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 British Columbia, 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.
- ** 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.
- *** Switzerland and the European Union agreed to link their ETSs in January 2016 but the agreement needs to be ratified before implementation.
- **** 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.
- † 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.
- ‡ International offsets were restricted in New Zealand as of May 2015, though a revision of the country’s ETS is ongoing.

Figure 20: Map of Current and Soon-to-Come Compliance Carbon Markets that Include an Offsetting Mechanism – and Whether Forestry is Included



Type of Regulation Offset Restrictions: Amount and Location	Forestry Included? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Maybe Offset Demand to Date by Compliance Entities or Governments*
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The 191 ICAO (International Civil Aviation Organization) Member States met in October 2016 and decided to implement a global market-based mechanism to offset any growth in emissions from international flights starting in 2020.



Korea: ETS
Korea offsets only (international offsets allowed post-2020); Offsets allowed for up to 10% of compliance obligation
 Afforestation/reforestation, forest management, wood product utilization, and other project types
920,000 KCUs sold on-exchange in 2015; An estimated 5-7 MtCO₂e KOCs were traded over-the-counter****

Japan: Joint Crediting Mechanism (JCM)
Offsets sourced through bilateral government-to-government agreements
 Forest Management Projects (Thinning and Sustainable Forest Management) and Afforestation Projects
Negligible - first project issued 40 tonnes in May 2016

China: ETS (7 pilots, national to launch in 2017)
China offsets only; Offsets allowed for 5-10% of compliance obligation (depending on the pilot program)
 First forestry related project was registered after third CCER EB meeting
96.8 MtCO₂e transacted in the pilot markets as of June 2016 | 27 MtCO₂e have been issued

Tokyo-Saitama: Linked ETS
Restrictions on offsets from outside Tokyo (within Tokyo market)
 Forest Absorption Credits
Unknown | 3.4 MtCO₂e were issued for the Tokyo ETS in 2015-2016

Taiwan: ETS (to launch at unspecified date)
Taiwan offsets allowed; International offsets limited to 10% of compliance obligation
 Approved early action offsets include forestry
None - compliance hasn't started

Australia: Emissions Reductions Fund
Australia offsets only; ERF funding initially set at AUD \$2.5 billion
 Carbon Farming Initiative†
143 MtCO₂e sold through the ERF in three auctions | AUD \$1.7 B value

New Zealand: ETS
New Zealand offsets only†
 Domestic forestry can generate (and sell) NZUs to reflect increased carbon stock in forested land
136 MtCO₂e offsets surrendered by compliance entities between 2010 and 2014 (last available data)

Developments to Watch

Negotiations around Article 6 of the Paris Agreement. Although the Paris Agreement provided the overall framework, negotiators are still working out the details for transferring emission-reductions internationally. In particular, the rules and market infrastructure that need to be hammered out under Article 6 will shape the carbon markets of the future—both the international one under the UNFCCC and the bottom-up, domestic markets that may interact with it. This work starts at the next COP in Morocco in November 2016.

The role of REDD+ in the aviation carbon market. In October, the International Civil Aviation Organization (ICAO) assembly agreed to implement a Global Market-Based Mechanism (GMBM) for reducing emissions known as CORSIA (the Carbon Offset and Reduction Scheme for International Aviation). Depending on rules to be decided by a technical committee over the coming months, the Emissions Unit Criteria under CORSIA may or may not include REDD+ and other forestry offsets. Given the membership of ICAO—governments and aviation companies—decisions made in the context of the MBM can be expected to set some precedents for the UNFCCC's work program on matters related to operationalizing Article 6 of the Paris Agreement.

California: An international linkage for avoided deforestation? It is unclear if the state's landmark cap-and-trade program will survive the Chamber of Commerce lawsuit, but we do know that the program's goals have been extended beyond 2020 through 2030. With domestic forestry already making up two-thirds of offsets within the California cap-and-trade market, the big question for forests going forward is if the state's Air Resources Board will move forward with a linkage with the state of Acre, Brazil and accept sector-based REDD+ offsets within its program, building off the recommendations of the REDD+ Offsets Working Group.

