Look to the Forests

How performance payments can slow climate change

A report of the Working Group on Scaling Up Performance-Based Transfers for Reduced Tropical Deforestation

Nancy Birdsall and Pedro Pablo Kuczynski, co-chairs
Michele de Nevers, Working Group manager

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Foreword

Reducing emissions from deforestation was raised at the annual conferences of the United Nations Framework Convention on Climate Change (UNFCCC) in the mid-2000s as one of the most promising and politically viable options for climate change mitigation. It was envisioned as a transaction in which forest-rich developing countries would be paid for reducing deforestation on the basis of measured and verified reductions in carbon emissions achieved by conserving forests. That simple idea of paying ex post facto for outcomes—what we call in this report "pay for performance"—made sense to those of us at the Center for Global Development because it was an approach not unlike Cash on Delivery Aid, an idea explored in depth at CGD. More effective financing of aid programs puts the recipient country in charge, encourages local innovation and institution building, and makes the recipient government accountable to its own citizens instead of to its donors. And it made sense to Pedro Pablo Kuczynski, who, as an economist, politician, and former finance minister of Peru, is accustomed to the pragmatism of funding what works. He comes from a country struggling with the effects on forests of commercial pressures in an open trading economy.

A decade since deforestation was taken up by climate negotiators, an internationally agreed-upon framework of rules and protocols shapes the simple pay-for-performance approach to reducing deforestation and encouraging sustainable forest management. But deforestation of the world's tropical forests continues apace, and relatively little of the money available for forest conservation and sustainable management "pays for performance." Most comes out of the aid budgets of OECD countries and pays, like traditional aid, for inputs, not outcomes. The framework of pay-for-performance to reduce deforestation has suffered what some experts call "aidification": falling into the aid trap of excessive pre-design, planning, and agency delays from which Cash on Delivery Aid and other pay-for-performance, results-driven transfers were meant to furnish an escape.

Yet forests occupy a unique space in the pay-for-performance discussion. Changes in forest cover are now relatively easy to observe and measure, thanks to satellite-based technologies and the growing capacity of forested countries for on-the-ground verification. And forests are a double win, twice over: They are a win for both climate and development, at the global level and the forested country level. Though currently undervalued in the race to avert catastrophic global climate change, in forested countries forests are a key to reducing drought and flooding, protecting watersheds, and supplying sustainable livelihoods to people living in and around them. They simultaneously fix carbon—a global benefit—and increase resilience to climate change, protecting agriculture, water supplies, and the people most vulnerable to extreme weather and natural disasters—a local benefit.

This report is based on the deliberations of the CGD Working Group "Scaling Up Performance-Based Transfers for Reduced Tropical Deforestation." The group brought together policy and business decision-makers from donor and forest-rich developing countries, from multilateral banks and UN agencies, and from countries including Brazil, Germany, Guyana, Indonesia, Liberia, Norway, Peru, Australia, the United Kingdom, and the United States. The group was supported by past and ongoing research at the Center: David Wheeler's groundbreaking work on the forest monitoring program FORMA (now part of Global Forest Watch); case studies of three pay-for-performance agreements between Norway and Brazil, Indonesia, and Guyana; and current work on the science, economics, and politics of tropical forests and climate change to be brought together in the forthcoming book, *Why Forests? Why Now?* by Frances Seymour and Jonah Busch.

The Working Group explored simple and practical solutions to the technical, bureaucratic, financial and political challenges that have limited greater public, private, and philanthropic pay-for-performance funding for forest conservation.

As co-chairs of the group, we attest that this report reflects extensive deliberations, in two meetings and in rounds of comments on earlier drafts by its fully engaged members. The report deals head-on with the challenges and concerns faced by public and private funders

concerned with climate change but confronted with competing priorities and tight budgets. On forest programs, it distinguishes between, on one hand, technical concerns that have been resolved through years of negotiation, first-hand experience in innovative pilot programs, and advances in technology, and on the other hand legitimate political and bureaucratic concerns regarding social and environmental risks (particularly for official OECD funders) that can now be addressed. The Working Group concludes that international funding to preserve forests can work without compromising environmental integrity or human rights—indeed, that pay-for-performance funding can help secure those objectives—and that in most settings those risks, though real, are minimal compared to the costs our world, and developing countries in particular, will face if we fail to maintain a stable climate.

We know that climate change will be one of the foremost challenges to achieving the Sustainable Development Goals in the coming years. We hope that the recommendations in this report will help smooth the way for governments, the private sector, and communities to come together to ensure tropical forest countries are paid for reducing deforestation as a service both to the global climate and to sustainable development. In the lead-up to Paris and beyond, we hope that they will rise ambitiously to the occasion.

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Acknowledgments

This report is based on the deliberations of a working group comprising government officials, donor agency staff, private sector, civil society, and experts in forestry, climate, and development. The Working Group members were invited to join in a personal capacity and on a voluntary basis. Working Group members are listed at the front of this report.

This report was written by Working Group Manager Michele de Nevers, with significant input from Working Group co-chairs Nancy Birdsall and Pedro Pablo Kuczynski and Center for Global Development staff on the Tropical Forests for Climate and Development Initiative, Frances Seymour, Jonah Busch, Sara del Fierro, and Jens Engelmann. While Working Group members agree with the broad thrust of the report, and the report was deeply informed by Working Group members, it does not represent a consensus of opinion among the members listed above. Its content is the responsibility of the authors and does not necessarily represent the views of the organizations with which the Working Group members are affiliated, the Center for Global Development, or its funders or board of directors. The Working Group meetings and staff time dedicated to this research were supported by grants to the Center for Global Development from the Norwegian Agency for Development Cooperation.

In April 2014 the Center for Global Development—an independent think tank working on development issues surrounding financing, economics, and global public goods—convened this Working Group to understand the conditions inhibiting the expansion of international funding for performance-based approaches to reduce deforestation. Working Group members analyzed progress in existing programs and identified solutions to current barriers. Broader consultations were also undertaken in the form of meetings and phone conversations with decision-makers, practitioners, donor agency staff, and NGO workers.

The Working Group report also relies heavily on the research and analysis conducted through the Center as part of the *Why Forests? Why Now?* book and paper series. Working Group members are grateful for the analyses conducted by background paper authors. The report also benefits from background studies conducted by Kenneth Lay and Poul Engberg-Pedersen specifically for the report. At different stages in developing this report, many individuals offered comments, critiques, and suggestions. We are very appreciative of these contributions.

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Abbreviations

BNDES	Brazilian Development Bank (Banco Nacional de Desenvolvimento Econômico e Social)
CGD	Center for Global Development
CPU	Cooperative participation units
DETER	Real Time System for Detection of Deforestation
DIB	Development Impact Bond
FAO	Food and Agriculture Organization of the United Nations
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program of the Climate Investment Funds
FORMA	Forest Monitoring for Action
GCF	Green Climate Fund
IBRD	International Bank for Reconstruction and Development
IETA	International Emissions Trading Association
IFF	Intergovernmental Forum on Forests
IPCC	Intergovernmental Panel on Climate Change
MMA	Ministério do Meio Ambiente (Ministry of Environment, Brazil)
MRV	Measurement, Reporting and Verification
NGO	Nongovernmental organization
ODA	Official development assistance
REM	Germany's REDD Early Movers program
REDD+	Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks
SFB	Serviço Florestal Brasileiro
TFN	Tropical forest nations
UN	United Nations
UNFCCC	United Nations Framework Convention for Climate Change
UN-REDD	United Nations REDD Programme

Executive summary

Look to the forests: How performance payments can help slow climate change

Protecting tropical forests is good for the global climate and good for development in forested countries. In the absence of robust carbon markets, performance-based funding to reduce emissions from deforestation is a key way donors can provide the incentives and commitment tropical countries need to curtail forest loss.

Tropical forests are undervalued assets in the race to avert catastrophic climate change. They deliver a global—and very public—benefit by capturing and storing atmospheric carbon.

At the same time, they reduce drought and flooding, protect watersheds from erosion and support sustainable livelihoods for people living in and around them. They also make communities more resilient to climate change by protecting the people most vulnerable to extreme weather and climate related natural disasters.

Most important for climate mitigation: according to the International Panel on Climate Change, forests could provide as much as one third of the effective climate change mitigation we need to stay on the two degree pathway over the next couple of decades. Preventing tropical deforestation must therefore be a key element of any global climate strategy, particularly in the near term (2016–2020), for global temperature rise to stay below 2 degrees Celsius.

But forests in tropical developing countries are especially vulnerable to commercial pressures in a thoroughly global commodity market, and are disappearing: forest cover loss was about 8 million hectares per year (about the size of Maine) between 2001 and 2012, and is growing at a rate of 200,000 hectares per year.

There is, with good reason, widespread political and popular support in developed and developing countries for reducing and even eliminating deforestation as quickly as possible in forest-rich developing countries. In many forest-rich developing countries, the institutions and policies to do so have been or are being put in place, through development assistance projects and programs focused on regulatory, and fiscal reforms, support for land titling and enforcement of legal restrictions on forest use and for improvements in forest governance. More recently, some developed countries have modified international trade policies to prohibit the import of illegally produced timber and some global corporations have put in place procurement standards for sustainable production of soy, palm oil, timber, and beef.

But development assistance support for forest conservation has been piecemeal, small, and largely project based—far from sufficient to complement the steps tropical developing countries and global corporations are taking. Deforestation is a global crisis. Large-scale funding—comparable to the billions of dollars disbursed by the IMF and the World Bank to developing countries during the 2008–10 global financial crisis for example—to encourage and compensate tropical forest countries for slowing deforestation has barely begun to flow.

In the absence of adequate funding, tropical deforestation continues to rise in most areas of the tropics. One exception is Brazil, where deforestation in the Amazon basin was cut by 80 percent from its peak even while Brazil increased soy and cattle production. For other tropical forests to achieve Brazil's success, serious financial incentives must be offered. While reduced deforestation will generally be in countries' medium and long term self-interest, the short term financial and political costs are real and significant. Leaders of developing countries—who have plenty of other challenges to deal with—need a compelling value proposition if reduced deforestation is to become a priority.

This report argues that what is urgently needed is a tested but far from fully exploited approach to funding forest conservation: pay-for-performance transfers, under which public (and private) funders pay governments of forest countries annually as a function of their verified performance in reducing deforestation-based emissions of greenhouse gases. A fully developed normative and technical framework (called REDD+, for Reducing Emissions from Deforestation and Forest Degradation) was agreed between developed and developing countries (as part of the broader international climate negotiations process) in Warsaw in 2013.

The framework for pay-for-performance REDD+ finance exists and is being implemented now in several countries, in particular with funding from Norway and Germany. What is needed now is new, large (in billions of dollars) offers of financial support from advanced economies in the form of pay-for-performance, that is, linked to actual performance in producing verified emissions reductions.

Many tropical forest countries in the developing world are now ready, institutionally and politically, to respond to pay-for-performance REDD+ programs and are signaling in their commitments for the Paris climate summit their interest in going beyond their own commitments conditional on new international support. They have said so in signing the Lima Challenge, a joint ministerial announcement in December 2014 in which 14 countries challenged developed countries to join them in achieving deeper emission reductions through international collaboration. Increased funding commitments from rich countries would give a quick boost to existing efforts and set the stage for a long-term and cost-effective strategy to protect the forests and the global climate for us all. Getting new funding commitments from a few developed countries in place by the time of the Paris climate summit, preferably directly, through a global pool or through commitments to existing funds such as the Forest Carbon Partnership Facility (FCPF) Carbon Fund, would be a good first step.

Working Group recommendations

This report provides ideas for how to mobilize additional funding for new pay-for-performance agreements supporting forest conservation. Based on the research, findings, and discussions of the Center for Global Development Working Group on Scaling Up Performance-based Transfers for Reduced Tropical Deforestation, it presents the Working Group's simple and practical solutions to the technical, bureaucratic, financial, and political challenges that have limited public, private, and philanthropic pay-for-performance funding. The report suggests positive steps to overcome these challenges.

The main recommendation of the Working Group is that developed countries need to provide certainty to tropical forest countries that their actions to reduce deforestation will be rewarded by performance payments from the international community.

- **Recommendation #1.** Official funders in advanced economies should offer (in Paris and post-Paris agreements) to pay tropical forest countries to reduce one billion tons a year of carbon emissions from deforestation over the next five years, through pay-for-performance transfers. Payments would be tied to measured and verified reductions in greenhouse gas emissions associated with maintaining forests (following REDD+ conventions and protocols). Major emitters in the rich world, including the United States, United Kingdom, Germany, France, Australia, and Japan would ideally negotiate pay-for-performance contracts with one or more forested countries in the developing world.

  Alternatively, they could join existing partnerships such as the Amazon Fund in Brazil or agreements between Norway and Germany with Ecuador and Colombia. In the short term, joining these bilateral/trilateral agreements may be preferable because these are already in place and have been partially "liberated" from conventional aid practices so are more easily able to channel funding. Or they could commit payments to one of the performance-based multilateral funds (the FCPF Carbon Fund, forthcoming performance-based mechanisms in the BioCarbon Fund Initiative for Sustainable Forest Landscapes, once these are available, or a potential results-based window for forests in the Green Climate Fund). Ideally these multilateral programs would also be streamlined to minimize obstacles that result from grafting conventional aid practices onto pay-for-performance programs.

  Though the goal would be tons of reduced carbon emissions, for ease of tracking each pledge could be expressed in dollars. Each partnership agreement between developed economies, forest nations and possible private investors would negotiate the appropriate price of carbon. If major emitters, perhaps including new donors like China, committed to fund a billion tons of emission reductions from tropical forests a year and if the negotiated price were $5–10 per ton of carbon, the total cost could be $5–10 billion a year—a small fraction of the annual $135 billion in official development assistance. If a number of countries adopted regulatory measures that created compliance regimes to reduce carbon, a market reference price could emerge to guide pricing, and the price might increase.
- **Recommendation #2.** To complement public funding, influential actors in the private sector—buyers of forest commodities, sovereign wealth funds, corporate environmental, social and governance funds, philanthropies and impact investors—should align their purchasing and investing decisions with REDD+

objectives, building on initiatives to eliminate imports of illegally logged timber and sustainable production of key commodities. They should become advocates for REDD+ policies and programs with both rich and forest rich country governments. Those companies that wanted to buy verified emission reductions could commit to pay-for-performance funding to reduce deforestation. For this to serve its purpose, they would need to move beyond projects to support large-scale pay-for-performance schemes at the national or state/province level. The most effective and efficient solution would probably be for them to piggyback on the various channels described above.

- **Recommendation #3.** Tropical forest countries should be encouraged to specify the amount of international financial support they would need to enable them to undertake additional emission reductions from reduced deforestation. They could propose a structure for international partnership deals tailored to national conditions and priorities as Brazil and Guyana have done in their agreements with Norway. In the pledges they provide for Paris and after, developing tropical forest countries should be encouraged to indicate how much they would be willing to do on their own and how much more they could do with international financial support, as Indonesia, Mexico, Ethiopia, and Morocco have already done.

How could this be done? The report addresses potential concerns about channeling large-scale funding through performance-based transfers. It draws on the early experience of a small but increasing number of pay-for-performance agreements to reduce deforestation launched in recent years, as well as results-based payment programs in other sectors. And it proposes new financing mechanisms.

1. **Trust but verify: avoid "aid-ification" of programs by entering into simple contracts that pay for verified performance.** Funders and forest countries can enter into performance agreements simpler than those currently being discussed. It's important to put the forest country in the driver's seat in designing the program. Contracts should provide certainty that performance will be rewarded. Funders ought to trust forest countries to deliver results and then provide funding when the agreed result is verified. The funder and recipient would agree on the baseline, the measure of improvement, and the method to verify results, and then enter into a contract and provide payments once the result is accomplished. If there are no results, there is no payment. Substantial donor support has already been provided to forest countries over many years to prepare them for performance payment schemes, support that has been gratefully received and that has had a positive impact in terms of REDD+ readiness, including having capacity to handle MRV (measurement, reporting and verification) and safeguards against environmental and social risks. Now is the time to build on that support and try something new: large scale pay-for-performance commitments. Developing countries are already feeling the impacts of climate change, underlining the urgency to act quickly.
2. **Avoid imposing conditions on how results are achieved.** Funders ought to avoid requiring plans, detailed information on program design or other evidence of "readiness." If countries request funding for up-front investments and actions, funders can help to ensure that an integrated financing plan is in place and help secure funding, including advances against performance contracts. But evidence of up-front funding or a fully funded program need not be a condition for entering into the performance agreement.
3. **View performance payments as part of a multifaceted program to achieve results, not as "double funding" of actions.** Countries will need to use many sources of financing to achieve results, including their own budgets. As programs are increasingly undertaken at the national and jurisdictional scale, multiple partners will support multiple activities. When reduced emissions are fully measured and reported, it will not be possible to directly attribute these to any single investment or to specific actions. Rather, each funding source will have made a contribution alongside many others, including forest countries' own efforts.
4. **Avoid "double-demanding": requiring that a country deliver a result and then imposing conditions on how the performance payments are used.** The recipient country ought to propose how the payment is used, whether for general budget support to finance sustainable national development plans, for low carbon or "green growth" investments, or for forest-specific results. For example, Brazil proposed that performance payments be channeled through the Amazon Fund to deepen results in reducing deforestation and Guyana funds its low carbon development strategy.

5. **Accept volatility of disbursements.** Performance-based programs do entail potential non-performance and thus possible non-disbursement. Official development assistance flows themselves are highly volatile. While inconvenient from a bureaucratic budget flow perspective, non-disbursement would appeal to legislators who worry about ineffective use of tax revenues, since funds don't flow without results. Despite potential hiccups in disbursements, funders ought to commit to making performance payments available to countries or jurisdictions that are ready to generate emission reductions at scale. And there are ways to smooth disbursements: channel funds through multilateral funds like the FCPF Carbon Fund or use a "committed payment" facility, described in the report.
6. **Negotiate conservative baselines to ensure "additionality" of actions.** Funders and forest countries should negotiate mutually agreeable baselines (reference levels) to avoid the risk of overpayment for results or payment for actions that might have taken place without the performance agreement. Reference levels should differ depending on whether a forest nation has already converted substantial areas of forest to other uses or has low levels of deforestation.
7. **Rely on advanced satellite monitoring to measure, report on, and verify results.** New satellite monitoring technologies provide reliable, high-quality data not just on changes in forest cover; they increasingly allow monitoring even of species composition, carbon density, and conservation of natural forest.
8. **Encourage performance agreements at a large scale—The United Nations Framework Convention on Climate Change (UNFCCC) has decided that programs should be national or at the level of sub-national administrative jurisdictions.** This avoids the risk of "leakage" (where reducing emissions in one place shifts them to another). To address concerns about the lack of "permanence" (when emissions avoided today might still occur in the future), the term of the performance agreement should be multi-year with potential to extend, to keep funding flowing for the long term.
9. **Manage concerns about potential misuse of funds, damage to the environment, and harm to forest communities.** Draw on the experiences of ongoing programs, the substantial work done in UNFCCC negotiations, and considerable investment in readiness and capacity building. Satellite data can increasingly be used to ensure compliance with environmental safeguards (including preserving biodiversity and natural forests). Where possible, positive social and environmental outcomes could be assured by relying on the forest country's own institutions and frameworks and verifying appropriate progress annually. Performance agreements provide forest governments with an incentive to keep forests standing and to use funds efficiently. The UNFCCC negotiations framework provides strong guidance about respect for the rights of indigenous peoples.

