



WORLD
RESOURCES
INSTITUTE



ISSUE BRIEF

FOREST-BASED CLIMATE MITIGATION: LESSONS FROM REDD+ IMPLEMENTATION

AMY E. DUCHELLE, FRANCES SEYMOUR, MARIA BROCKHAUS, ARILD ANGELSEN,
ANNE M. LARSON, MOIRA MOELIONO, GRACE Y. WONG, THU THUY PHAM,
AND CHRISTOPHER MARTIUS

WRI.ORG

CONTENTS

Executive Summary	2
Introduction	4
The Evolution of REDD+	6
National REDD+ Initiatives	9
Subnational Jurisdictional Approaches to REDD+ and Low-Emissions Development	15
Lessons from Local REDD+ Initiatives	16
Challenges of Integrating REDD+ across Scales	17
Recommendations and Conclusion	18
Further Reading	21
Endnotes	22
References	22
Acknowledgements	30
Authors	30

EXECUTIVE SUMMARY

Highlights

- The novel feature of REDD+—payments for results at the scale of national or subnational jurisdictions—is only now beginning to be tested, more than a decade since it was first embraced by the international community. Lessons are emerging about the degree to which such payments can prompt land use policy reforms to mitigate the emissions that cause climate change.
- National REDD+ initiatives have helped create domestic conditions for addressing deforestation and forest degradation, providing an important foundation for future impact. These conditions include better understanding of deforestation drivers, improved forest monitoring capacities, and increased stakeholder engagement.
- Subnational jurisdictional approaches are gaining traction as a strategic way to link REDD+ incentives, sustainable supply chain initiatives, and related domestic policies and finance. Many subnational jurisdictions across the tropics have made progress toward reducing deforestation; but more targeted policy reforms, including alignment of incentives at subnational, national, and international levels, are needed to sustain it.
- A first generation of REDD+ projects has yielded important insights into the drivers of deforestation that must be addressed at higher levels, including land tenure insecurity and demand for globally traded commodities. Rigorous evaluations of early project-scale REDD+ interventions can help inform the design and implementation of jurisdictional-scale policies, programs, and initiatives.

Since it emerged more than 10 years ago, REDD+, with its focus on results-based payments through global demand for reducing deforestation and forest degradation, has been seen as a way to promote both climate and development benefits from forests. Reducing tropical deforestation and other “natural climate solutions” are essential to keeping global warming below 1.5°C. Forests not only help mitigate climate change through actively sequestering and storing carbon, they also provide goods and noncarbon ecosystem services that contribute to income, health, access to clean water, and moderation of natural disasters, which are especially important to poorer households. They also regulate hydrology, which is key to maintaining local and regional agricultural productivity.

This report summarizes the REDD+ experience over the past decade. It draws on research conducted under the Global Comparative Study on REDD+ by the Center for International Forestry Research to take stock of lessons learned from REDD+ implementation to inform future forest-based climate change mitigation activities. It describes how the idea of REDD+ has evolved through international negotiations and early implementation, while complementary global initiatives have emerged. It analyzes the progress and challenges arising from REDD+ initiatives at national, subnational, and project scales, and concludes with forward-looking recommendations.

REDD+ Evolved in Scale, Scope, Finance Sources, and Global Context

The scale of REDD+ implementation has evolved from local to jurisdictional. Although REDD+ now focuses on the national scale for implementation (with subnational in the interim), there was an early proliferation of local REDD+ projects largely oriented toward the voluntary carbon market. Meanwhile, dozens of countries initiated national REDD+ programs, and subnational governments began pioneering “jurisdictional approaches” to REDD+ and low-emissions development.

The scope of REDD+ also broadened beyond its original focus on emission reductions to encompass wider sustainable development objectives. This was evident in the adoption of REDD+ social and environmental safeguards by the United Nations Framework Convention on Climate Change.

The sources of finance evolved, with most funding now coming from a few donor countries’ development agencies after the anticipated global carbon markets based on compliance regimes failed to materialize. This change in the nature of finance resulted in a shift away from the core results-based payments aspect of REDD+ toward support for the preparation and implementation of national REDD+ strategies. Large-scale, results-based payments as a reward for reducing deforestation have been limited to a few forest-rich countries.

REDD+ is now embedded in a broader context of complementary global initiatives. These include corporate zero-deforestation commitments to reduce conversion of forests to agricultural commodity production, pledges to restore degraded forests and landscapes, and initiatives to strengthen the land rights of indigenous peoples and local communities. Proponents of these initiatives increasingly recognize opportunities to integrate their efforts with REDD+ at the jurisdictional scale.

REDD+ Progress and Challenges at National, Subnational, and Local Levels

Of the more than 50 countries that have launched national REDD+ initiatives, most have failed to stop or reverse deforestation in absolute terms, but clear progress has been made toward intermediate milestones. These achievements include a better understanding of deforestation drivers, stronger and improving forest monitoring capacities, and engagement of stakeholders in national forest policy discussions. Evidence from Brazil, Indonesia, and Guyana—the first recipients of results-based finance—suggests that REDD+ initiatives positively influenced forest governance through increased transparency and public participation. REDD+ finance remains dwarfed by the underlying drivers of deforestation.

At the subnational level, dozens of provincial and district governments are beginning to implement jurisdictional strategies that link REDD+, sustainable supply chain commitments, and domestic policies. A recent study of 39 subnational jurisdictions, which encompass 28 percent of the world’s remaining tropical forests and which have made clear commitments to reducing deforestation, highlights their

advances in establishing integrated land use strategies, robust multistakeholder processes, and clear performance targets. Despite this progress, political and financial challenges still need to be addressed.

Lessons from more than 350 local REDD+ projects can inform higher-level jurisdictional programs. Although land use restrictions can be extremely effective in curbing local forest clearing, incentives are needed to alleviate the burdens of such restrictions on local communities. The rights, participation, and livelihoods of local farmers and communities, including women, must be prioritized in jurisdictional programs to ensure more effective and equitable outcomes. It is clear that systemic issues, such as land tenure insecurity, must be addressed at jurisdictional scales.

Recommendations

Industrialized countries must show greater coresponsibility for REDD+ finance beyond the few donors that have stepped forward with significant pledges of support. Given the ecosystem services and climate benefits that forests provide, along with their key role in rural development, forest conservation should be globally supported through increased financial flows to forest-rich developing countries and rewarded with market-based incentives. Increased transparency about what drives deforestation and who benefits from it can inform appropriate demand-side policies and investments, especially from REDD+-friendly donor countries.

REDD+ proponents must build constituencies for forests across levels and sectors. Strong domestic constituencies for forests are needed to maintain long-term political interest in forests and counteract business-as-usual interests. New narratives about the positive contributions that forests make to both economic development and climate stability can help develop such constituencies.

The international community should encourage international and national ambition toward climate goals while supporting subnational progress and innovation. Bold national policy reforms are needed to raise ambition toward planning for and achieving REDD+ in Nationally Determined Contributions (NDCs) toward climate goals. Strategies

to address deforestation drivers should include rigorous implementation of forest law, sustainable commodity supply chains, and viable alternatives for those who base their livelihoods on forests or on the industries that drive deforestation and degradation. Support is also needed for subnational jurisdictional approaches that have shown concrete progress toward reducing deforestation despite scarce international finance. Synergies could be achieved by explicitly linking commodity supply chain, restoration, and indigenous rights initiatives to the REDD+ institutional infrastructure that has been built at national and international levels.

Governments should recognize the rights of indigenous peoples and local communities. In many locations, securing rights for indigenous peoples and local communities is key to successful forest-based climate change mitigation. Recognizing indigenous peoples and local communities as substantive rights holders, instead of project beneficiaries, can help place them at the center of forest and climate initiatives.

INTRODUCTION

REDD+— short for “reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries”—debuted on the global stage more than a decade ago. The idea prompted high expectations that an approach featuring results-based incentives for reducing tropical deforestation and degradation could rapidly succeed where other approaches had failed. Since then, more than 50 countries have launched national REDD+ initiatives; dozens of subnational governments have experimented with “jurisdictional approaches” to REDD+ and low-emissions development; and more than 350 local REDD+ projects have been implemented globally. What are the lessons learned from REDD+ implementation at multiple scales so far? How can those lessons support future forest-based climate change mitigation?

This report begins by highlighting the importance of REDD+ for meeting global climate and development goals. It then discusses how the idea of REDD+ has evolved through international negotiations and early implementation. It continues by analyzing the progress and challenges arising from REDD+ initiatives at national, subnational, and project scales based largely

on research conducted under the Global Comparative Study on REDD+ by the Center for International Forestry Research (CIFOR). The report concludes with forward-looking recommendations.

Why REDD+ Is Important to Forests, Climate Change, and Development

In 2007, at the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Bali, climate negotiators embarked on talks to determine how international cooperation to reduce emissions from deforestation should be incorporated into global climate mitigation efforts. A review commissioned by the British government had identified reducing tropical deforestation as a key element of any strategy to substantially reduce global emissions (Stern 2006), and a coalition of forest-rich developing countries had proposed that such reductions be compensated with financial incentives from industrialized countries (Coalition for Rainforest Nations 2005). REDD+ was seen as a potential quadruple win, with climate benefits linked to cobenefits for poverty reduction, better forest governance, and biodiversity conservation (Brown et al. 2008). It was ultimately incorporated into Article 5 of the Paris Agreement in December 2015.

In the meantime, the case for addressing deforestation to meet climate goals has become even stronger. Recent estimates suggest that stopping deforestation and other “natural climate solutions” such as conservation, restoration, and improved management of forests, wetlands, grasslands, and agricultural lands, could provide 37 percent of the cost-effective emissions mitigation needed by 2030 to meet the Paris Agreement goal of keeping global warming below 2°C (Griscom et al. 2017). In addition, emerging science suggests that the impact of tropical deforestation on the global climate is amplified through accompanying land use emissions from forest fires, and agricultural emissions from former forestlands, as well as through nongreenhouse gas pathways, such as the loss of water cycling functions and impacts on atmospheric chemistry (Wolosin and Harris 2018).

In addition, evidence of forests’ contributions to development objectives continues to accumulate. Natural forests and wildlands provide on average 28 percent of total household income in communities in and around forests—nearly as much as agricultural

Lessons from more than 350 local REDD+ projects can inform higher-level jurisdictional programs

crops—supplying food, fuelwood, and fiber for consumption and sale (Angelsen et al. 2014). When forests are converted to other land uses (such as plantation agriculture), households that lose access to forest-based livelihoods do not necessarily benefit from new sources of employment and income (German et al. 2011). Women in these communities may be more adversely affected by deforestation than men because their rights to land and forests may be less secure (Colfer et al. 2016).

The contributions that forests make to health, access to clean water, and moderation of natural disasters are especially important to poorer households but remain largely invisible in national economic decision-making (Seymour and Busch 2016). Important initiatives (e.g., WAVES¹ and the Natural Capital Project²) are under way to capture the value of forests and other natural resources for inclusion in countries’ economic performance accounting. New science is illuminating the impacts of forests at broader scales. Forests regulate hydrology, which influences rainfall, flooding, and groundwater recharge both locally (Ellison et al. 2017) and remotely (Arraut et al. 2012). Deforestation can induce warmer and drier conditions (Silvério et al. 2015), with grave implications for maintaining agricultural productivity (Lawrence and Vandecar 2014), and the effects can be felt over long distances.

The sum of services provided by forests implies that the opportunity costs of conserving them for climate mitigation is lower than commonly thought and may even be negative. In other words, the noncarbon benefits of forests may provide sufficient economic justification for conserving them.

THE EVOLUTION OF REDD+

The scale and scope of implementation, sources of finance, and broader context for REDD+ initiatives have evolved since the idea was first introduced. The three sections below summarize key elements of that evolution.

Scale and Scope of Implementation

Since the idea of REDD+ first entered international climate negotiations, REDD+ initiatives have been promoted at multiple scales, even while the concept itself continued to evolve and before the main elements

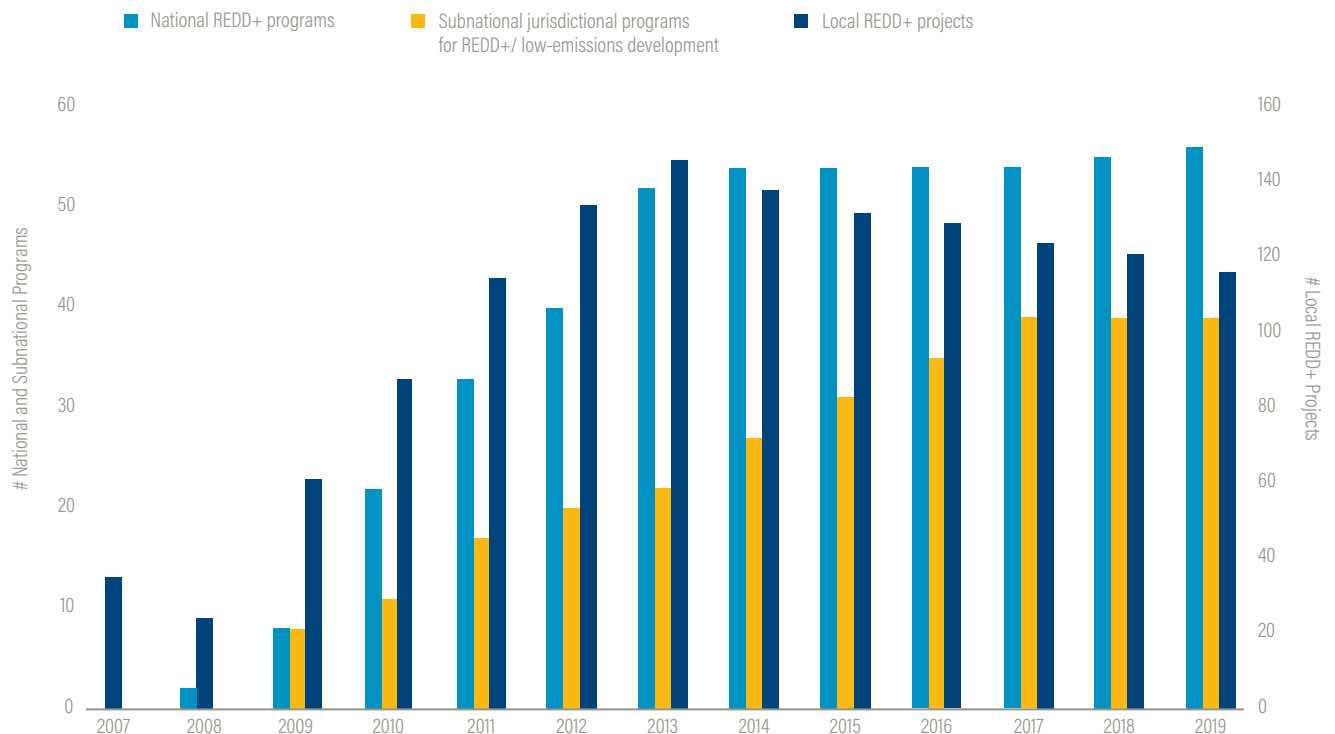
were agreed upon under the UNFCCC (Seymour and Busch 2016; Angelsen et al. 2018a; Box 1). A UNFCCC call for “demonstration activities” in 2007 led to an early proliferation of hundreds of local REDD+ projects (Figure 1). These projects were predominantly implemented by nongovernmental organizations (NGOs) or for-profit companies with an orientation toward voluntary carbon markets and a focus on smallholders or small-scale forest users (Simonet et al. 2015; Sills et al. 2014).

