

# Toward REDD+ Implementation

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## Abstract

After several years of REDD+ (reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries) readiness, countries are starting to move toward REDD+ implementation and accessing results-based payments (RBPs). Currently various parallel processes for accessing RBPs exist, including project and jurisdictional—approaches that often operate under a nascent national framework. This review is structured around the key considerations for countries to implement REDD+ and access RBPs. It offers a discussion focusing on three areas that are crucial for the success of REDD+: (a) REDD+ in the context of Nationally Determined Contributions (NDCs) under the Paris Agreement and the UN Sustainable Development Goals (SDGs), (b) the role of the private sector in achieving emissions reductions, and (c) access to RBPs for REDD+. We present some key considerations for future issues and possible successes of REDD+ implementation.

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## INTRODUCTION

Reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries (REDD+) emerged as a forest mitigation approach for developing countries under the United Nations Framework Convention on Climate Change (UNFCCC) (<http://redd.unfccc.int/>) in 2007, with rules for guiding its implementation concretized over the subsequent eight years and culminating in its inclusion in the Paris Agreement (Article 5) on climate change (1). The role of forests in the mitigation of climate change is clearly recognized in the Paris Outcome, mainly through Article 5 of the Paris Agreement (1) but also through other supporting, complementary elements, particularly a provision recognizing the importance of results-based payments (RBPs) for REDD+ (paragraph 55, decision 1/CP.21) (2). The inclusion of REDD+ in the agreement, especially at the level of a dedicated article, cements REDD+ as a core element of the global climate regime going forward and strongly reinforces the centrality of the REDD+ “rulebook” known as the Warsaw Framework for REDD+ (WFR). Three REDD+ decisions were adopted by Parties in 2015 at COP21, alongside the Paris Outcome. These pertain to (a) safeguards (3); (b) alternative policy approaches, such as Joint Mitigation and Adaptation for the integral and sustainable management of forests (4); and (c) non-carbon benefits (5). With the adoption of these decisions, the negotiations on REDD+ methodological issues and guidance were closed, paving the way for REDD+ implementation.

As an increasing number of countries move from initial REDD+ readiness to demonstration and implementation, greater emphasis is being placed on accessing finance for REDD+ implementation and receiving payments for verified emissions reductions. International REDD+ support processes have responded accordingly. Less than a month after the UNFCCC reached agreement on the WFR (6–8), the World Bank’s Forest Carbon Partnership Facility (FCPF) agreed to the Methodological Framework (MF) (9) for its Carbon Fund (CF). The CF is designed to pilot the distribution of RBPs for emission reductions achieved through REDD+ implementation; the

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**United Nations Framework Convention on Climate Change (UNFCCC):** ultimate aim is preventing “dangerous” human interference with the climate system; entered into force on March 21, 1994, and today, it has near-universal membership; 197 countries that have ratified the Convention referred to as Parties to the Convention

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MF lays out the criteria that countries must meet before they can participate (see <https://www.forestcarbonpartnership.org/carbon-fund-0> for more information).

Beyond the FCPF CF, several REDD+ RBP initiatives are being implemented globally. Namely, the German Development Bank's Rewarding Early Movers (REM) program (<https://www.giz.de/en/worldwide/33356.html>), the Amazon Fund (<http://www.amazonfund.gov.br/en/home/>), other bilateral agreements [such as those reached between developed countries like Norway, Germany, the United Kingdom and developing countries like Peru (10), Guyana (<http://www.guyanareddfund.org/>), and Indonesia (11)]. Forest carbon projects in voluntary carbon markets (see, e.g., <http://www.v-c-s.org/project/jurisdictional-and-nested-redd-framework/>) and associated standards and bodies (see, e.g., <http://www.climate-standards.org/>) were in place before these RBP initiatives and continue to operate alongside them. With the aim of bridging national- and project-scale initiatives and more holistically and inclusively addressing the drivers of forest loss, jurisdictional approaches have also emerged (<https://verra.org/project/jurisdictional-and-nested-redd-framework/>). Although all of these initiatives represent a major step forward to test how REDD+ RBPs could work in practice, they simultaneously create parallel processes and sets of rules for REDD+ implementation to those set out by the UNFCCC.

The Green Climate Fund (GCF) (<https://www.greenclimate.fund/home>) is the main multi-lateral source of funding for climate adaptation and mitigation in developing countries, including REDD+. It was established at the UN's sixteenth session of the Conference of the Parties (COP) (12) as an operating entity of the Financial Mechanism of the UNFCCC under Article 11. The GCF operationalized its pilot program on REDD+ RBPs in late 2017, having launched a Request for Proposals (RFP) and terms of reference (13).

Before national and subnational REDD+ approaches were agreed within the UNFCCC process, forest carbon projects were already being implemented, primarily in the context of voluntary carbon markets. This has somewhat led to confusion or a blurred distinction in the literature between REDD+ implementation at the national, subnational, and project levels. Lee et al. (14) offer a useful way forward in terms of definitions and approaches, i.e., a nesting approach, to reconcile the different scales at which REDD+ is implemented. Most forest carbon projects, even if they are often termed REDD+ projects and considered as such in the literature, were developed independently of national or subnational REDD+ policies and systems. According to Lee et al. (14), such forest carbon/REDD+ projects may be considered legacy projects, even though many are still in active implementation. The main differences between the UNFCCC REDD+ process and such forest carbon/REDD+ projects are that the latter (*a*) are mostly based on standards developed outside the UNFCCC such as Verra's Verified Carbon Standard (VCS) Jurisdictional and REDD+ Nested framework (<http://www.v-c-s.org/project/jurisdictional-and-nested-redd-framework/>) [and often the Climate, Community & Biodiversity Alliance's (CCBA's) Climate, Community and Biodiversity (CCB) Standards (<http://www.climate-standards.org/>)], (*b*) often aim at financing through the international voluntary carbon market, and (*c*) are of a smaller-scale project nature; REDD+ by definition, in contrast, is a national exercise, with interim exceptions at the subnational level (15). Nonetheless, in 2016 the five most transacted project types by volume in the voluntary carbon market in order of importance were REDD+ [with 9.7 MtCO<sub>2</sub>e at an average price of \$4.2/tCO<sub>2</sub>e (16)], wind, landfill methane, large hydropower, and community-focused energy efficiency (16). With the increasing importance of forest and land use, including REDD+ projects in the voluntary carbon market, it has become more pressing to find practical ways forward in terms of nesting and reconciling the various scales at which REDD+ is being implemented, to ensure environmental integrity. With much of the experience of REDD+ implementation currently coming from the local scale, it is unsurprising that much of the REDD+ implementation

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**Paris Agreement:**

builds upon the UNFCCC; central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C

**RBPs:** results-based payments

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literature refers to such small-scale forest carbon projects, rather than national or subnational implementation scales. Although this narrows the body of literature on REDD+ implementation, many useful lessons can be drawn from the implementation of local forest carbon projects, that can be built upon and scaled up to larger-scale national and subnational implementation.

Currently, these various parallel yet related global processes for accessing RBPs (at the national, subnational, or voluntary forest carbon markets) have the potential to cause confusion and overlap or repetition of implementation efforts by developing countries. Moreover, the diversity of methods and procedures adopted for REDD+ RBP programs increases the burden for developing countries when combining different funding sources for REDD+ (17).

Here, we draw on the existing body of REDD+ literature published over the past five years and present a review of issues structured around the key elements for REDD+ implementation. The article presents the key considerations to implement REDD+ and access RBPs, and thereafter offers a discussion focusing on three areas that are crucial in making REDD+ a long-term success: (a) REDD+ in the context of the Paris Agreement's Nationally Determined Contributions (NDCs) and the UN's Sustainable Development Goals (SDGs), (b) the role of the private sector, and (c) access to RBPs for REDD+.