Inclusion of forestry in the Green Climate Fund. The Green Climate Fund (GCF), the main operating entity of the UNFCCC, is now operational and approving projects. While the GCF identified *scaling up finance for forests* as a core strategic opportunity, it's up to countries to come forward with strong proposals for results-based emission reduction programs that demonstrate that emission reductions in the forest sector are a strategic national priority and essential to achieving low-emission and climate resilient development.

Rising interest in private forest and forest-carbon investments. Forest carbon's role in climate change has attracted public finance from the GCF and others mainly as grants to governments and organizations for REDD+ program development and for performance payments (as described in this report). Private sector investment, a smaller part of this picture, has financed the bulk of projects that currently transact carbon offsets—and these investors are seeking a defined financial return for their investments. An upcoming Forest Trends' report, *State of Private Investment in Conservation*, will shed more light on these historical investments and current trends.

The continued evolution of results-based REDD+ finance outside of carbon markets. In June 2016, at the fourteenth meeting of the FCPF Carbon Fund in Paris, the Fund Participants provisionally approved the first Emission Reductions Program Documents, for both Costa Rica and the DRC. Both countries will now enter into negotiations with the World Bank to finalize the terms of these agreements, aiming to sign Emission Reductions Payment Agreements in the near future. It will also be important to see whether the new REDD+ pledges announced in Paris by Norway, the United Kingdom, and Germany will start to flow to REDD+ countries, and whether sufficient progress is made toward the goal set by these donors to allocate \$5 billion in REDD+ finance by 2020.

Better data on forests. In order to measure progress in delivering results, countries need to develop strong monitoring, reporting, and verification (MRV) systems. While there have been some recent important developments in national forest data such as the 2015 FAO Global Forest Resources Assessment showing that more countries are reporting ever more reliable and complete information on their forests, there is still some way to go. Both the experience with implementing early REDD+ programs and recent analysis of the Intended Nationally Determined Contributions highlight the difficulties in producing accurate measurement of carbon. This data gathering is crucial, as monitoring forest cover and other trends provides a benchmark for countries to measure reductions in deforestation and the impact on mitigating climate change.

Methodology

This report is designed to track the global finance newly committed each year to sequester carbon or avoid emissions through forestry and land-use activities. The main emissions-reducing forestry and land-use activities we track are: tree-planting, forest management, Reducing Emissions from Deforestation and forest Degradation (REDD+), and agroforestry. The report scope also includes activities such as grasslands management, carbon farming and wetlands restoration. Our overall numbers include results-based payments for emissions reductions both through carbon offset transactions on carbon markets (both voluntary and compliance) and through bilateral or multilateral agreements to pay for emissions reductions. We acknowledge a “commitment” at the point that a contract is signed, committing the counterparties to both payments and results. The relevant unit of exchange is one tonne of carbon dioxide equivalent (tCO₂e).

Our carbon markets data is collected through an annual survey of offset project developers, retailers and brokers, as well as carbon offset accounting registries and exchanges that track and facilitate offset ownership. The bulk of the data was collected via an online survey between February 4 and April 1, 2016, though we re-opened the survey between June 30 and August 10, 2016 to collect additional data on the details of forest carbon projects. The survey was distributed to a list of approximately 1,100 organizations that Ecosystem Marketplace identified as potentially active in voluntary or compliance carbon markets. Of these, 263 organizations said they were active in developing and/or marketing forest carbon offsets and 107 actually completed offset transactions in 2015. All told, we tracked 293 unique transactions of forest carbon offsets and collected detailed data on land tenure, project-level finance, co-benefits, and more from 126 projects. Historical analysis was informed by more than 300 projects that provided data in previous years. A breakdown of our 2015 response rate by organization headquarters, project region, market type, and market role appears below.