   To protect the rights and livelihoods of indigenous peoples and local communities (so-called "social safeguards"), performance agreements can go beyond a "do no harm" standard to include benefits-sharing formulas for indigenous peoples and local communities, as the Brazil–Norway and Guyana–Norway programs do. For both environmental and social safeguards, performance agreements can require transparent annual reporting and a review process to assess evidence that environment conditions and the rights of indigenous peoples and other local communities are being safeguarded. The UNFCCC has finalized guidance for annual reporting on environmental and social safeguards, in keeping with national circumstances.[1] Funders can hold off transferring money to forest nations that don't provide such information or are not open to annual review. The information provided by forest countries can be audited by reputable third parties.
10. **Recognize governance challenges but use performance payments to create incentives to take difficult public policy actions.** Forests are under-represented in global action to reduce greenhouse gas emissions for climate mitigation in part because of legitimate concerns that important tropical forest countries may lack capacity and have poor institutions or weak enforcement. The creation of an internationally visible program to reduce deforestation as an incentive mechanism to improve governance has not been tried on a large scale. Performance payments can create incentives to overcome governance challenges and can encourage forest countries to implement the policy changes and public policy actions that will reduce deforestation.

11. **Generate new funding for performance-based transfers to reduce deforestation**. Support efforts to include international forest offsets in compliance carbon market programs. California has legislation allowing REDD+ international forest offsets and is in the process of finalizing implementing rules and regulations. The promising progress made by California and other subnational government programs ought to be encouraged and supported. The International Civil Aviation Organization is considering implementing a mandatory global carbon offset scheme which could provide significant opportunities; they should be encouraged to include international forest offsets in their scheme. In the Green Climate Fund, the development of a specific mitigation mechanism to pay-for-performance in reducing deforestation ought to be encouraged. Ideally, new schemes to generate new sources of funding would be established. These include, for instance, a committed payment facility to reduce deforestation or an endowment-like Forest Foundation Fund, both described in this report.

Other than a few pioneers, the world has not gotten nearly serious enough about providing financial incentives to tropical forest countries to reduce current trends in deforestation. This approach could fulfill forests' potential to slow climate change while delivering development benefits. The time to do so is now. Pay-for-performance partnerships to preserve forests should be a key part of the action agenda in Paris and beyond, for the benefit of forest communities and our global climate.

Look to the Forests

How performance payments can slow climate change

Introduction

Reducing tropical deforestation[2] is an important, cost-effective mechanism to slow carbon emissions and ensure development benefits. Halting deforestation and re-growing forests together have the potential to cut annual emissions of greenhouse gases by 24–30%.[3] And forest countries themselves have much to gain by protecting their forests, including ecosystem services and resilience to the impacts of climate change. Intact forests protect watersheds, reduce the impact of natural disasters, and provide food and energy.[4]

But forests are under threat. Rates of tropical deforestation are high and, in the majority of recent years, rising: a new study using satellite imagery indicates a 62% acceleration in net deforestation in the humid tropics from the 1990s to the 2000s.[5] For the tropics as a whole, deforestation was higher from 2005 to 2010 than from 2000 to 2005.[6]

A new global climate agreement based on voluntary national pledges of domestic action is expected to be finalized at the United Nations Framework Convention for Climate Change (UNFCCC) Conference of Parties in Paris in December 2015. But these voluntary pledges are not likely to lead to emissions reductions that would be large enough to meet the agreed-upon global goal of holding the increase in global temperature to 2 degrees Celsius (the "2C goal," or "2C"). There is likely to be a sizeable gap.

Forests can help to fill this gap. If stronger global actions to reduce deforestation are taken, the distance between current trends and the 2C path could be reduced significantly, especially in the short term. For instance, if all pan-tropical forest countries reduced their emissions from deforestation by 40% from the historical trend, 56% of needed emissions reductions could result in 2020; if forest emissions were cut by 80%, up to 71% of emissions reductions could be accomplished in 2020.[7] To this end, the New York Declaration on Forests[8] of September 2014 sets a goal of halving forest loss by 2020 and ending natural forest loss by 2030, as a complement to actions pledged under the UN convention.

It is in the interest of advanced economies to support decreases in deforestation beyond what forest countries are likely to pledge to do on their own as part of the UN convention. Recognizing this, at the most recent climate summit in Lima a group of 14 developing forest countries not only pledged to commit to ambitious domestic emission reduction targets but also offered more action—and more ambitious targets—if provided with large-scale funding from advanced economies. As articulated in the Lima Challenge, their offer to step up efforts to halt deforestation with international partnerships that would provide large-scale payments based on performance goes above and beyond commitments to be made under the convention.[9]

Pay-for-performance partnerships between advanced economies and tropical forest countries could help support the goals of the climate convention and realize the Lima Challenge, encouraging greater forest protection and reduced deforestation. The benefits of reducing deforestation are significant and the costs are reasonable. Traditional forest conservation projects generally have not succeeded in arresting rates of deforestation at the scale necessary. Global carbon markets, including a financing mechanism called REDD+[10] (shorthand for Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks), were meant to provide large-scale payments to forest countries to reduce deforestation, but carbon markets have grown very slowly and the price of carbon has remained low, at less than US$7 per ton. Public funders have supported efforts to reduce deforestation but have tended to stick with traditional project-based approaches rather than fund large-scale performance-based transfers to forest countries. Dramatic increases in funding for performance in reducing deforestation are needed.

With this in mind, the Center for Global Development convened a Working Group on Performance Payments to Reduce Tropical Deforestation. The Working Group examined evidence on deforestation and climate change, considered the effectiveness of conventional approaches, and assessed whether innovative mechanisms could overcome obstacles and mobilize additional resources.

Under co-chairs Nancy Birdsall, President of the Center for Global Development, and Pedro Pablo Kuczynski, former Prime Minister of Peru, the Working Group brought together experts from the worlds of climate change, forests, and development finance, comprising representatives from tropical forest countries, high-level policymakers, and fresh eyes from outside "REDD+ World," including the private sector. This report of the Working Group summarizes the constraints on expanding performance-based funding and offers solutions that build on the UNFCCC negotiations process and on early experiences with performance-based programs.

The main conclusion of the Working Group is that public and private funders should expand performance payments to reduce deforestation to achieve large-scale reductions in greenhouse gas emission and other development benefits in the near term.[11] The goal is both to increase the size of the pie—that is, the amount of funding to reduce deforestation—and to shift the composition of the pie from input-based to more performance-based approaches. While waiting for the commitments agreed to in Paris to become effective in 2020, the next four years (2016–20) should be used to pilot and build a body of experience with performance agreements to reduce deforestation. In this report, we describe ways in which the concerns that hold funders back from pursuing performance-based approaches can be managed. And we present new ideas for international partnerships that can help to increase funding to pay for demonstrated results in halting forest loss.

Chapter I

Forests are an essential ingredient for climate mitigation and sustainable development

A. The role of forests in international climate mitigation

Since the Review on the economics of climate change conducted by Lord Nicholas Stern in 2006,[12] forests have been recognized as a key component of any successful global mitigation strategy.[13] In Copenhagen and Cancún, international climate negotiators agreed to try to halt climate change and to hold the increase in global temperatures to 2 degrees Celsius. The world currently produces about 50 billion tons (50 gigatons) of greenhouse gases annually. To stay within the 2C limit, annual emissions need to be cut steadily. Emissions from just forest loss (not counting emissions from other sectors like industry, electricity, and so on) in tropical forest countries like Brazil and Indonesia were 5.4 gigatons a year from 2008 to 2012, or about the same level as total carbon emissions from the entire European Union.[14] While the net contribution of forests to total global emissions is about 10%, halting deforestation and re-growing forests together have the potential to lower annual emissions of greenhouse gases on a large scale—by as much as 30%.[15]

B. Reducing deforestation is a cost-effective mitigation strategy

In terms of carbon storage, keeping trees standing is less costly and more effective than re-planting forests.[16] It would take several decades (25–100 years) to recapture the amount of carbon released by cutting down 1 hectare of forest in a morning, and biodiverse forest ecosystems can be lost forever or take hundreds of years to recover. Capturing carbon in existing standing forests is far cheaper than as-yet unproven and costly technologies to capture carbon from power plants or industry.

The World Economic Forum estimates that the additional cost of investment to get on track to limit emissions so that global temperature increase would not exceed 2C is about US$700 billion.[17] Whereas forests' share of mitigation potential is as much as 30%, as noted above, forests account for only US$40 billion, or less than 6%, of the estimated total additional cost, compared to US$139 billion for energy, US$331 billion for buildings and industry, and US$187 billion for transport. Tropical forests offer a plentiful source of low-cost emissions reductions relative to other regions and sectors. The 923 megatons of carbon dioxide emissions that can be avoided in tropical forests in response to a price of US$20 per ton of carbon dioxide in 2020 is 4.5 times as much as the 206 megatons available at the same price in the European Union and 55 times as much as the 17 megatons available at the same price in California.[18]

C. Reducing deforestation is a timely solution

An additional advantage of curbing deforestation as a mitigation strategy is that its results can have a big impact in the short and medium term while new low-carbon technologies for energy and transport are still under development. Building on an analysis by Climate Advisers, CGD estimates that decreasing deforestation by 80% could reduce the gap between mitigation pledges that are expected to be confirmed at the Paris summit in December 2015 and the 2C pathway by more than 50% in the short term (between 2015 and 2020).[19]

Anticipated pledges to be offered in Paris are likely to lead to less than 50% of the reduction in emissions needed to reach a 2 degree pathway by 2030. But more ambitious action to reduce deforestation can help to "bend the curve" toward a 2 degree pathway, especially in the short term (2020–25).[20] Simply put, tropical forests should be an integral part of a credible climate-mitigation strategy, since reducing emissions from tropical deforestation offers the promise of timely and attainable emissions reductions.

Chapter II

International financing is critical to reducing tropical deforestation

Tropical forest countries need financial assistance to maximize their contributions to reducing emissions from deforestation. A significant share of these resources must of course come from the countries themselves. But reaching more ambitious emission reduction targets will need substantial funding from outside to incentivize forest countries to preserve their forests. Where do we stand now?

A. REDD+ financing to date

Aggregate funding for REDD+ from the public and private sectors is estimated at around US$9 billion for the period between 2006 and 2014, or an average of about US$1 billion a year.[21] While large, this sum is about the same as the US$8 billion pledged for the World Bank/FAO Tropical Forestry Action Plan in 1985 (and the latter is even bigger in real dollars). It is also far short of the estimated US$18–33 billion needed every year to cut emissions from tropical deforestation in half.[22]

Although REDD+ was originally conceived as a (carbon) market mechanism, the rules for REDD+, negotiated under the UNFCCC, allow funding for performance-based payments to come from public budgets, the private sector, and carbon markets.

B. Carbon markets

REDD+ was conceived by proponents[23] as an economically efficient tool to reach emission reduction targets as part of a global treaty to constrain global warming to 2 degrees Celsius. But negotiators failed to reach agreement on global targets at the 2009 climate negotiations in Copenhagen. As a result, the hoped-for global carbon market did not come into being and local/regional carbon markets have floundered, with prices for carbon hovering at very low levels. Voluntary carbon markets account for only about 10% of total funding to reduce deforestation, and regulatory ("compliance") markets account for none.

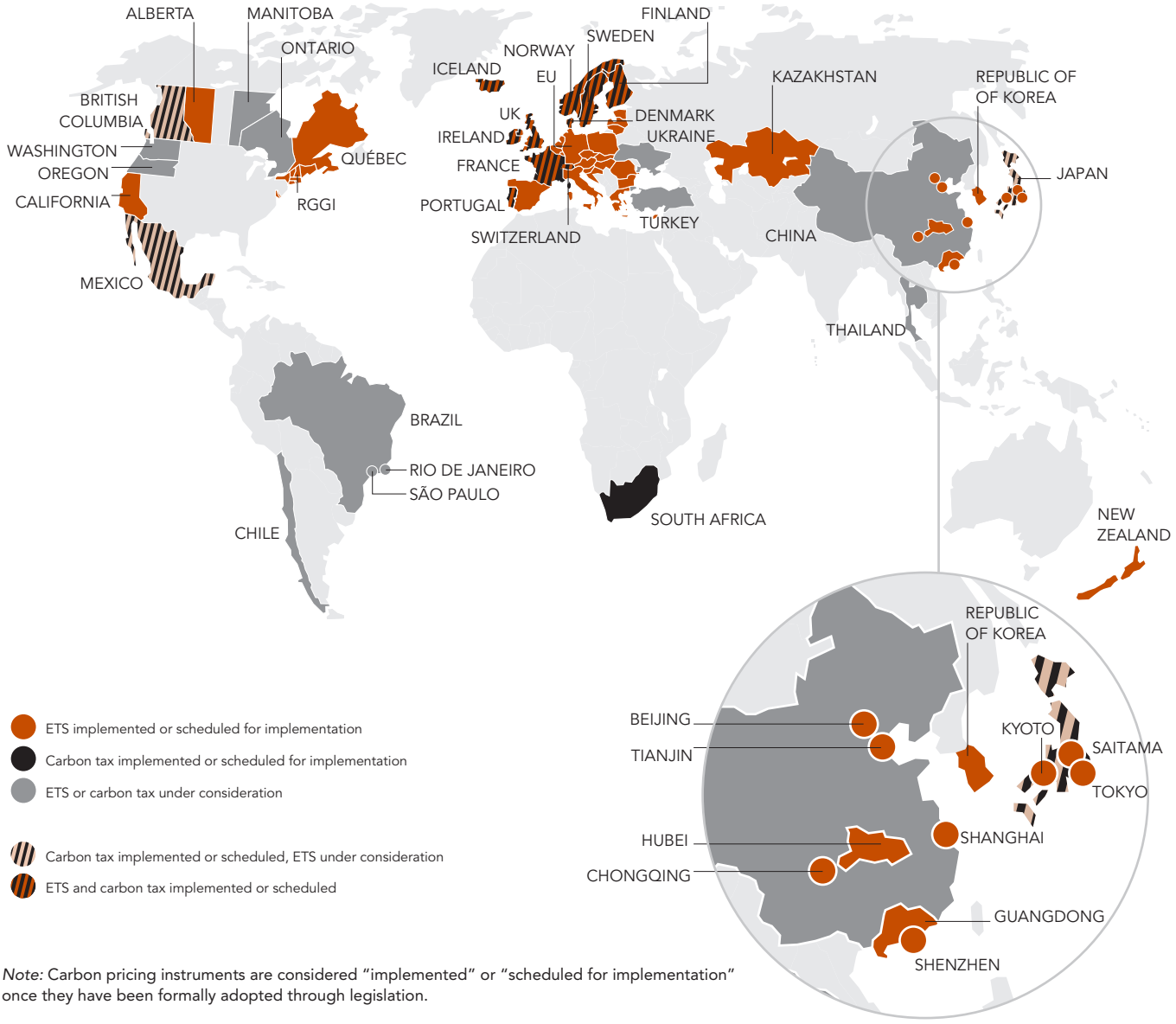
i. Regulatory ("compliance") carbon markets

No compliance market currently includes "avoided" deforestation. Carbon markets allow companies required to reduce greenhouse gas emissions (companies that are subject to "caps") to trade with other companies also subject to caps that may be able to reduce emissions more cheaply. Compliance market buyers of emissions reductions are those companies, countries, or other entities subject to emissions limits under a cap-and-trade program such as the EU's Emissions Trading System or California's cap-and-trade market.

In addition to trading between companies and sectors that are "capped," companies are also allowed in compliance carbon markets to buy emissions reductions from sources that aren't subject to caps—that is, to "offset" their emissions. The European Union's Emission Trading Scheme, for example, allows the use of offsets from developing countries purchased through the UN Clean Development Mechanism, which mostly covers energy and industry sectors. The mechanism does allow offsets for afforestation and reforestation but not for avoided deforestation.

REDD+ was conceived as a mechanism to allow companies, states, or other entities subject to caps to buy offsets created by avoiding or reducing deforestation from tropical forest countries. However, although a number of countries and jurisdictions have launched cap-and-trade programs (Figure 1), so far California is the only jurisdiction in the world that is considering provisions to recognize offsets from REDD+ as part of its greenhouse gas compliance system. California has led a collaboration, known as the Governor's Climate and Forests Task Force, with states and provinces in important forest countries to develop workable frameworks and mechanisms for generating compliance-grade assets from REDD+ and other forest carbon activities in tropical forest jurisdictions.[24] Yet even California has not yet finalized the rules and regulations that would allow it to operationalize international offsets. (See Annex 1 for a summary of emission trading systems and international offsets.)

Figure 1 Jurisdictions currently with carbon pricing



Note: Carbon pricing instruments are considered "implemented" or "scheduled for implementation" once they have been formally adopted through legislation.

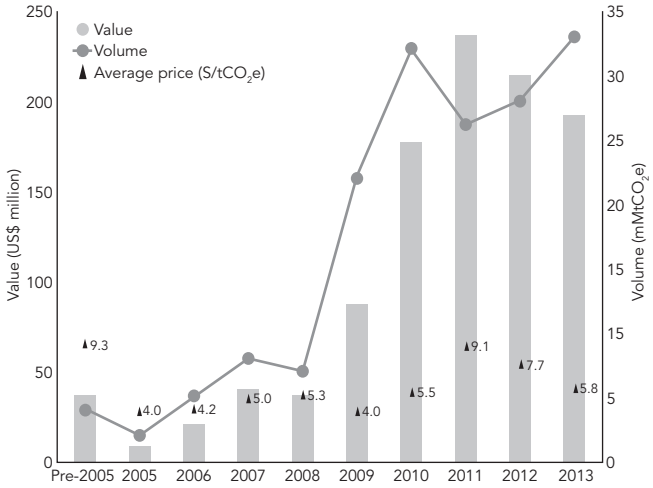
Source: Adapted from World Bank 2015.