## KEY CONSIDERATIONS FOR REDD+ IMPLEMENTATION

This section presents the key REDD+ elements necessary for implementation in the context of the UNFCCC: (a) understanding the scope and scale of REDD+; (b) moving through the REDD+ phases; (c) learning from REDD+ readiness; (d) identifying the drivers of deforestation, forest degradation, and the barriers to the implementation of the "+" activities; and (e) operationalizing the four required REDD+ elements to move to implementation and RBPs. Below, we summarize key REDD+ concepts for implementation (see 8 and 18 for detailed reviews).

### Understanding the Scope and Scale of REDD+

The following five activities—the scope of REDD+, in other words—were agreed upon in Cancun (12) and purposely allow for broad participation of countries depending on their national circumstances: reducing emissions from deforestation, reducing emissions from forest degradation, conservation of forest carbon stocks, sustainable management of forests, and enhancement of forest carbon stocks. The REDD+ activities have not been further defined in the decision texts, which allows for flexibility of implementation by developing country Parties. Although this provides an opportunity for countries to define a national interpretation of these activities, it is also challenging to frame what the activities consist of in practice in their national contexts (18). The Global Observation for Forest Cover and Land Dynamics also offers explanations of the activities (19).

REDD+ activities can be designed and implemented at various scales: national, subnational, or local. Lee et al. (14) summarize the characteristics and implications at each scale:

- National level: Under the Paris Agreement, countries must account for domestic achievement of an NDC, or target level of emissions (or removals), which is a type of claim to the generation of emission reductions. In addition, Article 6 allows the trading of such units to meet targets.
- Subnational level: A state or province may create a baseline against which performance is measured, and seek payment for results (with no carbon asset or credit generated) or generate carbon assets according to a pre-defined standard and sell them to buyers.

- Local level: Carbon projects set baselines, measure performance, and generate and sell carbon credits based on measured emission reductions and following third-party validated standards and methodologies.

A common thread across these implementation scales is permanence, which requires emission reductions to be lasting (20). It is therefore critical that the implementation of REDD+ across scales is “transformational,” meaning that it should lead to changes that remove the underlying driver(s) of emissions or barriers to enhancement of carbon stocks, such that emissions would not occur after the end of the activity’s implementation period and enhancements would not be reversed.

In designing policy approaches to REDD+ implementation at the national scale, countries are encouraged to identify the REDD+ activities that are most relevant to their national circumstances based, for example, on the specific drivers of deforestation and forest degradation at work, development plans, and climate change targets, i.e., NDCs.

In addition to national efforts under the Paris Agreement, there are several initiatives being implemented outside the UNFCCC process that provide important pathways and learning opportunities for the implementation of REDD+ programs across scales at the national and subnational/jurisdictional levels (21). An important contribution of some of these efforts has been the focus of jurisdictional approaches to REDD+, designing and testing programs, and institutional frameworks that operate across entire nations, states, or provinces. One of the most advanced forums for the development of jurisdictional approaches to REDD+ is the Governors’ Climate and Forests Task Force (GCFTF) (<https://gcftf.org/>). The GCFTF is active in 38 states and provinces in ten countries. It seeks to advance jurisdictional programs for reducing emissions from deforestation and land use, link these activities with emerging greenhouse gas (GHG) compliance regimes and other pay-for-performance opportunities, and also connect these subnational approaches to the national approaches (21).

The nesting approach proposes solutions for implementing and carbon accounting of REDD+ activities at multiple scales to reduce the risk of double counting of emission reductions, and it is increasingly gaining traction with governments. Lee et al. (14) propose that key benefits for countries of nesting are (a) providing early and future benefits; (b) creating a pathway for governments to implement policies to reduce emissions, especially in countries where mitigation is expected to occur on private or community-controlled land; (c) reducing the cost of mitigation actions; and (d) improving national measurement, reporting, and verification (MRV) systems.

## **Moving Through the REDD+ Phases Toward Implementation**

The Cancun Agreements (12) outline three nondiscrete phases that allow for an iterative approach to REDD+ implementation: readiness, demonstration, and results-based actions. This approach reflects UNFCCC countries’ convergence around the need for a flexible, learning-by-doing approach to REDD+ implementation, given the complexity of policy reform and structuring of incentives and carbon accounting systems, and in recognition of diverse national circumstances that would have countries prepare at different paces. Although the phases are defined flexibly enough to allow for country-level interpretation, they can be considered nondiscrete, and there is some overlap between them.

## **Learning From REDD+ Readiness**

A recent overview of REDD+ readiness (22) across four countries (Cameroon, Indonesia, Peru, and Vietnam) analyzed six implementation functions, namely (a) planning and coordination;

(b) policy, laws, and institutions; (c) MRV and audits; (d) benefit sharing; (e) financing; and (f) demonstration and pilots. The authors found mixed outcomes across the countries—with most progress evident on planning and coordination—and demonstration and pilots, whereas MRV and audits; financing; benefit sharing; and policies, laws, and institutions faced major challenges. Minang et al. (22) also found significant gaps in addressing drivers of deforestation and forest degradation, and linking REDD+ to broader national strategies and systematic capacity building.

Di Gregorio et al. (23) also observed a lack of emphasis on addressing drivers of deforestation and forest degradation and analyzed the public discourse around REDD+ in seven countries (Brazil, Indonesia, Papua New Guinea, Vietnam, Peru, Nepal, and Cameroon). The study determined a lack of participation by non-forestry actors, such as from agriculture, mining, and infrastructure development—representing an important lack of involvement by sectors involved in driving deforestation. In a similar vein, in their analysis of the power of agency in governing the design of national REDD+ in six countries (Indonesia, Vietnam, Brazil, Cameroon, Nepal, and Papua New Guinea), Brockhaus et al. (24) find that REDD+ policy formulation and implementation require the formation of broad-based coalitions that include actors for various sectors that drive deforestation and forest degradation, with the recruitment of powerful state actors to engage more extensively with the discourse coalitions that are calling for transformational change. This must be tackled when considering REDD+ implementation and RBPs, recognizing that these are also driven by the logic of accessing development finance (23, 25). Neeff et al. (26) observed a need for closer involvement of the private sector and maximizing co-benefits in moving from REDD+ to implementation. Mbatu (27) points out that since 2007, some important aspects of REDD+ have been ignored in the literature, including technology sharing/transfer, actual forest emissions reductions accounting, the role of gender, and regional studies.

### **Identifying the Drivers of Deforestation and Forest Degradation As Well As the Barriers to Conservation, Sustainable Management of Forests, and Enhancement of Forest Carbon Stocks**

While much of the discussion on REDD+ has focused on the drivers of deforestation and forest degradation, reinforcing the importance of understanding indirect and direct drivers and linking them to policy implementation (28–33), little attention has been paid to the “barriers” to the “+” activities of REDD+ (forest conservation, enhancement of forest carbon stocks, and sustainable management of forests), referring to the various obstacles to the implementation of these activities. They will be of the same nature as indirect drivers and will often overlap directly with direct and indirect drivers, and may be linked to different sections of legal documents and/or associated with different institutional actors and agents. For example, in the Democratic Republic of Congo the current land tenure regulatory framework may be considered both a driver of deforestation and a barrier to the enhancement activity. On the one hand, this law recognizes forest clearing to demonstrate economic use of the land, which in turn facilitates the process of entitlement to that land. On the other hand, lack of access to tenure security linked to this inadequate legislation inhibits reforestation (18).

