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Potentials for “results-based payments” in the forest sector under the Paris Agreement

Final report

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Potentials for “results-based payments” in the forest sector under the Paris Agreement

Final report

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Abstract: Potentials for “results-based payments” in the forest sector under the Paris Agreement

This report examines how, and under which circumstances different forms of financing are suitable for results- or transfer-based mechanisms for reducing emissions from deforestation and forest degradation as well as enhancing removals in forests (REDD+) in the context of different countries and measures. The approach of results-based payments is an important element of REDD+. Compared to unconditional finance approaches it delivers finance upon the achievement emission reductions or removals.

The report provides a typology of REDD+ finance mechanisms by elaborating differences between activity-, results- and transfer-based finance. We analyse 13 specific REDD+ finance mechanisms with regard to a range of criteria (e.g. general characteristics, financial governance, monitoring and quantification provisions). The report also explores which requirements arise from Article 6 and the common practice of market-based approaches for financing REDD+. This is followed by an assessment of the potential for REDD+ financing under different assumptions. To assess how the approaches work in practice, the report discusses REDD+ financing in the context of five case countries: Indonesia, Ethiopia, Peru, Vietnam and Democratic Republic of Congo. Against this background, we assess the suitability of REDD+ financing mechanisms for specific country situations. Finally, we draw overall conclusions and formulate recommendations for actions and constraints on the use of different forms of REDD+ financing.

Kurzbeschreibung: Potenziale für "ergebnisbasierte Zahlungen" im Waldsektor im Rahmen des Übereinkommens von Paris

Dieser Bericht untersucht, wie und unter welchen Umständen sich verschiedene Finanzierungsformen für ergebnis- oder transferbasierte Mechanismen zur Reduzierung von Emissionen aus Entwaldung und Walddegradierung sowie zur Steigerung der Kohlenstoffeinbindung in Wäldern (REDD+) im Kontext verschiedener Länder und Maßnahmen eignen. Der Ansatz ergebnisorientierter Zahlungen ist ein wichtiges Element von REDD+. Im Vergleich zu bedingungslosen Finanzierungsansätzen liefern sie Finanzierung nach erreichten Minderungen von Emissionen oder Kohlenstoffeinbindungen.

Der Bericht liefert eine Typologie der REDD+-Finanzierungsmechanismen, indem er die Unterschiede zwischen maßnahmen-, ergebnis- und transferbasierter Finanzierung herausarbeitet. Wir analysieren 13 spezifische REDD+-Finanzierungsmechanismen im Hinblick auf eine Reihe von Kriterien (z. B. allgemeine Merkmale, finanzielle Steuerung, Überwachungs- und Quantifizierungsbestimmungen). Der Bericht untersucht auch, welche Anforderungen sich aus Artikel 6 und der gängigen Praxis marktbasierter Ansätze zur Finanzierung von REDD+ ergeben. Darauf folgt eine Bewertung des Potenzials für die REDD+-Finanzierung unter verschiedenen Annahmen vermieden werden könnten. Um festzustellen, wie Ansätze in der Praxis funktionieren, erörtert der Bericht REDD+-Finanzierung in fünf Beispielländern: Indonesien, Äthiopien, Peru, Vietnam und die Demokratische Republik Kongo. Vor diesem Hintergrund bewerten wir die Eignung von REDD+-Finanzierungsmechanismen für die spezifischen Ländersituationen. Schließlich ziehen wir allgemeine Schlussfolgerungen und formulieren Empfehlungen für die Nutzung verschiedener Formen der REDD+-Finanzierung.

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List of abbreviations

A6.4ERs	Article 6.4 Emission Reductions
ACoGS	Avoided conversion of grasslands and shrublands
ACR	American Carbon Registry
AD	Activity data
AFOLU	Agriculture, Forests and Other Land Use
AGB	Above-ground biomass
ALM	Agricultural land management
AR	Afforestation, Reforestation
ARR	Afforestation, Reforestation and Revegetation
ART/TREES	Architecture for REDD+ transactions and The REDD Environmental Excellency Standard
BAU	Business as usual
BGB	Below-ground biomass
BSP	Benefit-sharing plan
CAFI	Central African Forest Initiative
CAR	Climate Action Reserve
CARB	California Air Resources Board
CCBA	Climate, Communities & Biodiversity Standard
CDM	Clean Development Mechanism
CO_2	Carbon dioxide
COP	Conference of the Parties
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DRC	Democratic Republic of Congo
DW	Dead wood
EF	Emission factor
ER	Emission reductions and removals
ERPA	Emission Reductions Payment Agreement
ESS	Environmental and Social Safeguard (standards)
ETS	Emissions Trading Scheme or System
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Programme
FOLU	Forests and Land Use

A6.4ERs	Article 6.4 Emission Reductions
FREL	Forest Reference Emission Level
FRL	Forest Reference Level
GCC	Global Carbon Council
GCF	Green Climate Fund
GEC	Global Environment Centre Foundation
GEF	Global Environment Facility
GHG	Greenhouse gas
GIS	Green Investment Scheme
HFLD	High forest low deforestation
HIC	High income countries
HIPC	Heavily indebted poor countries
HWP	Harvested wood products
ICAO	International Civil Aviation Organization
ICI	International Climate Initiative
IFM	Improved forest management
IPCC	Intergovernmental Panel on Climate Change
ISFL	Initiative for Sustainable Forest Landscapes
ITMOs	Internationally transferable mitigation outcomes
JCM	Joint Crediting Mechanism
JI	Joint Implementation
JNS	Jurisdictional and Nested REDD+
KfW	Kreditanstalt für Wiederaufbau
LEDS	Low Emission Development Strategy
LIC	Low-income countries
LMIC	Lower middle income countries
LULUCF	Land use, land use change, and forestry
MRV	Measurement, Reporting and Verification (of RBP results)
NDC	Nationally Determined Contribution (under the Paris Agreement)
NFS	Natural Forest Standard
NGO	Non-governmental organisation
NICFI	Norway's International Climate and Forest Initiative
ODA	Official Development Assistance
OMGE	Overall mitigation in global emissions
PA	Paris Agreement
PES	Payment for Ecosystem Services
PFES	Payment for Forest Environmental Services
RBF	Results-based finance

A6.4ERs	Article 6.4 Emission Reductions
RBP	Results-based payments
REDD	Reduced Emissions from Deforestation and Degradation
REM	REDD Early Movers Programme
RFS	Rainforest Standard
SFM	Sustainable forest management
SIS	Safeguard Information System
SOC	Soil organic carbon
TACCC	Transparent, accurate, complete, consistent and comparable
TBP	Transfer-based payments
TFS	Tropical Forest Standard
UBA	Umweltbundesamt (German Environment Agency)
UK	United Kingdom
UMIC	Upper middle-income countries
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCU	Verified carbon unit
WFR	Warsaw Framework for REDD+
WRC	Wetland restoration and conservation

Summary

What is this report about?

Forests play an important role in the **climate system**. The forest sector contributes to high emissions worldwide through the loss of historically built-up carbon stocks, mainly from **deforestation and forest degradation**.

Mechanisms for reducing emissions from deforestation and forest degradation as well as enhancing removals in forests (REDD+) aim at compensating developing countries for efforts to reduce emissions from deforestation and forest degradation, to maintain and increase forest carbon stocks or to manage forests sustainably. This report examines how, and under which circumstances, different forms of results-based financing are suitable for reducing emissions and enhancing removals in the forest sector in the context of different countries and mitigation measures. The report focusses on three 'forest sector' activities**: reducing emissions from deforestation or forest degradation** (REDD), **afforestation/reforestation** (AR), **improved forest management** (IFM).

In **Chapter 2**, we provide a typology of REDD+ finance mechanisms by elaborating differences between activity-, results- and transfer-based finance. In **Chapter 3**, we analyse 13 specific REDD+ finance mechanisms with regard to a range of criteria (e.g. general characteristics, financial governance, quantification of emission reductions and removals). **Chapter 4** compares the requirements arising from Article 6 of the Paris Agreement with the current practices of REDD+ financing mechanisms, in order to understand the Article 6 suitability of existing approaches. **Chapter 5** assesses the potential for REDD+ financing by looking at recent estimates of how much emissions from deforestation and forest degradation could be avoided under different assumptions. **Chapter 6** discusses the requirements for REDD+ financing that arise from different country contexts based on an analysis of **five countries: Indonesia, Ethiopia, Peru, Vietnam and Democratic Republic of Congo**. Against this background, we assess the suitability of REDD+ financing mechanisms considered in Chapter 2 for the specific country situations. In **Chapter 7**, we draw overall conclusions and formulate recommendations for actions and constraints on the use of different forms of REDD+ financing.

What are results- and transfer-based payment mechanisms and what is their role in climate change mitigation in the forest sector?

This report defines **REDD+ financing mechanisms** as direct and indirect ways of channelling finance into REDD+ activities, either by governmental or private actors. REDD+ financing mechanisms may address all three stages of REDD+: readiness, implementation and payments for results. With regard to the type of payment, the report distinguishes the following REDD+ finance mechanisms:

- **Finance for REDD+ readiness and implementation**: Payment is made for REDD+ readiness and demonstration activities[1] (Phase 1 of REDD+) as well as REDD+ implementation measures (Phase 2 of REDD+). This type of finance is paid ex ante for pre-defined activities, i.e. it is not results-based. Sometimes, payments that are not results-based are called "**activity-based payments**" (see, for instance, Derissen and Quaas 2013 and Thompson 2017). The biggest part of REDD+ finance to date is not results-based as few countries and regions can deliver emissions reductions.

[1] These include, for instance, development of national REDD+ strategy or action plans, national forest reference emission levels, a robust and transparent national forest monitoring system; and a safeguards information system (cf. UNFCCC Warsaw Framework).

- **Results-based finance approaches**: Payment is made ex post for the achievement of pre-defined and verified results, typically verified emission reductions or removals from REDD+ activities (Phase 3 of REDD+).[2] Results-based finance includes two more specific finance mechanisms:
  - **Results-based payments (RBP)**: The legal titles to the verified emission reductions or removals remain in the forest country and may be counted against that country's NDC. No transfer of legal titles to the verified emission reductions or removals to another country takes place.
  - **Transfer-based payments (TBP)**: Payment is made ex post for the transfer of verified emission reductions or removals. TBP is a specific form of results-based finance as the transfer of verified emission reductions or removals implies that such emission reductions or removals have been achieved and verified. Unlike in the case of RBP, the legal titles to the purchased reductions or removals are transferred to the buyer[3] and may be counted against that country's NDC or that entity's climate target (e.g. in the case of airlines under CORSIA).

What are requirements of existing results- and transfer-based mechanisms for REDD+ financing?

We have selected 13 REDD+ financing mechanisms that facilitate results- and/or transfer-based payments, for analysis. The analysis illustrates different approaches to REDD+ financing and discusses their commonalities, challenges and opportunities along a number of criteria. These range from general characteristics via aspects of financial governance to the quantification of emission reductions and removals including accounting of carbon benefits, means to address the non-permanence of emission reductions and removals, and approaches to non-carbon benefits and risks including safeguards. It should be noted, however, that beyond the requirements and criteria of REDD+ financing mechanisms, transformational change and the successful addressing of deforestation drivers requires coherent policies and governance in the forest and land sectors of REDD+ countries.

For the analysis, we drew on relevant guidance documents on the respective mechanisms (standards, methodological frameworks, technical documents, terms of reference, donor reports etc.). We also consulted literature on and evaluations of the selected mechanisms. The following REDD+ financing mechanisms were included:

- The Green Climate Fund's (GCF) Pilot Programme for REDD+ results-based payments;
- The World Bank's Forest Carbon Partnership Facility (FCPF);
- The World Bank's BioCarbon Fund (Initiative for Sustainable Forest Landscapes, ISFL);
- The partnership between Norway and Brazil;
- The partnership between Norway, UK, Germany and Colombia in the context of the REDD Early Movers (REM) Programme;
- The partnership between the Central African Forest Initiative (CAFI) and Gabon, funded by Norway;

[2] Note that these pre-agreed results can also be specific political milestones (Climate Focus 2015); however, in the context of REDD+ this form of RBF is rare.
[3] We differentiate between the terms „buyer" of credits (in the case of TBP, where actual transfers take place) and „payer" of credits (in the case of RBP, where no transfer takes place).

- The partnership between Norway, Germany and Peru;
- Japan's Joint Crediting Mechanism (JCM);
- The California Tropical Forest Standard (TFS);
- The Architecture for REDD+ transactions and The REDD Environmental Excellency Standard (ART/TREES);
- The Plan Vivo Standard for Community Payments for Ecosystem Services Programmes;
- Verra's Verified Carbon Standard (VCS) for REDD+ projects;
- Verra's Jurisdictional and Nested REDD+ (JNR).

The analysis looked at aspects such as the **sources and recipients** of REDD+ results-based finance; the amount of finance pledged for REDD+ RBP; the capping of payments; the use of results- vs. transfer-based REDD+ finance; how the prices are set for REDD+ emission reduction and removal units; to what extent the financing mechanisms include means to overcome investment gaps; when payments or disbursements are made; and whether the mechanisms contain provisions on the use of proceeds, specifically on monetary benefit-sharing.

Though the analysis only focussed on RBF and did not look into finance for REDD+readiness and implementation, the results indicate that the **availability of sufficient finance** remains a major challenge. The challenge will be aggravated since some of the mechanisms will expire in the next years. However, a smaller number of financing mechanisms can also be an opportunity in terms of reducing fragmentation, complexities and redundancies of the REDD+ finance landscape, while providing funds – e.g. through the GCF – is still required.

Non-permanence is a major challenge for mitigation activities in the forest sector. Emission reductions or removals might only be temporary, as the sequestered carbon could be released into the atmosphere at a later point in time. This risk includes also reversals triggered by climate change impact on land as currently already observed in different parts of the world. To address the risk of land use-related mitigation being reversed, three main approaches have been developed and partly taken up by REDD+ financing mechanisms. These include reducing non-permanence risks of mitigation activities (Approach 1); monitoring and compensating for reversals (Approach 2a), discounting (Approach 2b) or temporary crediting (Approach 2c); and accounting and compensation by the recipient countries (Approach 3). Risks of non-permanence can thus be addresses by a combination of measures. Due to the long period over which risks might occur, all forest related mitigation activities require an active assessment, monitoring and management of reversal risks over time.

Establishing credible and ambitious baselines is a key factor for the environmental effectiveness of REDD+ financing mechanisms. Often the baseline aims to represent the most likely scenario that would occur in the absence of the proposed activity, often also referred to as 'business-as-usual' scenario, and thus also forming the basis for an assessment of **additionality**. Setting baselines based on average or adjusted historical emissions can be considered the standard approach. With rapidly improving capacities of monitoring, including satellite technologies, accuracy and resolution of historic deforestation rates have been constantly increasing. However, especially for countries with large forest area and low deforestation rates and also for assessing avoided degradation and increased removal activities challenges regarding measuring changes in carbon stocks on a regional or national scale remain.

Approaches how **leakage** can be addressed differ with regard to the scale and type of the activity. Risks are large for single projects that affect the production of globally traded agricultural goods. Leakage risks can be avoided by careful project selection, mitigated by project design, and detected and estimated by adequate monitoring systems. However, this only applies if the project is small compared to the forest region as a whole and is not located in areas of high deforestation rates. Leakage factors bear the risk of underestimating leakage effects, because there is a lack of independent research on them. Therefore, it is important to differentiate leakage types as much as possible to be able to address the adequately. However, **global leakage**, i.e. the displacement of emissions due to international market shifts, can hardly be avoided.

Results-based finance requires **reliable quantification** of forest carbon to calculate emissions reductions and removals as a basis for accounting. It includes requirements for considering pools and gases and how uncertainty is treated, both determining the amount of results available. Robust **accounting** also relies on the comparison of quantified carbon benefits with credible baselines and deductions for leakage.

Crediting is the issuance of uniquely identifiable carbon credits, which is done after comparison with the established baseline and subsequent adjustments for leakage, consideration of uncertainty and non-permanence. While all results-based finance mechanisms require quantification, crediting is usually only part of mechanisms that transfer results to a buyer. In case credits are used for offsetting other (fossil fuel) emissions, credits need to represent additional and permanent emissions reductions or removals. Otherwise, their use would cause an overall increase of GHG in the atmosphere.

The sustainability and acceptance of REDD+ activities critically depend on the promotion of social and environmental **benefits** of these activities, and the mitigation of social and environmental risks linked to them. The analysis shows that the recognition and promotion of non-carbon benefits is less widespread and less institutionalised than the safeguarding of non-carbon risks. With regard to safeguards, most of the reviewed results- and transfer-based REDD+ financing mechanisms refer to the Cancun Safeguards. Some, however, require compliance with other (partly additional) sets of safeguards that are more concrete and ambitious. While all REDD+ financing mechanisms require reporting on safeguard implementation, some of them have additional follow-up mechanisms such as disclosure, grievance mechanisms and – in individual cases – sanctions for non-compliance with safeguards.

What are requirements and constraints of the Paris Agreement for results- and transfer-based finance mechanisms?

At COP26 in Glasgow, after six years of negotiations, countries adopted a rulebook for Article 6 (decisions 2/CMA.3 and3/CMA.3). The new Article 6 rules are, in many ways, a paradigm shift from the Kyoto Protocol. In principle, Article 6 does not limit the type of mitigation activities that are eligible. Both emission reductions and removals may be credited, including at different scales. One exception is that countries will further consider whether "emissions avoidance" and "conservation enhancements" will be eligible activities under Article 6. Though it is unclear what these terms exactly mean, "emissions avoidance" could, for example, be interpreted broadly to cover any activities where currently no emissions occur but would start to occur in the future. This may for example include avoiding emissions from high-forest low-deforestation (HFLD) countries.

The Article 6 rules establish a whole set of new requirements. Many existing REDD+ financing mechanisms were never designed or intended for Article 6 purposes and thus do not meet these

requirements. If these existing mechanisms were intended to qualify under Article 6 rules, they would need significant modification. For some activities, it may not be possible to meet Article 6 requirements though.

Important Article 6 requirements for REDD+ finance mechanisms include the following:

- **Enhancing ambition:** Articles 6.1 and 6.2 establish that the use of Article 6 should enhance ambition. This is commonly understood to mean that the international transfer of emission reductions should enable countries to set more ambitious climate targets. This holds for both buyer and seller countries. For seller countries, this can be achieved through various approaches that share the emission reductions or removals between the buyer and seller, such that the seller can use a part of the reductions or removals to achieve and enhance its own NDC. This may be achieved by setting baselines that are below business-as-usual, shorter crediting periods, or discounting a fraction of the emission reductions or removals.
- **Overall mitigation in global emissions (OMGE):** Article 6.4 of the Paris Agreement stipulates that the new Article 6.4 mechanism should lead to an 'overall mitigation in global emissions'. The rules for the Article 6.4 mechanism operationalises this principle by stipulating that a minimum of 2 per cent of the emission reductions should be transferred into a cancellation account. For Article 6.2, Parties are strongly encouraged to also implement OMGE. The principle of OMGE has not yet been implemented by any of the REDD+ financing mechanisms analysed. However, implementing this requirement is relatively straightforward.
- **Additionality:** The Article 6.2 rules require that mitigation outcomes must be additional. The Article 6.4 rules further specify this through more elaborated principles. Any emission reductions in relation to these assumptions could, however, occur due to multiple reasons, some of which being beyond the control of the activity participants, such as changes in prices for agricultural commodities or climate change. This implies that additionality for these emission reductions is not ensured. A second challenge is that most existing REDD+ finance mechanisms allow claiming emission reductions or removals that may result from the implementation of laws and regulations. However, the provisions under the Article 6.4 mechanism require that the emission reductions must exceed any mitigation that is required by law or regulation. In conclusion, the current approaches of most REDD+ finance mechanisms seem incompatible with the principles and approaches set out under Article 6. Meeting the provisions of the Paris Agreement would require a major change in the way how additionality is approached. Attributing emission reductions or removals to mitigation activities would require, in particular, ensuring that new mitigation activities are implemented, or existing activities are enhanced, that any legal requirements and policies be considered, and that mitigation exceeds those requirements, and that the emission reductions or removals are attributable to the mitigation activity. For many – but not necessarily all – REDD+ mitigation activities it may thus be difficult or impossible to comply with the requirements of additionality.
- **Baselines:** The Article 6 rules require that baselines be set below 'business-as-usual' emission projections and that baselines should take into account all existing policies and address uncertainties in quantification. Rules for the Article 6.4 mechanism also require that baselines consider NDCs and the long-term goals of the Paris Agreement. Compared to the Kyoto Protocol, these provisions can be considered as a paradigm shift in the way how baselines must be established. Most approaches pursued under existing REDD+ financing mechanisms are not compatible with these new principles. The use of average historical

emissions levels, without a downward adjustment, appears no longer appropriate in the light of the requirement to set baselines below business-as-usual or to use downward adjustments from historical levels. Moreover, REDD+ financing mechanisms currently do neither consider the NDC nor the LEDS of the forest country, nor the long-term goals of the Paris Agreement. In conclusion, baseline approaches under most existing REDD+ financing mechanisms would need to be considerably revised to be compatible with the requirements under Article 6.

- **Leakage:** Article 6 rules require that leakage be addressed. Existing REDD+ financing mechanisms address leakage to a varying degree. Some do not consider leakage at all, some require at least identifying leakage risks, some have measures in place to reduce leakage risks, and only some include deductions for leakage in determining emission reductions. Moreover, current leakage deductions often do not account for global leakage, or they provide for levels of deductions that may not match the actual risks of global leakage. As the Article 6 requirements both require minimising the risk of leakage and adjusting for any remaining leakage, most existing REDD+ finance mechanisms are currently not Article 6 compatible.

- **Robust accounting:** The use of carbon market mechanisms under the Paris Agreement requires robust accounting of international transfers of mitigation outcomes, including the avoidance of double counting. Under Article 6, double counting is mainly avoided through a form of double-entry bookkeeping, referred to as "corresponding adjustments". Article 6 rules define several principles how corresponding adjustments will be applied and reported upon. For REDD+ financing mechanisms, avoiding double issuance and double use is a key requirement that can be addressed through the appropriate design of these mechanisms. One of the challenges is that several activities are sometimes implemented in parallel. This poses the risk that emission reductions or removals can be subject to claims by different projects and programmes leading potentially to double claiming. A solution to this challenge is nested accounting frameworks for REDD+ projects and programmes. Addressing double claiming requires the authorisation by the forest country and subsequent application of corresponding adjustments. All existing REDD+ financing schemes that have been designed for RBF do not include such provisions. Even among carbon crediting mechanisms, only few have implemented measures to facilitate accounting through Article 6. Lastly, robust accounting for forestry-related activities further requires clarity on NDC targets for the LULUCF sector and clear information on how countries account for these.

- **Non-permanence:** Article 6 rules require that non-permanence risks be addressed. Some REDD+ financing mechanisms do not include provisions to address non-permanence. Others, in particular those designed for GHG offsetting purposes have procedures in place to address non-permanence risks. However, the robustness of these approaches varies greatly. To fully address reversals, recipient countries would also need to take action. For example, many countries have only single-year targets and would not account for any reversals that occur between these single-year targets.

- **Transparency and governance:** Article 6 emphasises the importance of transparency and governance. Indeed, transparency in decision-making and stakeholder engagement are key elements of good governance. Transparency and meaningful stakeholder engagement require that all relevant information on mitigation activities and the REDD+ financing mechanism is publicly available. Further, decision-making should follow clearly defined criteria that are easy to interpret and are consistently applied. Where relevant, expert input

and review should be solicited in defining decision-making criteria and inform decision-making. Existing REDD+ financing mechanisms partially address these requirements.

- **Enhancing positive and preventing negative environmental and social impacts:** Article 6 rules include elements for ensuring environmental and social safeguards, ensuring that activities promote sustainable development, and establishing a levy for funding adaptation. All major international financial institutions use environmental and social safeguards to ensure that activities that they fund do not result in any negative impacts on the environment and livelihoods of affected communities. Existing REDD+ financing mechanisms address these requirements to a varying degree. For example, many existing REDD+ finance mechanisms already include comprehensive environmental and social safeguards but none implemented a share of proceeds consistent with the Paris Agreement.

In conclusion, some areas – such as ensuring additionality, establishing baselines, leakage and non-permanence – constitute major barriers for REDD+ finance mechanisms qualifying under Article 6. Other Article 6 rules also require modification of existing REDD+ finance mechanisms but seem more manageable, such as implementing OMGE or managing environmental and social impacts. In interpreting these findings, it is important to bear in mind that most existing REDD+ finance mechanisms were never designed for Article 6 purposes but mostly for RPB purposes or the voluntary carbon market.

To address these challenges, it may be useful to distinguish in the future more clearly between RBF and TBP approaches. TBP approaches, such as those under Article 6, require much more rigour because the emission reductions or removals are used by the donor to counterbalance its own emissions and achieve climate targets. Many of the above requirements are, however, less important and relevant where the emission reductions or removals are used in the context of RBP and "contribution claims".

What is the potential for REDD+ financing mechanisms and how can it be estimated?

We assessed the emission reduction and removals potential for REDD+ financing approaches, drawing on existing studies. The assessment is based on studies that analysed forest-related emission reduction and removal potentials globally and in tropical countries, as well as national data and bottom-up studies on the mitigation contribution of REDD+ projects. While the former studies typically describe the theoretical or technical potential that can be achieved by activities without further policy constraints, bottom-up studies delineate the lower boundary of mitigation potential.

The technical potential of REDD+ can be estimated by assuming that all observed emissions from tropical deforestation and forest degradation would be halted. These emissions amount to about 1.8 to 3.6 Gt CO_2/yr. In addition, 8.0 Gt CO_2/yr removals through forest restoration could be achieved in tropical countries.

Mitigation potentials based on historic estimates, e.g. of deforestation rates, as provided by scientific studies and estimates based on projected reference levels included in countries' submissions to UNFCCC typically constitute a technical potential that is not necessarily realisable. Moreover, historic deforestation emissions include considerable amounts of emissions caused by illegal land conversion that can be as high as 50% or even 80% that might cause issues for determining additionality of the potential.

For an estimation of REDD+ potentials also Nationally Determined Contributions (NDCs) of countries can be used. Compared to historic estimates they reflect more realistically the level of ambition put forward by countries on mitigation in the land-use sector. Most countries refer to and include forests in their NDCs. However, different approaches to including the sector, and

different accounting approaches make a comparison of the potentials between countries challenging. An estimate of the REDD+ potential based on NDCs needs to consider that some NDC targets are conditional on the provision of international climate finance.

Through empirical analysis of implemented projects, it can be observed that currently realised REDD+ projects are still far below the potential mitigation contribution because of limited spatial coverage compared to the total forest area under pressure. The comparison of REDD+ potential at different levels reveals that the baselines of projects often assumed consistently higher deforestation than higher level reference scenarios or reference areas. This is because project baseline scenarios often assume a continuation of historical trends which may be unrealistic when the regional economic and political context changes. Nesting, the integration of smaller-scale land-based mitigation activities (e.g. projects) into larger national or subnational REDD+ programmes, is proposed as an approach for more reliable assessments of REDD+ potentials and robust accounting.

Country case studies: What is the current situation of results- and transfer-based mechanisms for REDD+ financing in countries?

We analysed in detail how the requirements for using results- and transfer-based finance are met by five countries – Democratic Republic of Congo, Ethiopia, Indonesia, Peru and Vietnam. The analysis focusses on RBP programmes identified as influential at the global level (GCF REDD+ RBP programme, BioCarbon ISFL, and the FCPF Carbon Fund), and those existing or planned at the national level (development of a domestic carbon market and domestic financial mechanisms to manage, channel, and distribute RBPs). The five countries were selected due to their advanced experiences across different mechanisms. This analysis provides lessons on how country contexts shape investments into forest-based RBPs, and on their implementation processes (e.g. existing institutions, legal and policy frameworks, projects/programmes, national agendas), how far their implementation is, and how international transfers are viewed and implemented.

In their NDCs, some countries make – sometimes substantial – distinctions between emission reductions (ER) they can achieve by their own means (unconditional contribution) and additional reduction targets achievable only with international financial support (conditional contribution). Three of the five countries studied increased their NDC targets in a second submission, Vietnam and Indonesia slightly (one-digit percentages), and Peru more strongly (10% increase). DRC still uses its first NDC. Ethiopia has quantified its NDC targets only in its second NDC submission. While conditional finance is important to all of them, in Ethiopia and DRC substantial ER will only be achieved with international support.

The five countries analysed engage in various RBP programmes, typically in bilateral or, more rarely, multilateral agreements, with the World Bank, the Green Climate Fund (GCF), Norway, Japan, Germany, the UK, and Switzerland, targeting national-level as well as jurisdictional (provinces, regions) levels. The selected countries also have experience with a number of REDD+ projects, some of which trade carbon credits on the voluntary market. The main mechanisms by which countries receive results-based payments are:

- Emission Reductions Payment Agreements (ERPAs) under the FCPF Carbon Fund were the most widely applied model for transfer-based payments in these countries, but Vietnam and Peru have withdrawn from the process. Indonesia, Ethiopia and DRC have a signed ERPA, but they are finalising their benefit-sharing plans, and have not received FCPF payments yet.
- The Green Climate Fund's results-based payments for REDD+. Those RBP allocated to Indonesia have not applied transfer-based payments; Vietnam is in the pipeline.

- Bilateral and multilateral agreements between donor countries (e.g. Norway, UK, Switzerland, Germany) and REDD+ countries (e.g. Indonesia, Peru, DRC) have different arrangements related to transfers.

These countries all participate in RBPs for jurisdictional programmes and projects, indicating there have been previous efforts for establishing national MRV (Measurement, Reporting and Verification) systems. They have systems and legal frameworks in place to support RBPs, but these are not yet functioning optimally and elements such as benefit-sharing mechanisms, national registries of climate change mitigation actions (including REDD+ actions), and laws that operationalize trading/transfer/pricing of forest-based carbon credits are missing or incomplete. Additionally, there is not yet sufficient experience in receiving and sharing the financial benefits from RBPs flowing in at the national level. All countries submitted their Forest Reference Emission Levels (FRELs) between 2015 and 2018, some have submitted one or several updates. The FRELs are generally seen by the UNFCCC Technical Assessment as 'transparent and complete'. The capacity to handle data is good in Indonesia and Peru; it has considerably improved in Ethiopia, Vietnam and DRC. Leakage and permanence are not or hardly addressed, and if discussed, no remedial action is proposed, indicating a point of concern. E.g. Indonesia and some of its regions have fire alert systems to address reversals. Uncertainty buffers are built into some agreements (e.g. the Indonesia-Norway agreement has a 20% uncertainly buffer). All countries have Safeguard Information Systems in place or are in the process of developing them, but available systems are still not fully functional. Separate safeguard-related activities are also carried out by some countries that are preparing for RBP from the FCPF Carbon Fund and the GCF.

Our case studies illustrate that challenges remain in all countries related to (1) integrating forest-related mitigation and adaptation activities into the larger economic and development context of countries, and (2) maintaining the momentum for forest-related activities, in particular in view of policy swings and conflict. On the other hand, realising – and translating into action – that development and climate mitigation must go hand in hand is an important step forward. There are opportunities to improve policy efficiency in embedding climate change and forestry in larger development strategies, aligning agriculture to sustainable development, and integrating efforts for integration and participation. On the other hand, there is a danger of policy swings pitting growth against development and climate action, and of climate action and forestry taking second stage.

How do selected country situations match the requirements of results- and transfer-based mechanisms for REDD+ financing?

Each country's experiences and status of progress are quite different.

Indonesia participates in national and jurisdictional RBF programmes, and the use of Article 6 is explicitly mentioned in its NDC, with support received by state and non-state actors. Indonesia has a national registry for climate change mitigation and adaptation action – but mostly state-led activities are so far registered there –, and a finance mechanism to manage funds related to REDD+ and other climate action. There are no ongoing domestic RBF programmes, but several laws and initiatives are underway, including a pilot cap-and-trade programme by the Ministry of Energy and Mineral Resources, a carbon tax programme by the Ministry of Finance supposed to start in April 2022, and a Presidential Decree on carbon pricing. These suggest opportunities exist for domestic carbon trading in the near future, where the demand is driven by a compliance market targeting domestic high-emission industries. Emission reductions from forests (e.g., through REDD+ projects) can be one of the sources for the traded carbon credits. On carbon trading, Indonesia will develop its own standards and registry, but has no governmental

guidance yet on international transfer-based payments. Indonesia puts a lot of institutional emphasis on peatland and mangrove emission reductions.

Ethiopia has RBF activities at subnational level well integrated into its national strategy. A programme in Oromia Regional state serves as the pilot to develop methods and approaches for MRV, benefit sharing, jurisdictional approaches to REDD+ and nested accounting systems. Ethiopia also hosts Africa's first afforestation/reforestation project under the Clean Development Mechanism (A/R CDM). By nesting a Verra-registered project, the Bale Mountain Eco-Region project, within the Oromia programme, Ethiopia shows how to incorporate voluntary carbon projects in a jurisdictional-scale RBF mechanism. Ethiopia has no domestic RBP programmes and lacks several important legal and policy framework conditions for a Payment for Ecosystem Services (PES) programme to be successfully piloted. No official statement is availableon how the Ethiopian government considers transfer-based payments. Nevertheless, Ethiopia is actively engaged in FCPF-CF (which is transfer-based).

Peru engages in several REDD+ RBP activities, among them one related to the Architecture of REDD+ Transactions (ART) approach spearheaded by Norway. Peru also pioneers a bilateral REDD+ RBF programme with Switzerland, serving as a global pilot for transacting internationally transferable mitigation outcomes (ITMOs) using bilateral agreements between national jurisdictions, particularly referring to Article 6.2 of the Paris Agreement, and currently the only mechanism to allow ITMOs in Peru. Peru has started implementing Direct Conditional Transfers (TDC) that provide conditional funds to local communities (not the involved individuals) to guarantee forest conservation. On the other hand, Peru's FREL report acknowledges technical and data gaps, and Peru has dropped from the FCPF Carbon Fund portfolio due to a missed deadline to sign an ERPA which indicates the challenges for countries to engage in RBP.

Vietnam has RBP programmes at the national and subnational levels and also many REDD+ projects, including responding to ART. Vietnam is working to increase its participation in multilateral and bilateral RBP programmes. Provinces show interest in carbon trading to finance forest protection. Vietnam is increasingly opening to carbon markets and public-private partnerships, too, and is currently developing a domestic carbon market system, which may generate funds for results-based payments. The country also has several domestic payment initiatives for ecosystem service programmes. As part of the National Payment for Forest Environmental Services (PFES) Scheme, beneficiaries of environmental services (e.g. hydropower plants) provide financial incentives to suppliers of these services (e.g. forest communities). Vietnam's carbon for forest ecosystems services (C-PFES) programme is still under development and could turn into transfer-based payments to international entities. It would allow charges on emissions from cement manufacturers and coal-fired power plants going towards financing forest conservation. Vietnam's PES and REDD+ efforts must be carefully managed to avoid double accounting in these overlapping activities.

DRC is pioneering jurisdictional and integrated REDD+ in the Congo Basin, e.g. with the Mai Ndombe PIREDD (Integrated REDD Programme), an ERPA under the FCPF Carbon Fund, and currently the only mechanism for TBP in DRC. FONAREDD, co-chaired by the Ministry of Finance and the Ministry of Environment, is the main mechanism for channelling international REDD+ finance. There are also PES projects under the UNFCCC's Clean Development Mechanism (CDM). With many foreign organisations participating in DRC's RBP, there is no activity fully implemented by domestic proponents. DRC puts emphasis on nested carbon accounting that integrates forest carbon projects into larger REDD+ programmes, with a view to promote a mix of actors at various levels to stimulate private investment and build capacity on the ground.

What are overall conclusions and recommendations for results- and transfer-based mechanisms for REDD+ financing?

The approach of RBP is an important element of REDD+ because it is expected to deliver measurable reductions of emissions and enhancements of removals. Despite the empirical evidence being weak as RBP has not been tested at scale, the general concept remains appealing to both donors and recipients. The various existing piloting mechanisms offer opportunities for gaining experience with approaches and build capacities. However, there is now the need for consolidation of the fragmented policy landscape and for providing donors and recipients with best practices. There is also the need to move from bilateral agreements to more international mechanisms that make use of common standards, harmonised datasets and consistent references. Moreover, an integration of REDD+ into national compliance markets can be a mechanism to address debits from accounting of forest activities, e.g. through the need to reduce emissions in other sectors.

At the same time, it has to be guaranteed that such a consolidation is achieved at a high level of quality. Important lessons learnt from REDD+ are that country ownership and institutionalization are key for good results of RBP approaches. The further development of RBP needs to address also the question of benefit sharing and whether all results achieved will be rewarded by countries providing finance.

The opportunity of a transfer of results to the donor, however, makes investments into REDD+ projects attractive for the donor. But it increases also the risk towards environmental integrity through the inflation of baselines, lack of additionality, leakage, and non-permanence. REDD+ financing mechanisms have developed different approaches for addressing these risks. Still, international standards are not fully comparable regarding incentives provided for improvements and good governance.

More than RBF approaches, TBF approaches require reliable quantification, robust accounting rules, and third-party review, e.g. as in-country missions. This is especially true for setting baselines that play a critical role in determining results and crediting. Certain activities should not be credited because some risks are just too difficult to manage. This includes projects with high risk of global leakage for which environmental integrity cannot be ensured. Moreover, TBF requires corresponding adjustments if the transferred credits are used for other international mitigation purposes.

It may be useful to distinguish more clearly between approaches for RBF and TBF. TBF approaches require much more rigour on many of the issues identified above, as the emission reductions or removals are used by the donor to achieve climate targets, and thus substitute the reduction of emissions in other places. Many of the above requirements related to accounting and crediting are, however, less relevant where the focus is on RBP. However, additionality is an essential requirement for any payments to avoid funding for activities happening anyway. Therefore, it may be useful to distinguish between requirements based on the purpose for which the payment is made. This approach could also be taken up by carbon crediting programmes which could consider issuing two types of carbon credits: one type that may be used for offsetting purposes, and thus requires more enhanced requirements to be satisfied (not only on double counting but also on other matters), and one type that can be used in the context of RBF and "contribution claims". This approach might ensure that finance flows to REDD+ activities but at the same time ensures the necessary level of integrity.

Zusammenfassung

Worum geht es in diesem Bericht?

Wälder spielen eine wichtige Rolle im Klimasystem. Der Waldsektor trägt durch den Verlust von historisch aufgebauten Kohlenstoffvorräten, hauptsächlich durch Entwaldung und Waldschädigung, zu hohen Emissionen weltweit bei.

Mechanismen zur Reduzierung von Emissionen aus Entwaldung und Walddegradierung sowie zur Steigerung der Kohlenstoffeinbindung in Wäldern (REDD+) zielen darauf ab, die Entwicklungsländer für ihre Bemühungen zu entschädigen, die Emissionen aus Entwaldung und Waldschädigung zu reduzieren, die Kohlenstoffvorräte der Wälder zu erhalten und zu erhöhen oder die Wälder nachhaltig zu bewirtschaften. In diesem Bericht wird untersucht, wie und unter welchen Umständen sich verschiedene Formen der ergebnisorientierten Finanzierung für die Verringerung von Emissionen und die Erhöhung von natürlichen Senken im Waldsektor im Kontext verschiedener Länder und Minderungsmaßnahmen eignen. Der Bericht konzentriert sich auf drei "Waldsektor"-Aktivitäten: Reduzierung von Emissionen aus Entwaldung und Waldschädigung (REDD), Aufforstung/Wiederaufforstung (AR) und verbesserte Waldbewirtschaftung (IFM).

In Kapitel 2 erstellen wir eine Typologie der REDD+-Finanzierungsmechanismen, indem wir die Unterschiede zwischen maßnahmen-, ergebnis- und transferbasierter Finanzierung herausarbeiten. In Kapitel 3 analysieren wir 13 spezifische REDD+-Finanzierungsmechanismen im Hinblick auf eine Reihe von Kriterien (z.B. allgemeine Merkmale, finanzielle Steuerung, Quantifizierung von Emissionsreduktionen und Kohlenstoffeinbindungen). Kapitel 4 vergleicht die Anforderungen, die sich aus Artikel 6 des Übereinkommens von Paris ergeben, mit den aktuellen Praktiken der REDD+-Finanzierungsmechanismen, um die Artikel 6-Eignung der bestehenden Ansätze zu verstehen. Kapitel 5 bewertet das Potenzial für die REDD+-Finanzierung anhand aktueller Schätzungen, wie viele Emissionen aus Entwaldung und Walddegradierung unter verschiedenen Annahmen vermieden werden könnten. Kapitel 6 erörtert die Anforderungen an die REDD+-Finanzierung, die sich aus den verschiedenen Länderkontexten ergeben, anhand einer Analyse von fünf Ländern: Indonesien, Äthiopien, Peru, Vietnam und die Demokratische Republik Kongo. Vor diesem Hintergrund bewerten wir die Eignung der in Kapitel 2 betrachteten REDD+-Finanzierungsmechanismen für die spezifischen Ländersituationen. In Kapitel 7 ziehen wir schließlich allgemeine Schlussfolgerungen und formulieren Empfehlungen für Maßnahmen und Einschränkungen bei der Nutzung verschiedener Formen der REDD+-Finanzierung.

Was sind ergebnis- und transferbasierte Finanzierungsmechanismen und welche Rolle spielen sie beim Klimaschutz im Waldsektor?

Als REDD+-Finanzierungsmechanismen können direkte und indirekte Optionen Finanzmittel in REDD+-Aktivitäten zu leiten unterschieden werden. Dies kann durch staatliche oder private Akteure geschehen. REDD+-Finanzierungsmechanismen können alle drei Phasen von REDD+ betreffen: Bereitschaft, Umsetzung und Zahlungen für Ergebnisse. Im Hinblick auf die Art der Zahlung unterscheidet der Bericht die folgenden REDD+-Finanzierungsmechanismen:

- Finanzierung von REDD+ Bereitschaft und Umsetzung: Zahlungen werden für REDD+-Bereitschafts- und Demonstrationsaktivitäten (Phase 1 von REDD+) sowie für REDD+-Umsetzungsmaßnahmen (Phase 2 von REDD+) geleistet. Diese Art der Finanzierung wird ex-ante für im Voraus festgelegte Aktivitäten gezahlt, d.h. sie ist nicht ergebnisorientiert. Manchmal werden Zahlungen, die nicht ergebnisorientiert sind, als "tätigkeitsbezogene Zahlungen" bezeichnet (siehe z. B. Derissen und Quaas 2013 und Thompson 2017). Der

größte Teil der bisherigen REDD+-Finanzierung ist nicht ergebnisorientiert, da nur wenige Länder und Regionen Emissionsminderungen erzielen konnten.

- Ergebnisbasierte Finanzierungsansätze: Die Zahlung erfolgt ex-post für das Erreichen vorher festgelegter und überprüfter Ergebnisse, typischerweise verifizierte Emissionsreduktionen oder Kohlenstoffeinbindungen durch REDD+-Aktivitäten (Phase 3 von REDD+).Die ergebnisorientierte Finanzierung umfasst zwei weitere spezifische Finanzierungsmechanismen:
  - Ergebnisbasierte Zahlungen (RBP): Die Rechtstitel für die verifizierten Emissionsreduktionen oder die Einbindung von Kohlenstoff verbleiben im Waldland und können auf das NDC des Landes angerechnet werden. Es findet keine Übertragung der Rechtstitel für die verifizierten Emissionsreduktionen oder Einbindungen auf ein anderes Land statt.
  - Transferbasierte Zahlungen (TBP): Die Zahlung erfolgt im Nachhinein für die Übertragung von geprüften Emissionsreduktionen oder Kohlenstoffeinbindungsmaßnahmen. TBP ist eine besondere Form der ergebnisorientierten Finanzierung, da die Übertragung von verifizierten Emissionsreduktionen oder Kohlenstoffeinbindungen impliziert, dass diese auch erreicht und verifiziert worden sind. Anders als bei RBP werden die Rechtsansprüche auf die gekauften Reduktionen oder die Einbindung von Kohlenstoff auf den Käufer übertragen und können auf das NDC dieses Landes oder das Klimaziel dieses Unternehmens angerechnet werden (z. B. im Falle von Fluggesellschaften im Rahmen von CORSIA).

Was sind die Anforderungen an bestehende ergebnis- und transferbasierte Mechanismen für die REDD+ Finanzierung?

Wir haben 13 REDD+-Finanzierungsmechanismen, die ergebnis- und/oder transferbasierte Zahlungen ermöglichen, zur Analyse ausgewählt. Die Analyse veranschaulicht verschiedene Ansätze zur REDD+-Finanzierung und erörtert ihre Gemeinsamkeiten, Herausforderungen und Chancen anhand einer Reihe von Kriterien, wie z. B. allgemeine Merkmale, Aspekte der finanziellen Steuerung, die Quantifizierung von Emissionsreduzierungen und Kohlenstoffeinbindungen, Mittel zum Umgang mit der Nichtdauerhaftigkeit von Emissionsreduzierungen und Kohlenstoffeinbindungen sowie Ansätze für nicht kohlenstoffbezogene Vorteile und Risiken einschließlich Schutzmaßnahmen. Dabei ist zu berücksichtigen, dass über die Anforderungen und Kriterien der REDD+-Finanzierungsmechanismen hinaus ein transformativer Wandel und die erfolgreiche Bekämpfung von Entwaldungsursachen eine kohärente Politik und Governance in den Wald- und Landsektoren der REDD+-Länder erfordern.

Die Analyse stützt sich auf einschlägige Leitfäden zu den jeweiligen Mechanismen (Standards, methodische Rahmenwerke, technische Dokumente, Leistungsbeschreibungen, Geberberichte usw.). Außerdem haben wir Literatur und Bewertungen der ausgewählten Mechanismen konsultiert. Die folgenden REDD+-Finanzierungsmechanismen wurden einbezogen:

- Das Pilotprogramm des Green Climate Fund (GCF) für ergebnisbasierte Zahlungen für REDD+;
- Die Forest Carbon Partnership Facility (FCPF) der Weltbank;
- Der BioCarbon Fund der Weltbank (Initiative for Sustainable Forest Landscapes, ISFL);
- Die Partnerschaft zwischen Norwegen und Brasilien;

- Die Partnerschaft zwischen Norwegen, Großbritannien, Deutschland und Kolumbien im Rahmen des REDD Early Movers (REM) Programms;
- Die Partnerschaft zwischen der Zentralafrikanischen Waldinitiative (CAFI) und Gabun, die von Norwegen finanziert wird;
- Die Partnerschaft zwischen Norwegen, Deutschland und Peru;
- Japans Joint Crediting Mechanism (JCM);
- Der kalifornische Tropenwaldstandard (TFS);
- Die Architektur für REDD+ Transaktionen und der REDD Environmental Excellency Standard (ART/TREES);
- Der Plan Vivo Standard für gemeinschaftliche Zahlungen für Ökosystemleistungen Programme;
- Verra's Verified Carbon Standard (VCS) für REDD+ Projekte;
- Verra's Jurisdictional and Nested REDD+ (JNR).

Die Analyse untersuchte Aspekte wie die Quellen und Empfänger der ergebnisbasierten REDD+-Finanzierung, die Höhe der für REDD+ RBP zugesagten Finanzmittel, die Deckelung der Zahlungen, die Verwendung von ergebnis- vs. transferbasierter REDD+-Finanzierung, die Art und Weise, wie die Preise für REDD+-Emissionsreduktions- und -Entfernungseinheiten festgelegt werden, inwieweit die Finanzierungsmechanismen Mittel zur Überwindung von Investitionslücken vorsehen, wann Zahlungen oder Auszahlungen erfolgen und ob die Mechanismen Bestimmungen über die Verwendung der Erlöse, insbesondere über den monetären Vorteilsausgleich, enthalten.

Obwohl sich die Analyse nur auf RBF konzentrierte und die Finanzierung der REDD+-Bereitschaft und -Umsetzung nicht untersuchte, deuten die Ergebnisse darauf hin, dass die Verfügbarkeit ausreichender Finanzmittel weiterhin eine große Herausforderung darstellt. Diese Herausforderung wird sich noch verschärfen, da einige der Mechanismen in den nächsten Jahren auslaufen werden. Eine geringere Anzahl von Finanzierungsmechanismen kann jedoch auch eine Chance sein, um die Fragmentierung, Komplexität und Redundanz der REDD+-Finanzierungslandschaft zu verringern, während die Bereitstellung von Mitteln - z. B. durch den GCF - weiterhin erforderlich ist.

Die Nicht-Dauerhaftigkeit ist eine große Herausforderung für Klimaschutzmaßnahmen im Waldsektor. Emissionsverringerungen oder -beseitigungen könnten nur vorübergehend sein, da der gebundene Kohlenstoff zu einem späteren Zeitpunkt wieder in die Atmosphäre freigesetzt werden könnte. Dieses Risiko schließt auch Umkehrungen vermiedener Emissionen und erreichter Kohlenstoffeinbindungen ein, die durch die Auswirkungen des Klimawandels auf den Boden ausgelöst werden, wie sie derzeit bereits in verschiedenen Teilen der Welt zu beobachten sind. Um dem Risiko einer Umkehrung der landnutzungsbedingten Minderungsmaßnahmen zu begegnen, wurden drei Hauptansätze entwickelt und teilweise von REDD+-Finanzierungsmechanismen aufgegriffen. Dazu gehören die Verringerung des Risikos (Ansatz 1), die Überwachung und Kompensation von Umkehrungen (Ansatz 2a), die Abzinsung (Ansatz 2b) oder die vorübergehende Gutschrift (Ansatz 2c) sowie die Anrechnung und Kompensation durch die Empfängerländer (Ansatz 3). Das Risiko der Nichtdauerhaftigkeit kann also durch eine Kombination von Maßnahmen angegangen werden. Aufgrund des langen Zeitraums, in dem

Risiken auftreten können, erfordern alle waldbezogenen Minderungsmaßnahmen eine aktive Bewertung, Überwachung und Steuerung der Umkehrrisiken im Laufe der Zeit.

Die Festlegung von glaubwürdigen und ehrgeizigen Referenzwerten ist ein Schlüsselfaktor für die ökologische Wirksamkeit von REDD+-Finanzierungsmechanismen. Oft zielt die Referenz (Baseline) darauf ab, das wahrscheinlichste Szenario darzustellen, das ohne die vorgeschlagene Aktivität eintreten würde, oft auch als "Business-as-usual"-Szenario bezeichnet, und bildet somit auch die Grundlage für eine Bewertung der Zusätzlichkeit. Die Festlegung von Referenzwerten auf der Grundlage durchschnittlicher oder angepasster historischer Emissionen kann als Standardansatz betrachtet werden. Mit der raschen Verbesserung der Überwachungskapazitäten, einschließlich der Satellitentechnologie, haben sich Genauigkeit und Auflösung der historischen Entwaldungsraten ständig verbessert. Insbesondere in Ländern mit großen Waldflächen und geringer Entwaldung sowie bei der Bewertung vermiedener Degradation und verstärkter Abholzungsaktivitäten bestehen jedoch nach wie vor Probleme bei der Messung von Veränderungen der Kohlenstoffvorräte auf regionaler oder nationaler Ebene.

Je nach Umfang und Art der Aktivität gibt es unterschiedliche Ansätze, wie mit Verlagerungseffekten (Leakage) umgegangen werden kann. Bei Einzelprojekten, die sich auf die Produktion von weltweit gehandelten landwirtschaftlichen Erzeugnissen auswirken, ist das Risiko groß. Verlagerungsrisiken können durch eine sorgfältige Projektauswahl vermieden, durch die Projektgestaltung gemildert und durch geeignete Überwachungssysteme aufgedeckt und abgeschätzt werden. Dies gilt jedoch nur, wenn das Projekt im Vergleich zur gesamten Waldregion klein ist und nicht in Gebieten mit hohen Entwaldungsraten liegt. Leakage-Faktoren bergen die Gefahr, dass Verlagerungseffekte unterschätzt werden, da es an unabhängigen Untersuchungen zu ihnen mangelt. Daher ist es wichtig, die Arten von Verlagerungen so weit wie möglich zu differenzieren, um sie angemessen behandeln zu können. Globale Effekte, d. h. die Verlagerung von Emissionen aufgrund internationaler Marktverschiebungen, lassen sich jedoch kaum vermeiden.

Die ergebnisorientierte Finanzierung erfordert eine verlässliche Quantifizierung des Festgelegten Kohlenstoffs im Wald, um Emissionsreduktionen und Kohlenstoffeinbindungen als Grundlage für die Anrechnung zu berechnen. Dazu gehören Anforderungen an die Berücksichtigung von Pools und Gasen und die Behandlung von Unsicherheiten, die beide die Menge der Ergebnisse bestimmen. Eine solide Bilanzierung beruht auch auf dem Vergleich des quantifizierten Kohlenstoffnutzens mit glaubwürdigen Referenzwerten und dem Abzug von Emissionen durch Verlagerungseffekte (s.o.).

Am Ende steht die Ausgabe eindeutig identifizierbarer Kohlenstoffgutschriften, die nach einem Vergleich mit der festgelegten Referenz und unter Berücksichtigung von Verlagerungseffekten, Unsicherheiten und der Nichtdauerhaftigkeit erfolgt. Während alle ergebnisbasierten Finanzierungsmechanismen eine Quantifizierung erfordern, sind Gutschriften in der Regel nur Teil von Mechanismen, die Ergebnisse an einen Käufer übertragen. Wenn Gutschriften zum Ausgleich anderer (fossiler) Emissionen verwendet werden, müssen sie zusätzliche und dauerhafte Emissionsreduktionen oder Kohlenstoffeinbindungen darstellen. Andernfalls würde ihre Verwendung zu einem Gesamtanstieg der Treibhausgasemissionen in der Atmosphäre führen.

Die Nachhaltigkeit und Akzeptanz von REDD+-Aktivitäten hängt entscheidend von der Förderung der sozialen und ökologischen Vorteile dieser Aktivitäten und der Minderung der damit verbundenen sozialen und ökologischen Risiken ab. Die Analyse zeigt, dass die Anerkennung und Förderung der nicht-kohlenstoffbezogenen Vorteile weniger weit verbreitet und weniger institutionalisiert ist als die Absicherung der nicht-kohlenstoffbezogenen Risiken.

Was die Schutzmaßnahmen betrifft, so beziehen sich die meisten der untersuchten ergebnis- und transferbasierten REDD+-Finanzierungsmechanismen auf die Cancun-Safeguards. Einige verlangen jedoch die Einhaltung anderer (teilweise zusätzlicher) Schutzmaßnahmen, die konkreter und ehrgeiziger sind. Während alle REDD+-Finanzierungsmechanismen eine Berichterstattung über die Umsetzung der Schutzmaßnahmen verlangen, verfügen einige von ihnen über zusätzliche Follow-up-Mechanismen wie Offenlegung, Beschwerdemechanismen und - in Einzelfällen - Sanktionen für die Nichteinhaltung von Schutzmaßnahmen.

Was sind die Anforderungen und Beschränkungen des Übereinkommens von Paris für ergebnis- und transferbasierte Finanzierungsmechanismen?

Auf der COP26 in Glasgow haben die Länder nach sechsjährigen Verhandlungen ein Regelwerk für Artikel 6 angenommen (Beschlüsse 2/CMA.3 und3/CMA.3). Die neuen Regeln für Artikel 6 stellen in vielerlei Hinsicht einen Paradigmenwechsel gegenüber dem Kyoto-Protokoll dar. Im Prinzip schränkt Artikel 6 die Art der anrechenbaren Minderungsmaßnahmen nicht ein. Sowohl Emissionsminderungen als auch Kohlenstoffeinbindungen können angerechnet werden, auch in unterschiedlichem Umfang. Eine Ausnahme besteht darin, dass die Länder weiter prüfen werden, ob die benannte "Emissionsvermeidung" und "Verbesserung des Erhaltungszustandes" zu den anrechenbaren Aktivitäten gemäß Artikel 6 gehören. Obwohl unklar ist, was diese Begriffe genau bedeuten, könnte "Emissionsvermeidung" zum Beispiel weit ausgelegt werden, um alle Aktivitäten zu erfassen, bei denen derzeit keine Emissionen auftreten, die aber in Zukunft auftreten würden. Dies könnte zum Beispiel die Vermeidung von Emissionen aus Ländern mit hohem Waldbestand und geringer Abholzung (HFLD) einschließen.

Die Bestimmungen von Artikel 6 enthalten eine ganze Reihe neuer Anforderungen. Viele bestehende REDD+-Finanzierungsmechanismen waren nie für die Zwecke von Artikel 6 konzipiert oder gedacht und erfüllen daher diese Anforderungen nicht. Wenn diese bestehenden Mechanismen unter die Bestimmungen von Artikel 6 fallen sollten, müssten sie erheblich angepasst werden. Für einige Aktivitäten ist es jedoch möglicherweise gar nicht möglich, die Anforderungen von Artikel 6 zu erfüllen.

Zu den wichtigen Anforderungen von Artikel 6 für REDD+-Finanzierungsmechanismen gehören die folgenden:

- Steigerung der Ambition: Die Artikel 6.1 und 6.2 legen fest, dass die Anwendung von Artikel 6 das Ambitionsniveau steigern soll. Darunter wird gemeinhin verstanden, dass der internationale Transfer von Emissionsreduktionen die Länder in die Lage versetzen soll, sich ambitioniertere Klimaziele zu setzen. Dies gilt sowohl für Käufer- als auch für Verkäuferländer. Für die Verkäuferländer kann dies durch verschiedene Ansätze erreicht werden, bei denen die Emissionsreduzierungen oder Kohlenstoffeinbindungen zwischen dem Käufer und dem Verkäufer aufgeteilt werden, so dass der Verkäufer einen Teil der Ergebnisse zur Erreichung und Verbesserung seiner eigenen NDC verwenden kann. Dies kann durch die Festlegung von Referenzwerten erreicht werden, die unter dem Business-as-usual-Niveau liegen, durch kürzere Anrechnungszeiträume oder durch die Abzinsung eines Teils der Emissionsreduzierungen oder Kohlenstoffeinbindungen.