Meanwhile, international funding for “REDD readiness” activities (development of national strategies or action plans, policies and measures, and capacity building)

FIGURE 1

PROJECTS DOMINATED IN THE EARLY YEARS OF REDD+, BUT EMPHASIS HAS SHIFTED TO NATIONAL AND SUBNATIONAL INITIATIVES

Number of ongoing REDD+ programs and projects per year



Note: Start of national REDD+ programs corresponds to year of initial support from UN-REDD or FCPF for national program development, or other first milestones. Start of subnational jurisdictional programs corresponds to year state/province became a member of the Governors’ Climate and Forests Task Force, or initiated its REDD+ / low-emissions development strategy.

Sources: UN-REDD Programme; FCPF; International Database of REDD+ projects and programs; Stickler et al. 2018a.

became available through new entities such as the Forest Carbon Partnership Facility (FCPF), which became operational in 2008, and the UN-REDD program, launched in 2008. Dozens of countries initiated national REDD+ programs. Simultaneously, provincial and district governments began pioneering “jurisdictional approaches” to REDD+ and low-emissions development (Boyd et al. 2018; Stickler et al. 2018a). Figure 1 illustrates the growth in the number of initiatives at these scales over time.

The final UNFCCC REDD+ framework agreed to in 2013, often referred to as the Warsaw Framework, focuses on the national jurisdictional scale and allows subnational jurisdictional programs in the interim. Approaching REDD+ at the jurisdictional, rather than the project scale, can better address drivers and enabling conditions, reduce leakage (i.e., displacing deforestation to outside intervention areas) and the risk of reversals (e.g., local forest loss from fires or storms), avoid the high transaction costs associated with project-scale accounting, and give developing countries greater control over their forest-based mitigation strategies (Skutsch et al. 2007). Moreover, a growing body of research shows that national (and subnational) policies are more important than local projects in reducing overall deforestation rates (e.g., Angelsen and Kaimowitz 1999; Busch and Ferretti-Gallon 2017; Börner et al. 2018).

During negotiations and early implementation, the scope of REDD+ broadened beyond its original focus on emission reductions to encompass wider sustainable development objectives. The UNFCCC REDD+ social and environmental safeguards, which include respect for the rights of indigenous people and local communities, effective stakeholder participation, promotion of livelihoods, and biodiversity conservation, demonstrate international policy consensus around this broader focus (UNFCCC 2011).

Sources and Targets of Finance

The nature of REDD+ finance was critical to its evolution. Key to the original REDD+ theory of change was that large-scale results-based finance generated by international demand for carbon emissions reduction would provide sufficient incentives for protecting forests. When anticipated carbon markets failed to

materialize, the core results-based payments approach was de-emphasized and REDD+ became funded predominantly through rich countries’ development agencies (Seymour and Angelsen 2012). The reliance on constrained donor budgets has resulted in a lack of certainty among developing countries that performance would result in payment. Potential demand for performance-based payments far outstrips firm donor funding commitments.

Furthermore, the REDD+ donor community has been limited to a few countries (such as Norway and Germany), which makes REDD+ funding potentially vulnerable to political fluctuations (Atmadja et al. 2018). And because most aid agencies were used to traditional input-based investments, REDD+ finance shifted away from a focus on *ex post* rewards for results and toward *ex ante* support for the preparation and implementation of national REDD+ strategies (Angelsen and McNeill 2012; Seymour and Busch 2016).

Most international REDD+ funding has been through bilateral and multilateral sources outside of the UNFCCC and used for “readiness” activities—that is, those focused on building systems to monitor forests, increasing stakeholder participation in national planning and policy processes, and developing systems to safeguard against unintended negative social and environmental consequences (Lee and Pistorius 2015). Importantly, forest-rich developing countries themselves have also made substantial investments in REDD+ readiness, which are not often acknowledged in global climate finance discourses (Atmadja et al. 2018).

The key feature that distinguished REDD+ from prior efforts to reduce deforestation—the prospect of offering large-scale, results-based financing to developing countries as a reward for performance—is only now beginning to materialize. In February 2019, multilateral REDD+ financing facilities made a series of announcements regarding prospective international payments to Brazil, Democratic Republic of the Congo (DRC), and Mozambique for results achieved in reducing forest-based emissions, with the latter two focused on implementation at the subnational level. The same month, it was announced that Indonesia had qualified for its first results-based payment under a bilateral REDD+ agreement with Norway. In September 2019, Norway agreed to pay Gabon \$150 million for conserving its forests (CAFI 2019).

KEY ELEMENTS OF REDD+

As negotiated under the United Nations Framework Convention on Climate Change (UNFCCC) and endorsed in the 2015 Paris Agreement, REDD+ finance and accounting take place at the national scale, or at the scale of subnational jurisdictions for an indeterminate interim period. REDD+ comprises three phases. Phase 1 (“readiness”) includes development of national strategies or action plans, policies and measures, and capacity building; Phase 2 (“implementation”) is implementation of Phase 1; and Phase 3 (“results-based finance”) is payment for emissions reductions achieved. To be eligible for results-based finance, countries must develop the following elements:

National REDD+ strategy or action plan: A country’s strategy or plan is highly dependent on national circumstances but should address drivers of deforestation and forest degradation, land tenure and forest governance issues, gender considerations, and the UNFCCC REDD+ safeguards.

Forest Reference Emission Level (FREL) and/or Forest Reference Level (FRL): National (or subnational in the interim) FREs and/or FRLs are expressed as metric tons of CO₂ equivalent per year for a reference period with which emissions and removals from a results period will be compared. FREs/FRLs should be transparent, consistent with the most recent guidance and guidelines of the Intergovernmental Panel on Climate Change (IPCC), and updated periodically.

National Forest Monitoring System (NFMS): A robust and transparent national (or subnational in the interim) forest monitoring system combines remote sensing and ground-based forest carbon inventory approaches to estimate emissions, removals, and forest area change. It builds on existing systems, as appropriate, and enables the monitoring of different forest types following national definitions.

Safeguard information system: This system provides transparent and accessible information on how all UNFCCC safeguards have been addressed and respected. It should recognize national sovereignty and legislation, relevant international agreements, and gender considerations.

Measurement, Reporting and Verification (MRV) of results-based actions: After FREL/FRL assessment, a separate technical analysis is conducted to measure, report, and verify “anthropogenic forest-related emissions by sources and removals by sinks, forest carbon stocks, and forest carbon stock and forest-area changes” resulting from the implementation of REDD+ activities. MRV should be done as part of a national forest monitoring system and follow IPCC guidance and guidelines.

Although a number of early REDD+ jurisdictional-scale results-based finance agreements were concluded before the UNFCCC negotiations were completed, all contain language related to the above elements to a greater or lesser degree.

Source: REDD + Web Platform n.d., <https://redd.unfccc.int/fact-sheets.html>. Accessed July 2019.

The evolution of REDD+ has resulted in contradictory discourses about forest-based climate mitigation policy options. Local projects are quite different from national and subnational REDD+ programs, and public finance is quite different from market-based approaches. Nevertheless, different stakeholders use the term “REDD+” to refer to all of these. Early opposition

to REDD+ was generated prior to 2009 when it was understood as predominantly private, project-scale transactions to be financed through compliance-based markets for forest carbon offsets. Although such transactions were never implemented, the skepticism of REDD+ among some stakeholders continues despite its considerable evolution over the past decade.

Complementary Global Initiatives

In the meantime, global initiatives that are complementary to REDD+ have emerged to reduce conversion of forests to agricultural commodity production, restore forests and landscapes, and strengthen the land rights of indigenous peoples and local communities.

The commitments of hundreds of companies to eliminate deforestation from their agricultural commodity supply chains brought widespread attention to the potential positive role of the private sector in helping reduce tropical deforestation (Taylor and Streck 2018). These “zero deforestation” commitments were made largely in the context of the Consumer Goods Forum and the 2014 New York Declaration on Forests (NYDF) with ambitious targets for full implementation by 2020. So far, evidence of the impact of these commitments has proved elusive (Taylor and Streck 2018). Many private-sector initiatives were initially disconnected from public policies and programs, but participating companies supporting platforms such as the Tropical Forest Alliance increasingly recognize the importance of linking their efforts to government initiatives—including offering conditional preferential sourcing across entire jurisdictions—to be able to realize their goals (Stickler et al. 2018b; Pacheco et al. 2018).

As REDD+ and zero-deforestation commitments put forest protection high on the international agenda, increasing momentum behind the 2011 Bonn Challenge raised international ambition for forest and landscape restoration. The pledge to restore 150 million hectares of cleared and degraded land by 2020, and 350 million hectares by 2030, was endorsed at the 2014 UN Climate Summit and included in the NYDF and has been complemented by regional initiatives in Africa and Latin America. The recent international declaration of 2021–30 as the UN Decade on Ecosystem Restoration could help scale up these efforts (UNEP 2019).

Finally, there has been renewed global attention to the importance of strengthening the rights and livelihoods of indigenous peoples and local communities. Recent research highlights the vast amount of carbon stored in locally managed forestlands, one-third of which lacks formal recognition of customary rights (RRI 2018). Indigenous peoples and local community members have

been subject to increasing acts of violence, murder, and intimidation related to conflicts over land and resources (Global Witness 2017; Sunderlin et al. 2018b). There are strong calls to secure collective tenure rights (Dooley and Stabinsky 2018) and encourage collaborative partnerships with indigenous peoples (Garnett et al. 2018) to meet climate, conservation, and development objectives.

Proponents of global initiatives such as REDD+, sustainable commodity supply chains, forest and landscape restoration, and rights-based approaches to development are increasingly recognizing opportunities to integrate their efforts at the jurisdictional scale. Jurisdictional approaches to forest and land use governance across entire governmental territories offer opportunities to connect international REDD+ financial incentives and market-based incentives linked to deforestation-free supply commitments with domestic policy and finance to protect and restore forests and improve the rights and livelihoods of local people (Nepstad et al. 2013; DiGiano et al. 2016; Boyd et al. 2018; Stickler et al. 2018a; Umunay et al. 2018).

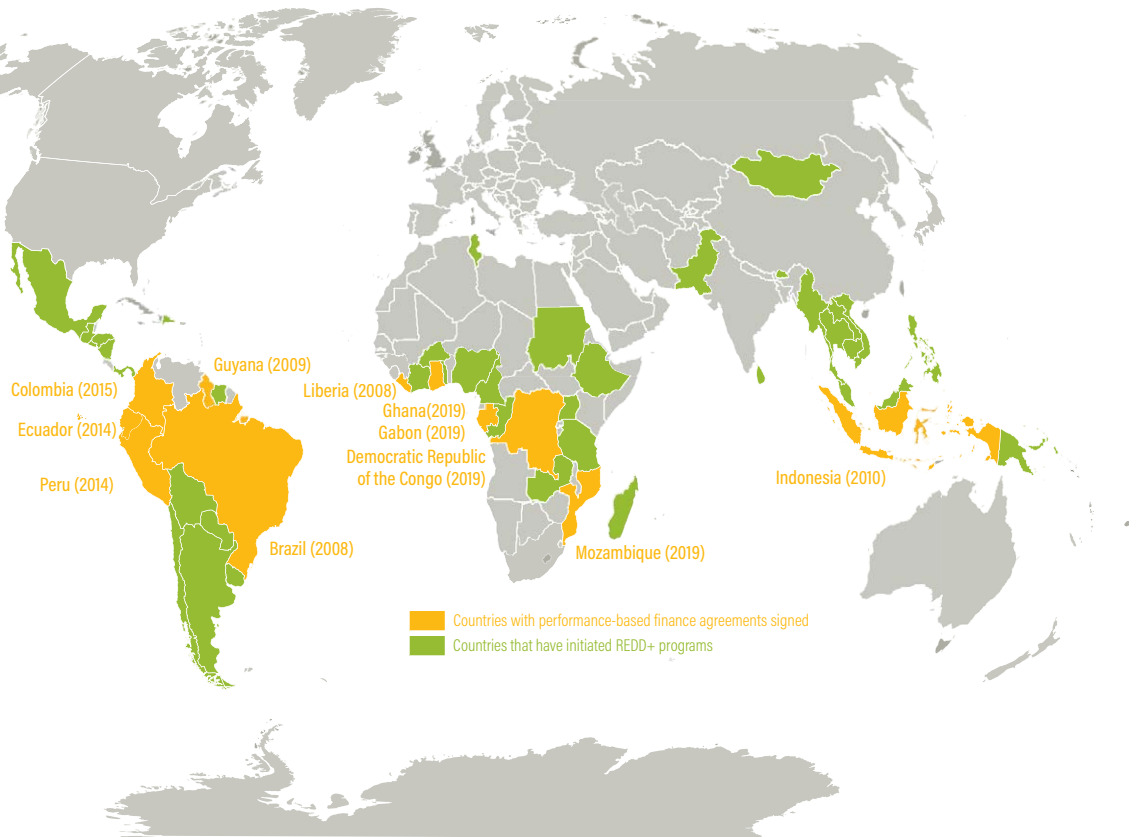
NATIONAL REDD+ INITIATIVES

Following the concept’s inclusion in the 2007 UNFCCC Bali Action Plan, more than 50 countries have initiated national REDD+ programs (Figure 2), and 55 countries explicitly mention REDD+ in their Nationally Determined Contributions (NDCs) to the Paris Agreement (Pham et al. 2018). As of September 2019, 39 countries had submitted forest reference emission levels (FRELs) to the UNFCCC, 7 had sent links to their national REDD+ strategies, and 4—Brazil, Colombia, Ecuador, and Malaysia—had fulfilled all UNFCCC requirements to access results-based payments through the Green Climate Fund, which launched a pilot program to finance that aspect of REDD+ in 2017. Although most national REDD+ initiatives have so far failed to arrest and reverse deforestation in absolute terms, discernible progress has been made toward intermediate milestones, which are described as follows.