Understanding how, why, and where deforestation and forest degradation are happening in a country is fundamental to designing effective REDD+ interventions (22, 23, 29, 30, 34). It is also important to remember that drivers and barriers determine whether an achieved result, i.e., an avoided emission or enhanced carbon stock, may be reversed in the future (20). In the context of the Paris Agreement, risk of reversals will be reduced due to the consistent and transparent accounting of land/pools/activities called for in the reporting to the UNFCCC via Biennial Transparency Reports (BTRs). Consequently, accounted net emission reductions, including those



achieved through CO<sub>2</sub> removals (i.e., enhancement and/or conservation), could be considered permanent (20). Other frameworks such as the FCPF CF, the VCS, California's cap-and-trade system, and Australia's Emissions Reduction Fund have developed systems and tools to manage the risk of reversal or to address non-permanence (20). The integration of accounting frameworks at the local level into the national reporting and accounting of NDCs would promote permanence, given that national reporting and accounting of NDCs are a long-term commitment under the Paris Agreement. This is crucial for REDD+ implementation, as successfully addressing the drivers and barriers permanently may lead to CO<sub>2</sub> emissions after the action's end. However, establishing a clear picture of these dynamics in most developing countries has proven a significant challenge over the course of the readiness phase, for several reasons.

The first is the complexity of indirect drivers that underlie the action in the field that results in the reduction of forest cover (which can often be traced to, e.g., international and domestic market demand and dynamics). The picture is further complicated through the networks of actors and power relations that govern these actions—with the most powerful influences lying often outside of the forestry sector (35). A third challenge is generating good quality data on drivers. Although spatially explicit land-use change analyses are increasingly possible using open source tools, platforms and data [e.g., the Food and Agriculture Organization of the United Nations's (FAO's) Open Foris Collect Earth (36)], linking the identified direct drivers to the underlying ones is a complicated task that involves extensive (in situ) data collection through stakeholder engagement, institutional context analyses, and field surveys.

Beyond understanding drivers and barriers on a country-by-country basis, particular attention has been placed in recent years on deforestation in tropical countries and regions driven by large agricultural commodities. Curtis et al. (37) developed a forest loss classification model to determine a spatial attribution of forest disturbance to the dominant drivers of land cover and land use change over the period 2001 to 2015. They found that 27% of global forest loss can be attributed to deforestation through permanent land use change for commodity production. The remaining areas maintained the same land use over 15 years; in those areas, loss was attributed to forestry (26%), shifting agriculture (24%), and wildfire (23%). Moreover, in tropical regions, shifting agriculture and commodity-driven deforestation were preeminent. In the Southeast Asian countries of Indonesia and Malaysia, widespread deforestation for agricultural expansion of oil palm plantations was identified through visual evidence. Across Central and South America, forests were converted to row crop agriculture and cattle grazing lands. Shifting agriculture was the dominant driver in sub-Saharan Africa. Despite corporate commitments, the rate of commodity-driven deforestation has not declined. We further discuss this in the section on involvement of the private sector (including agriculture commodity companies) for REDD+ implementation.

Matching key drivers (with high emission reduction potential) with mitigation interventions designed through REDD+ National Strategies and Policies and Measures is crucial. In an expert survey conducted in 2016, Pasgaard et al. (38) found that there is a weak match between key drivers and policies and interventions designed as many drivers are considered costly. Furthermore, underlying drivers are perceived as difficult to tackle due to their complex nature and therefore require comprehensive approaches beyond the immediate scope of REDD+.

Having looked at lessons learned from REDD+ readiness and identifying the drivers and barriers, we now provide an overview of the four REDD+ required elements for REDD+ implementation and RBPs.

### **Operationalizing the Four REDD+ “Elements”**

Countries are requested to have the following elements in place for REDD+ implementation and to access RBPs: (a) REDD+ National Strategies (NS) and Actions Plans (AP), (b) a National

Forest Monitoring System (NFMS), (c) a forest reference emission level (FREL)/forest reference level (FRL), and (d) a summary of safeguards information. Voigt & Ferreira (8) provide a useful review on these elements. We take a brief look at these four elements, given their pivotal role in REDD+ implementation.

**REDD+ National Strategies or Action Plans.** Countries aiming to undertake REDD+ activities are requested to develop a REDD+ NS or AP to describe how emissions will be reduced and/or how forest carbon stocks will be enhanced, conserved, and/or sustainably managed (12). The terms national strategy and action plan are used interchangeably in the UNFCCC COP decisions. REDD+ NS/APs are products of the readiness phase (Phase 1), drawing on various strands of analytical work, stakeholder engagement, and strategic decisions undertaken to prepare for REDD+ implementation (Phase 2).

The UNFCCC COP decisions highlight the central role that national governments have in designing and implementing REDD+ programs; i.e., national governments are to develop and implement REDD+ NS/APs. For this to succeed, national-level policy reforms and measures that tackle the main drivers of deforestation and forest degradation are essential to efficiently catalyze, coordinate, and support subnational efforts and public and private actors, as well as to ensure the overall coherence of policies and measures. REDD+ NS/APs should be designed and implemented with the full engagement of all relevant stakeholders, including those who benefit from forests or whose activities impact forests, as well as their political and customary leaders at various levels of governance. These strategies should also identify who will be responsible for implementing the policies and measures detailed in the REDD+ NS/APs.

The UNFCCC decisions leave full flexibility to countries on both the design process and content of REDD+ NS/APs, provided that guidance provided in UNFCCC REDD+ decisions are addressed. This allows each country to determine how best to implement REDD+ in the context of their national circumstances. With this given flexibility, REDD+ NS/AP documents are taking on many forms: as a comprehensive document or a short one supplemented by one or more (i.e., sectoral and/or subnational-based) investment plans, as a specific “REDD+ strategy,” or integrated into a wider climate and/or green economy framework [e.g., Ethiopia (39), Mexico (40)], or part of various sectorial and multisectorial development strategies.

Although we know of many countries that have completed and endorsed their REDD+ NS/APs, only nine countries have submitted them to the UNFCCC: Argentina, Brazil, Cambodia, Chile, Colombia, Ecuador, Malaysia, Mexico, and Papua New Guinea. While it seems surprising that no country refers to its REDD+ NS/AP in the NDC, this is likely due, in many cases, to countries still undergoing development of the NS/AP at the time of the submission of the Intended Nationally Determined Contributions (INDCs) (41).

Both research and implementation experiences increasingly highlight that achieving transformational cross-sectoral REDD+ policy formulation and implementation not only requires wide stakeholder engagement and consultation and the inclusion of the private sector, but also the forming of broad and inclusive coalitions that involve policy actors from various sectors driving deforestation and forest degradation (18, 24, 42). When influential state actors are able to engage more extensively with coalitions that are calling for transformational change, cross-sectoral policy reforms tackling the underlying drivers of deforestation and forest degradation in real and lasting ways are more likely to emerge and be successful in their implementation (18, 24).

**National forest reference emission levels/forest reference levels.** References 43–45 provide detailed technical overviews on this topic. A FREL/FRL for REDD+ is the benchmark for assessing a country’s performance in implementing REDD+ activities and is expressed in tonnes of



CO<sub>2</sub> equivalent per year (46). FRELs/FRLs can be established at a subnational scale as an interim measure while transitioning to the national level. The flexible rules created around FRELs/FRLs allow REDD+ countries to take into account the different economical and technical capacities, which are often not yet well elaborated in developing countries, into account in a stepwise manner (47).