- Gesamtminderung der globalen Emissionen (OMGE): Artikel 6.4 des Übereinkommens von Paris sieht vor, dass der neue Artikel 6.4-Mechanismus zu einer "Gesamtminderung der globalen Emissionen" führen soll. In den Regeln für den Artikel 6.4-Mechanismus wird dieser Grundsatz umgesetzt, indem festgelegt wird, dass mindestens zwei Prozent der Emissionsreduktionen auf ein Löschungskonto übertragen werden sollen. Für Artikel 6.2 werden die Vertragsparteien nachdrücklich ermutigt, auch die OMGE umzusetzen. Das Prinzip der OMGE wurde bisher von keinem der untersuchten REDD+-

Finanzierungsmechanismen umgesetzt. Die Umsetzung dieser Anforderung ist jedoch relativ einfach.

- Zusätzlichkeit: Die Regeln des Artikels 6.2 verlangen, dass die Minderungsergebnisse zusätzlich sein müssen. Die Regeln von Artikel 6.4 präzisieren dies durch detailliertere Grundsätze. Die meisten REDD+-Finanzierungsmechanismen enthalten keine spezifischen Bestimmungen zur Gewährleistung der Zusätzlichkeit, sondern stützen sich meist auf die Baseline, um die Zusätzlichkeit zu gewährleisten. Emissionsminderungen im Vergleich zu einem solchen Referenzszenario können jedoch aus verschiedenen Gründen eintreten, von denen sich einige der Kontrolle der an der Aktivität Beteiligten entziehen, wie z. B. Preisänderungen bei Agrarrohstoffen oder der Klimawandel. Dies bedeutet, dass die Zusätzlichkeit dieser Emissionsminderungen nicht gewährleistet ist. Eine zweite Herausforderung besteht darin, dass die meisten bestehenden REDD+-Finanzierungsmechanismen die Geltendmachung von Emissionsreduktionen oder Kohlenstoffeinbindungen erlauben, die sich aus der Umsetzung von Gesetzen und Vorschriften ergeben können. Die Bestimmungen des Mechanismus nach Artikel 6.4 verlangen jedoch, dass die Emissionsminderungen über die gesetzlich vorgeschriebenen Minderungen hinausgehen müssen. Zusammenfassend lässt sich sagen, dass die derzeitigen Ansätze der meisten REDD+-Finanzierungsmechanismen nicht mit den in Artikel 6 festgelegten Grundsätzen und Ansätzen vereinbar sind. Die Einhaltung der Bestimmungen des Übereinkommens von Parise würde eine grundlegende Änderung der Art und Weise erfordern, wie Zusätzlichkeit gewährleistet wird. Die Anrechnung von Emissionsminderungen oder Kohlenstoffeinbindungen auf Minderungsmaßnahmen würde insbesondere erfordern, dass sichergestellt wird, dass neue Minderungsmaßnahmen durchgeführt oder bestehende Maßnahmen verstärkt werden, dass alle rechtlichen Anforderungen und politischen Maßnahmen berücksichtigt werden und dass die Minderungsmaßnahmen über diese Anforderungen hinausgehen und dass die Emissionsminderungen oder Kohlenstoffeinbindungen auf die Minderungsmaßnahmen zurückzuführen sind. Für viele - aber nicht unbedingt alle - REDD+-Minderungsmaßnahmen kann es daher schwierig oder unmöglich sein, die Anforderungen der Zusätzlichkeit zu erfüllen.
- Referenzwerte: Nach den Bestimmungen von Artikel 6 müssen die Referenzwerte (Baselines) unter den Business-as-usual Projektionen von Emissionen liegen. Außerdem müssen die Referenzwerte alle bestehenden Maßnahmen berücksichtigen und Unsicherheiten bei der Quantifizierung ausräumen. Die Regeln für den Artikel 6.4-Mechanismus verlangen auch, dass die Baselines die NDCs und die langfristigen Ziele des Übereinkommens von Paris berücksichtigen. Im Vergleich zum Kyoto-Protokoll können diese Bestimmungen als Paradigmenwechsel in der Art und Weise betrachtet werden, wie Baselines festgelegt werden müssen. Die meisten Ansätze, die im Rahmen der bestehenden REDD+-Finanzierungsmechanismen verfolgt werden, sind mit diesen neuen Grundsätzen nicht vereinbar. Die Verwendung durchschnittlicher historischer Emissionswerte ohne Abwärtskorrekturen erscheint angesichts der Anforderung, die Basiswerte unter dem Business-as-usual-Niveau anzusetzen oder Abwärtskorrekturen von den historischen Werten vorzunehmen, nicht mehr angemessen. Darüber hinaus berücksichtigen die REDD+-Finanzierungsmechanismen derzeit weder das NDC noch die LEDS des Waldlandes noch die langfristigen Ziele des Übereinkommens von Paris. Zusammenfassend lässt sich sagen, dass die Baseline-Ansätze der meisten bestehenden REDD+-Finanzierungsmechanismen erheblich überarbeitet werden müssten, um mit den Anforderungen von Artikel 6 vereinbar zu sein.

- Verlagerungseffekte (Leakage): Die Bestimmungen von Artikel 6 verlangen, dass Verlagerungseffekte berücksichtigt werden. Bestehende REDD+-Finanzierungsmechanismen berücksichtigen Leakage in unterschiedlichem Maße. Einige berücksichtigen solche Effekte überhaupt nicht, einige verlangen zumindest die Identifizierung von Leakagerisiken, einige haben Maßnahmen zur Verringerung von Verlagerungsrisiken eingeführt, und nur einige sehen Abzüge für Verlagerungseffekte bei der Bestimmung der Emissionsreduktionen vor. Darüber hinaus werden bei den derzeitigen Abzügen für Verlagerungen globale Leakageeffekte oft nicht berücksichtigt, oder sie sehen Abzüge in einer Höhe vor, die möglicherweise nicht den tatsächlichen Risiken globaler Effekte entspricht. Da die Anforderungen von Artikel 6 sowohl die Minimierung des Risikos von Leakage als auch die Anpassung an verbleibende Verlagerungseffekte verlangen, sind die meisten bestehenden REDD+-Finanzierungsmechanismen derzeit nicht mit Artikel 6 vereinbar.

- Robuste Anrechnung: Die Nutzung von Kohlenstoffmarktmechanismen im Rahmen des Übereinkommens von Pariser erfordert eine solide Anrechnung von internationalen Transfers von Minderungsergebnissen, einschließlich der Vermeidung von Doppelzählungen. Gemäß Artikel 6 werden Doppelzählungen hauptsächlich durch eine Form der doppelten Buchführung vermieden, die als "Corresponding Adjustment" (entsprechende Anpassungen) bezeichnet wird. In den Regeln von Artikel 6 sind mehrere Grundsätze festgelegt, wie entsprechende Anpassungen angewendet und gemeldet werden. Für REDD+-Finanzierungsmechanismen ist die Vermeidung von Doppelausgaben und Doppelnutzungen eine zentrale Anforderung, die durch die geeignete Gestaltung dieser Mechanismen erfüllt werden kann. Eine der Herausforderungen besteht darin, dass manchmal mehrere Aktivitäten parallel durchgeführt werden. Dies birgt das Risiko, dass Emissionsreduktionen oder Kohlenstoffeinbindungen von verschiedenen Projekten und Programmen beansprucht werden können, was zu einer doppelten Inanspruchnahme führen kann. Eine Lösung für dieses Problem sind verschachtelte Anrechnungsrahmen für REDD+-Projekte und -Programme. Eine doppelte Inanspruchnahme erfordert die Genehmigung durch das Waldland und die anschließende Anwendung entsprechender Anpassungen. Alle bestehenden REDD+-Finanzierungssysteme, die für RBF konzipiert wurden, enthalten keine solchen Bestimmungen. Selbst unter den Mechanismen zur Anrechnung von Kohlenstoffgutschriften haben nur wenige Maßnahmen zur Erleichterung der Anrechnung durch Artikel 6 umgesetzt. Schließlich erfordert eine solide Anrechnung von Aktivitäten im Waldsektor auch Klarheit über die NDC-Ziele für den Landnutzungssektor und klare Informationen darüber, wie die Länder diese anrechnen.

- Nicht-Dauerhaftigkeit: Artikel 6 schreibt vor, dass die Risiken der Nicht-Dauerhaftigkeit berücksichtigt werden müssen. Einige REDD+-Finanzierungsmechanismen enthalten keine Bestimmungen zur Behandlung der Nicht-Dauerhaftigkeit. Andere, insbesondere solche, die für die Kompensation von Treibhausgasemissionen konzipiert sind, verfügen über Verfahren, um Risiken der Nichtdauerhaftigkeit zu berücksichtigen. Allerdings ist die Robustheit dieser Ansätze sehr unterschiedlich. Um das Risiko einer Umkehr der Emissionsreduktion oder Verlust des eingebundenen Kohlenstoffs vollständig anzugehen, müssten auch die Empfängerländer Maßnahmen ergreifen. Viele Länder haben beispielsweise nur Einjahresziele und würden die Umkehr von Emissionsminderungen, die zwischen diesen Einjahreszielen auftreten, nicht berücksichtigen.

- Transparenz und Governance: In Artikel 6 wird die Bedeutung von Transparenz und Governance hervorgehoben. In der Tat sind Transparenz bei der Entscheidungsfindung und die Einbeziehung von Interessengruppen Schlüsselelemente einer guten Governance. Transparenz und eine sinnvolle Einbeziehung der Interessengruppen setzen voraus, dass

alle relevanten Informationen über Minderungsmaßnahmen und den REDD+-Finanzierungsmechanismus öffentlich zugänglich sind. Außerdem sollte die Entscheidungsfindung nach klar definierten Kriterien erfolgen, die leicht zu interpretieren sind und konsequent angewendet werden. Gegebenenfalls sollten bei der Festlegung der Entscheidungskriterien und bei der Entscheidungsfindung die Meinung von Experten eingeholt und geprüft werden. Bestehende REDD+-Finanzierungsmechanismen erfüllen diese Anforderungen teilweise.

- Verstärkung positiver und Vermeidung negativer ökologischer und sozialer Auswirkungen: Die Bestimmungen von Artikel 6 enthalten Elemente zur Gewährleistung von Umwelt- und Sozialschutzmaßnahmen, zur Sicherstellung, dass die Aktivitäten eine nachhaltige Entwicklung fördern, und zur Einführung einer Abgabe zur Finanzierung von Anpassungsmaßnahmen. Alle großen internationalen Finanzinstitutionen verwenden Umwelt- und Sozialschutzmaßnahmen, um sicherzustellen, dass die von ihnen finanzierten Aktivitäten keine negativen Auswirkungen auf die Umwelt und die Lebensgrundlagen der betroffenen Gemeinschaften haben. Bestehende REDD+-Finanzierungsmechanismen berücksichtigen diese Anforderungen in unterschiedlichem Maße. So enthalten viele bestehende REDD+-Finanzierungsmechanismen bereits umfassende ökologische und soziale Schutzmaßnahmen, aber keiner von ihnen hat einen Anteil der Erlöse im Einklang mit dem Übereinkommen von Paris umgesetzt.

Zusammenfassend lässt sich sagen, dass einige Bereiche - wie die Sicherstellung der Zusätzlichkeit, die Festlegung von Baselines, Leakage und Nicht-Dauerhaftigkeit - große Hindernisse für REDD+-Finanzierungsmechanismen darstellen, die sich unter Artikel 6 qualifizieren. Andere Bestimmungen von Artikel 6 erfordern ebenfalls Änderungen an bestehenden REDD+-Finanzierungsmechanismen, scheinen aber leichter zu handhaben zu sein, wie die Umsetzung von OMGE oder die Berücksichtigung von ökologischen und sozialen Auswirkungen. Bei der Interpretation dieser Ergebnisse ist es wichtig zu bedenken, dass die meisten bestehenden REDD+-Finanzierungsmechanismen nie für Artikel 6-Zwecke, sondern meist für RPB-Zwecke oder den freiwilligen Kohlenstoffmarkt entwickelt wurden.

Um diesen Herausforderungen zu begegnen, könnte es sinnvoll sein, in Zukunft klarer zwischen RBF- und TBP-Ansätzen zu unterscheiden. TBP-Ansätze, wie z.B. die unter Artikel 6, erfordern strengere Kriterien, da die Emissionsreduzierungen oder Kohlenstoffeinbindungen vom Geber genutzt werden, um seine eigenen Emissionen auszugleichen und Klimaziele zu erreichen. Viele der oben genannten Anforderungen sind jedoch weniger wichtig und relevant, wenn die Emissionsminderungen oder Kohlenstoffeinbindungen im Rahmen von RBP und "Beitragsforderungen" verwendet werden.

Wie groß ist das Potenzial für REDD+-Finanzierungsmechanismen und wie kann es abgeschätzt werden?

Wir haben das Emissionsreduktions- und Kohlenstoffeinbindungspotenzial für REDD+-Finanzierungsansätze bewertet und uns dabei auf bestehende Studien gestützt. Die Bewertung basiert auf Studien, die waldbezogene Emissionsminderungs- und Kohlenstoffeinbindungspotenziale weltweit und in tropischen Ländern analysiert haben, sowie auf nationalen Daten und Bottom-up-Studien über den Minderungsbeitrag von REDD+-Projekten. Während die erstgenannten Studien in der Regel das theoretische oder technische Potenzial beschreiben, das durch Aktivitäten ohne weitere politische Einschränkungen erreicht werden kann, beschreiben Bottom-up-Studien die untere Grenze des Minderungspotenzials.

Das technische Potenzial von REDD+ kann geschätzt werden, wenn man davon ausgeht, dass alle beobachteten Emissionen aus der Entwaldung und Waldschädigung in den Tropen gestoppt

würden. Diese Emissionen belaufen sich auf etwa 1,8 bis 3,6 Gt CO2/Jahr. Darüber hinaus könnten in den tropischen Ländern 8,0 Gt CO2/Jahr durch die Wiederherstellung der Wälder gebunden werden.

Minderungspotenziale, die auf historischen Schätzungen, z. B. von Entwaldungsraten, beruhen, wie sie in wissenschaftlichen Studien vorgelegt werden, und Schätzungen, die auf projizierten Referenzwerten basieren, die in den Beiträgen der Länder zum UNFCCC enthalten sind, stellen in der Regel ein technisches Potenzial dar, das nicht unbedingt realisierbar ist. Darüber hinaus sind in den historischen Entwaldungsemissionen beträchtliche Mengen an Emissionen enthalten, die durch illegale Waldumwandlung verursacht wurden und bis zu 50 % oder sogar 80 % betragen können, was Probleme bei der Bestimmung der Zusätzlichkeit des Potenzials verursachen kann.

Für die Abschätzung des REDD+-Potenzials können auch die Nationally Determined Contributions (NDCs) der Länder herangezogen werden. Im Vergleich zu historischen Schätzungen spiegeln sie realistischer den Grad der Ambitionen wider, den die Länder bei der Eindämmung der Landnutzung an den Tag legen. Die meisten Länder beziehen sich auf Wälder und beziehen diese in ihre NDCs ein. Unterschiedliche Ansätze zur Einbeziehung des Sektors und unterschiedliche Buchhaltungsansätze erschweren jedoch einen Vergleich der Potenziale zwischen den Ländern. Eine Schätzung des REDD+-Potenzials auf der Grundlage der NDCs muss berücksichtigen, dass einige NDC-Ziele von der Bereitstellung internationaler Klimafinanzierung abhängig sind.

Die empirische Analyse der umgesetzten Projekte zeigt, dass die derzeit realisierten REDD+-Projekte aufgrund der begrenzten räumlichen Abdeckung im Vergleich zur gesamten Waldfläche, die durch Entwaldung bedroht ist, noch weit unter dem potenziellen Minderungsbeitrag liegen. Der Vergleich des REDD+-Potenzials auf verschiedenen Ebenen zeigt, dass in den Basisszenarien der Projekte häufig von einer durchweg höheren Entwaldung ausgegangen wird als in den Referenzszenarien oder Referenzgebieten auf höherer Ebene. Dies liegt daran, dass die Basisszenarien der Projekte oft von einer Fortsetzung historischer Trends ausgehen, was unrealistisch sein kann, wenn sich der regionale wirtschaftliche und politische Kontext ändert. Nesting, die Integration kleinerer landbasierter Minderungsmaßnahmen (z. B. Projekte) in größere nationale oder subnationale REDD+-Programme, wird als Ansatz für zuverlässigere Bewertungen des REDD+-Potenzials und eine solide Rechnungslegung vorgeschlagen.

Länder-Fallstudien: Wie ist die aktuelle Situation der ergebnis- und transferbasierten Mechanismen für die REDD+-Finanzierung in ausgewählten Ländern?

Wir haben im Detail analysiert, wie die Anforderungen für die Nutzung von ergebnis- und transferbasierter Finanzierung in fünf Ländern - Demokratische Republik Kongo, Äthiopien, Indonesien, Peru und Vietnam - erfüllt werden. Die Analyse konzentriert sich auf RBP-Programme, die auf globaler Ebene als einflussreich identifiziert wurden (GCF REDD+ RBP-Programm, BioCarbon ISFL und der FCPF Carbon Fund), sowie auf solche, die auf nationaler Ebene existieren oder geplant sind (Entwicklung eines nationalen Kohlenstoffmarktes und nationaler Finanzmechanismen zur Verwaltung, Kanalisierung und Verteilung von RBPs). Die fünf Länder wurden aufgrund ihrer fortgeschrittenen Erfahrungen mit den verschiedenen Mechanismen ausgewählt. Diese Analyse gibt Aufschluss darüber, wie der länderspezifische Kontext Investitionen in waldbasierte RBPs beeinflusst, und über ihre Umsetzungsprozesse (z. B. bestehende Institutionen, rechtliche und politische Rahmenbedingungen, Projekte/Programme, nationale Agenden), wie weit ihre Umsetzung fortgeschritten ist und wie internationale Transfers gesehen und umgesetzt werden.

In ihren NDCs machen einige Länder - manchmal erhebliche - Unterschiede zwischen Emissionsreduktionen (ER), die sie mit eigenen Mitteln erreichen können (unbedingter Beitrag), und zusätzlichen Reduktionszielen, die nur mit internationaler finanzieller Unterstützung erreicht werden können (bedingter Beitrag). Drei der fünf untersuchten Länder haben ihre NDC-Ziele in einer zweiten Runde erhöht, Vietnam und Indonesien geringfügig (einstellige Prozentsätze), Peru stärker (10 % Erhöhung). Die Demokratische Republik Kongo verwendet immer noch ihr erstes NDC. Äthiopien hat seine NDC-Ziele erst in seinem zweiten NDC-Antrag quantifiziert. Während die konditionierte Finanzierung für alle Länder wichtig ist, können Äthiopien und die Demokratische Republik Kongo erhebliche Einsparungen nur mit internationaler Unterstützung erreichen.

Die fünf analysierten Länder beteiligen sich an verschiedenen RBP-Programmen, in der Regel im Rahmen bilateraler oder seltener multilateraler Vereinbarungen mit der Weltbank, dem Green Climate Fund (GCF), Norwegen, Japan, Deutschland, dem Vereinigten Königreich und der Schweiz, die sowohl auf die nationale als auch auf die regionale Ebene (Provinzen, Regionen) ausgerichtet sind. Die ausgewählten Länder haben auch Erfahrung mit einer Reihe von REDD+-Projekten, von denen einige auf dem freiwilligen Markt mit Emissionsgutschriften handeln. Die wichtigsten Mechanismen, über die die Länder ergebnisabhängige Zahlungen erhalten, sind:

- Emission Reductions Payment Agreements (ERPAs) im Rahmen des FCPF Carbon Fund waren das am weitesten verbreitete Modell für transferbasierte Zahlungen in diesen Ländern, aber Vietnam und Peru haben sich aus diesem Prozess zurückgezogen. Indonesien, Äthiopien und die Demokratische Republik Kongo haben zwar ein ERPA unterzeichnet, aber sie sind dabei, ihre Pläne für den Vorteilsausgleich fertigzustellen, und haben noch keine Zahlungen aus dem FCPF erhalten.

- Die ergebnisabhängigen Zahlungen des Green Climate Fund für REDD+. Die Indonesien zugewiesenen RBP stellen keine transferbasierten Zahlungen dar; Unternehmungen in Vietnam sind noch in der Entwicklung.

- Bilaterale und multilaterale Vereinbarungen zwischen Geberländern (z. B. Norwegen, Großbritannien, Schweiz, Deutschland) und REDD+-Ländern (z. B. Indonesien, Peru, DRC) haben unterschiedliche Vereinbarungen in Bezug auf Transfers.

Die untersuchten Länder beteiligen sich alle an RBP für Programme und Projekte mit jurisdiktionalen Ansätzen, d.h. Ansätzen, die verschiedene Zuständigkeitsebenen berücksichtigen, was darauf hindeutet, dass es frühere Bemühungen um die Einrichtung nationaler Überwachungssysteme gegeben hat. Sie verfügen über Systeme und rechtliche Rahmenbedingungen zur Unterstützung von RBPs, die jedoch noch nicht optimal funktionieren und Elemente wie Mechanismen für den Vorteilsausgleich, nationale Register für Klimaschutzmaßnahmen (einschließlich REDD+-Maßnahmen) und Gesetze, die den Handel/Transfer/Bepreisung von waldbezogenen Kohlenstoffgutschriften ermöglichen, fehlen oder sind unvollständig. Darüber hinaus gibt es noch keine ausreichenden Erfahrungen mit der Verwendung der finanziellen Vorteile aus RBP, die auf nationaler Ebene fließen. Alle Länder haben zwischen 2015 und 2018 ihre Referenzemissionswerte für Wald (FREL) vorgelegt, einige haben eine oder mehrere Aktualisierungen eingereicht. Die FREL werden von der technischen Bewertung des UNFCCC im Allgemeinen als "transparent und vollständig" angesehen. Die Kapazität zur Datenverarbeitung ist in Indonesien und Peru gut, in Äthiopien, Vietnam und DRC hat sie sich deutlich verbessert. Leakage und Dauerhaftigkeit werden nicht oder kaum angesprochen, und wenn sie erörtert werden, werden keine Abhilfemaßnahmen vorgeschlagen, was auf einen Punkt hinweist, der Anlass zur Sorge gibt. In Indonesien und einigen seiner

Regionen gibt es z. B. Brandmeldesysteme, um Rückschläge zu vermeiden. In einigen Abkommen sind Unsicherheitspuffer eingebaut (z. B. das Abkommen zwischen Indonesien und Norwegen hat einen Unsicherheitspuffer von 20 %). Alle Länder verfügen über Safeguard-Informationssysteme oder sind dabei, sie zu entwickeln, aber die vorhandenen Systeme sind noch nicht voll funktionsfähig. Einige Länder, die sich auf RBP aus dem FCPF-Kohlenstofffonds und dem GCF vorbereiten, führen auch gesonderte Aktivitäten zum Thema Schutzmaßnahmen durch.

Unsere Fallstudien zeigen, dass es in allen Ländern noch Herausforderungen gibt, die (1) die Integration waldbezogener Minderungs- und Anpassungsmaßnahmen in den größeren Wirtschafts- und Entwicklungskontext der Länder und (2) die Aufrechterhaltung der Dynamik waldbezogener Maßnahmen betreffen, insbesondere in

Wie passt die Situation in den ausgewählten Ländern zu den Anforderungen der ergebnis- und transferbasierten Mechanismen für die REDD+-Finanzierung?

Die Erfahrungen und der Stand des Fortschritts in den einzelnen Ländern sind recht unterschiedlich.

Indonesien nimmt an nationalen und juristischen RBF-Programmen teil, und die Nutzung von Artikel 6 wird in seinem NDC ausdrücklich erwähnt, wobei staatliche und nichtstaatliche Akteure Unterstützung erhalten. Indonesien verfügt über ein nationales Register für Klimaschutz- und Anpassungsmaßnahmen - allerdings sind dort bisher hauptsächlich staatliche Aktivitäten registriert - sowie über einen Finanzierungsmechanismus zur Verwaltung von Geldern im Zusammenhang mit REDD+ und anderen Klimaschutzmaßnahmen. Es gibt keine laufenden inländischen RBF-Programme, aber mehrere Gesetze und Initiativen sind im Gange, darunter ein Pilot-Cap-and-Trade-Programm des Ministeriums für Energie und Bodenschätze, ein Kohlenstoffsteuerprogramm des Finanzministeriums, das im April 2022 anlaufen soll, und ein Präsidialerlass über Kohlenstoffpreise. Dies deutet darauf hin, dass es in naher Zukunft Möglichkeiten für den inländischen Emissionshandel geben wird, wobei die Nachfrage von einem Markt für die Einhaltung von Vorschriften ausgeht, der auf inländische emissionsintensive Industrien ausgerichtet ist. Emissionsreduzierungen aus Wäldern (z. B. durch REDD+-Projekte) können eine der Quellen für die gehandelten Emissionsgutschriften sein. Was den Handel mit Kohlenstoffgutschriften angeht, wird Indonesien seine eigenen Standards und ein eigenes Register entwickeln, hat aber noch keine staatlichen Vorgaben für internationale transferbasierte Zahlungen. Indonesien legt einen großen institutionellen Schwerpunkt auf die Reduzierung von Emissionen aus Moorböden und Mangroven.

Äthiopien hat RBF-Aktivitäten auf subnationaler Ebene gut in seine nationale Strategie integriert. Ein Programm im Regionalstaat Oromia dient als Pilotprojekt zur Entwicklung von Methoden und Ansätzen für ein Monitoring, Vorteilsausgleich, jurisdiktionale Ansätze für REDD+ und verschachtelte Abrechnungssysteme. Äthiopien beherbergt auch das erste Aufforstungsprojekt Afrikas im Rahmen des Mechanismus für umweltverträgliche Entwicklung (A/R CDM). Durch die Einbettung eines von Verra registrierten Projekts, des Bale Mountain Eco-Region-Projekts, in das Oromia-Programm zeigt Äthiopien, wie man freiwillige Kohlenstoffprojekte in einen RBF-Mechanismus auf Ebene verschiedener Zuständigkeitsebenen einbinden kann. In Äthiopien gibt es keine inländischen RBP-Programme, und es fehlen mehrere wichtige rechtliche und politische Rahmenbedingungen, damit ein Programm zur Honorierung von Ökosystemleistungen (PES) erfolgreich eingeführt werden kann. Es gibt keine offizielle Stellungnahme dazu, wie die äthiopische Regierung transferbasierte Zahlungen betrachtet. Dennoch beteiligt sich Äthiopien aktiv am FCPF-CF (der auf Transfers basiert).

Peru beteiligt sich an mehreren REDD+ RBP-Aktivitäten, darunter eine im Zusammenhang mit dem von Norwegen geführten Ansatz der Architecture of REDD+ Transactions (ART). Peru leistet auch Pionierarbeit mit einem bilateralen REDD+-RBF-Programm mit der Schweiz, das als globales Pilotprojekt für die Abwicklung von international übertragbaren Minderungsergebnissen (ITMOs) unter Verwendung bilateraler Vereinbarungen zwischen nationalen Rechtsordnungen dient, insbesondere unter Bezugnahme auf Artikel 6.2 des Übereinkommens von Paris, und derzeit der einzige Mechanismus ist, der ITMOs in Peru erlaubt. Peru hat mit der Umsetzung direkter bedingter Transfers (TDC) begonnen, bei denen lokalen Gemeinschaften (nicht den betroffenen Einzelpersonen) an Bedingungen geknüpft Mittel zur Verfügung gestellt werden, um die Erhaltung der Wälder zu gewährleisten. Andererseits räumt der peruanische FREL-Bericht technische und datentechnische Lücken ein, und Peru wurde aus dem Portfolio des FCPF-Kohlenstofffonds gestrichen, weil es die Frist für die Unterzeichnung eines ERPA verpasst hat, was auf die Herausforderungen für Länder hinweist, die sich für RBP engagieren.

Vietnam hat RBP-Programme auf nationaler und subnationaler Ebene und auch viele REDD+-Projekte, einschließlich einer nationalen Reaktion auf ART. Vietnam arbeitet daran, seine Beteiligung an multilateralen und bilateralen RBP-Programmen zu erhöhen. Die Provinzen zeigen Interesse am Kohlenstoffhandel zur Finanzierung des Waldschutzes. Vietnam öffnet sich zunehmend auch den Kohlenstoffmärkten und öffentlich-privaten Partnerschaften und entwickelt derzeit ein inländisches Kohlenstoffmarktsystem, das Mittel für ergebnisorientierte Zahlungen generieren kann. Das Land verfügt auch über mehrere inländische Zahlungsinitiativen für Ökosystemdienstleistungsprogramme. Im Rahmen des National Payment for Forest Environmental Services (PFES) Scheme bieten die Nutznießer von Umweltdienstleistungen (z. B. Wasserkraftwerke) den Anbietern dieser Dienstleistungen (z. B. Waldgemeinden) finanzielle Anreize. Das vietnamesische Programm "Carbon for Forest Ecosystems Services" (C-PFES) befindet sich noch in der Entwicklung und könnte zu transferbasierten Zahlungen an internationale Unternehmen führen. Es würde Abgaben auf Emissionen von Zementherstellern und Kohlekraftwerken ermöglichen, die zur Finanzierung des Waldschutzes beitragen. Vietnams PES- und REDD+-Bemühungen müssen sorgfältig gesteuert werden, um eine doppelte Bilanzierung bei diesen sich überschneidenden Aktivitäten zu vermeiden.

Die Demokratische Republik Kongo leistet Pionierarbeit bei der Umsetzung von REDD+ im Kongobecken, z.B. mit dem Mai Ndombe PIREDD (Integrated REDD Programme), einem ERPA unter dem FCPF Carbon Fund und derzeit dem einzigen Mechanismus für TBP in der Demokratischen Republik Kongo. FONAREDD, bei dem das Finanz- und das Umweltministerium gemeinsam den Vorsitz führen, ist der wichtigste Mechanismus für die Kanalisierung der internationalen REDD+-Finanzierung. Außerdem gibt es PES-Projekte im Rahmen der UN

Was sind die allgemeinen Schlussfolgerungen und Empfehlungen für ergebnis- und transferbasierte Mechanismen zur Finanzierung von REDD+?

Der Ansatz der ergebnis- und transferbasierten Finanzierung ist ein wichtiges Element von REDD+, da von ihm messbare Emissionsreduzierungen und Kohlenstoffeinbindungen erwartet werden. Obwohl die empirische Evidenz schwach ist, da RBP nicht in großem Maßstab getestet wurde, bleibt das allgemeine Konzept sowohl für Geber als auch für Empfänger attraktiv. Die verschiedenen bestehenden Pilotmechanismen bieten die Möglichkeit, Erfahrungen mit Konzepten zu sammeln und Kapazitäten aufzubauen. Allerdings muss die zersplitterte politische Landschaft konsolidiert werden und Gebern und Empfängern müssen Beispiele der guten Praxis zur Verfügung gestellt werden. Außerdem ist es notwendig, von bilateralen Vereinbarungen zu mehr internationalen Mechanismen überzugehen, die gemeinsame Standards, harmonisierte

Datensätze und einheitliche Referenzen nutzen. Darüber hinaus kann die Integration von REDD+ in die nationalen Compliance-Märkte ein Mechanismus sein, um Belastungen aus der Anrechnung forstwirtschaftlicher Aktivitäten zu begegnen, z. B. durch die Notwendigkeit, Emissionen in anderen Sektoren zu reduzieren.

Gleichzeitig muss sichergestellt werden, dass eine solche Konsolidierung auf einem hohen Qualitätsniveau erreicht wird. Wichtige Lehren aus REDD+ sind, dass die Eigenverantwortung der Länder und die Institutionalisierung der Schlüssel für gute Ergebnisse von RBP-Ansätzen sind. Bei der Weiterentwicklung von RBP muss auch die Frage des Vorteilsausgleichs geklärt werden und ob auch alle erzielten Ergebnisse von den finanzierenden Ländern tatsächlich honoriert werden.

Die Möglichkeit eines Ergebnistransfers an den Geber macht Investitionen in REDD+-Projekte für den Geber attraktiv. Allerdings erhöht sich dadurch auch das Risiko für die Umweltintegrität durch die Aufblähung der Referenzwerte (Baselines), fehlende Zusätzlichkeit, Verlagerungseffekte und fehlende Dauerhaftigkeit. REDD+-Finanzierungsmechanismen haben unterschiedliche Ansätze entwickelt, um diesen Risiken zu begegnen. Dennoch sind die internationalen Standards nicht vollständig vergleichbar, was die Anreize für Verbesserungen und gute Regierungsführung angeht.

Mehr als RBF-Ansätze erfordern TBF-Ansätze eine zuverlässige Quantifizierung, robuste Buchhaltungsregeln und die Überprüfung durch Dritte, z. B. in Form von Missionen in den Ländern. Dies gilt insbesondere für die Festlegung von Referenzwerten, die eine entscheidende Rolle bei der Bestimmung der Ergebnisse und der Anrechnung spielen. Bestimmte Aktivitäten sollten nicht angerechnet werden, weil einige Risiken einfach zu schwierig zu handhaben sind. Dazu gehören Projekte, bei denen ein hohes Risiko der globalen Verlagerung besteht und bei denen die Umweltintegrität nicht gewährleistet werden kann. Außerdem erfordert TBF entsprechende Anpassungen, wenn die übertragenen Gutschriften für andere internationale Klimaschutzzwecke verwendet werden.

Es könnte sinnvoll sein, deutlicher zwischen RBF- und TBF-Ansätzen zu unterscheiden. TBF-Ansätze erfordern in vielen der oben genannten Punkte eine viel größere Strenge, da die Emissionsreduzierungen oder Kohlenstoffeinbindungen vom Geber zur Erreichung von Klimazielen verwendet werden und somit die Reduzierung von Emissionen an anderer Stelle ersetzen. Viele der oben genannten Anforderungen in Bezug auf die Anrechnung und Gutschriften sind jedoch weniger relevant, wenn der Schwerpunkt auf RBP liegt. Die Zusätzlichkeit ist jedoch eine wesentliche Voraussetzung für alle Zahlungen, um zu vermeiden, dass Aktivitäten finanziert werden, die ohnehin stattfinden. Daher kann es sinnvoll sein, zwischen den Anforderungen zu unterscheiden, je nachdem, zu welchem Zweck die Zahlung erfolgt. Dieser Ansatz könnte auch von Programmen zur Anrechnung von Kohlenstoffgutschriften aufgegriffen werden, die zwei Arten von Kohlenstoffgutschriften ausstellen könnten: eine Art, die für Ausgleichszwecke verwendet werden kann und daher strengere Anforderungen erfordert (nicht nur in Bezug auf die doppelte Anrechnung, sondern auch in Bezug auf andere Aspekte), und eine Art, die im Rahmen von RBF und "Beitragsforderungen" verwendet werden kann. Dieser Ansatz könnte sicherstellen, dass Finanzmittel in REDD+-Aktivitäten fließen und gleichzeitig das erforderliche Maß an Integrität gewährleistet wird.

Glossary

Table 1: Definition of relevant terms used in the report

Term	Definition and comment
Afforestation/reforestation (AR)	A land-use activity that converts non-forest land into forest land. Afforestation refers to establishing forest on areas on previously unforested. Reforestation refers to re-establishing forests on lands that were forested previously and converted to other land use. Reforestation is sometimes also referred to as restoration.
Additionality	Additionality refers to emission reductions and removals that occur due to the incentives created through carbon credits. Additionality also implies that the emissions reductions and removals achieved should be attributable to the specific mitigation activities.
Allowance	An emissions unit issued under a cap-and-trade mechanism that entitles the holder to emit one metric ton of CO_2 (or its equivalent).
Auditor	An independent third-party entity that assesses whether a land-use activity requesting registration conforms with all requirements of a carbon crediting mechanism (often referred to as 'validation') and whether a request for issuing carbon credits conforms with all requirements of a carbon crediting mechanism (often referred to as 'verification').
Reducing emissions from deforestation or forest degradation	A land-use activity that reduces emissions from deforestation or forest degradation, e.g., through forest protection or addressing drivers of deforestation and degradation.
Baseline, Reference	Benchmark of emissions or removals against which emission reductions or enhanced removals can be measured. In the land-use sector, sometimes the term reference level is used instead of baseline.
Cap-and-trade mechanism	A mechanism that establishes an emissions cap for a set of defined entities, issues allowances corresponding to the emissions cap, and allows entities to trade the allowances. An example is an emissions trading system, such as the EU Emissions Trading System.
Carbon benefit	Emissions reductions and removals associated with activities in the forest sector. Used to make a distinction from other benefits, that are not related to carbon, such as benefits for biodiversity or local communities and indigenous peoples.
Carbon credit	An emissions unit that is issued by a carbon crediting mechanism and represents an emission reduction or removal of one metric ton of CO_2 (or its equivalent). Carbon credits are issued, tracked, and cancelled by means of a registry.
Carbon crediting mechanism	An organization registering land-use activities and issuing carbon credits for verified emission reductions or removals. Credits may be used in the voluntary market for voluntary offsetting, in compliance markets for meeting obligations, and as vehicle to disburse results-based finance. Mechanisms include also carbon standards for voluntary markets.
Carbon market mechanism	A mechanism that provides for the issuance and transfer of emissions units. This includes cap-and-trade mechanisms and carbon crediting mechanisms.

Term	Definition and comment
Carbon standard	Rules for carbon crediting in voluntary markets (for the purpose of this report: forest-based land-use) activities.
Corresponding adjustments	Corresponding adjustments are applied to avoid double counting with nationally determined contributions (NDC) under the Paris Agreement. An internationally transferred mitigation outcome that is counted toward another Party's NDC or use for other international mitigation purposes has to be added to the host Party's emissions.
Crediting	When emissions reductions or removals resulting from an activity are verified, compared to a reference and used to issue carbon credits
Crediting period	The length of time during which emission reductions and removals can be generated against a baseline.
Double counting	Double counting occurs when a single emission reduction or removal is used more than once towards the achievement of mitigation targets or goals. It can occur in different forms. Double counting can undermine integrity lead to higher emissions to the atmosphere.
Double issuance	When more than one unit is issued for the same emission reduction or removal.
Double use and double selling	When the unit backed by one emission reduction or removal is sold more than one time or used towards different targets.
Double claiming	When the same emission reduction or removal is used to achieve a national target, by reporting lower emissions towards achieving the target, and to issue a unit that is used by another stakeholder for achieving its own target.
Emissions unit	An electronic unit denominated as one metric ton of CO_2 (or its equivalent) that is issued by a carbon market mechanism to a registry. Emissions units can include carbon credits or allowances.
Emissions reductions and removals (ERR)	Reductions of greenhouse gas emissions (by sources) and removals of greenhouse gas emissions (by sinks)
Environmental integrity	Concept for assessing activities and carbon market mechanisms to ensure that aggregated global GHG emissions do not increase as a result of the implementation of a carbon market mechanism.
Improved forest management (IFM)	A land-use activity that enhances removals or reduces emissions from forest land. This includes silvicultural measures, reduced management intensity and reduced impact logging.
Jurisdictional approach	A land-use activity implemented at the scale of a jurisdiction. The jurisdiction may be at the national level, including an entire country, or at a sub-national administrative level. For the purpose of this report, the term is also referring to activities addressing larger areas at (sub-)national level as opposed to project level activities.
Land-use activity	A climate mitigation activity implemented in the land-use sector. This report recognises three forest related types of activities: reducing emissions from deforestation or forest degradation (REDD), afforestation/reforestation or forest restoration (AR), and improved forest management (IFM). Activities may be carried out at different scales, including projects, programs, and jurisdictional approaches.

Term	Definition and comment
Land-use sector	This comprises what the Intergovernmental Panel on Climate Change (IPCC) refers to as Land Use, Land-Use Change and Forestry (LULUCF). This definition excludes agricultural activities, such as livestock management and fertiliser application, which are covered by the agriculture sector and have been merged with LULUCF sector in the IPCC's Agriculture, Forests and Other Land Use (AFOLU) sector.
Leakage	An increase in emissions that is occurring outside the boundaries of the credited activity.
Nesting	The integration of smaller-scale land-based mitigation activities (e.g., projects) into larger national or subnational REDD+ programmes
Non-permanence	Non-permanence refers to the risk of emissions reductions or removals being reversed.
Payment for ecosystem services (PES)	Payment to stakeholders to make land management decisions that allow the continued provision of an environmental benefit.
Project	A land-use activity implemented on a confined area within a jurisdiction.
Restoration	Re-establishment of forests on land that were forested and converted to other land use. Also referred to as reforestation.
Results-based payments (RBP)	Results-based payments for the achievement of verified emission reductions and/or removals. The achieved reductions or removals remain in the forest country and may be counted against that country's NDC.
Results-based finance	Results-based finance encompasses both results-based payments (RBP) or transfer-based payments (TBP), both of which involve payments for verified emission reductions.
REDD+	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. Introduced into the UNFCCC negotiations in 2005, it now constitutes a payment mechanism addressing carbon storage and removal in forests in developing countries.
REDD+ financing mechanism	Direct and indirect ways of channelling finance into REDD+ activities, either by governmental or private actors.
Safeguards	Requirements and procedures of carbon crediting mechanisms aimed at avoiding and reducing potential negative impacts of credited activities.
Transfer-based payments (TBP)	Results-based payments for the transfer of verified emission reductions and/or removals. The emission reductions or removals are counted against the buyer's NDC or climate target.
Validation	Assessment of whether a request for registration of a land-use activity conforms with all requirements of a carbon crediting mechanism.
Verification	Assessment of whether a request for issuing carbon credits from a land-use activity conforms with all requirements of a carbon crediting mechanism.

Source: own compilation, Oeko-Institut.

1 Introduction

Acting as both, sinks and sources of CO_2, **forests** play an important role in the **climate system**. When trees absorb CO_2 from the atmosphere through photosynthesis and fix it in biomass, area-related carbon stocks are created in different pools such as living and dead biomass, litter and soil organic carbon. There is a transition between pools, e.g. from living biomass to dead biomass and finally soil carbon. Through this transition, decomposition of biomass releases parts of the stored carbon as CO_2 to the atmosphere. Also, harvested wood products serve as a carbon pool that increases when new products enter and decreases when products reach the end of their lifetime. In general, the carbon stocks in biomass and soil are subject to disturbances and therefore relatively unstable. The captured CO_2 can quickly re-enter the atmosphere due to disturbances such as fire, deforestation activities, wood harvest or the like.

The forest sector contributes to high emissions worldwide through the loss of historically built-up carbon stocks, mainly from **deforestation and forest degradation**. Between 2009 and 2018, land use and land use change caused emissions of 6 Gt CO_2/yr in total, driven largely by deforestation (Friedlingstein et al. 2020). The Global Forest Resources Assessment 2020 (FAO 2020b) estimates that the global forest area lost since 1990 amounts to 178 Mha (4%). Over this time, the annual rate of net forest loss was reduced from 7.8 Mha/year in 1990-2000 to 5.2 Mha/year in 2000-2010 and 4.7 Mha/year in 2011-2020 due to reduced deforestation but also increased forest restoration. However, in 2019, still 11.9 Mha of tropical forest area was destroyed. The majority of this loss, 3.8 Mha, could be attributed to primary forests in the humid tropics (WRI 2020). The loss of forest resulted in CO_2 emissions of at least 1.8 Gt CO_2 in 2019 (WRI 2020). The IPCC Special Report on Climate Change and Land (IPCC 2019) identified avoidance of deforestation and forest degradation as measures with medium or high mitigation potential at moderate costs and positive impacts on other sustainability objectives. This was confirmed by the recent Sixth Assessment Report IPCC (IPCC 2022). Roe et al. estimated the mitigation potential regarding deforestation and forest degradation emissions to be 0.4-6 Gt CO_2e per year (Roe et al. 2019).

From the beginning of **international climate negotiations**, the issue of forests has played a significant role in global efforts to mitigate climate change. After emission reductions from "avoided deforestation" were not recognised under the Clean Development Mechanism (CDM) of the Kyoto Protocol due to political and methodological concerns of a number of countries (Boyd et al. 2008; Bäckstrand und Lövbrand 2006; Streck und Scholz 2006), the reduction of emissions from deforestation in developing countries was put back on the agenda of the UN Framework Convention on Climate Change (UNFCCC) in 2005 (Wolff 2011). Now based on the idea of accounting for the reduction of forest-related emissions not within the framework of individual projects but at the national level (formative: Santilli et al. 2003), the Warsaw Framework for REDD+ was developed in the following years to compensate developing countries for efforts to reduce emissions from deforestation and forest degradation, to maintain and increase forest carbon stocks or to manage forests sustainably (title: "Reducing Emissions from Deforestation and Forest Degradation, and the Role of Conservation of Forest Carbon Stocks, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in developing countries", REDD+ for short).

REDD+ encompasses different activities, which are geared towards reducing negative change in forests and driving positive change, in both cases with regard to (a) forest area and (b) carbon intensity (see Table 2). Some of these activities serve to reduce emissions (e.g. fighting deforestation and forest degradation), others to increase removals by sinks (e.g. enhancement of carbon stocks through afforestation and reforestation).

Table 2: Options for addressing forests in climate change mitigation and overview of REDD+ activities

Options for addressing forests in climate change mitigation	Reduced negative change	Enhanced positive change
Address area of forests	Reducing emissions from **deforestation**	**Enhancement of forest carbon stocks**, i.e. through afforestation / reforestation
Address carbon stocks in forests (i.e. carbon stock per hectare)	Reducing emissions from **forest degradation**	**Enhancement of forest carbon stocks**, i.a. through forest restoration and rehabilitation
	Conservation of forest carbon stocks	**Sustainable management of forests**

Source:Angelsen & Wertz-Kanounnikoff (2008, p. 15), Streck & Costenbader (2012, p. 7).

REDD+ is anchored in the **Paris Agreement** (PA) through its Article 5 which refers to the guidelines and decisions on REDD+ developed under the UNFCCC[4]. In total, the Conference of the Parties (COP) adopted 16 decisions on REDD+ between 2007 and 2015. Seven of them[5] constitute the 'Warsaw Framework' on REDD+ (COP19, 2013), which was supplemented by two decisions of COP21 (2015).

The **core idea of the REDD+ framework** is that industrialised countries financially support developing countries in the implementation of forest/climate activities, inter alia by means of *results-based payments* for measurable and verifiable reductions of GHG emissions from forestry activities. Eligible activities include reducing forest conversion to other land uses, reducing forest degradation and improving forest management and afforestation. The prerequisite is that the REDD+ countries have developed a national strategy in advance, defined national (and transitionally also sub-national) reference levels, established a national forest monitoring system and an information system for dealing with ecological and social safeguards[6], for which the Warsaw Framework specifies rules in each case. The implementation of REDD+ in developing countries is divided into three phases: a preparatory ('readiness') phase for the development of national strategies (phase 1); the implementation of initial measures and demonstration activities (phase 2); and the phase of results-based activities (phase 3), which are subject to measurement, reporting and verification according to the modalities agreed in the Warsaw Framework. Results-based payments are thus an essential long-term element of REDD+ financing. The results-based payments envisaged in the third phase link financial resources to the demonstration of emission reductions, or the build-up of carbon stocks compared to a predefined reference level; other (non-climate-related) achievements such as biodiversity conservation are not a prerequisite for results-based financing.

The funds for **financing REDD+** can come from different sources.[7] It is assumed that international public funds will be the main source of financing in the first phase; that national public funds from REDD+ countries will be added in the second phase; and that private funds –

[4] PA Art. 5.2

[5] Decision 9/CP.19 to Decision 15/CP.19.

[6] These safeguards are intended to ensure that REDD+ activities do not run counter to other ecological goals (such as biodiversity protection) or social goals (such as poverty reduction, respect for the rights and knowledge of indigenous groups and local communities).

[7] Para 65, Decision 2/CP.17.

possibly market- or transfer-based funds - can also play a significant role in the third phase (COWI et al. 2018, p. 111). In recent years, a fragmented landscape of REDD+ financing has emerged from a variety of bilateral and multilateral donors and voluntary carbon markets (Forest Trends 2016; Center for Global Development 2015; EDF und Forest Trends 2018).

Considerable investments have already been made to prepare developing countries for REDD+ at the national level (readiness). In line with the requirements of the UNFCCC, developing countries have established or are in the process of establishing national plans and monitoring structures (Fischer et al. 2016; Duchelle et al. 2018a). Initial experience has also been gained with results-based payments (Wong et al. 2016). Between 2008 and 2015, around EUR 19.4 billion in direct and indirect payments were registered for REDD+ activities (COWI et al. 2018). While REDD+ pilot activities have been predominantly **publicly funded** (mainly from development cooperation funds) in recent years (COWI et al. 2018; EDF und Forest Trends 2018), it is obvious that government budgets are insufficient to raise the substantial funds deemed necessary to finance results-based REDD+ activities in the long term (Eliasch 2008; Stern 2006). Thus, additional financing is needed through **market- or transfer-based mechanisms** that link payments to the transfer of emission reduction units. Such mechanisms can also be used to tap finance of the **private sector**.

The often insufficient amount of finance from **Official Development Assistance** (ODA) funds is a major reason why transfer-based mechanisms, especially international carbon markets, are also being considered for financing REDD+ activities. Here, the buyer can use emission reductions towards its own climate targets. Collaboration can be varied in this regard: First, crediting mechanisms can quantify the reductions against baselines and issue respective reduction certificates. Second, the Land Use, Land Use Change and Forestry (LULUCF) sector can be integrated into emissions trading systems. And third, other bilateral forms of cooperation can exist, such as Green Investment Schemes (GIS). With Article 6, the Paris Agreement has created a framework for the crediting of such market-/transfer-based mechanisms which could potentially also be used to finance results-based REDD+ payments (Streck et al. 2017).

However, the inclusion of the LULUCF sector in transfer-based mechanisms is controversial. Critics fear that the environmental integrity of the emission reductions or removals is more difficult to ensure than in other sectors, especially because of uncertainties in quantifying emissions, setting reference scenarios and determining leakage. Another challenge is the risk of non-permanence of reductions/ removals. Social and other environmental aspects, such as the protection of indigenous peoples or the preservation of biodiversity, also play a major role in the discussion. Finally, analysts also fear that the market could be 'flooded' by cheap certificates from REDD+ and thus lead to permanently low prices which would reduce incentives for avoiding emissions among buyers in other sectors. Accordingly, the inclusion of the sector is also a controversial topic in the international climate negotiations on Article 6.

This debate does not always take into account that REDD+ involves a wide range of measures and activities (see Table 2), is implemented in very different countries and regions, and uses very different financing instruments. When considering the international transfer of mitigation results from the sector, it is important to account for this **heterogeneity** in national contexts and frameworks. Which forms of financing are effective can depend significantly on the background of each country and measure.

This report examines how, and under which circumstances, different forms of financing are suitable for results- or transfer-based mechanisms in the forest sector in the context of different countries and measures. For focussing the analysis, when referring to the 'forest sector', the report recognises three forest-related types of activities: **reducing emissions from**

deforestation or forest degradation (REDD), **afforestation/reforestation** or forest restoration (AR), and improved **forest management** (IFM).

In **Chapter 2**, we provide a typology of REDD+ finance mechanisms by elaborating differences between activity-, results- and transfer-based finance. In **Chapter 3**, we analyse 13 specific REDD+ finance mechanisms with regard to a range of criteria (e.g. general characteristics, financial governance, monitoring and quantification provisions etc.). **Chapter 4** explores which requirements arise from Article 6 and the common practice of market-based approaches for financing REDD+. **Chapter 5** provides an assessment of the potential for REDD+ financing by looking at recent estimates of how much emissions from deforestation and forest degradation could be avoided under different assumptions. **Chapter 6** discusses the requirements for REDD+ financing that arise from different country contexts based on an analysis of **five case countries: Indonesia, Ethiopia, Peru, Vietnam and Democratic Republic of Congo**. Against this background, we assess the suitability of REDD+ financing mechanisms considered in Chapter 2 for the specific country situations. In **Chapter 7**, we draw overall conclusions and formulate recommendations for actions and constraints on the use of different forms of REDD+ financing.

2 Typology of REDD+ financing mechanisms

In this chapter, we categorise financing mechanisms for REDD+. By "**REDD+ financing mechanisms**" the report refers to direct and indirect ways of channelling finance into REDD+ activities, either by governmental or private actors. We suggest classifying REDD+ financing mechanisms according to the following **criteria**:

a) the sources, channels and recipients of finance (Chapter 2.1); and

b) the type of payment (non-results-based payments; results-based payments; and transfer-based payments) (Chapter 2.2).

REDD+ financing mechanisms may address all three stages of REDD+: readiness, implementation and payments for results.

2.1 REDD+ financing mechanisms according to source, channels and recipients of finance

Looking at the source of REDD+ finance, we differentiate REDD+ finance (see Figure 1) according to:

- **Source**: governments (donor country governments and REDD+ country governments, in some cases including sub-national governments), the private (for-profit) sector and the non-profit sector, notably non-governmental (environmental) organisations (NGOs) and philanthropic organisations.
- **Channel**: multilateral REDD+ funds, bi- or multilateral REDD+ partnerships (i.e. donor programmes), multi-stakeholder initiatives on REDD+, the compliance and voluntary carbon markets and finance for production systems or conservation.
- **Recipient**: projects, (jurisdictional) programmes or funds established in REDD+ countries.

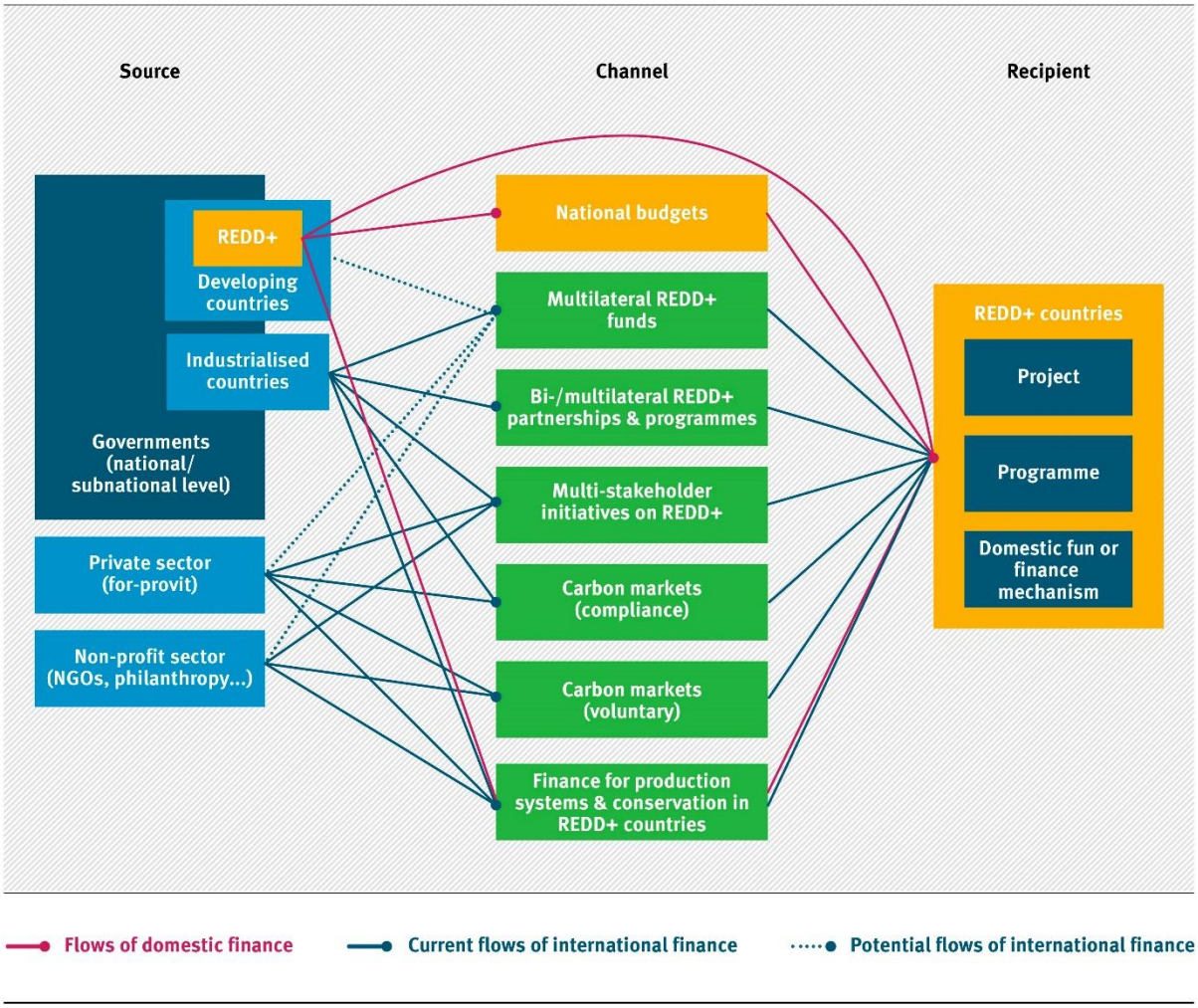
Generally, **governmental and non-governmental sources** of REDD+ finance can be distinguished. Among the former, we find governments from developed countries as well as from developing countries, including sub-national governments. REDD+ countries support their own REDD+ efforts through, among others, domestic tax revenues, budget allocations, but also personnel and other in-kind contributions at national and sometimes sub-national level, as well as though contributions by domestic public companies (e.g. from the petroleum industry). While data is fragmentary, domestic financing is considered to be significant, especially in emerging and middle-income economies (Streck 2012).[8] Domestic funding seems particularly relevant in Phase 2 of the REDD+ cycle (COWI et al. 2018, p. 111), but is also employed in Phase 1 (EDF und Forest Trends 2018, p. 17). Non-governmental sources of REDD+ finance include the private (for-profit) sector and the non-profit sector, notably non-governmental (environmental) organisations (NGOs) and philanthropic organisations.