Ecosystem Marketplace estimates that between 2006 and 2014 forest carbon offset transactions have been worth US$900 million, about 10% of the total funding for REDD+, almost all in voluntary markets.[25] Buyers in California and Australia bought forestry offsets from within their domestic markets to meet carbon regulations. Domestic forest offsets are now allowed within emerging carbon markets in South Korea and China. But there are no compliance markets that include international forest offsets.

ii. Private voluntary markets

"Voluntary" carbon markets enable companies that have set voluntary internal goals to reduce their greenhouse gas footprint to buy emission reduction credits ("verified emissions reductions"). Voluntary buyers purchase emissions reduction credits even though they are not legally obligated to reduce emissions. The emissions reductions can come from tropical forests. Private voluntary market buyers purchased the majority (89%, about US$379 million) of forest carbon market emission reductions in 2013, led by energy utilities and food and beverage companies seeking to meet corporate social responsibility commitments or demonstrate industry leadership on climate change (see Figure 2).[26] (Keep in mind that private markets account for only a small share of total investment in emission reductions from forests; most investment is from public funding, not through carbon markets.)

Figure 2 Annual forest offset market value and volume



Source: Norman and Nakhooda 2015, adapted from Ecosystem Marketplace's *State of the Forest Carbon Markets Report 2014*.

Private companies such as Microsoft and Disney generally buy verified emissions reductions from private project developers who design and invest in forest projects, obtain certification (credits that are measured, reported, and verified by certification agencies), and then either hold or sell the credits. In 2013, about two-thirds of voluntary market forest offset purchases were for projects to reduce tropical deforestation, a shift from an earlier focus on reforestation. Private voluntary market financing generally supports small, self-contained projects rather than larger jurisdictional-scale, results-based instruments. This situation may change as more sophisticated public–private partnership approaches are developed. The impetus to invest in larger jurisdictional-scale programs may also increase as a result of private sector supply-chain efforts that include company commitments to obtain palm oil and other commodities from sources that do not cause deforestation (so called "deforestation-free" sourcing) using jurisdictional approaches to ensure the traceability of these commodities.

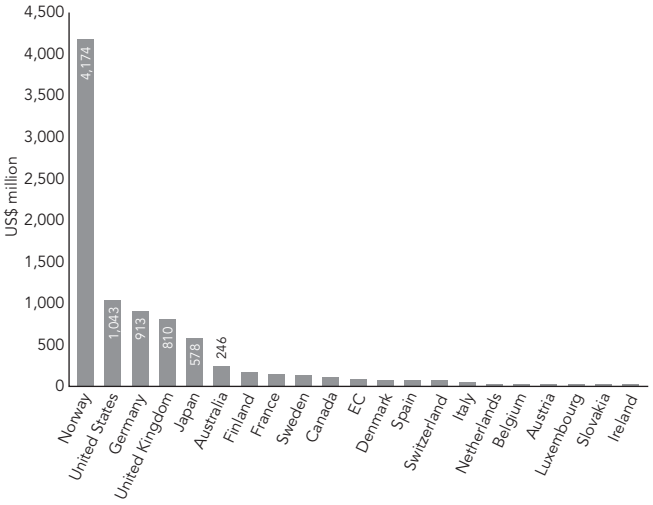
C. Public funding

The largest source of funding for REDD+ projects and programs—almost 90%—has been public bilateral official development assistance (ODA). Although there are more than 20 REDD+ donors (see Figure 3) and 80 recipient countries (see Figure 4), financial flows are relatively concentrated, with only a few major donors and recipients. Germany, Japan, Norway, the United Kingdom, and the United States provide 75% of identified public funding with 10 countries receiving the majority of finance. With some of the largest tropical forests in the world, Brazil and Indonesia together receive 40% of allocated funding. Two-thirds of this financing was pledged between 2006 and 2010. New pledges slowed after 2010, but new commitments of funding for Colombia, Ecuador, Liberia, and Peru were made in the fall of 2014.

D. Performance-based funding to reduce deforestation

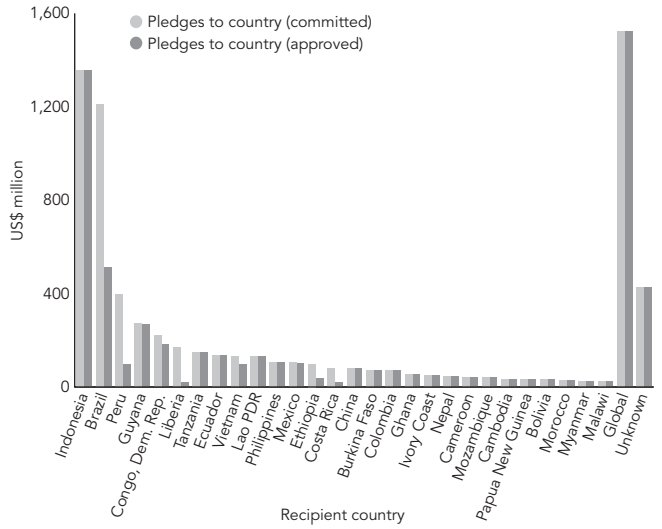
The purpose of REDD+ was to create an efficient and effective finance mechanism to compensate developing tropical forest countries for reducing greenhouse gas emissions from deforestation. To this end, implementation of REDD+ was designed in three phases, with Phase I (capacity development) and Phase II (piloting and demonstration) meant to ensure "readiness" for Phase III: full-fledged pay-for-performance programs. However, as of December 2014 only 42% of public REDD+ finance was actually results-based, Phase III

Figure 3 Donor country pledges for REDD+ for the period 2006–14



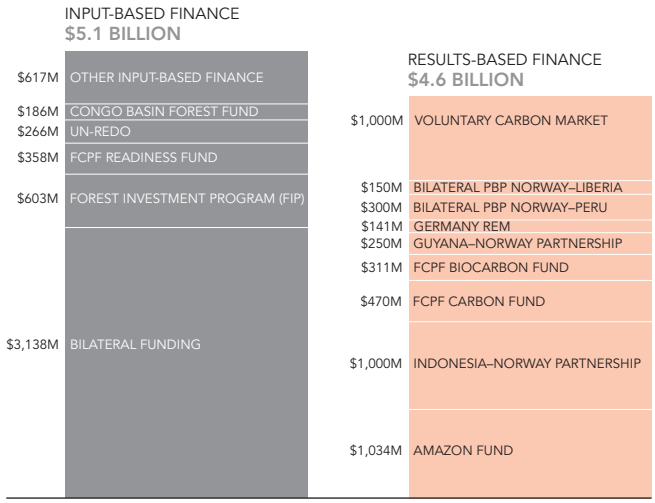
Source: Compilation of public sector reported data from the REDD+ Partnership Voluntary REDD+ Database and ODI and HBF Climate Funds Update covering REDD+ financial commitments for 2006–14 as presented in Norman and Nakhooda (2015).

Figure 4 Pledges to select REDD+ recipient countries, 2006–14



Source: Compilation of public sector reported data from the REDD+ Partnership Voluntary REDD+ Database and ODI Climate Funds Update covering REDD+ financial commitments for 2006 to December 2014.

Figure 5 Performance-based finance remains the smaller share of REDD+ finance



Source: Center for Global Development adapted from Norman and Nakhooda (2015).

(see Figure 5). The bulk of public and private REDD+ finance still funds "readiness" projects to prepare tropical forest countries to reduce emissions and possibly sell emission-reduction credits in future carbon markets—rather than paying for actual results in reducing emissions now.

The largest funder of performance-based programs to reduce deforestation is Norway, which had committed about US$4.2 billion in funding by the end of 2014 (Figure 6). Norway has entered into performance-based agreements with Brazil, Indonesia, and Guyana and late in 2014 entered into new agreements with Colombia, Ecuador, Liberia, and Peru. Germany's REDD+ Early Movers (REM) program also pays for performance (initial US$72 million committed by Germany, with additional commitments to select country programs from Norway and possibly the United Kingdom).

The only multilateral fund to pay for performance is the World Bank–managed Forest Carbon Partnership Facility (FCPF) Carbon Fund, with US$388 million in commitments from a group of donors, including Norway, the United States, and the United Kingdom. The multilateral World Bank–managed BioCarbon Fund Initiative for Sustainable Forest Landscapes (BioCarbon Fund for short, US$384 million) has announced plans to fund performance-based approaches, but the details of how it will do this have not yet been worked out.

The few pilot programs that pay tropical forest countries for results in reducing deforestation are:

- **Brazil–Norway:** In 2008, Brazil and Norway signed an agreement under which Norway pledged to contribute up to US$1 billion to a Brazilian environmental fund for reducing emissions from deforestation below the average rate of the 1996–2005 period.[27] The first of five bilateral results-based agreements established by Norway, this agreement called for donations from Norway to go to the Amazon Fund, which was specifically created by the Brazilian Development Bank (Banco Nacional de Desenvolvimento Econômico e Social or BNDES). The Amazon Fund finances projects that contribute to reducing deforestation and promoting sustainable development in the Amazon, with the potential to fund other countries and biomes. In 2013, the agreement, which was originally signed for a five-year period, was extended to December 2021.
- **Guyana–Norway:** In 2009, Guyana and Norway signed a memorandum of understanding[28] under which Norway would make payments, up to US$ 250 million, contingent upon keeping nationwide deforestation below the rate of 0.275%, a reference

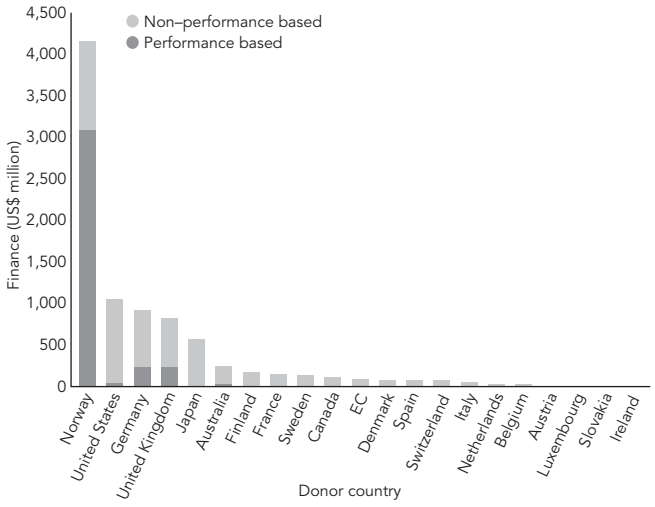
level set as the average of historical national and global emission rates.[29] The memorandum of understanding aligned with Guyana's Low Carbon Development Strategy, established in 2009, which includes a commitment to reducing emissions from deforestation. Payments would be made to the Guyana REDD+ Investment Fund, established for this purpose and used to support the strategy.

- **Indonesia–Norway:** Indonesia and Norway signed in 2010 a letter of intent under which Norway pledged up to US$1 billion to support Indonesia's REDD+ efforts in three phases, with performance-based payments for verified emissions reductions being the third phase.[30] The agreement followed Indonesia's announcement in 2009 of voluntary targets for reducing emissions, including especially reductions from avoided deforestation. Payments were to initially be channeled through UNDP until the Financing REDD+ in Indonesia mechanism was established.
- **Peru–Norway–Germany:** In 2014, Peru signed a joint declaration of intent with Norway and Germany in which Norway and Germany pledged to support emission reduction efforts in three phases.[31] Norway pledged up to US$300 million, with US$50 million toward phases I and II and US$250 million toward phase III verified reductions.
- **Liberia–Norway:** In 2014, Liberia and Norway signed a letter of intent in which Norway agreed to make payments up to Liberia to US$150 million to improve forest governance, strengthen law enforcement, and support efforts to reduce greenhouse gas emissions from deforestation.[32] Up to US$70 million is designated for policy measures and institutional building in initial years, and an additional US$80 million for verified reduced emissions. Funds will initially be channeled through the World Bank.
- **German REDD+ Early Movers (REM):** In 2012, the German Federal Ministry for Economic Cooperation and Development commissioned a program to reward pioneers or "early movers" in forest conservation.[33] REM's primary modality is ex-post performance–based payments through which it supports national and large-scale subnational programs. A second modality through ex-ante payments might be applied as a transition to results-based finance systems. The first REM agreement was signed and is delivering results-based finance to the State of Acre in Brazil (€25 million). A REM agreement with Ecuador was signed at the end of 2014, in cooperation with Norway (€11 million and 300 million NOK). A third agreement with Colombia is in preparation, also in cooperation with Norway and the United Kingdom.
- **Forest Carbon Partnership Facility Carbon Fund, administered by the World Bank:** The FCPF has two funding mechanisms, the Readiness Fund and the Carbon Fund. Both make payments to countries at the national and subnational levels. The former does so to prepare countries to enter into negotiated contracts, and the latter does so to pay for actual results, after readiness criteria are met.[34] The World Bank acts as trustee of the Carbon Fund, which became operational in 2011. As of April 2015, 11 countries have been invited into the Carbon Fund pipeline, and eight have signed a letter of intent.

Annex 2 provides details on these existing funds and partnerships.[35]

Large-scale performance agreements are still something of an experiment, having not yet been seriously tried as a global approach to deal with a global crisis. The most advanced of these early initiatives demonstrate practical approaches for implementing these programs, using public funding within existing development assistance institutional frameworks and instruments. As CGD's country studies indicate, they seem to have worked

Figure 6 Performance-based payments as a proportion of overall REDD+ finance



Source: Compilation of public sector reported data from the REDD+ Partnership Voluntary REDD+ Database, ODI analysis on the Fast Start Finance period between 2010 and 2012 and ODI and HBF Climate Funds Update covering REDD+ financial commitments for 2006–14 as presented in Norman and Nakhooda (2015).

Box 1 India's big climate move

The Government of India recently announced a new "pure form" performance-based payment program to conserve forests. India will transfer US$80 billion of the annual US$200 billion in total taxes collected to states, as what is called tax devolution. In a reform of its tax system, India will now allocate US$6 billion a year of these transfers in a way that will encourage forest conservation. The reform changes the "horizontal devolution" formula (that is, the transfer of funds to states), so that the pie will now—for the first time—be shared between states not just on the basis of population, area, and income but also forest cover, as monitored by India's 2013 Forest Survey, a satellite-based monitoring system. As a result, India is providing more results-based finance for forest conservation than any other country in the world, including the current biggest spender, Norway. An important dimension of this program is that the central government will not impose conditions on how forest cover is conserved: it will just pay for the results.

Note: For more on India's new program, see Busch, 2015.

reasonably well in Brazil, Guyana, and Indonesia. CGD's work suggests that the progress made under these agreements comes close to a proof of concept.

In a "pure" results-based approach like Cash on Delivery Aid, the payer would not impose conditions on how results are achieved or how performance transfers are spent; it would just pay for the agreed-upon results (in this case, verified emissions reductions) when they have been delivered. A good example of such a simple program is India's new tax-sharing program, in which a larger share of tax revenues is shared with states with higher forest cover (Box 1). In practice, the limitations imposed by existing aid frameworks have meant that none of the current results-based REDD+ programs conforms with a "pure" performance agreement, which would simply pay in proportion to reductions in emissions from deforestation. Since existing performance programs are managed mostly by development agencies, they tended to be hybrid in nature and are bound by traditional input-based ODA requirements that require evidence of value-for-money and include prior approval of plans, set conditions on how forest cover is conserved, or constrain the uses of funds once results have been delivered. Hewing to development practices slows progress and hampers the effectiveness and the ability to replicate these early pilots.

Chapter III

Why pay for performance?

Performance agreements can accelerate large-scale decreases in deforestation by providing incentives, visibility, and transparency as the world tries to find the fastest and most effective way to reduce greenhouse gas emissions. The most advanced instrument to pay for performance in reducing emissions is REDD+. Similar instruments are under consideration in other sectors, such as energy.

Support for results-based programs in development assistance has been growing, in part because such programs can increase the scale and speed of results. By paying for outcomes or results, they have been seen to improve program effectiveness over regular aid programs that pay for inputs (for example, training or equipment) or outputs (completion of a plan or strategy). And they can transform the partnership between the funder and recipient countries and empower local actors.[36] Results-based programs can draw the political and social attention needed to make a big difference in reducing deforestation, both in countries providing transfers and those receiving them. Performance-based agreements can provide policymakers with a clear centerpiece for building domestic consensus on priorities and goals in the land-use sector and set a level of transparency that can help domestic champions to monitor progress and maintain support.[37]

Four main benefits accrue from using performance-based funding to halt deforestation. Performance-based instruments can help increase a country's ambition, or willingness to endeavor to produce results at a large **scale**, and to achieve results in the short and medium term. Paying for performance increases the **incentive** for a country to achieve concrete results and not just to implement a project. Performance programs help to **share risk** between funders and recipients. And performance-based instruments increase both **visibility** and **transparency**, which reinforce the credibility of the forest country's political commitment.

A. Scale

Realizing the mitigation potential offered by forests requires accelerating the reduction in deforestation and expanding the coverage to national and subnational (or jurisdictional) levels. Early support for "readiness" and investments in projects with discrete boundaries have provided a body of experience and laid the foundations for action on a larger scale. But they have not arrested the continuing increase in rates of global deforestation. By paying for results at the national and jurisdictional levels, results-based transfers can achieve results at the needed scale.

B. Incentives

Results-based instruments provide at least three important incentives for forest countries to achieve mutually agreed-upon (by donor and recipient countries) development and climate results.

i. Monetary incentive

Large-scale performance-based programs, like the pioneering pilot programs supported by Norway, provide funding at a scale commensurate with the result: reduced global emissions from deforestation. This funding partially compensates countries for the opportunity cost of farming or developing the land that is conserved. The Norwegian partnerships show that payments need to be large enough to justify the often difficult political and institutional measures needed to change behaviors but that they do not need to fully compensate for costs undertaken or opportunities missed.

ii. Flexibility and discretion

We know that domestic commitment to a program's goals (that is, "country ownership") is fundamental to its success. And yet the conventional approach to development aid involves intense engagement by donors in diagnosis, planning, design, and strategy. This approach usually entails approval of fixed plans and the application of donor-specified procedures and processes to ensure compliance with fiduciary, environmental, and social policy standards. As a

result, country ownership is compromised. Performance agreements transfer funds in proportion to outcomes, giving countries flexibility and discretion over how they produce the results in accordance with their own local knowledge of effective strategies and politics, developing their own institutions and policies. Allowing countries to design their own programs and utilize their own standards and institutions heightens country ownership of the goals and increases the chances of success. Brazil was able to reduce deforestation in the Amazon by 80% between 2004 and 2013 by building on policy changes introduced in the mid-2000s. The agreement with Norway reinforced the change process that Brazil had initiated on its own.

iii. Discretion over the use of performance payments

In addition to encouraging effective methods, performance agreements incentivize by allowing the forest country discretion to use the performance payment as it sees fit to further its own development strategies, without limitations on how funds are used. Freedom to use the performance payments as needed strengthens country ownership over the program.