At the time of writing, 39 countries have submitted a FREL/FRL to the UNFCCC secretariat and these have been posted to the UNFCCC REDD+ Web Platform (<https://redd.unfccc.int/>). Brazil, Malaysia, and Nigeria have submitted more than one FREL/FRL. The FREL/FRLs submitted by countries to the UNFCCC are a mix of subnational and national scale. They may reflect one or more of the five REDD+ activities. Significant pools and activities should not be excluded unless sufficient justification for omission is provided in the submission, as per the relevant COP decisions (46). Each national submission of a proposed FREL/FRL, in the context of RBPs, is subject to a technical assessment (48). Each submission is technically assessed by an assessment team in accordance with the procedures and time frames established by the COP (see also 18). The technical assessment (TA) process is conducted once a year and is coordinated by the UNFCCC secretariat in Bonn, Germany.

At the time of writing, 28 out of 39 countries and 32 out of 43 submissions have completed the TA process, as per the final technical assessment report provided on the REDD+ Web Platform (<https://redd.unfccc.int/>). As part of the process, most countries do submit a modified submission. The countries and submissions represent a wide variety of circumstances in terms of geographic regions, low to high income, dry forests to humid tropical forests, and various stages of forest transition, from high-deforestation countries to those now gaining forest cover.

As the FREL/FRL submissions of countries are recent (starting in 2014), there is not a large body of literature concerned with REDD+ FRELs/FRLs. Nonetheless, a 2016 analysis of the Brazilian FREL, which had already undergone a technical assessment, and the Malaysian, Colombian, Ecuadorian, Mexican, and Guyanan FRELs, which had not undergone a technical assessment (49), highlight that the FRELs/FRLs submitted by these countries did not all reflect a fully national approach and all of the five activities. There appears to be confusion in Hargita et al. (49) concerning the inclusion of all five REDD+ activities in FREL/FRL submissions. We clarify here that a FREL/FRL may reflect one or more of the five REDD+ activities, noting that all significant activities should be included in the scope. Although “significant” is not defined in the context of activities or REDD+ specifically, an explanation for any omission needs to be provided in the submission if a “significant” activity is omitted; i.e., it needs to be justified (45). Furthermore, regarding pools and gases, countries should consider the five Intergovernmental Panel on Climate Change (IPCC) forest carbon pools: aboveground biomass, belowground biomass, deadwood, litter, and soil. There is therefore no requirement for countries to include all five REDD+ activities unless they are “significant” (47). Hargita et al. (49) indicate in their analysis that all five FRELs/FRLs they considered were set in a potentially preferable way (in other terms “cherry-picking,” i.e., national submissions for the most profitable approach, in terms of potential RBPs in relation to realized efforts), which they believe may undermine the cost-efficiency of REDD+ RBPs under the UNFCCC. Interestingly, although some literature suggests that adjustments for national circumstances in FRELs/FRLs be deduced from complex models based on the global deforestation curve (50), this does not appear to have been taken into consideration by countries when submitting their FRELs/FRLs. This may be due to a disconnect between the scientific literature and the REDD+ practitioners’ community, the complexity of applying such models in the early stages of FREL/FRL submissions, or the limitation in scope of looking at deforestation only.

In contrast to the national/subnational FRELs/FRLs, there are very detailed methodological requirements for REDD+ projects, as is the case, for example, with VCS-certified REDD+

projects. The VCS includes detailed methodological requirements for how the future emission levels (hereafter referred to as baselines to differentiate them from FRELs/FRLs) can be projected. For example, VCS methodologies for generating baselines of emissions from unplanned future deforestation and/or forest degradation require that the future rate of deforestation in the project area be estimated based on the historic rates of deforestation and/or forest degradation in an area where the agents and drivers of deforestation as well as the soil type/slope/elevation are similar to those found in the project area (e.g., in a larger reference area) (51).

**Robust and transparent National Forest Monitoring System.** The literature widely covers NFMS and MRV for REDD+ and reflects the significant technological developments occurring over the past years that make them more user friendly and cost-effective for developing countries with low technical capacities as well as increased access to relevant robust (global) datasets (52–56). This probably suggests that, although capacity for REDD+ MRV and NFMS was still considered low in 2012 (57), capacity is continuously and steadily increasing in REDD+ countries thanks to these developments (e.g., 58). Furthermore, capacity building in community-based forest monitoring appears to be increasing thanks to new technologies such as unmanned aerial vehicles and drones (59, 60).

The deployment of a robust and transparent NFMS entails a wide variety of considerations: (a) which pools and activities are likely to be significant in determining the level and trend in emissions and removals; (b) availability and cost of remote sensing data; (c) need for preprocessing and associated costs, which can include hosting costs in cloud environments; (d) assessment of existing data sources and the costs associated with acquiring and processing new sources of data [Light Detection and Ranging (LIDAR), radar, UAV, drones, etc.]; (e) existence of ground-based datasets and the need for new or supplementary surveys; (f) availability and suitability of existing tools for integrating actual data and producing required reports; (g) national support resources, both human and financial capacity to implement, improve, and operate the system in the long term; and finally (h) level of support and incentive payments and long-term costs. So far, most NFMS are based on optical activity data analysis for the measurement and reporting of deforestation, using often freely available medium-coarse spatial resolution (Landsat spatial resolution), whereas for the measurement and reporting of degradation and gain, higher-resolution data can be analyzed using a combination of field surveys and remote sensing (61) [e.g., Sentinel, Planet, Kompsat data (<https://earth.esa.int/web/guest/missions/3rd-party-missions/current-missions/kompsat-2>), RapidEye (<http://www.satimagingcorp.com/satellite-sensors/other-satellite-sensors/rapideye/>)]. Current remote sensing approaches to measure and allow reporting on forest degradation are evolving quickly but still need to reach maturity and subsequently will need to be used in an operational manner at a national level and/or subnational levels (62).

While designing a NFMS there are significant opportunities for integration with broader land use monitoring systems for GHG inventory purposes. Other reporting processes [such as the FAO Forest Resources Assessment (<http://www.fao.org/forest-resources-assessment/en/>)] could be investigated to improve management of resources that will facilitate the flow of information, the coordination of different institutions, and the consistency across reporting activities. Linkages to other permanent national monitoring activities, such as National Forest Inventories, for example, should be prioritized. Leveraging existing data collection platforms to establish systems to support other national and international reporting opportunities to countries in the longer term should be considered. For the NFMS, the challenge of securing long-term funding for REDD+ implementation should not be underestimated given increasing pressure to show cost-effectiveness; therefore, integration of data in multipurpose data platforms (one data platform policy) should

be considered as a way to seek cost reduction. The System for Earth Observations, Data Access, Processing & Analysis for Land Monitoring (SEPAL) platform as well as the Open Foris Collect Earth software designed by FAO Forestry are good examples of such platforms (36). The REDDcompass (<https://www.reddcompass.org/frontpage>) of the GFOI and the Methods and Guidance document (63) consist of concrete tools with which countries are guided to set up their autonomous national systems. If MRV monitoring costs are shared between sectors, an integrated monitoring system could have multiple benefits for non-REDD+ land use management (64). If the monitoring costs associated with co-benefits in other sectors such as optimized land management, improved fire management, agricultural monitoring, and monitoring other environmental values such as biodiversity are included, overall monitoring costs are likely to be lower than separate monitoring for each.

The field of NFMS and MRV in particular has witnessed significant technical development and opportunities in recent years (36). The new open source technologies (e.g., cloud-based processing such as Google and Amazon) are allowing developing countries to generate their own national data and thereby become less reliant on external support, e.g., open data sources [NASA Landsat archive (<http://landsat.gsfc.nasa.gov/data/>) opened since 2011 and the European Space Agency Sentinel open data (<http://www.copernicus.eu/main/data-access>)] and open source software, cheap drones, and smartphone applications to use for validation and surveying in forest areas and fire alerts, all of which can be almost in real time and have been taken up both by professional users as well as communities. The use of social media as Facebook, Twitter, and Snapchat allows for a quick community-based interaction and has been used for validation of forest activities in, for example, Global Forest Watch (<http://www.globalforestwatch.org/>).