In terms of the various **channels** through which REDD+ finance flows from these sources to its recipients, one important channel are **multilateral funds** such as the UN-REDD Programme or the World Bank's Forest Carbon Partnership Facility. They are independent institutions, based on international agreements or treaties. In their governing bodies, donor and recipient countries usually decide jointly on REDD+ project proposals from forested tropical jurisdictions. Donations typically come from developed countries, but in some cases and to a minor extent,

[8] For instance, the Mexican government reports domestic REDD+ finance contributions to amount to 43% of Mexico's total REDD+ finance Norman und Nakhooda (2015).

governments from developing countries and non-governmental actors also pay into multilateral funds. For instance, nine countries including Chile and Colombia have made pledges to the Green Climate Fund (GCF 2021), and BP Technology Ventures and The Nature Conservancy pay into World Bank's Carbon Fund.[9]

Figure 1: REDD+ financing mechanisms according to source, channel and recipient of finance



Source: own compilation, Oeko-Institut.

REDD+ finance is also provided though **bi- or multilateral REDD+ partnerships** (i.e. donor programmes), which are typically negotiated agreements between one or two developed country donor governments and a recipient (REDD+) country. Examples are Norway's International Climate and Forest Initiative (NICFI) which includes bilateral agreements with several tropical countries or the REDD Early Movers (REM) Programme. Through REM, Germany and, partly, Norway and the UK funded projects in pioneering partner countries and sub-national regions.

Industrialised countries' governments, companies and non-profit organisations provide REDD+ finance also through **multi-stakeholder initiatives**. An example is the LEAF Coalition, a partnership founded in 2021 by an initial group of governments (UK, US, Norway) and

[9] https://www.forestcarbonpartnership.org/donor-participants

corporations that aim to mobilise at least $1 billion in finance and use it to buy certified emission reductions and removals from tropical and subtropical forest jurisdictions.[10]

Another channel for REDD+ finance are **carbon markets**. Governments as well as non-governmental actors contribute to financing REDD+ when they buy REDD+ carbon credits either to comply with regulatory mitigation obligations ('compliance markets') or on voluntary grounds – e.g. for conservationist, philanthropic or marketing purposes ('voluntary market'). **Governments** that are parties to the Paris Agreement could purchase carbon credits for REDD+ activities under the Art. 6.2 mechanism of the Paris Agreement and use them to achieve their climate targets as formulated in their Nationally Determined Contributions (NDCs) (**compliance market**), noting that negotiations are ongoing whether 'emissions avoidance' should be eligible under Art. 6.2. There are also ongoing considerations under the Paris Agreement's Art. 6.4 mechanism whether "conservation enhancement activities" should be eligible, and the new Supervisory Body for Art. 6.4 still needs to develop recommendations on 'activities including removals' which will then need to be adopted by the Conference of Parties. The Paris Rulebook (notably, decisions 2/CMA.3 and CMA.3) specify the rules according to which carbon credits from REDD+ activities can potentially be used towards the achievement of a country's nationally determined contribution (NDC).[11]

The **private sector**[12] is also engaging in REDD+ financing: in some compliance markets, companies that are subject to emission reduction obligations may purchase REDD+ credits to meet (part of) these obligations. Such obligations or targets may exist at international, national or sub-national level (ICAP 2021a). An important operational compliance market at international level that involves the private sector and makes use of REDD+ credits (beyond AR)[13] is the International Civil Aviation Organization (ICAO)'s Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Under CORSIA, selected carbon market standards have been declared eligible, some of which provide REDD+ credits.[14] While CORSIA defines which standards are generally eligible (ICAO 2019), the eligible REDD+ standards define the concrete terms under which forest countries, jurisdictions or projects can access REDD+ finance within the CORSIA market.

On the **voluntary carbon markets**, where **private sector, non-profit actors** and **individuals** can purchase REDD+ credits on a voluntary basis, forestry and land use projects play a major role. Market analyses testify 'significant buyer interest in REDD+ credits', and a large share of transactions stem from REDD+ activities (Ecosystem Marketplace 2021, p. 10). The terms under which forest countries, jurisdictions or projects can access REDD+ finance are defined by the

[10] https://leafcoalition.org/. The emission reductions and removals from REDD+ activities will be certified by ART against the TREES standard; payments will be made upon the delivery of results for performance in the years 2022 - 2026. Companies participating in the Coalition can use the emission reductions for voluntary purposes and are required to be committed to science-based targets or equivalent quantified and independently verified decarbonisation targets. The initiative provides results-based payments, not transfer-based payments (cf. Chapter 2.2).

[11] Prior to 2021, governments could offset a part of their mitigation obligation under the Kyoto Protocol through emission reductions from projects under the Clean Development Mechanism (CDM) and Joint Implementation (JI). This included afforestation and reforestation projects (CDM, JI) as well as forest management projects (JI).

[12] „The United Nations defines the private sector as including individual, for-profit, and commercial enterprises or businesses; business associations and coalitions as well as corporate philanthropic foundations" UN (2009).

[13] The Kyoto Protocol's Clean Development Mechanism (CDM) provided for credits from afforestation and reforestation, but not the other REDD+ activities.

[14] This includes American Carbon Registry (ACR) (LULUCF category), Architecture for REDD+ Transactions (ART), China GHG Voluntary Emission Reduction Program (afforestation & reforestation category), Clean Development Mechanism (CDM) (afforestation & reforestation), Climate Action Reserve (CAR), Global Carbon Council (GCC) (REDD and afforestation & reforestation), The Gold Standard (GS) (Land Use and Forestry & Agriculture categories) and the Verified Carbon Standard (VCS) (jurisdictional REDD+); cf. ICAO. Several crediting programmes have not (yet) been approved, including some that offer forest-based climate mitigation (e.g. the "REDD.plus" standard developed by the Coalition for Rainforest Nations or the World Bank's Forest Carbon Partnership Facility).

broad range of existing carbon market standards. Such standards have been developed by national and subnational governments interested in providing their domestic carbon markets with credits, by non-governmental entities (certifiers, NGOs) or by private public partnerships. Japan's Joint Crediting Mechanism and California's Tropical Forest Standard are examples for governmental carbon standards, Verra's Verified Carbon Standard and Jurisdictional and Nested REDD+, Plan Vivo and ART/TREES are examples for non-governmental standards.[15]

Investments in forest and agricultural production systems and **finance for conservation or restoration** also contribute to implementing REDD+. Both governments (from developed and developing countries), private sector and non-profit actors may provide such finance which is relevant particularly for Phase 2 of REDD+. In the case of investments in land-based production systems, COWI et al. (2018) identify three basic approaches used by the private sector which can indirectly finance REDD+ efforts: 1) producing products in conformity with the legal requirements of the country of origin and possibly those set out in international agreements ('legality'), 2) producing products sustainably in their country of origin ('sustainability'), and 3) sourcing products that are not associated with deforestation in their country of origin ('deforestation-free'). In the case of private funding for conservation or restoration, possible mechanisms are payments for ecosystem services, debt-for-nature swaps, biodiversity offsets or ecotourism etc. (COWI et al. 2018).

Looking at the other end of the finance flows, **recipients** of REDD+ finance include REDD+ projects, jurisdictional programmes or funds within topical forest countries. REDD+ finance can flow directly to REDD+ **projects**, for instance when non-profit or for-profit project developers implement REDD+ projects in accordance with carbon market standards and sell credits directly to buyers. REDD+ finance can also flow to **jurisdictional – national and/ or subnational – programmes**. The respective (sub-/national) government receives the funds and allocates a share to stakeholder groups via a benefit-sharing mechanism. To the extent that the jurisdictional programmes are also "nested" programmes – which coordinate REDD+ implementation across multiple governance levels and accounting scales –, benefits are also shared with participating REDD+ projects (TNC und CI 2021, p. 8). Beyond channelling finance directly into specific projects or programmes, REDD+ countries increasingly set up **funds** with own governance structures (e.g. coordination committees with representation from central government, regional governments, civil society and ethnic groups), allocation criteria, benefit-sharing provisions and safeguards. These funds may serve as a mere pass-through of different streams of international donor finance or as a mechanism though which international finance is combined with national finance. An example for the latter is Brazil's Amazon Fund. Also, Indonesia's Public Agency for Environment Fund Management is discussed to combine REDD+ revenues from international donors and from carbon markets with domestic public money.[16] Colombia committed itself to introducing a respective fund ('financial mechanism') that receives results-based payments in its agreement with Germany, Norway and the UK (Colombia et al. 2015a, Section V (2)). While receiving international results-based payments, such domestic REDD+ funds do not generally distribute the funds received in a results-based way. Brazil's

[15] This includes American Carbon Registry (ACR) (LULUCF category), Architecture for REDD+ Transactions (ART), China GHG Voluntary Emission Reduction Program (afforestation & reforestation category), Clean Development Mechanism (CDM) (afforestation & reforestation), Climate Action Reserve (CAR), Global Carbon Council (GCC) (REDD and afforestation & reforestation), The Gold Standard (GS) (Land Use and Forestry & Agriculture categories) and the Verified Carbon Standard (VCS) (jurisdictional REDD+); cf. ICAO. Several crediting programmes have not (yet) been approved, including some that offer forest-based climate mitigation (e.g. the "REDD.plus" standard developed by the Coalition for Rainforest Nations or the World Bank's Forest Carbon Partnership Facility).

[16] See Mafira et al. (2020), p. 22.

Amazon Fund, for instance, allocated its means to projects in accordance with an activity-based logic (Amazon Fund 2017).

2.2 REDD+ financing mechanisms according to type of payment

Looking at the type of payment, we distinguish between the following REDD+ finance mechanisms:

- **Finance for REDD+ readiness and implementation**: Payment is made for REDD+ readiness and demonstration activities[17] (Phase 1 of REDD+) as well as REDD+ implementation measures (Phase 2 of REDD+). This type of finance is paid ex ante for pre-defined activities, i.e. it is not results-based. Sometimes, payments that are not results-based are called "**activity-based payments**" (see, for instance, Derissen und Quaas 2013 and Thompson 2017). The biggest part of REDD+ finance to date is not results-based and falls in this category.
- **Results-based finance (RBF) approaches**: Payment is made ex post for the achievement of pre-defined and verified results, typically verified emission reductions or removals from REDD+ activities (Phase 3 of REDD+).[18] Results-based finance includes two more specific types of payments:
  - **Results-based payments (RBP)**: The achieved emission reductions or removals are accounted for with their provider and in the forest country. The emission reductions/removals can hence be counted against the forest country's NDC. No transfer of legal titles for verified emission reductions and/ or removals to another country take place.
  - **Transfer-based payments (TBP)**: The achieved emission reductions or removals and the legal titles to them are transferred to the buyer.[19] The emission reductions/removals are counted against the buyer's climate targets. Such targets include countries' NDCs as well as climate targets of private entities within compliance regimes (e.g. in the case of airlines under CORSIA) or in voluntary settings (e.g. within the Science Based Targets initiative or as part of a company's sustainability strategy).

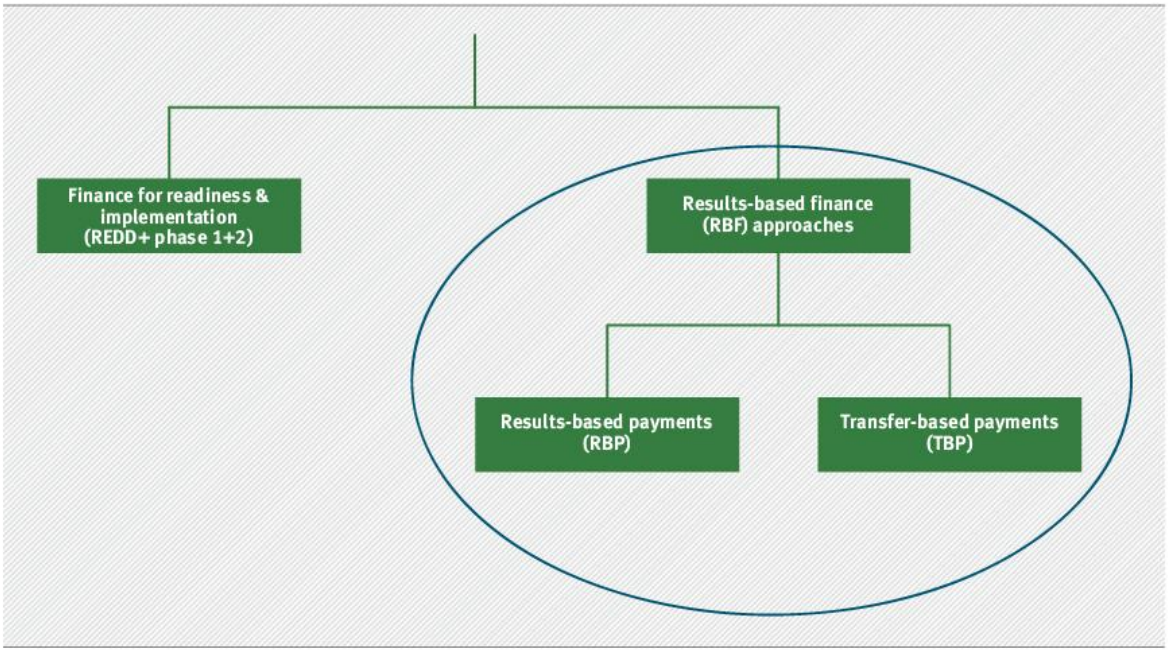
These REDD+ financing mechanisms and their interrelations are visualised in Figure 2. This study focuses on mechanisms within the green ellipse, notably results-based payments (RBP) and transfer-based payments (TBP).

[17] These include, for instance, the development of a national REDD+ strategy or action plan, national forest reference emission levels, a robust and transparent national forest monitoring system; and a safeguards information system (cf. UNFCCC Warsaw Framework).

[18] Note that these pre-agreed results can also be specific political milestones (Climate Focus 2015); however, in the context of REDD+ this form of RBF is rare.

[19] We differentiate between the terms „buyer" of credits (in the case of TBP, where actual transfers take place) and „payer" of credits (in the case of RBP, where no transfer takes place).

Figure 2: Categorisation of REDD+ finance mechanisms according to type of payment



Source: own compilation, Oeko-Institut.

Table 3 specifies the differences between these REDD+ finance mechanisms in greater detail.

Table 3: Characteristics of REDD+ finance mechanisms

	Readiness & implementation finance	Results-based payments (RBP)	Transfer-based payments (TBP)
Institutional framework	Article 5 PA, WFR	Article 5 PA, WFR	Article 6.2, 6.4 PA
Subject matter of payment	Planning and implementation of activities	Achievement of verified emission reductions and/or removals	Transfer of verified emission reductions and/or removals
Timing of payment	ex ante	ex post	ex post
International transfer of emission reductions / removals	n/a	No. Emission reductions or removals remain in the forest country and may be used to achieve the forest country's NDC.	Yes. Emission reductions or removals are transferred and used by the buyer to achieve NDCs or other climate target or goal. Article 6 rules apply, and corresponding adjustments are applied to account for the transfers.
Use of carbon credits	n/a	optional	optional

	Readiness & implementation finance	Results-based payments (RBP)	Transfer-based payments (TBP)
Examples (i.e. specific instruments)	UN REDD Programme	Pilot Programme of Green Climate Fund (GCF) for REDD+ results-based payments, several bilateral agreements by Norway	Carbon Fund of Forest Carbon Partnership Facility (FCPF)

Source: own compilation based on Streck et al. (2017).

Regarding the **institutional framework**, REDD+ readiness and implementation finance as well as RBP are usually implemented in the context of Article 5 of the Paris Agreement and the Warsaw Framework (WFR), while TBP is only possible under Art. 6.2 of the Paris Agreement. Apart from different **subject matters** (activities vs. verified emission reductions) and **time frames** of the payment (ex ante vs. ex post), the mechanisms also vary with regard to the **use** of the verified emission reductions and/or removals (Streck et al. 2017, pp. 6–7; Schneider et al. 2018, pp. 9–10). Firstly, only in the case of TBP, these ER get **internationally transferred**. In the case of RBP, emission reductions or removals are accounted for in the forest country.[20] In the case of results-based payments (RBP), the emission reductions and/or removals paid for by other Parties to the Paris Agreement or by private actors (companies, foundations, civil society organisations etc.) are not used by the payers to achieve their NDCs or other climate targets. If carbon credits are used to channel the finance, the carbon credits are cancelled by the buyer. In the case of transfer-based payments (TBP), the buyers count the emission reductions or removals to achieve their NDCs or other mitigation targets (e.g. domestic targets beyond the NDC or voluntary company goals). To account for such transfers and avoid double counting, Article 6.2 rules require the forest country to apply **corresponding adjustments** to its reported emissions. This ensures that the forest country cannot use the emission reductions or removals to achieve its own NDCs (Schneider et al. 2019).

Carbon credits can potentially be used for both results- and transfer-based payments. In the case of results-based payments, credits are not strictly necessary but can be used as a tool to measure and verify mitigation outcomes. The credits are cancelled without a third party claiming any use associated with the cancellation.

[20] In activity-based finance, the achieved results do not include emission reductions or removals, so these cannot be internationally transferred.

3 Analysis of existing results- and transfer-based payment mechanisms for REDD+ financing

In this chapter we analyse existing REDD+ financing mechanisms that facilitate results- and/or transfer-based payments. The analysis illustrates different approaches to REDD+ financing and discusses their commonalities, challenges and opportunities along a number of criteria, such as general characteristics, aspects of financial governance, the quantification of emission reductions and removals including accounting and crediting of carbon benefits, means to address the non-permanence of emission reductions and removals, and approaches to non-carbon benefits and risks such as safeguards.

3.1 Methodology for selecting and analysing REDD+ financing mechanisms

3.1.1 Selection of mechanisms

Based on considerations presented below, we selected 13 REDD+ mechanisms that enable results- and transfer-based payments for our analysis. For the analysis, we drew on relevant guidance documents on the respective mechanisms (standards, methodological frameworks, technical documents, terms of reference, donor reports etc.). We also consulted secondary literature on and evaluations of the specific mechanisms. To the extent that such documents were not available online, we requested them from the organisation 'sponsoring' the respective instrument. Finally, we took into account the wider literature on REDD+ financing (e.g., Center for Global Development 2015; Climate Focus 2015; COWI et al. 2018; EDF und Forest Trends 2018; Forest Trends 2015; 2016; Köhl et al. 2020; Streck et al. 2017; TNC und CI 2021).

From a pool of REDD+ financing mechanisms we selected **results- and transfer-based (RBP, TBP) mechanisms** for analysis for which detailed methodological information and data is easily available which complied with the following **criteria**:

- Mechanisms that are currently operational, under implementation or in a progressed state of planning, if there are indications that they will become relevant in the future (e.g. buy-in of important donors);
- Mechanisms that geographically cover developing / REDD+ countries (i.e. no avoided conversion mechanisms in donor countries), ideally with a broad coverage of developing countries[21];
- Mechanisms with a broad coverage of REDD+ activities (for instance, going beyond mere AR activities);
- Mechanisms with political relevance and / or an (expected) high volume of finance or emission reductions or removals.

In the selection we also took care of sufficient coverage and a certain differentiation of the below described criteria for analysis; that is, differences with regard to spatial level, source of finance, form of finance, distribution mechanisms, measures and target groups etc. The **RBP and TBP mechanisms** selected based on the criteria are:

[21] Exceptions are bilateral mechanisms and own mechanisms by REDD+ countries which, by definition, cannot have a broad coverage.

- The **Green Climate Fund**'s (GCF) Pilot Programme for REDD+ results-based payments (GCF 2017c). This five-year pilot on REDD+ RBPs was set up in 2017 within the GCF, which is a country-driven mulitlateral fund operating within the framework of the UNFCCC;
- The World Bank's **Forest Carbon Partnership Facility** (FCPF), with its transfer-based **Carbon Fund** (Tranche A and B) (FCPF 2021a);
- The World Bank's **BioCarbon Fund** (**Initiative for Sustainable Forest Landscapes**, ISFL) with its results-based Tranche 3 (BioCF ISFL 2021d);
- The partnership between **Norway** and **Brazil**, first set up in 2009 and renewed in 2015 (Norway und Brazil 2009; Brazil und Norway 2015);
- The partnership between **Norway**, **UK**, **Germany** and **Colombia** in the context of the **REDD Early Movers (REM) Programme**, established in 2015 (Colombia et al. 2015b) and renewed in 2019 (Colombia et al. 2019);
- The partnership between the **Central African Forest Initiative** (CAFI) and **Gabon**, funded by **Norway**, first set up in 2017 (Gabon und CAFI 2017) and renewed in 2019 (Gabon und CAFI 2019);
- The partnership between **Norway, Germany and Peru** from 2014 (Peru et al. 2014), updated in 2021 and then also joined by the **UK** and the **US** (Peru et al. 2021);
- **Japan's Joint Crediting Mechanism** (JCM), a governmental mechanism to invest in emission reductions in developing countries and use them to achieve Japan's emission reduction target. The JCM has been operational since 2017 (JCM 2021c; GoJ 2021);
- The **California Tropical Forest Standard** (TFS) which is to certify REDD+ projects in tropical countries for use in emission trading schemes (i.e. compliance markets) (CARB 2019) though further rule-making is required for credits to be accepted for use in California's own cap and trade system (Edwards 2020);
- The **Architecture for REDD+ transactions** and **The REDD Environmental Excellency Standard** (ART/TREES), a non-governmental standard under which countries and eligible subnational jurisdictions can generate verified emissions reduction credits by reducing their deforestation and degradation emissions (ART 2020);
- The **Plan Vivo Standard** for Community Payments for Ecosystem Services Programmes. This non-governmental carbon market standard generates, among others, carbon credits from and enables funding for REDD, A/R and improved forest management projects in developing countries. Such projects are, as interim measure, recognised under the UNFCCC (§ 71 (b), Decision 1/CP. 16, § 2, Decision 11/CP.19);
- Verra's **Verified Carbon Standard** (VCS),a non-governmental standard through which credits are generated from reduced emissions from deforestation and degradation, afforestation, reforestation and revegetation as well as improved forest managementin developing countries (VCS 2021);
- Verra's **Jurisdictional and Nested REDD+** (JNR) Standard which issues credits for jurisdictional and/or nested REDD+ (JNR 2021a; 2021b; 2021c);

We did *not* select for analysis several well-known REDD+ financing mechanisms that aim to mobilise finance when they did not comply with the above criteria. Among the multilateral funds

and donor programmes, this includes mechanisms that do not provide results- or transfer-based finance but mainly activity-based finance, such as the UN REDD Programme, the Global Environment Facility (GEF), the Climate Investment Funds under the Word Bank's Forest Investment Programme (FIP), the EU REDD Facility and Germany's International Climate Initiative (ICI). The same holds for the Central African Forest Initiative (CAFI) and the Congo Basin Forest Fund (CBFF).[22] Brazil's Amazon Fund was excluded, too, because it domestically allocated its funds – which it had received for achieved mitigation results (RBP) – in an activity-based way. The REDD Early Movers (REM) Programme was not included despite the fact that it provided results-based finance to Colombia, Ecuador and the Brazilian states of Acre and Mato Grosso (as well as activity-based finance to some 30 countries and 10 regions). The UK's International Climate Fund is not analysed separately since it mainly serves to channel money into other existing multilateral funds. We also refrained from including national or subnational mechanisms by REDD+ countries, since available data did not allow to conclude that the mechanisms did more than passing through international donor funds and rarely indeed included RBP.

When it comes to forest carbon crediting mechanisms for REDD+, a number of potential candidates were dismissed since they are not likely to provide significant emission reductions (e.g. the Natural Forest Standard (NFS), the Rainforest Standard (RFS); cf. Ecosystem Marketplace 2017) and/or because they do not geographically cover (a broader set of) developing countries (e.g. Australia's Carbon Farming Initiative; Trees Canada Afforestation and Reforestation Protocol; the US Regional Greenhouse Gas Initiative offset programme; the Climate Action Reserve (CAR), Brasil Mata Viva, Panda Standard). Some of the mechanisms only cover afforestation and reforestation activities and not a wider scope of REDD+ activities (e.g. the Clean Development Mechanism under the Kyoto Protocol, the Gold Standard, the Panda Standard). Some mechanisms do not focus on carbon but on co-benefit and can be applied in addition to a carbon mechanism (e.g. the Climate, Communities & Biodiversity Standard (CCBA), REDD+ Social and Environmental Standards / REDD+ SES, SocialCarbon). The American Carbon Registry (ACR) Nested REDD+ Standard was not analysed since it has been withdrawn. Its sponsoring organisation – Winrock International – now operates the ART/TREES Standard outside the ACR.

Only those documents describing the mechanisms were analysed that were or became available until April 2022.

3.1.2 Criteria for analysing the mechanisms

To document similarities and differences between finance mechanisms we used an analytical grid that compares essential characteristics of the financing mechanisms. It considers general characteristics, aspects of financial governance, the quantification of emission reductions and removals including accounting and crediting of carbon benefits, means to address the non-permanence of emission reductions and removals, and approaches to non-carbon benefits and risks such as safeguards.

[22] The bilateral results-based REDD+ Agreement (2019 Addendum) between Norway and Gabon, which is administered through the CAFI Fund, is the only RBF component in CAFI and will be analysed separately. The CBFF focusses on Phase 1 and 2 of REDD+ (https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/congo-basin-forest-fund/climate-change).

3.1.2.1 General characteristics

Sponsors and governance

Different actors that initiate (or 'sponsor') a REDD+ finance mechanism bring different interests and logics of action to the mechanism. Different forms of governance – e.g. concerning rule-making, oversight, representation of actors etc. – also influence a mechanism's effects.

Typically, REDD+ finance mechanisms may be initiated by governments, non-governmental actors both from the private and non-profit sectors, or multi-stakeholder groups. If governments sponsor the mechanism, particularly in multilateral constellations, there are often elaborate governance architectures balancing the representation of donor and recipient countries. Also, non-governmental actors are often given the possibility to at least observe the deliberations within the mechanisms. Non-governmental sponsors also often take care to include different stakeholders in their governance structures (e.g. boards, advisory committees).

Chapter 3.2.1.1 describes the sponsors and the role of governmental and non-governmental stakeholders in the governance of the selected REDD+ finance mechanisms.

Operational status

Basic information is about the operational status of the analysed REDD+ financing mechanisms. In Chapter 3.2.1.2, we will address the question of whether the mechanisms are already operational (or not)? If yes, have payments already been made, and respectively credits issued (or not)? When is the start and possibly the envisaged end of operations?

Geographical scope

Information on the geographical scope of a REDD+ finance mechanism is a relevant precondition for assessing the international distribution of RBF across countries or jurisdictions.

Chapter 3.2.1.3 therefore briefly assesses where exactly (in which regions, countries) the finance mechanisms require REDD+ mitigation activities to take place.

Note that the regions and countries that actually receive REDD+ RBP or TBP are covered in another chapter (Chapter 3.2.2.2, under the Section on "financial governance").

Spatial level of the intervention and nesting

Over the past years, REDD+ has been implemented both at project and 'jurisdictional'[23] (notably, national or subnational) levels. Under the UNFCCC, emission reductions or removals from REDD+ should be accounted for at national level, though subnational (including project) activities can be considered as an interim measure (§ 71 (b), Decision 1/CP. 16, § 2, Decision 11/CP.19).

In the analysis below, we will enquire about the spatial levels at which the finance mechanisms are implemented, and whether they have provisions on 'nesting'.

This information is relevant as different levels of REDD+ implementation are linked with different risks and benefits, and nesting is regarded as a strategy to optimise on these. Table 4 summarises the benefits and risks linked to national-, subnational- and project-level implementation of REDD+.

[23] Jurisdictions are administrative areas in which public authorities take (REDD+) decisions, notably the nation state or subnational states.

Table 4: Benefits and risks of implementing REDD+ at different spatial levels

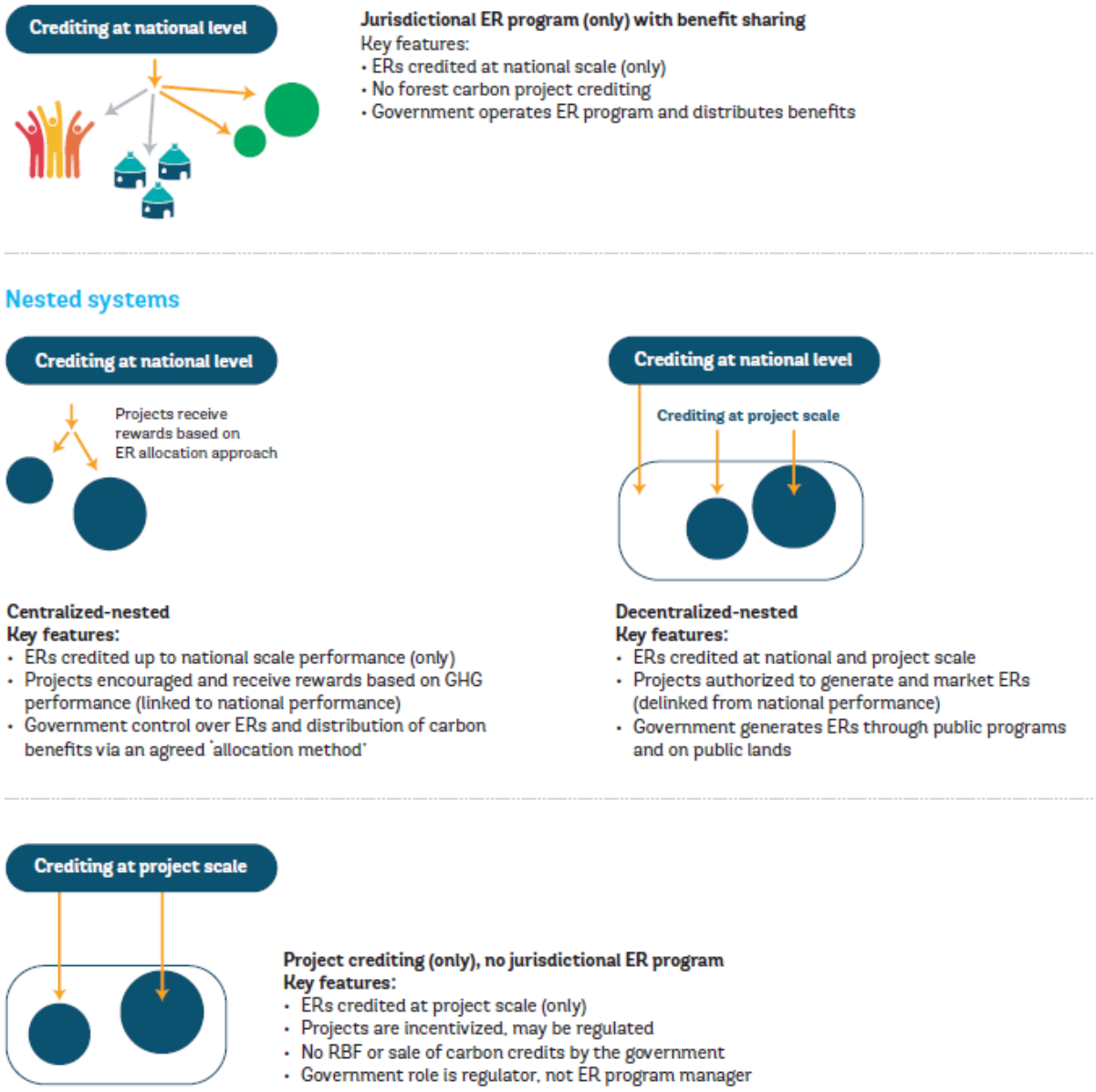
REDD+ implementation and accounting level	Benefits	Risks
National level	Policy decisions on reducing deforestation lead to more permanent and systemic change (i.e. are more 'transformational') than individual projects. Potential for leakage is lower than in subnational or project-level implementation, deforestation can be reduced at a greater scale. A standardised approach towards baselines and uncertainties is taken and ensures deforestation is reduced across all regions rather than in only those opting-in voluntarily. An integration into the NDC is easier	In many developing countries, federal and/or national governments have low capacities to provide and enforce robust policies in their territories. If the federal and/or national government is disinterested in REDD+ policies, the impact remains low in the whole country. Private investors are less comfortable with transacting with (national) governments than with project developers. National-level data may be unspecific, implementation more complex.
Subnational level	Policy decisions on reducing deforestation lead to more permanent and systemic change (i.e. are more 'transformational') than individual projects. Potential for leakage is lower than in project-level implementation, deforestation can be reduced at a greater scale. In the absence of a national strategy, carbon accounting and crediting can at least be implemented for projects and jurisdictional programmes.	Private investors are less comfortable with transacting with (subnational) governments than with project developers. Potential for leakage is higher than in national-level implementation. Costs of monitoring at subnational level relatively higher that at national level.
Project level	Projects are less complex and can be more responsive to local needs (e.g. address local drivers of deforestation, stakeholder needs). Risks for investors associated with REDD+ investments are smaller/ more controllable. Access to carbon market finance is hence easier. In the absence of a national strategy and sub-national programmes, carbon accounting and crediting can at least be implemented for projects.	Potential for leakage is the highest for project-level REDD+. Project patchwork No systemic change Risk of double counting Transaction costs for project development and MRV higher than at national level. If project crediting periods are similar in length to forestry rotation cycles, replantation of trees after logging is uncertain and permanence dubious. Opportunities to game the system

Source: based on Hamrick et al. (2021), TNI & CI (2021), Streck et al. (2008).

Spanning the different levels, a '**nesting**' of REDD+ activities has been suggested. Nesting is the integration of smaller-scale activities into larger national or subnational programmes (Lee et al. 2018, p. 3). Such an alignment of REDD+ implementation across different scales is not only reflected in the accounting of emissions and removals but in claims to emission reductions and the related legal and institutional arrangements (World Bank 2021b, p. 2). When REDD+ activities are nested, REDD+ results can occur at the jurisdictional levels (national, subnational), at project level and at either levels.

Different **forms of nesting** exist. The World Bank (World Bank 2021b, pp. 15–25) distinguishes **centralised vs. decentralised** nested approaches. In the first case, emission reductions are accounted for at the national scale, but approved projects may receive payments or emission reductions from the government in accordance with the country's benefit-sharing arrangements and emission reduction allocation system. In the second case, crediting and monetizing of emission reductions occurs both at national and at project scale, i.e. projects can themselves issue tradable emission reductions. Project MRV and safeguards are aligned with national approaches. In the figure below, only the two middle models – the centralised and decentralised nested approaches – are considered nested systems. Countries can employ one model or mix them.

Figure 3: Models for implementing REDD+, including nested systems



Source: World Bank (2021b, p. 15)

Depending on the model, **finance** for REDD+ results can flow (TNC und CI 2021, p. 8):

- directly to a jurisdictional (i.e. national and/ or subnational) programme, which then allocates benefits to participating projects and stakeholder groups via a benefit-sharing mechanism;
- both to REDD+ projects and to jurisdictional programmes (in the case of nested REDD+ approaches);
- directly to REDD+ projects.

Advantages of nesting (Lee et al. 2018, pp. 6–7; see also World Bank 2021b, p. 12; Hamrick et al. 2021) include the potential to:

- Stimulate private investment and tap multiple sources of finance, from RBP to voluntary carbon market finance;
- Provide operational on-the-ground capacity and experience that can complement governmental capacities invested in national REDD+ strategies;
- Create pathways for governments to implement emission reduction policies;
- Recognise decentralised forest governance and implement REDD+ in line with existing land tenure and rights regimes;
- Reduce cost of mitigation activities, through reducing MRV and transaction costs;
- Improve national MRV systems, align project-level with national MRV approaches and avoid double counting of emission reductions;
- Streamline approaches to permanence and additionality, while minimising the risks of leakage;
- Create broader support for REDD+ by involving stakeholders on all policy levels in design of REDD+, thus also harnessing broad technical, financial and human capacity for REDD+ implementation.

There are **challenges** linked to nesting, too:

- Generally, nesting requires a number of policy and design decisions (e.g., on the system's degree of centralisation or on the role of non-state actors, cf. World Bank 2021b); its implementation is technically demanding and causes significant financial and transaction costs.
- In centralised nested approaches, a core challenge is that projects may not receive benefits for their emission reductions if the overarching jurisdiction does not achieve sufficient emission reductions, or if the government does not distribute benefits fairly (World Bank 2021b, p. 18).
- In decentralised nested approaches, it is technically challenging to set up MRV systems that align project and national MRV; a national registry is required to regulate and track project accounting. Also, if project emission reductions exceed national reductions, governmenta are confronted with a "national underperformance" risk (World Bank 2021b, p. 19-20).

Chapter 3.2.1.4 addresses the (national subnational, project) levels on which REDD+ finance mechanisms are implemented, and whether these contain provisions regarding "nesting".

REDD+ activities

The REDD+ finance mechanisms may cover activities reducing emissions from a) deforestation and b) forest degradation, c) conservation of forest carbon, d) sustainable management of forests and/or e) enhancement of forest carbon stocks. In line with our selection criteria above, we focussed on finance mechanisms with a broader scope regarding aims. As a consequence, we excluded mechanisms that focus exclusively on AR or on IFM, respectively.

REDD+ activities differ with regard to carbon and non-carbon impacts. For instance, activities on a) and b) serve to reduce emissions, whereas the other activities serve to increase carbon sinks and hence produce CO_2 removals. Also, the different activities are associated with biodiversity risks to varying degrees (Pistorius et al. 2011): While activities countering deforestation (a) and forest degradation (b) are generally held to be unproblematic with regard to biodiversity, AR

activities (which fall in category e)) can include the establishment of monocrop forest plantations which are detrimental to biodiversity. Forest rehabilitation and forest restoration (which also fall into category e) and which aim at re-establishing the productivity and – some or all – species diversity originally present at a site) are more conducive to biodiversity. However, they tend to be less profitable than AR. The category of "sustainable management of forests" (d) is not internationally defined and can affect forests and surrounding ecosystems differently depending on the sites. As Pistorius et al. (2011, pp. 5–6) argue, "the implementation of ‚sustainable' management activities has more severe impacts on biodiversity in untouched primary forests than in forests that are already managed for timber (…) while some argue that the conservation of primary forests, e.g., in protected areas, could and should be an integral part of SFM, others associate SFM with the profit-optimizing exploitation of forest resources – even in primary forests. In this context, it remains unclear if the implementation of management activities such as reduced impact logging in primary forests can be characterized as sustainable (…)". REDD+ activities can also have different social impacts (e.g. lead to land / tenure conflicts, have welfare impacts) (Duchelle et al. 2018b; Kill 2015). However, these effects are less clearly assignable to the specific activities a) – d). For instance, land conflicts can occur with activities countering deforestation as well as plantation building.

Chapter 3.2.1.5 screens which REDD+ activities are financed under the selected RBP and TBP mechanisms.

Interlinkages between REDD+ finance mechanisms

To a certain extent, REDD+ finance mechanisms are interlinked and refer to each other. To better understand potential interactions, Chapter 3.2.1.6 assesses whether the analysed multilateral funds or donor programmes require compliance with existing carbon market standards, rather than defining own requirements (or recognise certification against such standards).

3.1.2.2 Financial governance

The financial governance of REDD+ relates to a number of **objectives**:

- Tapping (relatively) cost-effective mitigation options;
- Mobilising sufficient REDD+ finance;
- Mobilising REDD+ finance in a timely manner while avoiding investment gaps in the tropical forest countries;
- Distributing REDD+ finance across a multitude of countries including Low Income Countries that have few domestic capacities for REDD+ readiness and implementation measures;
- Sharing the monetary and non-monetary benefits of REDD+ within recipient countries and distributing them to the local levels where non-deforestation and -degradation need to be compensated to change actual forest use practices;
- Effectively incentivising emission reductions and removals from REDD+ activities, inter alia through appropriate unit prices for REDD+ credits;
- Coherence of REDD+ finance with other objectives of the UNFCCC and Paris Agreement as well as domestic policies within forest countries;
- Provision of non-carbon (co-)benefits and reduction of social and environmental risks from REDD+ activities.

In the following sections, we describe criteria for analysing REDD+ finance mechanisms that speak to these objectives.

Source of finance

As was elaborated in Chapter 2.1, REDD+ finance mechanisms may draw on three sources of finance: international public finance, international private finance, and domestic finance from REDD+ countries. The money can be channeled through multilateral funds, bi- or multilateral donor programmes, carbon markets, investments in forest or agricultural production systems and conservation programmes, as well as national or subnational mechanisms within REDD+ countries.

Multilateral trust funds typically require extensive coordination among a number of donors and stakeholders; significant management and reporting procedures make acquiring funds from them complex and lengthy processes (EDF und Forest Trends 2018, p. 10). This holds particularly when payments are linked with verified emission reductions and removals. Bi- or multilateral donor programmes can be tailored more to the demands and needs of the (generally lower number) of donors and recipients, though experience shows that transactions may also be time-consuming due to public sector bureaucracy and the relatively large amounts of money involved (ibid). International public finance can also flow into REDD+ activities through crediting mechanisms if governments pay for mitigation outcomes achieved in other countries. These payments are per se results- or transfer-based. After the Paris rulebook was finalised in 2021, such payments are also possible for REDD+ activities under the Paris Agreement's Art. 6.2 and 6.4 (see Chapter 4 on this).

International private finance can be raised via the carbon market, too. Private carbon market finance for REDD+ can either be driven by international and national mitigation obligations for the private sector ('compliance markets') or by own targets and voluntary commitment of companies as well as non-profit organisations ('voluntary markets'). Another potential source of international private finance – funds to make production systems more sustainable or strengthen conservation – are not typically conditional on achieving emission reductions or removals and will not be investigated further.

Finally, within REDD+ countries, domestic finance can be used to co-finance or complement payments from multilateral funds or donors. These funds can, in turn, be used to compensate ex post for domestic emission reductions or removals.

Chapter 3.2.2.1 provides an overview of the reviewed RBP and TBP mechanisms' actual sources of finance.

Recipient of finance

During the REDD+ negotiations under the UNFCCC, an implicit goal was that a broad range of tropical forest countries should benefit from REDD+ payments, including Low Income Countries that have few domestic capacities for implementing REDD+.

In particular when it comes to results-based finance, it is not only necessary that forest countries have the required technical capacities in place (for MRV, (sub-)national forest reference emission levels) and successfully manage policy development and implementation, but that they also fulfil financial prerequisites. These include, for instance, the capacity to pre-finance implementation measures; the existence of a mechanism that receives international RBP and re-allocates it (through benefit-sharing arrangements); as well as general structures and processes of good financial governance (e.g. with regard to transparency, corruption, fraud etc.).

Chapter 3.2.2.2 hence enquires which countries to date receive results-based finance and how these countries are distributed across income groups.

Amount of finance pledged and transacted

Mobilising sufficient finance to finance the reduction of emissions from deforestation and forest degradation has been one of the main objectives of REDD+, including results-based REDD+ finance. Over the years, different estimates have been made as to the required volumes of finance, and numerous pledges both by public and private actors have been made.

The Stern Review, for instance, estimated that opportunity cost of forest protection could be around USD 5-10 billion per year. This would be about USD 1-2/tCO_2 on average. The estimate was based on an analysis of eight countries responsible for 70% of global land useemissions (Stern 2006, p. 217). The Eliasch Review in 2008 estimated that 'the finance required to halve emissions from the forest sector to 2030 could be around USD 17-33 billion per year if included in global carbon trading' (Eliasch 2008, p. xvi). Reacting to such estimates, the Global Forest Finance Pledge of eleven countries and the European Union aims at raising USD12 billion between 2021 and 2025 (i.e. USD 2.4 billion annually within this period). The public-private LEAF Coalition aimed at mobilising USD 1 billion within a year – an initial goal that they announced in November 2021 to have reached.

Chapter 3.2.2.3 analyses the pledges made and the volumes actually transacted in the context of the reviewed REDD+ financing mechanisms.

Caps on payments

While some REDD+ financing mechanisms pay for each ton of CO_2 verified emission reductions or removals, others set financial limits on the payments.

Chapter 3.2.2.4 provides a brief check which of the reviewed mechanisms set such caps, and in which form (on programme budgets or individual payments, either per year or per country).

Payment for results or for transfer of results: RBP or TBP?

The difference between results- and transfer-based payments (RBP and TBP) has been described in Chapter 2.2 and is summarised in Table 5.

Table 5: RBP and TBP for REDD+

	Results-based payments (RBP)	Transfer-based payments (TBP)
Definition	Payments (ex post) for the achievement of verified emission reductions or removals from REDD+ activities.	Payments (ex post) for the transfer of verified emission reductions or removals from REDD+ activities.
Description	Emission reductions or removals remain in the forest country and can be counted against the forest country's NDC.	Emission reductions or removals are transferred and used by the buyer to achieve an NDC or climate target.

Source: own compilation, Oeko-Institut.

Comparing the two forms of finance, both are linked to specific opportunities and risks. For instance, **RBP** compensate forest countries for reducing forest-related emissions on the basis of actual results, thus aiming for an incentive which is particularly environmentally effective. On the other hand, in the case of RBP actors have a lower incentive to invest in REDD+ as this is not counted against their NDCs/climate targets, potentially resulting in finance gaps for REDD+. The price that funders of RBP pay per ton of CO_{2e} emission reduced or removed may not reflect actual (opportunity and transaction) costs of reducing deforestation.

For **TBP**, the (inverse) opportunity is that the possibility for investors to count emission reductions or removals towards their NDCs/ climate targets increases the incentive to invest in REDD+. On the side of partner countries, this can mitigate the risk of not achieving NDCs (Streck et al. 2017, p. 13). Accounting and quality criteria for TBP – inter alia, under Art. 6 of the Paris Agreement – tend to be more stringent than the rules of the Warsaw Framework[24]. Streck et al. assume that, as a consequence, tropical forest countries can access new markets, and/or negotiate higher prices under transfer-based than results-based finance (Streck et al. 2017, p. 13). In addition, the quality of emission reductions and removals may increase. The empirical validity of these assumptions can only be assessed when more TBP have been made. On the negative side, issues relating to the environmental integrity of REDD+ programmes (e.g. non-permanence, leakage, inflated baselines, lacking additionality etc.) become more problematic when emission reductions or removals are counted towards NDCs/climate targets: actual mitigation efforts will fall short of the NDCs/ targets committed to. Also, the full fungibility of REDD+ credits with credits from other activities can reduce overall credit prices and, subsequently, incentives for switching to low-carbon technologies. Moreover, international offsetting has been criticised from an ethical perspective including climate justice and equity approaches since it shifts mitigation away from jurisdictions that have contributed more to climate change to jurisdictions that are less responsible for climate change. Tropical forest countries, by providing REDD+ results to buyers, may risk their own achievement of climate targets while at the same time having increased costs for REDD+ implementation due to the more rigorous requirements of TBF (Streck et al. 2017, p. 13).

Chapter 3.2.2.5 analyses what types of payments the reviewed REDD+ financing mechanisms provide.

Prices and price setting

The amount of finance that is mobilised for REDD+ activities and the strength of the incentive to reduce deforestation and forest degradation depend, among others, on the prices paid for emission reductions and removals. Implicitly, they depend on price setting.

It is very difficult to specify an adequate price for emission reductions and removals from REDD+ activities. This has to do with the fact that opportunity costs (e.g. foregone profits from alternative land uses), transaction costs (e.g. for MRV, enforcement) as well as actual implementation costs (e.g. for afforestation and reforestation) differ according to context factors such as the position of a country on the forest transition curve, its integration in global agricultural supply chains, national drivers of deforestation, domestic wage levels etc.

With regard to price-setting, the literature on payment schemes for ecosystem services (such as REDD+) distinguishes price-setting through markets[25] and price-setting through state actors[26] (e.g., Gomez-Baggethun und Ruiz-Perez 2011).

- In the first case, prices emerge as a result of the interplay of supply and demand, ideally in markets with many providers and buyers so that price formation can function efficiently. Market prices for emission reductions and removals from REDD+ are influenced by opportunity costs, transaction costs as well as actual implementation costs (see above). However, *other market prices* also influence the price paid for emission reductions or removals from REDD+, notably the prices for carbon credits from non-forest activities.

[24] Note that this is in line with the Warsaw Framework: It foresees that additional modalities for verification may be decided upon for results-based actions eligible to trading (cf. Decision 14/CP.19, para. 15).

[25] 'Coasean' schemes, after economist R. Coase.

[26] 'Pigovian' schemes, after economist A. Pigou.

REDD+ credit prices could thus be depressed by cheaper non-forest mitigation options in credit markets. On the other hand, it has been criticised that REDD+ credits may be cheaper than mitigation efforts in other sectors, thus potentially undermining transformative change in these sectors.

- In the second case, prices are set by governments. The price level may result from estimates of (opportunity) costs involved in REDD+ activities, standard prices, available funds as well as negotiations with other governments.

A host of factors influence whether the market-based or politically determined prices provide adequate incentives for investing in REDD+ in a number of different countries with different socioeconomic settings and drivers of deforestation.

Chapter 3.2.2.6 reviews the prices presently paid under the selected financing mechanisms as well as the ways in which these prices are set.

Means to overcome investment gaps

One of the challenges of RBF approaches for forest countries is that, in order to achieve emission reductions or removals from REDD+, significant upfront investment is required – for capacity building, setting up MRV systems, improving forest governance and enforcement, incentivising alternatives to economic activities that are linked with deforestation etc. Per definition, RBF is awarded ex post (upon verification of results), so that a time lag exists between the (costs of) actions and the payments (Angelsen 2017, p. 246). The resulting investment gap can undermine REDD+ efforts in credit-constrained forest countries.

Over the years, different means to overcome these investment gaps have emerged or been suggested. These include, among others, financing "early action" achieved before an RBP agreement is concluded, providing non-results-based advance payments (possibly combined with regular payments based on interim progress), partnering with 'readiness' funds or providing own readiness tranches (Angelsen 2017; Climate Focus 2015).

Chapter 3.2.2.7 analyses whether the REDD+ finance mechanisms provide such means to overcome forest countries' investment gaps.

Timing of payments/disbursement

Related to the investment gaps that may emerge in the case of RBF approaches (see previous section) is the question of when exactly payments are disbursed.

Generally, payment is possible at the end of the eligibility or crediting period, or at intervals before the end of the eligibility/crediting period (typically after verification of emission reductions or removals). The latter is more advantageous for forest countries as it allows covering upfront investment costs in a timelier manner. On the other hand, should larger-scale reversals occur, there may be a risk that partner countries pay for results that are later undone by such reversals. Some mechanisms deal with this challenge by providing buffer pools.

Chapter 3.2.2.8 examines *when* the REDD+ financing mechanisms disburse payments for emission reductions or removals.

Monetary and non-monetary benefit-sharing

Benefit-sharing refers to the distribution of (results-based) REDD+ finance, which is typically required to be 'equitle'. It includes the sharing of monetary benefits – i.e. payments – and non-monetary benefits such as technology transfer, infrastructure provision, improved governance and more participatory decision-making (Luttrell et al. 2013). Benefits to be shared can also result from the very changes in forest use, when the provision of ecosystem services or

non-timber forest products is improved (ibid). Benefit-sharing can take place along scales from national via regional to local (vertical axis) and within scales, e.g. between stakeholders and communities (horizontal axis) (Pham et al. 2013). There is no blueprint for benefit-sharing (Streck 2020, pp. 15–16) which frequently depends on forest countries' strategies and related discourses on which actors 'merit' to benefit from REDD+ (e.g. project developers from the private sector or civil society, central or local government, local communities and indigenous peoples, vulnerable groups, women; cf. Pham et al. 2013). Benefit-sharing is also tightly interlinked with the question on who – nationally and/or locally – holds 'carbon rights', i.e. the (statutory, legal, contractual, customary etc.) entitlements to benefit from international and national REDD+ transactions (Streck 2020).

REDD+ debates under the UNFCCC as well as in parallel fora (e.g. UN REDD Programme, World Bank, REM Programme) have addressed the equitable sharing of benefits across regions and stakeholders, including in the context of RBF approaches. While benefit-sharing is not required under the Cancun Safeguards (see Chapter 3.1.2.6), various REDD+ financing mechanisms stipulate that the receipt of results- or transfer-based payments for REDD+ activities presupposes benefit-sharing arrangements.

Chapter 3.2.2.9 assesses whether and how the reviewed finance mechanisms govern the sharing of benefits. We cover benefit-sharing under the heading of "financial governance" as it includes monetary benefit-sharing and is also related with the subsequent topic (use of proceeds). We recognise, however, the importance of non-monetary benefit-sharing and include the related aspects in this section.

Use of proceeds (beyond benefit-sharing)

REDD+ debates have stressed the need for coherence in REDD+ related activities and finance. In accordance with this, the Cancun Safeguards for REDD+ activities require that thesecontribute to the achievement of the Climate Convention's objective to stabilise GHG concentrations, the finance commitment made by developed Parties and that they are consistent with environmental integrity, adaptation needs, the conservation of natural forests and biological diversity as well as with national development priorities, sustainable development goals and the objectives of national forest programmes (Decision 1/CP.16, Annex I, para 1 and 2).

Chapter 3.2.2.10 therefore explores whether REDD+ financing mechanisms for RBF make provisions with regard to the use of proceeds (beyond provisions on benefit-sharing which are addressed separately). That is, we analyse whether there are any conditions tied to spending the payments, for instance that proceeds need to be spent in line with the recipient countries' NDCs, low-carbon development plans or REDD+ strategies. We will also analyse whether such provisions are used to warrant coherence of the use of proceeds with the goals and policies mentioned in the Cancun Safeguards.

3.1.2.3 Addressing non-permanence of emission reductions and removals

A special feature of the forest sector is that emission reductions or the uptake of CO_2 can only be temporary, and the trapped carbon can re-enter the atmosphere at a later point in time. Non-permanence refers to the risk of greenhouse gas emissions reductions or removals being reversed (Schneider et al. 2022a). **Non-permanence** occurs if "*a mitigation activity enhances or preserves carbon stocks in carbon reservoirs but, at a later point in time, some or all of the additional increment in stock caused by the mitigation activity is released to the atmosphere*" (Schneider et al. 2022a). There is an inherent risk of land use-related mitigation being reversed, as carbon stocks that are preserved or enhanced could be lost through natural or human-induced disturbances at a later point in time (Böttcher et al. forthcoming).

Reversals can occur within or outside the geographical boundaries of a mitigation activity. They can happen at a much later point in time and are not necessarily caused by the mitigation activity but can occur incidentally – because carbon stored in a reservoir may be affected by unrelated drivers or disturbances (e.g. wildfires). The risk for a mitigation activity being reversed thus depends on the susceptibility to natural depletion processes that differs between different types of reservoirs. The size and scale of carbon reservoirs affected by a mitigation activity is another important factor in assessing reversal risk. The non-permanence risk depends also on the nature of the mitigation activity, including whether and how it affects human-caused drivers of carbon reservoir depletion.

Within the framework of REDD+, the risk of non-permanence is treated differently. As a rule, the risk of non-permanence is primarily addressed under market-based approaches, since here the emission reductions are transferred, and it must be clarified who takes responsibility for non-permanence.

Chapter 3.2.3 scrutinises different measures to address the risk of non-permanence. The analysis builds on the findings of a UBA research project analysing land use as a sector for market mechanisms under Article 6 of the Paris Agreement (FKZ 3718 42 005 0), carried out by Oeko-Institut (see Böttcher et al. forthcoming for further details).

Measures to address the risk of non-permanence

A key question for addressing non-permanence is the time horizon over which reversal risks should be considered: does 'permanent' mean forever, or something more finite? This question has been subject to confusion, in part due to misinterpretations of the atmospheric lifetime of CO_2 (Archer et al. 2009; Mackey et al. 2013). What matters from a mitigation perspective is that a pulse of carbon emissions raises atmospheric concentrations of CO_2 for thousands of years (Archer et al. 2009; Mackey et al. 2013; Ciais et al. 2013). Some observers argue that reversible mitigation should not substitute for permanent mitigation at all (Becken and Mackey 2017; Mackey et al. 2013). If reversible mitigation is financed, it is thus important to mitigate non-permanence risks for as long as possible.

Non-permanence risks can be addressed in three main ways under financing mechanisms:

1. **Reducing non-permanence risks:** The activities financed can be designed in ways to reduce the risk that reversals occur.
2. **Accounting and compensation for reversals through provisions under financing mechanisms:** The mechanism can establish different types of approaches with the aim of offering compensation for any reversals that may occur in the future. This approach is typically implemented under carbon crediting mechanisms but also some other financing mechanisms. Three approaches are being pursued (Schneider et al. 2022a):
   a. "***Monitoring and compensation for reversals:*** *Monitoring of any (potential) reversals and compensation for the reversals through cancellation of carbon market units;*
   b. ***Discounting:*** *Discounting of emission reductions or removals to account for possible future reversals;*
   c. ***Issuing temporary carbon credits:*** *Issuing carbon credits that expiry after a certain period and need to be replaced by other carbon market units, irrespective of whether reversals occurred.*"
3. **Accounting and compensation for reversals through the recipient country:** This means that the recipient country accounts and compensates for any reversals when accounting for its NDC.

Chapter 3.2.3 analyses approaches to addressing non-permanence among the selected results- and transfer-based REDD+ finance mechanisms.

3.1.2.4 Monitoring and assessing emission reductions and removals

Institutional framework for monitoring

A very important aspect in RBP is the methodological approaches to monitoring the results. Measurement, Reporting and Verification (MRV) refers to the process of periodically quantifying the emission reductions or removals of an activity. The ability to accurately measure emissions and removals is important for ensuring environmental integrity of activities. Monitoring requirements are typically quite detailed for carbon crediting mechanisms and can include different means of validation, verification and documentation. Böttcher et al. (forthcoming) reviewed 16 crediting standards and assessed risks for environmental integrity of land use activities in market mechanisms. They found that there are considerable challenges for mechanisms, especially with regard to quantifying emission reductions and hence demonstrating additionality, developing baselines or reference levels, considering leakage and accounting emissions.