Progress Achieved with Readiness Finance

Internationally and nationally funded readiness activities have improved the enabling conditions to tackle deforestation and forest degradation in several countries (Lee and Pistorius 2015). Achievements include a better

COUNTRIES WITH NATIONAL REDD+ PROGRAMS



Source: Adapted from Seymour and Busch 2016.

understanding of deforestation drivers, stronger and improving forest monitoring capacities (Romijn et al. 2015), engagement of stakeholders in national forest policy discussions, and improved policy coordination among national ministries involved in the governance of forestlands. Countries that were further advanced in the process used readiness funding to develop national REDD+ strategies (with strategies for subnational implementation where relevant and feasible), national forest monitoring systems, FRELs, and safeguard information systems.

In Colombia, readiness finance contributed to putting forests on the national political agenda through interministerial coordination and the establishment of a national multistakeholder platform. This progress resulted in the government's pledge to achieve zero net deforestation in the Colombian Amazon by 2020 (Streck et al. 2015), and a four-country partnership (among Colombia, Germany, Norway, and the United Kingdom) for results-based funding signed in November 2015. Readiness finance also supported Colombia's national strategy for controlling deforestation, *Bosques Territorios*

de Vida, which includes subnational strategies in the Amazon and Pacific regions (Government of Colombia 2019). President Ivan Duque's 2019 announcement of a new offensive against illegal deforestation suggests the political resilience of the national commitments in the face of significant challenges following the country's 2016 peace agreement.

The DRC used readiness funds to develop its national REDD+ strategy, establish a national fund for REDD+ finance, create a platform for the participation of civil society, and improve its forest monitoring capacity (Johns 2015). In Ghana, REDD+ funding catalyzed cooperation between the forestry commission and companies engaged in cocoa production to promote climate-smart cocoa (Asare 2015). In Mexico, REDD+ funding was used to develop a forestry policy with rural development at its core, and to pilot sustainable management practices that can be scaled up in a national program (Bauche 2015). Mexico also developed a safeguards system with legal, institutional, and compliance frameworks for implementation at national and subnational levels (SIS 2019).

Progress Achieved in Anticipation of Results-Based Payments

Brazil (2008), Guyana (2009), and Indonesia (2010), were the first recipients of firm commitments to results-based payments, which were offered by Norway and played a role in REDD+ being integrated into national development policy (Norad Evaluation Department 2017). Evidence suggests that REDD+ initiatives positively influenced forest governance through increased transparency and public participation, with the results-based payment aspect of REDD+ likely contributing to these outcomes (Seymour and Busch 2016).

Brazil succeeded in reducing Amazonian deforestation by about 80 percent from 2004 to 2012 through a series of public policies and private and sectoral measures (Assunção et al. 2012; Nepstad et al. 2014). Although the initiation of these efforts predated Brazil's 2008 REDD+ memorandum of understanding with Norway, some have argued that the agreement helped consolidate the political will needed for continued progress (Seymour and Busch 2016). While the Amazonian deforestation rate in Brazil remains lower than when the bilateral agreement started, it has increased since 2012 (Moutinho et al. 2016). A 27

percent uptick in deforestation in 2015–16 compared with 2014–15, combined with a lower reference level (consistent with rules established for performance-based contributions to the Amazon Fund³) led to a 62 percent reduction in Norway's 2017 payment compared with the average of previous payments (Norwegian Ministry of Climate and Environment 2017).

The February 2019 decision of the Green Climate Fund (GCF) to pay Brazil \$96.5 million for forest-based emissions reductions in 2014–15 (as one of the first grants from its REDD+ pilot program) was controversial in light of President Jair Bolsonaro's announced intentions to relax various forest protection measures. The Brazilian case highlights the importance of timing of verification-payment cycles in REDD+: the greater the lag time after performance, the more likely it is that a new administration will inherit the reward. The payment, however, provides an important signal to the new Brazilian administration, and to other forest-rich developing countries, that the international community is committed to rewarding the global public good of tropical forest conservation. In addition to Brazil, Colombia and Ecuador have reported verified emissions reductions at the national level, and have also presented proposals to the GCF for results-based payments. In July 2019, the GCF agreed to pay Ecuador \$18.6 million for results achieved in 2014.

In Indonesia, the national REDD+ initiative catalyzed by a 2010 letter of intent with Norway facilitated a number of important achievements. It prompted new policy measures, including a moratorium on new licenses for oil palm and timber plantations and logging concessions in mature forests and peatlands after May 2011, the "One Map" initiative to collect and harmonize spatial land use data, and progress on anticorruption efforts (Seymour and Busch 2016). Importantly, it also bolstered the indigenous rights agenda, as described in Box 2.

Forest loss in Indonesia declined in 2017, and again in 2018. Government initiatives to extend and expand the 2011 moratorium—to include peatlands already covered by licenses—and other measures in the wake of the catastrophic 2015 forest fires likely contributed to this outcome (Weisse and Goldman 2018, 2019), along with other factors such as wetter weather conditions and low commodity prices. In 2018, the moratorium on new licenses for oil palm plantations was extended

REDD+ AND THE INDIGENOUS RIGHTS AGENDA IN INDONESIA

“We see REDD+ as an opportunity for us [indigenous people] to be seen. . . .When you talk about forests you cannot exclude talking about us.”

—Mina Setra, Deputy Secretary General, Indigenous People’s Alliance of the Archipelago (AMAN) in an Indonesia Center for Global Development podcast, August 7, 2014. www.cgdev.org/blog/surprising-indigenous-view-redd-mina-setra-and-frances-seymour.

Indonesia’s forest rights agenda made considerable progress in the decade following initiation of the country’s national REDD+ program. Ongoing efforts to achieve progressive changes in law and policy accelerated. The most prominent achievement, Indonesia’s landmark 2012 Supreme Court decision to recognize indigenous rights to forest land (Constitutional Court Decision 2012), led to Presidential recognition of 18 customary territories, and spawned numerous district-level regulations.

This progress was enabled by several factors. Civil society organizations concerned with forest access and rights have been well organized in Indonesia since 1998 (Di Gregorio et al. 2012), and indigenous rights issues featured prominently in the evolving REDD+ policy arena (Moeliono et al. 2014). An open and transparent early REDD+ process facilitated by a national REDD+ task force (later briefly incarnated as an agency) encouraged multistakeholder collaboration to design the national REDD+ strategy. While the overall REDD+ policy network was characterized by multiple actors and policy coalitions with often conflicting and competing interests (Brockhaus et al. 2014) and different understandings of equity (Di Gregorio et al. 2013), safeguards and forest rights were consistently high on the REDD+ agenda.

Civil society organizations such as AMAN (a national federation of indigenous groups) leveraged the policy space created by REDD+ to legitimize a social justice agenda, taking strategic advantage of REDD+ as a prominent multilevel policy formulation process. In 2012, the REDD+ task force invited AMAN to submit maps of indigenous territories to be included

in the moratorium map that year. Subsequently, AMAN won the Supreme Court decision (Constitutional Court Decision 2012) that opened the door to government recognition of indigenous territories within state forest lands.

Interests opposed to recognizing indigenous rights to forests had come from both the public and private sectors. National and regional forestry officials stood to lose control over state forests and associated revenues, while corporate concessions for timber, mining, and plantations could be jeopardized. District governments, which must grant recognition to indigenous communities to qualify for land rights transfers, also grant permits to companies for resource extraction from government land. These factors may help explain why recognition of indigenous rights to land has been rare (van der Muur 2018).

In 2015, the opportunity to leverage the national REDD+ process to advance the indigenous rights agenda shifted when a new government dissolved the REDD+ agency and subsumed REDD+ affairs into the newly created Ministry of Environment and Forestry (Korhonen-Kurki et al. 2017). In this process, the focus of REDD+ and forest rights was redirected to a revived “social forestry” agenda (dating back to the late 1980s), which aims to devolve management of large areas of forestland to local communities. Over the past decades, previous social forestry programs had mixed impact (Maryudi et al. 2012; Moeliono et al. 2017), granting communities increased responsibilities but only limited forest management rights.

While Indonesia’s national REDD+ initiative initially provided an opening for indigenous groups to advance their territorial rights claims, it remains to be seen whether forward momentum can be maintained. While AMAN endorsed the candidacy of Joko Widodo for President in the 2014 election based on his promises to advance the indigenous rights agenda, the alliance withheld its endorsement for either candidate in the 2019 election, having been disappointed by limited progress (Gokkon 2019).

again for another three years. In February 2019, Norway announced that it will pay Indonesia for 4.8 megatonnes of carbon dioxide (MtCO₂) reduced in 2017 against the historical baseline (2006–16) as the REDD+ agreement moves into the results-based finance phase (Norway in Indonesia 2019).

In Guyana, REDD+ finance accelerated the formulation of several key national forestry policies; development of a strong national measurement, reporting, and verification (MRV) system (Norad 2013); and tenure regularization of indigenous lands (Laing 2015). While REDD+ has persisted on the national agenda since Guyana and Norway's agreement in 2009, questions remain about the role of REDD+ finance in relation to the country's current dependence on mining exports and future as a major oil exporter (Laing 2018). A recent analysis, however, shows that prospective REDD+ payments are competitive with state revenues from logging and mining leases in light of the low level of rent capture from extractive industries (Overman et al. 2019).

With bilateral agreements limited to a handful of countries, most countries are looking to multilateral REDD+ mechanisms for results-based finance. As of September 2019, 20 countries had progressed to the Carbon Fund (i.e., results-based payment) phase of their participation in the Forest Carbon Partnership Facility, a multilateral trust fund managed by the World Bank to support REDD+ efforts. The Carbon Fund requires development of national REDD+ strategies, MRV systems, and environmental and social safeguards to be eligible for emission reduction payment agreements (ERPAs) in which the REDD+ country is the seller and the FCPF is the buyer of verified emissions reductions. DRC, Mozambique, and Ghana are the first countries to sign ERPAs so far. National stakeholder involvement in FCPF processes has substantially raised government, and in some cases private sector, interest in and understanding of the role forests play in climate change mitigation, ecosystem service maintenance, and land tenure issues (Stolle 2018).

Challenges in Addressing the Underlying Drivers of Deforestation

For REDD+ to be successful, a transition away from the forces that drive business-as-usual deforestation is needed both within and beyond the forestry sector, and far beyond the policy domains of tropical countries where

deforestation takes place (Brockhaus and Angelsen 2012). Such a transition requires transformational change, which has been defined as shifts in political discourses, economic incentives, and power relations that lead away from business-as-usual policy approaches that directly or indirectly support deforestation and forest degradation (Brockhaus and Angelsen 2012; Di Gregorio et al. 2012). For instance, dominant narratives of national development often privilege the role of extending agriculture and infrastructure into forest frontiers as a way of generating revenue and employment.

Strategies for achieving REDD+ objectives inherently require coordination across sectors. However, there are often fundamental differences in goals and interests related to forests and natural resources, and political coalitions may actively undermine sustainability efforts and local peoples' rights (Larson et al. 2018a). Those who deforest, such as government agricultural and mining agencies, private firms, and elites with special interests, may coordinate more effectively with one another than those seeking low-emissions alternatives (Ravikumar et al. 2018). Not all solutions will be resolved through better coordination; regulations and law enforcement, as well as collective action, are also needed (Larson et al. 2018a).

Many REDD+ initiatives have thus far failed to address the key underlying drivers of land use change. A growing evidence base shows that the drivers of deforestation are embedded in global and domestic commodity chains and investments in commodities such as beef, palm oil, soybeans, cocoa, timber, and pulp and paper (De Sy 2015; Austin et al. 2017; Henders et al. 2015; Curtis et al. 2018). Brazil's early success in tackling large-scale drivers resulted from a policy mix that was built on command-and-control interventions (Börner et al. 2015) and included global commodity chain actors (Gibbs et al. 2015).

Not all forest-rich countries, however, have aimed to address these drivers or to change the behavior of the domestic and transnational agents who benefit most from deforestation. For instance, a review of early REDD+ readiness documents from 43 countries found that most proposed interventions did not match the identified large-scale, and often commodity-driven, drivers of deforestation. Instead, proposed activities fell under the categories of sustainable forest management, woodfuel efficiency, and agroforestry, and seemed to shy away from

controlling large commercial actors with well-developed lobbying capacities (Salvini et al. 2014). Despite improved understanding of deforestation drivers through improved spatial assessments using remote sensing and ground data and new platforms to trace commodity supply chains, powerful agents of deforestation can ignore or control this information to protect business-as-usual interests (De Sy et al. 2018). More recently national REDD+ strategies from select countries explicitly include interventions to tackle commodity-driven deforestation, such as deforestation-free palm oil agreements at national and subnational levels in Colombia and Ecuador. And as described further below, REDD+ initiatives are increasingly being linked to sustainable commodity supply chain initiatives at subnational scales.

Triggering Transformational Change

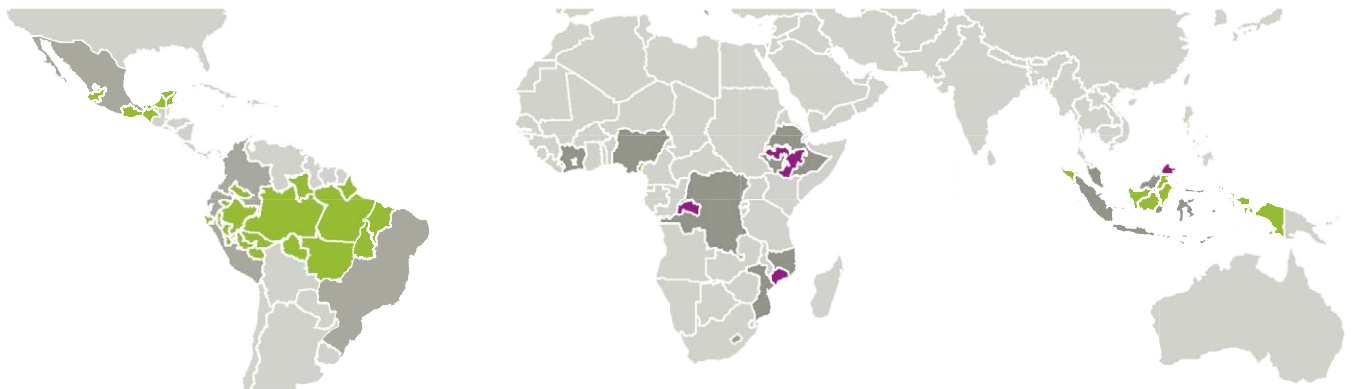
Featured prominently in a study of factors triggering progress toward transformational change in countries advancing REDD+ initiatives was the presence of diverse

coalitions calling for such change, as in Indonesia and Brazil (Korhonen-Kurki et al. 2014; Korhonen-Kurki et al. 2019; Brockhaus et al. 2017). The strength of these coalitions varied considerably among countries, but nowhere did they become stronger than the long-established coalitions for business as usual (Di Gregorio et al. 2017; Brockhaus and Di Gregorio 2014).