Ochieng et al. (53) examined the institutional effectiveness of REDD+ MRV by assessing thirteen REDD+ countries' progress in implementing the UNFCCC technical guidelines and good governance requirements, from the following three perspectives: (a) Ownership of technical methods examines whether countries' own technical methods for forest area and area change measuring and estimating forest carbon stocks; (b) administrative capacity examines development of administrative competence to implement MRV; and (c) governance examines whether countries embrace norms of good governance in their MRV systems. They found that countries have high to very high ownership of technical methods but that the majority rank only low to moderate on administrative capacity and good governance. This means that although countries have started developing technical methods for MRV and NFMS, it appears that they are yet to develop the competence necessary to administer MRV and NFMS and to inculcate good governance in MRV.

**Safeguards for REDD+: achievements, challenges, and opportunities.** The progressive inclusion of safeguards, including references to the rights of Indigenous Peoples (IPs) and local communities into the UNFCCC text and eventually enshrined as one of the four Warsaw pillars as a prerequisite for countries to receive RBPs, is an unprecedented accomplishment on its own (65).

Most notable is the evolution of the topic within the UNFCCC negotiations from a peripheral concept to a core set of requirements, promoted in common cause by what den Besten et al. (66) refer to as a coalition of "critical" actors [including IPs' organizations, Civil Society Organizations (CSOs), rights-based organizations, etc., and "reformist" actors (including conservation and research non-governmental organizations (NGOs), etc.]. These actors, at odds with many parties to the COP, and sharing a concern over a carbon-centric approach to REDD+ without due regard for the social and environmental dimensions and potential adverse impacts, threatened to slow or halt progress in UNFCCC negotiations on REDD+ if these issues were not given sufficient consideration (66–68).

## SEVEN CANCUN SAFEGUARDS

The following activities should be promoted and supported when implementing REDD+ activities, otherwise known as the Cancun safeguards (12):

- a. That actions complement or are consistent with the objectives of national forest programmes and relevant international conventions and agreements;
- b. Transparent and effective national forest governance structures, taking into account national legislation and sovereignty;
- c. Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples;
- d. The full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities, in the actions referred to in paragraphs 70 and 72 of this decision;
- e. That actions are consistent with the conservation of natural forests and biological diversity, ensuring that the actions referred to in paragraph 70 of this decision are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits, taking into account the need for sustainable livelihoods of indigenous peoples and local communities and their interdependence on forests in most countries, reflected in the United Nations Declaration on the Rights of Indigenous Peoples, as well as the International Mother Earth Day;
- f. Actions to address the risks of reversals;
- g. Actions to reduce displacement of emissions.

Although perhaps not going as far as some have advocated, the debate initiated in 2007 by this vocal and influential coalition laid the groundwork for a series of UNFCCC decisions on safeguards between 2010 and 2015, including the UNFCCC requirements that countries (*a*) ensure REDD+ activities, regardless of the source and type of funding, are implemented in a manner consistent with the Cancun safeguards (see the sidebar titled Seven Cancun Safeguards); (*b*) develop a system for providing information on how the Cancun safeguards are being addressed and respected [i.e., a safeguards information system (SIS)]; and (*c*) provide a summary of information (SOI) on how all the Cancun safeguards are being addressed and respected throughout the implementation of REDD+ activities (e.g., 3, 12, 46, 69, 70).

As the UNFCCC safeguard requirements were being elaborated over the years, REDD+ countries and the diverse set of actors supporting REDD+ countries in the readiness phase were working simultaneously to interpret and clarify the UNFCCC requirements and test their application, while also applying and creating their own institutional safeguards, standards, and associated guidance and tools—with mixed results.

In some ways, increased global attention and proliferation of safeguard approaches and materials on the part of REDD+ countries, multilaterals [e.g., FCPF, Forest Investment Program (FIP), UN-REDD Program], bilaterals [e.g., REM, Norway's International Climate and Forest Initiative (NICFI), United States Agency for International Development (USAID)], NGOs [e.g., Conservation International, Netherlands Development Organization (SNV), Climate Law and Policy, The Forest Dialogue, Forest Peoples Programme, Bank Information Center, Center for International Environmental Law, World Resources Institute, Tebtebba, Asia Indigenous Peoples Pact, The Center for People and Forests], and consortia (e.g., REDD+ Social and

Environmental Standards) have been beneficial. It has raised awareness of the critical importance of the biodiversity, livelihoods, equity, governance, rights, and participation dimensions of REDD+, while producing multiple perspectives and options on how these issues can be addressed in different country contexts. Some view the emphasis on safeguards, including full and effective participation in REDD+ as contributing to several positive outcomes, including increased dialogue between governments and stakeholders; more and improved opportunities for a neutral space to discuss historically contested and complex issues [e.g., Free, Prior and Informed Consent (FPIC) and land rights]; the standardization of IP/CSO representatives on national and global decision-making bodies (e.g., UN-REDD Policy Board, FCPF Participants' Committee, National REDD+ Steering Committees); the proliferation of national guidelines and guidance on FPIC, stakeholder engagement, and grievance mechanisms; and the rise of funding mechanisms managed by and dedicated to IP/CSOs and/or issues of importance to them (e.g., FIP Dedicated Grant Mechanism, FCPF Capacity Building Fund, UN-REDD Programme Community-Based REDD+, Rights and Resources Initiative Tenure Facility) (71–73).

Although these achievements cannot be understated, the UNFCCC negotiations on safeguards, while attempting to “strike a balance between prescriptive rules, national sovereignty and transaction costs” (67, p. 2141), have resulted in a lack of specificity in terms of content, approach, quality assurance, and compliance, with several consequences.

With regard to content, support and guidance to REDD+ countries have largely been driven by the multilateral programs of FCPF (Readiness and Carbon Funds) and the UN-REDD Programme, which in turn are driven by their respective institutions and delivery partners [the World Bank, FAO, Inter-American Development Bank (IDB), United Nations Development Programme (UNDP), and United Nations Environment Programme (UNEP)]. Institutional differences are thus reflected in guidance on content and requirements, e.g., whether or not countries should follow a human rights-based approach; whether to follow free, prior, and informed consent or consultation; whether a functional grievance mechanism, benefit sharing plan, and established title to emission reductions should be a requirement or not; and the degree of emphasis on do no harm versus do good (66, 68, 73–75).

Differences are also evident in terms of approach, e.g., whether to support countries to meet the UNFCCC requirements or require additional conditions for funding (e.g., GCF, FCPF CF MF, REM), whether to emphasize a national or project-level/jurisdictional approach, and whether assistance comes in the form of a country-led or consultant-led process (76, 77).

The literature on REDD+ does not yet provide insights into what does or does not work for the implementation of REDD+ safeguards. Bodin et al. (78) provide an interesting example by examining how countries can put REDD+ safeguards into practice at the national level, focusing on the environmental safeguard (e) on protecting natural forests and biodiversity. In their examination, they also look at how Mexico and Vietnam address Policies, Laws and Regulations within the context of safeguard (e). They find that although it is too early to draw conclusions on the effectiveness of safeguard (e) for REDD+ implementation and actual impacts of REDD+ on natural forests, biodiversity, and the social and environmental benefits, ex ante facilitation through financial support to REDD+ readiness, can help to elucidate and create a common understanding of the provisions of safeguard (e) and how it can be implemented in a range of national contexts. Even though such a common understanding of the elements of the norm and the processes to address them might not be sufficient to ensure a positive impact on natural forests and biodiversity, or to deliver social and environmental benefits, it does provide a useful reference point for countries and stakeholders when applying these requirements in a way that resonates with their national conditions (78).