Chapter 3.2.4.1 analyses institutional frameworks for monitoring under the selected results- and transfer-based REDD+ finance mechanisms.

Additionality

Additionality is essential to ensure that carbon credits are backed by actual emission reductions or removals. Emission reductions or removals are only additional if they are caused by the incentives from carbon crediting revenues. If they also occurred in the absence of the incentives from the carbon credits, they would not be additional (Schneider 2009; Gillenwater 2012). Non-additional emission reductions or removals can **undermine the effectiveness** of some REDD+ financing mechanisms. While additionality is an important criterion for transfer-based crediting mechanisms, it is not always considered important for other forms of results-based financing. Determining causality between a mitigation activity and emission reductions and removals in the forest is challenging. Deforestation and forest degradation are often driven by very different dynamics. Agricultural expansion, infrastructure development and wood extraction are frequent causes, but how these will develop, is in turn influenced by changes in underlying causes such as population growth, market developments, technological developments and policy changes (Geist und Lambin 2002). This creates considerable uncertainty how forests would develop in the absence of the policy and promoted activity, in particular for avoided deforestation or forest degradation. Also, forest-related emissions are considerably influenced by policy decisions at the national or subnational level, for example regarding land ownership, enforcement of environmental laws or economic development. However, the additionality or future adoption of policies is impossible to assess in practice. Their adoption and implementation depend on political priorities, public awareness, and the power of different stakeholders, which may change over time. There might also be a backsliding of legislation that makes the definition of additionality even more challenging. The assessment of additionality is often closely related to the setting of a baseline.

Chapter 3.2.4.2 documents approaches to ensuring additionality applied by selected REDD+ financing mechanisms.

Baselines

Baselines (term used under crediting mechanisms) or **reference levels** (term used under RBP) are necessary for determining the emission reductions or removals achieved through the financing. However, the development of these reference levels is associated with considerable uncertainties, especially for reducing emissions from deforestation. How the rate of deforestation will develop in the future depends on a number of factors, such as global demand

for agricultural products and timber or the political framework and priorities in the respective countries or climatic changes. At the same time, the definition of reference scenarios is of great importance, especially if they serve as a basis for the financing or transfer of emission reductions. However, there are considerable differences in the way in which financing instruments set reference levels. First, the **responsibility** for setting reference levels differs. Under the Warsaw Framework for REDD+, reference levels are set largely freely by the recipient countries, while under crediting mechanisms there are defined principles and methods, and the ultimate responsibility lies with the steering committees of the crediting mechanisms. A second major difference is the **level of ambition**: most existing crediting mechanisms aim to set the baseline '**conservatively**', i.e. below the most accurate value, in order to take account of uncertainties. Under the Warsaw Framework for REDD+ the TACCC principles (transparent, accurate, complete, consistent and comparable) have been agreed. However, no rules for dealing with uncertainties have been decided upon. In the period after 2020, the NDC may also have to be taken into account when determining the reference level, as well as other principles that could be defined under Article 6.

Robust baselines are critical for the **environmental integrity** of carbon credits. If baseline emissions are overestimated, both environmental integrity and economic effectiveness are undermined. If they are underestimated, harm to the environment might be limited but revenues from carbon credits might be lower and the activity may be less financially viable - though this depends on the elasticity of carbon credit demand (Böttcher et al. forthcoming). The uncertainty in establishing baseline scenarios differs considerably between different types of land-use activities (e.g. afforestation and reforestation versus avoiding deforestation) and the scale at which activities are implemented (e.g. projects versus jurisdictional approaches) (Böttcher et al. forthcoming).

Chapter 3.2.4.3 elaborates on the approaches of baseline setting of selected REDD+ financing mechanisms.

Leakage

Reducing emissions in one place may in some cases lead to an increase in emissions in other places (often referred to as **leakage**). It is essential to understand different causes for leakage to be able to directly link to drivers and provide an adequate risk assessment. The range of leakage risk is different depending on drivers and can be large. **Direct leakage**, or primary leakage, occurs often at a local and national scale. It occurs when an activity reduces the supply of products or services in comparison to the situation where the activity had not been implemented and causes activities or agents to shift from one area to another. Especially activities that avoid deforestation or degradation bear the risk of direct leakage because they aim at reducing activities such as agriculture or logging that can rather easily be relocated by the agents. **Indirect leakage**, or secondary leakage, also occurs if land-use activities cause a reduction in product or service supply from the target area but occur more indirectly through market effects. These effects are typically triggered by conservation activities avoiding the expansion of commercial agricultural production or afforestation of productive agricultural crop- and grasslands (Böttcher et al. forthcoming).

Leakage can occur at **local**/regional, **international**/global level. Local leakage is often attempted to be limited by implementation at national or regional level (jurisdictional REDD+) or by specific measures (e.g. avoiding the relocation of activities outside the project boundaries). Global leakage is much more difficult to address (Böttcher et al. forthcoming). While taking leakage into account is good practice in crediting mechanisms, it is much less so in climate finance. An important approach to mitigating leakage risks is through careful project design, by

providing landowners with alternative income sources or maintaining production levels through efficiency increases achieved by improved productivity. Establishing mitigation projects on unused land usually does not affect production levels of commodities or incomes of landowners and can thus also avoid leakage effects.

Chapter 3.2.4.4 presents how selected REDD+ financing mechanisms address the risk of leakage.

3.1.2.5 Accounting and crediting of carbon benefits

Crediting period

Mechanisms that issue credits do so once emissions reductions and removals from a given activity have been verified. How many credits are issued is determined against a crediting level, which usually is set by the baseline or reference level that provides an estimate of emissions or removals at the absence of an activity. Crediting levels can also include adjustments, e.g. to account for uncertainty or for maintaining a conservative approach. The amount of credits available for transfer also depends on assumptions regarding the impact of leakage and the risk of reversal. The period in which verified emissions reductions or removals generated by an activity can be used to issue credits against a given baseline is known as the crediting period.

Crediting periods of selected REDD+ financing mechanisms are compared in Chapter 3.2.5.1.

Quantification

Sufficiently precise quantification of the carbon emissions and removals through forests and other land areas is the basis for quantifying the emission reductions from REDD+. Quantification is an important requirement for **crediting** but also needs to be differentiated from it. The result of quantification delivers observed absolute emissions and removals that are estimated using different techniques and documented in a standardised way (also referred to as **reporting**). Crediting requires additional information on the baseline for assessing differences of the reported emissions and removals to a reference development (also referred to as **accounting**).

The IPCC Guidelines for reporting GHG emissions under the UNFCCC (IPCC 2003; 2006) form a quality standard for estimating emissions and removals and are often referred to by REDD+ mechanisms. They provide methods and default values that allow for the reporting of GHG emissions and removals that follows the TACCC principles, i.e. being transparent, accurate, complete, consistent and comparable.

The guidelines distinguish between different "Tier" levels that reflect the **level of methodological complexity**. Tier 1 forms the lowest level of complexity and is considered the basic method that makes use of global default values. Tier 2 requires already country-specific data and an intermediate level of complexity, while Tier 3 constitutes the most advanced method regarding data requirements and often involves modelling or detailed surveys. Methods at Tier 2 and Tier 3 level are assumed to have a higher **accuracy**, compared to Tier 1. The methods provided by the guidelines aim at ensuring that estimates of GHG emissions and removals are neither over- nor underestimated and thus can be considered "conservative" and uncertainties are reduced as far as practical. **Uncertainty** analyses help to assess robustness and increase **transparency** of estimates.

Quantification requires estimating carbon stock changes or GHG emissions and removals caused by an activity on a per ha basis (also expressed as an **emission factor**, EF) and the amount of area on which the activity takes place (also referred to as **activity data**, AD). The reliable and accurate quantification of both is necessary for robust estimates of GHG emissions and removals and requires collection, analysis and archiving of data from different sources and applying different methods. In addition to the classical methods of **field measurements**, e.g. in forest

inventories, approaches using **remote sensing** data have been developed in recent years (e.g. with satellite imagery). Such new technologies allow for a higher spatial resolution but also frequency of estimates. In combination, remote sensing can help to reduce costs of forest inventories by stratification of forest areas that allows for more efficient sampling designs on the ground. The increasing number of data sources, however, raises questions of **comparability** and **consistency** of the different approaches and data sets.

Another important aspect addressed by the guidelines is the **completeness** of monitoring, e.g. which **carbon pools, activities and gases** are taken into account (i.e. above-ground and below-ground living biomass, dead biomass, soil carbon and litter, harvested wood products). Particularly in the case of monitoring of soils, there are high uncertainties associated with assessing changes in carbon stocks. For some ecosystems, e.g. tropical peatlands, however, including soil carbon stocks is a decisive factor.

Chapter 3.2.5.2 compares how different REDD+ financing mechanisms quantify emission reductions and removals.

Issuance of credits

REDD+ finance mechanisms that deliver payments for achieved results in form of emissions reductions or increased removals, can also use these results to issue carbon credits. One carbon credit usually equals one ton of CO_2. To ensure this is the case, REDD+ finance mechanisms have procedures in place to verify that emissions reductions or removals have been achieved, before issuing the credits. This section analyses which REDD+ financing mechanisms foresee the issuance of credits, what procedures apply for this to take place and how many credits have been issued (as of 31.12.2021).

One of the functions of carbon credits is that they can be acquired by third parties for different purposes, for example to achieve an emission reduction target through the purchase of emission reductions or to offset own emissions and claim climate or carbon neutrality. Where the credits can be used, can determine the availability of finance and the stringency of procedures, i.e. what crediting level is used. This section also compares whether credits are used on the voluntary carbon market or for compliance purposes, such as in domestic cap-and-trade systems or international compliance markets.

How different REDD+ financing mechanisms issue credits is presented in Chapter 3.2.5.3.

Provisions to prevent double counting

Double counting occurs when one tCO_2 that was not emitted to the atmosphere or removed from it, is counted towards multiple targets. Double counting can undermine the financial effectiveness of a results-based approach to reducing emissions from deforestation and degradation and enhancing removals. It also jeopardises the achievement of global climate targets. The UNFCCC has addressed the risk of double counting since the introduction of the market mechanisms of the Kyoto Protocol and continues to do so under the Paris Agreement and its Article 6 on cooperative approaches.

Double counting can occur in different forms. Double issuance takes place when the same emission reduction or removal is used several times to issue different credits. Double use takes place when an issued unit is not properly cancelled or retired and used for more than one target or if it is sold more than one time. Double claiming is when the same emission reduction or removal is used both towards generating a credit and the achievement of a domestic or international mitigation commitment.

The concurrent existence of multiple REDD+ finance mechanisms and of different mitigation commitments can favour the occurrence of double counting. REDD+ activities in the context of TBF also carry a high risk of double counting, if activities are implemented at the national or subnational level (jurisdiction) and project level. A lack of clarity on who can claim an emission reduction or removal resulting from REDD+ activities, e.g. due to unresolved land tenure issues, can also increase the risk of double counting (Schneider et al. 2018).

Whether REDD+ finance mechanisms include provisions to avoid double counting in its different forms and how they do it is considered in Chapter 0.

3.1.2.6 Addressing non-carbon benefits and safeguards

Recognition of non-carbon benefits

Reducing emissions from deforestation and forest degradation as well as the 'plus activities' can have social and environmental – i.e. 'non-carbon' – (co-)benefits. Social co-benefits can include the protection of livelihoods of forest-dependent communities, the provision of alternative rural livelihoods through, inter alia, re-forestation or agro-forestry activities, and subsequent effects on incomes and poverty alleviation (Caplow et al. 2011; Groom und Palmer 2012). Environmental co-benefits include, for instance, the conservation of tropical forest ecosystems, the biodiversity they harbour and the ecosystem services they providebeyond carbon storage and sequestration (Caplow et al. 2011; Groom und Palmer 2012).

Potential non-carbon benefits of reducing deforestation and forest degradation have been broached early on in the REDD+ debates. In a work programme on results-based finance, parties were invited to explore ways to incentivise non-carbon benefits, and the Subsidiary Body for Scientific and Technological Advice requested to address methodological issues related to non-carbon benefits resulting from implementing REDD+ (Decision 1/CP.18). Ultimately, the parties to the UNFCCC decided 'that methodological issues related to non-carbon benefits resulting from the implementation of [REDD+] activities do not constitute a requirement for developing country Parties seeking to receive support' for the implementation of REDD+ activities (Decision 18/CP.21).

While no formal requirement in the Cancun Safeguards or the Warsaw Framework, it is still possible that REDD+ financing mechanisms recognise non-carbon benefits,require to consider them in planning, implementation and MRV processes of REDD+ activities, or even to consider them in relation to payments.

Chapter 3.2.6.1 therefore enquires about the extent to which the REDD+ financing mechanisms reviewed recognise, require or reward the provision of non-carbon benefits.

Safeguards addressing non-carbon risks

While REDD+ activities can produce social and environmental (co-)benefits, they can also create negative social and environmental impacts. For instance, REDD+ activities have been linked with restrictions to the economic activities of forest-dwelling communities, exclusion and evictions of such communities from forest land, lacking participation in implementation and violations of the rights of indigenous peoples (Chomba et al. 2016; Kill 2015). In environmental terms, the inclusion of the 'plus activities' into the REDD+ mechanism has created concerns with regard to negative biodiversity impacts. For instance, including the activity of 'enhancement of carbon stocks' *(*e.g. through afforestation or reforestation) raised fears about incentivising a conversion of natural forest into plantations (including, monocultural plantations, drawing on non-native an water-intense tree species) or a shift of land use activities to non-forest ecosystems with high biodiversity values such as peatlands ('inter-ecosystem leakage') (Pistorius et al. 2011; SCBD 2011).

Therefore, an important aspect within the REDD+ debates has been the demand that REDD+ activities do not to cause negative social and environmental impacts. For this purpose, rules have been developed to prevent such impacts ('safeguards'). Examples for safeguards include:

- Social safeguards address, among others, transparency of REDD+ strategy development and implementation, the participation of relevant stakeholders, respect for the knowledge and rights of indigenous peoples and local communities as well as effective governance structures for forests.
- Environmental safeguards relate to, for instance, the prevention of conversion of natural forests as well as the protection and conservation of natural forests and biological diversity, ecosystem services and other environmental benefits.

Respective safeguards have been developed by the parties to the UNFCCC – the 'Cancun Safeguards' (Decision 1/CP.16, Appendix I), listed in the box below – and by actors beyond the UNFCCC. These latter safeguards were partly developed before the Cancun Safeguards, partly afterwards in an attempt to operationalise or go beyond them. Examples of such sets of safeguards include the Convention on Biological Diversity guidance on REDD+ (CBD Decision X/33, para 8 and Decision XI/19, Annex, para 4); the REDD+ SES Principles (REDD+ SES Initiative 2012); the World Bank Social and Environmental Safeguard Policies[27]; or Verra's Climate, Community and Biodiversity Standards (VERRA 2017). In addition, under the Paris Agreement, the future Supervisory Body of Art. 6.4 will establish requirements and processes on the 'application of robust, social and environmental safeguards' (Decision 12.b/CMA.3, para 24) which could be relevant for REDD+ activities to the extent that these could be eligible under Art. 6.4 (cf. Chapter 4).

Chapter 3.2.6.2 gives an overview of safeguards included in the REDD+ financing mechanisms reviewed. Note that provisions on the following aspects, which sometimes form part of safeguards, are analysed separately within this report:

- Benefit-sharing provisions: see 3.2.2.9;
- Risks of reversals and displacement of emissions: see Chapter 3.2.3 and 3.2.4.4.

Cancun Safeguards (Appendix I of Decision 1/CP.16)

a) 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.

[27] World Bank Environmental and Social Framework, cf. https://www.worldbank.org/en/projects-operations/environmental-and-social-policies

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 incentivise the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits.

f) Actions to address the risks of reversals.

g) Actions to reduce displacement of emissions.

Institutional follow-up on safeguards

Whether the safeguard requirements of REDD+ finance mechanisms are thoroughly implemented and likely to be effective depends, among others, on the institutional follow-up provided by the mechanisms.

Such institutional follow-up may include, for instance, a requirement to monitor and report on the implementation of safeguards; the provision of indicators for monitoring and reporting; a stipulation to have reports validated by independent third parties and published; an obligation to provide for grievance redress mechanisms; or the sanctioning of non-compliance with safeguards.

From these different follow-up mechanisms, the Cancun Safeguards require reporting: Under them, it is necessary to implement 'systems for providing information on how safeguards are addressed and respected' (Decision 12/CP.17). As part of a System for providing Information (SIS), every four years a summary of how safeguards are implemented has to be provided as part of national communications (ibid, para 3 and 4; see also Decision 12/CP.19 and Decision 17/CP.21). On a voluntary basis, this information can also be published on the UNFCCC website (Decision 9/CP.19, para 11(c)). Submitting the most recent summary of information is a precondition for receiving results-based payments (Decision 9/CP.19, para 4). Safeguard information systems contribute to instutionalising reporting and linking it to the core objectives of the Rio Conventions.

Chapter 3.2.6.3 traces the institutional follow-up that requires REDD+ financing mechanisms to promote the implementation of safeguards.

3.2 Comparison of REDD+ financing mechanisms

In the following, we describe the 13 results- or transfer-based mechanisms for REDD+ financing selected (see Chapter 3.1.1) and discuss their commonalities, challenges and opportunities along the above-presented criteria.

3.2.1 General characteristics

To compare the selected REDD+ financing mechanisms, we describe their main sponsors and governance, geographical scope, spatial level of implementation, the REDD+ activities and phases they support, their operational status, the length of crediting periods and potential linkages between public finance and carbon market standards.

3.2.1.1 Sponsors and governance

Most of the selected results- or transfer-based REDD+ finance mechanisms are sponsored by governments; only four of the mechanisms have non-governmental (specifically: non-profit) sponsors (ART/TREES, Plan Vivo, VCS, JNR). While non-profit and private sector actors have an observer status with some of the public mechanisms and there is some governmental

commitment in the non-governmental mechanisms (e.g. Norway financially supported the launching of the ART/TREE standard[28], governments were consulted in the updating of the JNR requirements[29]), there are no genuine public-private mechanisms in our sample.

In multilateral funds and donor programmes, governments of industrialised (donor) country governments and those of REDD+ countries are typically both represented and have a say in the respective steering bodies (e.g. GCF, FCPF Carbon Fund, BioCarbon Fund ISFL, but also in donor programmes such as Norway's partnership agreements and in the bilateral agreements concluded under Japan's JCM). In the GCF Board, members from developed and developing countries are equally represented. The private sector and non-profit organisations can participate in Board meetings as observers. The World Bank's FCPF has the most elaborate governance structure: a Participants' Assembly (which provides general guidance) consists "of all eligible REDD countries, eligible donors, and eligible prospective Carbon Fund participants, representatives of relevant international organizations, relevant nongovernmental organizations, forest-dependent indigenous peoples and forest dwellers, and relevant private-sector entities may be invited (…) to attend annual meetings as observers" (IEG 2012). A Participants' Committee (elected by the Assembly and constituting the main decision-making body) comprises 14 REDD+ Country Participants and fourteen Readiness and Carbon Fund donors. Finally, a Participants Committee Bureau consists of eight members of the Participants Committee, five of which are REDD+ Countries and three are donors.[30] Unlike in other multilateral funds, non-governmental participants can also become 'eligible donors' and as such influence decision-making within the Carbon Fund. So far, three such donors have invested in the Carbon Fund: BP Technology Ventures, a subsidiary of BP Ltd; CDC Climat, a subsidiary of a French public sector financial institution; and The Nature Conservancy (TNC), a US-based NGO (IEG 2012).

Governments sometimes also sponsor crediting mechanisms or carbon market standards. Typically, these are national or subnational governments of industrialised countries striving to enable companies in their jurisdictions to invest in mitigation programmes and thus acquire offset credits. Examples in our sample include Japan's JMC and California's Tropical Forest Standard.

Where carbon market standards are sponsored by non-profit organisations (e.g. Plan Vivo, Verra or ART), the standards are typically governed by boards in which multiple stakeholders are involved. These range from non-profit organisations via business initiatives or for-profit consultancies, to scientists and international organisations.

Table 6: Governance of REDD+ finance mechanisms

REDD+ finance mechanism	Spon-sor	Managing entity	Governments		Non-governmental	
			Donor countries	REDD+ countries	Private sector	Non-profit sector
GCF, Pilot Programme for REDD+ RBP [31]	gov	Division of Mitigation and Adaptation of GCF	12 members of GCF Board	12 members of GCF Board	observers	observers

[28] https://www.nicfi.no/how-do-we-work/

[29] https://verra.org/jnr-program-advisory-group/

[30] IEG (2012), https://www.forestcarbonpartnership.org/fcpf-governance

[31] GCF (2016).

REDD+ finance mechanism	Spon-sor	Managing entity	Governments		Non-governmental	
			Donor countries	REDD+ countries	Private sector	Non-profit sector
FCPF (Carbon Fund) [32]	gov	Facility Manage-ment Team by World Bank; World Bank as trustee of Carbon Fund	Part of Participants Assembly; 14 members of Participants Committee; Carbon Fund Participants	Part of Participants Assembly; 14 members of Participants Committee	observers, but potentially also 'eligible donors'	Observers, but potentially also 'eligible donors'
BioCF-ISFL (Tranche 3) [33]	gov	World Bank, Climate Change Funds Management Unit (SCCFM)	5 participants	5 participants	-	-
Agreement of Norway with Brazil [34]	gov	NICFI, BNDES / Amazon Fund	Norway	Brazil	-	-
Agreement of Norway, Germany & UK with Peru [35]	gov	NICFI, KfW	Norway, Germany (UK as of 2021)	Peru	-	-
REM Programme Norway, Germany & UK with Colombia [36]	gov	NICFI, KfW	Norway, UK, Germany,	Colombia	-	-
Agreement of CAFI (Norway) with Gabon [37]	gov	NICFI, CAFI	Norway	Gabon	-	-
Japan's JCM [38]	gov	Environmental Ministry of Japan, supported by GEC	Japan	Partner country	-	-
California TFS [39]	gov	California Air Resources Board (CARB)	California (1 CARB chair + 2 members for	-	9 members of CARB, including 2 members from environmental justice	

[32] https://www.forestcarbonpartnership.org/governance; IBRD (2014a).

[33] https://www.biocarbonfund-isfl.org/who-we-are; https://climateinitiativesplatform.org/index.php/BioCarbon_Fund_Initiative_for_Sustainable_Forest_Landscapes_(ISFL); the five contributing participants are Germany, Norway, Switzerland, the UK and the US; the five other participants are Colombia, Ethiopia, Indonesia, Mexico and Zambia.

[34] https://www.regjeringen.no/en/historical-archive/solbergs-government/andre-dokumenter/kld/2021/kos-innsikt/samarbeidspartnere/id2345203/; BNDES is the Brazilian Development Bank (Banco Nacional de Desenvolvimento Econômico e Social). NICFI is jointly administered by the Norwegian Ministry of Climate and the Environment (KLD) and the Norwegian Agency for Development Cooperation (Norad).

[35] https://www.regjeringen.no/en/historical-archive/solbergs-government/andre-dokumenter/kld/2021/kos-innsikt/samarbeidspartnere/id2345203/

[36] https://www.regjeringen.no/en/historical-archive/solbergs-government/andre-dokumenter/kld/2021/kos-innsikt/samarbeidspartnere/id2345203/

[37] https://www.nicfi.no/current/norge-inngar-millionavtale-med-gabon/

[38] Ministry of the Environment, Japan (MOEJ); with Global Environment Centre Foundation (GEC) as implementation agency of the Financing Programme for JCM Model Projects since 2014 JCM (2021c) There are altogether 17 partner countries of the JCM.

[39] https://ww2.arb.ca.gov/about

REDD+ finance mechanism	Spon-sor	Managing entity	Governments		Non-governmental	
			Donor countries	REDD+ countries	Private sector	Non-profit sector
			legislative oversight)		communities and 2 public members	
ART/TREES [40]	non-gov	ART Secretariat, hosted by Winrock International	-	-	-	7 members of ART Board of Directors
Plan Vivo [41]	non-gov	Plan Vivo Secretariat	-	-	7 members of Plan Vivo Foundation's Board of Trustees	
Verra VCS [42]	non-gov	Verra	-	-	10 members of Board of Directors Advice: 15 members of VCS Program Advisory Group	
Verra JNR [43]	non-gov	Verra	Advice: Government Engagement Group	-	10 members of Board of Directors Advice: 6 members of JNR Advisory Group & 54 members of JNR Stakeholder Group	

Source: own compilation, Oeko-Institut.

3.2.1.2 Operational status

Most of the selected mechanisms are operational; the only exception is the California Tropical Forest Standard.

From the mechanisms we screened, payments have been made through multilateral funds (GCF, FCPF) and bi-/multilateral donor programmes (with finance from Norway, UK, Germany) to a select number of REDD+ countries – notably to Brazil, Chile, Costa Rica, Ecuador, Gabon, Indonesia, Mozambique and Paraguay. In the case of the crediting mechanisms analysed, REDD+ projects have been issued credits for 15 years and longer. However, under REDD+ jurisdictional programmes credits have not yet been issued.

[40] https://www.artredd.org/about/; while none of the current members of the ART Board of Directors works for the private sector as such, some of the non-profit organisations whose representatives are on the Board have close links to the private sector, such as Alliance for a Green Revolution in Africa (AGRA).

[41] https://www.planvivo.org/our-team

[42] https://verra.org/project/vcs-program/governance-development/; https://verra.org/about-verra/advisory-groups-committees/

[43] https://verra.org/project/jurisdictional-and-nested-redd-framework/; https://verra.org/about-verra/advisory-groups-committees/; https://verra.org/jnr-program-advisory-group/

Table 7: Operational status of REDD+ finance mechanisms

Mechanism	Operational status	Start & projected end of operations
GCF, Pilot Programme for REDD+ RBP [44]	Operational; payment made to Brazil (April 2020), Chile (Sept. 2020), Ecuador (Sept. 2020), Paraguay (Nov. 2020), Costa Rica (Feb. 2021), Indonesia (July 2021)	2017 – 2022 (funding exhausted by end of 2020)
FCPF (Carbon Fund) [45]	operational; payment made to Mozambique (October 2021)	2017 - 2025
BioCF-ISFL (Tranche 3) [46]	operational; no payments yet	2013 (ISFL) - 2030
Agreement of Norway with Brazil [47]	operational, with payments	2009
Agreement of Norway, Germany & UK with Peru [48]	operational, no payments yet	2014
REM Programme Norway, Germany & UK with Colombia [49]	operational, with payments	2015
Agreement of CAFI (Norway) with Gabon [50]	operational, with payments	2017
Japan's JCM [51]	operational, no issuance of credits to REDD+ projects / no payments yet	2013 - 2030 (REDD+ projects: 2015-16; 2015-17)
California TFS [52]	not yet operational	no information
ART/TREES [53]	operational, but programmes so far are only listed (not registered, no issuance)	2018
Plan Vivo [54]	operational, issuance for 17 out of 23 active REDD+ projects (REDD and A/R)	1997
VCS [55]	operational, with issuance	2006
JNR [56]	operational, but no registered programmes / no issuance	2012

[44] https://www.greenclimate.fund/redd

[45] https://www.worldbank.org/en/news/press-release/2021/10/15/mozambique-becomes-first-country-to-receive-emission-reductions-payments-from-forest-carbon-partnership-facility

[46] https://www.biocarbonfund-isfl.org/

[47] https://www.nicfi.no/partner-countries/

[48] https://www.nicfi.no/partner-countries/

[49] https://www.nicfi.no/partner-countries/

[50] https://www.nicfi.no/current/norge-inngar-millionavtale-med-gabon/

[51] https://gec.jp/jcm/en/wp-content/uploads/2021/09/20210927_list_en.pdf; GoJ (n.d.).

[52] https://ww2.arb.ca.gov/our-work/programs/california-tropical-forest-standard

[53] https://art.apx.com/myModule/rpt/myrpt.asp

[54] https://www.planvivo.org/pages/category/projects?Take=13; https://www.planvivo.org/pages/category/projects?Take=11

[55] https://registry.verra.org/app/search/VCS/Registered

[56] https://registry.verra.org/app/search/JNR/JNR%20VCUs; one programme is presently under stakeholder consultations but not yet registered (Jurisdictional Subnational Program for Incentives for Environmental Services of Carbon of the State of ACRE, Brazil – ACRE ISA-Carbon Program)

Source: own compilation, Oeko-Institut.

3.2.1.3 Geographical scope

Geographically, REDD+ activities which are to be rewarded through results- or transfer-based payments are typically required to take place in developing countries. This holds particularly for transfer-based payments which need to comply with the rules of the Paris Agreement.

Individual carbon standards allow for certified REDD+ activities to take place outside developing countries. Examples are a Plan Vivo REDD project in New Zealand[57] or a Verra REDD project in Australia.[58]

3.2.1.4 Spatial level of implementation

The results- and transfer-based mechanisms analysed are implemented at national, subnational and project level. Only a minority of those mechanisms that cover more than one spatial level to date has specific provisions regarding "nesting".

- **National level implementation only**: From the instruments analysed, only the bilateral REDD+ Partnerships between Norway and Brazil, Gabon, Peru and Colombia are exclusively implemented at national level.
- **National and subnational implementation**: Three of the mechanisms fund emission reductions at jurisdictional level, including national and subnational levels:
  - Under the Green Climate Fund's REDD+ RBP pilots the jurisdictional level is allowed on an interim basis only and for programmes on a "significant scale" (GCF 2017c, 3, 5). In terms of nesting, it is required that "[a]ny subnational program proposal should be of significant scale (…), demonstrating that an aggregation of such subnational scales can constitute the national level (e.g. states, provinces, biomes, etc.). Subnational level proposal should also demonstrate ambition to scale up to national level and should demonstrate a contribution to national ambition for emissions reductions, for example, the NDC and/or the implementation of the national REDD-plus strategy" (GCF 2017b, p. 5).
  - Under the FCPF's Carbon Fund (World Bank 2020, pp. 36–43) to date no provisions exist with regard to nesting, but the development of a nesting decision support tool by Climate Focus (and in consultation with stakeholders) is envisaged (World Bank 2020, 53).
  - The ART/TREES standard is subject to national government approval until 2030 and for jurisdictions that meet specific eligibility criteria.[59] Beyond these conditions, ART "does not include specific requirements and conditions for nesting of projects or incorporating sub-national or project-level activities."[60]
- **National, subnational and project-level implementation**: The Jurisdictional and Nested REDD+ (JNR) makes possible REDD+ payments in three "scenarios", each of which combines higher-level (e.g. national) and lower-level forest reference emission levels (FRELs), respectively jurisdictional programmes (cf. Figure 4):

[57] "Rarakau project" which aims to protect Māori-owned rainforest, cf. https://www.planvivo.org/rarakau

[58] "REDD Forests Grouped Project: Protection of Tasmanian Native Forest, cf.https://registry.verra.org/app/projectDetail/VCS/641

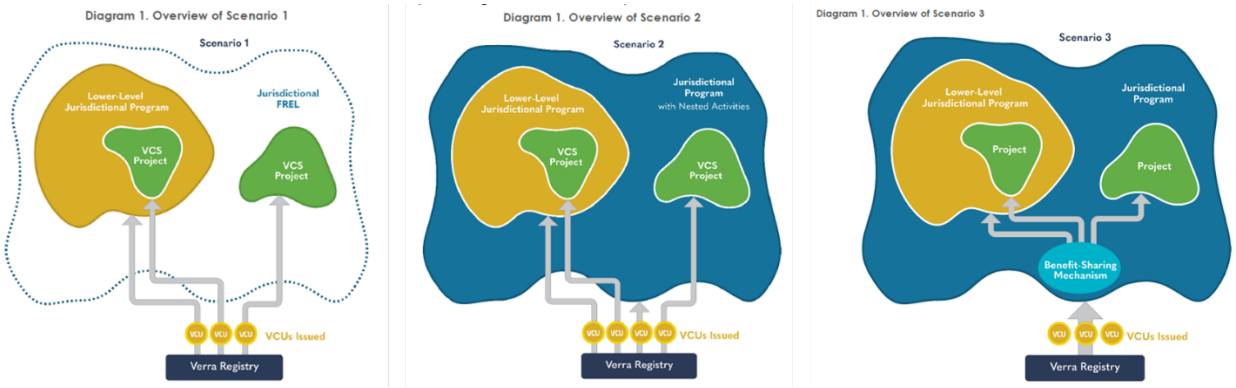
[59] cf. https://www.artredd.org/faq/

[60] cf. https://www.artredd.org/faq/

- JNR Scenario 1 defines requirements for developing jurisdictional FRELs and guidance to be applied by projects and lower-level jurisdictional programmes that are foreseen to be nested into them (JNR 2021a);
- JNR Scenario 2 defines requirements for developing jurisdictional REDD+ programmes for nested projects and jurisdictional programmes at a lower level (JNR 2021b);
- JNR Scenario 3 defines requirements for developing jurisdictional REDD+ programmes for the case of carbon accounting and crediting done only at the level of the jurisdictional programme, but where projects or lower-level jurisdictional programmes are not allowed to directly issue VCUs (JNR 2021c).

While allowing REDD+ projects, the JNR is not purely project-focussed.

Figure 4: Spatial level of REDD+ implementation and allocation of FRELs under the JNR



Source: JNR (2021a; b; c).

- **Subnational implementation only**: One of the selected mechanisms finances REDD+ at subnational level exclusively: the World Bank's BioCarbon Fund/ISFL (BioCF ISFL 2021b, p. 3). In terms of nesting, the BioCarbon Fund merely requires the compilation of existing data from the National Greenhouse Gas Inventory or similar processes (BioCF ISFL 2021b, p. 4)(BioCF ISFL 2021b, S. 4)(BioCF ISFL 2021b, S. 4)(BioCF ISFL 2021b, S. 4)(BioCF ISFL 2021b, S. 4)(BioCF ISFL 2021b, S. 4)(BioCF ISFL 2021b, S. 4)(BioCF ISFL 2021b, p. 4)(BioCF ISFL 2021b, p. 4)(BioCF ISFL 2021b, p. 4)(BioCF ISFL 2021b, p. 4)(BioCarbon Fund ISFL 2021b, p. 4)(BioCF ISFL 2021b, p. 4)(BioCF ISFL 2021b, p. 4)(BioCF ISFL 2021b, S. 4)(BioCF ISFL 2021b, S. 4)(BioCF ISFL 2021b, p. 4)(BioCF ISFL 2021b, p. 4) [61]
- **Subnational and project-level implementation**: While the TFS above all provides RBF for sector-based mitigation programmes in partner jurisdictions, it seeks to enable jurisdictions to include nested projects in the future (CARB 2019, Ch. 15). In terms of nesting, the TFS requires "(A) Offset project-specific requirements that establish methods to inventory, quantify, monitor, verify, enforce, and account for all project-level activities; [and] (B) A system for reconciling offset project-based greenhouse gas (GHG) reductions in sector-level accounting from the implementing jurisdiction's" (CARB 2019, p. 10). Also, sector plans must "transparently demonstrate the implementing jurisdiction's methodology for developing a reference level, measurement, reporting, and verification requirements, and how its jurisdictional program fits within any national program to reduce emissions from tropical

[61] While the California TFS focusses on subnational jurisdictions, it "can also be modified as appropriate to apply to national jurisdictions" (CARB 2019, p. 9).

deforestation and degradation (if applicable)" (CARB 2019, p. 10). The JNR's Scenario 1 also makes possible to fund jurisdictional REDD+ at subnational level and nest projects into these programmes (JNR 2021a).

- **Project-level implementation only**: Most of the screened crediting mechanisms to date exclusively fund project-level REDD+. This includes Japan's Joint Crediting Mechanism as well as carbon market standards (Plan Vivo, VCS). In terms of nesting, the JCM stipulates that 'JCM project may be part of national or sub-national REDD-plus programs and each side takes necessary measures to avoid double counting' (GoJ n.d., § 19). The Plan Vivo standard requires that "to avoid 'double counting' of ecosystem services, project intervention areas must not be in use for any other projects or initiatives, including a national or regional level mandatory GHG emissions accounting programme, that will claim credits or funding in respect of the same ecosystem services, unless a formal agreement is in place with the other project or initiative that avoids double-counting or other conflicting claims, e.g. a formal nesting agreement with a national PES scheme" (Plan Vivo 2013, § 5.14). The JNR standard stipulates that "where projects are located within a jurisdiction covered by a jurisdictional REDD+ program, project proponents shall follow the requirements in this document and the requirements related to nested projects set out in the VCS Program document Jurisdictional and Nested REDD+ Requirements" (VCS 2021, § 3.2.2).

Table 8: Spatial level of implementation

Spatial level	REDD+ finance mechanism	Provisions for nesting
National level only	Agreements between Norway (and partly Germany, UK) with: ▸ Brazil ▸ Peru ▸ Colombia ▸ Gabon	No
National & subnational level	▸ Green Climate Fund's REDD+ RBP pilots ▸ FCPF's Carbon Fund ▸ ART/TREES standard	Yes No, but support tool planned No
National, subnational & project level	▸ JNR (Scenario 1, 2, 3)	Yes
Subnational level only	▸ BioCarbon/ISFL ▸ California Tropical Forest Standard	Yes Yes
Subnational & project level	▸ California Tropical Forest Standard ▸ JNR (Scenario 1)	Yes Yes
Project level only	▸ Japan's Joint Crediting Mechanism ▸ Amazon Fund ▸ Plan Vivo ▸ VCS	Yes No Yes Yes

Source: own compilation, Oeko-Institut.

3.2.1.5 REDD+ activities

Most of the REDD+ financing mechanisms analysed cover the full scope of REDD+ activities. Among them are the GCF, the FCPF's Carbon Fund, the BioCarbon Fund's ISFL (Tranche 3), two of the selected bilateral agreements of Norway (with Colombia and Peru), Japan's JCM, Plan Vivo and Verra's JNR. Some mechanisms merely cover reducing emissions from deforestation and forest degradation, but not the "plus activities" of REDD+. This applies to Norway's bilateral agreements with Brazil[62] and Gabon, to California's Tropical Forest Standard and the ART/TREE standard. The VCS standard through its AFOLU projects[63] covers most REDD+ activities except (explicitly) the conservation of forest carbon stocks. Some of the mechanisms recognise additional activities beyond REDD+, be these other AFOLU activities or activities in other mitigation sectors (e.g. energy, industry).

[62] The first agreement between Norway and Brazil only covers emission reductions from deforestation; only the second one includes emission reductions from forest degradation.

[63] These include, specifically, Reduced Emissions from Deforestation and Degradation (REDD); Afforestation, Reforestation and Revegetation (ARR); Improved Forest Management (IFM); Agricultural Land Management (ALM); Avoided Conversion of Grasslands and Shrublands (ACoGS); Wetlands Restoration and Conservation (WRC); cf. https://verra.org/project/vcs-program/projects-and-jnr-programs/agriculture-and-forestry-projects/

Table 9: REDD+ activities supported by the finance mechanisms

Mechanism	Reducing emissions from deforestation	Reducing emissions from forest degradation	Conservation of forest carbon stocks	Enhancement of forest carbon stocks (AR)	Improved management of forests	Other eligible activities beyond REDD+
GCF, Pilot Programme for REDD+ RBP [64]	X	X	X	X	X	-
FCPF (Carbon Fund) [65]	X	X	X	X	X	-
BioCF-ISFL (Tranche 3) [66]	X	X	X	X	X	X (e.g. AFOLU)
Agreement Norway, Brazil [67]	X	(X)	-	-	-	-
Agreement Norway, Germany, UK(as of 2021), Peru [68]	X	X	X	X	X	-
REM Programme btw. Norway, UK, Germany, Colombia [69]	X	X	-	-	-	-
Agreement CAFI (Norway), Gabon [70]	X	X	-	-	-	-
Japan's JCM [71]	X	X	X	X	X	X (e.g. energy efficiency)
California TFS [72]	X	X	-	-	-	-
ART/TREES [73]	X	X	-	-	-	-
Plan Vivo [74]	X	X	X	X	X	X (e.g. agro-forestry)
VCS [75]	X	X	-	X	X	X (e.g, AFOLU, chem. ind.)
JNR [76]	X	X	X	X	X	-

[64] GCF (2017c).

[65] FCPF (2021c).

[66] BioCF ISFL (2020); https://www.biocarbonfund-isfl.org/approach?title=Building%20on%20Experience#id=4.

[67] Norway und Brazil (2009), Art. IV.1. Norway und Brazil (2009), Art. IV.1.

[68] Peru et al. (2021); Peru et al. (2014).

[69] Colombia et al. (2015b).

[70] Gabon und CAFI (2017), (2019).

[71] GoJ (n.d.); JCM (2021c).

[72] CARB (2019), Chapter 2.

[73] ART (2020), Chapter 3.2.

[74] Plan Vivo (2013), Chapter 2.

[75] VCS (2021), Appendix 1

[76] JNR (2021b), Chapter 3.9.

Source: own compilation, Oeko-Institut.

3.2.1.6 Interlinkages between REDD+ finance mechanisms

In the following, we look into interlinkages between REDD+ finance mechanisms, with a focus on whether donor programmes or multilateral funds recognise certification against existing carbon market standards rather than defining own requirements or requesting the REDD+ countries to develop methodologies.

We find that a number of the older mechanisms (Agreement of Norway with Brazil, Japan's JCM, FCPF Carbon Fund, BioCarbon Fund ISFL) do not mention any such linkages or explicitly prohibit use of other mechanisms, as in the case of Japan's JCM ("Neither side uses any mitigation projects registered under the JCM for the purpose of any other international climate mitigation mechanisms to avoid double counting", cf. (GoJ n.d., § 18)). Neither does the newer GCF Pilot Programme for REDD+ RBP refer to any existing carbon market standard.

From among the more recent bi- and multilateral agreements and programmes with contributions from Norway (and partly, Germany, the UK), most refer to the ART/TREES standard:

- the agreement of Norway, Germany, UK and Peru requires that Peru initiates the registration process for Architecture for REDD+ Transactions (ART) within 2021 (Peru et al. 2021, p. 3);
- the REM Programme between Norway, Germany & UK with Colombia requires the ART/TREES standard to be applied to Norway's results-based payments (Colombia et al. 2019, p. 6);
- the agreement of CAFI (Norway) with Gabon stipulates that Gabon will seek to go through an ART certification for the emission reductions and removals, including the TREES provisions on safeguards reporting and double counting, and ART processes for third party verification (Gabon und CAFI 2019, p. 2). Once TREES includes crediting beyond the proposed tagging of emission reductions below historical levels from high-forest low-deforestation (HFLD) countries, the Parties will assess whether and how to adjust to that methodology (ibid, p. 2) and will discuss whether this standard can be adopted for the partnership(ibid, p. 4).

Table 10: Interlinkages between REDD+ finance mechanisms

Use of carbon market standards under donor programmes / mulitlateral funds	
No	**Yes (standard)**
GCF, Pilot Programme for REDD+ RBP	Agreement of Norway, Germany, UK (as of 2021) and Peru: ART
FCPF (Carbon Fund)	REM Programme Norway, Germany & UK with Colombia: ART/TREES
BioCF-ISFL (Tranche 3)	Agreement of CAFI (Norway) with Gabon: ART/TREES
Agreement of Norway with Brazil	-
Japan's JCM	-

Source: own compilation, Oeko-Institut.

3.2.2 Financial governance

3.2.2.1 Source of finance

Most of the finance sources elaborated in Section 2.1 (Figure 1) are used for results- or transfer-based REDD+ finance. An exception is private sector investment or NGO finance for more sustainable forest or agricultural production systems (e.g. deforestation-free supply chains) or for nature conservation. While such finance contributes to the goals of REDD+, it is not generally tied to the achievement of emission reductions and removals (RBP/TBP).

Industrialised country governments are an important source for financing REDD+ results- or transfer-based payments. They are the major donors of the GCF Pilot Programme for REDD+ Results-based Payments, the FCPF Carbon Fund (Tranche B) and the BioCarbon Fund ISFL (Tranche 3), all of which represent multilateral funds; and of the bi- and multilateral agreements between Norway (and partly Germany/UK) with Brazil, Colombia, Gabon and Peru. They will also be major buyers of credits via the Art. 6 mechanisms which can in future be used to finance REDD+ via the Paris Agreement's compliance market.

Results- or transfer-based finance for REDD+ from the **private sector and the non-profit sector** is tapped both through compliance and voluntary carbon markets. To date, the only global compliance market that includes REDD+ credits is CORSIA, the international offsetting scheme for aviation under ICAO (which we do not analyse in this report). In future, tradable credits can be created and internationally traded from (at least specific) REDD+ activities under Art. 6.2 and Art. 6.4 of the Paris Agreement, called "Internationally Transferred Mitigation Outcomes" (ITMOs) in the case of Art. 6.2 and "Art. 6.4 Emission Reductions" (A6.4ER) in the case of Art. 6.4 (see Chapter 4 in detail). In a very limited volume, Tranche A of the FCPF's Carbon Fund made it possible for companies to use the achieved emission reductions and removals for compliance reasons: unlike Tranche B, which allows for restricted use of emission reductions only, Tranche A enables "unrestricted use" and thus use for compliance purposes or for resale. At the national and subnational levels, Japan's JCM and California's Tropical Forest Standard recognise emission reductions and removals from REDD+ in developing countries as offsets for companies in their respective jurisdictions (though the TFS is not yet operational). Finally, a significant amount of international private finance flows into results-based REDD+ activities through the voluntary carbon markets.

For **domestic REDD+ finance**, results-based payments are still rare. An exception is a carbon tax introduced in Colombia which provides the option to use (REDD+) offsets. We will not systematically assess this mechanism but mention it in this section for the sake of completeness. Under the mechanism, REDD+ offsets and other offsets are a means for the taxed companies (producers and importers of fossil fuels) to reduce their tax burden up to 100% (Law 1819 from 2016, Decree 926 from 2017). The offsets are generated in projects which are situated within Colombia and implemented after 2010. The projects need to comply either with the Clean Development Mechanism or with methodologies 'developed by certification programs or carbon standards that have been either publicly consulted and verified by a third party appropriately accredited or issued by the UNFCCC, or recognized by the national government through a National Normalization Body, or meet the requirements for the registration of initiatives established by the REDD+ registry' (Carbon Trust et al. 2018, p. 6). Emissions reductions or removals must be cancelled in the carbon market standard before being issued in the National Emissions Register (ibid).

The source of finance with relevance to the selected mechanisms is summarised in Table 11.

Table 11: REDD+ financing mechanisms selected for analysis

Source of finance	Channel	REDD+ finance mechanism
REDD+ country governments	National budgets, domestic climate trust funds etc.	▸ Colombia's carbon tax with option to use (REDD+) offsets
Industrialised country governments	Multilateral fund	▸ GCF Pilot Programme for REDD+ RBP ▸ FCPF Carbon Fund (Tranche B) ▸ BioCarbon Fund ISFL (Tranche 3)
	Multi-/ bilateral donor programme	▸ Agreements of Norway with Brazil ▸ Agreement of Norway, Germany & UK with Peru ▸ REM Programme btw. Norway, Germany, UK & Colombia ▸ Agreement of CAFI (Norway) with Gabon
	Carbon market (compliance)	▸ Art. 6 mechanisms under Paris Agreement
Private sector & non-profit sector		▸ Art. 6 mechanisms under Paris Agreement ▸ CORSIA (drawing on, inter alia, JNR and ART/TREES) ▸ FCPF Carbon Fund (Tranche A) ▸ Japan's JCM ▸ California TFS
	Carbon market (voluntary)	▸ Plan Vivo (REDD+ projects) ▸ VCS (REDD+ projects) ▸ JNR ▸ ART/TREES
	Finance for production systems and conservation	-

Source: own compilation, Oeko-Institut.

3.2.2.2 Recipient of finance

Table 12 lists (current and future) recipient countries, i.e. countries in which REDD+ activities are located and that (will) receive RBP/TBP. According to World Bank income groups, the countries can be differentiated into Low Income Countries/Heavily Indebted Poor Countries (LIC/HIPC), Lower Middle Income Countries (LMIC), Upper Middle Income Countries (UMIC), High Income Countries (HIC).

Table 12: Geographical scope of REDD+ finance mechanisms: envisaged recipients of RBP/TBP

Mechanism	Countries or activities selected to receive REDD+ RBP/TBP are located in…	Countries' income groups
GCF, Pilot Programme for REDD+ RBP [77]	▸ Asia & Pacific: Indonesia ▸ Latin America: Brazil, Chile, Colombia, Ecuador, Paraguay[78]	1 LMIC 4 UMIC 1 HIC
FCPF (Carbon Fund) (FCPF 2021b)	▸ Africa: Côte D'Ivoire, Democratic Republic of Congo, Ghana, Madagascar, Mozambique, Republic of Congo ▸ Asia & Pacific: Fiji, Indonesia, Lao PDR, Nepal, Vietnam ▸ Latin America: Chile, Costa Rica, Dominican Republic, Guatemala, Mexico, Nicaragua, Peru	4 LIC/HIPC 7 LMIC 5 UMIC 1 HIC
BioCF-ISFL (Tranche 3) [79]	▸ Latin America: Colombia, Mexico ▸ Africa: Ethiopia, Zambia ▸ Asia & Pacific: Indonesia	3 LMIC/HIPC 2 UMIC
Agreements between Norway and partly Germany/UK with Brazil, Colombia, Gabon & Peru [80]	▸ Africa: Gabon ▸ Latin America: Brazil, Colombia, Peru	4 UMIC
Japan's JCM [81]	▸ Asia & Pacific: Indonesia, Lao PDR	2 LMIC
California TFS [82]	▸ No registered programmes yet	-
ART/TREES [83]	▸ No registered programmes yet	-
Plan Vivo [84]	▸ Africa: Ethiopia, Kenya, Madagascar, Tanzania, Uganda ▸ Asia & Pacific: India, Indonesia, Sri Lanka, Timor-Leste, Vietnam ▸ Latin America: Bolivia, Mexico, Nicaragua	3 LIC/HIPC 10 LMIC
VCS [85]	▸ Africa: DRC, Guinea-Bissau, Malawi, Mozambique, Sierra Leone, Tanzania ▸ Asia & Pacific: Cambodia, Indonesia, Papua New Guinea ▸ Latin America: Belize, Bolivia, Brazil, Chile, Colombia, Paraguay, Peru	5 LIC/HIPC 6 LMIC 4 UMIC 1 HIC

[77] https://www.greenclimate.fund/redd

[78] funding proposals approved as of September 2020

[79] https://ndcpartnership.org/funding-and-initiatives-navigator/biocarbon-fund-initiative-sustainable-forest-landscapes-isfl

[80] https://www.nicfi.no/partner-countries/

[81] https://gec.jp/jcm/?p_type%5B%5D=redd&s=&operator=in#label_result

[82] https://ww2.arb.ca.gov/our-work/programs/california-tropical-forest-standard

[83] https://art.apx.com/myModule/rpt/myrpt.asp?r=111

[84] https://www.planvivo.org/Pages/Category/projects?Take=13

[85] Registered projects using methodology VM006 (Carbon Accounting for Mosaic and Landscape-scale REDD Projects), VM007 (REDD+ Methodology Framework), cf. https://registry.verra.org/app/search/VCS/Registered

Mechanism	Countries or activities selected to receive REDD+ RBP/TBP are located in…	Countries' income groups
Verra JNR [86]	▸ No registered programmes yet	-

Source: own compilation, Oeko-Institut.

3.2.2.3 Finance pledged and transacted

Information on the amount of finance **pledged** for results- or transfer-based REDD+ payments is only available for multilateral funds or bi-/multilateral REDD+ partnerships. Crediting mechanisms do not pledge finance; the finance that can (in future) be achieved through the mechanisms results (roughly[87]) from the amount of verified emission reductions and removals and the price paid by credit buyers. Similarly, data on finance transacted (or disbursed, respectively) is better available for multilateral funds and bi-/multilateral REDD+ partnerships than for crediting mechanisms.

The largest RBF **pledges** have been made by Norway in its agreement with Brazil, followed by the FCPF Carbon Fund and the GCF's Pilot Programme for REDD+ (see Table 13). The highest amount of **payments** (disbursements) has been made in the context of the Norway-Brazil agreement and the GCF Pilot Programme. According to our analysis, under the REDD+ finance mechanisms considered, a **total** of USD 3.7 billion has been pledged since 2009, while USD 1.4 billion have been disbursed. This is due to two factors: in most cases, the emission reductions or removals have not yet accrued or have not yet been verified but probably will be in the future. In some cases, the respective emission reductions or removals could not be achieved and the pledged finance therefore lapsed. The latter was the case for Colombia in 2017, a year in which the country failed to reduce deforestation rates below the Forest Reference Emission Levels (Vivid Economics 2021, p. 34). Peru did not receive any payments under the first partnership agreement with Norway and Germany (2014-2020),[88] failing to reduce deforestation and forest degradation sufficiently, too.

Looking at another source of information which cuts across diverse funding sources, the Lima REDD+ Information Hub registers seven countries as having received results-based finance for REDD+[89]: Argentina (from the GCF), Brazil (from the governments of Norway, Germany, UK and from Petróleo Brasileiro S.A.), Chile (GCF), Colombia (REM Programme, GCF), Costa Rica (GCF), Ecuador (GCF), Indonesia (GCF).

In the case of the **crediting mechanisms** that help financing REDD+ activities, there is no information available on the amount of finance actually transferred (on the primary or secondary market). Usually, projects or programmes do not report externally on credit prices and hence on revenues.[90] An overview of Ecosystem Marketplace on market volume and average credit prices by forest carbon market standard is dated (2016) and does not differentiate between types of forest carbon credits (Ecosystem Marketplace 2017, p. 29). It is thus not

[86] https://registry.verra.org/app/search/JNR/All%20Projects

[87] For more details, see Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**.

[88] Personal communication with advisor in Norwegian Ministry of Climate and Environment in June 2021.

[89] Out of altogether eleven countries that have reported emission reductions and removals ("results") through REDD+: Argentina, Brazil, Cambodia, Chile, Colombia, Costa Rica, Ecuador, Indonesia, Malaysia, Papua New Guinea and Paraguay, cf. https://redd.unfccc.int/info-hub.html(accessed 28/01/2022).

[90] One example is Japan's JCM: While the amount of expected emission reductions is known for the respective projects/programmes, the price that will be paid for respective credits is not: „Currently, JCM credits are mainly acquired through projects supported by governmental financing programmes, and there are no statistics available to show the price level of JCM credits" (https://www.carbon-markets.go.jp/eng/faq/jcm.html#credits). Another example is Plan Vivo projects: while transaction volumes per project are externally reported, prices and revenues are subject to internal reporting only; see, for instance, https://www.planvivo.org/Handlers/Download.ashx?IDMF=b320dcea-1fea-40b3-83fb-2f400efce93d

possible to draw conclusions on monetary transfers related to REDD+ activities, in particular not to the individual crediting mechanisms/ standards. More recent analyses of the voluntary carbon markets classify "forestry and land use" projects as the biggest project category both in terms of volumes and prices achieved. Forestry and land use projects had a market volume of USD 164 million in 2019 and reached 476 million in the first three quarters of 2021 (calculation based on ibid, p. 11). While the exact share of REDD+ projects implemented in developing countries within this project category is not clear, the authors point to a "massive increase in REDD+ volumes (avoided planned and avoided unplanned deforestation) as well as Afforestation/Reforestation" in the period 2020-2021 (Ecosystem Marketplace 2021).

Table 13: Pledges and disbursements

Mechanism	Pledges or signed RBP / TBP agreements	Disbursements for RBP / TBP by Nov. 2021
GCF, Pilot Programme for REDD+ RBP	USD 500 million [91] (2017-2022)	USD 387 million [92]
FCPF (Carbon Fund)	USD 670 million [93] (2017-2025)	USD 6.4 million [94]
BioCarbon Fund (ISFL), Tranche 3	USD 222 million [95] (2013-2030)	USD 0
Agreement of Norway with Brazil (2009, 2015)	up to NOK 1,000 million (ca. USD 116.3 million) annually (2009-2015/2015-2020), depending on results [96] (i.e. potential total of USD 1,400 million)	USD 1,000 million (2008-2017, remaining money frozen in mid-2019[97])
Agreement of Norway, Germany & UK with Peru (2014, 2021)	2014 agreement: USD 250 million from Norway up until end of 2020, depending on results 98 2021 agreement: NOK 375 million annually from 2022-2025 (i.e. potential total of NOK 1,500 million / USD 164.63 million), depending on results 99	2014 agreement: USD 0 (due to lacking emission reductions) [100] 2021 agreement: USD 0 [101]

[91] GCF (2017c).

[92] own calculations based on https://www.greenclimate.fund/redd

[93] FCPF (2021a).

[94] https://www.worldbank.org/en/news/press-release/2021/10/15/mozambique-becomes-first-country-to-receive-emission-reductions-payments-from-forest-carbon-partnership-facility

[95] BioCF ISFL (2021d).

[96] Brazil und Norway (2015); Norway (2021), https://www.nicfi.no/partner-countries/brazil/

[97] Due to unilateral changes in the governance structure of the Amazon Fund by the then-new Brazilian administration, which Norway perceived as breach of the partnership agreement; cf. https://www.nicfi.no/partner-countries/brazil/

[98] https://www.nicfi.no/partner-countries/Peru/

[99] Peru et al. (2021).

[100] https://news.mongabay.com/2021/06/us-uk-join-norway-and-germany-in-effort-to-protect-Perús-rainforests/; https://redd-monitor.org/2021/06/08/Perús-new-redd-deal-with-norway-germany-the-uk-and-the-usa-much-ado-about-nothing/

[101] In 2021, payments for *achieved policy milestones* by the Peruvian government in the period 2018-2020 (not yet for achieved emission reductions) amounts to USD 10 million, cf. https://www.bmu.de/en/pressrelease/Peru-reaching-key-milestones-in-rainforest-protection

Mechanism	Pledges or signed RBP / TBP agreements	Disbursements for RBP / TBP by Nov. 2021
REM Programme Norway, Germany & UK with Colombia (2015, 2019)	2015 agreement: up to USD 113 million, depending on results 102 2019 agreement: total of up to USD 260 million until 2025, starting from 2021 103	2015 agreement: USD 63.6 million (for 2013- 2016) [104] 2019 agreement: USD 0 [105]
Agreement of CAFI (Norway) with Gabon (2017, 2019)	USD 150 million (2016-2025) [106]	USD 17 million (2019) [107]
Total	**USD 3.7 billion (2009-2030)**	**USD 1.4 billion (2009-2030)**

Source: own compilation, Oeko-Institut.