Headquarters location	Number of projects
North America	15
Latin America	43
Europe	13
Africa	24
Asia	20
Oceania	10
Total	126

Number of Organizations Responding by Market Type		
Voluntary	Compliance	Active in Both
182	6	15

Number of Organizations Responding by Supplier Type		
Project Developer	Retailer or Broker	Both
73	33	7

A few things to keep in mind about our survey data:

- We attempt to contact (sometimes through multiple emails and phone calls) all organizations that are active in the forest carbon markets, but survey-based research is inherently based on response rate.
- To avoid any double-counting of transaction volumes, we asked respondents to specify the volume of offsets transacted through a broker (who facilitates deals but does not take ownership of the tonnes). When we identified an overlap, the transaction was counted only once.
- We do not track the individual “lives” of offsets as they pass through the value chain. For example, if a project developer sold an offset to a retailer and then the retailer sold the same offset to a final buyer, we count each transaction separately to derive the volume and value of transactions in the overall market. This methodology is consistent with most other marketplace analyses. We do report on primary versus secondary volumes and values where we can.
- Prices and values are collected in all currencies and converted to US dollars using the average exchange rate during the relevant calendar year (in this case, 2015).

- All price data presented in this report is volume-weighted for significance.
- This report presents only aggregated data. All supplier-specific information is treated as confidential. We take this very seriously and reveal more detailed information (such as transaction volume by country or standard) only when we have at least three data points from three different organizations.
- Because the aim of this report is to account for all payments for emissions reductions, we do not apply any quality criteria screens for offsets included in calculations. However, we do follow up with dozens of respondents to confirm or clarify survey responses that were incomplete or raised a red flag. In a few cases where we were unable to confirm that transactions occurred, these responses were omitted.

Beyond our survey, we collected additional information on compliance markets through public data sources and interviews. In particular, we used public data from the California Air Resources Board and Australia's Clean Energy Regulator to gain insight into the California cap-and-trade market and Australia's Emissions Reduction Fund, respectively.

Information on payments for forest-based emissions reductions through bilateral and multilateral agreements was collected through public documents and interviews. These non-market agreements usually come about in a few phases:

- First, an **announcement** may be made—such as Germany, Norway, and the United Kingdom's recent announcement that they will fund up to \$5 B in REDD+ emissions reductions through 2020. Announcements represent potential money on the table, but they may not yet designate a recipient.
- Next, the parties to the agreement may sign a Letter of Intent, Memorandum of Understanding, or similar document that turns the announcement into a **pledge**. For the most part, this report considers results-based finance to be payments for verified emissions reductions. However, some results-based pledges also include money for activities other than emissions reductions (such as specific capacity-building outcomes)—and in some cases it is not possible to parse the two.
- A pledge becomes a **commitment** when a contract to pay for results is signed. Actual delivery of those results may occur immediately or in the future. It is only the commitment stage of non-market finance that we track in our headline numbers for this report—this is the stage that is best aligned with our markets data (which we also track at the point of contract).
- Although not tracked in this report, the final stage of results-based payment is **disbursement**—when the money actually flows to the recipient party.

Directory of Forest Carbon Offset Suppliers

Organization	Website	Organization Headquarters
BioCarbon Partners	www.biocarbonpartners.com	Africa
Carbon Tanzania	www.carbontanzania.com	Africa
Credible Carbon	www.crediblecarbon.com	Africa
ECOTRUST	www.ecotrust.org	Africa
FORM Ghana Ltd.	www.formghana.com	Africa
Gola Rainforest Conservation LG	www.golarainforest.org	Africa
Mikoko Pamoja	www.aces-org.co.uk	Africa
Mozambique Carbon Initiatives LDA	www.mozcarbon.com.mz	Africa
Oceanium	www.oceaniumdakar.org	Africa
Uganda Carbon Bureau	www.ugandacarbon.org	Africa
Vi Agroforestry Programme	www.viagroforestry.org	Africa
ANSAB	www.ansab.org	Asia
CAFACA	www.cafaca.com	Asia
China Green Carbon Foundation	www.thjj.org	Asia
Community Forest Ecosystem Services	www.fauna-flora.org	Asia
Forest Carbon	www.forestcarbon.com	Asia
InfiniteEARTH Ltd	www.infinite-earth.com	Asia
Mawphlang Welfare Society	www.communityforestryinternational.org	Asia
Rupantaran Nepal	www.rupantaran.org.np	Asia
The Carbon Consulting Company	www.carbonconsultingcompany.com	Asia
The Indonesian coservation community Warsi	www.warsi.co.id	Asia
VEDA Climate Change Solutions Ltd	www.vccslindia.org/	Asia
2050 Consulting	www.2050.se	Europe
ALLCOT Group	www.allcot.com	Europe
Althelia Ecosphere	www.althelia.com	Europe
AzzeroCO2	www.azzeroco2.it	Europe
BaumInvest GmbH & Co KG	www.bauminvest.de	Europe
BioCarbon	www.biocarbongroup.com	Europe
Blue Ventures Conservation	https://blueventures.org/	Europe
Bosques Sostenibles	www.bosquessostenibles.com	Europe
Carbon Clear	www.carbon-clear.com	Europe
Carbon Expert	www.carbonexpert.ro	Europe