C. Risk sharing

Funders and recipients face two kinds of risks when beginning a program—volatility in disbursements and uncertainty regarding the achievement of high-level results, like reduced deforestation. In traditional projects, funders and recipients develop detailed plans for inputs and activities that are expected to contribute to achieving high-level results (including reduced deforestation) and set payment schedules in line with the projected pace of implementation. In practice, the volatility of disbursements for conventional aid is quite high, a consequence of changing policies and politics within funding agencies and their countries that make it difficult for recipient countries to plan and budget.[38] Furthermore, funders are mostly accountable for disbursing funds and face limited accountability for projects that fail to achieve their goals. For example, bilateral grants are disbursed whether or not a technical training program has increased the enforcement activities of a local agency.

Performance agreements alter this distribution of risk in several ways. The volatility of disbursements is related to performance, which is still difficult to predict but certainly more easily influenced by the recipient country than domestic policy in a donor country or multilateral agency. More important, under performance agreements recipients can be held accountable for the degree of success they achieve, because payments linked to outcomes are a visible indicator of that performance. Funders save taxpayer money by only paying for results, and recipient countries have incentives to achieve results in the most cost-effective ways.

However, one of the reasons recipients of performance agreements hesitate is that they assume more of the risk. Both the cost of achieving reduced deforestation and the effectiveness of country policies and enforcement are uncertain. The country risks undertaking costly policies and actions to reduce deforestation without receiving the performance payment because of unforeseen factors that lead to continued deforestation (for instance, a sharp rise in commodity prices that increases pressure to convert land to ranching or farming). It will be important to manage risk through careful negotiation of reference levels, through the flexibility to adjust reference levels ex post facto to reflect changing conditions, and by separately ensuring availability of funding for upfront actions.[39]

D. Visibility and transparency

Performance agreements can reinforce the ambition of local champions who are concentrated on getting results. They can help to engender and strengthen ownership, encouraging finance ministries to align with forest champions in the environment ministry or civil society. With relatively little funding (compared to the US$140 billion spent annually by all donors for ODA), performance-based funding to reduce deforestation has influenced policies in Guyana and Indonesia. Placing a credible offer on the table—providing certainty that performance will result in payment—has been sufficient to generate action. The public visibility and transparency of the agreement (the Norway agreements are published on both funder and recipient websites) gives credibility to the political commitment to take the difficult measures needed to achieve results.

Chapter IV
Working Group proposals

Stronger political commitment is needed to pay for independently verified emissions reductions from avoided deforestation. With political commitment in place, several practical steps can help ramp up funding for pay-for-performance agreements to curb deforestation. Specifically governments ought to:

- Increase incentives.
- Update standards and practices.
- Manage risks.
- Generate new funding.

Paying tropical forest countries now for measurable results in slowing deforestation can be an attractive, feasible, and affordable way to reduce carbon emissions. It can provide an evidence base, practical experience, and models for addressing concerns that can make REDD+ an effective transfer mechanism to support post-2020 international mitigation commitments. And yet this is not happening at the speed and the scale commensurate with forests' potential role in halting climate change.

Why not?

Why haven't donors from rich countries and private investors who are committed to combating climate change grabbed the opportunity to cut emissions in a big way by paying forest countries for actual reductions in deforestation? First, they lack incentives to pay for large-scale emission reductions (such as limits on greenhouse gas emissions or a global carbon market). Second, they adhere to designs and practices familiar to them from development-assistance programs and express concerns about the potential risks of performance-based approaches. And in the absence of a price on carbon, facing fiscal austerity and competing demands, they lack adequate sources of funding.

But there is a way forward. Lessons from experience show us how to expand and improve performance-based approaches in ways that can have a marked impact on the problem. The solution is to find ways to increase incentives, to encourage funders to adopt nonconventional practices, to adopt simplified measures to manage risk, and to generate new sources of funding. The recommendations that follow show how to do this.

A. Increase incentives to overcome lack of demand for emission reductions

The most formidable challenge to scaling up performance-based funding to decrease forest loss is the lack of demand for emissions reductions from global carbon markets. Prior to the Copenhagen summit in 2009, the international negotiations were aimed toward reaching a top-down global agreement to limit warming to 2 degrees Celsius, with binding national targets for reducing emissions. Implicit in this process was the idea that the Copenhagen agreement would result in a price on carbon— through a cap-and-trade program—and this would lead to demand for inexpensive emission-reduction opportunities that tropical forests provide. However, the climate negotiations are now based on a bottom-up process of aggregating national voluntary pledges to reduce emissions. Most analysts believe that this will not lead to the formation of robust global or even regional carbon markets, and thus demand for proven emissions reductions will remain weak. Some potential funders worry about the shortage of countries and jurisdictions that are in a position to provide large-scale emissions reductions.

Working Group suggestions

- **Ensure certainty that performance will be rewarded. Reducing emissions from deforestation is an important means of implementation for mitigation.** Public funders should use official finance (ODA or other sources) to provide assurance that funding for performance agreements is in place. They should shift the balance of funding from investment projects to performance agreements. When we speak of performance, we refer to ultimate outcomes, not intermediate performance milestones such as staff on board, training accomplished, or equipment purchased. Greater certainty about the availability of performance payments will lead to a greater "supply" of countries and jurisdictions that can produce emissions reductions. In fact,

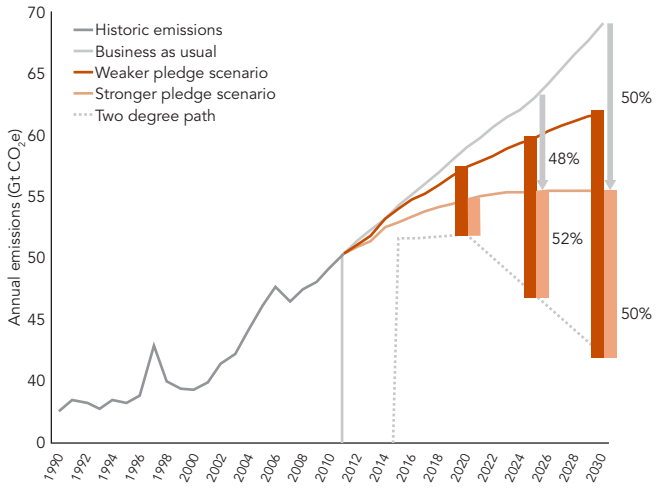
many countries and jurisdictions are well advanced in preparing for performance agreements.

- **Dual commitments.** One proposal under discussion is to scale-up commitments to reduce emissions through "dual national and international mitigation commitments." The nations that are parties to the international climate negotiations agreed in Lima to set forth during 2015 their self-financed domestic targets for reducing greenhouse gas emissions, called "intended nationally determined contributions," and to finalize agreement on these voluntary pledges at the Paris climate negotiations in December 2015, with actions to take effect in 2020. But the emissions cuts that countries are expected to pledge in Paris are unlikely to deliver the results needed through 2030 to contain warming within the 2C goal. As figure 7 shows, even if pledges are on the more ambitious end of the possible range, such commitments may only go about halfway toward the goal.[40]

Most of the Paris pledges put forth so far only cover self-funded action within national borders. But international mitigation commitments will be required to meet emissions reduction targets consistent with the 2C scenario. The REDD+ mechanism negotiated under the UNFCCC would be a good way to expand international commitments. Developed countries should include a commitment to pay developing tropical forest countries for reduced deforestation as part of their Paris pledges. They ought to provide a clear roadmap on climate finance. They should make a commitment on the number of tons of emissions reductions they will provide through international partnerships as part of the Copenhagen commitment to mobilize US$100 billion per year by 2020.

The Lima Challenge supports the September 2014 New York Declaration, in which signatories pledged to halve the loss of natural forests globally by 2020 and end natural forest loss by 2030. To come closer to achieving the 2C goal, advanced economies should commit to additional pledges (additional to their baseline domestic targets) for tons of mitigation that they intend to secure outside their borders through partnerships with developing countries (see Annex 3). Switzerland and Norway have already proposed international mitigation commitments and Indonesia (in 2009), Mexico, and Morocco have offered additional action to reduce emissions based on international support. The mitigation pledged by advanced economies outside their borders would reduce more emissions at a lower cost, enable large emission cuts in developing countries that would otherwise not occur, help ensure a global climate agreement that comes closer to reaching the 2C goal, facilitate the linking of regional systems and carbon markets, and deliver significant development benefits.

Figure 7 Expected Paris Agreement mitigation gap (with INDCs)



Source: Climate Advisers 2015.

B. Employ appropriate standards: Avoid conventional aid rules and practices for performance agreements

Conventional ODA practices undermine the potential effectiveness of performance agreements in reducing deforestation. The early examples of performance agreements described above and characterized in Table 1 below have introduced important innovations and achieved some success. But in some cases they impose additional conditions, beyond the result itself, related to how countries plan and prepare for producing results, how countries produce results, and how they use performance payments. These conditions add to costs, delay action, create unnecessary lags in making results payments when results are achieved, and dampen incentives to achieve the large-scale results.

i. Conditionality on how results are achieved and how performance payments are used

One of the strengths of performance agreements is that countries can adopt different approaches to achieving results, discard those

Table 1 Performance-based REDD+ programs differ in their reliance on conventional aid restrictions

BENEFITS	NORWAY–BRAZIL	NORWAY–GUYANA	NORWAY–INDONESIA	GERMANY'S EARLY MOVERS PROGRAM	FOREST CARBON PARTNERSHIP FACILITY'S CARBON FUND
Large-scale geographical coverage	✓ covers entire Amazon but not other forest biomes	✓+ nationwide	✓+ nationwide	✓ national and jurisdictional	✓– subnational or quasi-nationwide[a] in scattered plots (Costa Rica)[b]
Size of monetary incentive. Relevant size of monetary incentive varies between a countrywide approach or subnational level, size of country[d]	✓ Although amount is large ($1 billion), based on the formula in the agreement, this amount should have been transferred within 6 months; total payment should have been larger for 2009–13	✓+	✓ Amount of the agreement is large ($1 billion); but large incentive has not yet had an effect in reducing deforestation, and performance payment has not been made	✓ initial amount not large enough for significant visibility or national impact; can be scaled up through donor partnerships	✓ amount not large ($63 million) but program has significant visibility.[c] In most countries funding concentrated in a few jurisdictions
Flexibility and discretion on how results are achieved	✓+ relies on Brazilian Development Bank systems	✓– requires compliance with multilateral development bank procedures and systems (rigid)	✓ requires use of United Nations Development Programme systems (somewhat flexible)	✓ follows principles developed by German development cooperation	✓ Allows country systems, but requires use of World Bank systems and several additional conditions if country does not have its own systems
Discretion over use of performance payments	✓ uses nationally agreed-upon priority (Amazon Fund) plus requirements for project eligibility	✓– Low Carbon Development Strategy is national strategy but project-specific conditions imposed by multilateral development banks	✓ United Nations Development Programme systems	✓ benefit sharing formula proposed by forest countries based on national/subnational programs, agreed-upon by Germany. Flexibility to adjust over time. 50% to go to local communities; part of funds for new measures to reduce deforestation	✓+ funds transferred to national budgets
Visibility and transparency	✓+ published on donor, recipient websites	✓+ published on donor, recipient websites	✓+ published on donor, recipient websites	unknown	✓+ Documents published on Forest Carbon Partnership Facility's website; multiple civil society organizations and indigenous-people observers
Key	✓+ very strong incentive	✓ strong incentive	✓– OK; some incentive		

a. The REDD activities of the Costa Rica Emission Reduction Program will not be implemented in a single territory or large expanse of land, but rather in a set of parcels of varying sizes—mostly less than 50 ha—located on private land or in indigenous territories and distributed throughout the national territory. Total coverage is 342,000 ha out of a total of 3.3 million ha of private land.

b. FCPF Carbon Fund Emission Reductions Program Idea Note, 2013.

c. The assessment of the size of the incentive is relative. Norway's pledge of $1 billion each to Indonesia and Brazil is very generous in terms of ODA, particularly for middle-income countries, but small relative to the size of the economies of Indonesia and Brazil.

d. See Forest Carbon Partnership Facility (2013).

that aren't working, and adapt and change. But when designing performance-based programs, funders frequently adopt the stance that they (the funders) have to assure that the recipient will be successful and therefore seek evidence of "readiness" (capacity, policy reform, and institutions). The funders insist that systems, institutions, and capacity be in place and seek evidence that the country has access to resources to implement large, complex programs on the ground *before* agreeing to provide results payments. This leads to lengthy planning and review processes that culminate in fairly rigid plans regarding *how* the country will achieve results prior to even signing a results contract. See box 2 for a case in point.

Working Group suggestion

- **Trust but verify.** Performance agreements could be simple agreements that define results, identify reference levels and indicators, and specify how they will be verified and measured. An external review of a country's strategy is not necessary to "assure success." Evidence shows that country ownership of strategies is the critical factor in success. External reviews may in fact delay implementation of promising initiatives. Instead, funders can put the recipient country in the driver's seat. They can sign performance agreements once the conditions for verifying results are established (for example, satellite monitoring and an agreed reference level) but ought not to require presentation and agreement on detailed plans and strategies for *how* the country/jurisdiction plans to achieve results.

Box 2 The Forest Carbon Partnership Facility Carbon Fund

The Forest Carbon Partnership Facility (FCPF) Carbon Fund, which has an eight-step processing protocol, allows only countries that have signed a readiness grant to enter the pipeline of the Carbon Fund (Forest Carbon Partnership Facility, 2011). They must prepare a strategy for how they will reduce emissions at two levels: readiness at national level (as presented in the R-Package, to be endorsed by the FCPF Participant Committee) and a program document at the subnational or national level with a specific intervention strategy for the program. First an Early Idea Note, then an Emission Reductions Programs Idea Note, and then an Emission Reductions Payment Agreement must all be approved by Carbon Fund participants. Additionally, they must prepare a social and environment safeguards assessment and produce an environmental and social management framework. This framework is in principle the safeguard instrument for the program, to be applied to all program activities, and faces World Bank approval along with the payment agreement.

ii. Financing conditions: "Readiness" and the "missing middle" financing gap

Sometimes recipients will be able to deliver results at very low cost. This can happen when simple legal, regulatory, or managerial changes effectively mobilize existing public or private resources to generate results. Other times, recipients will need funds for initial investments. In these cases, the recipient can either finance these investments out of their own domestic budget or seek funds from public or private entities in the form of loans or development impact bonds. When funders insist on evidence proving that countries have in place adequate capacity and effective governance, the forest country will probably need substantial upfront investment to be able to demonstrate such "readiness." Forest countries may not have the resources to pay for the required upfront investments and activities and may turn to donors for additional funding. Thus, rather than paying for results, funders may prefer to support upfront investments and actions that lead to results.

Working Group suggestions

- **Certainty is needed that performance payments will be available.** By starting the performance agreement right away, countries will be in a position to undertake measures that do not require additional funding. For those that do require funding, a country can seek grants, technical assistance, or even loans with the prospect of repaying those loans with the annual performance payments. The fundraising project could involve a structured financing package from an array of bilateral and multilateral climate programs, including those of bilateral agencies, the FCPF Readiness Fund, UN-REDD, the Forest Investment Program, and private voluntary market investors. Integrated financial solutions are needed, but funding inputs should be kept separate from funding for results. By putting the performance agreement in place first, the range of financing

options is expanded while preserving the advantages of flexibility and forest-country autonomy that are constrained by conventional readiness approaches.

- **Advance payments: enable countries to borrow against results-based contracts.** Results funding can be advanced to pay for investments, as is done in the World Bank Program for Results. Multilateral programs like the FCPF Carbon Fund are considering advance payments against results contracts. Under these arrangements, the recipient country can draw on some of the promised performance payment in advance to fund upfront investments if needed. In the FCPF Carbon Fund, when the result is achieved, the amount that was paid upfront would be deducted from the final performance payment. If the result is not achieved, the recipient country could be asked to repay the funder.
- **Ensure that funding is available for all three phases, as appropriate:** capacity building, institutional and governance reforms, and then results. The existence of a performance agreement makes the possibility of mobilizing other funds more likely. If a particular funder is paying for results, recipients still have access to a wide range of funding from other sources that can complement the innovative performance-based funding. Or a funder can finance both inputs and results. For instance, the Norway–Indonesia agreement provides funding for all three phases of REDD+. The Norway–Liberia agreement also provides upfront grant financing to cover investment costs.[41] For Brazil, with robust institutions and capacity, the agreement covers only Phase III (performance payments).
- **Consider using development impact bonds,** a new public–private financing model that can mobilize private investment to finance upfront investments and then be repaid when results are achieved. The "Development Impact Bond" (DIB) model has rich countries committing to purchase emission reduction credits generated by tropical forest nations. Results could be achieved with support from private investors at a jurisdictional scale. The DIB is not a bond in the sense of a "green bond" or a traditional debt instrument. The DIB is a partnership between a private investor, an implementing agency, and a public outcomes funder. In a DIB, a public funder, such as a donor agency or group of agencies, would commit to pay for the outcome: reduced emissions from avoided deforestation as verified by satellite monitoring (a verified or certified emission reduction). If the forest country did not have the resources to pay for the upfront actions and investments needed to generate the result, a private investor (for example, an impact investor or private company like Disney or Microsoft that purchases credits in the voluntary market) would put up the money. The actions needed to deliver the result could be undertaken by an NGO, a private company, or a national or local government. The outside funds would help to overcome a constraint on the government—for example, a cap on hiring or insufficient enforcement resources. Once the result (reduced deforestation) is delivered, the investor would be repaid by the funder government, with some return on investment. The reduced deforestation produces an emissions reduction certificate verified in terms of amount and production in compliance with the Warsaw Framework rules that governments have agreed on. In cases where DIBs mechanisms have been effective, the involvement of the private sector, as investor or implementing agency, has delivered results at a lower cost than otherwise, which makes it possible to pay a return on investment. See Annex 4 for further background on DIBs.
- **The DIB can potentially add value in two ways.** First, in cap-and-trade markets it may take five or more years to generate, monitor, and verify emissions reductions. The DIB can provide upfront financing to bridge to the eventual result payment. Second, a DIB could conceivably attract private investors into an approach that, by following the Warsaw/FCPF methodological framework, is more acceptable to public funders. Currently the private voluntary carbon market follows one set of rules (such as the Verified Carbon Standard or the Climate, Community and Biodiversity standards[42]), while government markets (EU Emission Trading Scheme, California's cap-and-trade, FCPF Carbon Fund) follow others (the Warsaw Framework, California's REDD Offsets Working Group guidelines and the FCPF Carbon Fund methodological framework). The differences in these rules act as a barrier to drawing private investment into programs in which governments pay for results.

iii. Concerns about "double funding"

Some funders worry about "double funding" or over-subsidizing: paying once for the upfront investment for "readiness" and then paying again for the final result (emission reduction).