The study also revealed that financial incentives accelerated REDD+ implementation in countries with national forest ownership such as Brazil, Indonesia, and Guyana. However, national ownership can prove ineffective for transitioning away from large-scale drivers of deforestation if governments are closely tied to those who represent powerful business-as-usual interests (see Cole et al. 2017 for Laos; May et al. 2016 for Brazil; and Brockhaus et al. 2017). The scale of REDD+ financial incentives pales beside its business-as-usual competition. For example, the value of illegally traded timber alone may exceed the total value of all official development aid (Barber and Canby 2018), and large-scale investments in

FIGURE 3

SAMPLE OF STATES AND PROVINCES DEVELOPING LOW-EMISSIONS DEVELOPMENT STRATEGIES INCLUDED IN EARTH INNOVATION INSTITUTE, CIFOR, AND GOVERNORS' CLIMATE AND FORESTS TASK FORCE STUDY ON SUBNATIONAL JURISDICTIONAL APPROACHES



Note: Tropical states and provinces in green are members of the Governors' Climate and Forests Task Force; those in purple are developing low-emissions development strategies outside of this network.

Source: Stickler et al. 2018a.

land conversion and subsidies to the agriculture sector vastly outstrip investments in reducing forest-based climate emissions in tropical countries (ODI 2015; Climate Focus 2017).

In summary, while many countries have made significant progress in addressing forest loss through national REDD+ initiatives, multilateral results-based payments are only just beginning to flow, and the scale of available finance is dwarfed by the scale of the challenges.

SUBNATIONAL JURISDICTIONAL APPROACHES TO REDD+ AND LOW-EMISSIONS DEVELOPMENT

The emergence of subnational governments as leaders in REDD+ and low-emissions development was bolstered by the Governors' Climate and Forests Task Force, established by nine governors from Brazil, Indonesia, and the United States in 2008, which recognized subnational jurisdictions as important sites of forest-based climate policy implementation, innovation, and learning (Boyd et al. 2018). Subnational governments have legal and political power in decentralized systems (Larson and Ribot 2009, Boyd et al. 2018) and are closer to the farmers and communities making land use decisions (Stickler et al. 2014).

The state of Acre in Brazil developed the world's first jurisdictional REDD+ program through its 2010 System of Incentives for Environmental Services law and has been supported by the German government's REDD+ Early Movers (REM) program since 2012. Acre's FREL and safeguard information systems are aligned with those at the national level to ensure compatibility with national REDD+ goals. Acre was one of the first members of the Governors' Climate and Forests Task Force, and as of September 2019, the task force had 35 tropical member states and provinces in eight countries (www.gcftf.org). Figure 3 shows tropical member states and provinces, as well as others undertaking low-emissions development strategies.

For example, the signed ERPAs in DRC and Mozambique, mentioned earlier, will be piloted through subnational jurisdictional REDD+ programs in the provinces of Mai-Ndombe and Zambezia, respectively (Reyniers 2018, Simonet and David 2018). Furthermore, district and

municipal networks to promote sustainable development have been implemented in Brazil (e.g., the Green Municipalities Program) and in Indonesia (Roundtable for Sustainable Districts, or LTKL).

In addition, a number of programs in subnational jurisdictions have been initiated with an explicit focus on linkages to sustainable commodity supply chains. For instance, the BioCarbon Fund's Initiative for Sustainable Forest Landscapes (ISLF), managed by the World Bank, is targeting subnational jurisdictions in Colombia, Ethiopia, Indonesia, Mexico, and Zambia where agriculture is a key driver of land use change (World Bank 2019). Better alignment of results-based REDD+ payments with preferential access to markets and finance for commodities that are legally and sustainably produced could create incentives stacked at different jurisdictional scales. However the effectiveness of such incentives will be limited if a significant share of demand for forest-risk commodities is from domestic or emerging markets that are not yet sensitive to concerns about deforestation.

While subnational jurisdictional approaches are attracting substantial attention, many such initiatives are still in the formative stages, and further assessment of key design and implementation principles and their relationship to outcomes is needed. A recent study of the 39 tropical states and provinces (see Figure 3) that have made formal commitments to reducing deforestation shows most made progress toward their goals by developing key enabling measures. Such measures included developing integrated jurisdictional land use management strategies, establishing robust multistakeholder processes, and formulating clear performance targets. Deforestation decreased in just under half of these jurisdictions in 2012–17 relative to projected subnational FRELs, although the impacts of sustainability policies—both individual policy interventions and sets of policies implemented as a whole—on deforestation outcomes remain to be evaluated (Stickler et al. 2018a; Stickler, 2018b).

In the meantime, experience from subnational jurisdictional approaches to REDD+ and low-emissions development shows potential for increasing benefits to indigenous peoples and local communities by prioritizing the rights recognition and participation of traditional forest guardians across entire jurisdictions (DiGiano et al. 2016). Indeed, in 2018 the Governors' Climate and Forests Task Force adopted a set of guiding principles

for collaboration and partnership between subnational governments, indigenous peoples, and local communities to support such rights-based approaches (GCF Task Force 2018).

Political and Financial Barriers to Subnational Jurisdictional Approaches

Subnational jurisdictional approaches to REDD+ and low-emissions development present new opportunities for creative alternatives to business as usual. However, there are very real political challenges for the elected officials pursuing these approaches, including difficulties in moving from commitments to implementation, limited rewards—and sometimes significant political risk—for their efforts, and political turnover that impedes any government-led approach (Boyd et al. 2018). Subnational governments, in particular, may face barriers to innovation due to national governments' tendencies to centralize decision-making at the national level (Trench et al. 2018) and limited budgets and capacities (Libert Amico and Trench 2016).

Finance and investment to support the progress of subnational jurisdictions is still lacking. Germany's REDD+ Early Movers program provided direct results-based finance to the states of Acre and Mato Grosso in Brazil for reducing their deforestation rates from their historical baselines, but most international climate finance committed to subnational jurisdictions has not been conditional on results (Stickler et al. 2018b). Approval of the California Tropical Forest Standard—specifically designed to support tropical forest jurisdictions through potential international, sector-based forest offsets in the California cap-and-trade system—by the state's Air Resources Board in September 2019 provided an important signal for potential market-based finance to reward progress.

Finally, although the jurisdictional approach concept is increasingly being adopted by key supply chain companies (e.g., Unilever, Mars), platforms (e.g., Consumer Goods Forum, Tropical Forest Alliance), and initiatives (e.g., Cocoa and Forests Initiative), barriers to private-public partnerships still need to be resolved (Luttrell et al. 2018a; Boyd et al. 2018). These barriers include questions about how to operationalize preferential sourcing and investment at jurisdictional

scales, and what metrics of jurisdictional performance should be used. Companies and investors may not know how to engage with local governments and may face significant reputational risk associated with investment in places that are just beginning to address deforestation. To address these barriers, there is a need for simple and safe partnerships between committed companies and local governments to realize mutually defined goals (Nepstad 2019). Transparent monitoring and reporting of progress toward these goals in the context of sustainable sourcing arrangements is also needed to hold private and public actors accountable for their promises.

LESSONS FROM LOCAL REDD+ INITIATIVES

Although under the UNFCCC, REDD+ finance and accounting take place at jurisdictional scales, rigorous evaluations of early REDD+ projects can help inform the design and implementation of jurisdictional policies, programs, and initiatives that will likely affect the rights and livelihoods of rural producers and local communities. Since 2010, CIFOR has evaluated the impacts of 23 local REDD+ projects in Brazil, Peru, Cameroon, Tanzania, Indonesia, and Vietnam.

Findings highlight some important early impacts:

- *Some reduced deforestation.* Nine local REDD+ initiatives reduced deforestation in their communities relative to control areas with the reduction in average annual deforestation rates ranging from 0.4 to 2.3 percentage points (Bos et al. 2017).
- *Some evidence of livelihood benefits.* No systematic negative impacts of these REDD+ interventions were observed on local welfare (Sunderlin et al. 2017), with some evidence of significant livelihood benefits (Duchelle et al. 2018a).
- *Little effect on land tenure.* Sensitive and systemic issues such as land tenure conflicts cannot be fully addressed at the project scale. For instance, while REDD+ interventions did not worsen smallholder tenure insecurity, there is little evidence that projects' efforts to address tenure security produced positive results (Sunderlin et al. 2018a).

- *Need more attention to gender.* While there are examples of REDD+ projects enhancing women's participation in village decision-making (Kariuki and Birner 2016; Sharma et al. 2017), there is also evidence that implementers could do more to promote gender equality and safeguard women's rights. Stereotypes and false assumptions regarding women's roles in forest management may help explain the limited attention given to gender in early REDD+ activities (Larson et al. 2018b).
- *Need more local participation.* Meaningful participation in local REDD+ projects is often limited. Some projects did not exhibit comprehensive free, prior, and informed consent, and others gave insufficient attention to integrating local needs (Sunderlin et al. 2018b; Duchelle et al. 2018b).
- *Incentives alleviate the burden of restrictions on land use.* Incentives for smallholders and communities (e.g., payments, infrastructure, livelihood support) significantly alleviated the burdens of land use restrictions (e.g., through law enforcement, protected areas) associated with some local REDD+ initiatives (Duchelle et al. 2017).

An extensive review of recent impact studies of REDD+ projects is consistent with the findings summarized above (Duchelle et al. 2018c). The few studies published on carbon/land use outcomes show moderately encouraging results, while the more numerous studies on well-being highlight small or mixed results that are more likely to be positive when incentives are part of the intervention. While many REDD+ projects take place in areas with long histories of forest-related conflict and injustice, early concerns that REDD+ would systematically worsen those conditions is not supported by the overall evidence. In some places, however, REDD+ projects created high expectations locally, especially related to the prospects of substantial cash transfers, which were never realized due to lack of predictable finance (Angelsen and Vatn 2016).

Together, these project findings highlight the importance of addressing systemic issues such as land tenure insecurity at jurisdictional scales and the need to avoid shifting REDD+ burdens to the local level since the actual drivers of deforestation are often operating at higher levels (Luttrell et al. 2018b). They also underscore the importance of prioritizing the rights, participation, and

Stereotypes and false assumptions regarding women's roles in forest management may help explain the limited attention given to gender in early REDD+ activities

livelihoods of local farmers and communities, including women, in jurisdictional REDD+ initiatives to ensure more effective and equitable outcomes.

CHALLENGES OF INTEGRATING REDD+ ACROSS SCALES

As REDD+ moves into the results-based finance phase, countries are wrestling with issues of integrating accounting, strategies, and finance across local, state/provincial, and national scales. Accountability for NDCs to the Paris Agreement, negotiations around the Agreement's Article 6 (which governs the international transfer or sale of emission reduction units), and the prospect of the inclusion of forest carbon credits in various emissions-reduction compliance regimes (including one being developed by the International Civil Aviation Organization) all require the alignment of REDD+ accounting across scales to avoid double counting results when emission reductions are claimed, sold, or traded (Lee et al. 2018).

National governments are unlikely to meet climate targets based on reducing land use emissions without meaningful engagement of subnational governments,

A review of NDCs of REDD+ countries shows that less than one-fourth highlight the potential contribution of subnational governments to their national mitigation goals

especially in countries where local jurisdictions exercise authority over land use planning and permitting. A review of NDCs of REDD+ countries shows that less than one-fourth highlight the potential contribution of subnational governments to their national mitigation goals (Sarmiento Barletti et al. 2018). As mentioned earlier, decentralization can give subnational governments substantial legal and political power, but there is a need to clarify both the authorities and resources required for local governments to implement policies effectively. Effective decentralization has been impeded in many countries, such as Vietnam (Yang et al. 2016), Peru (Kowler et al. 2016), and Indonesia (Indrato et al. 2012) by a lack of financial and labor resources and capacity, despite the increased responsibilities and mandates devolved to lower levels of government. The evolution of REDD+ finance and accounting to the jurisdictional scale has also changed the dynamic for existing REDD+ projects, which can no longer anticipate direct participation in international transactions with Paris-compliant carbon markets. There is an opportunity, however, to “nest” existing REDD+ projects into jurisdictional programs, and catalyze new local actions, to contribute to higher-level emission reduction targets (Lee et al. 2018).

As international results-based finance begins to flow, national governments must also grapple with downstream

benefit-sharing mechanisms. Debates around benefit sharing involve questions of equity; that is, Who should benefit from REDD+? Who has a right to the benefits? and Whose perspective matters? For instance, Luttrell et al. (2013) describe different rationales for benefit sharing, including purposefully channeling benefits to those with legal rights; those who have achieved emission reductions; low-emitting forest stewards; those who have incurred costs and require compensation; facilitators of REDD+ implementation; or, the poorest. A critical examination of the underlying narratives that influence design of benefit-sharing mechanisms is needed relative to their contextual conditions if REDD+ is to be effective, equitable, and legitimate (Wong et al. 2019). Lessons from earlier benefit-sharing experiences can be used to identify and mitigate risks of inequitable outcomes (Loft et al. 2017). For example, under the REM program in Acre, Brazil, 70–90 percent of German funds go directly to local actors, including indigenous peoples and traditional communities that act as conservation stewards and farmers and cattle ranchers, who are reducing deforestation along the agrarian frontier (KfW 2017).

RECOMMENDATIONS AND CONCLUSION

Given the lessons learned from REDD+ implementation to date, and new prospects of results-based finance on the horizon, we lay out the following recommendations for moving forward:

Accelerate transformational change in REDD+ finance and market incentives

Greater coresponsibility is needed from the international community beyond the few countries that have stepped forward with significant pledges of REDD+ finance. Given the ecosystem services and climate benefits that forests provide, along with their key role in rural development, forest protection should be globally supported through increased financial flows to forest-rich developing countries and rewarded with market-based incentives.