The fragmentation in advice to and approaches taken by countries has resulted in (a) an increased burden on REDD+ countries to decipher and apply the necessary and often inconsistent requirements, (b) multiple sets of safeguards being applied to projects simultaneously and in the same country, and (c) numerous time-consuming comparative analyses to determine potential gaps [e.g., national frameworks compared to the Cancun safeguards or to those of an implementing partner or Accredited Entity (AE)]; AEs to the IFC PS for GCF accreditation; AE to AE in the case of potential cofinancing from GCF; jurisdictional or project-level safeguards compared to national approaches to safeguards) (72, 73, 77).

Furthermore, many REDD+ countries have invested a significant amount of time and resources in efforts to meet the UNFCCC safeguard requirements (e.g., national interpretation of the Cancun safeguards; development of national or jurisdictional principles, indicators, and criteria for an SIS) only to be confronted with a change in the base requirements for funding (e.g., new or different standard requirements from the GCF and FCPF CF) or that the safeguards that will be applied in the context of a specific project are actually that of the Accredited Entity (GCF) or the Delivery Partner (FCPF). Related is the challenge countries face in aligning their national approaches to safeguards (as per UNFCCC guidance) with the diverse project approaches (FCPF, GCF, REM, NICFI) (76).

Beyond the conceptual challenges associated with clarifying the “rules of the game,” there exist the perennial ones associated with successful implementation of safeguards and stakeholder engagement, even when there is greater clarity around the policies and procedures. Evidence from reviews and evaluations of readiness programs, feedback from regional and global consultations with indigenous peoples and local communities, and a review of national submissions to the CF pipeline suggest the following chronic and systemic challenges prevail: insufficient government and stakeholder capacity; inadequate engagement of IPs/CSOs and other marginalized populations in design and implementation of projects; inadequate “representativeness” of so-called representatives (both individuals and stakeholder platforms); challenges in reaching (informing, raising awareness, building capacity) remote communities; local elite capture (of benefits, representation, decision making); insufficient efforts to translate materials into understandable forms (language, format); pressure from donors and project implementers to accelerate project implementation without sufficient time and resources for upfront and ongoing stakeholder engagement; weak monitoring and evaluation frameworks; insufficient leverage on the part of delivery partners [International Financial Institutions (IFIs), UN agencies] to push for the type of transformative change required to address the more entrenched and root causes of some safeguards risks (e.g., tenure reform, FPIC, recognition of IPs’ rights); ineffective mainstreaming of gender issues and approaches into all aspects of REDD+; insufficient funding for IPs/CSOs capacity building and delays when funding is provided; historical distrust between government and stakeholders; and insufficient information about and understanding of IPs, local communities, and potentially affected peoples’ practices, livelihoods, cultures, etc. (72, 73, 77, 79, 80).

Deficits need to be addressed in both the normative and operational frameworks for REDD+ safeguards. The REDD+ discourse continues to benefit from a diverse and dynamic set of actors who have been committed to the success of REDD+ since its conception. Some of the same actors who pushed for the inclusion of safeguards in 2007 continue to call for strengthened language and commitments in terms of content and compliance in the context of the GCF (e.g., calls for an IP-specific policy, dedicated funding for IPs). The importance of these issues only increases as more countries transition into Phases 2 and 3, further crystalizing requirements and piloting approaches.



## DISCUSSION: CHALLENGES AND OPPORTUNITIES FOR REDD+ IMPLEMENTATION

We identify three areas where we see key challenges and opportunities for REDD+ to switch gears to implementation and results: (a) REDD+ in the context of NDCs and the SDGs, (b) the role of the private sector, and (c) access to RBPs for REDD+.

### Nationally Determined Contributions, Countries' Integrated Mitigation Agendas, and the Sustainable Development Goals

NDCs, the pledged contributions of countries to the goals of the Paris Agreement, are the central element of the new global climate change framework. Given the centrality of the NDCs, the planning and implementation processes at the national level for the NDCs can serve as catalysts to generate political will, implement necessary national legislation, and promote coordination of institutions in planning and implementation. Of the 197 Parties to the UNFCCC, 183 Parties have submitted a first NDC and one Party has submitted its second NDC, at the time of writing. (<https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx>). For those countries with significant mitigation potential in the forest and/or broader land sectors, the NDC can provide the momentum to achieve sustainable forest and land management objectives (81). These objectives, in many cases, are already outlined in REDD+ NS/APs. Furthermore, signatories to the Paris Agreement have an enhanced reporting responsibility to submit BTRs containing national GHG inventories and reporting related to the NDCs. This means that across sectors, sources and sinks are included in the national GHG inventory (20).

Agriculture and land use, land use change and forestry (LULUCF), or AFOLU (Agriculture, Forestry and Other Land Use) are among the most referenced sectors in countries' mitigation contributions. Fifty-four percent of countries included LULUCF as part of an economy-wide target. However, even more reference LULUCF even if not explicitly part of the scope of the target, with 77% of all countries' NDCs, which is approximately 120 INDCs, referring to LULUCF. This proportion makes the role of LULUCF in the NDCs second only to the energy sector (82). Assuming the full implementation of NDCs, land use and forests in particular are a key component of the Paris Agreement by globally turning from a net anthropogenic source (1990–2010) to a net sink of carbon by 2030 and providing a quarter of emission reductions planned by countries (83).

In some countries specific activities are referred to, with afforestation/reforestation and improved cook stoves as the most commonly referenced, followed by activities or targets to increase and/or protect forest cover, and reduce emissions (including through REDD+) (84). Overall, despite the variations in how the sector is reflected, most countries clearly have provided a signal of ambition to include forest emissions and removals in their NDCs (84). In many cases, countries have made an explicit link between the NDCs and REDD+, specifically referencing intention to implement REDD+ as a component of the NDCs, in order to meet targets for the forest or land sector. In total, approximately 56 countries include a reference to REDD+ in their NDCs (41). Linking REDD+ plans and objectives to the NDCs in the way these countries have already done can clearly provide an opportunity to scale up and enhance momentum of REDD+ implementation in countries by embedding forest-related mitigation action through REDD+ in the NDC context. However, there are also challenges in doing so.

The concept of conditional components of the NDCs is one example of an issue on which there is limited clarity. Many developing countries included this concept of conditional contributions in their NDCs but are not necessarily certain of how this translates into implementation. In the case of REDD+, there are questions around, for example, how a country might associate results of REDD+ programs to a conditional versus unconditional component of an NDC. REDD+ may

be seen as conditional on international support, including results-based finance, but it has also been pointed out that there are domestic efforts related to REDD+ that perhaps should actually be captured as unconditional (84). Some argue that it is unlikely that countries will move quickly from what is formulated in their NDCs into REDD+ implementation until there is more clarity on how to finance REDD+ and clarity on how to deal with agricultural commodities such as oil palm, soy, and cattle ranching as drivers of deforestation (41).

Countries' NDCs under the Paris Agreement and how REDD+ is integrated in them are also important in relation to the SDGs. The SDGs related to climate change mitigation (SDG 13) and forest conservation (SDG 15) relate intrinsically to central objectives of REDD+. Bastos Lima et al. (85) assess the institutional interactions and potential synergies between the SDGs and REDD+ at the global level as well as two national-level contexts in Indonesia and Myanmar. They distinguished between three different synergy types—core, complementary, and supplementary. Their findings suggest that interactions between REDD+ and the SDGs at the output level (i.e., either in the form of cognitive interaction or interaction through commitment) are beginning to take shape in some countries, with Indonesia as an example. They also find that REDD+ provides a viable, internationally accredited means of implementing certain SDG targets, and the SDGs in turn offer a politically powerful additional rationale for expanding REDD+ actions beyond its core carbon-related objectives at national levels.