Working Group suggestions

- **Consider upfront funding as part of a larger program.** When bilateral and multilateral programs agree to finance the upfront investments undertaken by a forest country, they are not paying for tons of carbon; rather, they are paying for activities that complement the other actions and resources applied by the country to achieve results. The upfront investment programs do not set baseline reference levels nor do they monitor and verify results. They may thus overestimate the extent to which their own inputs led to the final result and may conflate "performance milestones" (for example, preparation of a draft law, fully staffing a department) with actual results (emissions reductions).
- **Understand that achieving results requires interventions at many stages and this does not mean there is "double funding."** Countries will need to use many sources of financing to achieve results, including their own budgets. Emissions reductions are a consequence of multiple activities. As programs are increasingly undertaken at the landscape- and jurisdictional-level scale, multiple partners will support multiple activities. When the reduced emissions are fully measured and reported, it will not be possible to directly attribute these to any single investment or specific actions. Rather, each funding source will have made a contribution along with many others (including forest countries' own efforts). All REDD+ phases and the financing thereof are part of a continuum that will lead to the goal of reducing emissions. If funders are concerned about over-subsidization, or "double funding," coordination in program design and the structure of financing packages can resolve these concerns.

iv. Conditionality on how performance payments are used: "double demanding."

The idea behind performance agreements is that funders pay in proportion to how well the agreed-on result is achieved—reduced deforestation based on satellite monitoring—and do not pay when there are no results. But in practice, performance programs also impose aid-like conditions on how the performance payment is used. This has been called "double demanding": requiring that a country deliver a result—reduced deforestation—and then imposing conditions on how they use the performance payments once they are transferred. Rather than just transferring performance payments as general budget support, funders may insist that countries also account for how the funds will be used. This may be an upfront requirement that the country produce a Benefit Sharing Plan as part of the results contract (like the German REM and FCPF Carbon Fund[43]), or that the funds will be used for a specific purpose like a low-carbon development strategy (as in the Guyana–Norway agreement). The requirement to track how funds are used has led to substantial delays in the transfer of funds even once results have been verified due to procurement procedures, development of suitable projects, and other issues.

The Brazil–Norway program is an interesting example of conditions on the use of performance payments. At Brazil's request, the agreement requires that funds be used by the Amazon Fund for forests. This allows for a deepening of results, where Brazil uses some or all of the performance payment to get more results, and reinforces the political position for protection of forests. This is the deal that Brazil designed and wanted; it therefore reflects deep country ownership and creates an incentive for public-policy action at the national level.

One of the reasons that funders have been slow to adopt performance-based approaches in general has been criticism that programs that disburse against outputs or outcomes lack the procurement procedures and audit mechanisms necessary to avoid corruption. Conditions on how performance payments will be used after they are transferred are meant, in part, to ensure that funds will not be "misused." But a working paper by CGD researchers[44] argues that results-based approaches to foreign aid may in fact be less vulnerable to corruption than traditional approaches that monitor and track the purchase and delivery of inputs and activities. It notes that input-tracking approaches have a weak track record for controlling diverted funds. The real cost of corruption is the forgone benefit from not achieving the program result. The paper points out that performance-based approaches make the most relevant effects of corruption—the failure of programs to deliver results—more visible. Potential funders should recognize the risks (lost mitigation and development opportunities) from not conserving forests.

Working Group suggestions

- **Distribute funds as budget support or cash transfers to citizens.** Forest countries could request disbursements that go directly into national budgets or an annual per-person cash

transfer, perhaps targeted at forest communities, as a means to more quickly share the benefits with local people. Alternatively, transfers could be made into a sovereign wealth fund from which interest could eventually be shared.

- **If funders need to ensure that payments are used for a specific purpose, ideally they would rely on appropriate recipient-country institutions and policies.** In the world of sustainable development finance, the momentum to use national institutions is growing. It has been proposed in the high-level development finance discussions leading to the conference in Addis Ababa in 2015 that the proportion of bilateral ODA that uses country systems and appears on country budgets be increased to four-fifths by 2020. And in the World Bank's Program for Results, funders can increase reliance on the forest country's national institution's own fiduciary management systems plus ex post facto audits, including by an independent third party. In the Brazil–Norway partnership, performance payments are transferred to the Amazon Fund, which is managed by BNDES. In agreement with Norway, the Amazon Fund applies the fiduciary controls and safeguard policies of BNDES when it funds activities with performance payments. The Brazil–Norway Agreement relies on BNDES and an independent steering committee to address the relevant fiduciary risks without direct supervision or involvement of Norway in the Amazon Fund's governance. Funders should avoid attaching extra conditions to results payments, which unnecessarily delay disbursement and undermine the link between performance and funding.

C. Manage risks

Performance-based agreements to reduce deforestation should be an attractive instrument to reduce greenhouse gas emissions. However, funders, forest countries, and civil society stakeholders are concerned about potential risks that may affect how these performance-based transfers would work. Such concerns have discouraged potential funders. The cost to the world is an under-supply of performance-based funding for performance agreements to reduce deforestation.

Many concerns about risks have already been addressed by the fruitful progress under the international climate negotiations.[45] Other remaining and emerging concerns deserve consideration but can be addressed without undue burden. The commitments made in Paris are to become effective in 2020. In the meantime, the next four years (2016–20) should be used to pilot and build a body of experience with performance agreements to reduce deforestation so they can be scaled up in 2020. The following section identifies some frequently cited risks and suggests how they might be managed.

i. Establishing baselines is important

The decision on the baseline (so-called reference levels) against which performance is measured is critical because it determines how much a country will be paid for performance. Establishing the reference level is tricky because deforestation may fluctuate over time and may or may not follow a long-term trend. The UN agreement on REDD+ requests countries to submit their baseline (reference) level of deforestation against which future performance would be measured. So far, six countries have submitted reference levels, subject to a technical review of their methodology.

ii. Ensuring that the reference level is appropriate

There is no independent entity that can judge the validity of the reference level. Because countries will be paid for performance relative to the reference level, there is a large monetary incentive to bias it. If the reference level is too high, the funder risks paying for something that would have happened anyway (the performance is not additional) or paying for a "reduction" that does not actually happen.

Working Group suggestions

- **At some future point, there may be a technical body that can provide an independent assessment of the validity of reference levels.** Until then, in performance agreements using public funds, the reference level should be negotiated directly between the funder and recipient, as was done in the Guyana–Norway agreement. Several estimated reference levels that were considered unrealistic were discarded, and Guyana and Norway agreed on a reference level that was acceptable to both parties.
- **In future compliance carbon markets with international forest offsets, it will be important to ensure that the buyer does not pay for a claimed reduction in emissions that does not take place because the false emission reduction credit would**

count against the buyer's obligation to reduce emissions. To minimize the risk of a possible exaggeration in the amount of emission reduction, the buyer could negotiate a conservative reference level or could buy offsets at a discount (also called partial offsetting)—to buy, say, five emission reduction units but count only four against the buyer's compliance obligation.

iii. Measurement, reporting, and verification.

The design of performance-based programs can be relatively straightforward, but the quality of the indicators chosen and the verification process are critical to success. Measuring, reporting, and verification of results are needed to ensure proper payment for reduced greenhouse gas emissions. In 2001, international climate negotiators ended up excluding tropical forests from the Kyoto Protocol because of the difficulty of accurately monitoring forests, among other reasons.

Working Group suggestion

- **Use advanced satellite monitoring for measurement, reporting, and evaluation.** Technological capacity to monitor forests is no longer the barrier to international finance for forests and climate that it was in the 1990s when the Kyoto Protocol was negotiated. Funder countries can now enter into pay-for-performance agreements with forest countries that utilize simple, inexpensive satellite technology to meet operational needs for measurement, reporting, and verification.[46] As of 2014, thanks to scientists at the University of Maryland and elsewhere, anyone with a computer can freely download a global map showing areas of forest losses and gains the size of a baseball diamond every year from 2000 to 2012.[47] Forest monitoring has been instrumental to effective enforcement in Brazil and elsewhere. Brazil's success would not have been possible without a satellite program called Real Time System for Detection of Deforestation (DETER), which sends out alerts of where deforestation is occurring across the Amazon every two weeks. Now DETER-like data are available globally through Forest Monitoring for Action, a program that is part of Global Forest Watch (and was first developed by David Wheeler at CGD) that uses satellite data to generate regularly updated online maps and alerts of tropical forest clearing.

In 2009, the governments of Guyana and Norway signed an agreement that Guyana would keep its rate of deforestation at near-zero levels in exchange for up to US$250 million from Norway. Thanks to forest-monitoring technology, that agreement has been monitored and respected. Importantly, both Guyana and Norway agreed to keep monitoring simple and move quickly, rather than wait for technologies that could count every ton of carbon perfectly. And detailed guidance for forest countries on how to set up forest-monitoring systems is available.[48]

iv. Leakage and permanence.

There is some anxiety that reducing emissions in one place might just shift them to another location ("leakage") and that emissions avoided today might still take place at some time in the future ("permanence" or "reversal"). These concerns have been addressed in the climate negotiations and the solutions are included here to ensure awareness by a broad range of audiences who might not follow the negotiations closely.

Working Group suggestions

- **Move to larger scale—national, subnational or jurisdictional—programs.** The concerns about "leakage" can be addressed by designing results-based programs that operate at the scale of countries, states, or provinces, rather than site-specific projects. This is the approach required by the UNFCCC text on scale.[49] "Jurisdictional" approaches ensure that reduced deforestation covers large-scale geographies, avoiding the potential for leakage. The jurisdictional approach is being used in results-based partnerships being developed as part of the Governor's Climate Change Task Force between California and Acre, Brazil, or the REM program in Acre, and in the FCPF Carbon Fund. The work by states and provinces to develop jurisdictional programs is well advanced and is providing a blueprint for how such programs could work in future carbon markets.
- **Extend the term of the results-based agreement to keep funding flowing for the long term to address concerns about permanence.** Birdsall and Savedoff recommend five-year terms for performance-based contracts with options for renewal, similar to the approaches adopted in Norway's

agreements with Brazil and Guyana. In thinking about permanence or reversal, it is worth emphasizing that whether Brazil's lower rates of deforestation persist, its emissions reductions from 2004 to 2014 are just as real and permanent as reductions from any other sector. Just as if Brazil had cut its coal consumption by 80% over a decade, a large stock of carbon is left in the ground or in the forest where it might—or might not—be burned later.[50]

v. Environmental safeguards

Environmental safeguards reduce the risk of losing natural forests and biodiversity that may result from programs to reduce deforestation. Potential funders typically include conditions regarding fiduciary, environmental, and social safeguards in performance agreements. The concern is that, in response to the prospect of large payments, tropical forest countries and actors therein may take measures to achieve results that are detrimental to people or the environment. In forest performance agreement programs, donors usually require additional evidence (often with external or third-party verification) that the recipient has followed environmental rules and procedures acceptable to donors.

The concerns about social and environmental risks led to a lengthy process (2007–13) of negotiations to agree on safeguard principles for REDD+ in the international climate regime. During this time only Norway and Germany entered into actual performance-based agreements. The approach to managing safeguards in REDD+ under the UNFCCC was finalized with the agreement of the Warsaw Framework, the international rulebook for REDD+, in December 2013.[51]

The World Bank–managed FCPF Carbon Fund became operational in 2011, but took an additional 2.5 years of work to finalize a methodological framework (which includes criteria and indicators for safeguards) in 2013. Some programs, such as the Norway–Guyana program and the FCPF Carbon Fund, use financial intermediaries such as the World Bank or the Inter-American Development Bank largely to ensure that safeguards designed for conventional aid programs are followed.

Environmental safeguard standards and additional funder requirements have led to hesitation to fund performance programs and delays in designing performance agreements and transferring performance payments.

Working Group suggestions

- **Utilize satellite data to ensure compliance**. Consistent with the agreed-upon REDD+ rulebook, countries can soon rely on satellite data to monitor compliance with environmental safeguards (ensuring conservation of natural forests and biodiversity) in addition to measuring and verifying results:

  "Remote sensing can be, and has been, used to unambiguously distinguish long-lived natural forest cover from managed tree plantations, enabling monitoring of safeguards on conservation of natural forests and the ecosystem services they provide and the biodiversity they support. The increased availability and falling cost of high-resolution imagery enables accurate monitoring of the conversion of natural forests to managed plantations over larger areas, and can be used to implement biodiversity safeguards by detecting and characterizing the diversity of species (trees and indirectly animals) within forests."[52]
- **Rely on the forest country's own institutions and frameworks and stop payments if environmental standards are violated.** Funders can agree with recipients on broad environmental and social standards rather than imposing process steps. This was done in the Norway–Brazil agreement. Norway assessed the fiduciary and social and environmental standards and management systems of BNDES, the implementing agency that manages the Amazon Fund, and agreed that these would be used in the program to reduce emissions. Performance agreements are multi-year, paying for results against annual verification. By paying over time using ex post facto verification, funders can assure that safeguard standards have been respected. The performance agreements would reserve the right to suspend the agreement if violations of agreed-upon environmental and social standards should occur. This would allow funders to rely on and strengthen existing international agreements, protocols, and standards. Funders could also include a clause calling for repayment of the performance transfer if there are violations of environmental standards.
- **Require annual reporting of compliance with environmental and social standards.** As evidence of compliance with safeguards, funders can require the recipient to provide an annual report on compliance using their own safeguard information system format. The UNFCCC has finalized guidance for how to do this for environmental and social safeguards, in keeping with

national circumstances. Rely on reporting on the ground—for example, community monitors—to verify. The recipient should submit annual reports based on their normal internal and external monitoring systems to demonstrate whether they have complied with the agreed-upon standards. In the event of any failures to abide by these standards, the funder can reserve the right to suspend its agreement.

vi. Protecting the rights of indigenous peoples and local communities (social safeguards)

Legal and illegal exploitation of forest resources has in the past displaced indigenous peoples and other inhabitants or has restricted their access to or degraded the resource, with negative impacts on livelihoods. With insecure land-tenure rights, forest-dependent communities in some instances have been harmed by private interests who see business opportunities in the forest, often abetted by corrupt government officials. Government-sponsored forest protection efforts have also alienated indigenous communities from their customary forest territories. This has led to a concern that putting a value on the carbon in forests may further harm forest communities. Indigenous peoples issues have to some extent been "resolved" in the UNFCCC negotiations, with strong guidance about respect for the UN Declaration on the Rights of Indigenous Peoples. Nevertheless, there is concern that in performance agreements, government and private interests will have an incentive to ignore the rights of local communities in order to claim REDD+ revenues for themselves.

Working Group suggestions

- **Carefully assess potential alignment of interests between governments and indigenous peoples.** In contrast with traditional forest-sector investment projects, performance agreements provide forest country governments with an incentive to keep forests standing and intact. There is little evidence of significant harm caused by performance agreements to reduce deforestation and preliminary evidence from results-based programs suggests that impacts on local rights (land tenure) and livelihoods can be positive. However, there is some evidence of communities losing direct control over the resource in an area in Tanzania.[53] The alignment of incentives between forest governments and indigenous peoples to maintain forests eases the potential risk, particularly given evidence that indigenous peoples can be effective stewards of forests.[54] In fact, experience to date suggests that the political space opened by the REDD+ agenda has increased the bargaining power of indigenous groups. In Indonesia an important indigenous peoples organization says that attention to REDD+ and mapping efforts generated by the Indonesia–Norway letter of intent[55] got them a seat at the table with the government that they had not had before.[56]
- **Include benefits-sharing clauses.** Performance agreements can go beyond "do-no-harm" to include active programs that ensure indigenous peoples benefit. They can, as the Brazil–Norway and Guyana–Norway programs do, include requirements about benefits sharing of performance payments with local communities.
- **Engage in a dialogue with governments about land tenure and local control over management of the resource.** The example in Tanzania cited above involved the transfer of control and management of a mangrove forest from the local community to the national government. The report on compliance with social safeguards should examine tenure and resource-control provisions.
- **As with environmental safeguards, performance agreements can require transparent annual reporting and a review process to assess evidence that the rights of indigenous peoples and other local communities are being protected.** Funders can hold off transferring money to forest nations that don't provide such information or are not open to annual review. The information provided by forest countries can be audited by reputable third parties. Funders and recipient governments can provide venues for observers on the ground to report abuses on an ongoing basis as well as part of the annual review.
- **Support further research on the actual impact of results-based programs to reduce deforestation.**

vii. Offsets—Domestic versus international action

Environmental justice advocates object to offsets because big polluters are often located in poor communities. Allowing them to reduce carbon emissions elsewhere misses the opportunity for low-income communities to enjoy greater benefits from associated reductions in local air pollution.

Working Group suggestions

It should be recognized that, whereas restricting offsets to domestic action might speed the transition to a low-carbon energy sector in the home country, this would be at the expense of transition to a low-carbon land sector.

- **REDD+ doesn't have to mean offsets.** The UNFCCC convention recognizes emissions reductions from carbon markets as well as direct transfers. It is possible to reward forest countries for reducing deforestation without carbon markets and without offsets. This is what happens in the various Norwegian partnerships.[57] In the international climate negotiations, the government of Brazil has opposed allowing rich countries to buy international offsets rather than reducing their own emissions. Norway's offer to provide funds that reward performance without generating offsets made it possible for Brazil to accept the agreement with Norway because it respected its negotiating position and its sovereignty. An important consequence of the Brazil–Norway agreement was to demonstrate an approach to performance-based international cooperation on forests that doesn't rely on offsets.
- **Regulators can and do limit the use of offsets.** To address concerns about insufficient action at home, regulators can apply a quota to offsets, stipulating the share of emissions reductions to be made at home, regardless of cost. In most cap-and-trade programs, the amount of offsets is limited: in California's cap-and-trade program[58] only 4–8% of emissions reductions can come from offsets at all (including domestic) and international sector-based offsets would represent, at most, 2% of total compliance obligations in the first compliance period and a maximum of 4% in the second and third compliance periods. International offset credits (such as those under the Clean Development Mechanism) in the EU's Emission Trading Scheme are allowed, but they need to be located in a least-developed country, limiting the scope for these credits. The Waxman-Markey bill that passed the US House of Representatives but failed in the Senate would have allowed only up to 1.0–1.5 billion tons of carbon dioxide per year to be achieved through offsets.
- **Pair offsets with more ambitious emissions reduction targets.** To allay the fear that offsets allow rich countries to "buy their way out" of their obligations, access to offsets could be paired with more ambitious climate targets in rich countries ("buying their way up"). The prospect of cost containment from REDD+ offsets led the US House of Representatives to pass a more ambitious climate bill in 2009 than it otherwise would have. Governments making commitments are highly cognizant of what climate bills will cost, so cheaper cuts and deeper commitments are a natural package.
- **Partial offsetting.** Companies that seek to use offsets would be required to purchase more emissions reductions than they actually use (like a "Baker's Dozen"[59]), sometimes referred to as buying offsets at a discount (also called partial offsetting). The Waxman-Markey bill would have required companies to buy and set aside 1 ton of emissions reductions for every 4 tons of emissions purchased and used as offsets. This approach would result in more global emissions reductions than would have occurred by just reducing emissions at home.
- **Strengthen enforcement and publish data on local pollution.** To address the understandable concern that low-income communities experience higher levels of exposure to dangerous levels of toxic pollutants that may accompany carbon emissions, regulators should ensure that companies purchasing offsets fully comply with standards for local air pollution. Government action may be needed to determine whether local pollution standards are too low or enforcement is not effective. But it would be inefficient to use a policy tool aimed at lowering global carbon emissions to address a local pollution issue. Publishing data on compliance performance with regulations governing local pollutants in the context of establishing eligibility for carbon offsets can bring greater attention to the issue.

viii. Double counting: "shared tons."