3.2.2.4 Caps on payments

The core idea of RBF approaches is to reward past (verified) emission reductions and removals. In line with this, a number of REDD+ finance mechanisms pay verified emission reductions or removals, multiplied by the unit price for REDD+ emission reductions and removals. The respective mechanisms include all crediting mechanisms analysed here (Japan's JCM, California TFS, ART/TREES, Plan Vivo, VCS, JNR).

In the case of multilateral funds and donor programmes, not all emission reductions or removals that are verified under the funds/programmes are paid for. In most cases, payments are capped on financial grounds. Such caps on payments can be on overall **programme budgets** or on individual **payments (per year, per country)**.

Examples include the GCF REDD+ Pilot Programme for REDD+ RBP (with a budget capped at USD 500 million) and the FCPF Carbon Fund (budget cap: USD 670 million). The GCF Pilot Programme also caps the payments per country at 30% of the programme budget (GCF 2017, Section 3.4). Under the CAFI agreement with Gabon, payments are capped at USD 150 million for results delivered between 2016 and 2025 (Gabon und CAFI 2019, Section 5). The agreement between Norway, Germany, UK and Colombia limits payments from Norway to USD 50 million per year until 2025 and subjects them to annual parliamentary approvals (Colombia und Norway 2018). Similarly, under the 2008 Norway-Brazil Agreement, the share of compensated emission reductions fluctuated over the years due to differences in the available funds.[108] As a result, between 2009 and 2018, Norway did not pay all verified emission reductions from reduced deforestation verified for the period, but only ca. 5% of emission reductions or removals (5 billion tons of CO_2).[109]

[102] Colombia et al. (2015a).

[103] https://www.bmu.de/en/pressrelease/colombia-germany-norway-and-the-uk-step-up-efforts-to-reduce-deforestation-in-colombia

[104] Vivid Economics (2021).

[105] In 2021, payments for *achieved policy milestones* by the Colombian government in 2020 (not yet for achieved emission reductions) will likely reach USD 33.5 million (https://www.nicfi.no/current/colombia-attracts-over-usd-30-million-for-stepping-up-fight-against-deforestation/).

[106] Gabon und CAFI (2017), (2019).

[107] https://www.cafi.org/node/770

[108] Communication with NICFI from February 22, 2022.

[109] https://www.nicfi.no/partner-countries/brazil/

Adjusting the payment for verified emission reductions or removals to available funds has led analysts to conclude that 'The agreement between Brazil and Norway is a mix between what might be termed 'receipt-based' and 'results-based' agreement. The donor agreement … states that disbursements are upon 'written requests from BNDES based on the financial needs of the fund and on the amount of emissions reductions attested by the technical committee' (Article 5.1). This statement can be interpreted as disbursements being whichever is lower: the actual spending or the results" (Angelsen 2017: 253-254).

Table 14: Financial caps on payments

Caps on payments:	Mechanism:
No caps	▸ Japan JCM ▸ California TFS ▸ ART/TREES ▸ Plan Vivo ▸ VCS ▸ JNR
Caps on programme budgets or payments	▸ GCF Pilot Programme for REDD+ RBP ▸ FCPF (Carbon Fund) ▸ Agreement of Norway with Brazil ▸ Agreement of Norway, Germany, UK (as of 2021) and Peru ▸ REM Programme Norway, Germany & UK with Colombia ▸ Agreement of CAFI (Norway) with Gabon

Source: own compilation, Oeko-Institut.

3.2.2.5 Payment for results or for transfer of results: RBP or TBP

While all of the selected finance mechanisms are RBF approaches, we differentiate between RBP (where the verified emission reductions and removals funded by an actor are not counted against the NDC or climate targets of that actor but remain with the provider) and TBP (where emission reductions and removals are counted against the NDC or climate targets of the buyer and transferred away from the provider).

From among the multilateral funds and bi-/multilateral donor programmes, the FCPF's Carbon Fund and the BioCF ISFL provide **transfer-based payments**. In the case of the Carbon Fund, Section 5.02 of the Emission Reduction Payment Agreements (ERPA) that are concluded between a REDD+ country and the Carbon Fund Trustee (the World Bank) governs the transfer of emission reductions. It requires "the transfer of all rights, titles and interests attached to such transferred ERs". These may be used by Carbon Fund participants (i.e. donor countries). A REDD+ country ("seller") "may only use or claim the reduced tonnes of CO_2e (underlying ERs contracted and transferred under the ERPA) for compliance with domestic commitments if and in so far as the Trustee, following consultations with Carbon Fund participants, has provided its express prior written consent"[110] (see also IBRD 2014b, Section 5.02). This means that while the transfer of legal titles to emission reductions and removals (and thus TBP) is the standard scenario, it is possible that REDD+ countries keep the legal titles and count the emission reductions against their NDC, if the donor countries agree. The payment would then constitute RBP.

[110] https://www.forestcarbonpartnership.org/erpa-general-conditions

In case of the BioCF ISFL, there are two Emission Reductions Use Modalities,[111] the first of which provides RPB and the second one TBP. Under ER Use Modality 1, the ISFL makes payments for verified emission reductions, but the emission reduction units are transferred back to the REDD+ country ("ISFL program country") which may use them toward its NDC (hence, they are RBP). Under ER Use Modality 2, the verified emission reductions purchased by the ISFL are forwarded to the purchasing countries ("ISFL Contributors") who retain ownership of them (hence, the payments are TBP). As the REDD+ country cannot use the emission reductions to achieve its NDC, it may demand higher prices for these emission reductions[112].

TBP are also foreseen in Japan's Joint Crediting Mechanism (JCM) where both Japan and the partner country can use part of the verified emission reductions and removals from a REDD+ programme to achieve their NDCs (Japan und Lao PDR; Japan und Indonesia 2013). JCM's rules of implementation, for example, lay out that the JCM aims "[t]o appropriately evaluate contributions to greenhouse gas … emission reductions or removals from Japan in a quantitative manner, through mitigation actions implemented in the Lao People's Democratic Republic and use those emission reductions or removals to achieve emission reduction targets of the countries involved" (GoJ n.d.). Also, "Both sides mutually recognize that verified reductions or removals from the mitigation projects under the JCM can be used as a part of their own internationally pledged greenhouse gases mitigation efforts" (Japan und Lao PDR).

In addition, carbon market standards may provide TBP. For instance, emission reductions and removals under the ART/TREES, VCS and JNR standards can be transferred between countries to meet Paris Agreement NDCs or climate targets within CORSIA.[113] To avoid double claiming of emission reductions or removals against other reduction targets, the ART/TREES standard includes the possibility to label TREES credits for which a corresponding adjustment has been applied (ART 2020, Section 13.3). The VCS stipulates that "VCUs used in the context of Paris Agreement Article 6 mechanisms and international Paris-related programs such as CORSIA shall meet any and all relevant requirements established under such mechanisms and programs. This includes, in particular, any requirements relating to double counting and corresponding adjustments" (VCS 2021; Section 3.20.1). The JNR framework is said to be "rigorous enough to meet the needs of market-based mechanisms around the world, such as [CORSIA] and is also aligned with the Paris Agreement, as such able to serve multiple markets." [114] The Plan Vivo standard 2013 contains no provisions on the transfer of ERR titles (Plan Vivo 2013). However, the standard is presently under revision, with the Plan Vivo Foundation focussing on "[e]xploring the ways in which the Standard can continue to develop and adapt to fit the evolving context of the voluntary carbon market (VCM) and the emerging landscape of Nationally Determined Contributions (NDCs)" (Plan Vivo 2021a, p. 5). California's TFS requires the transfer of jurisdictional sector-based offset credits and a proof of their retirement by the implementing jurisdiction (i.e. a REDD+ country or region within such a country). Companies can use the credits to meet their targets under an emissions trading scheme that utilises the TFS (potentially in the future, California's Cap-and-Trade Program).

The other REDD+ finance mechanisms we analysed provide **results-based payments** with no transfer of the emission reduction title. Some of them explicitly state so in their guidance documents. For instance, the GCF REDD+ Pilot Programme states that "[o]wnership of the emissions reductions paid for by the GCF will not be transferred to the GCF. Payments should be

[111] https://www.biocarbonfund-isfl.org/what-are-erpa/financing-modalities-under-isfl

[112] https://www.biocarbonfund-isfl.org/what-are-erpa/financing-modalities-under-isfl

[113] https://www.artredd.org/faq/

[114] https://verra.org/project/jurisdictional-and-nested-redd-framework/

recorded in the UNFCCC web portal and recipient countries' national counterpart, and corresponding results will no longer be eligible for RBPs under the GCF or in any other arrangement. Countries can consider, at their own discretion, to use the emission reductions towards achievement of their NDCs" (GCF 2017c, pp. 4–5).

All carbon crediting mechanisms also allow for RBP. They are only now preparing for implementing the Article 6 provisions.

Other mechanisms do not explicitly exclude the transfer of the emission reduction and removal titles. However, either statements on the national use of the results for the REDD+ countries' NDCs or the absence of provisions governing a transfer of ERR titles indicate that no such transfer is foreseen. Cases in point are the agreements between Norway and Brazil (which is explicitly titled „donation agreement"), between Norway/Germany/UK and Peru in the context of the REM Programme,[115] and the Norwegian-financed agreement between CAFI and Gabon.[116] The same holds for the 2013 version of the Plan Vivo Standard, but as stated above, its update will likely change this.

Table 15: Mechanisms allowing for results- and/or transfer-based payments

Mechanism	RBP	TBP
GCF, Pilot Programme for REDD+ RBP	X	
FCPF (Carbon Fund)	(X)	X
BioCF-ISFL (ER Use Modality 1 vs. ER Use Modality 2)	X	X
Agreement of Norway with Brazil (2009, 2015)	X	
Agreement of Norway, Germany & UK with Peru (2021)	X	
REM Programme Norway, Germany & UK with Colombia (2019)	X	
Agreement of CAFI (Norway) with Gabon (2019)	X	
Japan's JCM		X
California TFS	X	X
ART/TREES	X	X
Plan Vivo	X	
VCS	X	X*
JNR	X	X*

Source: own compilation, Oeko-Institut. * Rules for implementing Article 6 provisions for TBP are under consideration.

3.2.2.6 Prices and price setting

How is the unit price per ton of reduced or removed CO_{2e} emissions determined, and what specific prices have been set under the different financing mechanisms?

For price setting, we can distinguish the following approaches:

[115] In the Joint Declaration of Inten (JDI), the partners "[r]ecognize the contributions of the JDI on REDD + for the fulfillment of the NDC of Peru" Peru et al. (2021); see also Peru et al. (2014).

[116] The agreement allows that "Gabon may exercise this offer or sell to another buyer offering a higher price" Gabon und CAFI (2019).

- **(Largely) Unilateral price setting** by multilateral funds and donors: In the context of multilateral funds and bi-/multilateral REDD+ partnerships, we find examples for a (largely) unilateral price setting. The caveat ('largely') is made because often there is at least some influence by REDD+ countries in the price setting process. In the GCF REDD+ pilot programme, the GCF Board (which includes REDD+ countries) determined the price (USD 5/tCO_{2e}) which then applied automatically to all funding proposals (GCF 2017c). This means that recipients could not influence the price in the funding proposal stage, though generally some REDD+ countries formed part of the GCF Board and were involved in the price setting process in this capacity. In the REDD+ agreement concluded between Norway and Brazil prices were primarily defined by Norway; the prices varied between years and depended both on the amount of available funding and the amount of verified emission reductions submitted.[117] Under the Agreement of Norway, Germany, UK (as of 2021) and Peru, a floor price of USD 10/tCO_{2e} was defined (Peru et al. 2021, p. 4), but no payments have yet been made.[118] Under the REM Programme between Norway, Germany & UK with Colombia, the price for the German and UK contributions has been set at USD 5 (Colombia et al. 2015b, p. 10), while Norway pays USD 10 (up to NOK 400 million per year until 2025) (Colombia et al. 2019, p. 6). Under the Norway-financed Agreement of CAFI with Gabon, a general floor price of USD 5 has been set,[119] but USD 10 will be paid for results certified by ART[120] (Gabon und CAFI 2019).
- **Bilateral price negotiations** between countries and/ or between countries and multilateral funds: Unit prices per ton of CO_{2e} reduced/removed can be bilaterally negotiated between the buying/financing actor and the seller. This is the case for the FCPC Carbon Fund where the unit price per payable emission reduction and removals ('Contract ER') is negotiated between the REDD+ country ('programme entity') and the FCPF Trustee (World Bank) in an Emission Reductions Payment Agreement, in accordance with the 'Pricing Approach for the Carbon Fund of the FCPF' adopted by the FCPF's Participants Committee (Resolution PC/12/2012/3; see also FCPF 2012a). The FCPF's Pricing Approach sets guiding principles such as that pricing should be fair, flexible and simple; that the ERPA price 'should be a combination of fixed and floating portions, where feasible'. It also mentions that pricing can take non-carbon benefits into consideration (ibid). De facto, FCPF Carbon Fund ERPAs set unit prices for emission reductions and removals at USD$ 5/tCO_{2e}. It is likely that the BioCF will also be based on bilateral price negotiations. To date, no Emission Reductions Purchase Agreements have yet been drafted under BioCF (ISFL) Tranche 3.[121]
- **Market-based pricing**: In the case of carbon market standards (here: California TFS, ART/TREES, Plan Vivo, VCS, JNR), emission reductions and removals, once verified, are issued and sold as REDD+ credits on (compliance or voluntary) carbon markets. Here, the interplay of demand and supply determines the price for primary transactions (purchases from the project) and secondary transactions (purchases from resellers). Primary transactions can resemble bilateral negotiations (see above), differing from the cases described in the previous section above all in the nature of the involved actors (private

[117] Communication with NICFI from February 22, 2022.

[118] Communication with NICFI from February 22, 2022.

[119] For up to 75 million USD for results achieved in 2016-2020 and up to an additional 75 million USD for results achieved in 2021-25.

[120] Provided that the overall financial commitment from CAFI remains at up to USD 150 million for the 2016-25 period.

[121] The ISFL Annual Report 2021 mentions that „the assortment of legal documentation for Emission Reductions Purchase Agreements (ERPAs) was finalized, which lays the foundation for the first ERPA negotiations expected to commence in the coming financial year" BioCF ISFL (2021d), p. 8.

rather than governmental). Under the Plan Vivo standard, for instance, the price for credits in primary transactions is set by each project in negotiation with potential buyers. The standard's manual points out that prices should recognise, on the one hand, buyers' willingness to pay, and on the other, project costs, local income levels and the expectations by communities(Plan Vivo 2016, p. 26). Information on the prices of REDD+ credits traded in carbon markets is difficult to obtain.While the VCS's 'Verified Carbon Units' are estimated to have been traded at USD 3.76 during 2020 and 'Plan Vivo Certificates' at USD 8.49 (Ecosystem Marketplace 2021, p. 19), this information is not specific to the standards' REDD+ credits. Beyond price differences between REDD+ standards, there are price differences between REDD+ project types. For instance, in 2016 REDD credits on voluntary markets for avoided unplanned deforestation sold at an average of USD 4.2, REDD credits for avoided planned deforestation at USD 4.6, and afforestation/reforestation credits at USD 7.5 (Ecosystem Marketplace 2017, p. 31). For some of the mechanisms (California TFS, ART/TREES) no credits have yet been issued and traded, so no prices exist.

Table 16 summarises the main information, including the prices per tCO_2e.

Table 16: Price setting and prices for REDD+ emission reductions or removals

Mechanism	Price setting	Price per tCO_{2e}
GCF, Pilot Programme for REDD+ RBP	(Largely) Unilateral price setting	USD 5
FCPF (Carbon Fund)	Bilateral price negotiations	USD 5 [122]
BioCarbon Fund (ISFL), Tranche 3	No information found	[No prices set yet]
Agreement of Norway with Brazil	(Largely) Unilateral price setting	USD 0.06 - 3.14 [123]
Agreement of Norway, Germany, UK (as of 2021) and Peru	(Largely) Unilateral price setting	USD 10 (floor price)
REM Programme Norway, Germany & UK with Colombia	(Largely) Unilateral price setting	USD 5 from Germany & UK USD 10 from Norway (up to NOK 400 million per year until 2025)
Agreement of CAFI (Norway) with Gabon	(Largely) Unilateral price setting	USD 5 (floor price) USD 10 (floor price) for results certified by ART
Japan's JCM	No information found	No information found
California TFS	Market-based pricing	No trading yet
ART/TREES	Market-based pricing	No trading yet
Plan Vivo	Market-based pricing	No information found on price of Plan Vivo's REDD+ credits

[122] Unit price per transferred Contract ER as agreed in actual ERPAs.

[123] Own calculations (Oeko-Institute) over the period 2007-2018; this is below the price of 5 US$/t CO_{2e} which Brazil expected to meet Amazon Fund (2013), Section 5.3.

Mechanism	Price setting	Price per tCO_{2e}
VCS	Market-based pricing	No information found on price of VCS' REDD+ credits
JNR	Market-based pricing	No information found

Source: own compilation, Oeko-Institut.

3.2.2.7 Means to overcome investment gaps

In the following, we assess whether and how RBP finance mechanisms include means to overcome forest countries' investment gaps.

- A number of the REDD+ financing mechanisms – notably, multilateral funds and bi-/ multilateral REDD+ partnerships – include **finance for Phase 1 and/or 2 of REDD+**. Partly, this is through self-standing financing tranches within the same mechanism or readiness funds with which the mechanism directly partners. This is the case for the GCF (via the GCF's REDD+ Readiness and Preparatory Support Programme, Project Preparation Facility and regular project cycle funding), FCPF (via the Readiness Fund) and the BioCarbon Fund ISFL Tranche 3 (via the BioCarbon Fund*plus*). Bi- and multilateral REDD+ partnerships tend to have specific provisions on finance for pre-RBP in the agreements, though sometimes it does not become clear whether these activities are subsumed under Phase 1 or 2. Respective agreements include those between Norway and Brazil (Art. IV No. 1, Norway und Brazil 2009; specifically the inital grant of 700,000,000 NOKs), Norway, UK, Germany and Colombia (Modality 1, cf. Colombia et al. 2015b), Norway and Gabon (with the agreement Gabon und CAFI 2017 covering Phase 2 only) as well as Norway, Germany and Peru (Phases 1 and 2 in Peru et al. 2021 and Peru et al. 2014). In the case of Japan's JCM, the agreements also hint that support for early-phase activities is included: 'Both sides [Japan & REDD+ partner country] work in close cooperation to facilitate financial, technological and capacity building support necessary for the implementation of the JCM' (Japan und Lao PDR, § 8; Japan und Indonesia 2013, § 10). In case of the GCF and the REM Programme Norway, Germany & UK with Colombia , the programme documents explicitly mention that implementation of REDD+ phases can overlap (GCF 2017a, p. 7; Colombia et al. 2015b, p. 5).
- **Advance payments** can be another means to overcome investment gaps. Notably in the case of the FCPF's Carbon Fund, the Emission Reductions Payment Agreement allows for „advance expense payments" („for any fees, charges, costs … in relation to registration, issuance and forwarding of Contract ERs or Additional ERs or the ER Transfer"), „upfront advance payments" as well as "interim advance payments" (conditional upon a letter of credit, fulfilment of "conditions of effectiveness" as well as potential additional conditions, such as milestones for Upfront Advance Payment instalments), "ER advance payment" (for Contract ERs and/or Additional ERs generated by the ER Program during a Reporting Period). The Trustee (World Bank) is entitled to deduct any advance payment(s) made to the Program Entity from time to time from the periodic payments (FCPF 2014, Section 4.04).
- **Ex ante issuance**: A third means to overcome investment gaps is used by Plan Vivo: its certificates may be issued on an ex ante basis for each project intervention, according to the crediting system selected by the project at the time of validation: "… ex-ante credits are issued once participants have entered an agreement to implement a plan vivo and have met their first performance target(s), but before the climate services have actually been delivered. Most projects use one or the other method, but some use a combination of both, using ex-post for one activity and ex-ante for another. The choice as to which will be used by

a project will depend on the availability and terms of other funding streams and the type of intervention. Ex-ante credit provision is the only way to successfully fund some projects, but the increased uncertainty will lead to more conservative estimates of emission reductions, and thus a lower number of credits being generated, compared to ex-post. The choice of crediting type will affect the project period" (Plan Vivo 2017, p. 6; see also p. 23).

Some of the analysed mechanisms provide **no specific means to overcome investment gaps**. This includes most carbon market standards (California TFS, ART/TREES, VCS, JNR).

Table 17: REDD+ phases financed and means to overcome investment gaps

Mechanism	Financing of REDD+ phases beyond Phase 3	Advance payments	Ex ante issuance of credits
GCF, Pilot Programme for REDD+ RBP	1, 2	-	-
FCPF (Carbon Fund)	1, 2	x	-
BioCarbon Fund (ISFL), Tranche 3	1, 2	-	-
Agreement of Norway with Brazil	[1, 2]	-	-
Agreement of Norway, Germany, UK (as of 2021) and Peru	1, 2	-	-
REM Programme Norway, Germany & UK with Colombia	2	-	-
Agreement of CAFI (Norway) with Gabon	2	-	-
Japan's JCM	[1, 2]	-	-
California TFS	-	-	-
ART/TREES	-	-	-
Plan Vivo	-	-	x
VCS	-	-	-
JNR	-	-	-

Source: own compilation, Oeko-Institut.

3.2.2.8 Timing of payments

When do REDD+ financing mechanisms disburse payments for emission reductions or removals?

In our sample, (1) payments can be disbursed *before the end* of the **eligibility/crediting period** under all REDD+ financing mechanisms. Generally, this presupposes (a) an independent and *ex post* verification of emission reductions or removals and, in the case of crediting mechanisms, the issuance of credits. Only one mechanism (b) allows for payments after credits have been issued on an *ex ante* basis. None of the mechanisms stipulates that (2) payments can only be made at the end of the eligibility/crediting period. Potential risks resulting from reversals that might 'invalidate' intermediate payments already disbursed are remedied by buffer pools in some of the mechanisms (see Chapter 3.1.2.3).

Differences occur with regard to provisions for the **time periods** in which verifications can or have to be carried out and payments are scheduled. Some allow annual or biannual verification (and payments), others set limits in the sense of "at least every 4-6 years". Some of the mechanisms do not specify these time periods but leave their definition to participants.

Typically, there is a certain **time lag** between verification of emission reductions or removals and the payment (or disbursal) in which the governing body of the financing mechanism needs to approve the disbursement or the verification results, so that credits can be issued and sold. In some cases, intervening processes need to take place, such as receip of emission reductions in a buffer pool.

The above-described case (1a) constitutes the rule: payments are made after an independent and ex-post verification of emission reductions or removals and, in the case of crediting mechanisms, the issuance of credits. According to our analysis the periods for payments or for verification (and thus, implicitly, for payments) can either be pre-defined by the mechanism or can be without prior definition:

- **Pre-defined periodic payments**:
  - In the FCPF Carbon Fund, periodic payments are transferred to the recipient within thirty calendar days following completion of the emission reduction transfer **at the end of each reporting period**. While the length of reporting periods is not prescribed, the FCPF's Management Team recommends to align reporting years to calendar years (FCPF 2014, Section 5.02 and 5.03; 2018b).
  - For the BioCF ISFL (Tranche 3), periodic payments are made during each **'ERPA phase'** within thirty calendar days following a) receipt of a share of emission reductions in a buffer pool and b) subsequent transfer of the remaining emission reductions (BioCF ISFL 2021c, para 89-90). No information was found on the length of an ERPA phase.
  - In the case of most of the analysed crediting mechanisms, credits can be issued (and hence sold) periodically at the end of **verification periods**. The (minimum/maximum) length of the verification period varies though and in some cases we could not identify the relevant information (e.g. for Japan's Joint Crediting Mechanism, cf. GoJ n.d., Section O and for the VCS, cf. VCS 2022, Section 4.5). The California TFS enables **annual** verification (and hence payments) (CARB 2019, Chapter 8), ART/TREES **annual or biannual** verification (ART 2020, Section 14.1) and the JNR requires verification **at least every 4-6 years** for Scenario 2 and 3 (JNR 2021b, Section 3.14.3; 2021c, Section 3.13.3).
  - The REM programme with Colombia allows for **annual payments** (Colombia et al. 2015b, pp. 10–11).
- **Periodic payments without prior definition of the time period**:
  - The GCF Pilot Programme for REDD+ RBP does not explicitly specify verification periods but mentions that countries may submit results 'for any year' (i.e. annually). It stipulates that proposals will be approved **on a rolling basis**(GCF 2017c, para 12). Funds are transferred in a single disbursement after approval by the Board (GCF 2017c, para 8). Though it is not specified how long approval by the Board may take, by late 2021, over 75% of the allocation had been disbursed. [124]
  - The Norway-Brazil agreement disbursed funds upon **semi-annual**, or even more frequent requests related to the **financial needs** of the Amazon Fund and the amount of emission reductions approved by the Fund's Technical Committee (Norway und Brazil 2009, Art. VI).
  - The Agreement of CAFI (Norway) with Gabon allows for periodic payments based on documented financial needs, **availability of funds** and results of the independent verification of emission reductions (Gabon und CAFI 2019, pp. 9–10).
- For the Agreement of Norway, Germany, UK and Peru (Peru et al. 2021), the amount of or timing of verifications and hence of payments is not specified/clear.

[124] own calculations based on https://www.greenclimate.fund/redd

A special case (1b) is the Plan Vivo standard: It is the only mechanism in our sample that allows the issuance of credits not only on an ex post basis but also on an ex ante basis, "according to the crediting system selected by the project at the time of validation" (Plan Vivo 2017, p. 23).

Table 18: Timing of payments

Mechanism	Timing of payments
GCF, Pilot Programme for REDD+ RBP	Periodic payments after verification of emission reductions or removals (period not specified, annual submission of results possible) and subsequent approval by GCF Board
FCPF (Carbon Fund)	Periodic payments after verification (reporting period, annual period recommended), within thirty days following completion of the transfer of emission reductions
BioCarbon Fund (ISFL), Tranche 3	Periodic payments after verification (ERPA phase), within thirty days following receipt of a share of emission reductions in a buffer and subsequent transfer of remaining emission reductions.
Agreement of Norway with Brazil	Periodic payments (upon semi-annual, or more frequent, request) based on financial needs of recipient and verified emission reductions and removals
Agreement of Norway, Germany, UK and Peru	Payment after verification (no specific provisions as to frequency of verification) (Peru et al. 2021, p. 4)
REM Programme Norway, Germany & UK with Colombia	Periodic payments after verification (annually)(Colombia et al. 2015b, pp. 10–11)
Agreement of CAFI (Norway) with Gabon	Periodic payments based on financial needs of recipient, availability of funds and verified emission reductions and removals
Japan's JCM	Periodic payments (in the future): after verification and issuance of credits; periodic issuance possible after verification
California TFS	Periodic payments (in the future): after verification and issuance of credits; periodic issuance is possible annually after verification
ART/TREES	Periodic payments (in the future): after verification and issuance of credits; periodic issuance is possible bi-annually or annually after verification
Plan Vivo	After verification and issuance of credits; credits may be issued either on an ex ante or on an ex post basis
VCS	Periodic payments: after verification and issuance of credits; periodic issuance possible after verification
JNR	Periodic payments (in the future): after verification and issuance of credits; periodic issuance possible after verification (at least every 4–6 years, for Scenario 2 & 3)

Source: own, Oeko-Institut.

3.2.2.9 Monetary and non-monetary benefit-sharing

In this chapter, we analyse whether and how REDD+ finance mechanisms govern the distribution of monetary and non-monetary benefits from REDD+ activities.

Most of the mechanisms we screened include **mandatory benefit-sharing provisions**. One mechanism contains an **optional provision**. It should be noted that most mechanisms that do

not contain either mandatory or optional benefit-sharing provisions still involve requirements that are likely to affect the sharing of benefits more **implicitly**, for instance through requirements on stakeholder involvement and participation in REDD+ planning and implementation.

Mandatory benefit-sharing provisions are part of the following mechanisms: FCPF Carbon Fund, the BioCarbon Fund (ISFL), Japan's JCM, California's TFS, Plan Vivo, VCS and JNR. **Content**-wise, the provisions may refer to either of the following elements:

- **Requirement to share monetary and non-monetary benefits**: The CPF Carbon Fund requires the programme entity to share "a significant part" of monetary and non-monetary benefits with the beneficiaries (IBRD 2014b, Section 6.03). The Californian TFS stipulates, in accordance with the Principles and Criteria from the REDD+SES Version 2 (2012), that the benefits of the REDD+ programme are "shared equitably among all relevant rights holders and stakeholders" (CARB 2019, Ch. 3(c)(3) and Attachment 3). More indirectly, the GCF requires that 'activities proposed to be funded by the REDD+ RBP' are in line with the GCF's Gender Policy and its Indigenous Peoples' Policy (GCF 2017c, para 19). Plan Vivo specifies a concrete **benefit-sharing target** as part of the benefit-sharing mechanism: "Projects selling Plan Vivo Certificates should aim to deliver at least 60% of the proceeds of sales on average to communities. Where less than 60% is delivered projects must justify why this is not possible, why the benefits delivered to communities are fair and that they are able to effectively incentivise activities" (Plan Vivo 2013, Sections 8.11-8.12).

- **Requirement to develop a benefit-sharing plan** (FCPF Carbon Fund, cf. IBRD 2014b, Section 6.03) **or a benefit-sharing mechanism** (BioCarbon Fund ISFL, cf. BioCF ISFL 2021b, Section 3.6) by means of implementing the benefit-sharing requirement: Some mechanisms specify required content of a benefit-sharing plan (FCPF 2016b, Indicator 30.1) or elements the benefit-sharing mechanism needs to contain. The latter may include respect for customary rights to lands and territories (BioCF ISFL 2021b, Section 3.6) or "stakeholders' carbon rights, including rights to land, forests, forest resources" (JNR 2021a, Section 3.8.7; 2021b, Section 3.8.7). The California TFS also requires establishing "[t]ransparent, participatory, effective and efficient mechanisms … for equitable sharing of benefits" (CARB 2019, Ch. 3(c)(3) and Attachment 3).

- **Process and participation**: Several standards require that the distribution of REDD+ benefits are "carried out in a fair (…) and accountable manner" (e.g., ART 2020, Section 12.5.2). Various mechanisms also require the involvement of stakeholders in processes related to benefit-sharing, such as in the development of benefit-sharing plans (FCPF 2016b, Indicator 31.1) or in the assessment of benefits and costs (CARB 2019, Ch. 3(c)(3) and Attachment 3, Criterion 2.1). Some mechanisms specify specific groups that need to be involved, such as indigenous peoples (FCPF 2016b, Indicator 31.1; JNR 2021a; 2021b), women (CARB 2019, Ch. 3(c)(3) and Attachment 3, Criterion 2.1; JNR 2021a; 2021b) or marginalised and vulnerable people (CARB 2019; JNR 2021a; 2021b).

- **Transparency and monitoring requirements regarding benefit-sharing**: The FCPC Carbon Fund and the BioCarbon Fund ISFL, for instance, require that a benefit-sharing plan is made publicly available prior to ERPA signature (disclosure), that it needs to be formulated in understandable language and requires regular information on its implementation annexed to monitoring reports (FCPF 2016b, Indicator 30.1; BioCF ISFL 2019). While some standards do not contain benefit-sharing obligations as such (e.g. the JCM (Japan n.d., para 21) or ART/TREES) – they may require the disclosure of benefit-sharing

arrangements (Japan n.d., Annex II(b)(i)(e)),[125] ART 2020, Section 12.5.2) and a requirement to disclose in the initial TREES concept "any agreements in place or that will be in place for the transfer of ER rights or benefit allocation arrangements with landowners / resource rights holders that exist between the Participant and project owners, landowners and/or other collective rights holders (including indigenous peoples and other traditional communities)" (ART 2020, Annex A, 1.(6)).

An **optional benefit-sharing provision** is included in the GCF's Pilot Programme for REDD+ RBP which mentions that a description of how the proceeds from RBP will be used "may also include a benefit sharing plan" (GCF 2017c, para 26).

Implicit benefit-sharing provisions are contained in all mechanisms. They include, for instance, requirements to involve civil society stakeholders (sometimes indigenous or traditional groups are explicitly mentioned) in REDD+ planning and implementation, in funding mechanisms (e.g., Peru et al. 2014, p. 3; Colombia et al. 2015b, p. 6) or in the development of national plans directing the re-investment of the results-based payments (Gabon und CAFI 2019, p. 4). Another implicit mechanism is the requirement to prioritise public over private benefits in projects; to support socially disadvantaged groups (Amazon Fund 2017, mandated by Norway and Brazil, 2009); and carry out activities benefiting indigenous communities (e.g. Peru et al. 2014, pp. 5); or to strengthen indigenous peoples' self-governance of their territories (Colombia et al. 2015b, pp. 9–10).

[125] As part of the safeguard criterion "Establish transparent and effective project governance structures".

Table 19: Provisions on benefit-sharing

Mechanism	Provisions on benefit sharing [mandatory, optional, implicit]
GCF, Pilot Programme for REDD+ RBP	optional (benefit-sharing plan)
FCPF (Carbon Fund)	mandatory (benefit sharing, BSP, content of BSP, process of BSP development, disclosure of BSP, monitoring/reporting of BSP implementation)
BioCarbon Fund (ISFL), Tranche 3	mandatory (benefit sharing, BSP, content of BSP, process of BSP development, disclosure of BSP, monitoring/reporting of BSP implementation)
Agreement of Norway with Brazil	implicit
Agreement of Norway, Germany, UK (as of 2021) and Peru [126]	implicit
REM Programme Norway, Germany & UK with Colombia	implicit
Agreement of CAFI (Norway) with Gabon	implicit
Japan's JCM	mandatory (disclosure of benefit-sharing arrangements, including on fairness of procedures)
California TFS	mandatory (BS, participatory assessment of benefits, participatory mechanisms for equitable sharing of benefits)
ART/TREES	mandatory (disclosure of benefit-sharing arrangements and of fair and transparent process of benefit distribution)
Plan Vivo	mandatory (benefit-sharing mechanism and target)
VCS	implicit (grievance redress procedure)
JNR	mandatory (benefit-sharing mechanism, transparent and participatory process)

Source: own compilation, Oeko-Institut.

3.2.2.10 Use of proceeds

In the following, we examine whether the REDD+ financing mechanisms make any provisions with regard to the use of proceeds, beyond benefit sharing. We also check whether such provisions promote coherence with the goals and policies mentioned in the Cancún Safeguards.

- **No provisions on the use of proceeds:** The FCPF Carbon Fund, the BioCarbon Fund ISFL,[127] the Agreement of Norway, Germany, UK with Peru, the REM Programme with Colombia[128]

[126] http://www.fundoamazonia.gov.br/en/donations/ (cf. links to diplomas on donations); Norway und Brazil (2009); Colombia et al. (2015b); Gabon und CAFI (2017), (2019); Peru et al. (2014); Peru et al. (2021).

[127] However, an introductory remark in the ISFL Process Requirements highlights that payments from the ISFL are "to catalyze the development of a low carbon rural economy that generates livelihood opportunities and overall reductions in Emissions from the land" BioCF ISFL (2021c), Secion 1.

[128] The declaration Colombia et al. (2019) merely points out that (results-based) „[c]ontributions under modality 2 will pay for a portion of the third-party verified emission reductions and thus provide additional incentive for Colombia to achieve its goal of ending natural forest loss by 2030" (ibid, Section VI).

and all crediting mechanisms (Japan's JCM, California TFS, ART/TREES, Plan Vivo, VCS, JNR) do not specify how the proceeds from RBP or TBP should be used.

- **Provisions on the use of proceeds:** However, a number of the finance mechanisms analysed stipulate how the REDD+ payments should be used. The mechanisms include multilateral funds or bi-/multilateral agreements. Where such provisions exist, use of the results-based payments is tied to (re-)investment in one or more of the following thematic areas:
  - **REDD+ activities, respectively the recipient countries' REDD+ strategies**, as in the case of the GCF Pilot Programme for REDD+ RBP (GCF 2017c, Section 3.2) and the Norway-Brazil Agreement (Norway und Brazil 2009, Art. I.3);
  - **The recipient countries' low-carbon development plans** as in the case of the GCF Pilot Programme (GCF 2017c, Section 3.2);
  - **The recipient countries' NDCs** as in the GCF Pilot Programme (GCF 2017c, Section 3.2; without specification with regard to mitigation or adaptation components of the NDC) and the CAFI-Gabon Agreement (Gabon und CAFI 2019, Art. 6; limited to climate change mitigation aspects of the NDC).

  Comparing these guidelines on the use of proceeds with the policy coherence stipulations of the Cancún Safeguards, the REDD+ mechanisms support the achievement of the Climate Convention's GHG concentration goal (NDCs, low carbon development plans) (Decision 1/CP.16, Annex I, para 1 and 2; see also Chapter 3.1.2). To the extent that coherence with NDCs is not limited to mitigation, consistency with adaptation needs is promoted, too. Other goals and policies included in the Cancún Safeguards are not explicitly referenced in the provisions on the use of proceeds.

Table 20: Provisions on the use of proceeds from results-based payments

Use of proceeds from RBP		Mechanism
No provisions on use of proceeds		▸ FCPC (Carbon Fund) ▸ BioCarbon Fund ISFL ▸ Agreement of Norway, Germany, UK with Peru ▸ REM Programme Norway, Germany & UK with Colombia ▸ Japan JCM ▸ California TFS ▸ ART/TREES ▸ Plan Vivo ▸ VCS ▸ JNR
Provisions tying use of proceeds to…	… REDD+ activities/ strategies	▸ GCF Pilot Programme for REDD+ RBP ▸ Agreement of Norway with Brazil
	…Low carbon strategies	▸ GCF Pilot Programme for REDD+ RBP
	… NDCs	▸ GCF Pilot Programme for REDD+ RBP ▸ Agreement of CAFI (Norway) with Gabon

Source: own compilation, Oeko-Institut.

Procedurally, the provisions on the use of proceeds include some interesting aspects:

- The GCF Pilot Programme links its requirements regarding the use of proceeds to the scorecard approach it employs to determine the level of payment for results (GCF 2017c, Annex XII). Among others, the scorecard takes into account whether the recipient provides information on the contribution to the above-mentioned plans/strategies (REDD+, low-carbon development, NDC). It also assesses more widely the sustainable development potential of the funding proposal (high/medium/low). The respective assessments influence the amount of the payment.
- The CAFI-Gabon Agreement requires development of a "detailed national investment plan directing the reinvestment of the results-based payments" which needs not only to be agreed by the CAFI Executive Board but also to be jointly developed with all relevant stakeholders (Gabon und CAFI 2019, Art. 6).

3.2.3 Addressing non-permanence of emission reductions and removals

As presented in Chapter 3.1.2.3, three approaches to address non-permanence can be differentiated. One option for reducing non-permanence risks is through appropriate safeguards (Approach 1). Alternatively, risks can also be mitigated through accounting and compensation for reversals through provisions under financing mechanisms (Approach 2), notably through monitoring and compensation for reversals (Approach 2a), discounting (Approach 2b) or issuing temporary carbon credits (Approach 2c). Finally, accounting and compensation for reversals can be guaranteed by the recipient country (Approach 3).

Existing REDD+ financing mechanisms make use of these different approaches. In general, all carbon market standards analysed have provisions in place to address non-permanence. Also, with the exception of Japan's JCM, they all rely on a combination of measures to reduce the non-permanence risk of mitigation activities (Approach 1) and the establishment of means to monitor and compensate for potential reversals (Approach 2a).

For bi-/multilateral REDD+ agreements as well as multilateral funds with RBP, the picture is more diverse. The GCF requires REDD+ RBP activities to include measures to address the risk of reversals in their funding proposal (GCF 2017, p. 21). However, while for some countries a buffer approach is applied, there does not seem to be any standardised methodology in place. Similarly, the FCPF requires measures to prevent and minimise the risk of reversal to be in place but does not prescribe any approach. However, the establishment of buffer reserves is used as a default approach (FCPF 2016b). The BioCF-ISFL requires a risk assessment and has set up a buffer reserve.

For bi-/multilateral REDD+ agreements with RBP, limited information is available on provisions to address non-permanence. According to information provided by the Norwegian Ministry of Climate and Environment, the bilateral REDD+ Partnership between Norway and Brazil under NICFI addresses non-permanence by using a very conservative emission factor in the emission estimates. Yet, no detailed information on this arrangement is publicly available. Also, no information is available on the REDD+ Partnership between Norway, Germany and Peru under NICFI. Under this partnership, no payments for reduced emissions have been made yet. In the bilateral REDD+ Partnership between Norway and Gabon under NICFI, reference is made to the ART/TREES methodology[129], which uses a risk assessment and a pooled buffer reserve as an approach to address non-permanence. The REM programme between Norway, Germany, the UK and Colombia under NICFI pursues a different approach: for each ton of rewarded emissions, an

[129] See https://www.artredd.org/trees/

additional ton is retired, thus discounting the achieved mitigation outcomes (KfW und GIZ 2015).

In the following, we describe the different approaches to addressing non-permanence in more detail and compare in what way they are used by the different REDD+ finance mechanisms.

Approach 1: Reducing the non-permanence risk of mitigation activities

This option mainly entails conducting non-permanence risk assessments and based on the results, either excluding mitigation activities with higher risks from eligibility or establishing incentives for mitigation activity proponents to mitigate reversal risks:

- Ineligibility of activities with high reversal risks: Some mechanisms exclude mitigation activities if the risk is deemed too high or if projects do not set out how risks will be mitigated (JNR, Plan Vivo, VCS).
- Risk assessment informs contribution to buffer reserve or discounting level: Several mechanisms use the risk assessment to determine the activity's contribution into a buffer reserve out of which reversed mitigation outcomes can be compensated for (ART/TREES, JNR, Plan Vivo, TFS, VCS, bilateral REDD+ Partnership between Norway and Gabon, using the ART/TREES methodology, BioCF-ISFL and FCPF Carbon Fund, even though not as a standard methodology for all projects).

Further approaches to mitigate mainly human-caused reversal risks include a variety of legal instruments, such as long-term obligations for activity proponents to maintain carbon stocks and compensate for reversals. Examples include a Reversal Risk Mitigation Agreement/Risk Mitigation Covenant for geologic and terrestrial sequestration projects, management and financial plans that are presented to local government or financial institutions and proof of legal requirement to continue the management practice (e.g. VCS), and a legally binding conservation easement agreement signed and approved by the relevant state agency that reduces the risk rating for a project. For the other REDD+ financing mechanisms with RBP considered, no information on this question is available.

Approach 2a: Monitoring and compensating for reversals

The most common approach to address non-permanence risks is through monitoring and compensating for reversals through cancellation of issued carbon credits. Under this approach, several design features are important for its effectiveness (Böttcher et al. forthcoming; Schneider et al. 2021):

- **Time horizon for monitoring and compensating for reversals:** In most cases, it is not practical for carbon market standards or other REDD+ financing mechanisms to establish an indefinite (perpetual) time horizon for monitoring and compensating for reversals. From a private investment perspective, an obligation to compensate for reversals for 100 years resembles nearly an indefinite commitment. However, the carbon market standards included in this analysis only require monitoring for the duration of the crediting period which may be significantly shorter (e.g. 7-10 years for Plan Vivo, 10-30 years for JNR). An exception is TFS which requires monitoring and compensation until 2050. The FCPF Carbon Fund and the BioCF-ISFL require monitoring for at least 15 years after the end of the crediting period. Shorter time horizons are more likely to result in reversible mitigation being inefficiently under-priced relative to other mitigation options because the future costs of maintaining the carbon would not be internalised when making investment decisions. For the other REDD+ financing mechanisms, no information on this question is available.

- **Addressing reversals in case of irregular discontinuation of monitoring:** If monitoring of reversals discontinues prior to the required time horizon, future reversals may go undetected (Schneider et al. 2022a). In some cases, activity proponents might even terminate monitoring because a reversal has occurred, or because they plan an intentional reversal (e.g. due to wood harvesting or land development). In such instances, compensation of all issued credits is the most robust approach to ensure environmental integrity. This is required by most of the carbon crediting mechanisms (JNR, TFS and VCS[130]). Mechanisms that require no or only partial compensation do not fully cover actual reversals and create moral hazard issues, as activity proponents could discontinue monitoring and reporting once reversals occur. For the other financial instruments, no information on this question is available.

- **Addressing reversals after regular ending of monitoring:** A related question is to what extent mechanisms address reversals that might occur after the end of the defined time horizon for monitoring and compensating for reversals. If a pooled buffer reserve is in place (see next bullet), retiring the activity's carbon credits held in this buffer reserve after the end of regular monitoring provides some safeguard to compensate for future reversals. However, this depends on how well the number of credits held in the pool reflects actual future reversal risks. This approach is implemented by most of the carbon market standards (ART/TREES, JNR, VCS) and by the REDD+ Partnership between CAFI and Gabon which builds upon the ART/TREES methodology. The FCPF Carbon Fund and the BioCF-ISFL require a robust reversal management mechanism (equivalent to the programme buffer) , including a strong focus on ownership and stewardship, to be in place after the end of the agreement, otherwise the credits in the buffer will be cancelled. Keeping the deposits in the buffer (e.g. Plan Vivo) promotes environmental integrity to a lesser extent: it enhances the capitalisation of buffers for future compensation of reversals, which might help to address large-scale reversals. However, as the credits may ultimately be used to compensate for reversals from other mitigation activities, they may not at the same time compensate for potential future reversals associated with the original mitigation activity. It has to be noted that responsibility of the project host for addressing reversal risks after ending of monitoring would serve twofold: it is in support of building monitoring systems leading to more comprehensive accounting and improved policies as well as ownership. Pooled buffers, however, diffuse responsibility. For the other REDD+ financing mechanisms considered no information on this question is available.

- **Responsibility for compensating for reversals:** Once reversals have been identified (or their occurrence cannot be excluded as no monitoring report is available), the reversed mitigation needs to be compensated for by enhancing mitigation elsewhere. What approach for compensating is best suited may depend on the type of reversals. For intentional reversals, activity proponents or landowners should be the primary entity responsible for compensating. They are able to control and reduce the risk of reversals through appropriate activity design. Moreover, not making them responsible could create moral hazard issues, as they would receive the benefits from carbon credits but not have strong incentives to keep carbon stocks in place. Under ART/TREES, JNR and VCS, for example, reversals are addressed by the buffers in the first place, but the proponents of the mitigation activity are then required to replenish the buffer in case a reversal has occurred.

  Many carbon crediting mechanisms and financing instruments use a 'pooled buffer reserve' to address the risk of reversals (ART/TREES, JNR, Plan Vivo, VCS, FCPF Carbon Fund and

[130] For the other REDD+ financing mechanisms considered, no information on this question could be found.

BioCF-ISFL as well as the REDD+ Partnership between CAFI and Gabon which builds upon the ART/TREES methodology). Under this approach, a fraction of the carbon credits from mitigation activities with non-permanence risks is set aside into a common buffer reserve which is managed by the carbon crediting mechanism and which can be drawn upon to cover reversals from any participating activity. Pooled buffer reserves, or well-designed insurances, offer the advantage that they diversify risks and can compensate for large reversals from individual mitigation activities. They can be effective for compensating for unintentional reversals and for stepping in to cover if compensation by the proponents of the mitigation activity is not enforceable (e.g. due to bankruptcy). A key prerequisite for this is that the buffer is sufficiently 'capitalised' and includes a diverse portfolio of activities. Under the GCF, for Chile, Colombia and Paraguay, a buffer approach is used to manage the risk of reversals as well (FAO 2020a). Chile and Paraguay base their approach on the guidelines developed by the FCPF for their Carbon Fund (GCF 2020b). However, no such mechanism is included in Brazil's funding proposal (GCF 2019). If the practice of using buffers were to be formalised, the GCF's general guidance would need to be adapted (GCF 2020b).

An alternative is a non-pooled buffer reserve, as for example applied by TFS, in which credits are set aside only for a specific project but not pooled with credits from other sources. Environmental integrity can be further strengthened if mechanisms define additional actors which assume liability in case the mechanism ceases operation or the actor to assume liability in the first place drops out for other reasons. Responsibility by activity proponents and the buffer reserve could be complemented with a country liability to compensate for reversals. This may not only enhance the likelihood that reversals are compensated for but could also reduce transaction costs if a country liability lowers the fraction of credits to be deposited in the buffer reverse. Under the JNR, for example, an additional insurance or country liability will lower the risk rating which informs which fraction of carbon credits need to be put in a pooled buffer reserve.

- **Updating of baselines in case of reversals:** In the event of a reversal, some carbon crediting mechanisms allow or require establishing a new baseline. Some carbon crediting mechanisms allow for the updating of baselines in case of an unintentional reversal (e.g. TFS) or catastrophic events (e.g. VCS), with no limitations as to how the baseline is adjusted. Under ART/TREES, JNR and VCS, the baselines are regularly updated. ART/TREES and JNR have safeguards in place for avoiding that the updated baseline is not higher than the original baseline. Under Plan Vivo, no updating of baselines is possible. For the other financial instruments, no information on this question is available. Adjusting emissions baselines upwards requires determining the extent and impact of the disturbance in the baseline scenario. This can be subject to significant uncertainty, which could lead to over-crediting.

Approach 2b: Discounting

Some REDD+ financing mechanisms discount the emission reductions or removals to address non-permanence risks. This means that a fraction of the reductions or removals is not issued as carbon credits.

Among the carbon market standards considered, only the JCM applies a default discount factor of 20% in its REDD+ methodology for Cambodia. In the REM Programme between Germany, the UK and Norway with Colombia, for each ton of rewarded emissions, an additional ton is retired, which can be considered as a form of discounting (KfW und GIZ 2015). Under the GCF, pilot programmes are exploring the appliance of discount factors to address non-permanence; yet, no

standard approach is available for the GCF (GCF 2017b). According to information provided by the Norwegian Ministry of Climate and Environment, under the bilateral REDD+ Partnership between Norway and Brazil under NICFI, non-permanence is addressed by using a very conservative emission factor in the emission estimates, thus implicitly also discounting the amount of rewarded emission reductions.

In terms of environmental integrity, discounting is problematic because it provides limited incentives for activity proponents to avoid reversals and thus creates moral hazard problems. It constitutes a rather static concept providing no incentives for improving monitoring and GHG reporting quality or reducing uncertainties. Moreover, given the lack of incentives to avoid reversals and that reversals are not even reported if activity proponents 'walk away', discount rates may need to be set quite high in order to ensure that non-permanence is effectively addressed. This could also lower the incentives for project proponents to implement and maintain activities, as it reduces the value of the carbon stored relative to other land values (Ellis 2001). Discounting could, however, be a suitable approach for mitigation activities where the reservoir is not under the control of the activity proponents – as this avoids moral hazard issues – and where the risk of reversals is relatively low and reasonably well known. It has to be considered, though, that such exceptions can serve as loopholes.

Approach 2c: Using temporary emission reductions or credits to address non-permanence

None of the instruments included in this analysis uses temporary credits to address non-permanence. This approach is only used under the CDM mechanism for afforestation and reforestation projects.

Approach 3: Accounting and compensation by the recipient country

The risk of non-permanence can not only be addressed by RBF schemes but also by the recipient countries. In principle, non-permanence could be addressed if the country where a reversal occurs reports and accounts for the reversal when tracking progress and accounting for its NDC. If a reversal occurs, the country reports higher emissions and would therefore need to follow-up with additional mitigation action to still reach its NDC, and in so doing compensate for the reversal (Schneider et al. 2022a).

In practice, there are, however, several caveats and challenges to make this happen:

- **Coverage of NDCs:** When accounting for their NDCs, countries include only those sectors, gases, categories, activities, sources and sinks, and carbon pools that are within the scope of their NDC.[131] Compensation of reversals would only occur for those covered by the NDC. Moreover, determining the scope of NDCs is challenging, due to limited transparency but high diversity of NDCs and methodological challenges regarding the allocation of mitigation measures within and outside of NDCs (Schneider et al. 2020).
- **Visibility of reversals in indicators used to track progress:** The Paris Agreement requires countries to select 'indicators' for tracking progress towards their NDC targets (Schneider et al. 2022a). Those countries that follow emissions targets, GHG emissions covered by the NDC can serve as indicators. Instead, for countries aiming to achieve an afforestation target, the hectares of afforested land can be considered a more suitable indicator (Schneider et al. 2022a). Reversals might, however, not always be 'visible' in the described indicators. This can be due to the lack of granularity of the indicator to capture the reversals (Prag et al. 2013). This is a particular challenge for the land use, land-use change and forestry (LULUCF) sector (Herold und Böttcher 2018; Schneider et al. 2022b). For example, the GHG inventory

[131] See decision 18/CMA.1, Annex, paragraphs 64 and 70, and decision 4/CMP.1, Annex II, paragraph 3.

may not always capture measures, and subsequent reversals from, improved forest management. Similarly, if a country reports only the hectares of afforested land to track progress towards an afforestation target, reversals from wildfires on that land are not visible as long as the land remains 'forest land'.

- **Single-year targets:** In their NDCs many countries report only targets for single years such as 2030 (Schneider et al. 2022a). Reversals occurring in the target year would be accounted for. Reversals in other years, however, would end up only being reported. Thus, the reversal would not have implications for the achievement of the targe. Moreover, the country would not be required to compensate for the reversals to achieve its NDC. In countries with continuous multi-year targets, instead, reversals from all years would be accounted for. This applies to countries under the Kyoto Protocol and those who established emissions trajectories for NDC accounting (Schneider et al. 2022a).
- **Ambition of NDC targets:** The ambition of NDC targets differs widely (Climate Action Tracker 2021). If countries have ambitious NDC targets, they may indeed need to compensate for material amounts of reversals. Independent assessments of current NDC targets suggest, however, that many countries have NDC targets that correspond to higher levels of emissions than their likely emissions with the policies in place at the time of target setting (La Hoz Theuer et al. 2019) – an issue that has also been referred to as 'hot air' in the context of the Kyoto Protocol (Boehringer 2000). In this latter case, countries may not need to actually compensate for any reversals, as they would achieve their NDC targets anyway. The more ambitious an NDC target is, the more likely it is that a country would compensate for reversals (Schneider und La Hoz Theuer 2019; Kollmuss et al. 2015).
- **Treatment of natural disturbances and harvested wood products in NDC accounting:** Countries pursue different approaches in how they account for natural disturbances and harvested wood products in their NDCs. Some countries exclude natural disturbances. In this case, such reversals would not be accounted and compensated for. Also, the treatment of removals after disturbances is then crucial and as a consequence should be excluded. Addressing non-permanence in managed forests can also be done by differentiated accounting of harvested wood products, e.g. by separating products of different lifetimes. However, inconsistencies of accounting between countries with different approaches and treatment of traded wood need to be avoided.

In conclusion, when engaging in international carbon market mechanisms, recipient countries of RBF schemes would only account and compensate for any reversals under specific conditions; under several circumstances, reversals would remain unaddressed if not specifically addressed through approaches by the RBP scheme or specific accounting approaches agreed among the cooperating countries.

The following table summarises the information from above. Data is condensed; for instance, the various options that financing mechanisms may use under Approach 2a are summarised in one cross.

Table 21: Approaches for addressing non-permanence of emissions

Mechanism	App. 1 *	App. 2a *	App. 2b *	App. 2c *	App. 3 *
GCF, Pilot Programme for REDD+ RBP	(x) depends on recipient	x depends on recipient	(x) explored in pilot programmes	-	depends on recipient
FCPF (Carbon Fund)	x	x default approach	(x) depends on recipient	-	depends on recipient
BioCF-ISFL (Tranche 3)	x	x	-	-	depends on recipient
Agreement of Norway with Brazil	-	-	x	-	depends on recipient
Agreement of Norway, Germany, UK (as of 2021) and Peru	?	?	?	-	depends on recipient
REM Programme Norway, Germany & UK with Colombia	-	-	x	-	depends on recipient
Agreement of CAFI (Norway) with Gabon	x	x	-	-	depends on recipient
Japan's JCM	-	-	x (Cambodia)	-	depends on recipient
California TFS	x	x	-	-	depends on recipient
ART/TREES	x	x	-	-	depends on recipient
Plan Vivo	x	x	-	-	depends on recipient
VCS	x	x	-	-	depends on recipient
JNR	x	x	-	-	depends on recipient

Source: own compilation, Oeko-Institut.