Currently, the obligations of donor countries—in terms of the amounts or modalities of funding to be provided—are not as well articulated in the REDD+ framework as are the requirements for recipient countries (Martius et al. 2018). A functional carbon market or broader partnerships between rich and forest-rich countries that create demand for jurisdictional forest-based emissions

reductions could increase incentives for change. Efforts in that direction have progressed slowly, in part due to outdated leakage concerns about the quality of forest carbon credits based on project-scale implementation.

In addition, the effectiveness of REDD+ finance could be bolstered by nascent demand-side policies to address illegal logging or the conversion of forest to agricultural production, and to reward production practices certified as legal and sustainable. Efforts to reduce the conversion of tropical forests to produce globally traded commodities have not yet balanced obligations between producer and consumer jurisdictions. Some rich countries, such as those in the European Union, have begun to restrict imports (or at least eligibility for subsidies, in the case of biodiesel based on palm oil) linked to deforestation. Positive incentives for sustainable production (such as preferential sourcing or price premiums) have been much slower to materialize.

Build stable and more powerful constituencies for forests across levels and sectors

Transformational change within countries will require strong domestic constituencies that support forest conservation and sustainable land use across sectors and levels of government. Such constituencies can help maintain long-term political interest in forests, even through governmental turnovers, and help counteract the multilevel influence (and venue shopping) of deforestation agents. New narratives about the positive contributions forests make to both economic development and climate goals can help support such constituencies (Angelsen et al. 2018c). In fact, elements of successful forest conservation and restoration initiatives in Brazil, Costa Rica, Ethiopia, India, South Korea, and other countries have been identified as national and political ownership through a proforest narrative, long-term political will, and cross-sectoral coordination (Angelsen et al. 2018c).

Promote transparency to address the drivers of deforestation

More effort is needed to tackle the large-scale drivers of deforestation. While governments and private sector actors have made new commitments through national and subnational jurisdictional approaches, increased transparency is needed to hold actors accountable to their promises (Boyd et al. 2018). Increased transparency

related to the revenue flows from business-as-usual development and prospective REDD+ benefit-sharing mechanisms can help create political support for transformational change (Overman et al. 2019). New information on drivers and benefit flows from deforestation can also inform rich countries' demand-side policies, such as the Norwegian pension fund's divestment from more than 60 companies associated with deforestation (Norges Bank 2019), and the European Union Communication, Stepping Up EU Action against Deforestation and Forest Degradation (European Union 2019). Such actions will be particularly important for donor countries promoting REDD+ to ensure credibility and policy coherence in their efforts to halt deforestation.

Encourage international and national ambition while supporting subnational progress and innovation

Forest-rich developing countries can substantially raise ambition toward planning for and achieving REDD+ in their NDCs by tackling the drivers of deforestation and forest degradation. As Angelsen et al. (2018c) conclude, bold policy reforms are needed, such as those that led to massive reduction in Amazonian deforestation in Brazil. Although REDD+ is explicitly mentioned in the NDCs of 55 countries, the credibility of targets for reducing forest-based emissions would be strengthened by strategies to address drivers of deforestation and forest degradation (such as removal of perverse subsidies), as well as forest governance and safeguards issues (Pham et al. 2018). As demonstrated in Brazil, such strategies should include rigorous implementation of forest law, sustainable commodity supply chains, and viable alternatives for those who base their livelihoods on forests or on the industries that drive deforestation. It is also important to recognize the continued work required to maintain such successes through political upheaval, as evidenced by the recent backsliding of Brazil in terms of both environmental and social protections.

Subnational jurisdictions across the tropics have shown concrete progress toward reducing deforestation despite scarce international climate finance (Stickler et al. 2018a, 2018b). These innovations include integrated low-emissions development strategies for entire jurisdictions and robust and inclusive multistakeholder processes. Recommendations for supporting these approaches include developing broadly shared definitions of success in addressing tropical deforestation;

purposefully investing in jurisdictions at all stages of progress, not just the most advanced; and providing support for government partnerships with indigenous peoples, local communities, and companies seeking to make their commodity supply chains more sustainable (Stickler et al. 2018b).

Support a rights-based approach to forest-based climate mitigation

In many locations, securing rights for indigenous peoples and local communities is central to successful forest-based mitigation (Sunderlin et al. 2018b). The emergence of REDD+ brought new attention to pre-existing rights concerns (see Box 1) and provided opportunities for the rise of legal norms to protect the rights of indigenous peoples (Jodoin 2017). Yet there is a chicken-and-egg problem. While tenure reforms are considered insufficient to ensure implementation of REDD+ safeguards (Sunderlin et al. 2018b), the slow implementation of REDD+ may have done damage to the indigenous rights agenda by delaying the national policies and actions needed to protect local rights (Savedoff 2018). Recognizing indigenous peoples and local communities as substantive rights holders (rather than project beneficiaries) can help place them at the center of forest and climate initiatives (Sarmiento Barletti and Larson 2017).

Leverage domestic finance for forests

There is an urgent need to promote new sources of financing for forests, with several promising national initiatives under way. In 2014, India created one of the first ecological fiscal transfers for forests by including forest cover in the formula to determine how much tax revenue the central government will distribute to states annually. The level of funding at stake is substantial, estimated at \$6.9 billion to \$12 billion annually from 2015 to 2019 (Busch and Mukherjee 2017). There are also emerging opportunities in Colombia, Indonesia, and Mexico in carbon tax and green bonds programs. New sources of international financing could complement such domestic fiscal policies (Seymour and Busch 2016).

Learn from early experiences with results-based payments

The technical and sociopolitical challenges involved in creating and implementing a results-based payment system at a jurisdictional scale, which was REDD+'s initial and novel idea, were vastly underestimated. Lessons can be learned from other forms of results-based aid; for example, that agreements must be backed with credible funding and that not all REDD+ finance should be performance based (Angelsen 2017). REDD+ incentives could support results achieved during all three phases of REDD+ (Angelsen et al. 2018b). For instance, some argue that payment for policy performance could help foster national ownership and more equitable sharing of costs and risks (Savedoff 2016).

As described above, lessons are emerging about the circumstances under which such payments can prompt essential policy reforms in land use planning, tenure, and agriculture in the absence of broader political and social change. The pilot results-based payment schemes now under way, both within and outside the UNFCCC framework (e.g., Green Climate Fund, FCPF) will soon provide a wider set of experiences from which to draw conclusions. Any results-based payments must address key technical and political challenges, including what to pay for, how to set reference levels, and whom to pay (Angelsen et al. 2018b).

Realize synergies between REDD+ and related global initiatives

As described above, there are opportunities to link jurisdictional REDD+ implementation with initiatives to promote sustainable commodity supply chains and to advance the indigenous rights agenda. And although the recent push for forest landscape restoration to meet global climate and development goals is welcomed, such efforts should not detract from the need to protect the world's remaining tropical forests. Synergies could be achieved, and dis-synergies avoided, by contextualizing restoration efforts squarely in the "+"—that is, the carbon stock enhancement component— of REDD+. Similarly, new discourses on "natural climate solutions" (e.g., TNC 2019) and "natural carbon capture" (e.g., CLUA 2019) should be explicitly linked to the REDD+ institutional infrastructure that has been built at national and international levels.

In conclusion, conserving tropical forests is essential to meeting climate and development objectives, and REDD+ has served as a testing ground for multiple approaches to addressing these objectives. Deforestation and forest degradation, however, are deeply rooted in powerful business-as-usual interests, and REDD+ finance has been meager, thus progress has been slower than expected. Few rigorous studies are available that assess the impacts of REDD+ policies and interventions. More learning is needed about REDD+ implementation and outcomes at national and subnational levels before labeling REDD+ a fad or failure and moving on to the next big idea (Angelsen et al. 2017, 2018a). For true learning to take place, impact assessment should not be an afterthought but rather integrated at the outset with a clear plan for establishing a realistic counterfactual or baseline against which to measure impacts (Angelsen et al. 2018c).

The initial, novel feature of REDD+, results-based payments at jurisdictional scales, remains largely untested. Yet REDD+ helped create a global alliance for forest protection that encompasses tenure and rights, public-private partnerships, and increased monitoring and transparency, which is novel compared with previous conservation efforts. Through progress in many tropical countries, we know more about the problem of deforestation and forest degradation, and elements of the solutions, than ever before. Now is the time to mobilize that knowledge through action by rich and forest-rich countries alike.

FURTHER READING

Center for International Forestry Research (CIFOR) Global Comparative Study on REDD+. <https://www.cifor.org/gcs/publications/>.

Center for Global Development (CGD) Forest and Climate Paper Series. <https://www.cgdev.org/page/wfwn-paper-series>.

World Resources Institute (WRI) Ending Tropical Deforestation Series. <https://www.wri.org/publication-series/ending-tropical-deforestation>.

ENDNOTES

1. WAVES (Wealth Accounting and the Valuation of Ecosystem Services) is a World Bank–led global partnership launched in 2010 that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts. <https://www.wavespartnership.org/>.
2. The Natural Capital Project—a partnership among World Wildlife Fund, The Nature Conservancy, University of Minnesota, and Stanford University—works to provide decision-makers with reliable ways to assess the true value of the services that ecosystems provide. <https://www.worldwildlife.org/projects/the-natural-capital-project>.
3. The Amazon Fund was set up in 2008 to manage REDD+ funding from bilateral donors, including Norway and Germany. The fund's reference level is the average of the deforestation rate over the previous 10 years and is updated every 5 years. The most recent update reduced the Amazon Fund's upper limit for raising funds to \$21.5 billion for results achieved between 2006 and 2016 (Angelsen et al. 2018b).

REFERENCES

- Angelsen, A. 2017. "REDD+ as Result-Based Aid: General Lessons and Bilateral Agreements of Norway." *Review of Development Economics* 21 (2): 237–64. <https://doi.org/10.1111/rode.12271>.
- Angelsen, A., and D. Kaimowitz. 1999. "Rethinking the Causes of Deforestation: Lessons from Economic Models." *World Bank Research Observer* 14 (1): 73–98. <http://documents.worldbank.org/curated/en/264451468180276699/pdf/766320JRN0WBRO00Box374385B00PUBLIC0.pdf>.
- Angelsen, A., and D. McNeill. 2012. "The Evolution of REDD+: A Political Economy Framework." In *Analysing REDD+: Challenges and Choices*, edited by A. Angelsen, M. Brockhaus, W.D. Sunderlin, and L. Verchot, 31–48. Bogor, Indonesia: Center for International Forestry Research (CIFOR). http://www.cifor.org/publications/pdf_files/Books/BAngelsen120103.pdf.
- Angelsen, A., and A. Vatn. 2016. "REDD+: From Idea to Reality—and Back?" In *Festschrift in Honor of Professors Ole Hofstad and Birger Solberg*, edited by S. Baardsen, T. Eid, and H. F. Hoen, 97–107. Ås, Norway: Norwegian University of Life Sciences.
- Angelsen, A., P. Jagger, R. Babigumira, B. Belcher, N.J. Hogarth, S. Bauch, J. Börner, C. Smith-Hall, and S. Wunder. 2014. "Environmental Income and Rural Livelihoods: A Global-Comparative Analysis." *World Development*, 64 (Supplement 1): S12–S28. <http://dx.doi.org/10.1016/j.worlddev.2014.03.006>.
- Angelsen, A., M. Brockhaus, A.E. Duchelle, A.M. Larson, C. Martius, W.D. Sunderlin, L.V. Verchot, G. Wong, and S. Wunder. 2017. "Learning from REDD+: A Response to Fletcher et al." *Conservation Biology* 31 (3): 718–20. <http://dx.doi.org/10.1111/cobi.12933>.
- Angelsen, A., C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham (eds). 2018a. *Transforming REDD+: Lessons and New Directions*. Bogor, Indonesia: CIFOR.
- Angelsen, A., E.A.T. Hermansen, R. Rajão, and R. van der Hoff. 2018b. "Results-Based Payment: Who Should Be Paid, and for What?" In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.
- Angelsen, A., C. Martius, A.E. Duchelle, A.M. Larson, T.T. Pham, and S. Wunder. 2018c. "Conclusions: Lessons for the Path to a Transformational REDD+." In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.
- Arraut, J.M., C. Nobre, H.M.J. Barbosa, G. Obregon, and J. Marengo. 2012. "Aerial Rivers and Lakes: Looking at Large-Scale Moisture Transport and Its Relation to Amazonia and to Subtropical Rainfall in South America." *Journal of Climate* 25 (January): 543–56. <https://doi.org/10.1175/2011JCLI4189.1>.

Asare, R.A. 2015. "The Impacts of International REDD+ Finance: Ghana Case Study." Washington, DC: Climate and Land Use Alliance (CLUA). http://www.climateandlandusealliance.org/wp-content/uploads/2015/08/Impacts_of_International_REDD_Finance_Case_Study_Ghana.pdf.

Assunção, J., C.C. Gandour, and R. Rocha. 2012. *Deforestation Slowdown in the Legal Amazon: Prices or Policies?* Rio de Janeiro, Brazil: Climate Policy Initiative affiliated with Pontifical Catholic University of Rio (PUC-Rio).

Atmadja, S.S., S. Arwida, C. Martius, and T.T. Pham. 2018. "Financing REDD+: A Transaction among Equals, or an Uneven Playing Field?" In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.

Austin, K.G., M. González-Roglich, D. Schaffer-Smith, A.M. Schwantes, and J.J. Swenson. 2017. "Trends in Size of Tropical Deforestation Events Signal Increasing Dominance of Industrial-Scale Drivers." *Environmental Research Letters* 12 (5): 054009. <http://iopscience.iop.org/article/10.1088/1748-9326/aa6a88/meta>.

Barber, C.V., and K. Canby. 2018. "Assessing the Timber Legality Strategy in Tackling Deforestation: Accomplishments and Remaining Challenges in Addressing Illegal Logging and Associated Trade." Working Paper. Washington, DC: World Resources Institute (WRI). One of a series of papers prepared for the Oslo Tropical Forest Forum, Oslo, June 27–28.

Bauche, P. 2015. *The Impacts of International REDD+ Finance: Mexico Case Study*. Washington, DC: CLUA. http://www.climateandlandusealliance.org/wp-content/uploads/2015/08/Impacts_of_International_REDD_Finance_Case_Study_Mexico.pdf.

Börner, J., E. Marinho, and S. Wunder. 2015. "Mixing Carrots and Sticks to Conserve Forests in the Brazilian Amazon: A Spatial Probabilistic Modeling Approach." *PLoS ONE* 10 (2). <https://doi.org/10.1371/journal.pone.0116846>.

Börner, J., T.A.P. West, A. Blackman, D.A. Miteva, K.R.E. Sims, and S. Wunder. 2018. "National and Subnational Forest Conservation Policies." In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham (eds). Bogor, Indonesia: CIFOR.