Organization	Website	Organization Headquarters
Carbon Online Ltd	www.carbononline.co	Europe
carbon-connect AG	www.carbon-connect.ch	Europe
Carbon Sink Group	www.carbonsink.it	Europe
CLevel	www.clevel.co.uk	Europe
Climate Neutral Group	www.climateneutralgroup.com	Europe
Climate Partner	www.climatepartner.com	Europe
CO2 Solidaire	www.co2solidaire.org http://www.geres.eu/en	Europe
CO2OL	www.co2ol.de	Europe
Concern Universal	www.concern-universal.org	Europe
Cool Earth	www.coolearth.org	Europe
EcoAct	www.eco-act.com	Europe
EcoWay S.p.a.	www.ecoway.it	Europe
Face the Future	www.facethefuture.com	Europe
First Climate	www.firstclimate-climateneutral.com/gb/	Europe
Forest Carbon Ltd	www.forestcarbon.co.uk	Europe
Green Innovation Srl	www.co2-zero.it	Europe
Green Resources	www.greenresources.no	Europe
Indufor	www.indufor.fi	Europe
Initiative Développement (ID)	www.id-ong.org	Europe
myclimate	www.myclimate.org	Europe
Natural Capital Partners	www.naturalcapitalpartners.com/	Europe
Numerco	www.numerco.com	Europe
Our Offset Ltd	www.ouroffset.com	Europe
Phoresta onlus	ww.phoresta.org	Europe
PrimaKlima -weltweit- e.V.	www.primaklima.org	Europe
South Pole Carbon Asset Management Ltd.	www.southpolecarbon.com	Europe
Wind to Market SA	www.w2m.es	Europe
Woodland Trust	www.woodland-trust.org.uk	Europe
World Land Trust	www.worldlandtrust.org	Europe
Yorkshire Dales Millennium Trust	www.ydmt.org	Europe
ZeroMission	www.zeromission.se	Europe
AMBIO S.C. de R.L.	www.ambio.org.mx	Latin America
Biofilica	www.biofilica.com.br	Latin America