* Approach 1: Reducing the non-permanence of mitigation activities
* Approach 2a: Monitoring and compensating for reversals
* Approach 2b: Discounting
* Approach 2c: Using temporary emission reductions or credits to address non-permanence
* Approach 3: Accounting and compensation by the recipient country

3.2.4 Monitoring and assessing emission reductions and removals

3.2.4.1 Institutional framework

Measurement, Reporting and Verification (MRV) including the quantification of emission reductions and removals are aspects addressed by all mechanisms analysed. They form the basis for measuring and determining results of mitigation activities and are therefore essential for both RBP and TBP mechanisms. Moreover, mechanisms address the need for consistency

between different levels of monitoring, such as between project level and national level monitoring and over time. The general institutional framework for measuring, reporting and verification, however, differs among mechanisms. The following elements typically characterise the monitoring framework of mechanisms:

- Regular reporting on monitoring and quantification results is a requirement for all mechanisms. There are differences between the **frequency of reporting** that ranges between annual (e.g. Plan Vivo), bi-annual (e.g. ART/TREES) and reporting per monitoring period (e.g. JCM).
- Most mechanisms differentiate between validation and verification reporting (e.g. JCM, ART/TREES, BioCF-ISFL, JNR). In general, **validation** is the systematic, independent, and documented ex ante evaluation of a proposed project by a third party to assess compliance with requirements of a mechanism. **Verification** is usually the ex post independent review of GHG emission reductions and removals claimed for a specific period. It assesses the degree to which projects have correctly quantified net GHG reductions, and must be conducted by an independent third-party verifier. Both, validation and verification require formal reporting formats usually provided by the mechanisms as templates.
- All mechanisms typically require a **third-party involvement** for performing an independent assessment for validation and verification. Projects under the GCF need to undergo a review by an Independent Technical Assessment Board (ITAP). This should be formed by LULUCF experts selected from the UNFCCC roster of experts and with experience in REDD+ assessment and analysis. Third-party verification under the Californian TFS requires accreditation in conformance with ISO 14064-3:2006. ART/TREES ensures independence and technical capabilities of the validation and verification bodies through accreditation by an accreditation body that is a member of the International Accreditation Forum. Similarly, JNR requires that the validation and verification body has been accredited, has completed at least five project validations and completed JNR training from Verra. In particular, experience of the validation and verification team needs to cover relevant topics, such as knowledge about drivers of deforestation and degradation, development and assessment of REDD+ baselines modeling, measuring and monitoring forest carbon stocks and emissions, including remote sensing, GIS and statistical techniques but also have regional expertise or experience. Reporting needs to include a list of the members on the validation or verification team, including their role and a summary description of the qualifications
- Under JNR, validation and verification consist additionally of a **public comment** period hosted on the Verra registry. Also, FCPF, GCF and ART/TREES require process-related and approved documents to be made publicly available with an option to exclude commercially sensitive information (e.g. ART/TREES). According to Plan Vivo rules, stakeholders must have access to the project's land management plan in an appropriate format and language.
- Regarding the participation and involvement of stakeholders in monitoring, there are some mechanisms with specific requirements. The GCF Pilot Programme, for example, encourages the use of **participatory monitoring** involving targeted stakeholders (GCF 2017c). This can involve communities and local stakeholders, including civil society organisations. Plan Vivo follows the internal principles that projects need to "demonstrate community ownership" and "meaningful" participation of communities is guaranteed through "design and implementation of land management plans that address local needs and priorities" (Plan Vivo 2013). Project proponents thus need to identify barriers for participation and provide evidence that participatory methods are used for involving stakeholders. ART/TREES refers

to the Cancún Safeguard principles, requesting "full and effective participation of relevant stakeholders – in particular indigenous peoples and local communities" (ART 2020). VCS requires to conduct a local **stakeholder consultation** prior to validation as a way to "inform the design of the project and maximize participation from stakeholders". Such consultations are meant to allow stakeholders to "evaluate impacts and raise concerns about potential negative impacts" through activities.

- **Responsibility** for monitoring lies with the participant, project proponent, implementing jurisdictions or national authorities, depending on the type of financing mechanism.

3.2.4.2 Additionality

Additionality means that without the intervention (i.e. the additional funding provided through the REDD+ financing mechanism) the emission reductions or removals would not have occurred. This common definition for additionality, which has also been adopted under Article 6.4 of the Paris Agreement, implies that the quantified emission reductions must be attributable to the mitigation actions. This means that reductions that would occur anyway (e.g. due to lower demand for agricultural products or stricter requirements for deforestation-free consumption) are not additional.

Under the GCF Pilot Programme for REDD+ RBP and the BioCarbon/ISFL there are no specific procedures for assessing additionality. Also, the financing mechanisms addressing the national level only, including the bi-/ multilateral REDD+ partnerships between Norway, Germany, UK with Brazil, Peru, Colombia and Gabon do not require additionality assessments. This is due to the fact that they were established before Article 6 of the Paris Agreement that requires additionality was agreed.

Determining causality between a mitigation activity and emission reductions and removals is challenging. Finance mechanisms including the project level only, like Plan Vivo and VCS, have developed specific assessment procedures and tests for providing proofs for additionality. Payments under Plan Vivo projects must demonstrate **legal additionality** (i.e. provide evidence that the project is not based on activities that are required by law). Additionality can also be documented by providing evidence that there are barriers to the implementation of a project (e.g. financial, institutional, social, technical, ecological barriers).

VCS has developed specific tools for assessing additionality of land-use projects in multiple steps that should be used to "identify credible **alternative land-use scenarios**" and evaluate identified alternatives as well as the proposed scenario of the project (VCS 2012c). The identification of alternative land use scenarios should take into account relevant national and sectoral policies and circumstances. These include also historical land uses, practices and economic trends. Continuation of the pre-project land use is considered the minimum assumption of the assessment. The identified scenarios must be "**credible**". VCS considers activities and land uses credible that occur on the project area at project start or that have occurred ten years before the project started. The most plausible scenario is to be picked as a baseline. In addition to the selection of a credible baseline, an **investment analysis** needs to demonstrate that the proposed project activity, without revenues from carbon crediting, is economically or financially less attractive compared to one of the identified alternative scenarios. It was found that in cases where projects have little or no financial incentive other than revenues expected from marketing of carbon credits, additionality can be proven more clearly by using investment analysis (Chagas et al. 2020). In addition or as an alternative, a **barrier analysis** can be carried out to assess potential hurdles for proposed project activities that a) might prevent implementation of an activity without revenues from credits; and b) do not prevent that at least one of the identified alternative scenarios is implemented, except the

proposed project activity. The multi-step assessment developed by VCS is complemented with an assessment whether similar activities have already been successfully implemented in the geographical vicinity of the proposed activity (**common practice analysis**). If this is the case and there are no distinctive differences to similar activities, the activity cannot be considered additional.

As discussed above, mechanisms addressing the national or subnational level using jurisdictional approaches do not consider additionality tests like those used by projects. A barrier analysis at larger scale cannot provide a proof of causality due to many more influencing factors to changes in emissions. Nevertheless, additionality is addressed through different approaches. The FCPF Carbon Fund ties the assessment of additionality to **baseline setting** (historic emission levels). It requires conservative approaches to setting baselines (e.g. by including existing and clearly funded programmes or activities within the baseline) as additionality tests often "have proven difficult to operationalize" (FCPF 2016b).

Under JNR additionality is addressed by forming a "**conservative benchmark"** that is used to measure how nested projects and lower-level jurisdictional programmes perform. By applying this principle, emission reductions compared to the benchmark are additional. The rules explicitly state that "to this end, relevant policies and measures to reduce GHG emissions that were enacted before the start of the crediting period shall be included in the [reference level] estimation" (JNR 2021a p. 16). This means that crediting can only start after new legislation, policies, or concrete implementation of mitigation activities have taken place.

Also, ART/TREES uses a performance-based approach. It requires that only those emissions and removals exceeding a historical crediting level are eligible for crediting emission reductions or increased removals. Alternatively to the performance-based approach, since the revision of the standard in August 2021 (ART 2021), participants can use the **High Forest Low Deforestation** (HFLD) **crediting approach**. Projects are considered additional if the participant meets a specific HFLD score threshold. To be eligible for this alternative approach, participants need to demonstrate that their forest cover is larger than 50% and the reported annual deforestation rate is below 0.5%. The sum of the participant's forest cover and the deforestation rate score forms the HFLD score. This must be 0.5 or higher throughout the reference period. Such an approach simplifies on the one hand additionality requirements for participants in carbon crediting. However, it also puts much more weight on baseline setting and the necessity to find a credible but yet conservative scenario for its establishment.

3.2.4.3 Baselines

Credible baseline setting is the most important factor for the environmental effectiveness of REDD+ financing mechanisms. A baseline represents the level of emissions or removals against which actual emissions or removals are benchmarked in order to determine the emission reductions or removals resulting from an activity. The term "baseline" will be used in the following as an overarching term.

A baseline can describe both an underlying *scenario* (e.g. continued deforestation at historical levels) and the associated *emissions or removals level* (e.g. the emissions resulting from continued deforestation at historical levels). In many mechanisms, the baseline aims to represent the most likely scenario that would occur in the absence of the proposed activity, often also referred to as '**business-as-usual**' (BAU) scenario. Thus, in some instances, baselines are also used for demonstrating additionality (see above). While the term 'baseline' is common among crediting mechanisms (e.g. VCS), some mechanisms use the term '**reference level**' (Japan's JCM), some refer to the '**reference emission level**' (Plan Vivo). There are mechanisms that consider the baseline as the '**crediting level**' (ART/TREES), others define a crediting level

that is different from the reference level (California TFS). National level mechanisms such as GCF REDD+ RBP, FCPF and BioCarbon ISFL build on the national forest reference emission level (FREL) or forest reference levels (FRL) submitted under UNFCCC REDD+ or require that baselines should be "informed" by them.

Baselines are developed using a variety of **approaches**, including activity-specific emissions trajectories, historical average emissions, and sectoral performance standards (Chagas et al. 2020). Böttcher et al. (forthcoming) differentiate the following four main approaches: 1) Reference areas are used for smaller projects and can be established only where an area of similar conditions can be found; 2) (adjusted) historical average is the most common approach for establishing baselines and used for projects and jurisdictions; 3) projections of the historical trend are also used for projects and jurisdictions, while 4) modelling, due to its complexity, is mainly used for jurisdictions, most often at national level.

Independent of how baselines are derived, they always represent a **future emissions and removals level**. Baselines are thus projections that anticipate a future development of land-use change, e.g. by interpreting drivers of past trends or making assumptions on a BAU development (Böttcher et al. forthcoming). The approaches differ in which scenario is assumed to occur in the future and what data basis is used to estimate the emissions or removals level associated with the baseline scenario.

The GCF Pilot Programme for REDD+ RBP requires that reference levels applied are based on historical data and is equal to or below the average annual historical emissions during the reference period (GCF 2017c). Exceptions are allowed if countries belong to the group of HFLD countries. Countries that have "consistently maintained high forest cover and low deforestation rates" are allowed to **adjust** their **historic reference level** within certain limits (the adjustment may not exceed 0.1% of the carbon stock over the eligibility period and not exceed 10% of the reference level).

Rules of the FCPF require that emission reductions achieved should be conservatively measured and reported relative to a transparently presented and clearly documented reference level (FCPF 2016b). Reference levels may be at a smaller scale or established earlier than national forest reference levels of a country submitted to UNFCCC but should inform and be informed by them to achieve consistency and ensure sub-national levels sum up to the national level. The FCPF also allows adjustments of references above average historical rates under similar conditions as GCF. Another requirement of the country is that long-term historical deforestation has been minimal across the entirety of the country and the country has high forest cover.

Financing under the BioCarbon ISFL requires for validation an assessment whether the methods used to construct the baseline are "in line with the IPCC and best practice approaches as defined, for example by the GFOI" but does not provide more explicit requirements for its construction (BioCF ISFL 2020).

Under the Californian TFS, too, a reference level based on historical data has to established by the implementing jurisdiction, instead of using projections of future deforestation" (CARB 2019). It has to be established over a period of 10 consecutive years. This length is most common among mechanisms that work with historical baselines (see Table 22). Its estimate has to be transparent and "based on high-quality, spatially explicit data". This is typically provided by **remote sensing** technologies. In addition, sensitivity to variation in forest cover, structure, and biomass needs to be known. In order to ensure a **conservative baseline**, implementing jurisdictions the crediting baseline needs to be established at least 10% below the historical reference level. Moreover, it needs to decline linearly to a jurisdictional-specific redduction target for the forest sector in 2050 (CARB 2019).

The approach for baseline setting under ART/TREES (referred to as crediting level) foresees estimates of historical emissions over a period of five years (ART 2020). The level needs to be reduced by **uncertainty percentages** if its estimate exceeds an uncertainty threshold of 15% (at 90% confidence level). Different to other mechanisms there should be no gaps between the end of the reference period and the start of the crediting period. The crediting level needs to be updated every five years and updated levels may not be higher than previous ones, leading to a decreasing crediting level over time and ensuring conservativeness, similarly like the Californian TFS.

Plan Vivo provides methodologies for setting projected reference emission levels (Plan Vivo 2013). Projects aiming at reducing locally driven deforestation establish a reference emission level by determining a historic deforestation rate and initial carbon stock. Historical deforestation is measured or modelled for a reference area describing conditions prior to the establishment of the project and then projected into the future under an assumed baseline scenario. The historical reference period must start within 10 years prior to project start and end within 2 years of the project start.

Verra's JNR is another example applying historical baselines, although not exclusively. JNR also allows establishing **jurisdictional reference levels** with increasing emission trends if justifiable by national circumstances, such as in the case of high forest low deforestation countries (VERRA 2020). The higher jurisdiction (e.g. national government) sets a jurisdictional reference level that is allocated to the projects and lower-level jurisdictional programmes located within the boundaries of the jurisdiction to inform baselines of the projects. The project baselines use historical annual average emissions covering a period of 4 to 6 years, overlapping the jurisdictional reference period for two years (JNR 2021 c).

VCS has established methods for different types of activity. The baseline for REDD+ projects can be assessed using historic data, modelling or proxy areas. Methodologies for establishing baselines for unplanned deforestation provide two approaches, either from observed historic deforestation trends in a reference area, or from an observed (historic) relationship between population and deforestation, applying a regression model (VCS 2012b). Approaches using modelling rely on high quality and resolution of data for model training or calibration. While deforestation data are available from remote sensing at relatively high spatial (30x30m or higher) and temporal (annual) resolution, driver data form a bottleneck as they are based on statistics and census data with lower frequency and spatial resolution.

Baselines for planned deforestation under the VCS standard are estimated using **proxy areas** (VCS 2013). The selection of at least six of such areas needs to comply with specific requirements, including that land conversion practices, post-deforestation land use, and management and land use rights type shall be the same as on the project area. Proxy areas need to be geographically as close as possible, include the same forest types, soil types, slope classes and elevation classes. The proxy area will be used to estimate average deforestation rates that can be considered representative of the common practice in the project area. The approach of using reference areas can be used for projects but cannot be applied to jurisdictional approaches. It may also be more suitable for small-scale activities where it can be assumed that the most plausible baseline scenario is the continuation of a land use causing no changes in carbon stocks. In practice, approaches involving reference areas could be difficult to implement as sufficiently similar areas often do not exist (Böttcher et al. forthcoming).

Chagas et al. (2020) in their analysis of five crediting standards state that setting baselines remains highly uncertain under all approaches. This is especially true for deforestation and degradation that is a result of complex socio-economic dynamics. While they conclude that the

use of historical reference levels tends to be more conservative than the application of reference areas, there is the risk of an **inflation of baselines,** i.e. the inappropriate selection of reference data that leads to an overestimation of emission reductions or removals, in both cases by either selection of the reference areas or reference periods. Chagas et al. see opportunities for more conservative baselines through more nesting that allocates project or subnational baselines to an aggregate baseline at national level. Other considerations for more conservative baselines include limiting of adjustments above historic reference levels (Chagas et al. 2020).

Table 22: Overview of approaches to baseline development and length of reference period

REDD+ finance mechanism	Approach to baseline development	Length of reference period	Revision
GCF, Pilot Programme for REDD+ RBP	Historical, HFLD countries may adjust it to above historic average	5-20 years	Not addressed
FCPF (Carbon Fund)	Historical, HFLD countries may adjust it to above historic average	10 years, end date for the reference period is two years before the start of the activity	Not addressed
BioCF-ISFL	Historical	Approximately 10 years, including at least two data points	Each crediting period (ERPA)
Agreement Norway, Brazil	Historical	10 years prior to each 5-year period	Not addressed
Agreement Norway, UK, Germany, Colombia	Historical	No baseline but absolute reduction target in ha	Not applicable
Agreement Norway, Gabon	Historical	Baseline 10 years, crediting level 5 years	Not addressed
Agreement Norway, Germany, Peru	Historical	Period 2010-2019	Not addressed
Japan's JCM	Historical	Period 2006 to 2014	within 5 years
California TFS	Historical baseline, at maximum 48 months between end of period and use of credits	10 years	Not addressed
ART/TREES	Historical or HFLD approach, no gap between reference and crediting period	5 years	every 5 years
Plan Vivo	Historical or projection	10 years and end at max. 2 years before start of crediting	every 10 years
VCS	Historic, modelling or proxy area	7-14 years, start date between 9 and 12 years in the past, end date within two years before project start	every 10 years
JNR	Historical	4-6 years, longer if reference considered conservative	after 4-6 years

Source: own compilation, Oeko-Institut.

3.2.4.4 Leakage

Next to the challenges described for determining baselines, avoiding leakage of GHG emissions is another factor that is particularly relevant for REDD+ financing mechanisms. Leakage is defined as the unanticipated decrease or increase in GHG benefits outside of the project's accounting boundary (the boundary defined for the purposes of estimating the project's net GHG impact) as a result of project activities (IPCC 2000). There are two main forms of leakage:

- Primary leakage: Leakage resulting from direct activity shifting or outsourcing (e.g. in a project to restore degraded land, cattle is placed outside the project area).
- Secondary leakage: Leakage occurring from activities creating incentives for third parties to increase drivers. It is also referred to as leakage resulting due to market effects (e.g. forests are preserved in the project area but the demand for forest products remains the same leading to increased deforestation in another region).

Leakage can occur at different geographic levels: locally, jurisdictional/nationally and internationally/global. For land-use and forestry projects all of the three levels are relevant. At the local level avoided deforestation might be nullified if for example deforestation rates outside the project area increase. At jurisdictional/national level leakage might occur if e.g. efforts to preserve forests lead to substituting wood as building material with more carbon intensive materials such as steel or concrete. At the global level leakage might occur if industries that drive deforestation relocate their activities to other countries in response to the protection efforts.

Approaches how leakage can be addressed differ with regard to the scale of the activity. Risks for direct leakage are typically larger for single projects. Leakage can be addressed more easily if activities target entire jurisdictions or countries. Also, the type of REDD+ activity and the type of commodities affected by REDD+ activities make a difference. REDD+ projects or (jurisdictional) programmes that affect the production of globally traded agricultural goods have a higher risk of global leakage compared to subsistence farming. Displacement of production leading to the displacement of emissions (leakage) cannot entirely be avoided. However, leakage risks can be mitigated by adequate project design, e.g. by providing alternative income sources to landowners. An ideal approach to addressing leakage includes identifying and mitigating leakage risks, monitoring and quantifying any remaining leakage during the activity's lifetime, and accounting for leakage by deducting leakage emissions in the calculation of total emission reductions and removals (Chagas et al. 2020).

The GCF Pilot Programme for REDD+ RBP as a national level finance mechanism requires that information on actions to reduce displacement of emissions is provided (GCF 2017c). It does so by referring to the relevant Cancun safeguard (g) "Actions to reduce displacement of emissions" but without specifying approaches or which type of leakage needs to be addressed.

The FCPF requires that potential sources of **domestic** and **international displacement** of emissions are identified by assessing all drivers of land-use change relevant for the emission reduction activity (FCPF 2016b). It emphasises the need for good **project design** that reduces the risk of leakage caused by market or subsistence shifts, e.g. by keeping production levels of commodities in the targeted area at the level where they were before the start of an activity. Moreover, alternative sustainable livelihoods for affected agents should be provided. Regarding international displacement and leakage of emissions the mechanism points to the challenge of accounting and attribution challenges and therefore does not require a deduction of achieved emission reductions to account for it.

The BioCarbon ISFL requires to identify GHG sources and sinks that may be impacted by the proposed activity and assess their associated risk for displacement (BioCF ISFL 2020). It also requires effective strategies to mitigate and/or minimise, to the extent possible, potential displacement. The other national level REDD+ financing mechanisms do not address leakage in their methodologies.

Japan's JCM recognises the risk of displacement. It requires that a decrease in forest carbon stocks and also an increase of forest-related GHG emissions outside the project area that can be considered related to project activities are quantified and accounted for as emissions from displacement (JCM 2020). It also addresses **positive leakage**, i.e. the case where carbon stocks are increased, or emissions reduced outside the project area due to the project activities. However, attribution of such effects could be difficult, as they could be caused by changes in framework conditions leading to an issue of additionality.These effects need to be identified and excluded from the accounting. The approach prescribed for the identification of displacement effects applies a displacement belt. It is an area which is located outside of the project area, where deforestation and forest degradation could occur due to the displacement of project activities. The displacement belt needs to be delineated based on information on the impact of project activities, e.g. obtained from local experts (JCM 2020).

The Californian TFS requires a framework and mechanisms for managing and mitigating **activity-shifting** leakage **and market-shifting leakage** and for detecting and accounting for any remaining leakage outside the implementing jurisdiction's borders (CARB 2019). It has to be documented how drivers, agents, and causes of deforestation are directly addressed by the activity within the implementing area, e.g., by replacing drivers with more sustainable economic activities, or improving in their sustainability.

ART/TREES requires leakage to be addressed by applying specified TREES leakage deductions. TREES has established three classes of leakage risk for participants, ranging from high, medium to low (ART 2020). The assessed level of leakage is determined by how much area is included under the TREES project and results in a certain proportion of emission reductions and removals that must be deducted. A high risk of leakage is assumed if less than 25% of a national forest area are included in TREES, leading to a reduction of emissions and removals that can be claimed by 20%. A low risk is assumed if 60–90% of national forest area included in TREES, leading to a 5% deduction.

Plan Vivo requires that all potential sources of leakage and the location of areas where leakage could occur must be identified and any appropriate mitigation measures described (Plan Vivo 2013). The mechanism defines **leakage** as **significant** if climate services are reduced by more than 5%. Such a case requires an approved approach of leakage monitoring. Identified emissions related to leakage need to be subtracted from climate services claimed. As a minimum, a conservative estimation of likely leakage emissions needs to be made and subtracted. Plan Vivo provides a methodology that applies leakage discount if leakage cannot be accurately measured (Plan Vivo 2013). Leakage beyond national boundaries explicitly does not need to be considered.

Under the VCS, leakage due to market effects must be considered for all activities, using specific methods. This includes leakage emissions from activity shifting for avoiding planned deforestation/forest degradation, from activity shifting for avoiding unplanned deforestation, from market effects, from displacement of fuelwood extraction, from displacement of pre-project agricultural activities and **ecological leakage**. Ecological leakage constitutes a special type of leakage that occurs due to natural processes inside an activity's boundary and leads to emissions in surrounding ecosystems. They are typically associated with wetland activities that affect hydrological properties of ecosystems (Schwarze et al. 2002).

Verra's JNR (2014) requires the determination and accounting of indirect leakage if activities affect the production of relevant global commodities that are linked to international markets. This can be done using a default approach that includes 'Global Commodity Leakage Values' which have been derived based on literature and differentiate between Brazil, Indonesia, Democratic Republic of Congo, and all other countries. The leakage tool developed by JNR provides a stepwise approach for evaluating leakage risks from a jurisdictional programme and for determining the appropriate leakage deduction, including activity shifting leakage, market leakage and **deforestation to degradation leakage** for jurisdictional programmes.

Table 23: Overview of types of leakage and approaches for addressing it in different financing mechanisms

REDD+ finance mechanism	Type of leakage and approach for addressing it
GCF, Pilot Programme for REDD+ RBP	Generic, actions to reduce displacement
FCPF (Carbon Fund)	Domestic leakage, risk needs to be identified, addressed by project design International leakage, risk needs to be identified but not accounted for
BioCF-ISFL (Tranche 3)	Generic, risk needs to be identified and assessed
Agreement Norway, Brazil	Not addressed
Agreement Norway, UK, Germany, Colombia	Not addressed
Agreement Norway, Gabon	Not addressed
Agreement Norway, Germany, Peru	Not addressed
Japan's JCM	Negative and positive leakage, risks need to be identified, leakage effects calculated using a displacement belt
California TFS	Activity shifting and market leakage, risks need to be managed and mitigated for, also any "remaining leakage" needs to be detected and accounted for
ART/TREES	Activity shifting and market leakage, three classes of leakage: high, medium, low, leading to certain leakage deduction of emission reductions and removals that can be claimed
Plan Vivo	Generic, risks of all types of leakage need to be identified and mitigated; if it cannot be measured, leakage discount factors need to be applied
VCS	Activity shifting, market leakage, displacement of fuelwood extraction, displacement of pre-project agricultural activities and ecological leakage, detailed methodologies are provided, needs to be identified and deducted.
JNR	Activity shifting, market leakage, deforestation to degradation leakage, provides different approaches, including applying 'Global Commodity Leakage Values'

Source: own compilation, Oeko-Institut.

3.2.5 Accounting and crediting of carbon benefits

3.2.5.1 Eligibility or crediting period

The REDD+ finance mechanisms analysed have different eligibility or crediting periods, i.e. time periods during which emission reductions and removals can be generated against a reference level or a crediting level and which are renumerated by results-based finance. We use the term 'eligibility period' for RBP mechanisms and the term 'crediting period' for TBP mechanisms that rely on credits (units).

Many mechanisms have an eligibility or crediting period of five years (e.g. GCF, REM Programme with Peru, CAFI agreement with Gabon, ART/TREES, Plan Vivo) or slightly longer (agreements of Norway with Brazil and Norway et al. with Peru). These periods were all renewed by another five-year period in the case of the analysed bi- and multilateral agreements and are in general renewable in the case of ART/TREES and Plan Vivo standards. Other mechanisms have longer crediting periods from the start (FCPF Carbon Fund – up to 10 years, California TFS – from completion of sector plan till 2050, VCS – 20 years, 4 times renewable).

Finance mechanisms also differ in their criteria for determining the start date of the eligibility or crediting period. For example, Verra-JNR defines the start date of a crediting period as the "date in which project or program began generating GHG emission reductions or removals" (VCS, JNR), whereas ART/TREES and the California TFS define it in relation to the procedural requirement. For ART/TREES there may be a maximum of four years between the submission of the programme concept note and the start of the crediting period. For the California TFS the crediting period starts with the completion of the sector plan. Plan Vivo does not specify a definition of the start date and defines the crediting period as "(t)he length of time over which carbon services are calculated". The VCS set a time limit for the earliest crediting period start date of AFOLU projects (01.01.2002). Under the FCPF the start date is the "date in which implementation of at least one of the ER Program Measures has started".

Table 24: Eligibility or crediting period of REDD+ finance mechanisms

Mechanism	Crediting period
GCF, Pilot Programme for REDD+ RBP	5 years (2013-2018) [132]
FCPF (Carbon Fund)	up to 10 years (between 2016 and 2025) (FCPF 2021c).
BioCF-ISFL (Tranche 3)	defined in Emission Reduction Payment Agreements (BioCF ISFL 2021a)
Agreement of Norway with Brazil	7 years (2009-2015), extended by 5 years (2016-2020) (Norway und Brazil 2009; Brazil und Norway 2015)
Agreement of Norway, Germany, UK (as of 2021) and Peru [133]	6 years (2014-2020), extended for 5 years (2021-2025), but RBP envisaged to start 2022 (-2025), i.e. 4-year period
REM Programme Norway, Germany & UK with Colombia	twice 5 years (2016-2020; 2021-2025) (Colombia et al. 2015b, 2019)
Agreement of CAFI (Norway) with Gabon	twice 5 years (2016-2020, 2021-2025) (Gabon und CAFI 2017)
Japan's JCM	no information found
California TFS	varying ("The crediting period begins when the sector plan is completed and continues until 2050") (CARB 2019)
ART/TREES	5 years, renewable (without limitations); less than five years only for subnational participants for whom crediting generally ends in 2030 (ART 2020, p. 15).
Plan Vivo	5 years, renewable (at least once) (Plan Vivo 2015, p. 11).
VCS	20 years, renewable 4 times (total crediting period cannot exceed 100 years) (VCS 2021, p. 27)
JNR	Programme crediting period: 10 years twice renewable or 20 years renewable for 10 years (in both cases: maximum 30 years of crediting) (JNR 2021b, p. 10), except in "Scenario 1"[134] where there are no requirements for jurisdictional proponents developing and registering a FREL with respect to the crediting period, because there is no crediting to the jurisdiction

Source: own compilation, Oeko-Institut.

3.2.5.2 Quantification

The quantification of carbon benefits forms a central element of REDD+ financing mechanisms that involve issuing of credits. For the quantification of emission reductions and removals REDD+ financing mechanisms have developed detailed methodologies. These methodologies specify how the amount of emissions and removals to be credited is determined. There is a large

[132] https://www.greenclimate.fund/redd

[133] http://www.fundoamazonia.gov.br/en/donations/ (cf. links to diplomas on donations); Norway und Brazil (2009); Colombia et al. (2015b); Gabon und CAFI (2017), (2019); Peru et al. (2014); Peru et al. (2021).

[134] „Under Scenario 1, the jurisdictional proponent develops and registers a forest reference emission level (FREL) covering all or part of its jurisdictional territory. The jurisdictional FREL is allocated to REDD+ projects and lower-level jurisdictional programs1 located within the geographic boundaries of such FREL to determine their baselines or FRELs, respectively. Carbon accounting and crediting only occur to the nested REDD+ projects and/or nested lower-level jurisdictional programs (and not to the higher-level jurisdiction)."

variety of approaches, involving different data sources, methods, tools, and procedures. The approaches of REDD+ financing mechanisms are compared addressing the following aspects:

- **Pools and gases**: Which carbon pools need to be included and what are rules for excluding pools? Which gases are included?
- **Methodologies**: Which methods and technologies are required for the quantification of emissions and removals? Are different Tier levels allowed to account for data availability and level of accuracy required? To what degree do mechanisms require information on how quantification of emissions and removals has been done, are there references to guidelines such as IPCC or other standards on quantification of GHGs that allow for a reconstruction of the results?
- **Uncertainty analysis**: How do mechanisms ensure that emission reduction or removals estimates are accurate and neither over- nor underestimated? How are uncertainties to be documented and communicated? Are there deductions of the accountable amount required in case of a high level of uncertainty?

Pools and gases

Regarding the inclusion of carbon pools in estimates of GHG emissions and removals, mechanisms apply different rules. Under GCF all "significant" pools need to be included. An exclusion can be justified by lack of data and/or if the omission does not overestimate emissions or underestimate removals (GCF 2017c). Moreover, countries should indicate plans to include more pools in the future. Similarly, inclusion of all "significant" gases is required.

BioCF ISFL considers pools and gases "significant" if they make up at least 25% of the absolute level of the total GHG emissions and removals in a subcategory, and their relative magnitude contributes to 60% of the cumulative emissions (BioCF ISFL 2021b).

FCPF allows excluding certain pools if "emissions associated with excluded pools and greenhouse gases are collectively estimated to amount to less than 10% of total forest-related emissions" or it can be demonstrated that excluding pools and gases would underestimate total emission reductions (FCPF 2016b).

Above- and below-ground biomass are expected to contribute significantly to emissions and emission reductions and therefore need to be included in estimates under JCM, while dead wood, litter, soil organic matter are "conservatively" excluded. Under the California Tropical Forest Standard above- and below-ground standing live and dead biomass and lying dead biomass, but not soil carbon, need to be included (CARB 2019).

ART/TREES differentiates between primary and secondary pools and gases. Primary pools are above-ground biomass and soil organic matter of peat soils. Estimates of emissions from the primary pools and gases have to be included. Secondary pools constitute below-ground biomass, dead wood, litter, and soil organic matter (mineral soils). Harvested wood products are explicitly excluded. Other pools and gases may be excluded if their contribution is not more than 3% of total emissions. Secondary pools and gases that are included, are calculated based on literature or IPCC Tier 1 approaches. However, the approach needs to be at least at the tier level applied for calculating the national GHG inventory (ART 2021). Primary gas is CO_2, methane and nitrous oxide form secondary gases.

Plan Vivo requires considering in general the inclusion of all pools, especially those whose carbon stocks are expected to decrease compared to the baseline. They can be excluded,

however, if they are considered insignificant, i.e. amount to less than 5% of total climate benefits (Plan Vivo 2013).

Under JNR the inclusion of above-ground and below-ground biomass is mandatory. Pools that are expected to decrease, compared to the reference, cannot be excluded (JNR 2021b). However, soil organic carbon is currently not considered by the mechanism.

Methodologies

For the quantification of emissions and removals, mechanisms refer to existing methodologies or specify their own methods to be applied. Referring to existing methods and guidelines, e.g. IPCC guidance documents, enables comparability and ensures quality and transparency of estimates. Often, mechanisms require minimum Tier levels that aim to ensure a minimum level of accuracy. Under FCPF, IPCC Tier 2 or higher methods need to be applied. Tier 1 level methods are accepted in exceptional cases (FCPF 2016b).

ART/TREES requires estimates of emissions from the primary pools and gases to be based on IPCC Tier 2 or higher methods (ART 2021). Tier 1 methods and defaults may only be used for emissions accounting for secondary pools and gases that contribute an equivalent of less than 3% of reported emissions.

Under Plan Vivo an "approved approach" must be used to quantify ecosystem services. Such an approach constitutes a protocol, methodology or tool that has been approved by the Plan Vivo Foundation or accepted under another scheme (Plan Vivo 2013).

The BioCarbon Fund ISFL refers to ISO Standard 14064-2:2006 – Greenhouse Gases as main principles of GHG estimation (BioCF ISFL 2021b).

FCPF aims at increasing transparency of GHG quantification by requiring that specific methodological steps are made publicly available. These include e.g. the choice of activity data, and pre-processing and processing methods, choice of emission factors and description of their development, any methods and assumptions associated with adjusting emissions (FCPF 2016b).

Some mechanisms more explicitly formulate requirements for specific methods. JCM demands a combination of remote sensing and ground-based survey, including novel satellite observation technologies (JCM 2020).

Uncertainty analysis

A quantification of uncertainties is required by all reviewed mechanisms but methods and implications for estimated emissions and reductions differ (see Table 25). Under the Green Climate Fund a country has to provide information on aggregate uncertainties, "taking into account national capabilities and circumstances" (GCF 2017c). The mechanism considers the quality of information on uncertainties in its scoring system. Proponents fail on the uncertainty requirement if no information is provided or if the uncertainty level is higher than 50%. Uncertainty levels below 50% that also identify sources of uncertainties and assess their relative contribution score lower compared to proponents that are able to present uncertainty levels below 30% and are able to include most sources of error and have implemented processes to minimise systematic and random errors.

The FCPF requires applying conservative assumptions and methods for estimating GHG emissions and removals and applying a stepwise approach to address uncertainties (FCPF 2016b): 1) uncertainties need to be identified and the sources of uncertainty to be assessed; 2)

where feasible and cost effective, uncertainties should be minimised, 3) the remaining uncertainties need to be quantified and documented.

The estimation of uncertainties associated with activity data and emission factors is typically done through assessing accuracy of input data, confidence intervals, distribution of error, and propagation of error methods. A number of mechanisms explicitly suggest or prescribe methods for calculating uncertainties, e.g. using Monte Carlo simulations (e.g. FCPF, BioCarbon Fund, ART/TREES, JNR).

The identification and quantification of uncertainty results for many mechanisms in a deduction of estimated emission reductions or increased removals. Proponents under the BioCarbon Fund are required to set aside a portion of emission reductions into a buffer reserve (BioCF ISFL 2021b). For uncertainties lower than 15%, no deduction is foreseen. In case uncertainties are higher, either 4% (> 15% to 30% uncertainty), 8% (> 30% to 60% uncertainty), 12% (> 60% to 100% uncertainty), or 15% (> 100%) of the quantified emission reductions have to be set aside.

Also JNR requires addressing uncertainties of estimates of emissions (JNR 2021b). A qualitative uncertainty analysis has to be applied to demonstrate how systematic and random uncertainty are reduced to the degree possible. Any remaining random uncertainty needs to be quantified. Based on the quantitative uncertainty assessment, the mechanism applies discount factors that are derived from the estimated uncertainty level. At an uncertainty level below or equal to 10% the discount factor is 0. With higher uncertainties the factor increases up to 25.53% at the uncertainty level of 100%. Projects with higher levels are not eligible for crediting.

A percent deduction is also required by the California Tropical Forest Standard (CARB 2019). Similarly, ART/TREES applies an Uncertainty Adjustment Factor, using the value at risk model (ART 2021). Also Plan Vivo projects have to identify and estimate the level of uncertainty in ecosystem service quantifications (Plan Vivo 2013). A recent draft revision of the standard[135] requires that in the case of quantifying carbon benefits, uncertainty has to be assessed at a 90% confidence level and uncertainty adjustments need to be applied if the 90% confidence interval is greater than 50%. The adjustment is 0.25 times the estimated uncertainty in percent minus 0.5. If sources of uncertainty cannot be quantified, they must be "controlled through the use of best practice approaches". This involves appropriate default values, documented strong correlation of predictors, and robust assumptions.

VCS's REDD+ methodological framework sets the allowable uncertainty to +/-15% of net emissions and removals at the 95% confidence level (VCS 2020). If uncertainty exceeds the threshold, a deduction is applied equal to the amount that the uncertainty exceeds the allowable level.

Table 25: Methods for quantification of emissions reductions and removals applied by REDD+ finance mechanisms

REDD+ finance mechanism	Requirements for pools and gases to be included/excluded	Requirements for uncertainty analysis	Uncertainty deduction from quantified emissions and removals
GCF, Pilot Programme for REDD+ RBP	"Significant" pools and gases to be included, exclusion only if data lacking	Quantification required;	No

[135] https://www.planvivo.org/Handlers/Download.ashx?IDMF=7447254a-3fc3-41dd-8ec6-268316bd25cc

REDD+ finance mechanism	Requirements for pools and gases to be included/excluded	Requirements for uncertainty analysis	Uncertainty deduction from quantified emissions and removals
		No approval if uncertainty >50% or no information provided	
FCPF (Carbon Fund)	Exclusion of pools only if emissions amount to less than 10% of total forest-related emissions or demonstration that excluding pools and gases underestimates emission reductions	Quantification required; Method: Monte Carlo simulations	No
BioCF-ISFL (Tranche 3)	"Significant" pools and gases that make up at least 25% of total emissions and removals subcategory, and relative contribution of 60% to cumulative emissions	Quantification required; Method: Monte Carlo simulations	< 15% - 0%; > 15% to 30% - 4%; > 30% to 60% - 8%; > 60% to 100% - 12%; > 100% - 15% of quantified emission reductions to be set aside
Agreement Norway, Brazil	Not specified	None	No
Agreement Norway, UK, Germany, Colombia	Addresses CO_2e but does not specify gases	None	No
Agreement Norway, Gabon	Not specified	None	No
Agreement Norway, Germany, Peru	Key carbon pools; Addresses CO_2e but does not specify gases	None	No
CAFI	AGB, BGB, SOC (organic soils)	Quantification required; Method: not specified	No
Japan's JCM	Pools and gases that are expected to contribute significantly to emissions and removals (AGB, BGB, DW, litter and SOC; CO_2, CH_4, N_2O)	Uncertainty assessment only for forest map; Method: not specified	No
California TFS	AGB, BGB; SOC not considered; only CO_2	Quantification required; Method: not specified	Percent credit deduction
ART/TREES	Primary pools (AGB, SOC of peat soils) and primary gases (CO_2)	Quantification required; Method: Monte Carlo simulations	Uncertainty adjustment factor

REDD+ finance mechanism	Requirements for pools and gases to be included/excluded	Requirements for uncertainty analysis	Uncertainty deduction from quantified emissions and removals
Plan Vivo	AGB, AGB non-tree, BGB, litter, DW, SOC, HWP; exclusion of pools needs to be justified	Quantification required; Method: not specified	Adjustments if the 90% confidence interval is greater than 50% of the estimated value
VCS	Significant changes in carbon stocks need to be included, detailed provisions for different activities	Quantification required; Method: specific provisions	Adjustments if at 95% confidence interval uncertainty exceeds 15%; deduction equal to amount that the uncertainty exceeds allowable level
JNR	Pools that are at risk of decreasing (relative to reference) cannot be excluded; SOC not included	Quantification required; Method: Monte Carlo simulations	<= 10% - 0%; > 10% - 0% to 25.53% (100%); > 100% not eligible for crediting

Source: own compilation (Oeko-Institut). AGB = above-ground biomass, BGB =below-ground biomass, DW = dead wood, HWP = harvested wood products, SOC = soil organic carbon

3.2.5.3 Issuance of carbon credits

RBP and TBP can operate with and without issuing carbon credits. Out of the RBF mechanisms analysed, only 9 foresee the issuance and sale of credits. These are FCPF Carbon Fund, BioCF-ISFL (Tranche 3), JCM, California TFS, ART/TREES, Plan Vivo, VCS and Verra JNR. The following section only focusses on these REDD+ finance mechanisms.

Issuance procedures

The amount of credits issued in a given crediting period is generally determined by the difference between observed emissions and a crediting level or baseline and by potential adjustments made to account for leakage, non-permanence and uncertainty (see sections above). The issuance of credits or payments takes place once results have been verified by independent (e.g. CAFI-Gabon partnership, CTFS) and often approved third parties (e.g. JCM, PlanVivo). PlanVivo requires verification every five years and allows for either ex ante or ex post issuance (Plan Vivo 2017). Which "crediting system" is used, depends on the project intervention. Under the VCS the verification body has to change after six consecutive years of verification.

Crediting level

REDD+ finance mechanisms differ in their approaches to determine the crediting level. In ART/TREES, the crediting level for emission reductions is equal to the average of emissions during the five calendar years prior to the crediting period. The crediting level has to be updated for each crediting period. In version 1.0, a deduction from the crediting level is required if uncertainty exceeds a certain threshold. If this is the case, the uncertainty value is used as a factor to calculate the crediting level. Version 1.0 requires a deduction for leakage and non-permanence from the calculated emissions reductions, to determine the number of credits. In

version 2.0 deductions for uncertainty, leakage and non-permanence are made from the calculated emissions reductions. This version also introduces a crediting option for high-forest-low-deforestation participants (HFLD). An HFLD participant is defined as having more than 50% forest cover and a deforestation rate below 0.5% in each year of the reference period. Forest cover and deforestation rate are used to calculate a score. This score is multiplied by the carbon stock and the product is added to the crediting level to deliver the HFLD crediting level. If emissions exceed the crediting level, a percentage of the overall credits is deducted as a penalty.

The crediting level of ART/TREES for removals is defined as "an average annual area of conversion from non-forest to forest during the 5 calendar-year reference period". Credits are issued if removals in a given year exceed the value of the crediting level.

Japan's JCM refers to the crediting level as "reference emissions". In general terms, the JCM states that reference emissions are calculated below business-as-usual emissions (Government of Japan 2021). The number of credits to be issued is determined by deducting the project emissions from the reference emissions. The JCM issues general guidance for the development of project methodologies and then approves specific methodologies. For REDD+, there are currently only general guidelines and one approved methodology for Cambodia. The project reference level is calculated in alignment with Cambodia's national forest reference emission level submitted to the UNFCCC. According to the JCM project cycle, credits are issued after the monitoring report has been submitted and verified and an issuance request has been processed (Government of Japan 2021).

In the California Tropical Forest Standard, which has a crediting period until 2050, the crediting level starts at least 10% below the reference level and is linearly reduced until a 2050 sector target established by the jurisdiction is reached. The reference level is defined as the average grossemissions of ten consecutive years. Two years may lie between the 10-year reference period and the start of the crediting period. Deductions are required to account for uncertainty and the risk of reversal. The number of credits corresponding to one calendar year is calculated in a yearly monitoring report, which is verified by an independent third party.

The Plan Vivo Standard defines the crediting level as the difference between the project baseline and expected "climate benefits" from a project. No deduction for uncertainty or risk of reversal from the crediting level are applied, but there is a requirement to put credits in a buffer and to make conservative estimates of climate benefits to address uncertainty.

VCS documentation refers to a crediting baseline but does not include a specific definition (VCS 2021). The crediting baseline is used interchangeably with the determination of additionality and no other benchmark for determining the number of issued credits is mentioned in the programme document. Credits are issued at the request of the project proponent for a specific verification period. For projects in the AFOLU sector, activities that lead to emissions reductions must be implemented during the verification period.

Verra JNR uses three "carbon accounting and crediting scenarios". In each scenario, the starting point for crediting is a jurisdictional baseline (FREL) for the higher-level jurisdiction e.g. national. Where crediting is possible for lower-level jurisdictions or projects, these are given specific baselines via allocation from the FREL. This allocation is "based on the risk of deforestation or forest degradation and the applicable emission factors" (JNR 2021a; 2021b). An allocation tool is provided by Verra, where data regarding the FREL, nested projects and risk categories for specific areas of forest can be introduced. Verra will provide a risk mapping tool (VERRA 2021). A deduction is applied to the FREL to address uncertainty and a specific number of VCUs is placed in a "jurisdictional pooled buffer account". Issuance takes place after a jurisdictional programme and/or the nested elements have been registered and have submitted

an issuance request. A monitoring and verification report have to be submitted, as well as documents stating the legal right of representors to the emissions reductions and removals.

In the FCPF Carbon Fund, the reference level of an emission reduction programme is used as the baseline for crediting (FCPF 2021b). In a first step, verified emissions are deducted from the reference level. Then, deductions to address uncertainty and non-permanence are made and this portion of verified emission reduction does not generate credits.

Prices

Only two of the analysed mechanisms issued credits before 2021, namely Plan Vivo and VCS, which have a project-based approach. Both mechanisms have issued credits at least since 2010. No price information for Plan Vivo Certificates (PVC) and verified carbon units (VCUs) is available on the mechanisms' websites. However, both provide information to the carbon market survey carried out by Ecosystem Marketplace[136]. The average VCU price from 2016 to 2020 was USD 2.7 and the average price for a PVC for the same period was USD 7.9. The traded volume reported for VCUs in 2020 was more than 71 million credits, in 2016 the volume was around 33 million credits. The traded volume of PVCs in 2020 was around 1.2 million and in 2016 it was 369,000. The FCPF Carbon Fund issued credits for the first time in 2021 at a price of USD 5 to a programme implemented in Mozambique. The Carbon Fund and the participating countries agree the price in the "Emissions Reductions Payment Agreement" (ERPA). The ERPA also specifies the share of emissions reductions that will be transferred to the Carbon Fund. Japan's JCM has not issued any credits either and there is no price information available. None of the jurisdictional scale mechanisms analysed, namely ART/TREES, Verra JNR and the California TFS, have issued credits to date.

PVCs, VCUs, and ART credits can be used in the voluntary carbon market. The last two credits are eligible emission units under CORSIA and can thus be used in a compliance market (ICAO 2021). However, CORSIA explicitly excludes project level REDD+ credits, unless they are issued under scenario 2 and 3 of the VERRA JNR standard. Japan plans to use JCM credits to fulfil "its GHG reduction target" (GoJ 2021). Potential credits issued under the California TFS cannot be used in the California cape-and-trade program (CARB 2019).

Table 26: Overview of REDD+ financing mechanisms that foresee the issuance of credits: prices and instances where the credits can be used

Mechanism	Issuance of carbon credits	Where credits are used	Amount of credits issued (as of 31.12.2021)	Price per t CO_2
FCPF (Carbon Fund)	Yes	Unclear	2,040,904 from Zambézia Integrated Landscape Management Program in Mozambique	USD 5
BioCF-ISFL (Tranche 3)	In the future	Unclear	0	No payment agreements available

[136] https://www.ecosystemmarketplace.com/carbon-markets/em-global-carbon-survey/

Mechanism	Issuance of carbon credits	Where credits are used	Amount of credits issued (as of 31.12.2021)	Price per t CO_2
Agreement of CAFI (Norway) with Gabon	Currently not, option to issue credits under ART/TREES	If credits are issued, voluntary and compliance market	0	n.a.
Japan's JCM	Yes	For achievement of Japan's NDC	0	Projects supported by government programmes, no information on prices available
California TFS	Maybe	Credits are not used. Adoption of the standard does not allow "tropical offset credits into the California Cap-and-Trade Program"	0	n.a.
ART/TREES	In the future	Voluntary market and compliance market (CORSIA)	0	USD 10 (this price is indicated by the LEAF coalition, the expected primary buyer for TREES Credits)
Plan Vivo	Yes	Voluntary market	3,866,346 Plan Vivo Credits 807,217 Buffer units	No single price. Credits can be bought from projects or resellers
VCS	Yes	Voluntary market. Compliance market (Colombian Carbon tax, South African carbon tax)	371,573,946 Verified Carbon Units 62,029,122 Buffer units	No single price. Credits can be bought from projects or resellers
Verra JNR	In the future	Voluntary and compliance market (CORSIA)	0	n.a.

Source: own compilation, Oeko-Institut

3.2.5.4 Provisions to prevent double counting

Double counting of emission reductions and removals means counting the same emission reduction or removal – or the result - for the achievement of two different targets. The exclusion of the transfer of results is the most high-level approach to prevent double counting. This is the case for the REDD+ RBP Programme of the GCF and the agreement between Norway and Brazil as well as the agreement between Norway, Germany, UK and Peru.

The REM Programme Norway, Germany & UK with Colombia and the Agreement between CAFI and Gabon require the verification of results using ART/TREES, this implies that a transfer is foreseen at some point in time, but is currently not the case. The default of the BioCF-IFSL is to exclude transfers, but it can be agreed to and specified in the "payment agreement".

In the mechanisms where transfers are an option, double counting is addressed in a varying level of detail:

- Some mechanisms refer only to double counting (BioCF-ISFL, JCM, California TFS, Verra JNR), while others have provisions addressing specific forms of double counting (FCPF, ART/TREES, VCS, Plan Vivo).
- Most mechanisms include operational provisions for how to avoid double counting (FCPF, JCM, ART/TREES, Plan Vivo, VCS, Verra JNR), while two leave the details of how to avoid double counting to the participating parties (BioCF-IFSL, California TFS). In two cases, the application of a third-party standard that covers double counting is a requirement (REM Programme Norway, Germany & UK with Colombia and the Agreement between CAFI and Gabon).
- The operational provisions to avoid double counting include:
  - Prohibiting the registration of projects under another mechanism (JCM) or checking for other registrations (ART/TREES).
  - Detailed procedures for the issuance, transfer and retirement of credits (California TFS, ART/TREES, VCS, Verra JNR).
  - Nesting of projects into programmes implemented at the national or subnational level, i.e. aligning accounting of the project with accounting of a jurisdiction (ART/TREES, Verra JNR, Plan Vivo)
- All the mechanisms that allow for transfers require the use of a registry. Some specify which registry must be used (VCS, Verra JNR, ART/TREES, Plan Vivo) while others do not include a specification, but it can be assumed that they refer to a registry implemented by the transferring country (JCM, FCPF, BioCF-IFSL) or subnational jurisdiction (California TFS).

Besides nesting, some mechanisms also include provisions that address double claiming between the voluntary market and compliance markets. The FCPF prohibits that the sellers use the units they sell for complying with their domestic commitments, but it is possible if the fund's trustees agree to it. JCM specifies that JCM projects can sell credits only to Japan, which will use it for compliance with domestic commitments. The California TFS requires a description of how jurisdictions will avoid double claiming. ART/TREES specifies that credits used for compliance purposes require authorisation from the selling country and that the selling country must apply a corresponding adjustment (as specified in requirements related to Article 6 of the Paris Agreement), whereas transactions for the voluntary carbon market do not require this corresponding adjustment by the selling country. The VCS states that it does not address double claiming, but prohibits that emissions reductions and removals are issued both as a carbon credit and a credit for use in others mechanisms (e.g. allowances under a domestic cap-and-trade programme).

Table 27: Provisions to prevent double counting

Mechanism	Provisions against double counting (double issuance, use, claiming)
GCF, Pilot Programme for REDD+ RBP	▸ A transfer of results to the GCF is explicitly excluded in the pilot programme terms of reference. ▸ Additional provisions are included that help to avoid double counting with other mechanisms, although this is not explicitly addressed. For example, the eligibility period for results from 31 December 2013 to 31 December 2018 precludes double counting with NDCs. Results must be communicated to the UNFCCC, and a technical assessment must be completed. Authorisation of projects by relevant authorities is a requirement.
FCPF (Carbon Fund)	▸ The general conditions of the Emissions Reductions Payment Agreement explicitly exclude double claiming and double use, by stating it is not allowed (ERPA general conditions, cf. IBRD 2014b) https://www.forestcarbonpartnership.org/system/files/documents/FCPF ERPA_General Conditions_November 1 2014_0.pdf. ▸ Use by the seller for "compliance with domestic commitments" is only possible if the Carbon Fund and its trustees consent to it in writing. A registry system on the side of the seller is expected, but not a prerequisite for the sale of credits. ▸ Emission Reduction units must be tracked in a Transaction Registry.
BioCF-ISFL (Tranche 3)	▸ Unless it is explicitly defined in the payment agreement, emissions reductions from programmes under the BioCF-ISFL cannot be used by "any entity for sale, public relations, compliance or any other purpose". ▸ The ISFL programme requirements address double counting in the section on emission reductions transactions. Arrangements to avoid all types of double counting are selected by the BioCF-ISFL and the host country. ▸ Emission Reduction units must be tracked in a Transaction Registry. (BioCF ISFL 2021b)
Agreement of Norway and Brazil	▸ No transfer of results specified. ▸ No provisions on double counting (Norway und Brazil 2009; Brazil und Norway 2015)
Agreement of Norway, Germany, UK (as of 2021) and Peru	▸ No transfer of results specified. ▸ No provisions on double counting.
REM Programme Norway, Germany & UK with Colombia	▸ No transfer of results specified. ▸ Colombia was expected to clarify by 2020 how the "deforestation reduction goal is reflected in its NDC". ▸ Payments for "verified emission reductions at the national level" are to be made applying the Architecture for REDD+ Transactions and its TREES standard. (Colombia et al. 2019)
Agreement of CAFI (Norway) with Gabon	▸ Gabon agreed to apply ART TREES provisions on double counting as it will "go through Architecture for REDD+ Transactions certification for the emission reductions and removals". ▸ The agreement specifically refers to credits Gabon "may (...) sell to another buyer offering a higher price". Whether this then implies a transfer of results is not specified.

Mechanism	Provisions against double counting (double issuance, use, claiming)
Japan's JCM	▸ "Rules of implementation for the JCM or guidance for implementation", agreed between the government of Japan and a Partner state that for the moment, JCM is operating as "non-tradable credit type mechanism". ▸ Mitigation projects registered under the JCM can only be used for the JCM. The explicit purpose of this provision is to prevent double counting. ▸ Each side is required to have in place a registry and to check it to ensure there is no double counting.
California TFS	▸ Sector plans of implementing jurisdictions "must describe" how the crediting programme avoids double counting "with any other voluntary or mandatory program's efforts to reduce emissions from deforestation and forest degradation, including any Nationally Determined Contribution under the Paris Agreement of the UNFCCC". ▸ Requirements for accounting for nested projects included. ▸ Crediting programmes are required to have a registry in place. A clear procedure is established for issuance, transfer and retirement of credits in the registry of the implementing jurisdiction. Proof of retirement is required.
ART/TREES	▸ Different forms of double counting are explicitly addressed. ▸ Requirements to avoid double issuance: • "Any verified or issued emission reductions in the same accounting area" must be disclosed. • Other registrations must be disclosed, checks for duplicate registration will take place. • Units must be cancelled in one registry, before re-issuance • The number of credits issued for projects under other programmes or schemes will be deducted from the ART TREES credits issued to the participating jurisdiction. An exception applies if it is demonstrated that these other issued credits are only for compliance with domestic obligations and targets. ▸ Requirements to avoid double use: • Proof of ownership of the credit before issuance. • Tracking of ownership of credits by serial number and account in the registry. • Transfer of credits off the registry is forbidden. • Double selling is forbidden for users of the ART Registry[137]. ▸ Requirements to avoid double claiming • Host countries are required to authorise transfers of ART/TREES credits "for compliance purposes to buyers outside" the country. • Letters of authorisation are required if the buyer claims the credit for achievement of its NDC or if an airline claims it for compliance with CORSIA or if a corporate buyer claims the credit for its voluntary pledges. • The host country is required to make a corresponding adjustment in its reporting to the UNFCCC, if it authorised that those credits can be claimed by another country for its NDC or by an airline. • "Voluntary market transactions do not require corresponding adjustments". ▸ Use of the ART Registry[138] is mandatory.

[137] https://www.artredd.org/art-registry/

[138] https://www.artredd.org/art-registry/

Mechanism	Provisions against double counting (double issuance, use, claiming)
	▸ The ART TREES registry allows for credit labelling, e.g. if credits are associated with a Letter of Authorisation or a corresponding adjustment. ▸ Accounting at a subnational level and nesting only possible until 2030.
Plan Vivo	▸ Double selling and double claiming are addressed. Plan Vivo requires that "project intervention areas" are only used by one project or programme. This includes jurisdictional and national programmes. If the project intervention area falls under such jurisdictional or national efforts, nesting is required. ▸ Use of a registry is mandatory. Plan Vivo uses the Markit Environmental Registry[139].
VCS	▸ Double counting defined as, when one GHG emission reduction or removal "is monetized separately by two different entities or where a GHG emission reduction or removal is sold to multiple buyers". ▸ Requirements to address double issuance: • A detailed registration and issuance process is in place which requires project proponents to submit documentation and evidence at the validation stage of a project and verification stage, before VCUs are issued. Addresses double monetisation and double selling. ▸ Requirements to prevent double use (referred to as double monetisation): • Prohibits that emissions reductions or removals issued as VCUs are also issued as "GHG allowances or other types of GHG credits under an emissions trading program, or as other forms of environmental credit". • Evidence must be provided, that "emissions reductions or removals generated by the project" will "not be counted or used" by the other programme or mechanism. This may be evidence of cancellation in the other programme, evidence of purchase of allowances from the other programme or evidence that the project activity is outside the scope of the "program or national cap". ▸ VCUs can be labelled to demonstrate that they fulfil requirements of CORSIA and Article 6 of the Paris Agreement (under development). ▸ Verra does not address double claiming, as it considers it to fall outside its jurisdiction (VCS 2012a). ▸ Use of a registry is mandatory. The VCS uses the Verra registry[140].
Verra JNR	▸ Requires alignment between project level accounting and accounting at a jurisdictional level, also known as nesting. ▸ Provisions to prevent double counting are specific for the different nesting scenarios. ▸ Scenario 1 (credits issued to projects only and not the national-level jurisdiction): • No requirements regarding other REDD+ incentives or programmes. • If projects comply with CORSIA or other requirements, they should use VCU labels. • VCS Standard applies to nested projects. ▸ Scenario 2 (credits issued to national jurisdiction and activities at lower jurisdiction or project level):

[139] https://mer.markit.com/br-reg/public/index.jsp?entity=issuance&sort=vintage&dir=DESC&start=0&acronym=&limit=15&name=plan+vivo&standardId=&unitClass

[140] https://registry.verra.org/

Mechanism	Provisions against double counting (double issuance, use, claiming)
	• Jurisdictions are forbidden to credit the same emission reduction under another "GHG program". VCS registration and issuance procedure must be followed. • Jurisdictions are forbidden to credit the same emission reduction under a results-based programme. Proof that emissions reductions "have not and will not" be counted under any results-based programme must be provided. • If the jurisdictional programme operates within a jurisdiction that has an emission trading programme or a binding cap, VCS Standard requirements apply to demonstrate emissions reductions or removals will not be counted or used twice. • National-level jurisdiction "shall deduct" credits issued to project or lower-level jurisdictional programme from their total GHG reductions. • Emissions reductions achieved by "non-forest carbon projects (…) that reduce pressure on forests (e.g. fuel efficient cookstove projects) shall be deducted" from the total of GHG reductions of the national jurisdiction. • VCS Standard applies to nested projects. ▸ Scenario 3 (credits issued only to national jurisdiction): Same as for Scenario 2. ▸ Use of a registry is mandatory. The Verra JNR uses the Verra registry[140].