Bos, A.B., A.E. Duchelle, A. Angelsen, V. Avitabile, V. De Sy, M. Herold, S. Joseph, C. de Sassi, E.O. Sills, W.D. Sunderlin, and S. Wunder. 2017. "Comparing Methods for Assessing the Effectiveness of Subnational REDD+ Initiatives." *Environmental Research Letters* 12 (7). <http://iopscience.iop.org/article/10.1088/1748-9326/aa7032/meta>.

Boyd, W., C. Stickler, A. Duchelle, F. Seymour, D. Nepstad, N.H.A. Bahar, and D. Rodriguez-Ward. 2018. "Jurisdictional Approaches to REDD+ and Low Emissions Development: Progress and Prospects." Working Paper. Washington, DC: WRI. One of a series of papers prepared for the Oslo Tropical Forest Forum, Oslo, June 27–28.

Brockhaus, M., and A. Angelsen. 2012. "Seeing REDD+ through 4Is: A Political Economy Framework." In *Analyzing REDD+: Challenges and Choices*, edited by A. Angelsen, M. Brockhaus, W.D. Sunderlin, and L. Verhot, 15–30. Bogor, Indonesia: CIFOR. http://www.cifor.org/publications/pdf_files/Books/BAngelsen20102.pdf.

Brockhaus, M., and M. Di Gregorio. 2014. "National REDD+ Policy Networks: From Cooperation to Conflict." *Ecology and Society* 19 (4): 14. <http://dx.doi.org/10.5751/ES-06643-190414>.

Brockhaus, M., M. Di Gregorio, and S. Mardiah. 2014. "Governing the Design of National REDD+: An Analysis of the Power of Agency." *Forest Policy and Economics* 49 (December): 23–33. <http://dx.doi.org/10.1016/j.forpol.2013.07.003>.

Brockhaus, M., K. Korhonen-Kurki, J. Sehring, M. Di Gregorio, S. Assembe-Mvondo, A. Babon, M. Bekele, M.F. Gebara, D.B. Khatri, H. Kambire, F. Kengoum Djiegni, D. Kweka, M. Menton, M. Moeliono, N.S. Paudel, T.T. Pham, I.A.P. Resosudarmo, A. Siteo, S. Wunder, and M. Zida. 2017. "REDD+, Transformational Change and the Promise of Performance-Based Payments: A Qualitative Comparative Analysis." *Climate Policy* 17 (6): 1–14. <http://dx.doi.org/10.1080/14693062.2016.1169392>.

Brown, D., F. Seymour, and L. Peskett. 2008. "How Do We Achieve REDD+ Benefits without Doing Harm?" In *Moving Ahead with REDD+: Issues, Options and Implications*, edited by A. Angelsen, 107–18. Bogor, Indonesia: CIFOR. http://www.cifor.org/publications/pdf_files/Books/BAngelsen080111.pdf.

Busch, J., and K. Ferretti-Gallon. 2017. "What Drives Deforestation and What Stops It? A Meta-analysis." *Review of Environmental Economics and Policy* 11 (1): 3–23. <https://doi.org/10.1093/reep/rew013>.

Busch, J., and A. Mukherjee. 2017. "Encouraging State Governments to Protect and Restore Forests Using Ecological Fiscal Transfers: India's Tax Revenue Distribution Reform." *Conservation Letters* 11 (2): 1–11. <https://doi.org/10.1111/conl.12416>.

Central African Forest Initiative (CAFI). 2019. "Gabon: First in Africa to Receive Payments for Preserved Rainforests" (blog), 22 September. <https://www.cafi.org/content/cafi/en/home/all-news/gabon--first-in-africa-to-receiving-payments-for-preserved-rainf.html>.

Climate Focus. 2017. *Progress on the New York Declaration on Forests—Finance for Forests. Goals 8 and 9 Assessment Report*. Amsterdam, The Netherlands: Climate Focus. <https://climatefocus.com/sites/default/files/NYDF%20report%202017%20FINAL.pdf>.

CLUA (Climate and Land Use Alliance). 2019. Website. <http://www.climateandlandusealliance.org/priorities/>.

- Coalition for Rainforest Nations. 2005. "Reducing Emissions from Deforestation in Developing Countries: Approaches to Stimulate Action." Submission by the Governments of Papua New Guinea and Costa Rica to the Eleventh Conference of the Parties United Nations Framework Convention on Climate Change, agenda item 6. <http://www.rainforestcoalition.org/documents/COP11AgendaItem6-Misc.Doc.Final.pdf>.
- Cole, R., G. Wong, M. Brockhaus, M. Moeliono, and M.H. Kallio. 2017. "Objectives, Ownership and Engagement in Lao PDR's REDD+ Policy Landscape." *Geoforum* 83 (July): 91-100. <https://doi.org/10.1016/j.geoforum.2017.05.006>.
- Colfer, C.J., B. Basnett, and M. Elias. 2016. *Gender and Forests: Climate Change, Tenure, Value Chains and Emerging Issues*. Abingdon, Oxon: Routledge.
- Constitutional Court Decision 35/PUU-X/2012, reviewing Law 41 of 1999 on Forestry, issued 20 March 2013 (Traditional Forest Community case). 2012. Indonesia. https://www.forestpeoples.org/sites/fpp/files/news/2013/05/putusan_sidang_35%20PUU%202012-Kehutanan-telah%20ucap%2016%20Mei%202013.pdf.
- Curtis, P.G., C.M. Slay, N.L. Harris, A. Tyukavina, and M.C. Hansen. 2018. "Classifying Drivers of Global Forest Loss." *Science* 361 (16407): 1108-11.
- De Sy, V., M. Herold, F. Achard, R. Beuchle, J.G.P.W. Clevers, E. Lindquist, and L.V. Verchot. 2015. "Land Use Patterns and Related Carbon Losses Following Deforestation in South America." *Environmental Research Letters* 10 (12): 124004. <http://dx.doi.org/10.1088/1748-9326/10/12/124004>.
- De Sy, V., M. Herold, M. Brockhaus, M. Di Gregorio, and R.M. Ochieng. 2018. "Information and Policy Change." In *Transforming REDD+: Lessons and New Directions* edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.
- Di Gregorio, M., M. Brockhaus, T. Cronin, and E. Muharrom. 2012. "Politics and Power in National REDD+ Policy Processes." In *Analysing REDD+: Challenges and Choices*, edited by A. Angelsen, M. Brockhaus, W.D. Sunderlin, and L. Verchot. 69-90. Bogor, Indonesia: CIFOR.
- Di Gregorio, M., M. Brockhaus, T. Cronin, E. Muharrom, L. Santoso, S. Mardiah, and M. Büdenbender. 2013. "Equity and REDD+ in the Media: A Comparative Analysis of Policy Discourses." *Ecology and Society* 18 (2): 39. <http://dx.doi.org/10.5751/ES-05694-180239>.
- Di Gregorio, M., C. Gallemore, M. Brockhaus, L. Fatorelli, and E. Muharrom. 2017. "How Institutions and Beliefs Affect Environmental Discourse: Evidence from an Eight-Country Survey on REDD+." *Global Environmental Change* 45: 133-50. <https://doi.org/10.1016/j.gloenvcha.2017.05.006>.
- DiGiano, M., C. Stickler, D. Nepstad, J. Ardila, M. Becerra, M. Benavides, S. Bernadinus, T. Bezerra, E. Castro, M. Cendales, C. Chan, A. Davis, S. Kandel, E. Mendoza, J. Montero, M. Osorio, and J. Setiawan. 2016. *Increasing REDD+ Benefits to Indigenous Peoples and Traditional Communities through a Jurisdictional Approach*. San Francisco: Earth Innovation Institute. <https://earthinnovation.org/wp-content/uploads/2014/09/Increasing-REDDBenefits-to-Indigenous-Peoples-Traditional-Communities.pdf>.
- Dooley, K., and D. Stabinsky. 2018. "Missing Pathways to 1.5 °C: The Role of the Land Sector in Ambitious Climate Action." Climate Land Ambition and Rights Alliance (CLARA). climatelandambitionrightsalliance.org/report.
- Duchelle, A.E., C. de Sassi, P. Jagger, M. Cromberg, A.M. Larson, W.D. Sunderlin, S. Atmadja, I.A.P. Resosudarmo, and C.D. Pratama. 2017. "Balancing Carrots and Sticks in REDD+: Implications for Social Safeguards." *Ecology and Society* 22 (3): 2. <https://doi.org/10.5751/ES-09334-220302>.
- Duchelle, A. 2018a. "Evidence on Local REDD+ Impacts from a Long-Term Global Comparative Study," CIFOR Letter to California Air Resources Board. November 13. www.arb.ca.gov/lispub/comm/bccomdisp.php?listname=tfs2018&comment_num=102&virt_num=93.
- Duchelle, A.E., C. de Sassi, E.O. Sills, and S. Wunder. 2018b. "People and Communities: Well-Being Impacts of REDD+ on the Ground." In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.
- Duchelle A.E., G. Simonet, W.D. Sunderlin, and S. Wunder. 2018c. "What Is REDD+ Achieving on the Ground?" *Current Issues in Sustainability* 32: 134-40.
- Ellison, D., C.E. Morris, B. Locatelli, D. Sheil, J. Cohen, D. Murdiyarto, V. Gutierrez, M. van Noordwijk, I.F. Creed, J. Pokorny, D. Gaveau, D.V. Spracklen, A.B. Tobella, U. Istedt, A.J. Teuling, S.G. Gebrehiwot, D.C. Sands, B. Muys, B. Verbist, E. Springgay, Y. Sugandi, and C.A. Sullivan. 2017. "Trees, Forests and Water: Cool Insights for a Hot World." *Global Environmental Change* 43 (March): 51-61. <https://doi.org/10.1016/j.gloenvcha.2017.01.002>.
- European Union, "EU Communication (2019) on Stepping Up EU Action against Deforestation and Forest Degradation." 2019. http://ec.europa.eu/environment/forests/eu_comm_2019.htm.
- FCPF (Forest Carbon Partnership Facility). n.d. <https://www.forestcarbonpartnership.org/>. Accessed August 5, 2019.
- Gallemore, C., M. Di Gregorio, M. Moeliono, and M. Brockhaus. 2015. "Transaction Costs, Power, and Multi-level Forest Governance in Indonesia." *Ecological Economics* 114 (June): 168-79. <https://doi.org/10.1016/j.ecolecon.2015.03.024>.

- Garnett, S., N. Burgess, J. Fa, A. Fernandez-Llamazares, Z. Molar, C. Robinson, J. Watson, K. Zander, B. Austin, E. Brondizio, N. Collier, T. Duncan, E. Ellis, H. Geyle, M. Jackson, H. Jonas, P. Malmer, B. McGowan, A. Sivongxay, and I. Leiper, 2018. "A Spatial Overview of the Global Importance of Indigenous Lands for Conservation." *Nature Sustainability* 1: 369–74. <https://doi.org/10.1038/s41893-018-0100-6>.
- GCF Task Force (Governors' Climate and Forest Task Force). 2018. "Guiding Principles for Collaboration and Partnership between Subnational Governments, Indigenous People and Local Communities." https://docs.wixstatic.com/ugd/cb5e0d_39355e4046ed4369afcf3d7fc7193d7.pdf.
- German, L. G. Schoneveld, and P. Pacheco. 2011. "Local Social and Environmental Impacts of Biofuels: Global Comparative Assessment and Implications for Governance." *Ecology and Society* 16 (4): 29.
- Gibbs, H.K., L. Rausch, J. Munger, I. Schelly, D.C. Morton, P. Noojipady, B. Soares-Filho, P. Barreto, L. Micol, and N.F. Walker. 2015. "Brazil's Soy Moratorium." *Science* 347 (6220): 377–78. <http://science.sciencemag.org/content/347/6220/377.full?ijkey=DY9/InsvOM5iQ&keytype=ref&siteid=sci>.
- Global Witness. 2017. "Defenders of the Earth: Global Killings of Land and Environmental Defenders in 2016." Report. Global Witness. <https://www.globalwitness.org/en/campaigns/environmental-activists/defenders-earth/>
- Gokkon, B. 2019. "Indonesia: Why Jokowi and Prabowo Won't Be Getting the Indigenous Vote," *Asian Correspondent*. <https://asiancorrespondent.com/2019/01/indonesia-why-jokowi-and-prabowo-wont-be-getting-the-indigenous-vote/>.
- Government of Colombia. 2019. "Forest Territories of Life—Integral Strategy to Control Deforestation and Manage the Forests." Report submitted to UN-REDD. <https://www.unredd.net/documents/un-redd-partner-countries-181/latin-america-the-caribbean-334/colombia-706/16790-bosques-territorios-de-vida-estrategia-integral-de-control-a-la-deforestacion-y-gestion-de-los-bosques.html>.
- Griscom, B.W., J. Adams, P.W. Ellis, R.A. Houghton, G. Lomax, D.A. Miteva, W.H. Schlesinger, D. Shoch, J.V. Siikamäki, P. Smith, and P. Woodbury. 2017. "Natural Climate Solutions." *Proceedings of the National Academy of Sciences* 114 (44): 11645–50.
- Henders, S., M. Ostwald, V. Verendel, and P. Ibsch. 2015. "Do National Strategies under the UN Biodiversity and Climate Conventions Address Agricultural Commodity Consumption as Deforestation Driver?" *Land Use Policy* 70 (January): 580–90.
- Indrarto, G.B., P. Murharjanti, J. Khatarina, I. Pulungan, F. Ivalerina, J. Rahman, M.N. Prana, I.A.P. Resosudarmo, and E. Muharrom. 2012. "The Context of REDD+ in Indonesia: Drivers, Agents and Institutions." Working Paper 92. Bogor, Indonesia: CIFOR.
- International Database on REDD+ Projects." <http://www.reddprojectsdatabase.org/>. Accessed August 5, 2019.
- Jodoin, S. 2017. *Forest Preservation in a Changing Climate: REDD+ and Indigenous and Community Rights in Indonesia and Tanzania*. Cambridge, UK, and New York: Cambridge University Press. <https://doi.org/10.1017/9781316986882.007>.
- Johns, T. 2015. *The Impacts of International REDD+ Finance: DRC Case Study*. Washington, DC: CLUA. http://www.climateandlandusealliance.org/wp-content/uploads/2015/08/Impacts_of_International_REDD_Finance_Case_Study_DRC.pdf.
- Kariuki, J., and R. Birner. 2016. "Are Market-Based Conservation Schemes Gender-Blind? A Qualitative Study of Three Cases from Kenya." *Society and Natural Resources* 29 (4): 432–47. <https://doi.org/10.1080/08941920.2015.1086461>.
- KfW. 2017. "REDD+ in the State of Acre, Brazil: Rewarding a Pioneer in Forest Protection and Sustainable Livelihood Development." Bonn, Germany: Federal Ministry for Economic Cooperation and Development (BMZ).
- Korhonen-Kurki, K., J. Sehring, M. Brockhaus, and M. Di Gregorio. 2014. "Enabling Factors for Establishing REDD+ in a Context of Weak Governance." *Climate Policy* 14 (2): 167–86. <https://doi.org/10.1080/14693062.2014.852022>.
- Korhonen-Kurki, K., M. Brockhaus, E. Muharrom, S. Juhola, M. Moeliono, C. Maharani, and B. Dwisatrio. 2017. "Analyzing REDD+ as an Experiment of Transformative Climate Governance: Insights from Indonesia." *Environmental Science & Policy* 73 (July): 61–70. <https://doi.org/10.1016/j.envsci.2017.03.014>.
- Korhonen-Kurki, K., M. Brockhaus, J. Sehring, M. Di Gregorio, S. Assembe-Mvondo, A. Babon, M. Bekele, V. Benn, M.F. Gebara, H.W. Kambire, F. Kengoum, C. Maharani, M. Menton, M. Moeliono, R. Ochieng, N.S. Paudel, T.T. Pham, G.P. Dkamela, and A. Siteo. 2019. "What Drives Policy Change for REDD+? A Qualitative Comparative Analysis of the Interplay between Institutional and Policy Arena Factors." *Climate Policy* 19 (3), 315–28. DOI: 10.1080/14693062.2018.1507897.
- Kowler, L.F.A. Ravikumar, A.M. Larson, D. Rodriguez-Ward, and C. Burga. 2016. "Analyzing Multilevel Governance in Peru: Lessons for REDD+ from the Study of Land-Use Change and Benefit Sharing in Madre de Dios, Ucayali and San Martin." Working Paper No. 203. Bogor, Indonesia: CIFOR. <http://dx.doi.org/10.17528/cifor/006107>.
- Laing, T. 2015. "The Impacts of International REDD+ Finance: Guyana Case Study." Washington DC: CLUA.
- Laing, T. 2018. "Guyana's REDD+ Agreement with Norway: Perceptions of and Impacts on Indigenous Communities." Working Paper No. 476. Washington, DC: Center for Global Development.