## **Role of the Private Sector**

During many countries' REDD+ readiness phases, work on stakeholder engagement largely dealt with bringing together government agencies, civil society organizations, and NGOs, in the first instance to raise their awareness about REDD+, moving later to identifying their specific roles and responsibilities in implementation. The private sector was notably absent in many boards and committees convened to discuss REDD+ development and implementation, in part due to a lack of knowledge of private sector actors and their interests in countries' land use sectors, and in part to a lack of interest by private sector actors, or because of the lack of a convincing business case for them to do so. Nonetheless, growing public concern about the contribution of forest loss to climate change, biodiversity decline, and the direct link with agricultural commodities has spurred new initiatives by private-sector actors to eliminate deforestation from their operations and supply chains (37, 86).

The following can often be the first question: "Who is (or are) the private sector?" The answer to this is complex because the nature of the private sector in the land use sector in many developing countries is often ambiguous and dispersed. At the production end are the producers; further along the supply chain are the traders, processors, manufacturers, and retailers that trade products at various stages of their processing, and the investors that provide the finance. At every stage, these actors can range from multinational organizations, small and medium sized enterprises, sole traders, or individual farmers. Without a clear picture of whom exactly comprises the private sector in a country, comprehensive and effective engagement is a challenge. This links also to the challenges around traceability of the commodities themselves. Take palm oil in Indonesia, where the vast majority (90%) of palm oil is noncertified and not traceable along the entire supply chain (87): The oil produced from one palm fruit passes through many production steps and is mixed with oil from multiple other plantations or smallholder lots. This makes understanding and engaging specific agents of deforestation impossible. Stakeholder and supply chain mapping exercises are a helpful first step, although these can be time- and cost-intensive exercises. Understanding the range of these identities, then, leads to the conclusion that the importance of the private sector in the land use sector cannot be overstated. Although responsibility for broader policy reforms

(and their enforcement) will always fall to national governments, it is often the private sector that provides the impetus and capital for innovation.

Land use change involving private-sector actors and entities may occur in several ways (88). They can result from various factors such as (a) illegal or poorly controlled activities by companies and smallholders, often associated with poor governance; in such cases, companies can significantly reduce forest loss by improving their practices, particularly if the government also strengthens governance and law enforcement. (b) National policies that support agricultural expansion combined with poor land use planning that fails to take into consideration the carbon density and biodiversity value of land allocated to agriculture are another example. To counter this through the implementation of REDD+ interventions, the private sector can play a role in moving expansion activities to previously cleared areas, but it needs support from government in improving the policy and legal context. (c) Legal forest conversion conducted as part of a country's national development strategy is a third example. Countries or provinces with very low historical levels of forest loss may have little alternative to clearing forests if they wish to expand agriculture. In such cases, policy change or incentives will be needed to minimize forest loss and ensure that the most valuable forest areas are conserved. Finally, (d) smallholders expanding into new areas so they can supply companies with raw materials is another example. Many national governments emphasize the development of smallholder production in the agriculture sector and often require large companies to support smallholder development programs. Companies can play a significant role in improving the planning process and promoting responsible land use that minimizes the pressure on forests.

Beyond these direct actions, the private sector is increasingly involved in innovative organizations and partnerships that are acting across scales to promote and implement measures for increased land use sustainability (42, 86). The number of private commitments to reduce deforestation from supply chains has greatly increased in recent years, with at least 760 public commitments by 447 producers, processors, traders, manufacturers, and retailers as of March 2017 (89). Lambin et al. (86) provide a recent in-depth review of the role of supply chain initiatives to reduce deforestation. It is concerning that of the 760 public commitments, 1 in 5 commitments has become dormant (i.e., a target date that is past due—or never had a target date at all—and has never had progress information available) (89).

At the international level, sustainable certification bodies aim to integrate sustainable practices across the entire chain of producers, buyers, processors, product manufacturers, and retailers of agricultural and forest commodities and are gaining recognition and popularity among consumers. Notable frontrunners are the Roundtable for Sustainable Palm Oil (<https://www.rspo.org/about>); the Roundtable on Responsible Soy (<http://www.responsiblesoy.org/?lang=en>); Bonsucro, the global sugarcane platform (<http://www.bonsucro.com/>); and the Roundtable on Sustainable Biomaterials for biofuels (<http://rsb.org/>). The ultimate objective of these roundtables is to become so widely adopted by the buyers of each commodity that producers who are not certified are effectively excluded from the market. Multinational companies are increasingly looking to such certification schemes due to consumer pressure and a desire to green their brand. The challenge remains convincing national (small and medium) companies to follow suit.

Accompanying these certification bodies targeting specific commodities are international public-private coalitions between multinational companies, government, and NGOs. These include the Tropical Forest Alliance (TFA) 2020 (<https://www.tfa2020.org/>), a public-private partnership that was founded by the US Government and the Consumer Goods Forum (CGF) with the goal of reducing the tropical deforestation associated with key global commodities. The TFA is open to members, including producer and consumer country governments, private-sector companies, and civil society organizations that agree to undertake specific actions to address

commodity-driven tropical deforestation, such as improving land use planning, promoting the use of degraded lands and reforestation, and improving monitoring of tropical deforestation. The CGF's "zero net deforestation" commitment (<https://www.theconsumergoodsforum.com/what-we-do/resolutions/>) and the New York Declaration on Forests (<http://forestdeclaration.org/>) are similar platforms that raise awareness and provide impetus to action on deforestation at the international level through private-sector engagement.

At the national level, companies, smallholder representatives, national and provincial governments, and civil society organizations are being brought together through national commodity platforms. These are in operation in Indonesia for palm oil (Indonesia Palm Oil Platform; <http://www.inpop.id/en/home/>), Costa Rica for pineapple (<http://www.pnp.cr/index.php/en/>), and Ghana for cocoa (Ghana Cocoa Platform; <http://www.ghanacocoaplatform.org/>), with many others in preparation stages. These platforms bring together government officials, farmers, civil society groups, and companies to create a space to discuss approaches to issues including policy making, land use planning, and law enforcement. In the context of REDD+, these platforms have served as a key entry point for private-sector engagement in the national strategies and policy development process.

At the subnational level, private-sector actors form part of provincial-scale initiatives that take a "jurisdictional" approach to tackling deforestation. The GCFTF is a collaboration that brings such efforts together to promote co-learning and provides technical advice. Jurisdictional approaches are advocated as approaches that can help prevent fragmentation of (national) efforts and create shared, multisector agendas (42). At this scale, private-sector engagement can be highly effective and efficient; however, without broader accompanying institutional and policy reform, such approaches risk remaining testing grounds that are not further scaled up to the national level.

Considering all these initiatives and commitments made, MacFarquhar ask to what degree the most influential actors in the global palm oil, soy, cattle product, and timber product supply chains are committing to address deforestation (90). They found that (a) despite signs of improvement among leading companies, the rate of progress by most companies is inadequate to meet 2020 targets to address deforestation [Curtis et al. (37) concluded the same in a more recent study]; (b) demand for unsustainably produced commodities remains uncurbed by major importing countries, whereas producer countries are increasingly committing to address deforestation within their borders; (c) strong policies from a small number of leading financial institutions are yet to be matched by their peers and client/investee companies; (d) if 2020 goals for addressing commodity-driven deforestation are to be met, company, government, and financial-sector action requires great improvements.

Despite corporate commitments, the rate of commodity-driven deforestation has not declined (37). Moreover, Curtis et al. (37) estimate that to end deforestation, companies will have to eliminate 5 million hectares of conversion from supply chains each year.