Source: own compilation, Oeko-Institut.

3.2.6 Addressing non-carbon benefits and safeguards

3.2.6.1 Recognition of non-carbon benefits

To what extent do the reviewed REDD+ financing mechanisms recognise, require or reward the provision of non-carbon benefits? We can differentiate between the following constellations (with individual funding mechanisms possibly covering more than one of these):

- **No recognition of non-carbon benefits**: The Agreement of Norway with Brazil (Norway und Brazil 2009), the REM Programme between Norway, Germany & UK with Colombia, the Agreement of CAFI (Norway) with Gabon[141] as well as the crediting mechanisms VCS[142] and JNR do not mention non-carbon benefits.
- **Recognition of non-carbon benefits (without further requirements)**: Under the Agreement of Norway, Germany, UK and Peru partners "recognize the contributions that the [agreement] can make in relation to co-benefits that complement national efforts and actions towards the achievement of the objectives of the Convention on Biological Diversity (…)" (Peru et al. 2021, p. 1). No requirements are tied to this recognition.
- **Requirement to consider non-carbon benefits in planning and implementation**: Under the GCF Pilot Programme it is "optional" for a results-based funding proposal to "contain a description, with any available evidence, of non-carbon benefits associated with the implementation of REDD-plus activities during the eligibility period" (GCF 2017c, para 26). The Carbon Fund's Methodological Framework (FCPF 2016b) requires that an emission reduction ("ER") programme "outlines potential Non-Carbon Benefits, identifies priority Non-Carbon Benefits, and describes how the ER Program will generate and/or enhance such

[141] Only in the 2017 agreement (which does not pertain to results-based payments, though), Gabon commits itself to developing a policy on a carbon-neutral approach to the conversion of non-HCS/HCV forest to other land uses, and to promote in its context social and environmental benefits Gabon und CAFI (2017).

[142] The VCS merely mentions that "Additional certification standards may be applied to demonstrate social and environmental benefits beyond GHG emission reductions or removals" VCS (2021), Section 3.16.1..

priority Non-Carbon Benefits" (Indicator 34.1). It specifies that priority non-carbon benefits "should be culturally appropriate, and gender and inter-generationally inclusive, as relevant" (ibid). Under the BioCarbon IFSL, non-carbon benefits need to be considered during programme selection and design. Similarly, Japan's JCM defines "other social and environmental benefits" to be one safeguard criterion (Japan n.d., § 21(1), Annex II) and requires safeguard activities to be planned and implemented (ibid, § 22). ART/TREES mentions non-carbon benefits as part of the required conformance with the Cancun Safeguards (ART 2020, Section 12.5.5). A process indicator requires public institutions to assess social and environmental benefits of REDD+ actions and promote their enhancement in the implementation of REDD+. Plan Vivo requires that projects generate ecosystem service benefits[143] (Plan Vivo 2013, Section 2) and to demonstrate „clear plans to benefit the livelihoods of participants", with benefits being defined by local participants (Plan Vivo 2013, Section 7). The FCPC Carbon Fund, Japan's JCM and California's TFS do not have explicit requirements for considering non-carbon benefits in planning and implementation, but require it implicitly since they oblige participants to monitor, report and/or verify non-carbon benefits (see next bullet point).

- **Requirement to monitor, report and/or verify non-carbon benefits**: Within FCPF Carbon Fund, information on projects' non-carbon benefits needs to be made public and included in monitoring and interim progress reports (FCPF 2016, Indicator 35.2). The BioCarbon ISLF also requires non-carbon benefits to be monitored and reported through the World Bank's and ISFL's monitoring and evaluation mechanisms (BioCF ISFL 2021b, Section 3.3). Under Japan's JCM, "other social and environmental benefits" as a safeguard criterion need to be monitored and reported on (Japan n.d., § 22, Annex II). California's TFS requires that jurisdiction's social and environmental safeguard programmes "must receive a positive verification consistent with the Climate, Community and Biodiversity Standards Version 3.1" (CARB 2019, CH. 15(e)); the CCB standard requires projects to "adopt best practices to deliver net positive benefits for climate change mitigation, for local communities and for biodiversity" (VERRA 2017, p. 3). Plan Vivo requires a project socioeconomic baseline scenario and development of a socioeconomic impact assessment/monitoring plan to measure advances against the baseline scenario (Plan Vivo 2013, Section 7).

- **Payment for non-carbon-benefits**: Only two of the reviewed mechanisms – at least indirectly – recognise non-carbon benefits in the context of payments: the FCPF Carbon Fund links interim advance payments to "information on the generation and/or enhancement of Priority Non-Carbon Benefits" (FCPF 2014, Section 4.04). Similarly, the scorecard assessment of the GCF Pilot Programme checks whether information has been provided on "how the proceeds are used in a manner that contributes to the long-term sustainability of REDD-plus activities, including non-carbon benefits" (GCF 2017c, Annex XII, Section 3b); a 'fail' on this criteria implies failing the programme (ibid, p. 20, 22). It is thus not the actual provision of non-carbon benefits that is financially rewarded (direct link) but the provision of information on non-carbon benefits (indirect link).

[143] E.g. through various intervention types such as ecosystem restoration, ecosystem rehabilitation, prevention of ecosystem conversion or ecosystem degradation and improved land use management.

Table 28: Recognition of non-carbon benefits

Mechanism	No recognition	Recognition (without require-ments)	Requirement to consider in planning & implementation	Requirement to measure, report and/ or verify	Recognition in payment
GCF, Pilot Programme for REDD+ RBP			optional		x
FCPF (Carbon Fund)			implicit	x (measuring, reporting)	x
BioCF-ISFL (Tranche 3)			x	x (measuring, reporting)	
Agreement of Norway with Brazil	x				
Agreement of Norway, Germany, UK and Peru		x			
REM Programme Norway, Germany & UK with Colombia	x				
Agreement of CAFI (Norway) with Gabon	x				
Japan's JCM			implicit	x (measuring, reporting)	
California TFS			implicit	x (verification)	
ART/TREES			x		
Plan Vivo			x	x (measuring)	
VCS	x				
JNR	x				

Source: own compilation, Oeko-Institut.

3.2.6.2 Safeguards addressing non-carbon risks

Safeguards to mitigate social and environmental (i.e. 'non-carbon') risks exist for almost all REDD+ finance mechanisms reviewed. In most cases, compliance or consistency with the Cancun Safeguards is required; in some cases, compliance with other provisions is required – either exclusively or in addition to compliance with the Cancun Safeguards. Such other safeguards include policies of multilateral funds and international organisations (e.g. Green Climate Fund or World Bank safeguard policies) or provisions by multistakeholder initiatives such as the REDD+ SES Initiative or the Governors' Climate and Forests Task Force. Finally, some finance mechanisms define their own sets of safeguards (e.g. Plan Vivo, VCS, JCM). The following sections elaborate on these findings.

- **No safeguard requirements**: Only the donor agreement between Norway and Brazil does not specify safeguards (which predates the UNFCCC Cancun Safeguards), however, it is reacting to the UNFCCC developments[144]).
- **Requirement to implement Cancun Safeguards or safeguards consistent with these**: A number of mechanisms either directly require implementation of the Cancun Safeguards (as in the case of the GCF's REDD+ Pilot Programme; cf. GCF 2017c, Annex XII) or consistency with the Cancun Safeguards. The latter holds for most of the analysed bi-/multilateral REDD+ partnerships, Japan's JCM, California's TFS,[145] the ART/TREE standard[146] and the JNR (Scenarios 2 and 3) (see Peru et al. 2014, p. 3; Colombia et al. 2015b, p. 6; GCF 2017c, Annex XII; Gabon und CAFI 2019, p. 2; GoJ n.d., para 21; ART 2020, Section 12.5; JNR 2021b; 2021c, Sectio 3.8.1).[147]
- **Requirement to implement or be consistent with other pre-existing safeguards (independent of the finance mechanism)**:
  - **Organisational policies (GCF, World Bank)**: In addition to the Cancun Safeguards, the GCF requires that due diligence reports confirm compliance with GCF policies, notably the GCF's own Environmental and Social Safeguard standards (ESS Standards which include stakeholder engagement), Gender Policy and Interim Policy on Prohibited Practices (GCF 2017c, para 18).

    The FCPF Carbon Fund requires that the emission reduction programme meets the World Bank's social and environmental safeguards and promotes and supports the Cancun Safeguards (FCPF 2016b, Indicator 24.1);[148] safeguard plans should include measures identified during the national *readiness* process (Indicator 24.2).[149]

    The BioCarbon Fund requires that ISFL Emission Reduction Programs are developed and implemented in accordance with World Bank Group policies including social and environmental safeguards[150] (BioCF ISFL 2021b, para 2.2.1). As part of these, ISFL emission reduction programmes are required to consult with relevant stakeholders as part of their preparation and implementation (ibid). ISFL ER Programs should also include a (public) assessment of the land and resource tenure regimes in the programme area (BioCF ISFL 2021b, Section 3.5).
  - **REDD+ SES and others**: Under California's TFS, to demonstrate consistency with the UNFCCC Cancun Safeguards, the sector plan and safeguard reports must identify principles, criteria, and indicators that conform with the **REDD+SES** Version 2 (REDD+SES 2012) …' (CARB 2019, Ch. 10(b)). Consultation of forest-dependent

[144] The respective safeguards include (according to Brazil's 1st Safeguards Summary, cf. Brazil (2010)): legal compliance; acknowledgement and guarantee of rights; distribution of benefits; economic sustainability, improving standards of living and reducing poverty; environmental conservation and remediation; participation; monitoring and transparency; governance.

[145] Additionally, the TFS requires that 'To demonstrate consistency [with the UNFCCC Cancun Agreement], the sector plan and safeguard reports prepared for each reporting period must identify principles, criteria, and indicators that conform with the REDD+SES Version 2 (REDD+SES 2012) …' CARB (2019), Ch. 10(b).

[146] ART/TREES specifies structural, process and outcome indicators for the Cancun Safeguards ART (2020), Section 12.5.

[147] Note that often the term 'Cancun Safeguards' is not explicitly mentioned, but 'relevant UNFCCC decisions' or 'established international standards' are referred to.

[148] Document FMT Note CF-2013-3 contrasts World Bank Safeguard Policies and the Cancun Safeguards.

[149] In turn, for the FCPF *Readiness* Fund, the 'Common Approach' specifies the following topics as "most relevant safeguards": environmental assessment, natural habitats, forests, involuntary resettlement, indigenous peoples, physical and cultural resources FCPF (2012b), Rn. 14. Under the Common Approach, Stakeholder Guidelines outline principles for effective participation and consultation, operational guidelines, and practical "how-to" guidance FCPF (2012b), Rn. 26–30.

[150] https://www.worldbank.org/en/projects-operations/environmental-and-social-framework We could find no information on whether the programmes should also be consistent with the Cancun Safeguards.

communities needs to adhere to the Governors' Climate and Forests Task Force Guiding Principles for Collaboration and Partnership Between Subnational Governments, Indigenous Peoples and Local Communities (CARB 2019, Ch. 10(a)).[151]

The JNR under Scenario 1 specifies that Principle 6 of REDD+SES (i.e. on the full and effective participation of all relevant rightsholders and stakeholders) "*may* be used" to guide the development of jurisdictional FRELs (JNR 2021a, Section 3.8.6). Alternatively, the "Guidelines on Stakeholder Engagement" in REDD+ Readiness of the FCPF and/or the UN-REDD Programme may be used. Under Scenario 2 and 3, the JNR provides the option that, additional to the Cancun Safeguards and jurisdictional requirements, 'additional standards such as the REDD+SES *may* be applied to demonstrate compliance with the social and environmental safeguards requirements' (JNR 2021b; own italics; JNR 2021c, Section 3.8.6 in both documents).

- **National and sub-national safeguard requirements**: Frequently, compliance with relevant national or subnational safeguards is required, too (e.g., GoJ n.d., para 21; JNR 2021b; 2021c, Section 3.8.1; Plan Vivo 2013).

- **Requirement to implement own safeguards defined by finance mechanism**: Japan's JCM specifies a number of own safeguards (Japan n.d., § 21)[152] which are to be implemented in addition to consistency with, among others, 'relevant international conventions and agreements' (and hence the Cancun Safeguards). The Plan Vivo and VCS standards do not actually use the term "safeguards" but still define social and environmental requirements that projects need to comply with (Plan Vivo 2013[153]; VCS 2021[154]).

Table 29: Addressing non-carbon risks

Mechanism	No safeguards	Cancun Safeguards	Other pre-existing safeguards	Own safeguards defined by finance mechanism
GCF, Pilot Programme for REDD+ RBP		x	x (GCF policies)	

[151] The California TFS also allows 'adherence to additional standards, such as the Green Climate Fund Indigenous Peoples Policy (Green Climate Fund 2018), the United Nations Development Programme Social and Environmental Standards (UNDP 2015), the Green Climate Fund/UN Women Mainstreaming Gender in Green Climate Fund Projects Manual (Green Climate Fund/UN Women 2017), the Forest Carbon Partnership Facility Common Approach to Environmental and Social Safeguards (FCPF 2012), and the International Finance Corporation Environmental and Social Performance Standards (IFC 2012) … to help demonstrate consistency' CARB (2019), Ch. 10 (b).

[152] These safeguards include: (b) Establish transparent and effective project governance structures; (c) Recognize and respect rights to lands and resources; (d) Recognize and respect the knowledge and rights of indigenous peoples and members of local communities; (e) Promote and support the full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities; (f) Provide equal employment opportunities and adequate working conditions; (g) Conserve natural forests; (h) Respect other prioritized areas that have high values for the conservation of biological diversity and ecosystem services; (i) Generate other social and environmental benefits; (j) Address the risks of reversals; and (k) Reduce the risks of emissions displacement

[153] Respective Plan Vivo requirements relate to project locations, land tenure, benefit-sharing (see also Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**), a voluntary and participatory project planning process, community ownership, generation of livelihood benefits and ecosystem service benefits (Plan Vivo 2013, Section 1.1, 2.1, 4.10, 7.1. 8.4). Further safeguards relevant for addressing risks of reversals (Plan Vivo 2013, Section 6.3-6.4) and leakage (Section 5.19-5.20) are addressed in Chapter 3.2.4.

[154] Respective VCS requirements relate to avoidance of negative impacts on the natural environment or local communities ('No Net Harm'), engagement with local stakeholders during project development and implementation VCS (2021), Section 3.16, a public comment period, preparatory identification of local stakeholders that will be impacted by the project (ibid, Section 3.16.11), identification of risks to local stakeholders and measures to mitigate these risks (ibid, Section 3.16.12), respect for local stakeholder resources such as property rights and damage to the ecosystems on which local stakeholders rely, among others by not introducing invasive species, justifying the use of non-native species over native species, justifying the use of fertilizers, chemical pesticides, biological control agents and other inputs used by the project and their possible adverse effects (ibid, Section 3.16.16). Requirements also concern appropriate communication and consultation with local stakeholders (ibid, Section 3.16.17).

Mechanism	No safeguards	Cancun Safeguards	Other pre-existing safeguards	Own safeguards defined by finance mechanism
FCPF (Carbon Fund)		x	x (World Bank policies)	
BioCF-ISFL (Tranche 3)			x (World Bank policies)	
Agreement of Norway with Brazil	x			(specified later for Amazon Fund generally)
Agreement of Norway, Germany, UK and Peru		x		
REM Programme Norway, Germany & UK with Colombia		x		
Agreement of CAFI (Norway) with Gabon		x		
Japan's JCM		x		x
California TFS		x	x (GCF Principles for Collaboration and Partnership)	
ART/TREES		x		
Plan Vivo				x
VCS				x
JNR		x	x optional (e.g., REDD+SES)	

Source: own compilation, Oeko-Institut.

3.2.6.3 Institutional follow-up on safeguards

What institutional follow-up mechanisms do the REDD+ financing mechanism require or provide to promote the implementation of safeguards? In the case of the reviewed mechanisms, we find the following follow-up components:

- **Safeguard indicators**: Some of the financing mechanisms provide indicators against which participants need to monitor and report safeguard implementation, or against which the finance mechanism assesses the programme. In the case of the GCF, for instance, each aspect of the Cancun Safeguards is translated into a scorecard criterion (GCF 2017c, Annex XII, Stage II, Section 3). The Carbon Fund's Methodological Framework lays down five indicators (FCPF 2016b). FCPF Indicator 24.1, for instance, reads: 'The ER Program demonstrates through its design and implementation how it meets relevant World Bank social and environmental safeguards, and promotes and supports the Cancun Safeguards". ART/TREES provides indicators on structure (governance arrangements), process (mandates, procedures etc.) and outcomes (implementation results) for participants to demonstrate conformance with the Cancun Safeguards (ART 2020, Section 12.2).

- **Monitoring and reporting**: Monitoring and reporting of safeguard implementation is a basic requirement to follow up on safeguards. Except for the early Norway-Brazil Agreement, all reviewed mechanisms require regular *reporting* of the implementation of safeguards (see table below). Reporting periods differ: in some cases (e.g. Plan Vivo), annual reporting is required; in others, reporting is necessary for a verification period. As was elaborated in Section 3.1.2.6, the Cancun Safeguards require that 'systems on providing information on safeguards' (abbreviated: 'SIS') are implemented. Finance mechanisms that necessitate compliance with the Cancun Safeguards (e.g. the GCF) pass on this requirement.

  A precondition for reporting is the *monitoring* of safeguard implementation. Some of the mechanisms explicitly require monitoring (e.g., FCPF 2016b, Indicator 25.1; BioCF ISFL 2021c, para 66; Japan n.d., Annex I, §3; Plan Vivo 2021c, 3.9.4); other mechanisms do so only implicitly via the reporting requirement.

- **Validation**: The independent validation of safeguard reporting is an additional measure to ensure follow-up on safeguards. Among the mechanisms analysed, all crediting mechanisms require validation of the safeguard reports (which may be self-standing reports or parts of monitoring reports). In the case of the carbon standards (California TFS, ART/TREES, Plan Vivo, VCS, JNR), the respective bodies are specifically approved and they are independent firms responsible for performing the validation and/or verification (e.g., the TFS, cf. CARB 2019, Ch. 10(e); ART 2020, Section 14.1; Annex A, Section 3; VCS n.d., Section 4.2-4.3). Under the JCM, safeguard activity progress reports are evaluated by the mechanism's 'Joint Committee' (GoJ n.d., § 22(g), §§30-31, 36-37).

- **Public disclosure**: Some REDD+ financing mechanisms require public disclosure of safeguard reporting. To the extent that mechanisms require compliance with the Cancun Safeguards (e.g. GCF Pilot Programme, bi-/multilateral REDD+ partnerships), this implicitly includes a UNFCCC requirement that information on safeguards should be 'transparent and consistent' and 'accessible by all relevant stakeholders' (Decision 12/CP.17).[155] The FCPF Carbon Fund, California TFS and Plan Vivo have a self-standing requirement to publicly disclose safeguard plans (FCPF 2016b, Indicator 25.2; CARB 2019, Chapter 10(c)) or safeguard issues as part of annual reports (Plan Vivo 2021c, Section 4.9).

- **Grievance mechanism required**: Mechanisms to enable feedback and redress grievances help learning of cases of safeguard violation. REDD+ activities funded by the FCPF Carbon Fund or the BioCarbon Fund ISFL require an appropriate Feedback and Grievance Redress Mechanism (FCPF 2016b, Criterion 26; BioCF ISFL 2021b, Section 3.4). Among the carbon market standards, only ART/TREES does not prescribe formal grievance processes for safeguards (ART 2020, Section 12.4).[156]

- **Sanctioning of non-compliance with safeguards**: The linchpin of safeguard follow-up is whether the REDD+ finance mechanisms sanction non-compliance with safeguards or safeguard reporting by reducing/withholding payments or credit issuance. Not all mechanisms provide clear information on this.

  The GCF Pilot Programme on REDD+ RBP requires information on implementation of the Cancun Safeguards in its scorecard assessment; a 'fail' on any of the Cancun criteria (i.e. 'the

[155] In the table below, the cross is bracketed when disclosure is due to UNFCCC provisions and not to own provisions of the REDD+ financing mechanism.

[156] The complaints and appeals procedure situated with the TREES Validation and Verification Body governs the relationship between programme participants or stakeholders and ART representatives/ secretariat ART (2020), Section 16.

summary is missing information to understand how the safeguard has been addressed and respected') implies failing the Pilot Programme (GCF 2017c, Annex XII, Section 3a).

The FCPF Carbon Fund links interim advance payments to evidence that the programme activity is being implemented in accordance with the Safeguards Plans (FCPF 2014, Section 4.04). Furthermore, failure to observe, implement and meet all requirements contained in a Safeguards Plan counts as "events of default". If such an event of default is intentional, the World Bank as FCPF Trustee may terminate the ERPA (FCPF 2014, Section 16.01-16.04). Various of the bi-/multilateral REDD+ partnerships reviewed, too, stipulate that reporting on how safeguards are being addressed and respected is a prerequisite for payments (Peru et al. 2014, p. 6; Colombia et al. 2015a, Section VI (g)).

Under the crediting mechanisms analysed, conformance with the respective safeguards is assessed as part of the validation/verification process. When a REDD+ programme that does not meet the validation criteria and the validation/verification body produces negative validation conclusions, corrective action needs to be taken until the validation/verification body provides a positive validation, or else the registration or issuance request are not accepted (ART 2020, Section 14.1; Plan Vivo 2021c, p. 18; 2021b, p. 13; VCS 2021, para 4.1.11; JNR 2021b, para 2.5.4).

Table 30: Institutional follow-up of safeguards

Mechanism	Indicators provided	Monitoring / Reporting required	Verification required	Disclosure required	Grievance mechanism	Sanctioning non-compliance
GCF, Pilot Programme for REDD+ RBP	x	x (SIS)		(x)		x
FCPF (Carbon Fund)	x	x		x	x	x
BioCF-ISFL (Tranche 3)		x			x	
Agreement of Norway with Brazil						
Agreement of Norway, Germany, UK (as of 2021) and Peru		x (SIS)		(x)		x
REM Programme Norway, Germany & UK with Colombia		x (SIS)		(x)	x	x
Agreement of CAFI (Norway) with Gabon		x (SIS)		(x)	(x)[157]	
Japan's JCM		x	x		x	
California TFS		x	x	x	x	
ART/TREES	x	x	x		(x)[158]	x
Plan Vivo		x	x	x	x	x
VCS		x	x		x	x

[157] While the 2017 and 2019 agreements do not link safeguards to a grievance redress mechanism, the 2018 document mentions an existing Grievance Mechanism of the National Land Use Planning Commission in Gabon Gabon und CAFI (2017), p. 7.

[158] No formal grievance processes for safeguards ART (2020), Section 12.4 but a general complaints and appeals procedure exists within the TREES Validation and Verification Body ART (2020), Section 16.

Mechanism	Indicators provided	Monitoring / Reporting required	Verification required	Disclosure required	Grievance mechanism	Sanctioning non-compliance
JNR		x			x	x

Source: own compilation, Oeko-Institut.

3.3 Synthesis

The following sections aim to synthesise the above findings on different aspects of the 13 results- and transfer-based REDD+ financing mechanisms reviewed. We summarise and discuss insights with regard to the mechanisms' financial governance, how they address non-permanence of emission reductions and removals, how they monitor, credit and account for emission reductions and removals, and how they address non-carbon benefits. In the following section, we discuss the objectives related to these characteristics, the differences and commonalities between the mechanisms reviewed as well as the opportunities and challenges related to them.

3.3.1 Financial governance

The financial governance of REDD+ is linked with a number of **objectives**:

- Tapping (relatively) cost-effective mitigation options;
- Mobilising sufficient REDD+ finance;
- Mobilising REDD+ finance in a timely manner while avoiding investment gaps in the tropical forest countries;
- Distributing REDD+ finance across a multitude of countries including Low Income Countries that have few domestic capacities for REDD+ readiness and implementation measures;
- Sharing the monetary and non-monetary benefits of REDD+ within recipient countries and distributing them to the local levels where non-deforestation and -degradation need to be compensated to change actual forest use practices;
- Effectively incentivising emission reductions and removals from REDD+ activities, inter alia through appropriate unit prices for REDD+ emission reductions or removal;
- Coherence of REDD+ finance with other objectives of the UNFCCC and Paris Agreement as well as domestic policies within forest countries;
- Provision of non-carbon (co-)benefits and managing of social and environmental risks from REDD+ activities.

Against this background, we looked at aspects such as the sources and recipients of REDD+ results-based finance; the amount of finance pledged for REDD+ RBP; the use of results- vs. transfer-based REDD+ finance; how the prices are set for REDD+ emission reduction and removal units and what unit prices are; how the amount of payable emission reductions are calculated; to what extent the financing mechanisms include means to overcome investment gaps; when payments or disbursements are made; and whether the mechanisms contain provisions on the use of proceeds and on monetary benefit-sharing.

In the following, we describe differences and commonalities between the mechanisms reviewed, the complementarity of existing approaches and gaps left by these, as well as related opportunities and challenges.

We have classified the selected results-based REDD+ mechanisms according to their **source** (REDD+ country governments, industrialised country governments, private sector and non-profit sector). While the carbon market mechanisms by private actors have mobilised results-based finance for years, the results-orientation of publicly funded mechanisms such as multi-lateral funds and bi-/multilateral agreements is relatively new; only World Bank-sponsored mechanisms and the Norway-Brazil agreements financed results even prior to 2010. Norway remains the biggest source of results-based REDD+ finance. We could even identify one domestic (tropical country) mechanism for results-based REDD+ finance: Colombia's carbon tax with an option to use REDD+ offsets.[159] While the increasing orientation towards results-based REDD+ finance is an opportunity for effective climate mitigation, it comes with a number of well-known challenges with regard to social and environmental integrity that are summarised below in this synthesis.

Looking at the **recipient** side, we find that ten Asian, 13 Latin-American and 15 African countries are or have been recipients of REDD+ results-based finance. Indonesia is the recipient of payments from six different RBP mechanisms and hence the most experienced country in terms of results-based REDD+ finance in our sample; it is followed by Brazil, Chile, Colombia, Mexico and Peru which receive(d) payments from three RBP mechanisms each.[160] The countries on which case studies have been conducted in Chapter 6 (Indonesia, Ethiopia, Peru, Vietnam, DRC) all received payments from at least two of 'our' RBP mechanisms. We did not determine the absolute amounts of results-based finance that are transferred to the respective countries and regions and it needs to be kept in mind that the monetary amounts may differ significantly (e.g. payments for credits from project-based carbon market standards do not compare to national-level payments from the analysed bilateral agreements). The recipients include eight Low Income Countries, 18 Lower Middle Income Countries, eleven Upper Middle Income Countries and, with Chile, one High Income Country. Though, generally, it is satisfactory that three quarters of the recipients of REDD+ RBP (in our sample) are low and lower-middle income countries, this assessment needs to be qualified as we do not take into account the monetary amounts transferred.

Looking at the amount of **finance pledged and transacted for results- and transfer-based REDD+**, we reviewed pledges in the context of (a.) multilateral funds and bi-/trilateral REDD+ agreements or programmes, and (b.) financial transfers under crediting mechanisms. Across the funds and agreements analysed (ad a.), donors have pledged USD 3.5 billion for the period 2009 to 2030. Of these, USD 1.4 billion have actually been transacted. The time lag is a corollary of REDD+ being a results-based mechanism that only pays ex post for verified results. Still, the gap between pledged and transacted finance points to the need for means to overcome investment gaps. Crediting mechanisms (ad b.) do not pledge finance; the finance that is transacted results from the amount of verified emission reductions and removals and the price paid by credit buyers. The sums of transacted volumes are not recorded. On the voluntary carbon market, however, REDD+ transactions have increased significantly within the project category of "forestry and land use" projects which in turn is the biggest project category both in terms of

[159] Note that the Brazilian Amazon Fund does not allocate money in a results-based way, though it receives money in a results-based way.

[160] Bolivia, DRC, Ethiopia, Lao PDR, Madagascar, Mozambique, Nicaragua, Paraguay, Tanzania and Vietnam receive(d) payments from two RBP mechanisms each. In our sample, Belize, Cambodia, Costa Rica, Côte D'Ivoire, the Dominican Republic, Ecuador, Fiji, Gabon, Ghana, Guatemala, Guinea-Bissau, India, Kenya, Malawi, Nepal, Papua New Guinea, the Republic of Congo, Sierra Leone, Sri Lanka, Timor-Leste, Uganda and Zambia receive(d) payments from one RBP mechanism each.

volumes and prices achieved (in the first three quarters of 2021, a market volume of USD 476 million was reached for these projects, with an unclear share of REDD+ projects). Still, the overall volume of results-based finance transacted under multilateral funds, donor agreements or crediting mechanisms remains well below the overall target value described, for instance, by the Eliasch Review. This review estimated in 2008 that 'the finance required to halve emissions from the forest sector to 2030 could be around $17-33 billion per year if included in global carbon trading' (Eliasch 2008, p. xvi). Though we only focussed on RBF and did not look into finance for REDD+ phases 1 and 2, it remains obvious that finance remains a major challenge in the future. This holds all the more since some of the mechanisms will expire in the next few years. While this is an opportunity in terms of reducing fragmentation, complexities and redundancies of the REDD+ finance landscape, providing funds – e.g. through the GCF – is still required.

RBP and TBP originating in multilateral funds and bi-/multilateral REDD+ partnerships, as a rule, have **caps on payments** (while crediting mechanisms do not). While this is not as such surprising, it qualifies the core idea of RBF approaches – which is to reward (all) past and verified emission reductions and removals. The examples show, however, that in the case of forest countries successfully reducing deforestation, the amount of actual emission reductions and removals can exceed the capacity or willingness to pay even of financially strong donor countries such as Norway. While those emission reductions and removals paid for are 'results-based', not all results are paid for. This is a conceptual lesson.

With regard to the question of whether payment is made for results only (**RBP**) or for the transfer of these results (**TBP**), the majority of multilateral funds and bi-/multilateral REDD+ partnerships provide RBP; exceptions are the FCPF Carbon Fund, the BioCF ISFL (only ER Use Modality 2) and Japan's JCM. Most crediting mechanisms are used to distribute both RBP and TBP. Considering that various of the funds/partnerships expire while a number of crediting mechanisms develop rules to implement the provisions of the Paris Agreement's Article 6 for TBP, a trend towards strengthening TBP can be observed, possibly at the cost of RBP. While TBF may increase the incentive to invest in REDD+, the quality of emission reductions and removals as well as the prices achievable under transfer-based finance, there are also risks related to TBF. Notably, environmental integrity concerns related to REDD+ such as non-permanence and leakage become more pronounced when emission reductions or removals are counted against NDCs/climate targets. As a consequence, actual mitigation efforts will fall short of the NDCs/ targets committed to. Other problematic aspects concern the fungibility of REDD+ credits and non-forest credits which may slow down the transition towards low-carbon technologies; forest countries potentially risking their NDC achievement through selling REDD+ credits to buyers; and ethical issues related to offsetting. In the face of these risks, as well as the preference (in the past) of several important REDD+ countries (e.g. Brazil) for RBP, it is important that the Green Climate Fund steps into the gap that likely emerges when other RBP mechanisms expire. This requires the GCF to initiate a follow-up to its present pilot programme for REDD+ RBP in a timely manner.

Prices for emission reductions and removals from multilateral funds or bi-/multilateral REDD+ partnerships are either USD 5 or 10. The uniformity of these prices indicates that actual price formation depends not so much on equitable negotiations between the providers and funders of REDD+ emission reductions and removals; considering the wide variety of economic and ecologic context conditions, one would expect greater variance between prices in different agreements. Possibly, prices are set more unilaterally by donors which are oriented towards a widely used standard price. Whether or not USD 5 or, respectively, USD 10 are an adequate price for emission reductions and removals from REDD+ is difficult to determine at a global level:

while from the perspective of cost effectiveness, the costs of effective REDD+ should be as low as possible, from the perspective of fairness, all costs related to REDD+ activities should be covered; and from the perspective of environmental effectiveness, an incentive should be created that is sufficiently high to redirect land-use activities away from deforestation and forest degradation. Cost structures, including opportunity costs, however, can differ widely between forest countries and activities, so that 'adequacy' of prices for REDD+ ERR is context-specific. This challenge needs to be addressed by RBP schemes in which **price-setting** is not market-based but determined by governments. Better data on credit prices under crediting mechanisms could guide a more context-sensitive setting of prices for RBP.

While multilateral funds and bi-/multilateral REDD+ partnerships typically provide some **means to overcome investment gaps**, this does not hold for carbon market standards. An exception is the Plan Vivo Standard which enables the ex ante issuance of credits. While this is advantageous with regard to covering upfront investment costs, ex ante credits are problematic regarding uncertainties in future implementation and ecological factors that may reduce results vis-à-vis assumptions. This provides a challenge that cannot be resolved through market-based approaches alone. As multilateral funds and bi-/multilateral REDD+ partnerships with RPB will expire and the role of TBP will likely increase, it is all the more necessary not to neglect finance for the early REDD+ phases as long as tropical countries still have issues with building the capacities to effectively implement REDD+.

As regards the **timing of payments**, all REDD+ financing mechanisms reviewed provide for payments *before* the end of the eligibility/crediting period. Typically, payments are made after the ex-post verification of emission reductions or removals and, in the case of crediting mechanisms, the issuance of credits. Some mechanisms allow annual or biannual verification (and payments), others require verification "at least every 4-6 years". Longer periods of verification provide greater difficulties for REDD+ countries to refinance their investment costs.

Only few of the REDD+ financing mechanisms analysed stipulate **how proceeds are to be used**. Those mechanisms that do have provisions on the use of proceeds (GCF, bi-/multilateral REDD+ agreements) require that payments are re-invested in REDD+ activities, forest countries' low-carbon development plans or achievement of their NDCs. At least to a limited extent, the REDD+ mechanisms thus reinforce the impact of REDD+ payments and support coherence with goals specified under the UNFCCC and Paris Agreement. While respective provisions cannot be made in the case of voluntary carbon market standards, this opportunity for coherence and effectiveness should be used in the development of a regular (i.e. not pilot) payment scheme for REDD+ RBP under the GCF. Institutional follow-up mechanisms such as a requirement to demonstrate how the proceeds have been used would strengthen this approach.

Most of the mechanisms screened – both RBP and TBP – contain mandatory **benefit-sharing provisions**. Requirements include the obligation to share monetary and non-monetary benefits (underpinned, in one case, by a target for the share of proceeds to be allocated to communities); obligations to develop respective benefit-sharing plans or mechanisms, to organise accountable and participatory processes, be transparent and monitor safeguard implementation. A challenge is that benefit-sharing includes vulnerable groups, from local communities in remote areas via indigenous peoples to the poor and women. Mainstreaming the obligation to include these groups in the design, implementation and review of benefit-sharing mechanisms can increase the equity and societal acceptance of (RBF approaches to) REDD+. This argument should also be considered in the design for any future funding window under the GCF for REDD+ RBP, as benefit-sharing under the present pilot programme is optional.

3.3.2 Addressing non-permanence of emission reductions and removals

Non-permanence is a characteristic of the forest sector that poses a major challenge for mitigation activities in the sector. Emission reductions or the uptake of CO_2 might only be temporary and the sequestered carbon re-enters the atmosphere at a later point in time. To address the risk of land use-related mitigation being reversed, three different approaches have been developed and partly taken up by REDD+ financing mechanisms. These include reducing non-permanence of mitigation activities (Approach 1), accounting and compensating reversals through monitoring and compensating (Approach 2a), discounting (Approach 2b) or temporary crediting (Approach 2c) or accounting and compensation by the recipient countries (Approach 3). Environmental integrity risks of non-permanence can thus be addresses by a combination of measures but mitigation activities with significant non-permanence risks require an active management of reversal risks over time.

There are a number of challenges and opportunities related to addressing non-permanence:

- Risk assessments increase **transaction costs** for the proponents of the mitigation activity but also provide buyers with an additional assurance of integrity.
- Non-permanence risks differ considerably between mitigation activities. More and better data for **understanding** differences in risk between types of mitigation activities as well as individual activities is an essential prerequisite for managing risks. For example, the non-permanence risk of an avoided deforestation project in a fire- and drought-prone area is higher than the one of a peatland restoration project.
- Carbon crediting mechanisms could refrain from crediting activities where reversal risks are high, such as for commercial plantations; **limiting eligibility** to activities with low long-term reversal risks can be a very effective means to reduce non-permanence risks.
- **Discounting** can raise moral hazard issues and should therefore only be pursued where non-permanence risks are well known and not under the control of the activity proponents.
- Larger scale **catastrophic reversals** or situations where activity proponents are unable to compensate, e.g. due to bankruptcy, raise a challenge for the credibility of forest mitigation activities. This needs to be addressed by sufficiently coordinated and pooled buffer reserves.
- **Temporary credits** are in principle a conservative approach as they fully account for any reversals but are less attractive for carbon markets as the units are not 'fungible' with other carbon market units.
- The **time horizon** for monitoring and compensating for any reversals is a critical choice that varies considerably between carbon crediting mechanisms. Sufficiently long time periods, such as minimum 100 years, provide incentives for robust activity design and better 'internalise' the cost of reversals.

3.3.3 Monitoring emission reductions and removals

Monitoring and assessing emission reductions and removals constitutes an important basis for REDD+ financing mechanisms, and approaches to monitoring are typically well developed and methods for assessing also documented. Under TBP approaches, determining emissions and removals in a conservative manner is important for ensuring environmental integrity of REDD+ activities.

Credible baseline setting is the most important factor for the environmental effectiveness of REDD+ financing mechanisms. In many mechanisms, the baseline aims to represent the most likely scenario that would occur in the absence of the proposed activity, often also referred to as 'business-as-usual' scenario and thus also forming the basis for an assessment of **additionality**.

There are a number of challenges and opportunities related to monitoring and assessing emission reductions and removals:

Opportunities

- **Additionality** is among the issues addressed by REDD+ financing approaches with a large variety of methods. Examples are the demonstration of legal additionality by providing evidence that the project is not based on activities that are required by law, investment analyses showing that without revenues from carbon crediting, projects would be economically or financially not attractive, or barrier analyses identifying hurdles that prevent project implementation.
- **Historic baseline** setting is the most frequently applied approach.
- With rapidly **improving capacities of monitoring** including satellite technologies, accuracy and resolution of historic deforestation rates have been constantly increasing.
- Approaches how **leakage** can be addressed differ with regard to the scale and type of the activity. Risks are large for single projects that affect the production of globally traded agricultural goods. At smaller project level leakage risks can be best avoided by careful project selection, mitigated by project design and detected and estimated by adequate monitoring systems.

Challenges

- **Additionality** is difficult to ensure for REDD+ finance mechanisms. However, it is an important criterion, especially for transfer-based mechanisms. It is not always considered important for non-transfer-based forms of (results-based) financing.
- Moreover, additionality can be a larger challenge for activities related to reducing emissions from deforestation while it has proven to be a smaller issue for afforestation projects. This is because determining causality between a mitigation activity and emission reductions and removals in the forest is challenging. Deforestation and forest degradation are often driven by very different dynamics.
- From an environmental integrity perspective, in addition to additionality, also management practices that focus solely on carbon benefits need to be avoided, e.g. fast growing monocultures contributing little to longer-term mitigation and adaptation.
- There needs to be more consideration of alternative likely scenarios in additionality assessments. For example, considering natural recovering of forests when enforcing forest protection and ban of illegal logging can be considered a conservative approach. This might entail the development of additional methodological guidance.
- There are general challenges related to **historic baselines** for estimating emission reductions and removals especially for countries with historically high forest cover and low deforestation rates where historic baselines tend to underestimate future emissions, and countries with high historic deforestation rates where this approach tends to inflate

baselines. Benchmarking and "front runner" approaches could help mitigate the risk of inflated baselines.

- Setting **baselines** using models remains highly uncertain under all approaches analysed. This is especially true for mitigation activities related to reducing deforestation and degradation that require an assessment of complex socio-economic dynamics that form the underlying drivers.
- Global **leakage**, i.e. the displacement of emissions due to international market shifts, can hardly be avoided. It can, however, be approximately estimated and deducted. Global displacement factors as applied by JNR can provide rough estimates. Ultimately, projects with a high risk of global leakage should not be considered for carbon crediting as environmental integrity of such projects cannot be ensured.

3.3.4 Accounting and crediting

Rules and guidelines to define accounting and crediting practices serve different purposes:

- The provide the basis for avoiding double counting and ensuring robust accounting towards mitigation targets;
- Ensure the adequate remuneration for activities that result in emission reductions and removals.

If crediting and a transfer of emissions reductions and removals take place two additional functions become relevant:

- Ensure that only real results, i.e. emissions reductions and removals that really occurred, are transferred and used to achieve mitigation targets or offset other emissions.
- Prevent double counting of emissions reductions or removals.

The general approach for quantifying emissions reductions and removals is the same for all REDD+ financing mechanisms analysed. These entail the quantification of carbon in different pools, activity data and establishment of a baseline or reference level to have a benchmark for tracking changes. However, the details often vary between financing mechanisms, e.g. in the methods used to assess uncertainty or in how different carbon pools are addressed.

The issuance of credits usually takes place once results have been verified. For this the respective financing mechanisms rely on third party verifiers. Crediting takes place during a defined period and there are significant differences in the approaches taken by financing mechanisms towards the start of a crediting period, its duration, and its renewal. Tied to the crediting period is the requirement to update crediting levels or baselines, which also varies between mechanisms. Crediting at the project level has been ongoing for more than ten years, however, given the challenges related to this approach, financing mechanisms have pivoted towards jurisdictional approaches. Crediting at this level is still at an early stage. Owing to the risks associated with transfers of emissions reductions and removals from REDD+ activities, TBP mechanisms generally have more and more stringent requirements than RBP mechanisms.

Opportunities

- The diversity of financing mechanisms offers countries the option to choose where to participate. In some instances, targeted methodologies like those developed under the JCM, can serve to better accommodate national circumstances.

- Jurisdictional approaches, especially those that require that crediting is tied to a national reference level, have the potential to support countries in achieving a coordinated and integrated approach to financing REDD+ activities and achieving their NDC targets.
- Jurisdictional approaches that can be used both for RBP and TBP, for example ART/TREES, reduce complexity for implementing countries.
- Complying with strict quantification requirements to demonstrate results, entails developing capacities for MRV. These capacities have increased over time and it is likely that they will continue to improve.

Challenges

- The diversity of financing mechanisms bears the risk of a race to the bottom regarding requirements for ensuring environmental integrity. There is also the risk of lock-in situation at sub-national level if there is no requirement for consistency with the national level.
- For countries it is hard to know which financing mechanisms are the most advantageous for them, considering the diversity of approaches.
- Preventing double counting against the backdrop of different financing mechanisms is more challenging with very diverse requirements and achievement of NDC targets. Sometimes there is no clear line between RBP and TBP mechanisms. The differentiation is important as it implies very different requirements for ensuring environmental integrity.
- Integration and coordination of different results-based finance mechanisms in one jurisdiction is needed. This includes considering diverse requirements and varying degrees of experience with them.
- There is a lack of price information for credits from project level financing mechanisms. Information on prices is only available via third parties. Also, there is no transparency on how differences in prices come about. If differences are related to the quality of credits, will the availability of cheaper forest carbon credits also impact quality in terms of environmental integrity?

3.3.5 Addressing non-carbon benefits and safeguards

An important aspect of REDD+ activities are the potential benefits and risks that they can have for the environment (e.g. biodiversity) and society (e.g. livelihoods). In order to promote such non-carbon benefits and mitigate non-carbon risks, many of the reviewed REDD+ mechanisms provide rules, though these are of different coverage, scope and institutional follow-up.

Presently, a limited number of REDD+ mechanisms do not **recognise non-carbon benefits** or do not tie this recognition to requirements regarding their provision (among them, four bi-/multilateral REDD+ partnerships and two crediting standards). In contrast to this, seven of the 13 reviewed mechanisms require to consider non-carbon benefits in the planning and implementation of REDD+ activities – three in an obligatory way, one in an optional way and another three in an implicit way. Of these, four mechanisms – two multilateral funds and two crediting standards – require participants to monitor, report and/or verify non-carbon benefits, and only two mechanisms (multilateral funds) tie payments to the provision of information on non-carbon benefits. While it has been argued that results-based payment should not be made over-complicated and should focus on the provision of carbon benefits, the analysis shows that there are at least indirect ways of promoting non-carbon benefits. Both RBP and TBP are conducive to being strengthened in this regard.

Safeguard rules **to mitigate non-carbon risks** are more widespread than rules to promote non-carbon benefits. One reason is that they are explicitly required within the UNFCCC's Warsaw Framework (through the Cancun Safeguards) and safeguard information systems. Hence, only one REDD+ partnership – which pre-dates the Cancun Safeguards – does not have explicit safeguard requirements. Most of the reviewed REDD+ financing mechanisms indeed require compliance or consistency with the Cancun Safeguards. In some cases, compliance with other provisions is required – partly, in addition to the Cancun Safeguards and partly instead of them. Such 'other' safeguards include policies of multilateral funds and international organisations, provisions by multistakeholder initiatives and own sets of safeguards defined by the mechanisms (notably, in the case of crediting mechanisms). To the extent that crediting mechanisms presently develop rules for implementing Article 6 provisions for TBP, they may take over the requirement that participants comply with the Cancun Safeguards. However, these are minimum standards that should be operationalised in a country-specific way and leave scope to be more ambitious. Another challenge is the perspective that self-standing safeguards – independent of the Cancun Safeguards – will be developed to operationalise the Article 6.4 mechanism (see Chapter 4). This might entail another wave of adjusting safeguards, with an as yet unclear outcome for the stringency of safeguards for REDD+ activities. Similarly important is the transfer of existing safeguard frameworks to other land-based mitigation options, e.g. nature based solutions.

The effectiveness of REDD+ finance mechanisms in addressing non-carbon risks can be promoted by requirements regarding the **institutional follow-up on safeguard implementation**. As the analysis shows, such follow-up includes, for instance, requirements to monitor and report on the implementation of safeguards, partly based on pre-specified indicators; to disclose the respective findings; to have reports validated by independent third parties; to provide safeguard information systems and grievance redress mechanisms; or to sanction non-compliance with safeguards. The most effective component is likely the threat of sanctions. The challenge for the future is hence to mainstream the sanctioning of safeguards despite the fact that such sanctions are not foreseen in the Cancun Safeguards.

4 Comparison of Article 6 requirements with existing REDD+ financing mechanisms

In this chapter, we compare the requirements arising from Article 6 of the Paris Agreement with the current practices of REDD+ financing mechanisms, as identified and discussed in Chapter 3. This allows examining the extent to which REDD+ financing mechanisms can be used as transfer-based mechanisms under Article 6 of the Paris Agreement.

Towards this end, the main principles of Article 6 of the Paris Agreement and the requirements from decisions adopted on Article 6 at COP26 in Glasgow are identified. The focus is on those aspects that are particularly relevant for the financing of REDD+ activities under Article 6. The analysis also draws on common practices that evolved from existing carbon crediting programmes or mechanisms by assessing how they address these requirements, what can be considered as best practices, and what are main shortcomings. We then assess the compatibility of existing REDD+ financing mechanisms with these principles and requirements and identify any potential conflicts.

This chapter is organised around the key requirements resulting from Article 6 and the decisions on Article 6 adopted at COP26 in Glasgow (sections 4.1 to 4.10), followed by a synthesis of the findings (section 4.11).

4.1 General eligibility of REDD+ activities

The guidance on cooperative approaches under Article 6.2 adopted in decision 2/CMA.3 defines Internationally Transferred Mitigation Outcomes (ITMOs) from a cooperative approach as "*emission reductions and removals, including mitigation co-benefits resulting from adaptation actions and/or economic diversification plans or means to achieve them"* (paragraph 1 (b) Annex to decision 2/CMA.3). The rules, modalities and procedures for the Article 6.4 mechanism define that an Article 6.4 activity *"shall be designed to achieve mitigation of GHG emissions that is additional, including reducing emissions, increasing removals and mitigation co-benefits of adaptation actions and/or economic diversification plans […]"* (paragraph 31 (a) Annex to decision 3/CMA.3). With these board definitions a wide array of mitigation activities is in principle eligible both under Article 6.2 and Article 6.4.

This also holds for different possible scales at which activities may be implemented. In defining ITMOs, the guidance on cooperative approaches under Article 6.2 does not provide any restrictions on the scale of activities, which can be interpreted such that activities of different types of scale are eligible, including programmes as well as sectoral approaches such as jurisdictional REDD+ and policy crediting. The rules, modalities and procedures for the Article 6.4 mechanism define that activities may be projects or programmes of activities and allow the Supervisory Body to approve other forms of activities for eligibility under the mechanism (paragraph 31 (b) of decision 3/CMA.3).

The land-use sector, and mitigation activities in that sector, are not separated out in the Article 6 decisions. This can be interpreted such that they fall within the scope of the definitions. However, the eligibility of "emissions avoidance" will be further considered under both Article 6.2 and Article 6.4. In addition, the eligibility of "conservation enhancements" will be further considered under Article 6.4. The cover decision on the guidance on cooperative approaches under Article 6 requests the SBSTA to develop recommendations for consideration and adoption at CMA4 to define whether ITMOs could include "emissions avoidance" (paragraph 3 (c) decision 2/CMA.3). Similarly, paragraph 7(h) of decision 3/CMA.3 requests the SBSTA to consider whether Article 6.4 activities could include "emissions avoidance" and "conservation

enhancement" activities. Until these considerations have been concluded, these activities may not be eligible. It is, however, unclear what these terms exactly mean. "Emissions avoidance" could, for example, be interpreted broadly to cover any activities where currently no emissions occur but would start to occur in the future. This may for example include avoiding emissions from high-forest low-deforestation (HFLD) countries.

Lastly, it is important to note that, as with any other activities or sectors, any REDD+ financing approaches would need to meet all requirements set out in the guidance on cooperative approaches under Article 6.2 or the rules, modalities and procedures for the Article 6.4 mechanism in order to qualify under these approaches. Emission reductions or removals resulting from approaches under the Warsaw Framework for REDD+ are not automatically eligible. At COP26 in Glasgow, a proposal by Papua New Guinea that would have deemed activities under the Warsaw Framework as automatically eligible under Article 6 was met with strong opposition from other Parties and was not included in the final decision.

4.2 Enhancing ambition

Articles 6.1 and 6.2 establish that the use of Article 6 should enhance ambition. This is commonly understood to mean that the international transfer of emission reductions should enable countries to set more ambitious climate targets. The access to Article 6 could help buyer countries to set more ambitious targets, as they can then draw on more climate mitigation potential which may reduce costs.

There is a widespread understanding that the principle of enhancing ambition should help not only buyer countries but also seller countries to increase their ambition. This can be achieved through various approaches to share the emission reductions or removals such that only part of the mitigation is transferred to the buyer while the other part remains in the host country and can be used to fulfil the NDC in the host country. This may allow the country to set a more ambitious NDC in the future or to achieve a conditional NDC. Specific approaches to achieve this include the following:

- Applying more ambitious baselines that are below business-as-usual: If the reference levels (or baselines) are set much more ambitiously than the actual business-as-usual (BAU) emissions, then the reductions from the difference between the actual BAU emissions and the reference level will not be transferred internationally and can be used by the host country itself to meet its NDC.

  Participating Parties in cooperative approaches under Article 6.2 must report for each cooperative approach how they ensure environmental integrity. This includes a description of how reference levels applied are conservative and baselines set in a conservative way and below business-as-usual projections (paragraph 18 (h) ii of the Annex to decision 2/CMA.3).

  Similarly, the rules, modalities and procedures for the Article 6.4 mechanism prescribe that methodologies for quantifying emission reductions and removals should encourage ambition over time and be conservative and below business as usual (paragraph 33 of the Annex to decision 3/CMA.3). Specifically, historical emissions – as used by many REDD+ financing mechanisms as a reference or baseline level – can only be used if they are adjusted downwards (paragraph 36 of the Annex to decision 3/CMA.3). This matter is further discussed in section 4.5 below.

- Shorter crediting periods: Another possibility is to take measures that lead to a longer-term reduction of emissions or removals by sinks, but for which credits are internationally transferred only for a limited period. The Article 6.4 mechanism establishes a maximum

duration of all crediting periods of 15 years for emission reductions, and 45 years for removals (paragraph 31(f) of the Annex to decision 3/CMA.3). Most existing REDD+ finance mechanisms allow for much longer crediting periods.

- Discounting a fraction of the emission reductions or cancelling of a fraction of the credits issued; Some existing REDD+ finance mechanisms include discounting; in some instances, however, such discounting is pursued to achieve different goals, such as addressing uncertainty or addressing non-permanence.

4.3 Overall mitigation in global emissions (OMGE)

Article 6.4 of the Paris Agreement stipulates that the new Article 6.4 mechanism should lead to an 'overall mitigation in global emissions'.

The rules, modalities and procedures for the Article 6.4 mechanism operationalise this principle by stipulating that a minimum of 2 per cent of issued Article 6.4 emission reductions (A6.4ERs) should be transferred into a cancellation account. These A6.4ERs cannot be further transferred and not be used for the achievement of NDCs or other international mitigation purposes.

The guidance on cooperative approaches under Article 6.2 does not include a provision for mandatory cancellation of ITMOs. Paragraph 39 of the guidance, however, strongly encourages participating Parties to cancel ITMOs not used to be accounted for under any Party's NDC or other international mitigation efforts. This is to ensure that an overall mitigation in global emissions is achieved. Reference is made in this context to the arrangements for OMGE under the Article 6.4 mechanism, which can be interpreted as providing a strong normative orientation for Parties when considering determining scope and amount of ITMOs to be cancelled. While the cancellation of ITMOs is voluntary for cooperative approaches under Article 6.2, it is mandatory for Parties to report on any delivery of overall mitigation in global emissions related to their participation in cooperative approaches (see paragraph 40 of the guidance).

The principle of OMGE has not yet been implemented by any of the REDD+ financing mechanisms analysed in Chapter 3, neither by carbon crediting mechanisms nor by mechanisms primarily designed to deliver RBP. However, implementing this requirement is relatively straightforward and thus not a major obstacle for using Article 6.

4.4 Additionality

The guidance on cooperative approaches under Article 6.2 defines that ITMOs are "real, verified and additional" (paragraph 1 Annex to decision 2/CMA.3). The guidance, however, does not include any further requirements as to which aspects must be met by Parties to demonstrate the additionality of ITMOs. This leaves it open for Parties themselves to choose approaches and tools to demonstrate additionality of the ITMOs.

The rules, modalities and procedures for the Article 6.4 mechanism contain more specific provisions in relation to additionality. First, paragraph 31 of the Annex to decision 3/CMP.3 defines that activities shall be designed to achieve mitigation of GHG emissions that is additional. Further, paragraph 38 stipulates the following requirements for approaches demonstrating additionality:

- Must be based on a robust assessment that shows that the activity would not have occurred in the absence of the incentives from the Article 6.4 mechanism.
- Must take into account all relevant national policies including legislation.

- Must show that the activity represents mitigation that exceeds any mitigation that is required by law or regulation.
- Must take a conservative approach that avoids locking in levels of emissions, technologies or carbon-intensive practices.

These provisions clearly deviate from the approach taken under the Kyoto Protocol. For REDD+ activities, it would be difficult to comply with these requirements.

The analysis in Chapter 3 showed that most REDD+ financing mechanisms do not have any specific provisions to ensure additionality, but mostly rely on the baseline to ensure additionality. In many instances, average or adjusted historical emissions are used as the baseline, and sometimes the baseline may be set at a higher level (e.g. under ART/TREES for HFLD countries). Any emission reductions in relation to such a baseline could, however, occur due to multiple reasons, some of which being beyond the control of the activity participants, such as changes in prices for agricultural commodities or climate change. The observed emission reductions compared to a historical baseline are thus not necessarily caused by the mitigation activities. Some REDD+ finance mechanisms do not even require that any new mitigation activities must be implemented but allow crediting emission reductions resulting from ongoing mitigation actions (e.g. ART/TREES 2.0).

A second challenge is that most existing REDD+ finance mechanisms allow claiming emission reductions or removals that may result from the implementation of laws and regulations. However, the provisions under the Article 6.4 mechanism require that the emission reductions must exceed any mitigation that is required by law or regulation.