Organization	Website	Organization Headquarters
Brasil Mata Viva	www.brasilmataviva.com.br	Latin America
Carbosur	www.carbosur.com.uy	Latin America
CIMA-Cordillera Azul	www.cima.org.pe	Latin America
Compensation International Progress S.A. -Ciprogress Greenlife-	www.ciprogress.com	Latin America
Cooperativa Agraria Cacaotera ACOPAGRO	www.acopagro.com.pe	Latin America
Forestry Project for the Basin of the Chinchiná River	www.infimanizales.com	Latin America
Fundación S2M	www.s2m.com.ec	Latin America
Green Farm CO2FREE	www.greenfarmco2free.com.br	Latin America
Greenoxx NGO	www.greenoxx.com	Latin America
Grupo Ecológico Sierra Gorda, I.A.P.	www.sierragorda.net	Latin America
IDESAM	www.idesam.org.br	Latin America
MÉXICO2	www.mexico2.com.mx	Latin America
Mindo Cloudforest Foundation	www.mindocloudforest.org	Latin America
ONF International - Brazil	www.onfinternational.org	Latin America
Programme for Belize	www.pfbelize.org	Latin America
Pronatura Mexico	www.pronatura.org.mx	Latin America
Sustainable Carbon	www.sustainablecarbon.com	Latin America
The Nature Conservancy Chile	www.nature.org	Latin America
3Degrees	www.3degreesinc.com	North America
Blue Source, LLC	www.bluesource.com	North America
Bonneville Environmental Foundation	www.b-e-f.org	North America
Brinkman Climate	www.brinkmanclimate.com	North America
Carbon Offsets To Alleviate Poverty (COTAP)	www.COTAP.org	North America
Carbonfund.org Foundation, Inc.	www.carbonfund.org	North America
City of Arcata	www.cityofarcata.org	North America
Clean Air Action Corp	www.cleanairaction.com	North America
ClimeCo Corporation	http://climeco.com	North America
Clinton Development Initiative	www.clintonfoundation.org	North America
Code REDD	www.coderedd.org www.standfortrees.org	North America
Conservation International	www.conservation.org	North America
Coop Carbone	www.coopcarbone.coop	North America
Cuyamaca Project	www.parks.ca.gov/?page_id=667	North America
EcoPlanet Bamboo	www.ecoplanetbamboo.com	North America

Organization	Website	Organization Headquarters
ECOTIERRA	www.ecotierra.co/en	North America
Ecotrust Forest Management	www.ecotrustforests.com	North America
Encourage Capital	www.encouragecapital.com	North America
Forest Carbon Offsets LLC	www.forestcarbonoffsets.net	North America
Green Assets	www.green-assets.com	North America
GreenTrees	www.green-trees.com	North America
Mikro-Tek Inc	www.mikro-tek.com/	North America
NativeEnergy Inc.	www.nativeenergy.com	North America
NatureBank	www.naturebank.com	North America
Northwest Natural Resource Group (NNRG)	http://nnrg.org/	North America
Renewable Choice Energy	www.renewablechoice.com/	North America
Sustainable Travel International	www.sustainabletravel.org	North America
Taking Root	www.takingroot.org/	North America
The Climate Trust	www.climatetrust.org	North America
The Conservation Fund	www.conservationfund.org	North America
The Nature Conservancy US	www.tnc.org	North America
The Ocean Foundation	www.oceanfdn.org	North America
The Paradigm Project	www.theparadigmproject.org	North America
Tierra Resources LLC	http://tierraresourcesllc.com	North America
Verus Carbon Neutral	www.verus-co2.com	North America
W.M. Beaty & Associates, Inc.	www.wmbeaty.com	North America
Wildlife Conservation Society	www.wcs.org	North America
Wildlife Works LLC	www.wildlifeworks.com	North America
Australian Carbon Traders	www.australiancarbontraders.com	Oceania
Carbon Forest Services Limited	www.carbonforestservices.co.nz	Oceania
Carbon Neutral Australia	www.carbonneutral.com.au	Oceania
Carbon Trade Exchange	www.ctxglobal.com	Oceania
Cassinia Environmental	www.cassinia.com	Oceania
Climate Friendly Pty Ltd	www.climatefriendly.com	Oceania
Cool Planet Energy Pty Ltd	www.coolplanet.com.au	Oceania
Ekos	www.ekos.org.nz	Oceania
Enviro-Mark Solutions (Landcare Research)	www.enviro-mark.com	Oceania
Ernslaw One Ltd	www.ernslaw.co.nz	Oceania
GreenCollar Climate Solution	www.greencollarclimate.com.au	Oceania

Organization	Website	Organization Headquarters
Greenfleet	www.greenfleet.com.au	Oceania
New Forests	www.newforests.com.au	Oceania
New Leaf Carbon Project	http://tasland.org.au	Oceania
SIGMA GLOBAL	www.sigmaglobalcompany.com	Oceania

Note: These forest carbon offset suppliers responded to Ecosystem Marketplace's survey in 2016 and indicated that they would like to be listed in the report directory. This is not a comprehensive list of all forest carbon offset suppliers.

Appendix 1

This table lists the URLs for the hyperlinked documents included in Table 5.