"Double counting" refers to a situation where a funder country and a recipient country both claim credit for the same ton of emissions reduction in a partnership program in which both contribute to the result. Confusion may surround the generation of "shared tons" of emissions reductions.

Working Group suggestion

- **Develop transparent registries that cover multiple sectors.** This would ensure that a ton of emission reduction is

only recorded once and that there is no "double counting." The FCPF Carbon Fund has guidance on data management and emissions reduction transaction registries in its methodological framework and is working on good practice guidance in cooperation with the Partnership for Market Readiness and others. Alternatively, funders and recipients could agree on a shared percentage of tons when negotiating the performance payment contract.

D. Generate new funding for performance-based transfers to reduce deforestation

The supply of public funding to reduce deforestation is limited by fiscal austerity in funder countries and competing priorities for ODA funding. The biggest tropical forest countries are middle-income countries, and many donors prioritize ODA resources for the poorest countries. Creative approaches can expand the impact of scarce ODA funding, generate new sources of funding for global public goods, and leverage private funding:

i. Support efforts to include international forest offsets in voluntary and compliance carbon market programs.

California has legislation allowing REDD+ international forest offsets and is in the process of finalizing implementing rules and regulations. California's program is linked with Quebec, intends to link with Ontario, and is looking to link with other subnational governments. They are discussing linking California's cap-and-trade program with Mexico, which has introduced a carbon tax.[60] The International Civil Aviation Organization is discussing a global market based mechanism to offset about 17 gigatons of carbon between 2020 and 2050, and this may include international forest offsets.

The Governors' Climate & Forests Task Force, a subnational collaboration of 22 states and provinces, is on the front lines of the effort to develop performance-based programs to reduce tropical deforestation. They are actively building jurisdictional strategies and programs to reduce deforestation and are looking for opportunities to channel performance-based funds to producers, foresters, farmers, ranchers, indigenous peoples, local communities, and other forest stakeholders.

ii. Ensure that REDD+ funding through the Green Climate Fund (GCF) is in proportion to forests' potential role in reducing emissions, pays for results, and encourages results-based approaches, not just capacity-building projects.

With forests accounting for 24–30% of mitigation potential (as well as significant adaptation potential), it would be reasonable to consider that global funding to reduce deforestation should be at least US$12–16 billion a year.[61] A recent CGD publication also shows that reducing deforestation can account for about 38% of low-cost emissions reductions from developing countries (and 52% if China is excluded).[62] With the GCF's current level of pledged funding totaling US$10.2 billion,[63] the GCF should commit US$1.2–1.5 billion to forests in the next few years.[64] Since other funds such as the Global Environmental Facility, the Forest Investment Program, and the FCPF Readiness Fund already provide upfront capacity-strengthening investments, the GCF has the unique opportunity to distinguish itself by piloting results-based approaches in REDD+ programs in the mitigation window. However as stated above, the amount of funds available for REDD+ will be limited. With this in mind, the GCF should allocate funding based on the scale of potential results and the cost per ton of achieving results. Nothing precludes the use of results-based approaches at the GCF for results that are defined as outputs. But to be truly innovative and make a big difference with results-based approaches, the GCF would need to change its existing focus on accreditation and pre-planning and design programs that pay countries for reduced green-house gas emissions.[65] The GCF will be able to provide financial incentives necessary for performance-based approaches to a limited number of jurisdictions and countries. If the GCF adopts an approach similar to the Guyana–Norway incentive structure, it would realistically have to limit itself to funding five to six agreements.

iii. Establish a committed payment facility to reduce deforestation

Donors should establish a mechanism that tests the potential to use "pure" payment for results to reduce deforestation, avoiding the grafting of ODA practices onto pay-for-performance programs. This can be done by entering into contracts with tropical forest countries in which funders agree to pay them for reducing deforestation.

The facility should make payments up to US$5 billion a year (for example, US$5 per ton, up to 1 gigaton), for, say, 15 years. Funders would be free to make commitments to the facility in any way they want—with contracts, pledges, promissory notes, or cash deposits.

The facility would negotiate legally binding commitments with individual forest countries. The facility's liabilities—the obligations to pay forest countries for reduced deforestation against agreed baselines and with verified results from satellite monitoring—would be underwritten by an intermediary such as the GCF or the International Bank for Reconstruction and Development (IBRD).

Donor countries and forest countries could share the political credit and tons for these reductions in a simple, transparent registry system. Payments would be made conditional on performance on deforestation, with no restrictions on how the forest countries achieve the results or use the resulting revenues.

The proposed facility would be a pure-form performance-based instrument. Funders would only have to disburse funds, to reimburse IBRD/GCF, if forest countries met their target for reduced deforestation. If forest countries fail to reduce deforestation, funders would not need to disburse funds.

This arrangement would eliminate the problem of delays in disbursements to forest countries once they achieve their results. The GCF or IBRD would disburse against the demonstrated result and then collect from the funder. The funder would not have to commit funds in advance; the pledge is not contractual because they are contingent, not certain. If the funder reneges, it would damage IBRD (and risk the wrath of the other members of the cooperative). See Annex 5 for more details.

iv. Create new public–private partnerships, such as a Forest Foundation Fund.

The Forest Foundation Fund would be an endowment-like fund, funded in advanced economy governments' money markets by extending public bank deposit insurance (for example, the Federal Deposit Insurance Corporation in the United States) to cover deposits that would fund an endowment-like portfolio of higher risk and higher return assets. The fund would generate long-term investment returns that would accrue to qualifying tropical forest nations based on performance. These returns would compensate them for stopping and reversing deforestation and other forms of land-use degradation that contribute to global climate change. See Annex 6 for full details.

Chapter V

Conclusion: Just do it

Whether or not the international climate negotiations lead to the emergence of a global carbon market that includes international offsets for tropical forests, advanced economy countries should increase performance-based transfers to forest countries to reduce deforestation in recognition of the global public good that tropical forest countries provide in protecting their forests. Before the commitments agreed to in Paris become effective in 2020, the next five years should be used to pilot and build a body of experience with pay-for-performance transfers to reduce deforestation. Lessons can be learned from ongoing performance-based programs in several tropical forest countries. Future agreements should build on the progress that has been made in the international climate negotiations and the availability of advanced technologies to monitor and manage risks.

Annex 1

Emissions trading systems and international forest offsets

	BUYER OF CREDIT	DOES SYSTEM ALLOW FOR INTERNATIONAL OFFSETS?	DOES SYSTEM ALLOW OFFSETS FOR INTERNATIONAL FORESTS?	SOURCE
CAP-AND-TRADE SYSTEMS IN OPERATION	Alberta—2007 Specified Gas Emitters Regulation	no decision	n/a	International Emissions Trading Association (IETA)
	Australia Carbon Pricing Mechanism	yes	no	International Forum on Forests (IFF)
	California Cap-and-Trade Program	yes, but only a limited share of firm's compliance can be fulfilled with international offsets	not yet, but implementing regulations under development	IFF and IETA
	EU Emissions Trading Scheme	yes	no	IFF
	New Zealand Emission Trading Scheme	yes	no	IFF
	Norwegian ETS	yes	no	IETA
	Quebec Cap-and-Trade Scheme	yes	consistent with California, so possible	IFF
	Regional Greenhouse Gas Initiative US (power plants in Northeast and mid-Atlantic)	no decision	n/a	IFF
	Swiss ETS (covers large-scale industry and is linked to EU ETS and subject to same regulations	yes	no	IFF
	Tokyo and Saitama—subnational system in Japan	no decision	n/a	IFF
PLANNED CAP-AND-TRADE SYSTEMS	Brazil Emission Reductions Market (no start date yet)	not yet clear	possible but not yet clear	IFF
	China ETS Pilot in seven cities (established in 12th Five Year Plan)	no decision yet, but considered unlikely	n/a	IFF and IETA
	Costa Rica—plans to develop ETS but no details yet	not yet clear	not yet clear	IFF
	India piloting an emissions trading system in Tamil Nadu, Gujarat, and Maharashtra to reduce particulate emissions	not yet clear	not yet clear	IETA
	Indonesia—considering voluntary ETS	not yet clear	not yet clear	IFF
	Japanese Government currently considering national ETS	under consideration	under consideration	IFF
	Kazakhstan ETS—in pilot stage since 2013, set to launch in 2015	possible in statute, but contingent on Kazakhstan's future inclusion in Annex B of Kyoto Protocol		IETA
	Mexico—2012 General Climate Change Law creates possibility for ETS, but no plans announced yet	not yet clear	not yet clear	
	South Korea mandatory ETS (does not start until 2015)	not until 2020	n/a	IFF

Annex 2

REDD+ performance-based payment programs compared

	GUYANA REDD+ INVESTMENT FUND (GRIF)	FOREST CARBON PARTNERSHIP FACILITY'S (FCPF) CARBON FUND	NORWAY–INDONESIA PARTNERSHIP	AMAZON FUND	GERMANY'S REDD+ EARLY MOVERS PROGRAM (REM)	BIOCARBON INITIATIVE FOR SUSTAINABLE FOREST LANDSCAPES	PERU–GERMANY–NORWAY PARTNERSHIP	NORWAY–LIBERIA PARTNERSHIP
FINANCIAL PLEDGE	US$250 million	US$470 million	US$1 billion	US$1.03 billion	US$71 million	US$357 million	US$300 million	US$150 million
FINANCE-TYPE FUNDERS	Public–Bilateral Funders: Norway	Public and Private–Multilateral Funders: United Kingdom, European Union, Australia, Canada, Germany, Norway, Switzerland, United States, BP Technology Ventures Inc, CDC Climat, and The Nature Conservancy Managed by World Bank	Public–Bilateral Funders: Norway	Public and Private–Multilateral Funders: Norway, Germany, and Petróleo Brasileiro S.A. (Petrobras) Managed by Brazilian Development Bank (BNDES)	Public–Bilateral Funders: Germany, Norway	Public–Bilateral Funders: Norway, United Kingdom, and United States	Public–Multilateral Funders: Norway, Germany	Public–Bilateral Funders: Norway
SCALE	Jurisdictional	National and jurisdictional	Jurisdictional	Regional and project level	National and jurisdictional	Jurisdictional	National	National
GEOGRAPHICAL SCOPE	Guyana	Only countries already registered with the FCPF and at determined level of REDD+ readiness	Indonesia	Amazon basin: 80% of resources targeting Brazilian Amazon. Up to 20% of resources may be directed to other biomes in Brazil and other tropical countries.	Global	State of Oromia in Ethiopia is first jurisdiction. Orinoquia region in Colombia and Eastern Province in Zambia have been identified as jurisdictions for imple-mentation.	Peru	Liberia

	GUYANA REDD+ INVESTMENT FUND (GRIF)	FOREST CARBON PARTNERSHIP FACILITY'S (FCPF) CARBON FUND	NORWAY–INDONESIA PARTNERSHIP	AMAZON FUND	GERMANY'S REDD+ EARLY MOVERS PROGRAM (REM)	BIOCARBON INITIATIVE FOR SUSTAINABLE FOREST LANDSCAPES	PERU–GERMANY–NORWAY PARTNERSHIP	NORWAY–LIBERIA PARTNERSHIP
ACTIVITY SCOPE	Only reduced emissions from deforestation at the start. Other REDD+ activities could be addressed in the future.	Full scope of REDD+	80% of funds are dedicated to verified emissions reductions from deforestation, forest degradation, or peatland conversion. Some institutional and capacity-building activities will be supported with 20% of the finance.	REDD+, sustainable forest management, management of public forests/ protected areas, environmental inspection, economic activities based on sustainable forest use, zoning and land use, conservation, recovery of deforested areas. Other capacity-building activities are funded by the Amazon Fund that do not directly create emissions reductions.	Primarily verified emissions reductions from deforestation (scope for inclusion of reduced degradation when MRV systems mature).	Potential activities for support include small-scale plantation farming, sustainable forest management, afforestation and reforestation, regeneration, National Park designation/ no-deforestation zoning, agroforestry, and sustainable agricultural practices.	Three phases (preparation, transformation, and contributions for verified emission reductions), with at least $250 million dedicated to Phase III.	Up to US$70 million towards policy measures and institutional building in initial years; an addition US$80 million for verified reduced emissions in the period toward 2020.
REFERENCE LEVEL	Based on Guyana's historical deforestation rates for 2000–09 (0.03%) plus the global average deforestation rate of 0.52% from 2005 to 2010. Reference level set at 0.275%. Guyana receives less compensation if deforestation rate rises above 0.056%, and none if rate rises above 0.1%.	Geo-referenced and nested. Adjustments from historical average are allowed only for programs within high forest, low deforestation countries. Public consultation and peer review are required in the approval process for a reference level.	Based on either United Nations Framework Convention on Climate Change (UNFCCC) level or domestically according to Indonesia's emissions reductions pledges and UNFCCC methodological guidance.	Based on a historical reference level; that is, average deforestation, over past 10 years, and updated every five years. The emission factor (lost carbon per ha) is set to 100tC/ha, with a payment of US$5/ tCO_2.	Based on historical reference level (i.e., average deforestation of past 10–12 years). Based on proxy indicators, and conservative estimates of forest carbon, in accordance to UNFCCC and IPCCC guidance.	Not yet implemented. The pilot project in Ethiopia has agreed to begin with a simple measuring, reporting, and verification (MRV) approach based on historic deforestation rates and then elaborate as capacity is built in implementing agencies over time and has established initial performance targets.	As part of Phase 1, a reference level will be determined based on "participatory process and robust and conservative approach, consistent with UNFCCC."	To be determined by December 2015; to be based on historical analysis of emissions and using methodology consistent with MRV system.

	GUYANA REDD+ INVESTMENT FUND (GRIF)	FOREST CARBON PARTNERSHIP FACILITY'S (FCPF) CARBON FUND	NORWAY–INDONESIA PARTNERSHIP	AMAZON FUND	GERMANY'S REDD+ EARLY MOVERS PROGRAM (REM)	BIOCARBON INITIATIVE FOR SUSTAINABLE FOREST LANDSCAPES	PERU–GERMANY–NORWAY PARTNERSHIP	NORWAY–LIBERIA PARTNERSHIP
LEAKAGE	A national land-use planning system is to be developed to avoid leakage. Leakage is captured in the national accounting system.	Both international and domestic leakage potential must be assessed. In the MRV system, only domestic leakage has to be counted.	Unknown	Not specifically addressed. It is unclear whether BNDES requires leakage management from projects.	Risk management mechanism through retirement of additional ERs. Reporting requirements on leakage risk for subnational ER programs.	Unknown	Unknown	Unknown
FUNDER PAYMENTS	Initial payment on signing administrative agreement in 2009, then annually on request from the World Bank (trustee). Annual payments based on projected 12 months of projects and admin costs. Total is determined by results and emissions avoided.	Payments made on delivery of the emission reductions that have been independently verified. Some upfront payments may be possible subject to conditions still to be established.	US$200 million to be paid as "contribution-for-delivery" of initial preparation and transformative activities (Phases I and II agreed to in the letter of intent). US$800 million to be paid as a "contribution-for-verified-emissions-reduction" during the final third phase of the partnership.	Initially, payments were made on written requests from fund manager BNDES based on the financial needs of fund and levels of emissions reductions attested to by the technical committee. Currently made in one or more installments based on donor's agreement.	Payments solely on verified emissions reductions. REM also has a technical cooperation component for targeted support for elements needed to set up results-based finance system (e.g., registry, safeguards, MRV issues).	Payments expected when programs produce a defined result. The fund could also deploy results-based finance to incentivize policy changes in emerging markets that would advance the sustainable land-management agenda.	Payments for verified emissions reductions will be made annually based on verified national emissions. Peru will initially receive technical support from the Inter-American Development Bank to develop the financial mechanism.	Payments will initially flow through World Bank Liberia REDD+ Investment Program. Payments for verified emissions reductions will be made annually based on national emissions.
MONITORING AND VERIFICATION	Guyana and Norway issued a Joint Concept Note on MRV, and Guyana developed a roadmap for installing a comprehensive national MRV system, including interim progress indicators.	Stepwise approach to a comprehensive system for conservatively measuring and reporting changes in deforestation, degradation, conservation, and forest enhancement plus co-benefits, benefit sharing, and safeguards. Local communities, private sector, and others should be involved in implementation and verification of results.	Independent institution to conduct MRV created in Phase I, and Phase II is planned to implement a countrywide MRV system.	Monitoring by Serviço Florestal Brasileiro/ Ministry of the Environment (SFB/MMA) (Brazilian Forest Service) and INPE (Brazilian National Institute of Space Research). Results are independently audited.	Performance measured using proxy indicators—primarily the IPCC's conservative estimates of the carbon content of forest ecosystems or country-specific targets plus conservative assumptions about the CO_2 price per ton for paying for emissions reductions.	Unknown	Peru will publish a Technical Memorandum that will include relevant institutional responsibility for monitoring and verification.	Letter of intent includes immediate actions on MRV (including composing overall strategy for an MRV system and establishing arrangements with Global Forest Watch and other institutions) and 2015–17 priorities, including development and finalization of MRV roadmap, conforming with IPCC Tier 2.