Public-private policy interactions are needed to increase the effectiveness of supply-chain initiatives that aim to reduce deforestation (86) and to spur adequate levels of investment to ensure material, scaled action on the ground. REDD+ implementation at the jurisdictional level, where the nexus of scales (implementation of REDD+ NS/APs, commodity supply chain, and the control of states in decentralized countries) occurs, is an important part of making such public-private policy mixes happen on the ground.

### **Access to Finance (Investments) and Results-Based Payments**

Four countries (Brazil, Colombia, Ecuador, and Malaysia) have their submitted REDD+ results listed on the UNFCCC REDD+ Information Hub. As an increasing number of countries have

been moving from initial REDD+ readiness to demonstration and implementation, greater emphasis has been placed on accessing finance for investment in Phase 2 implementation of REDD+ as well as RBPs for fully MRVed REDD+ results. International REDD+ support processes have responded accordingly with the GCF having been identified as having a key role in providing RBPs for REDD+, the creation of the FCPF CF and other initiatives, such as bilateral agreements under Germany's REM Program.

Nonetheless, at the time of writing, only a few donors have engaged in RBPs for REDD+. The most well-known multilateral approaches, the FCPF CF and Bio-Carbon Fund, both administered by the World Bank, have proven to be cumbersome for countries to engage with (91). Currently, neither of the funds has made results-based disbursements. Furthermore, except for multilateral funding of pilots, only Germany (through, e.g., REM) and Norway (through bilateral agreements) have entered into results-based finance agreements (91). The example of the bilateral agreement between Norway and Brazil is an interesting one. Brazil set up the Amazon Fund (prior to the finalization of the REDD+ Warsaw Framework) to incentivize and receive payments for reduced emissions from deforestation in the Amazon region. The national government monitors forest cover change in the Amazonian region with data posted online via a web-GIS portal (<http://www.obt.inpe.br/OBT/assuntos/programas/amazonia/prodes>). The Brazilian Development Bank (BNDES) manages donations to the fund, which have been received by Norway, Germany, and Petrobras (the state energy company) and have surpassed \$1 billion. The internal (i.e., in the Brazilian Amazon) distribution of these funds is not related to emission reductions but is meant to finance project activities that will further reduce deforestation. Subnational governments, NGOs and indigenous communities within the Amazon region are invited to propose project activities assessed against criteria defined by BNDES.

Meanwhile, flows of private investment to forest carbon offset projects have remained subdued due to low carbon prices in the voluntary carbon market and the regulatory risk associated with nesting projects within compliance carbon accounting frameworks (92).

When examining the variety of programs, initiatives, and arrangements by which countries may access RBPs for REDD+, there is no full consistency regarding the requirements that need to be met by countries in order to access that finance (76). Maniatis et al. (76) provide a full comparative analysis. This is a challenge for REDD+ countries, states, and local voluntary carbon market projects, as there may be conflicting rules and modalities and duplicative processes for reporting data and information. Certain elements of the guidance/requirements to operationalize RBPs under multilateral and bilateral agreements for REDD+ RBPs outside the UNFCCC context are characterized by a degree of prescriptiveness not seen in the REDD+ decisions agreed upon under the UNFCCC. Several of these elements can indeed be considered as necessary to operationalize RBPs, in line with the operational modalities of the various financing entities and taking into account specific features of these schemes, such as the legal nature of emission reductions.

There are other elements, however, that appear to potentially place additional burdens and/or limitations on countries without being necessary to affect the operationalization of the RBPs. These include, for example, specific limitations on time period for the reference level or the eligible adjustments. It is useful for countries to further consider these, as they aim to design effective REDD+ programs at the subnational and national levels and seek finance for Phases 2 and 3 of REDD+.

As mentioned above, UNFCCC decision 9/CP.19 encouraged the GCF to play a key role in collectively channeling adequate and predictable RBPs in a fair and balanced manner, taking into account different policy approaches, while working with a view to increasing the number of countries that are in a position to obtain and receive payments for RBAs. As indicated above, the GCF has a fully operational REDD+ results-based payments pilot program, with the first

REDD+ RBPs awarded in early 2019 for results achieved by Brazil in the Amazon Biome in 2014 and 2015 (<https://www.greenclimate.fund/projects/fp100>) and the second one awarded in mid-2019 for results achieved by Ecuador in 2014 (<https://www.greenclimate.fund/projects/fp110>). The RFP for the pilot program provides guidance that is consistent with the Warsaw Framework for REDD+ and other relevant UNFCCC REDD+ decisions, while also incorporating some additional criteria and elements. This process for RBPs under the GCF could provide an opportunity for alignment within a common approach that is consistent with the Warsaw Framework and associated UNFCCC decisions, and recognizing the stepwise, iterative nature of REDD+ that is embedded in that framework. Furthermore, it could also address a need for some additional measures to ensure a high level of confidence in the results eligible for payments, while also ensuring consistency with the operational modalities and policies of the GCF. Such a common approach would provide a contrast to the multiplicity of rules described above.

### SUMMARY POINTS

1. REDD+ is being implemented at various scales—national, subnational, and local. Much of the literature looks at the local scale.
2. REDD+ has not yet delivered on its original promise for quick and low-cost emission reductions due to the technical systems and political, economical, and regulatory transformations that need to take place in developing countries. Nonetheless, REDD+ implementation is starting to move in this direction and the first REDD+ RBPs through the GCF have been approved.
3. Great advances have been made on technical aspects of REDD+, and these will have benefits for countries beyond REDD+, e.g., for improved governance, monitoring, understanding of drivers and barriers, policy making, and management. Nevertheless, the governance reforms needed and policy making around REDD+ take longer, and few countries have started large-scale implementation.
4. Nearly a decade of advocacy, analysis, and practice of REDD+ safeguards reveals normative and operational deficits that need to be addressed to ensure the safeguard requirements and objectives agreed within the UNFCCC are achieved.
5. Countries have started developing robust technical methods for MRV and NFMS, but most countries have yet to develop the competence necessary to administer MRV and NFMS and to inculcate good governance in MRV. This will be a crucial component of the success of REDD+ implementation and RBPs.
6. Linkages between REDD+ and countries' NDCs and commitment to the SDGs are becoming increasingly important to ensure the sustainability and scaling up of REDD+ activities.

### FUTURE ISSUES

1. Recognizing that there are various parallel yet related REDD+ processes under the UNFCCC, it should be a key priority for all parties involved to streamline the processes as much as possible so that more REDD+ countries can engage.



2. We must understand how REDD+ NS/AP documents across countries are being used (or not) to guide REDD+ implementation on the ground.
3. Operationalizing REDD+ NS/APs should be done through accompanying investment plans or frameworks to leverage transformation and action on the ground and provide a framework for the private sector to engage more easily.
4. Implementing REDD+ across scales at the national, subnational, and local levels in a streamlined manner is key to maximize the impact of REDD+ implementation.
5. Key to addressing the normative deficits in regard to REDD+ safeguards would be the design of a framework for (a) aligning safeguard content across fragmented programs and funds and (b) assessing the quality and compliance of SOIs. Key to addressing the operational deficits would be the concerted prioritization and integration of safeguard issues into the design, management, and budgets of REDD+ programs and projects, with a focus on capacity building of government and stakeholders on related topics.
6. Jurisdictional approaches for REDD+ implementation, especially with regard to addressing industrial commodity-driven deforestation, have great potential for impact while building public-private partnerships.
7. Clarification of regulatory frameworks at the national level provides a clear signal to investors as to the viability of nesting projects within national FRELs/FRLs and NDCs.

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The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

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