Recipient	Agreement	URL
Amazon Fund		
Brazil	Original agreement and several addenda	http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en/Esquerdo/doacoes/
Forest Carbon Partnership Facility		
Chile	August 2014, Letter of Intent	https://forestcarbonpartnership.org/sites/fcp/files/2014/November/Letter%20of%20Intent%20signed%20Chile.pdf
Costa Rica	September 2013, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/Carta%20intenci%C3%B3n%20firmada%20the%20world%20Bank%20%28banco%20mundial%29%202013.pdf
Cote D'Ivoire	November 2015, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2015/November/FCFP_Carbon%20Fund_Cote%20d%27Ivoire_Letter%20of%20Intent.pdf
Dominican Republic	June 2016, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2015/November/Final%20Resolution%20%20DR%20ER-PIN.pdf
DRC	June 2014, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2014/July/Lol%20DRC%20%28Cover%20letter%20and%20Lettre%20d%27Intension%29.pdf
Ghana	September 2014, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2014/December/Signed%20Ghana%20LOI.pdf
Madagascar	November 2015, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2015/November/Signed%20MG%20LOI.pdf
Mexico	November 2014, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2014/December/Mexico%20LOI%20Signed%20Sep2014.pdf
Mozambique	November 2015, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2015/November/FCPF%20CF%20Moz%20LOI%20signed.pdf
Nepal	June 2015, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2015/September/Signed-%20Letter%20of%20Intent-%20June%203%2C%202015.pdf
Nicaragua	January 2016, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2016/Jan/Nicaragua%20LOI%20Signed%20with%20cover%20letter.pdf
Peru	March 2016, Letter of Intent	http://documents.worldbank.org/curated/en/318061468327583658/pdf/RAD767794819.pdf
Republic of Congo	September 2014, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2014/october/Lol%20RoC%20Sep%202015.pdf

Recipient	Agreement	URL
Vietnam	December 2014, Letter of Intent	https://www.forestcarbonpartnership.org/sites/fcp/files/2015/January/Letter%20of%20intent_Potential%20Purchase%20of%20Emission%20Reductions_countersigned_Jan15.pdf
REDD Early Movers		
Colombia	December 2014, Memorandum of Understanding	https://www.regjeringen.no/globalassets/upload/kld/kl/klima-og-skogprosjektet/rem-joint-statement-proposal-december08_final.pdf
Ecuador	December 2014, Memorandum of Understanding	https://www.regjeringen.no/globalassets/upload/kld/kl/klima-og-skogprosjektet/rem-joint-statement-proposal-december08_final.pdf
Norway's Bilateral Agreements		
DRC	April 2016, Letter of Intent	https://www.regjeringen.no/globalassets/departementene/kld/kos/drc/letterofintent_drc_cafi.pdf
Colombia	November 2015, Joint Declaration of Intent (with Germany and the United Kingdom)	https://www.regjeringen.no/globalassets/departementene/kld/kos/joint_declaration_of_intent_colombia_norway_germany_uk_redd_in_colobia-002.pdf
Guyana	November 2009, Memorandum of Understanding	https://www.regjeringen.no/globalassets/upload/md/vedlegg/klima/klima_skogprosjektet/the-memorandum-of-understanding-guyana-norway-on-redd-081109-signed-091109.pdf
Indonesia	May 2010, Letter of Intent	https://www.regjeringen.no/globalassets/upload/SMK/Vedlegg/2010/Indonesia_avtale.pdf
Liberia	2014, Letter of Intent	https://www.regjeringen.no/en/aktuelt/Liberia-and-Norway-launch-climate-and-forest-partnership/id2001145/
Peru	2014, Letter of Intent	https://www.regjeringen.no/en/aktuelt/Peru-Germany-Norway-launch-climate-and-forest-partnership/id2001143/

Supporters

MacArthur Foundation

The John D. and Catherine T. MacArthur Foundation (www.macfound.org) supports creative people and effective institutions committed to building a more just, verdant, and peaceful world. In addition to selecting the MacArthur Fellows, the Foundation works to defend human rights, advance global conservation and security, make cities better places, and understand how technology is affecting children and society. MacArthur is one of the nation's largest independent foundations. Through the support it provides, the Foundation fosters the development of knowledge, nurtures individual creativity, strengthens institutions, helps improve public policy, and provides information to the public, primarily through support for public interest media.