	GUYANA REDD+ INVESTMENT FUND (GRIF)	FOREST CARBON PARTNERSHIP FACILITY'S (FCPF) CARBON FUND	NORWAY–INDONESIA PARTNERSHIP	AMAZON FUND	GERMANY'S REDD+ EARLY MOVERS PROGRAM (REM)	BIOCARBON INITIATIVE FOR SUSTAINABLE FOREST LANDSCAPES	PERU–GERMANY–NORWAY PARTNERSHIP	NORWAY–LIBERIA PARTNERSHIP
EXAMPLE PROGRAM OR PROJECT	Fast-tracking the Amerindian land titling process. The project seeks to (a) issue titles for all Amerindian villages that submit requests, (b) strengthen existing mechanisms to deal with unresolved land issues, and (c) improve Ministry of Amerindian Affairs outreach.	Costa Rica is the first country to be endorsed. 29.5 million tons of CO_2 emissions reductions for which the Carbon Fund is expected to pay US$63 million (based on a price of US$5 per ton of CO_2).	Pilot project in central Kalimantan province.	Supporting the state of Amapá to increase technical knowledge on production/extraction of açaï berries, wood, and Brazil nuts; improve land-use planning; and develop instruments for REDD+ implementation. Of its current projects, 26% are sustainable production, 48% monitoring and control, 12% land-use planning, and 14% are scientific and technological development.	REM has already agreed to spend around €25 million for results-based payments for emissions reductions at 5 USD/tCO_2. So far, €20 million have been disbursed.	The Oromia REDD+ Program in Ethiopia will promote cross-sectoral investments in the area of forests, agriculture, livestock, and biomass energy.	N/A	N/A. Contributions for verified emission reductions will support Liberia's "green economic growth."
REPORTED LESSONS AND CHALLENGES	Some performance indicators considered vague and insufficiently defined. Early concern that scope was "outside the forest," for example creating low-carbon jobs in urban centers. The Guyanese government has reported slow payments and severe budgetary cuts applied by the parliamentary opposition (which cut GRIF project budget by 95% in 2013), which is hampering progress.	The carbon price for emissions reductions is not fixed and eventual pricing will take into consideration other factors.	Some performance indicators are too vague and have led to negotiations on the exact meaning, for example, what are "natural forests" in the context of Indonesia's moratorium?	Initial reference level based on deforestation rate for 1996–2005. Brazil should have been paid US$2 billion per year for the five-year period (2009–13) equivalent to 10 times the promised amount. Amazon Fund has therefore been criticized for not being able to financially pay on the basis of actual emissions reduced. Amazon Fund has identified that the establishment of a participative system of governance, good standards of transparency, and a constant dialogue with civil society were crucial and that the development of a forest economy on a sustainable basis has been a challenge.	Unknown	Unknown	Unknown	Delays have been seen as initial funding has been held in escrow account during development of concept note, which has taken over nine months

Source: Adapted from Norman and Nakhooda (2014).

Annex 3

The promise of dual commitments: International mitigation partnerships

To reduce climate pollution enough to avoid the worst impacts of global warming, nations must exceed self-financed, unilateral pollution reduction targets. Countries need to make additional commitments about what more can be done by working together.

The domestic emissions cuts that countries are expected to pledge unilaterally by the time of the Paris Agreement will not deliver the emission reductions needed through 2030 to avoid catastrophic impacts of climate change. In the most optimistic scenario, we can get about halfway there (see Figure A3.1).

Our analysis of the Paris process shows that you can get about halfway there just with what countries are likely to pledge as self-funded action within their borders—and that's not bad. But the math makes clear that this is not enough. If the world can find a way to truly work together, the potential for progress is enormous.

The opportunity in the developing world

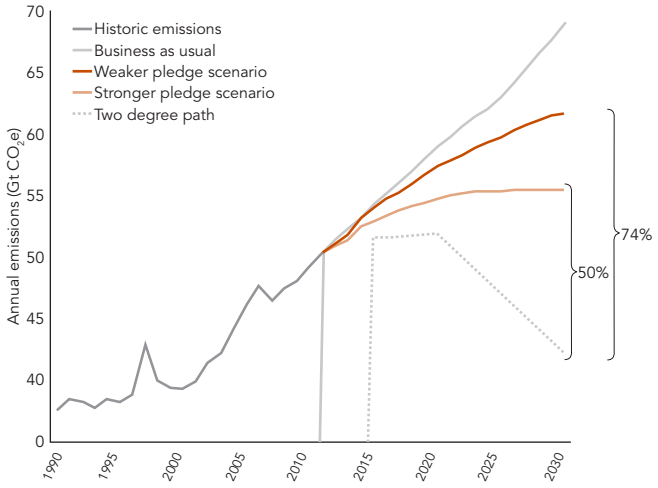
The majority of growth in future emissions is expected to come from poor and emerging economies. The geography of opportunity aligns poorly with the geography of capacity to act. While all nations should reduce emissions, one cannot expect developing nations to do much more than their fair share.

But many developing countries are prepared to take ambitious self-financed actions, and many have signaled a willingness to do even more in the context of international incentive payments. The opportunity is enormous. Many developing nations—from Colombia to India and Indonesia—have an abundance of low-cost opportunities to cut climate pollution. Since 2005, for example, Brazil alone has cut more carbon pollution than the entire EU by reducing deforestation in the Amazon.

Under a dual commitments approach (see Figure A3.2), a developing country determines how many additional tons can be reduced, above and beyond its self-funded commitment, with international partnerships. Massive forest conservation and restoration on a global scale holds great promise to reduce emissions, as does building low-carbon cities, factories, and power plants across the developing world.

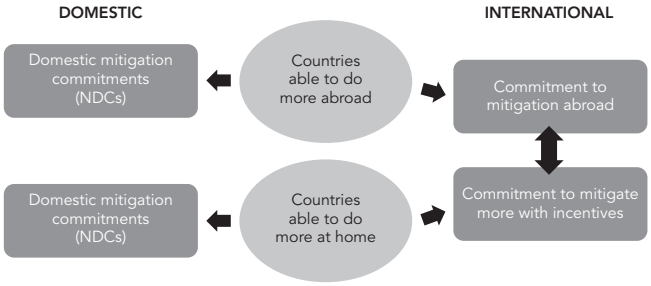
The EU, the United States, and Japan should each pledge to enter into bilateral and multilateral partnerships to reduce at least 1 billion tons of carbon dioxide a year after 2020 outside their borders,

Figure A3.1 Expected Paris Agreement mitigation gap (with INDCs)



Source: Climate Advisers, 2015 forthcoming.

Figure A3.2 Dual commitments



Source: Climate Advisers, 2015 forthcoming.

on top of their domestic actions. This would create a race to the top among developing countries, mobilize finance for results, and start a process to close the global mitigation gap.

Dual commitments and global climate politics

Leading developing countries

Ambitious developing countries—in particular forest countries—are ready to lead. Through the "Lima Challenge,"14 countries pledged to come forward with ambitious climate goals, and to do more with financial incentives.

Europe

The EU is divided. After long negotiations, member countries agreed to reduce "at least 40% domestically" by 2030. 14 countries representing 80% of the EU's GDP want to go further. An international mitigation commitment could be construed to allow these countries to lead. As host of the G7, Germany is in a unique position to create a coalition of major economies to join forces.

The United States

Faced with an obstructionist Congress, President Obama is seeking to maximize climate ambition through executive authority. He cannot pledge money without Congress, but has the authority to make an international mitigation pledge, using his foreign policy powers and other existing legal authorities.

Japan

Prime Minister Abe is looking for new ways to lead on climate change internationally following the Fukushima nuclear disaster, which has made reducing emissions at home more difficult and uncertain. International mitigation could offer a way to increase ambition while preserving flexibility around the nuclear share of Japan's energy mix.

Poor and vulnerable nations

Currently, vulnerable African and island nations are ambivalent about the emerging Paris agreement because it may not do enough to reduce climate pollution or spur economic investment in those nations. Strong pledges from developed nations to reduce climate pollution outside their borders would address some of their concerns and help seal an ambitious climate deal in Paris.

Annex 4

Development impact bonds to reduce deforestation

Performance-based payment mechanisms can be applied in different ways. One of the most innovative business models is the Development Impact Bond (DIB). Based on the model of social impact bonds, which have been launched in the United Kingdom, the United States, and other industrialized countries, DIBs bring together private investors, governments, development agencies, and nonprofit/private service delivery organizations to focus on achieving a social outcome.

The basic model of a DIB is that private investors provide advance payments for NGOs or local service providers to implement interventions that are expected to lead to a development outcome. An outcomes funder—typically a development agency, potentially with a partner government—makes payments in installments to investors if the interventions succeed, with returns linked to progress achieved. Outcomes are independently verified to ensure that all sides are confident that the results have been achieved. DIBs are a way to shift incentives and accountability to results and increase the effectiveness of program implementation. The more flexible source of pre-financing is expected to give implementing organizations more space to innovate and adapt their approaches to reflect learning on the ground.

A DIB could help to address the gap in financing to promote forest conservation by attracting socially motivated investors and ensuring that public funding is only used to pay for what works. First, all partners would have to agree to a clear definition of a mutually desired outcome, such as a reduction in deforestation by a certain percentage rate in a specific location. Investors would provide the financing for forest conservation projects; this financing could be used, for example, to fund community forest monitoring projects, improved land registries of forested areas, or the development of economic activities from the sustainable use of forests.

An independent evaluator would verify all reported results, and outcome funders would pay for each unit of progress toward the goal—that is, each measurable reduction in deforestation associated with the projects. Outcome payments would be channeled back to investors, with greater reductions in deforestation translating to greater returns, up to a cap. Outcomes funders could be donor governments who want to support forest conservation in partnership with national or local governments who could use the model to create incentives for local authorities, communities, or private delivery organizations to improve local management and conservation of forests. In any case, the outcomes funder would be confident that funds have only been used to pay for what works, because payments back to investors would be linked directly to verified outcomes.

Annex 5

A committed payment facility to combat deforestation

Paying forest countries to protect their forests creates an incentive to protect an essential global public good. Results-based financing schemes for forests already exist, and some are effective at addressing deforestation and degradation. But they are characterized by burdensome qualification protocols and onerous conditionality on how countries use the payments they receive, which makes such schemes difficult to implement and ultimately unattractive for forest country governments. We propose a "committed payment facility" to scale up and institutionalize the elements of models that work best. This proposal calls for a results-focused financing mechanism that will reward forest countries based on mutually agreed, transparently measured satellite data on forest coverage. Payments could be awarded for tackling deforestation, producing lower carbon emissions, or both. The forest facility gives donors, corporations, and institutional investors an impactful investing mandate, and gives high-net-worth individuals a clear path to pay for verifiable results while minimizing the burden on forest country counterparties.

Opportunity

Forest loss is symptomatic of market failure: we earn private returns from logging and clearing land for agriculture, but the costs in terms of less biodiversity and higher carbon emissions are public. As a result of this gap between private returns and social costs, forest loss is a growing cause of man-caused climate change. Logging and clearing forests releases carbon dioxide, and clearing early-growth forests also prevents them from sequestering future emissions.

We set out how a results-based "committed payment facility" can fix this market failure, delivering a trifecta of slower deforestation, better outcomes per development dollar, and valuable resource payments to resource-constrained forest country governments. Funders—including high-net-worth individuals, corporations, institutional investors with social impact mandates, and donors—can limit a major source of carbon emissions and protect valuable biodiversity by paying countries to preserve their forests.

Several programs, including the Forest Carbon Partnership Facility's Carbon Fund, are already in place and theoretically reward countries for progress in preventing deforestation. However, these programs subject payments to forest countries to financial, procurement, environmental, and social regulations, public consultation protocols and processes, and requirements to commit to how funds will be used if they are paid out. These requirements make these schemes cumbersome to operate, costly to comply with, and unattractive to forest countries.

Because of these and other constraints, results-based financing for forests totals less than US$1 billion annually. We estimate that paying to protect forests to reduce carbon emissions in the fourteen "Lima Challenge" forest countries would cost around US$5 billion annually and close a third of the gap between current emissions forecasts and the level of emissions we can afford to meet the 2C goal. This funding gap and the urgency of tamping down global carbon emissions requires a compelling proposition to funders to encourage a rapid ramp-up in results-based funding envelopes.

The committed payment facility's institutional innovation is to act as a single-purpose, results-focused mechanism that rewards forest countries for preventing degradation and deforestation based on transparent, mutually agreed on, and objectively verifiable criteria. Payments would be earned on the basis of changes in forest coverage measured from satellite data and can be targeted on either tons of carbon dioxide or hectares of forest, depending on whether the facility's focus is on preventing emissions or deforestation.

Operated by but legally distinct from the IBRD, GCF, or a similar institution, the facility would operate as a single-purpose channel to facilitate payments to forest countries for preventing forest loss. (Funders can report their contributions as ODA.)

This makes the committed payment facility a more compelling proposition for forest country governments. It gives funders a clear pathway to paying for results (if results are not achieved, funders get their money back), it secures good outcomes overseas and political support for effective development spending at home, and it provides

a clear break between climate finance and excessive, burdensome conditionality attached to traditional aid programs.

Mechanism

The committed payment facility will differ in crucial ways from any existing or planned programs to pay for results in deforestation. It will be a results-focused mechanism for fixing the market failure driving high rates of deforestation, keeping administrative costs for both the fund and its counterparties low by avoiding the qualification conditions and conditionality on payments that make other forest programs difficult to implement for donors and unattractive to developing country governments.

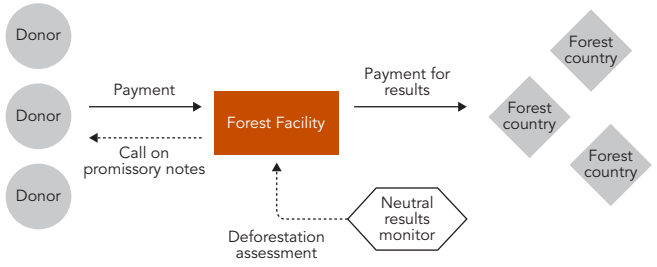
It will operate by entering into contracts with forest countries. These contracts will stipulate the payment to be awarded to forest countries for mutually agreed on, transparently measured performance in deforestation prevention. The facility will pay out to these countries based on objective, third-party assessments of satellite data on annual changes in forest coverage and on mutually agreed upon prices, disbursement terms, and baseline levels.

Safeguards

Contracts will require forest countries to adhere to carefully structured safeguards to protect human rights; if these safeguard clauses are violated, forest countries will forfeit their rights to payments from the facility.

In particular, the facility's contracts will only oblige forest countries to adhere to the seven REDD+ safeguard principles agreed to in Cancún, Mexico, without attaching additional requirements or "pre-qualification" hurdles.

Figure A5.1 Payment and outcomes relationships



Enforcement of these principles will be built into contracts through an arbitration clause: in case the forest country is perceived to have violated its commitment to honor the principles, an aggrieved party can trigger an arbitration process administered by the institution housing the forest facility. Unlike existing programs, contracts will not include onerous conditions to produce plans and strategies, put excessively specific safeguards in place, go through qualification periods, or other administrative burdens.

Financing structure

The facility translates financing commitments from high-net-worth individuals, corporations, and donors into contingent payments to forest countries.

Because it pays out only for results, a typical trust fund or other upfront payment scheme would be unattractive for most donors, since it would imply lodging funds "in advance of need"—before they may be disbursed. In addition, the contracts to pay forest countries on the basis of results achieved are contingent liabilities, so the facility needs to have underlying assets in order to enter into these contracts—if not, it would be insolvent at the moment the contracts were agreed.

To solve this, donors can commit to the fund using promissory notes, which function as cash-equivalent promises to pay a nominal amount. They are debited from the donor's account when they are issued, but only trigger a flow of funds from that account to the forest facility when the facility calls the promissory note. This financing arrangement also eliminates the problem of delays in disbursements to forest countries once they achieve their results. Using promissory notes to support the facility carries the valuable public finance benefit of not paying in full immediately for uncertain future disbursements.

The facility would call promissory notes from donors, and allocate the resulting flow to forest countries as and when agreed results are verified. After an agreed-upon period—say, 25 years—the facility will wind down, and any undrawn commitments returned to donors.

ODA scoring and commitments to the GCF

Donors are eager to score spending as foreign aid. The promissory note feature of our structure will allow donors to score their

spending immediately, regardless of when they are disbursed by the forest facility. In addition, if the forest facility were to be housed within the GCF, payments and payment commitments in the form of promissory notes could contribute to a donor's pledge to fund the GCF, which has a target to raise US$100 billion per year by 2020 and to which several donor countries have already pledged specific amounts.

Effect on climate change and value for money

Tackling deforestation by fixing this market failure represents very high value for money. The current reference price for a ton of carbon dioxide is US$5 (the price used by the Amazon Fund, the FCPF Carbon Fund, and in an agreement between Guyana and Norway). At this price, the cost of paying Lima Challenge countries to close the gap between the pledges at Paris and the target 2C scenario implies payments of US$4.8 billion per year. The price may rise in the future (a good thing) and the amounts needed would rise accordingly.

Performance of a results-based facility compared to existing agreements

Paying forest countries for their performance in reducing, or avoiding, deforestation should be simple and straightforward. But it is not.

Mobilizing funding from private companies has not advanced because relatively few companies, on a global basis, are subject to greenhouse gas emission limits. Those that are—in the EU, California, and a handful of other jurisdictions—cannot buy emissions reductions from forest countries because carbon-trading systems do not include emissions reductions from tropical forests.

Similarly, while public funders in industrial countries have promoted the idea of disbursing funds in relation to the achievement of results, in practice they have generally funded the delivery of physical outputs or the enactment of new legislation without incentivizing the behavior that the legislation seeks to encourage.

The few bilateral and multilateral programs that are able to pay for results in reducing deforestation have onerous oversight and management requirements. These mechanisms have proven to be ineffective at disbursing money. Even when a forest country delivers the agreed-upon result, the transfer of funds is impeded by conditionality about how the funds can be used.

Finally, funding for forest countries to combat deforestation that is not linked to results, and some results-based programs like the FCPF Carbon Fund, are frequently subject to a gamut of financial, procurement, environmental, and social safeguards; public consultation protocols and processes; and requirements to commit to how funds will be used (benefits-sharing plans), all of which make these schemes cumbersome and costly for forest country governments.

Political propositions

The facility builds political support by only paying out for positive results

The forest facility would be a performance-based instrument. If forest countries fail to reduce deforestation, donors would not need to disburse funds, securing political support at home for paying out for good results rather than failed programs.

By paying only for results, the fund carries a lower expected cost for donors

The facility's payments depend on forest countries meeting pre-agreed-upon targets; since this is less certain, the expected cost of the payments is lower than their nominal cost. In practice, this means that donors will be able to pledge larger amounts to such a facility than they could to the FCPF or other facilities of the GCF that disburse certain payments irrespective of results.