- Larson, A.M. and J. Ribot. 2009. "Lessons from Forestry Decentralization." In *Realising REDD+: National Strategy and Policy Options*, edited by A. Angelsen. Bogor, Indonesia: CIFOR.
- Larson, A.M., J.P. Sarmiento Barletti, A. Ravikumar, and K. Korhonen-Kurki. 2018a. "Multilevel Governance: Some Coordination Problems Cannot Be Solved through Coordination." In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.
- Larson, A.M., D. Solis, A.E. Duchelle, S. Atmadja, I.A.P. Resosudarmo, T. Dokken, and M. Komalasari. 2018b. "Gender Lessons for Climate Initiatives: A Comparative Study of REDD+ Impacts on Subjective Wellbeing." *World Development* 108 (August): 86–102. <https://doi.org/10.1016/j.worlddev.2018.02.027>.
- Lawrence, D., and K. Vandecar. 2015. "Effects of Tropical Deforestation on Climate and Agriculture." *Nature Climate Change* 5: 27–36. <https://www.nature.com/articles/nclimate2430>.
- Lee, D., and T. Pistorius. 2015. "The Impacts of International REDD+ Finance." September. San Francisco: CLUA. http://www.climateandlandusealliance.org/wp-content/uploads/2015/09/Impacts_of_International_REDD_Finance_Report_FINAL.pdf.
- Lee, D., P. Llopis, R. Waterworth, G. Roberts, and T. Pearson. 2018. "Approaches to REDD+ Nesting: Lessons Learned from Country Experiences." Washington, DC: The World Bank, Forest Carbon Partnership Facility, Biocarbon Fund.
- Libert Amico, A., and T. Trench. 2016. "Bosques y suelos en el contexto de REDD+: Entre gobierno y gobernanza en México." *Terra Latinoamericana* 34 (1): 113–24.
- Loft, L., D.N. Le, T.T. Pham, A.L. Yang, J.S. Tjajadi, and G.Y. Wong. 2017. "Whose Equity Matters? National to Local Equity Perceptions in Vietnam's Payments for Forest Ecosystem Services Scheme." *Ecological Economics* 135: 164–75.
- Luttrell, C., L. Loft, M.F. Gebara, D. Kweka, M. Brockhaus, A. Angelsen, and W. Sunderlin. 2013. "Who Should Benefit from REDD+? Rationales and Realities." *Ecology & Society* 18 (4): 52.
- Luttrell, C., H. Komarudin, M. Zrust, P. Pacheco, G. Limberg, F. Nurfatriani, L. R. Wibowo, I. Hakim, R. Pirard. 2018a. "Implementing Sustainability Commitments for Palm Oil in Indonesia: Governance Arrangements of Sustainability Initiatives Involving Public and Private Actors." Working Paper 241. Bogor, Indonesia: CIFOR.
- Luttrell, C., E.O. Sills, R. Aryani, A.D. Ekaputri, and M.F. Evnike. 2018b. "Beyond Opportunity Costs: Who Bears the Implementation Costs of Reducing Emissions from Deforestation and Degradation?" *Mitigation and Adaptation Strategies for Global Change* 23 (2): 291–310. <http://dx.doi.org/10.1007/s11027-016-9736-6>.
- Martius, C., A. Angelsen, A.M. Larson, T.T. Pham, D.J. Sonwa, and B. Belcher. 2018. "Pathway to Impact: Is REDD+ a Viable Theory of Change?" In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.
- Maryudi, A., R.R. Devkota, C. Schusser, C. Yufanyi, M. Salla, H. Aurenhammer, R. Rotchanaphatharawit, and M. Krott. 2012. "Back to Basics: Considerations in Evaluating the Outcomes of Community Forestry." *Forest Policy and Economics* 14 (1): 1–5. <https://doi.org/10.1016/j.forpol.2011.07.017>.
- May, P.H., M.F. Gebara, L.M. de Barcellos, M.B. Rizek, and B. Millikan. 2016. *O contexto de REDD+ no Brasil: determinantes, atores e instituições—3 edição atualizada*. Bogor, Indonesia: CIFOR.
- Moeliono, M., C. Gallemore, L. Santoso, M. Brockhaus, and M. Di Gregorio. 2014. "Information Networks and Power: Confronting the 'Wicked Problem' of REDD+ in Indonesia." *Ecology and Society* 19 (2): 9. <http://dx.doi.org/10.5751/ES-06300-190209>.
- Moeliono, M., T.T. Pham, I.W. Bong, G.Y. Wong, and M. Brockhaus. 2017. "Social Forestry—Why and for Whom? A Comparison of Policies in Vietnam and Indonesia." *Forest and Society* 1 (2): 1–20. <http://dx.doi.org/10.24259/fs.v1i2.2484>.
- Mongabay. 2018. "Indonesian President Signs 3-Year Freeze on New Oil Palm Licenses." (blog) September 20. <https://news.mongabay.com/2018/09/indonesian-president-signs-3-year-freeze-on-new-oil-palm-licenses/>.
- Moutinho, P., R. Guerra, and C. Azevedo-Ramos. 2016. "Achieving Zero Deforestation in the Brazilian Amazon: What Is Missing?" *Elementa: Science of the Anthropocene* 4 (September): 000125. <https://www.elementascience.org/articles/10.12952/journal.elementa.000125/>.
- Myers, R., A.J.P. Sanders, A.M. Larson, R.D. Prasti, and A. Ravikumar. 2018. "Analyzing Multilevel Governance in Indonesia: Lessons for REDD+ from the Study of Landuse Change in Central and West Kalimantan." Working Paper 202. Bogor, Indonesia: CIFOR. <http://dx.doi.org/10.17528/cifor/006058>.
- Nepstad, Daniel. 2019. "How Can Companies Deliver on their 2020 'Zero Deforestation' Pledges? (Hint: Collaborate)." Earth Innovation Institute (blog) May 1. <https://earthinnovation.org/2019/05/how-can-companies-deliver-on-their-2020-zero-deforestation-pledges-hint-collaborate/>
- Nepstad, D., S. Irawan, T. Bezerra, W. Boyd, C. Stickler, J. Shimada, O. Carvalho Jr., K. MacIntyre, A. Dohong, A. Alencar, A. Azevedo, D. Tepper, and S. Lowery. 2013. "More Food, More Forest, Few Emissions, Better Livelihoods: Linking REDD+, Sustainable Supply Chains and Domestic Policy in Brazil, Indonesia and Colombia." *Carbon Management* 4 (6): 639–58.
- Nepstad, D., D. McGrath, C. Stickler, A. Alencar, A. Azevedo, B. Swette, T. Bezerra, M. DiGiano, J. Shimada, R. Seroa da Motta, E. Armijo, L. Castello, P. Brando, M.C. Hansen, M. McGrath-Horn, O. Carvalho, and L. Hess. 2014. "Slowing Amazon Deforestation through Public Policy and Interventions in Beef and Soy Supply Chains." *Science* 344 (6188): 1118–23.

Norad (Norwegian Agency for Development Cooperation) Evaluation Department. 2013. "Real-Time Evaluation of Norway's International Climate and Forest Initiative." Oslo, Norway: Norad. https://www.regjeringen.no/globalassets/upload/kld/kl/klima-og-skogprosjektet/real-time_evaluation_of_norway_s_international_climate_and_forest_initiative_contribution_to_measurement_reporting_and_verification.pdf.

Norad Evaluation Department. 2017. "Norway's International Climate and Forest Initiative: Lessons Learned and Recommendations." Oslo, Norway: Norad.

Norges Bank. 2019. *Government Pension Fund Global 2018 Annual Report*. Oslo, Norway: Norges Bank. <https://www.nbim.no/en/publications/reports/2018/annual-report-2018/>.

Norway in Indonesia. 2019. "Indonesia Reports Reduced Deforestation, Triggering First Carbon Payment from Norway" (blog) February 16, Norway in Indonesia, Royal Norwegian Embassy in Jakarta. <https://www.norway.no/en/indonesia/norway-indonesia/news-events/news2/indonesia-reports-reduced-deforestation-triggering-first-carbon-payment-from-norway/>.

Norwegian Ministry of Climate and Environment. 2017. "Brazil Sees Reduced Payments from Norway Following Increased Deforestation in the Amazon," (blog) December 8. <https://www.regjeringen.no/en/aktuelt/okt-avskoging-i-brasils-regnskog-gir-redusert-utbetaling-fra-norge/id2581396/>.

ODI (Oversea Development Institute). 2015. "International Aid Earmarked for Saving Forests in Brazil and Indonesia Dwarfed by Billion Spent on Subsidies for Palm Oil, Soy and Beef Industries That Cause Deforestation—New Report," (blog) March 30, ODI. <https://www.odi.org/news/752-deforestation-palm-oil-soy-beef-timber-subsidies-brazil-indonesia>.

Overman, H., A. Cummings, J. Luzar, and J. Fragoso. 2019. "National REDD+ Outcompetes Gold and Logging: The Potential of Cleaning Profit Chains." *World Development* 118: 16–26.

Pacheco, P., H. Bakhtary, M. Camargo, S. Donofrio, I. Drigo, and D. Mithofer. 2018. "The Private Sector: Can Zero Deforestation Commitments Save Tropical Forests?" In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.

Pham T.T., M. Moeliono, A. Angelsen, M. Brockhaus, P. Gallo, T.L. Hoang, T.L.C. Dao, C. Ochoa, and K. Bocanegra. 2018. "Strategic Alignment: Integrating REDD+ in NDCs and National Climate Policies." In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.

Ravikumar, A., A.M. Larson, R. Myers, and T. Trench. 2018. "Inter-sectoral and Multi-level Coordination Alone Do Not Reduce Deforestation and Advance Environmental Justice: Why Bold Contestation Works When Collaboration Fails." *Environment and Planning C: Politics and Space* 36 (8): 1437–57. <https://doi.org/10.1177/2399654418794025>.

Reyniers, C. 2018. "Mai-Ndombe, DRC." In *The State of Jurisdictional Sustainability*, edited by C.M. Stickler, A.E. Duchelle, J.P. Ardila, D.C. Nepstad, O.R. David, C. Chan, J.G. Rojas, R. Vargas, T.P. Bezerra, L. Pritchard, J. Simmonds, J.C. Durbin, G. Simonet, S. Peteru, M. Komalasari, M.L. DiGiano, and M.W. Warren. San Francisco: Earth Innovation Institute; Bogor, Indonesia: CIFOR; Boulder, Colorado: Governors' Climate and Forests Task Force Secretariat.

RRI (Rights and Resources Initiative). 2018. "A Global Baseline of Carbon Storage in Collective Lands. Indigenous and Local Community Contributions to Climate Change Mitigation." Washington, DC: RRI.

Romijn, E., C.B. Lantican, M. Herold, E. Lindquist, R. Ochieng, A. Wijaya, D. Murdiyarso, and L.V. Verchot. 2015. "Assessing Change in National Forest Monitoring Capacities of 99 Tropical Countries." *Forest Ecology and Management* 352 (September): 109–23. <http://dx.doi.org/10.1016/j.foreco.2015.06.003>.

Salvini, G., M. Herold, V. De Sy, G. Kissinger, M. Brockhaus, and M. Skutsch. 2014. "How Countries Link REDD+ Interventions to Drivers in Their Readiness Plans: Implications for Monitoring Systems." *Environmental Research Letters* 9 (7): 074004.

Sarmiento Barletti, J.P., and A.M. Larson. 2017. "Rights Abuse Allegations in the Context of REDD+ Readiness and Implementation: A Preliminary Review and Proposal for Moving Forward." Infobrief 190. Bogor, Indonesia: CIFOR. <http://dx.doi.org/10.17528/cifor/006630>.

Sarmiento Barletti, J.P., A.M. Larson, and N. Cisneros. 2018. "What Roles Do Subnational Governments Play in Nationally Determined Contributions (NDCs)? Between Rhetoric and Practice in REDD+ Countries." Infobrief 239. Bogor, Indonesia: CIFOR.

Savedoff, W.D. 2016. "How the Green Climate Fund Could Promote REDD+ through a Cash on Delivery Instrument: Issues and Options." Policy Paper 072. Washington, DC: Center for Global Development.