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 specialised 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.

Premium Sponsors



Ecosphere+ is a new venture established with the founding mission of building pre-2020 scale in the marketplace for eco-commodities; giving businesses across multiple sectors, investors, consumers and other key stakeholders access to assets from projects and programmes that are essential to delivering the <20C carbon budget through preserving the valuable carbon stored in the biomass of tropical forests and other critical landscapes as well as physical commodities including deforestation-free agricultural produce such as coffee and cocoa created through sustainable agroforestry systems. Ecosphere+ is part of the Althelia Ecosphere Group, the successful asset management platform established to demonstrate that competitive financial returns can be fully aligned with the preservation of natural capital and social development.



New Forests invests to create sustainable and productive landscapes—for our clients and the communities where we operate. New Forests (www.newforests.com.au) is a sustainable real assets investment manager offering leading-edge strategies in forestry, timber processing, infrastructure, land management, and conservation. Founded in 2005, the company provides institutional investors targeted opportunities in the Asia-Pacific region and the United States and has more than AUD 3 billion and 750,000 hectares of assets under management. The company is headquartered in Sydney, Australia with offices in Singapore and San Francisco. New Forests also manages Forest Carbon Partners (www.forestcarbonpartners.com), an investment fund that finances and develops forest carbon offset projects and is a leading provider of forest carbon offsets to the California compliance market.

Sponsors



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/>.



GreenTrees is reforesting one million acres of marginal farm land in the Mississippi Alluvial Valley. To date they have planted over 30 million trees on 120,000 acres, in partnership with private landowners. The tree plantings have generated millions of tonnes of verified carbon credits that are registered on the American Carbon Registry (ACR). Those credits account for the vast majority of domestic forestry credits ever registered on the voluntary market. However, GreenTrees' project is about much more than generating carbon credits. One-third of all emissions have come from land-use change, namely deforestation. By reforesting land GreenTrees is helping to bend the climate curve, restore species habitat, clean the water, and support the local and global economy. Trees are nature's technology, the only readily deployable and scalable solution to climate change.



Baker & McKenzie has been at the forefront of global climate change law for more than fifteen years. Our team of more than 60 lawyers across the globe have worked on numerous pioneering deals, including writing the first carbon contracts, setting up the first carbon funds, and advising on the first structured carbon derivative transactions. We continue to advise on the design of international climate law, on leading market transactions, and the implementation of the Paris Agreement. Our practice is driven by climate mitigation, environmental enhancement and the development of low carbon economies, and assisting in climate adaptation. We advise on programs, projects and incentive schemes across global, regional and national economies for emissions reductions, clean and renewable energy, bio-energy, biodiversity enhancement, and environmental infrastructure. Our legal expertise helps clients structure, finance, develop, implement, commercialize, monetize or comply with the economy-changing activities that these programs, projects and incentive schemes are designed to deliver.



The Family of Forest Trends Initiatives

Biodiversity Initiative

Promoting development of sound, science-based, and economically sustainable mitigation and no net loss of biodiversity impacts

Coastal and Marine Initiative

Demonstrating the value of coastal and marine ecosystem services

Communities Initiative

Strengthening local communities' capacity to secure their rights, manage and conserve their forests, and improve their livelihoods

Ecosystem Marketplace

A global platform for transparent information on environmental finance and markets, and payments for ecosystem services

Forest Policy, Trade, and Finance Initiative

Supporting the transformation toward legal and sustainable markets for timber and agricultural commodities

Public-private Finance Initiative

Creating mechanisms that increase the amount of public and private capital for practices that reduce emissions from forests, agriculture, and other land uses

Water Initiative

Promoting the use of incentives and market-based instruments to protect and sustainably manage watershed services

Learn more about our programs at www.forest-trends.org