The mechanism is attractive to forest countries because it is transparent and fair

Avoiding restrictions on how forest countries use the transfers they earn will be very attractive. It will avoid the double demanding/conditionality problem and will accelerate the availability of funds in the forest country. Results could be evaluated at any reasonable level of aggregation (for example, at the state rather than at the national level), and disbursements would be to the national government or a sub-sovereign agency, which would be free to allocate to other levels of government and to specific groups, including indigenous peoples.

A results-based mechanism avoids the pitfalls of ODA's administrative burdens

The forest facility provides a clear break between climate finance and the conditionality and burdensome management protocols that have impeded programs with similar objectives.

Annex 6
Forest Foundation Fund

This annex describes a proposal to create an endowment, funded in its sponsoring governments' money markets, to generate long-term investment returns that—net of funding and financial administration costs—would accrue to qualifying tropical forest nations (TFNs). These returns would compensate them for stopping and reversing deforestation and other forms of land-use degradation that contribute to global climate change.

The proposed fund is designed to achieve two goals:

- Attract large-scale private investment to fund offsets to the near-term costs to TFNs and their citizens associated with ending deforestation (thus providing an incentive for TFNs to prevent deforestation).
- To do so with little or no initial cash payment by non-TFN-sponsor governments and with as efficient an application of their (standby) public credit as possible.

As designed, the Forest Foundation Fund (FFF) targets the largest single part of investors' asset allocations (cash and short-term deposits and other high-grade money-market investments) and does not require an initial cash outlay by sponsoring governments. Sponsoring governments' backstop guarantees would operate in much the same way as the guarantees they routinely offer to bank depositors in their respective countries. While the FFF's assets would be raised in sponsors' respective domestic markets, they would be aggregated and invested over a long horizon as a single global fund in the diverse set of asset classes customarily included in the portfolios of, for example, university and philanthropic endowments.

The FFF is not designed to provide cash loans or grants to TFNs to help them, for example, qualify to participate in FFF. Nor does it contemplate any use of the investment returns for purposes other than rewarding initial qualification and actual avoidance of deforestation/degradation as documented by satellite verification. Similarly, it does not propose to fund directly investments in deforestation-avoiding activities in TFNs (except to the extent that these investments may otherwise be appropriate for the FFF's portfolio based on a conventional, risk-and-return-based asset allocation).

Instead, TFNs would earn participation interests in the FFF each year that verification established that they had avoided deforestation. Over time, a TFN implementing effective programs to end deforestation could build a substantial sovereign wealth fund through the progressively increasing value of its share in the FFF.

Obviously, the specifics need to be further defined, and we have not yet surveyed any of the many official and private-sector parties that would be involved. But CGD believes that this proposal can be delivered more or less along the lines outlined here, and that it offers the most efficient approach yet devised for applying the credit of non-TFN governments to incentivize TFN governments to avoid deforestation.

Summary of key features

Principal participants in the FFF

- **Sponsor/guarantor:** Highly creditworthy governments of countries with well developed financial markets. The FFF would offer money-market investments or accounts in each sponsor's domestic market, which the sponsor would guarantee in the same manner that it guarantees other such domestic cash or short-term money-market investments.
- **Investors:** Retail and institutional investors in a sponsor's respective money markets. By subscribing to the domestic-market offerings undertaken by the FFF, they would provide funds on high-grade, money-market terms into the FFF's endowment portfolio.
- **Qualified TFNs:** Tropical forest nations that have achieved an initial certification based on the nature and extent of their institutional capacity to achieve the satellite-monitored outcomes required to receive the returns on a share in the net earnings of the Fund. Thereafter, a TFN could maintain its participation on the basis of periodic (probably annual) satellite verification. If a TFN were to fail at verification, its participation share would

be reduced or eliminated, and the share thus freed up would be redistributed pro rata to the remaining qualified TFNs.

- **Global arranger:** The World Bank or another organization similarly qualified to provide financial services (that is, arranging for the FFF to receive deposits in sponsors' domestic markets, engaging a fund manager to manage the investment of the FFF portfolio, and conducting back-office functions) and to arrange for satellite verification of TFNs' entitlement to participation interests in the FFF.
- **Fund manager:** A public- or private-sector asset manager with a demonstrated capacity to structure and manage a diversified, long-horizon endowment portfolio, selected through a competitive bidding process.

Asset gathering

In each sponsor's domestic money market, the global arranger would engage domestic financial intermediaries to raise short-term funds in transactions conforming to existing market convention. The FFF could arrange the financing in its own name as a direct issuer of securities or it could do so through, for example, mutual funds or passed-through bank or postal-savings deposits. The terms of these transactions would vary depending on the currency, then-prevailing market conditions, the size of the respective sponsor's guarantee, and so on. Liquidity could be available either in the secondary market, through daily redemptions at the appropriate NAV, or via withdrawal of pass-through deposits. The FFF would engage domestic institutions as well, to provide operational services such as custody, valuation, reporting, and so on.

Funds borrowed in each market would be aggregated for investment into a single global endowment, incorporated in an appropriate form and jurisdiction as advised by counsel, and agreed to by sponsors as most conducive to achieving their goals for the FFF.

Investment

The FFF's fund manager, with the advice of an appropriately constituted outside investment committee and in a manner consistent with best practice in the investment industry, would develop and submit to the fund's governing body for approval investment guidelines to establish the risk tolerance of the fund, the asset classes in which it may invest, and the required governance, reporting, and auditing regimen.

Direct or outside fund management. Investment could be done in-house by the fund manager or through specialist asset managers based on the fund manager's judgment as to the approach most likely to achieve the most cost-effective implementation of the fund's investment strategy. The fund manager would propose for approval by the Fund's governing body guidelines for selection of outside fund managers.[63]

Eligible investment assets. While the details of portfolio structure would await completion of a disciplined strategic asset allocation, this proposal assumes that, after setting aside a cash reserve sufficient to meet the short-term cash needs associated with the money-market deposits funding it, the FFF would invest in the full array of asset classes customary for long-term endowments and pension funds, which share a willingness to tolerate substantial volatility in the marked-to-market value of their portfolios in the interests of much larger long-term return than is available through low-volatility investments in the bond or money markets. Indeed, the essence of this proposal is the willingness of sponsors to absorb the risk associated with the higher volatility of these returns in the interest of attracting large-scale private investment from less risk-tolerant investors. Accordingly, we anticipate that sponsors would authorize the fund to invest in, inter alia:

- Publicly traded equities worldwide.
- Publicly traded debt worldwide, including debt that is sub-investment-grade.
- Private equity, via limited partnership interests or co-investment.
- Real estate, whether through traded vehicles (for example, REITs), limited partnerships, co-investment, or direct ownership.
- Infrastructure, again through any of the various vehicles customary in sound investment practice.
- Timberland.
- Commodities.
- Currencies (solely for risk-management purposes).

Portfolio "tilts." While the proposal contemplates a fully diversified, conventional endowment portfolio of the kind maintained by major universities, foundations, and pension funds, sponsors could request that the global arranger emphasize certain kinds of investments. These could include, for example, those that would accelerate the flow of investment into opportunities related to climate change mitigation or adaptation, or other environment-enhancing

opportunities (a so-called "green tilt"), or more narrowly into investments that would themselves help TFNs deal with deforestation or other forms of land degradation (a "REDD tilt"). However, each of these decisions could have an effect on risk-adjusted return; in general, as constraints increase, risk rises, often without a concomitant increase in return.[64]

Expected returns and volatility of returns. While past performance can never guarantee future outcomes, the past decade—encompassing as it does the 2007–09 financial crisis—offers a useful perspective on the dynamics of the proposed vehicle. During this period, diversified endowments in the United States earned an average of 8.5%, while one-month certificates of deposit (a good proxy for the rates at which the fund would borrow in money markets) averaged 1.56%. Assuming a total of 1% in fees and costs and a 10% cash reserve for the ins and outs of deposits, that leaves an average annual accretion of 5.25% on participation units in the endowment. If Brazil, for example, were to have a 40% interest in a US$100 billion fund, that's an average of US$2.1 billion a year as long as it continued qualifying. Last year, that figure would have been US$5.5 billion.

Expected annual volatility accompanying this return would be about 11%, with an approximately 1 in 3 chance that returns in any given year would be less than the FFF's money-market financing cost and thus result in a net loss to the fund. As in conventional deposit insurance situations, the sponsor's respective guarantees would only be called in the event that a "run" on deposits threatened to exceed the cash reserve established to accommodate expected net withdrawals by depositors. There exist ample data to model the probability of such an occurrence, which has proven highly unlikely in situations in which creditworthy domestic government guarantees back deposits, as would be the case under the FFF proposal.

Portfolio valuation. The FFF portfolio would be marked to market monthly, both for general reporting purposes and to value the "cooperative participation units" (CPUs) that would represent the interests of RPNs in the return on the endowment.

TFN Qualification and participation: "cooperative participation units"

Creation and notional allocation of cooperative participation units. At start-up, the FFF would create a fixed number of CPUs representing a percentage share of the net returns (after the money-market financing costs) of the fund. The FFF would assign a notional allocation to each TFN qualified to be a beneficiary of the fund. The size of the allocation would be determined by the size and other characteristics of the forest, and other land resources would be the subject of a REDD program.

Qualification and initial allocation. A TFN would receive its actual allocation of CPUs upon meeting qualification standards related to the robustness of its national REDD program and capacity to implement it, as determined by an agreed-upon validating authority. In the first round of allocation, there would be fewer CPUs than the amount that could, in principle, be supported by the REDD performance of all potentially participating countries, and these would be awarded on a first-come, first-served basis. This approach both creates incentives for rapid qualification and avoids excessive dilution during a period in which accumulated returns are necessarily low.

Retention of allotted CPUs—the observable results requirement. Annually or at some other appropriate interval after an initial allocation, an agreed-upon monitoring authority (which may or may not be the same as the validating authority described above) would report to the fund and the sponsors on an assessment as to whether there has been deforestation or other land-use degradation beyond pre-agreed-on amounts stipulated in the creation of the CPUs. This assessment would be based solely on the results of satellite over-flight, and would not require further assessment of the initial qualification standards; in short, CPU retention is purely results-based and objective. If the assessment shows results as good as or better than the minimum, the TFN will retain its CPUs. If not, all of the TFN's CPUs will be forfeited to the fund, which will retire them.

Governance

Best practice suggests that governance of the fund should include a high-level body representative of the stakeholders (in this case, the primary and secondary sponsors and the TFNs holding CPUs). It should also ensure that the global arranger and the fund manager receive input from a highly qualified group of outside advisors who also have a direct reporting channel to the representative body.

Board of trustees. Overall authority for governance of the fund could be vested in a board of trustees composed of one representative for each of the primary and secondary sponsors. Among other things, the trustees would select and engage the global arranger, the fund manager, the validating and monitoring authorities (that would qualify TFNs and validate their compliance with the observable results requirement, respectively), independent auditors, and so on. Further, the board would promulgate broad guidelines for the operation of the fund within which the global arranger would operate. Trustees would meet quarterly and at such other times as the board may determine.

Notes

1. See https://unfccc.int/files/meetings/bonn_jun_2015/in-session/application/pdf/sbsta42_i4_20150608t2315h.pdf.
2. This report focuses on pan-tropical forests in developing countries (including some sub-tropical forests in countries like Mexico and Nepal) rather than temperate forests because tropical forests have more tons of carbon per hectare than temperate forests; tropical forests are being lost rapidly, while temperate forests are more or less at net zero loss, and so carbon loss from tropical forests is higher; tropical forests have far more biodiversity than temperate forests (⅔ of all land species); and, in some but not all parts of the tropics, clearing forests is far more irreversible than in temperate regions (for example, restoring forest in Madagascar or the Sahel is next to impossible without Herculean human effort; forests will naturally regrow in Costa Rica). When we speak of deforestation here, we also include forest degradation; for convenience we will normally refer to "deforestation."
3. Seymour and Busch, 2014.
4. Brandon, 2014; Busch, 2014a.
5. Kim, Sexton, and Townshend, 2015.
6. Hansen et al., 2013.
7. de Nevers and Engelmann, 2015.
8. United Nations, 2014a.
9. United Nations, 2014b.
10. REDD+ is shorthand for "Reducing Emissions from Deforestation and Forest Degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks." It refers to the mechanism negotiated under the United Nations Framework Convention on Climate Change for results-based finance for forest-related emissions mitigation, including both carbon markets and funding outside carbon markets.
11. Reducing the negative impacts of climate change is crucial for developing countries, which are projected to experience the most damaging effects of global warming.
12. Engelmann, 2015; Hansen et al., 2013.
13. Stern, 2006.
14. Engelmann, 2015.
15. See also Busch, 2014b.
16. Busch and Engelmann, 2015.
17. The $700 billion annual investment (or $14 trillion cumulatively from 2010–30) comes from additional investments in energy (including power generation and energy transmission), building and industry (including energy efficiency investment for residential and commercial building and industry investments in sectors such as iron and steel), transportation (including costs for innovative technology such as hybrid vehicles and upgrading and expanding infrastructure in plane, ship, rail), and forestry (including reforestation, capacity building, REDD+ mechanisms, and performance payments for forest protection). Additional investments for water, agriculture and telecommunications to meet the 2C scenario were unknown in the original analysis and so not included in the $700 billion total. Estimates are based on OECD, IEA, FAO, and UNEP figures, as calculated in the WEF report (World Economic Forum, 2013).
18. California and the European Union have cap-and-trade programs that mean that carbon-pricing policies are already in place. (Busch and Engelmann, 2015).
19. Wolosin and Belenky, 2014; de Nevers and Engelmann, 2015.
20. de Nevers and Engelmann, 2015.
21. All figures are in nominal terms.
22. From Norman and Nakhooda, 2014: "Estimating REDD+ financing needs depend on a wide range of factors. There have been several attempts to estimate needs with the Eliasch Review suggesting 'that the finance required to halve emissions from the forest sector by 2030 could be around US$17–33 billion per year if including global carbon trading' (Eliasch 2008: xvi). In 2009, the Informal Working Group on Interim Finance for REDD+ estimated that between 15 and 25 billion Euros

would be required for a 25% reduction in annual global deforestation rates by 2015 (IWG-IFR 2009). A number of studies have developed economic models to estimate financial needs using a price range of US$5–20 per ton of CO_2e avoided (Kindermann et al., 2008). Such estimates suggest that with deforestation and degradation currently releasing 'around 6 billion tons of carbon dioxide into the atmosphere each year, reducing deforestation 50 percent by 2020 would cost in the range of US$15–60 billion per year in direct financial transfers' (Morris and Stevenson, 2011: 3).

23. In 2005, the Governments of Papua New Guinea and Costa Rica submitted a document to the UNFCCC that proposed options to provide revenue streams to reduce emissions from deforestation (UNFCC, 2014).
24. Governors' Climate and Forests Task Force, n.d.
25. Forest Trends' Ecosystem Marketplace, 2014.
26. Ecosystem Marketplace, 2014.
27. Government of Norway, 2008.
28. Government of Guyana, 2009.
29. Government of Norway, 2011.
30. Government of Norway, 2010.
31. Government of Norway, 2014a.
32. Government of Norway, 2014b.
33. Federal Ministry for Economic Cooperation and Development, 2012).
34. Forest Carbon Partnership Facility, 2015).
35. For more information on the three bilateral partnerships, see also CGD's three-country study on Guyana, Indonesia, and Brazil' REDD+ experiences with Norway: Busch and Birdsall (2014), Seymour, Birdsall, and Savedoff (2015), and Birdsall, Savedoff, and Seymour (2014).
36. Birdsall and Savedoff, 2010.
37. Perakis and Savedoff, 2015.
38. Kharas, 2008.
39. Angelsen 2013.
40. Purvis, Belenkey, and Wolosin, 2015.
41. The drawback of this approach is that the funding for upfront capacity building, developing monitoring, and reporting systems, may be "projectized" and subject to the delays and bureaucratic procedures that affect aid. This seems to be the case in Liberia.
42. The Verified Carbon Standard is a greenhouse gas program that projects can use to certify that they are actively reducing emissions. "Verified carbon units" are issued if they meet certain criteria (that is, they are real, measurable, additional, permanent, independently verified, conservatively estimated, uniquely numbered and transparently listed), and can then be bought, sold, or retired in the market. Similarly, Climate, Community and Biodiversity standards evaluate projects based on their ability to address climate change, support local communities and smallholders, and conserve biodiversity. See http://www.v-c-s.org/ and http://www.climate-standards.org/ for more information.
43. In the FCPF Carbon Fund, the contract (the Emission Reductions Payment Agreement) is between the World Bank and an entity that has the authority to transfer the title to emissions reduction to the Carbon Fund. In most countries that is the government. The money goes to that entity and will then be distributed to the beneficiaries according to the benefit-sharing plan, which is part of the results contract and is the result of negotiations among the program stakeholders. The benefit-sharing plan could define, for example, that some stakeholders get paid on reduced tons of carbon dioxide against their baseline. Communities may be paid based on proxies (for example, hectares instead of tons of carbon dioxide).
44. Kenny and Savedoff, 2013.
45. La Vina and de Leon, 2014; United Nations Framework Convention on Climate Change, 2005.
46. Goetz et al., 2014.
47. Goetz et al., 2014.
48. Hewson, Steininger, and Pesmajoglou, 2014.
49. See United Nations Framework Convention on Climate Change (2014).
50. Seymour and Busch, forthcoming 2015.
51. Busch, 2013.
52. Goetz et al., 2014.
53. There is, however, a paper about communities losing direct control over the resource in an area in Tanzania: See Beymer-Farris and Bassett (2012).
54. Stevens, Winterbottom, Springer, and Reytar, 2014.
55. Government of Norway, 2010.
56. Seymour, 2014.
57. Abranches, 2014.

58. Lueders et al., 2014.
59. Busch, 2014c.
60. Mulkern, 2015.
61. Seymour and Busch (2014) makes that case that, based on the percentage of cost-effective emissions reductions from developing countries (excluding China), the number should be even higher.
62. Busch and Engelmann, 2015.
63. Gonzalez, 2014.
64. In Copenhagen, rich countries pledged to mobilize US$100 billion a year for developing countries to mitigate and adapt to climate change. If half of that sum went to adaptation, as many developing countries would like, then the remaining US$50 billion would be for mitigation. With forests accounting for 24–30% of mitigation potential, it would be reasonable to consider that US$12–16 billion a year should be mobilized for forests.
65. William Savedoff, private correspondence.
66. In general, investment staff in charge of funds of the scale contemplated for the FFF use some combination of direct and outside fund management.
67. This proposal does not lend itself to using the portfolio for direct financing in RFN countries of the kind carried out by multilateral development banks and other international financial institutions. The financial and nonfinancial transactions costs necessarily associated with such activity, even if the investments themselves were otherwise competitive, would undermine the basic value proposition of this proposal, which is to generate funds simply to reward easily measureable, on the ground, results in RFNs' REDD programs.

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