Savedoff, W. 2018. "Competing or Complementary Strategies? Protecting Indigenous Rights and Paying to Conserve Forests." Working Paper No. 490. Washington, DC: Center for Global Development.

Seymour, F., and A. Angelsen. 2012. "Summary and Conclusions: REDD+ Without Regrets." In *Analysing REDD+: Challenges and Choices*, edited by A. Angelsen, M. Brockhaus, W.D. Sunderlin, and L.V. Verchot. Bogor, Indonesia: CIFOR.

Seymour, F., and J. Busch. 2016. *Why Forests Why Now? The Science, Economics, and Politics of Tropical Forests and Climate Change*. Washington, DC: Center for Global Development.

Sharma, B.P., P. Shyamsundar, M. Nepal, S.K. Pattanayak, and B.S. Karky. 2017. "Costs, Cobenefits, and Community Responses to REDD Plus: A Case Study from Nepal." *Ecology and Society* 22: 34.

- Sills, E.O., S. Atmadja, C. de Sassi, A.E. Duchelle, D. Kweka, I.A.P. Resosudarmo, and W.D. Sunderlin, eds. 2014. *REDD+ on the Ground: A Case Book of Subnational Initiatives across the Globe*. Bogor, Indonesia: CIFOR. <http://dx.doi.org/10.17528/cifor/005202>.
- Silvério, D.V., P.M. Brando, M.N. Macedo, P.S.A. Beck, M. Bustamante, and M.T. Coe. 2015. "Agricultural Expansion Dominates Climate Changes in Southeastern Amazonia: The Overlooked Non-GHG Forcing." *Environmental Research Letters* 10: 104015.
- Simonet, G., and O. David. 2018. "Zambezia, Mozambique." In *The State of Jurisdictional Sustainability*, edited by C.M. Stickler, A.E. Duchelle, J.P. Ardila, D.C. Nepstad, O.R. David, C. Chan, J.G. Rojas, R. Vargas, T.P. Bezerra, L. Pritchard, J. Simmonds, J.C. Durbin, G. Simonet, S. Peteru, M. Komalasari, M.L. DiGiano, and M.W. Warren. San Francisco: Earth Innovation Institute; Bogor, Indonesia: CIFOR; and Boulder, Colorado: Governors' Climate and Forests Task Force Secretariat.
- Simonet G., A. Karsenty, P. Newton, C. de Perthuis, B. Schaap, and C. Seyller. 2015. "REDD+ Projects in 2014: An Overview Based on a New Database and Typology." *Information and Debate Series* 32. Paris, France: Paris-Dauphine University, Climate Economics Chair.
- SIS (Sistema de Informacion de Salvaguardas). 2019. "Salvaguardas de REDD+." <http://sis.cnf.gob.mx/salvaguardas-redd/>.
- Skutsch, M., N. Bird, E. Trines, M. Dutschke, P. Frumhoff, B.H.J. de Jong, P. van Laake, O. Masera, and D. Murdiyarto. 2007. "Clearing the Way for Reducing Emissions from Tropical Deforestation." *Environmental Science & Policy* 10 (4): 322–34. <https://doi.org/10.1016/j.envsci.2006.08.009>.
- Stern, N. 2006. *The Economics of Climate Change: The Stern Review*. London: HM Treasury.
- Stickler C., M. DiGiano, D. Nepstad, J. Hyvarinen, R. Vidal, J. Montero, A. Alencar, E. Mendoza, M. Benavides, M. Osorio, E. Castro, C. Mwangi, S. Irawan, J.O. Carvalho, M. Becerra, D. McGrath, C. Chan, B. Swette, J. Setiawan, T. Bezerra, M. McGrath-Horn, and J. Horowitz. 2014. *Fostering Low-Emission Rural Development from the Ground Up*. San Francisco: Earth Innovation Institute.
- Stickler, C.M., A.E. Duchelle, J.P. Ardila, D.C. Nepstad, O.R. David, C. Chan, J.G. Rojas, R. Vargas, T.P. Bezerra, L. Pritchard, J. Simmonds, J.C. Durbin, G. Simonet, S. Peteru, M. Komalasari, M.L. DiGiano, and M.W. Warren. 2018a. *The State of Jurisdictional Sustainability*. San Francisco: Earth Innovation Institute; Bogor, Indonesia: CIFOR; and Boulder, Colorado: Governors' Climate and Forests Task Force Secretariat.
- Stickler, C.M., A.E. Duchelle, J.P. Ardila, and D.C. Nepstad. 2018b. "Subnational Jurisdictional Approaches: Policy Innovation and Partnerships for Change." In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. Bogor, Indonesia: CIFOR.
- Stolle, Fred. 2018. Correspondence between the authors and Fred Stolle, deputy director of Forest Program, WRI, Washington, DC. April 30.
- Streck, C., D. Conway, J.P. Castro, and T. Varns. 2015. "The Impacts of International REDD+ Finance: Colombia Case Study." Washington, DC: CLUA.
- Sunderlin, W.D., C. de Sassi, A.D. Ekaputri, M. Light, and C.D. Pratama. 2017. "REDD+ Contribution to Well-Being and Income Is Marginal: The Perspective of Local Stakeholders." *Forests* 8 (4): 125.
- Sunderlin, W.D., C. de Sassi, E.O. Sills, A.E. Duchelle, A.M. Larson, I.A.P. Resosudarmo, A. Awono, D.L. Kweka, and T.B. Huynh. 2018a. "Creating an Appropriate Tenure Foundation for REDD+: The Record to Date and Prospects for the Future." *World Development* 106: 376–92.
- Sunderlin, W.D., A.M. Larson, and J.P. Sarmiento Barletti. 2018b. "Land and Carbon Tenure: Some—but Insufficient—Progress." In *Transforming REDD+: Lessons and New Directions*, edited by A. Angelsen, C. Martius, V. De Sy, A.E. Duchelle, A.M. Larson, and T.T. Pham. 2018. Bogor, Indonesia: CIFOR.
- Taylor, R., and C. Streck. 2018. "The Elusive Impact of the Deforestation-Free Supply Chain Movement." Working Paper. Washington, DC: WRI. One of a series of papers prepared for the Oslo Tropical Forest Forum, Oslo, June 27–28.
- TNC (The Nature Conservancy). 2019. *Natural Climate Solutions: Unleashing the Full Potential of Natural Climate Solutions*. Arlington, VA. TNC. <https://global.nature.org/initiatives/natural-climate-solutions>.
- Trench, T., A.M. Larson, A. Libert Amico, and A. Ravikumar. 2018. "Analyzing Multilevel Governance in Mexico: Lessons for REDD+ from a Study on Land-Use Change and Benefit Sharing in Chiapas and Yucatán." Working Paper 236. Bogor, Indonesia: CIFOR.
- Trung L.Q., V.T. Phuong, A. Yang, and V.D. Hai. 2015. "The Distribution of Powers and Responsibilities Affecting Forests, Land Use, and REDD+ across Levels and Sectors in Vietnam: A Legal Study." Occasional Paper 137. Bogor, Indonesia: CIFOR.
- Umunay, P., B. Lujan, C. Meyer, and J. Cobian. 2018. "Trifecta of Success for Reducing Commodity-Driven Deforestation: Assessing the Intersection of REDD+ Programs, Jurisdictional Approaches, and Private Sector Commitments." *Forests* 9 (1): 609.

UNEP (United Nations Environment Programme). 2019. "New UN Decade on Ecosystem Restoration Offers Unparalleled Opportunity for Job Creation, Food Security and Addressing Climate Change," (blog) March 1. <https://www.unenvironment.org/news-and-stories/press-release/new-un-decade-ecosystem-restoration-offers-unparalleled-opportunity>.

UNFCCC. 2011. "Report of the Conference of the Parties on Its Sixteenth Session, Held in Cancun from 29 November to 10 December 2010." <https://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=12>.

UN-REDD Programme. 2019. "Regions and Country Overview." <https://unredd.net/regions-and-countries/regions-and-countries-overview.html>.

van der Muur, Willem. 2018. "Forest Conflicts and the Informal Nature of Realizing Indigenous Land Rights in Indonesia." *Citizenship Studies* 22 (2): 160–74. DOI: 10.1080/13621025.2018.1445495.

Weisse, M., and E. Goldman. 2018. "2017 Was the Second-Worse Year on Record for Tropical Tree Cover Loss," (blog) 27 June, WRI. <https://blog.globalforestwatch.org/data/2017-was-the-second-worst-year-on-record-for-tropical-tree-cover-loss>.

Weisse, M., and E. Goldman. 2019. "The World Lost a Belgium-Sized Area of Primary Forests Last Year," (blog) April 25, WRI. <https://www.wri.org/blog/2019/04/world-lost-belgium-sized-area-primary-rainforests-last-year>.

Wolosin, M., and N. Harris. 2018. "Tropical Forests and Climate Change: The Latest Science." Working Paper. Washington, DC: WRI. One of a series of papers prepared for the Oslo Tropical Forest Forum, Oslo, June 27–28.

Wong G.Y., C. Luttrell, L. Loft, A. Yang, T.T. Pham, D. Naito, S. Assembe-Mvondo, and M. Brockhaus. 2019. "Narratives in Benefit Sharing: Examining Evidence from Within and Beyond the Forest Sector." *Climate Policy* 19 (8): 1038–51.

World Bank. 2019. "BioCarbon Fund. Initiative for Sustainable Forest Landscapes." <https://www.biocarbonfund-isfl.org/about-us>.

Yang, A., N.D. Tien, V.T. Phuong, L.Q. Trung, T.T. Pham, A.M. Larson, and A. Ravikumar. 2016. "Analyzing Multilevel Governance in Vietnam: Lessons for REDD+ from the Study of Land Use Change and Benefit Sharing in Nghe An and Dien Bien Provinces." Working Paper 218. Bogor, Indonesia: CIFOR.

ACKNOWLEDGMENTS

We are pleased to acknowledge our institutional strategic partners, who provide core funding to WRI: Netherlands Ministry of Foreign Affairs, Royal Danish Ministry of Foreign Affairs, and Swedish International Development Cooperation Agency.

CIFOR's contribution to this publication is based on the Global Comparative Study on REDD+ (www.cifor.org/gcs). The funding partners that supported this study include the Norwegian Agency for Development Cooperation (Norad); the Australian Department of Foreign Affairs and Trade (DFAT); the European Commission (EC); the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB); the United Kingdom Department for International Development (UKAID); and the CIAR Research Program on Forests, Trees and Agroforestry (CRP-FTA), with financial support from the donors contributing to the CGIAR Fund.

The authors would like to thank the external reviewers of this publication—Arya Harsono, Donna Lee, Clea Paz-Rivera, Novia Widyaningtyas, and Michael Wolosin—for their comments and suggestions, which have greatly improved this issue brief. Thank you also to WRI colleagues Maite Knorr-Evans, Gaia Larsen, Dan Lashof, Carlos Muñoz Pina, and Rod Taylor for their helpful reviews.

This publication was initially produced as a working paper for the 2018 Oslo Tropical Forest Forum with financial support from Norway's International Climate and Forest Initiative.

ABOUT THE AUTHORS

Amy E. Duchelle is a Senior Scientist and Leader of the Climate Change, Energy & Low Carbon Development Team at CIFOR.
Contact: A.Duchelle@cgiar.org

Frances Seymour is a Distinguished Senior Fellow at WRI.
Contact: Frances.Seymour@wri.org

Maria Brockhaus is a Professor of International Forestry Policy at the University of Helsinki.
Contact: Maria.Brockhaus@helsinki.fi

Arild Angelsen is a Professor at the Norwegian University of Life Sciences.
Contact: Arild.Angelsen@nmbu.no

Anne M. Larson is a Principal Scientist and Leader of the Equity, Gender and Tenure Team at CIFOR.
Contact: A.Larson@cgiar.org

Moira Moeliono is a Research Consultant in the Climate Change, Energy & Low Carbon Development Team at CIFOR.
Contact: M.Moeliono@cgiar.org

Grace Y. Wong is a Researcher at the Stockholm Resilience Centre.
Contact: Grace.Wong@su.se

Thu Thuy Pham is a Senior Scientist in the Climate Change, Energy & Low Carbon Development Team at CIFOR.
Contact: T.Pham@cgiar.org

Christopher Martius is a Principal Scientist in the Climate Change, Energy & Low Carbon Development Team at CIFOR and Managing Director of CIFOR Germany GmbH.
Contact: C.Martius@cgiar.org

ABOUT WRI

World Resources Institute is a global research organization that turns big ideas into action at the nexus of environment, economic opportunity, and human well-being.

Our Challenge

Natural resources are at the foundation of economic opportunity and human well-being. But today, we are depleting Earth's resources at rates that are not sustainable, endangering economies and people's lives. People depend on clean water, fertile land, healthy forests, and a stable climate. Livable cities and clean energy are essential for a sustainable planet. We must address these urgent, global challenges this decade.

Our Vision

We envision an equitable and prosperous planet driven by the wise management of natural resources. We aspire to create a world where the actions of government, business, and communities combine to eliminate poverty and sustain the natural environment for all people.

Our Approach

COUNT IT

We start with data. We conduct independent research and draw on the latest technology to develop new insights and recommendations. Our rigorous analysis identifies risks, unveils opportunities, and informs smart strategies. We focus our efforts on influential and emerging economies where the future of sustainability will be determined.

CHANGE IT

We use our research to influence government policies, business strategies, and civil society action. We test projects with communities, companies, and government agencies to build a strong evidence base. Then, we work with partners to deliver change on the ground that alleviates poverty and strengthens society. We hold ourselves accountable to ensure our outcomes will be bold and enduring.

SCALE IT

We don't think small. Once tested, we work with partners to adopt and expand our efforts regionally and globally. We engage with decision-makers to carry out our ideas and elevate our impact. We measure success through government and business actions that improve people's lives and sustain a healthy environment.

Each World Resources Institute issue brief represents a timely, scholarly treatment of a subject of public concern. WRI takes responsibility for choosing the study topics and guaranteeing its authors and researchers freedom of inquiry. It also solicits and responds to the guidance of advisory panels and expert reviewers. Unless otherwise stated, however, all the interpretation and findings set forth in WRI publications are those of the authors.

Maps are for illustrative purposes and do not imply the expression of any opinion on the part of WRI, concerning the legal status of any country or territory or concerning the delimitation of frontiers or boundaries.



WORLD
RESOURCES
INSTITUTE

10 G STREET NE
SUITE 800
WASHINGTON, DC 20002, USA
+1 (202) 729-7600
WWW.WRI.ORG

978-1-56973-969-3