In conclusion, the current approaches of most REDD+ finance mechanisms seem incompatible with the principles and approaches set out under Article 6 of the Paris Agreement. Meeting the provisions of the Paris Agreement would require a major change in the way how additionality is approached. Attributing emission reductions or removals to mitigation activities would require, in particular, ensuring that new mitigation activities are implemented, or existing activities are enhanced, that any legal requirements and policies be considered, and that mitigation exceeds these requirements, and that the emission reductions or removals are attributable to the mitigation activity. The latter may require fundamentally different approaches to calculating emission reductions and removals, such as monitoring the underlying mitigation activities being implemented and modelling how they affect carbon stocks. This may, however, be associated with considerable uncertainties and it may be difficult to distinguish exogenous influence factors from the effects of the mitigation activity. For many – but not necessarily all – REDD+ mitigation activities it may thus be difficult or impossible to comply with the requirements of additionality.

4.5 Baselines

In the international negotiations under the Paris Agreement, the rules for baselines were controversially discussed. Many countries took the position that baselines should be set at an ambitious level and that ambitious benchmarks should be the first choice. Emission benchmarks are, however, difficult to implement in the forest sector. Other Parties argued that the baseline approaches from the Kyoto Protocol may also be suitable under the Paris Agreement. A further controversial issue was whether and how the ambition of the NDC should be taken into account when setting baselines. This is particularly important for the 50 or so countries that have set a specific target for the forest sector in their first NDC. In order to avoid an over-sale of reductions in this case, the baseline must at least reflect the level of ambition of the NDC.

The guidance for Article 6.2 stipulates that Parties shall report on how each cooperative approach ensures environmental integrity through baselines set in a conservative way and below 'business-as-usual' emission projections. This principle clearly deviates from the Kyoto Protocol where baselines were commonly understood to represent a 'business-as-usual' scenario that is conservatively chosen, taking into account uncertainty. The Article 6.2 guidance also stipulates that baselines should take into account all existing policies and address uncertainties in quantification and potential leakage.

The rules, modalities and procedures for the Article 6.4 mechanism provide more specific requirements for baselines. They also establish the principle of baselines being set below 'business-as-usual' but also establish various other principles, including that mechanism methodologies shall encourage ambition over time, align with the long-term temperature goal of the Paris Agreement, contribute to the equitable sharing of mitigation benefits between the participating Parties, contribute to reducing emission levels in the host Party, align with its NDC and, if applicable, its long-term low GHG emission development strategy, and the long-term goals of the Paris Agreement.

Moreover, three eligible baseline approaches are specified (Annex V.B decision 3/CMA.3):

- "*Best available technologies that represent an economically feasible and environmentally sound course of action, where appropriate;*
- *An ambitious benchmark approach where the baseline is set at least at the average emission level of the best performing comparable activities providing similar outputs and services in a defined scope in similar social, economic, environmental and technological circumstances;*
- *An approach based on existing actual or historical emissions, adjusted downwards to ensure alignment with principles described above.*"

Overall, these provisions can be considered as a paradigm shift in the way how baselines must be established. Under the Kyoto Protocol, in the voluntary carbon market and under RBP mechanisms, baselines are typically established differently, in particular based on historical emissions without a downward adjustment.

Most approaches pursued under most existing REDD+ financing mechanisms are not compatible with the principles set forth in decisions on Article 6:

- The use of average historical emissions levels, without a downward adjustment, appears no longer appropriate in the light of the requirement to set baselines below business-as-usual or to use downward adjustments from historical levels.
- REDD+ financing mechanisms currently do neither consider the NDC nor the LEDS of the forest country, nor the long-term goals of the Paris Agreement. This is, however, required to ensure the over-selling of emission reductions, as set out in paragraph 33 of decision 3/CMP.3.
- The use of historical emissions as baselines, for periods well into the future, is incompatible with achieving the long-term goals of the Paris Agreement.
- Most REDD+ financing mechanisms do not encourage ambition over time, as required under both Article 6.2 and 6.4. This could be best achieved if the baseline is lowered over time.

In conclusion, baseline approaches under most existing REDD+ financing mechanisms would need to be considerably revised to be compatible with the requirements under Article 6.

4.6 Leakage

Both, the guidance for Article 6.2 and the rules, modalities and procedures for the Article 6.4 mechanism include reference to leakage. Under Article 6.2, Parties are required to report how they have addressed potential leakage in participating in cooperative approaches. The Article 6.4 rules, modalities and procedures stipulate that any methodology developed for the new mechanism should take into account any leakage due to the implementation of the activity (paragraph 33 of the Annex to decision 3/CMA.3). Leakage is further addressed in paragraph 31 that establishes the rules that mitigation activities under Article 6.4 must adhere to. Here it is stipulated that activities must "minimize the risk of leakage and adjust for any remaining leakage in the calculation of emission reductions and removals". The Article 6.4 decision further requests the SBSTA to develop recommendations regarding activities involving removals including leakage by CMA 4 (Paragraph 6 (c) of decision 3/CMA.3). Overall, the Article 6 rules thus require addressing leakage but are not specific on how it should be addressed.

Existing REDD+ financing mechanisms address leakage to a varying degree (see section 3.2.4.4). Some do not consider leakage at all, some require at least identifying leakage risks, some have measures in place to reduce leakage risks, and only some include deductions for leakage in determining emission reductions. As the Article 6 requirements both require minimising the risk of leakage and adjusting for any remaining leakage, most existing REDD+ finance mechanisms would need to revise their leakage approaches to be compatible with Article 6. Moreover, the provisions in the Article 6 decisions imply that remaining leakage emissions must be fully addressed. The current leakage deductions, however, often do not account for global leakage or they provide for levels of deductions that may not match the actual risks of global leakage.

4.7 Robust accounting

The use of carbon market mechanisms under the Paris Agreement requires robust accounting of international transfers of mitigation outcomes. One of the key elements of Article 6 are accounting rules to avoid double counting of emission reductions or removals. Double counting refers to a situation in which a single greenhouse gas emission reduction or removal is counted more than once towards achieving mitigation targets or goals. Three different forms of double counting are commonly distinguished (Schneider et al. 2015; Schneider et al. 2019):

- **Double issuance** occurs if more than one unit is issued for the same emission reduction or removal. This leads to double counting if more than one of these units is counted for achieving mitigation targets or goals. The main solution for avoiding double issuance is appropriate mechanism design that includes rigorous checks by verifiers and programmes before units are issued.
- **Double use** occurs if the same unit is counted twice to achieve a mitigation target or goal. The main solution for avoiding double use is to ensure tracking of transfers through registries as well as appropriate cancellation procedures.
- **Double claiming** occurs if the same emission reduction or removal is claimed by two different entities for achieving mitigation targets. One claim might be made by a country or jurisdiction reporting lower emissions or higher removals to achieve its target, the other by an entity retiring the carbon credit for offsetting.

The Article 6.2 guidance provides a framework for avoiding such double counting. Schneider et al. (2019) describe this approach of double-entry bookkeeping, referred to as "corresponding adjustments". "As with bank transfers, an entry in one account requires a corresponding

opposite entry to another account. The country selling emission reductions makes an addition to its emission level, and the country acquiring the emission reductions makes a subtraction" (Schneider at al.2019). The enhanced transparency framework requires selling and buying countries to prepare an emissions balance. This balance compares a country's target level with its emissions including the adjustment for transfers between the countries. By applying these rules, buying countries are allowed to count the transferred emission reductions towards their mitigation targets. In parallel, countries selling emission reductions cannot use these any more for achieving their own targets (Schneider et al. 2019).

Under the Article 6.2 guidance, countries are allowed not only to transfer mitigation outcomes among themselves but also to authorise the use of mitigation outcomes by third parties, such as under CORSIA or for voluntary offsetting purposes. If mitigation outcomes are authorised by a forest country under Article 6, the country must apply corresponding adjustments for any transfers.

The guidance (Annex III.B, decision 2/CMA.3) also stipulates that "*each participating Party shall apply corresponding adjustments in a manner that:*

- *ensures transparency, accuracy, completeness, comparability and consistency,*
- *participation in cooperative approaches does not lead to a net increase in emissions within and between NDC implementation periods, and*
- *corresponding adjustments are representative and consistent with the participating Party's NDC implementation and achievement.*"

The guidance further defines methods that Parties must apply consistently throughout the NDC implementation period, distinguishing between methods for single-year and multi-year NDCs. The text further requests the SBSTA to elaborate further methods and guidance to provide for a single method for corresponding adjustment that will be applied from 2031 onwards (paragraph 15(b), decision 2/CMA.3).

Avoiding double issuance and double use is a key requirement that can be addressed through an appropriate design of the carbon crediting mechanism. One of the particular challenges of carbon crediting mechanisms crediting REDD+ activities is that several activities are sometimes implemented in parallel. This poses the risk that emission reductions or removals can be subject to claims by different projects and programmes leading potentially to double claiming. A solution to this particular challenge, which has been already pursued under such carbon crediting mechanisms, , e.g. by Verra's Jurisdictional and Nested REDD+ (JNR), are nested accounting frameworks for REDD+ projects and programmes. In such a system, activities that generate emission reductions or removals within the scope of a jurisdictional scheme may need to obtain approval from that jurisdiction which will include an attestation that these reductions or removals will not be claimed by that jurisdiction itself.

Addressing double claiming require the authorisation by the forest country and subsequent application of corresponding adjustments. All existing REDD+ financing schemes that have been designed for RBF do not include such provisions. Most carbon crediting mechanisms are now in the process of implementing measures to facilitate accounting through Article 6.

Robust accounting under Article 6 requires clarity on NDC targets. Indeed, prior to engaging in Article 6 all countries need to clarify their NDC targets in an initial report. For forestry-related activities this may pose additional challenges, such as clarifying how natural disturbances or harvested wood products are accounted for.

4.8 Addressing non-permanence risks

Both the guidance on cooperative approaches under Article 6.2 and the rules, modalities and procedures for the Article 6.4 mechanism contain provisions to address non-permanence risks. Participating Parties in Article 6.2 must report how each cooperative approach minimises the risk of non-permanence of mitigation across several NDC periods and how, when reversals of emission reductions or removals occur, the cooperative approach will ensure that these are addressed in full (paragraphs 18 (h) iii and 22 (b) iii of the Annex to decision 2/CMA.3). Similarly, the rules, modalities and procedures define that Article 6.4 activities shall minimise the risk of non-permanence using the same formulation under Article 6.2 stated above.

Appropriately addressing non-permanence risks requires action both at the level of the REDD+ finance mechanisms and the recipient country. Typically, REDD+ financing mechanisms that have been designed for GHG offsetting purposes have much more robust procedures in place to address non-permanence risks. However, the robustness of these approaches varies greatly. For example, the duration for which reversals must be identified and compensated for varies between 1 and 100 years. REDD+ financing mechanisms that have been designed for RBP purposes address non-permanence to a varying degree, but all would need to be substantially revised to meet the requirements of the Paris Agreement.

To fully address reversals, recipient countries would also need to take action. For example, many countries have only single-year targets and would not account for any reversals that occur between these single-year targets.

4.9 Transparency and governance

Transparency in decision-making and stakeholder engagement are key elements of good governance. Transparency and meaningful stakeholder engagement require that all relevant information on mitigation activities and the REDD+ financing mechanism is publicly available. Further, decision-making should follow clearly defined criteria that are easy to interpret and are consistently applied. Where relevant, expert input and review should be solicited in defining decision-making criteria and inform decision-making.

The guidance on cooperative approaches under Article 6.2 does not include any requirements or recommendations regarding the consultation and engagement of local stakeholders. The rules, modalities and procedures for Article 6.4 stipulate that activities should undergo local and, where appropriate, subnational stakeholder consultations that are consistent with applicable domestic arrangements in relation to public participation, local communities and indigenous peoples (paragraph 31 (e) of the Annex to decision 3/CMA.3). Further, stakeholders have the possibility to develop methodologies for the Article 6.4 mechanism (paragraph 35 of the Annex to decision 3/CMA.3). Existing REDD+ financing mechanisms partially addresses these requirements.

4.10 Enhancing positive and preventing negative environmental and social impacts

The solution to the climate crisis is inextricably linked with development pathways. It is therefore important that any activities supported through Article 6 are undertaken in the context of sustainable development and do not result in any environmental harm or create negative social impacts. The main concepts that are discussed to ensure that activities under Article 6 comply with these concerns are the following:

- **Environmental and social safeguards:** Almost all major international financial institutions use environmental and social safeguards to ensure that activities that they fund do not result in any negative impacts on the environment and livelihoods of affected communities. They further require that implementing entities have a track record in managing environmental and social risks associated with an activity as well as frameworks that guide the minimisation and mitigation of these risks. Also, the institutions operating the financial mechanism of the UNFCCC and the Paris Agreement, the GEF and the GCF, as well as the Adaptation Fund have such safeguards in place. So far, most compliance-focused GHG crediting programmes have only placed limited emphasis on safeguards which has been a controversial issue in project implementation (Schneider et al. 2017).

  The guidance on cooperative approaches under Article 6.2 requires participating Parties to provide information on how the approach considers the Parties' obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, persons with disabilities and people in vulnerable situations and the right to development as well as gender equality, empowerment of women and intergenerational equity. The rules, modalities and procedures for the Article 6.4 mechanism stipulate that the Supervisory Body will establish the necessary processes to operate the mechanism, which includes the application of robust social and environmental safeguards. (Paragraph 24 a (x) of the Annex to decision 2/CMA.3).

  While these provisions cover several aspects typically addressed through environmental and social safeguards they are not as comprehensive as safeguards systems that are considered as international best practices such as those of the International Finance Cooperation (IFC 2012). Many existing REDD+ finance mechanisms include comprehensive environmental and social safeguards; some mechanisms would require, however, substantial revision to be compatible with the Article 6 requirements.

- **Promoting sustainable development:** The notion that the response to the climate crisis must take place in the context of sustainable development is enshrined in the overall objectives of the Paris Agreement (see Article 2.1). In the context of international carbon market mechanisms, Article 6.1 stipulates that promoting sustainable development should form one of the objectives of any voluntary cooperation in the implementation of NDCs. Article 6.2 repeats this provision by requiring Parties to promote sustainable development where engaging in cooperative approaches that involve the use of ITMOs towards NDCs. For the Article 6.4 mechanism, the objective of supporting sustainable development is directly enshrined in the mechanism's name (mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development), and it is sometimes even called the Sustainable Development Mechanism.

  Many Parties view sustainable development as a national prerogative and stress that it is not the role of the international community to define national development priorities. With the Agenda 2030 and the Sustainable Development Goals it can however be argued that an internationally agreed framework exists that provides a shared blueprint on what sustainable development entails and how it can be measured. Further, as both Article 6.2 and 6.4 include "shall" provisions when it comes to the promotion of sustainable development, it is clear that it will form an important aspect for the quality of ITMOs and units created under the Article 6.4 mechanism.

  Per the guidance on Article 6.2, Parties will need to detail in their biennial transparency reports how each cooperative approach in which the Party participates is consistent with the

sustainable development objectives of the host Party. As supporting sustainable development is a primary objective of the Article 6.4 mechanism, its rules, modalities and procedures include a requirement for host countries to publicly indicate to the mechanism's Supervisory Body that projects indeed contribute to sustainable development (while acknowledging that the consideration of sustainable development is a national prerogative).

Existing REDD+ financing mechanisms address these requirements to a varying degree. Some mechanisms, such as the VCS, do not include any provisions to assess sustainable development impacts, whereas others have more detailed requirements including the monitoring of sustainable development impacts.

- **Share of proceeds for adaptation:** Article 6.1 stipulates that the aim of voluntary cooperation in the implementation of NDCs is to allow for higher ambition not only in mitigation but also in adaptation actions. Both, the guidance on cooperative approaches under Article 6.2 and the rules, modalities and procedures for the Article 6.4 mechanism contain elements that operationalise this provision.

  For Article 6.2, the guidance includes provisions that strongly encourages Parties that participate in cooperative approaches to contribute resources to adaptation. The Adaptation Fund here is mentioned as the primary vehicle through which these contributions should be made. When determining the size of the adaptation contribution, Parties and stakeholders should take into account the size of the levy on the share of proceeds under the Article 6.4 mechanism (see below).

  For Article 6.4, the provision articulated in Article 6.6 stipulates that the CMA shall ensure that a share of the proceeds from activities under the Article 6.4 mechanism is used to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation. This same provision was also included in the Kyoto Protocol and was later operationalised by raising a 2% levy on proceeds under the CDM that were directed to the Adaptation Fund. With decisions 13/CMA.1 paragraph 4 and decision 1/CMP.14, Parties to the Paris Agreement decided that the Adaptation Fund, when serving the Paris Agreement, shall be financed from the share of proceeds from the Article 6.4 mechanism. The rules, modalities and procedures for the Article 6.4 mechanism adopted at COP26 set the levy for the Adaptation Fund at 5 per cent of the issued A.64 ERs.

  Existing REDD+ finance mechanisms would need to adopt these rules when using Article 6.

4.11 Synthesis

The analysis in this chapter showed that existing REDD+ financing mechanisms are only partially compatible with Article 6 rules. For a broad range of issues analysed, existing TBP REDD+ mechanisms are found to be incompatible with Article 6 rules. In some instances, the incompatibilities identified may be difficult or impossible to address. Some activities may thus not qualify for Article 6, even if their approaches are updated. Some activities may qualify under Article 6 if the relevant approaches are modified.

The analysis suggests that four areas are particularly challenging to ensure compatibility with Article 6 rules:

- **Additionality:** Most REDD+ financing mechanisms do not have any specific provisions to ensure additionality, but mostly rely on the baseline to ensure additionality. Any emission reductions in relation to such a baseline could, however, occur due to multiple reasons, some of which being beyond the control of the activity participants, such as changes in prices for

agricultural commodities or climate change. This implies that additionality for these emission reductions is not ensured. A second challenge is that most existing REDD+ finance mechanisms allow claiming emission reductions or removals that may result from the implementation of laws and regulations. However, the provisions under the Article 6.4 mechanism require that the emission reductions must exceed any mitigation that is required by law or regulation.

- **Baselines:** The Paris Agreement rules require that baselines be set below 'business-as-usual' emission projections and that baselines should take into account all existing policies and address uncertainties in quantification. Rules for the Article 6.4 mechanism also require that baselines consider NDCs and the long-term goals of the Paris Agreement. Compared to the Kyoto Protocol, these provisions can be considered as a paradigm shift in the way how baselines must be established. Most approaches pursued under existing REDD+ financing mechanisms are not compatible with these new principles. The use of average historical emissions levels, without a downward adjustment, appears no longer appropriate in the light of the requirement to set baselines below business-as-usual or to use downward adjustments from historical levels, if transfers of result are intended. Moreover, REDD+ financing mechanisms currently do neither consider the NDC nor the LEDS of the forest country, nor the long-term goals of the Paris Agreement.

- **Leakage:** Existing REDD+ financing mechanisms address leakage to a varying degree. Some do not consider leakage at all, some require at least identifying leakage risks, some have measures in place to reduce leakage risks, and only some include deductions for leakage in determining emission reductions. Moreover, current leakage deductions often do not account for global leakage, or they provide for levels of deductions that may not match the actual risks of global leakage. As the Article 6 requirements both require minimising the risk of leakage and adjusting for any remaining leakage, most existing REDD+ finance mechanisms are currently not compatible with Article 6.

- **Non-permanence:** Article 6 rules require that non-permanence risks be addressed. Some REDD+ financing mechanisms do not include provisions to address non-permanence. Others, in particular those designed for GHG offsetting purposes have procedures in place to address non-permanence risks. However, the robustness of these approaches varies greatly. To fully address reversals, recipient countries would also need to take action. For example, many countries have only single-year targets and would not account for any reversals that occur between these single-year targets.

In conclusion, these four areas may constitute major barriers for REDD+ finance mechanisms qualifying under Article 6. Meeting the Article 6 rules would require a major change in how these issues are currently addressed under REDD+ finance mechanisms. In some instances, in particular for avoided deforestation, it may be difficult to satisfy these requirements at all, given the challenges in attributing observed emission reductions to the mitigation actions taken on the ground.

There are a number of other Article 6 rules that would also require modification of existing REDD+ finance mechanisms but seem more manageable. This includes, for example, implementing the principles in relation to enhancing ambition, overall mitigation in global emissions (OMGE), and transparency and governance. With regard to environmental and social impacts, many but not all existing REDD+ finance mechanisms have already developed comprehensive environmental and social safeguards. Similarly, some existing mechanisms have already detailed requirements including the monitoring of sustainable development impacts.

In interpreting these findings, it is important to bear in mind that most existing REDD+ finance mechanisms were never designed for Article 6 purposes but mostly for RBP purposes or the voluntary carbon market. It can be expected that some of them will update their standards in the future in order to comply with Article 6 rules. This holds in particular for the voluntary carbon market programmes. Others may continue to operate outside the scope of Article 6 of the Paris Agreement.

To address these challenges, it may be useful to distinguish more clearly between RBP and TBP in the future. TBP approaches, such as those under Article 6, require much more rigour because the emission reductions or removals are used by the donor to counterbalance their own emissions and achieve climate targets, and may thus substitute the reduction of emissions in other places. Many of the above requirements are, however, less important and relevant where the emission reductions or removals are used in the context of RBP. Therefore, it may be useful to distinguish requirements based on the purpose for which the payment is made. Such a differentiation could also be taken up by carbon crediting programmes which could consider issuing two types of carbon credits: one type that may be used for offsetting purposes, and thus requires more enhanced requirements to be satisfied, and one type that can be used in the context of RBF and "contribution claims" where no transfer of emission redutions or removals occurs. This approach might ensure that finance flows to REDD+ activities but at the same time ensures the necessary level of integrity for TBF approaches.

5 Assessment of the potential for REDD+ financing mechanisms

In the following, we assess the emission reduction and sink enhancement potential of REDD+ financing approaches, drawing on existing studies. The assessment includes **scientific studies** that analysed forest-related potentials of emission reduction and sink enhancement globally and in tropical countries (Griscom et al. 2017; Roe et al. 2019).

Some middle-ground estimates can potentially be derived from the analysis of **national data**, such as reported data on deforestation and degradation (e.g. Olesen et al. 2018; Busch und Engelmann 2017). Moreover, potentials based on submitted "forest reference (emission) levels" and NDCs can provide insights into what can be expected from the national perspective.

Another source for the assessment are bottom-up studies on the mitigation contribution of REDD+ projects as, e.g., performed by Atmadja et al. (2022). While the scientific studies typically describe the theoretical or technical potential that can be achieved by activities without further policy constraints, bottom-up studies delineate the lower boundary of mitigation potential.

5.1 Global level estimates of the potential

Since 1990, 178 Mha (4%) of global forest area has been lost (FAO 2020b). The annual rate of net forest loss was reduced from 7.8 Mha/year in 1990-2000 to 5.2 Mha/year in 2000-2010 and 4.7 Mha/year in 2011-2020 due to reduced deforestation but also increased forest restoration. Harris et al. (2021) estimated **global gross deforestation emissions** to amount to 8.1 ± 2.5 $GtCO_2e$ per year for the historic period 2001 to 2019, however, including also other disturbances. In 2019, even an area of 11.9 Mha of forest tree cover was destroyed (gross forest loss). Primary forests in the humid tropics made up 3.8 Mha of that loss, resulting in CO_2 emissions of at least 1.8 Gt CO_2 in 2019 (WRI 2020). These historic estimates imply an enormous potential for avoiding emissions from deforestation and forest degradation but also for forest restoration.

The IPCC Special Report on Climate Change and Land (IPCC 2019) identified avoidance of deforestation and forest degradation as measures with medium or high mitigation potential at moderate costs and positive impacts on other sustainability objectives. A comprehensive review of land-based mitigation potentials by Griscom et al. (2017) resulted in potential emission reduction from deforestation of 3.6 Gt CO_2e/yr. The global reforestation potential was estimated to be 10.1 Gt CO_2e/year, of which 8.0 Gt CO_2e/year are expected in tropical countries. Similarly, Roe et al. estimated the mitigation potential regarding reduced deforestation to be 0.41 – 5.8 Gt CO_2e per year (Roe et al. 2019). Together with afforestation and reforestation and improved forest management the mitigation potential would increase to 18.0 Gt CO_2e/year globally (Roe et al. 2019).

Over the past decade, restoration programmes have been established, such as the Bonn Challenge, under which countries have committed to restore 150 million hectares by 2020 and 350 million hectares by 2030. The Bonn Challenge was endorsed by the New York Declaration on Forests. Moreover, many countries have included forest protection and restoration activities as part of their Nationally Determined Contributions (NDCs).

Significant investments have been made to direct and indirect REDD+ activities. Olesen et al. (2018) estimate funding provided by EU, non-EU and multilateral organisations to amount to EUR 17.2 billion between 2008 and 2015. Commitments for REDD+ peaked at over EUR 2.5

billion between 2010 and 2012 and remained between EUR 2 and 2.5 billion in the following years (Olesen et al. 2018).

However, countries are still far from realising the mitigation potential in forests. After the New York Declaration on Forests in 2014, tropical forest loss has increased and efforts will need to be accelerated at least fivefold by 2030 and threefold by 2050 to ensure that forests can contribute their share to achieving the Paris temperature goal (Progress on the New York Declaration on Forests 2021).

5.2 National level estimates of the potential

An approach to assessing emission reduction and removal potentials more realistically is including information on the national **Forest reference emission levels** (FREL) or Forest reference levels (FRL). FRELs and FRLs describe assumed emission levels in the future as a reference for measuring efforts spent on reducing emissions and increasing removals.

Table 31 provides an overview of submitted FRELs and FRLs of selected countries. The countries (except for Brazil) are analysed in detail in Chapter 6. The reference emission levels for all countries are based on historic emissions observed in different periods. Therefore, there is a general similarity between estimated potentials for reduced deforestation from the scientific literature that is also based on historic emissions. The largest discrepancies can be observed for DRC, where scientific studies see only limited mitigation potential despite high reference level emissions reported by the country.

Mitigation potentials based on historic estimates as provided by scientific studies or also as FRELs/FRLs by countries' submissions to UNFCCC typically constitute a **technical potential** that is not necessarily realisable. Olesen et al. (2018) constrained the technical potentials of emission reductions of 41 countries derived from FAO data by applying an effectiveness factor. The factor aims at illustrating to what extent emission reductions can be achieved in REDD+ countries. It considers different technical, biophysical and socio-economic indicators related to forest characteristics, development of drivers of land use changes for assessing risks of emission reductions, monitoring capacities, policy engagement, and effectiveness of governance (Olesen et al. 2018). Of the 41 analysed potential REDD+ countries, Malaysia, Ghana, Brazil, Indonesia, and Ecuador ranked highest, i.e. technical potentials of emission reductions in these countries were expected to be relatively effective if implemented.

Table 31: Mitigation potential from scientific literature, submitted forest reference emission levels (FREL) and realised results for selected countries.

Country	Potential for reduced deforestation in Mt CO_2 (Griscom et al. 2017; Roe et al. 2019)	Potential for afforestation and reforestation in Mt CO_2 (Griscom et al. 2017; Roe et al. 2019)	Type of reference level; reference period; pools included; gases included	Forest reference emission level* (FREL) and/or Forest reference level (FRL) in Mt CO_2e	Results** (emission reduction achieved compared to FREL) in Mt CO_2e (2017)
Indonesia	570.2	-212.0	Historic; 1990-2012; AGB, SOC of peatland; CO_2	568.86 (2013) 593.33 (2020)	48.98
Ethiopia	not estimated	-97.5	Historic; 2000-2013; AGB, BGB, deadwood; CO_2	17.98 (FREL, 2016) -4.79 (FRL, 2016)	not reported

Country	Potential for reduced deforestation in Mt CO_2 (Griscom et al. 2017; Roe et al. 2019)	Potential for afforestation and reforestation in Mt CO_2 (Griscom et al. 2017; Roe et al. 2019)	Type of reference level; reference period; pools included; gases included	Forest reference emission level* (FREL) and/or Forest reference level (FRL) in Mt CO_2e	Results** (emission reduction achieved compared to FREL) in Mt CO_2e (2017)
Peru	64.5	-32.9	Historic; 2001-2014; AGB, BGB; CO_2	77.57 (2015) 93.70 (2020)	not reported
Vietnam	47.7	-128.2	Historic; 1995-2010; AGB, BGB; CO_2	59.96 (FREL, 2016) -39.60 (FRL, 2016)	not reported
DRC	130.9	-35.6	Historic; 2001-2014; AGB, BGB; CO_2	979.15 (2015) 1,177.32 (2019)	not reported
Brazil	990.2	-1,549.7	Historic (adjusted); 1996-2015; AGB, BGB, litter; CO_2	**1,087.32 (2016)**	**612.76**

AGB = above-ground biomass, BGB = below-ground biomass, SOC = soil organic carbon. Sources: * Estimated potential for 2030 based on country's effectiveness score across individual indicators to realise emission reduction; ** UNFCCC REDD+ Web platform, https://redd.unfccc.int/submissions.html?topic=6

Such considerations allow a more donor-oriented perspective on the potential for emission reduction that includes cost-effectiveness but not additionality. The latter includes the question of **legality and governance**. Historic deforestation emissions include considerable amounts of emissions caused by illegal land conversion. Forest Trends (2014) estimated that about 50% of deforestation occurring in the tropics can be considered illegal. In Brazil and Indonesia, two countries where more than 80% of deforestation occurs due to commercial agriculture, illegal "agro-conversion" was assumed to be as high as 80% (Forest Trends 2014)

Olesen et al. (2018) also analysed countries according to their potential for accessing international funding for REDD+, to reflect the capacity of countries to trade realised emission reductions through international market-based mechanisms paid for by international donors. Criteria included the history of international public funding in REDD+, national safeguard circumstances, and local safeguard circumstances. Higher-ranked countries, such as Bolivia, Tanzania, Liberia, Ethiopia and Peru, have a higher ability for securing international financing in the future (Olesen et al. 2018).

Also Nationally Determined Contributions (NDCs) of countries can be used to assess mitigation potentials. Compared to historic estimates they reflect the level of ambition put forward by countries on mitigation in the land-use sector. Most countries refer to and include forests in their NDCs (WWF 2021; Herold und Böttcher 2018). WWF (WWF 2021) found that 47 out of 55 countries that submitted enhanced or updated NDCs to the UNFCCC refer to forests in their submissions and 26 specified quantitative targets for mitigation. Such targets can explicitly address emission reductions or constitute rather qualitative targets.

Another analysis of 32 NDCs with quantitative targets resulted in a potential of 292 $MtCO_2$/year (Progress on the New York Declaration on Forests 2021). This potential is to some degree

conditional on international climate finance. Ten percent of forest targets in analysed NDCs that used tons of CO_2 as metric were found to be conditional, while the share of conditional targets expressed in hectares of land was 38% (Progress on the New York Declaration on Forests 2021).

5.3 Project-level estimates of the potential

Another approach for assessing the mitigation potential of REDD+ is through **empirical analysis** of implemented projects. Currently realised REDD+ projects are still far below the potential mitigation contribution because of limited spatial coverage compared to the total forest area under pressure (Atmadja et al. 2022). The total expected emission reduction potential of 325 REDD+ projects analysed by Atmadja et al. (2022) was 141 $MtCO_2e$/year. Compared to about 6.0 $GtCO_2e$/year potential contribution of tropical and subtropical forests to GHG mitigation this is a share of less than 3% (Atmadja et al. 2022).

Table 32: Comparison of emission reductions expected from REDD+ projects and potential forest-based contributions to the Paris Agreement

REDD+ projects	Mt CO_2e/year	Potential	Mt CO_2e/year
Avoided deforestation	116.0	Avoided forest conversion	2,897
Afforestation/reforestation	14.6	Reforestation	2,407
Other	10.8	Other	777
Total	**141.5**	**Total**	**6,081**

Source: Atmadja et al. 2022

The analysis of Atmadja et al. (2022) also revealed that most projects show similar deforestation trends since project start compared to national levels. The authors raise concerns about project additionality, which should be assessed using counterfactual methods, but can be questioned if national-level baselines and project development cannot be separated looking at per area unit emissions.

Analysing mitigation projects in the Brazilian Amazon, West et al. (2020) found that crediting baselines of projects often assumed consistently higher deforestation than counterfactual reference scenarios or areas. This can be explained by the fact that projects started before national policies became more effective but bears risks for environmental integrity of market mechanisms if credits for reduced deforestation claimed by projects rather constitute artifacts of external factors. Project baseline scenarios often assume a continuation of historical trends but become unrealistic counterfactuals when regional economic and political contexts change (West et al. 2020). Nevertheless, historical reference periods are among the most common methods applied by REDD+ financing mechanisms for estimating baseline emissions (see Chapter 3.2.4.3 on baselines).

Atmadja et al. (2022) identified a risk of projects diverging from national carbon accounting methods because of different scopes. Information from REDD+ projects is difficult to include in national reporting due to the fragmented nature of project reporting. But they see opportunities for updating carbon accounting parameters to get them in line with national methods that allow for consistent **nesting** of accounting at different levels. This could be achieved by multilevel dialogues within and across countries to establish common practices by which countries and projects perform these updates (Atmadja et al. 2022).

5.4 Synthesis

The technical potential of REDD+ can be estimated by assuming that all observed emissions from tropical deforestation and forest degradation could be reduced. These emissions amount to about 1.8 to 3.6 Gt CO_2/year. In addition, 8.0 Gt CO_2/year removals through forest restoration could be achieved in tropical countries.

Mitigation potentials based on historic estimates as provided by scientific studies typically constitute a technical potential that is not necessarily realisable. Moreover, historic deforestation emissions include considerable amounts of emissions caused by illegal land conversion that can be as high as 50% or even 80%.

For an estimation of REDD+ potentials also Nationally Determined Contributions (NDCs) of countries can be used. Compared to historic estimates they reflect more realistically the level of ambition put forward by countries on mitigation in the land-use sector. Most countries refer to and include forests in their NDCs. However, different approaches to including the sector, and different accounting approaches make a comparison of potential between countries challenging. An estimate of the REDD+ potential based on NDCs needs to consider that it is conditional on international climate finance.

Through empirical analysis of implemented projects, it can be observed that currently realised REDD+ projects are still far below the potential mitigation contribution because of limited spatial coverage compared to the total forest area under pressure. The comparison of REDD+ potential at different levels reveals that the baselines of projects often assume consistently higher deforestation than counterfactual reference scenarios or areas. This is because project baseline scenarios often assume a continuation of historical trends but become unrealistic counterfactuals when regional economic and political contexts change. There are opportunities for improved carbon accounting but also more reliable assessment of REDD+ potentials with consistent nesting of approaches at different levels.

6 Country analyses

6.1 Introduction

This chapter analyses five countries – Democratic Republic of Congo, Ethiopia, Indonesia, Peru and Vietnam – representing tropical forest countries in Asia, Africa and Latin America. The objective of this analysis is to understand the current and potential implementation of a transfer-based finance mechanism (Chapter 3) by examining how the requirements of using market-based and transfer-based finance (Chapter 4) are present in these countries. Our analysis will focus on RBPs that were identified as influential at the global level, and existing or planned RBPs at the national level. At the global level, it includes the GCF REDD+ RBP programme, BioCarbon ISFL, and the FCPF Carbon Fund. At the country level, it includes the development of a domestic carbon market and domestic financial mechanisms to manage/channel/distribute RBPs.

The five countries were selected for their **advanced experiences** across different mechanisms. They provide lessons on **how country contexts shape investments into, and implementation of RBPs** (e.g. existing institutions, legal and policy framework, existing projects/programmes, national agendas, forest sector and geographic conditions).

6.2 Country case studies

6.2.1 Methods

The five selected countries host REDD+ actions at national and subnational levels, either receive REDD+ RBPs or are in the pipeline for such RBPs, and offer geographical variation across regions (Africa, Asia, Latin America), as well as different policy contexts. We analysed existing studies, national and global datasets, policy documents, reports, laws, and news with relation to RBPs. Country situations were analysed to understand how the principles and requirements of the usability of market-based or transfer-based financing approaches (reviewed in Chapter 4) are being met or implemented. To ensure quality and accuracy, the draft analyses were reviewed by country REDD+ experts working with CIFOR's Global Comparative Study on REDD+ to validate the content. This network of global experts has conducted country-level REDD+ research for more than a decade. Guiding questions used to analyse the context of each country are presented in Table 33.

Table 33 Guiding questions to analyse country context

Aspect of analysis	Guiding questions
Country profile of REDD+ and results-based financing	How has the country engaged with UNFCCC's REDD+ processes? What international and domestic RBP programmes/initiatives are ongoing or being planned in the country? Which programmes allow for transfer-based financing?
Enhancing ambition, reducing emissions, and ensuring additionality (related to Sections 4.2, 4.3, and 4.4)	What, if any, are the approaches taken by countries to use international transfer of emission reductions for setting more ambitious climate targets? How do host countries plan to produce emissions reductions beyond those targeted by their NDCs?

Aspect of analysis	Guiding questions
	What are the means by which additionality of emission reductions from REDD+ can be verified?
Quantification of emission reductions and removals (related to Section 4.5)	How have countries set their reference baselines in relation to IPCC guidelines and NDC ambitions? How is leakage addressed?
Accounting, managing non-permanence and transparency (related to Sections 4.6, 4.7, 4.8, and 4.9)	What systems or institutions are in place domestically to ensure double counting is avoided? What measures are in place/planned to reduce the risk of non-permanence and compensate the damage to the atmosphere in the event of non-permanence (e.g. buffers, or cancellation/discounting)? What institutional arrangements are in place at the national/regional levels to ensure stakeholder engagement in decision-making in projects/programmes?
Enhancing positive and preventing negative environmental and social impacts (Section 4.10)	What safeguard-related measures are available in the country? How are they implemented? How are forest-based mitigation measures aligned with domestic sustainable development and climate adaptation policies and measures?

Source: own compilation.

Table 34: Overview of country RBPs

Channel of finance – scale of targeted recipient	Mechanism by recipient country of finance				
	Indonesia	Vietnam	Peru	Ethiopia	DRC
Multilateral institution - national	GCF - Allocated	GCF - Pipeline			
Multilateral institution - subnational	FCPF Carbon Fund – ERPA*signed, E. Kalimantan	FCPF Carbon Fund – ERPA* signed, North Central Coast region; LEAF Coalition – LoI signed, 11 provinces	FCPF Carbon Fund – Withdrawn 2021; GCF – Pipeline (Peruvian Amazon)	FCPF Carbon Fund – ERPA* in preparation in Oromia	PIREDD – Maï Ndombe
Donor country – national	LoI with Norway – ended 2021	n/a	Joint Declaration of Intent (JDI), 2021	n/a	
Voluntary market - projects	VCM projects	VCM projects	VCM projects	VCM projects	VCM projects
Domestic tax/finance systems – various scales	Carbon cap and tax system in 2022	Carbon market based on PFES		n/a	

* ERPA = Emission Reductions Payment Agreement

Source: own compilation.

6.2.2 Indonesia

6.2.2.1 Country RBP profile

Indonesia participates in several national and jurisdictional level RBF programmes, including the bilateral RBF arrangement with Norway, the Emission Reductions Payment Agreement (ERPA) with World Bank's Carbon Fund (East Kalimantan) at the provincial level, and payments from the Green Climate Fund (GCF) at the national level. In addition, there are 20 active REDD+ projects, of which seven had traded carbon credits in the voluntary market as of September 2020 (Simonet et al. 2020). Note that the BioCarbon ISFL programme administered by the World Bank is not included in this review. It provides a USD 13.5 million grant to prepare a provincial-level REDD+ programme in Jambi but still remains in the category of readiness and implementation funding rather than RBF (Aryal 2021b) although it may advance into RBF in the future.

Based on Indonesia's FREL (DG CC - MOEF 2019), Indonesia demonstrated emissions reductions between 2014 and 2017 of 7.4 Mt CO_2e submitted to Norway (part of 2016 and all of 2017) and GCF (2014-part of 2016). Both RBF proposals built on each other. The proportion of ERs made available for RBF by Norway (65% of annual ERs) was reported in the GCF proposal, ensuring there is no double counting. In both cases, 35% was set aside to buffer against uncertainty (20%) and fulfil Indonesia's NDC ambitions (15%). There were no buffers included to address leakage. The beneficiaries of GCF's RBP are represented by the Ministry of Environment and Forestry (MoEF), while published information was lacking on the identification of beneficiaries of Norway's RBP.

Norway's RBF agreement with Indonesia was within the framework of a bilateral Letter of Intent (LoI) signed in 2010 (Government of the Kingdom of Norway und Government of the Republic of Indonesia 2010). After 11 years of cooperation, Indonesia had achieved every milestone in the LoI, which are: (i) completing a REDD+ national strategy; (ii) forming a special REDD+ agency reporting to the president (i.e. REDD+ agency established in 2013 and mainstreamed within the Ministry of Environment and Forestry in 2015); (iii) establishing a national MRV system and institutions; (iv) implementing a province-wide REDD+ pilot (i.e. East Kalimantan and Jambi). The remaining milestone, which was the most contentious, is (v) forming a REDD+ financial institution (i.e. the Indonesia Environment Fund, established in 2019).Norway required that the environment fund be audited, and Indonesia felt this was challenging Indonesia's sovereignty, as this is an institution established by presidential decree. In 2021, Indonesia did not renew the LoI, citing non-payment of RBFs despite REDD+ emission reduction achievements and sovereignty concerns[161].The East Kalimantan REDD+ programme listed a wider range of beneficiaries, including provincial and district-level agencies, private sector, local communities and CSOs. In the latest draft, private sector entities access only non-monetary benefits such as capacity building and government assistance in acquiring permits/certification (MoEF und PGEK 2020). Other beneficiaries can access monetary and non-monetary benefits. The financial management process is complex, involving five subnational and three national-level institutions. Verification will be conducted by an MRV unit (Directorate GHG Inventory and Monitoring Reporting Verification) in MoEF's (Ministry of Environmen and Forestry) DG of Climate Change. Much of the administrative and programme monitoring tasks, including calculation of payment, will be done by the environmental agency at the provincial level.

[161] cf. https://kemlu.go.id/portal/en/read/2912/berita/indonesia-terminates-the-loi-on-redd-with-norway and https://news.mongabay.com/2021/09/indonesia-terminates-agreement-with-norway-on-1b-redd-scheme/

Table 35: Summary of RBF mechanisms in Indonesia

RBF mechanism, location and level	Financing value and agreement	Milestones and 2021 status	Transfer-based (TBF)?
Carbon trading in voluntary markets, various locations, projects (4)	Project carbon credit sales through voluntary market carbon registries (Verra, Plan Vivo)	By Dec 2020, 21 ongoing projects, 7 of which have traded carbon credits from as early as 2014	No
RBP from FCPF Carbon Fund ERPA with World Bank, East Kalimantan, Province (1)	USD 110 million; ERPA for max 22 Mt CO_2e at USD 5/ t CO_2e, with buy options for an extra 20 Mt CO_2e; Advance (5%) and interim payments (max 50% of monitored ERs) are allowed to cover running expenses	ER programme start: June 2019; ERPA signed Nov 2020 between World Bank and MoEF (2); MoEF has to fulfil effectiveness conditions by Nov 2021; End of agreement: Dec 2025; 0% disbursed as of Feb 2022; Benefit-sharing plan finalised October 2021	Yes
RBF with GCF, Indonesia – National (2)	USD 103.8 million; Recognition of 2014-2016 results, totalling 27 Mt CO_2e	Approved Aug 2020	No
RBF with Norway, Indonesia – National (2,3,5)	USD 56 million/NOK 530 million; Payment for 2017-2019 results of 11.2 Mt CO_2e, ad USD 5/t CO_2e	Emission reduction report, detailing amount of ERs available for RBP by Norway (2019); Mar 2020: Norway announced payment; Sep 2021: Indonesia terminates the LoI citing non-payment and sovereignty issues	No data

Source: (1) Aryal 2021a; RI et al. 2020; MoEF und PGEK 2021; (2) GCF 2020a; (3) DG CC - MOEF 2019; Ministry of Climate and Environment of Norway 2020; (4) Simonet et al. 2020; (5) MoFA 2021.

The FCPF Carbon Fund agreement includes a transfer clause from the programme entity (represented by MoEF) to the Trustee (IBRD) for the contracted ERs, as follows:

"For the avoidance of doubt, by having transferred the above ERs, we also have transferred and assigned to the Trustee the right to cause those ERs to be forwarded into any Registry Account(s) of the Trustee's nominee(s) in accordance with any modality, procedure, process or mechanism established by any relevant authority, entity or registry."

Indonesia's 2nd National Communication (NC) defines REDD+ financing as a *"result-based payment mechanism, based on performance of verified emission reduction" (MoEnv 2010, xxiv).* As such, Indonesia ties regulations and practices on REDD+ financing and with those on MRV. For example, *"…the Indonesian FREL serves as a baseline for reducing emission from deforestation and forest degradation under REDD+ mechanism (performance-based payment of REDD+)."* (MoEnv 2010, 167). This is supported by the establishment of a national registry system for climate change mitigation and adaptation action[162] and a financial mechanism to manage funds related to REDD+ and other climate-related actions (BPDLH). As of March 2021, almost all forest-based climate action in the registry were state-led, despite many private-sector led reforestation/ afforestation and REDD+ activities on the ground (IDRECCO).

There are no ongoing *domestic* RBF programmes, but there are several laws and initiatives underway that suggest opportunities for domestic carbon trading soon. The Ministry of Energy

[162] http://srn.menlhk.go.id/

and Mineral Resources is trialling a pilot cap-and-trade programme for carbon with 80 electricity generation companies (Indrawan 2021). A presidential decree (no. 98/2021) on carbon pricing was published on 1 November 2021. The Minister of Finance stated that a carbon cap and tax system will start to be implemented on 1 April 2022, based on a carbon price of IDR 30,000/t CO_2e (USD 2.1/t CO_2e) (Sembiring 2021). Carbon trading includes emissions offsetting and emissions trading. Since forestry is identified as one of several sectors that can provide climate mitigation benefits, it implies forestry can be one of the sources of carbon credits traded. Indonesia will develop its own standards and registry for carbon trading.

The Indonesia Environment Fund (Badan Pengelolaan Dana Lingkungan Hidup—BPDLH) was established in October 2019 as a non-structural agency under the Ministry of Finance (BPDLH 2020). It will manage, channel, and mobilise environmental finance including for REDD+ from public, private, domestic and international sources. It is the main financial agency to manage all the national and jurisdictional REDD+ RBFs.

While there is a clear pathway being built for domestic carbon trading in Indonesia, the government has not provided guidance on the possibility of transfer-based payments to international entities for subnational entities. All of Indonesia's emission reductions from the forestry sector (FOLU) and other sectors are still designated towards the fulfilment of Indonesia's NDCs.

6.2.2.2 Enhancing ambition, reducing emissions, and ensuring additionality

Indonesia ratified the Paris Agreement and submitted its INDC in 2016 (Indonesia 2016). It submitted an updated NDC along with a long-term strategy on low carbon and climate resilience 2050 (LTS-LCCR 2050) in July 2021 (RI 2021a). Forests and Land Use (FOLU) is the most important element in Indonesia's NDCs, as the source of both emission reductions and carbon removals. Between 2010 and 2016, FOLU contributed 43.6% of GHG emissions.

Indonesia's NDC has two sets of targets (see Table 36):

- Unconditional reduction (CM1) of 26% GHGs against the BAU by 2020 and 29% by 2030
- Conditional reduction (CM2) of 38% and up to 41% by 2030, subject to international support for finance, technology transfer and development and capacity building

During the 2021 NDC update, the unconditional reduction remained at 834 Mt CO_2e (29% reduction). Conditional reductions increased from 1082 Mt CO_2e (38%) to 1186 Mt CO_2e (41%) as initially planned. The 96 Mt CO_2e (3%) change mostly comes from increased emission reduction targets from the FOLU sector (from 650 to 692 Mt CO_2e) and the energy sector.

Table 36: Summary of Indonesia's GHG Emission Reduction Targets

Sector	GHG Emission Level 2010* (Mt CO_2e)	BAU	GHG Emission Reduction Target 2030			
			Before 2021 update		After 2021 update	
			CM1	CM2	CM1	CM2
1. Energy*	453.2	1,669	314	398	314	446
2. Waste	88	296	11	26	11	40
3. IPPU	36	70	3	3.25	3	3
4. Agriculture**	111	120	9	4	9	4
5. Forestry and Other Land Uses (FOLU)***	647	714	497	650	497	692
TOTAL	1,334	2,869	834 (29%)	1,081 (38%)	834 (29%)	1,185 (41%)

Source: RI 2021b. *) Including fugitive. **) Only include rice cultivation and livestock. ***) Including emissions from estate crops plantation.

Peatlands play an important role for Indonesia. In its 1st BUR (2016), Indonesia documented that peat fires contributed to nearly 50% of Indonesia's total GHG emissions. Relatedly, the conservation and rehabilitation of peatlands is an important part of Indonesia's NDC and national climate strategy. Indonesia has established a Peatland Rehabilitation Agency, which has recently (2021) been restructured to also include mangrove rehabilitation.

Article 6 is explicitly incorporated into Indonesia's NDC. The updated NDC includes additional information on concrete actions in climate finance, including issuing USD 2 billion in green bonds, establishing a national agency to manage and mobilise environmental and climate finance, and preparing carbon pricing measures.

Indonesia adopted the following systems for monitoring and reporting outcomes of the Paris Agreement:

- National Registry System (SRN) – to register climate actions related mitigation and adaptation;
- National GHG Inventory System (SIGN-SMART);
- MRV system for mitigation including REDD+;
- Safeguards Information System for REDD+ (SIS-REDD+);
- Information Systems on vulnerability (SIDIK) and joint adaptation and mitigation at the Village level (PROKLIM).

Indonesian state and non-state actors have sought and received support to implement Article 6, notably for enhancing forest MRV capacity, establishing FREL at the subnational level, and establishing a regulation on carbon pricing (Article 6.4 – non-market mechanism).

Given the vibrant project and jurisdictional level activities, accounting and nesting rules of existing forest carbon projects in jurisdictional REDD+ programmes needs to be resolved (Irawan et al. 2019).

6.2.2.3 Quantification of emission reductions and removals

Indonesia submitted a FREL in 2015, amended in 2016 and 2022 (MoEF 2016; RI 2022). The 2016 submission used a stepwise approach and identified areas of technical improvement, such as refining activity data and emission factors, estimating peatland fire emissions and including additional REDD+ activities. The baseline was constructed using eight points in time between 1990 and 2012. This 22-year period can be considered relatively long given the availability of remotely sensed data. It was chosen to cover various mid- and short-term dynamics, e.g. changes in government and fluctuations in commodity markets.

In the 2022 update, improvements were made, including: a. Including additional REDD+ activities, notably enhancement of forest carbon stock, preventing decomposition of peat, reducing fires (peat and minerals) in areas experiencing deforestation or forest degradation, and reducing emissions from conversion of mangrove forests into cultivated areas; b. Expanding carbon pools beyond above-ground biomass, to now include all carbon pools (above-ground biomass, below-ground biomass, dead wood, litter, soil); c. Including the calculation of emissions from non-CO_2 gases (CH_4 and N_2O), which were previously not included; d. Improving the calculation method used: net emissions; e. Improving the calculation of uncertainty.

Indonesia has good technical capacity in remote sensing, and has improved its national forest inventory capacity over time (Nesha et al. 2021). Activities accounted include deforestation and forest degradation. Indonesia is one of the few countries in the world that accounts for peatlands in its FREL, which is important given the size of the Indonesian peatlands and the role of these ecosystems as 'irrecoverable' carbon stores (Goldstein et al. 2020). The UNFCCC's technical assessment of Indonesia's FREL remarked: "*The assessment team notes that the data and information used by Indonesia in constructing its FREL are transparent and complete, and are in overall accordance with the guidelines contained in the annex to decision 12/CP.17*". There are nevertheless several areas of improvement, including (a) the necessity of accounting of post-conversion removals; (b) coverage of further potential sources of error; and (c) inclusion of other significant pools, such as below-ground biomass, deadwood and soil organic carbon and non-CO_2 GHG emissions (UNFCCC 2016a).

Leakage is not included in Indonesia's FREL, and the national RBF agreements with Norway and GCF both include 0% leakage buffers. There is, however, a 20% buffer to take into account uncertainty (DG CC - MOEF 2019).

6.2.2.4 Accounting, managing non-permanence and transparency

Nested accounting in Indonesia is complex due to the many REDD+ activities taking place simultaneously at various scales for which various accounting methods are being used. At the project level, projects use accounting methods accepted by certification standards such as Verra or Plan Vivo. At the provincial level, the FCPF Carbon Fund refers to its own approach, the Carbon Fund Methodological Framework. Many practitioners have commented that provincial-level RBF programmes such as FCPF impose stricter standards than those in UNFCCC's Warsaw Framework for REDD+ which countries use for REDD+ MRV at the national level (UN-REDD Programme 2016).

In 2017, the Ministry of Environment and Forestry restricted projects and other subnational entities from applying directly to international funding sources (MoEF 2017). This was re-iterated in April 2021 when the Minister stated that Indonesia is not ready to adopt the LEAF

funding initiative, based on ART/TREES, because it was not aligned with how forest carbon was currently accounted in Indonesia[163]. The Minister did not elaborate further on which specific accounting aspects were not aligned.

Indonesia's MoEF established and manages Indonesia's National Registry System[164] (SRN) registering all actions related to climate mitigation and adaptation from various sectors including REDD+. Project proponents self-register their projects on a voluntary basis. As of July 2021, the database featured mostly projects by the government or state-owned enterprises, with few private sector and civil-society projects. The system is therefore not yet comprehensive enough to prevent double counting.

Non-permanence of emissions reductions from forests in Indonesia is caused by planned and unplanned deforestation. Planned deforestation mainly results from changes in land use designation from forest to other uses. Unplanned deforestation and degradation are the result of forest encroachments by small and large-scale actors. In both cases, fire is an important element, either as a tool for forest conversion or a consequence of forest loss. At the national level, initiatives and institutions to monitor and extinguish forest and land fire incidences and restore fire-damaged landscapes include the Peatland and Mangrove Restoration Agency (BRGM), the SIPONGI forest and land fire monitoring system[165], the SPARTAN fire risk alert system[166], and the land and forest fire management directorate under MoEF. In 2021, the national police was piloting the ASAP Digital Nasional, a national fire monitoring and alert system in collaboration with MoEF (Polda Kaltim 2021).

At the subnational level, fire-prone provinces such as East and Central Kalimantan issued regulations and have institutions to react quickly to natural disasters including forest and land fires. The above institutions help in documenting non-permanence. Systems to compensate for fire-related damages are not well developed and rely on Indonesia's weak legal system.

6.2.2.5 Enhancing positive and preventing negative social impacts

At the national level, Indonesia has established a publicly accessible safeguards information system (SIS) known as SIS-REDD+[167]. There are similar systems at provincial level in Jambi, East Kalimantan and West Kalimantan (Tacconi und Muttaqin 2019). SIS-REDD+ builds on pre-existing mandatory and voluntary policies and regulations that address various safeguard aspects (Aurora et al. 2016). SIS REDD+'s seven principles correspond to the seven Cancun Safeguards principles.

Institutionally, the SIS is administered at the national level, supported by the provincial and district levels. Ad-hoc multi-stakeholder forums can be established to accommodate safeguard-related issues as needed (Dwisatrio et al. 2021). Despite this subnational institutional structure, the system has not collected much data. As of 5 July 2021, it had registered 64 REDD+ activities, which comprise REDD+ readiness activities, REDD+ projects that are ongoing, and those that have ended. Of this, nine contain data on two or more of the seven safeguard principles. Registration by REDD+ activity managers or proponents is still voluntary, which may explain the lack of data submission.

[163] https://foresthints.news/indonesia-national-focal-point-to-unfccc-takes-stance-on-the-leaf-coalition/

[164] http://srn.menlhk.go.id/

[165] http://sipongi.menlhk.go.id/home/main

[166] https://www.bmkg.go.id/cuaca/kebakaran-hutan.bmkg

[167] http://ditjenppi.menlhk.go.id/sisredd/

Intent on avoiding negative impacts on the economic development, Indonesia is increasingly embracing the concepts of green development, green economy and low-carbon development, in terms of public discourses and development planning (Bappenas 2021; Dwisatrio et al. 2021). The national development planning agency (Bappenas) leads a policy initiative on Low Carbon Development Planning (PPRK) for 2021-2030. This initiative is described as "*a process for identifying development policies that maintain economic growth, alleviate poverty, and help meet sector-level development targets, while simultaneously helping Indonesia achieve its climate objectives, and preserve and improve the country's natural resources*" (Bappenas 2019a). The period and sectors involved coincide with Indonesia's NDC First Commitment period. PPRK implementation includes the establishment of AKSARA, a development planning and monitoring platform to document low carbon development action in a transparent, accurate, complete, consistent and integrated way (Bappenas 2019b). There are no clear linkages between AKSARA and SRN (Dwisatrio et al. 2021).

6.2.3 Ethiopia

6.2.3.1 Country RBP profile

Ethiopia participates in RBF mechanisms at the subnational level, as summarised in Table 37. It participates in REDD+ results-based finance (RBF) through the World Bank's FCPF Carbon Fund programme in Oromia Regional State, the Oromia Forested Landscape Program (OFLP). The programme is well-integrated into Ethiopia's national strategy as a pilot REDD+ programme, where methods for MRV, benefit sharing, jurisdictional approaches to REDD+ and nested accounting systems are developed and piloted. It received start-up funding from the BioCarbon ISFL programme, also administered by the World Bank.

Ethiopia hosts Africa's first afforestation/reforestation project under the Clean Development Mechanism (A/R CDM) in Humbo *woreda* (district) in the Southern Nations, Nationalities and Peoples (SNNP) regional state. The project started in 2005 with World Vision Australia as the main project proponent. Start-up funding came from the project proponent, World Vision, with in-kind funding from the local government and active participation of seven local communities. It was since registered as a CDM project in 2009 and received payments for emissions reductions from the Canadian government through the World Bank BioCarbon Fund in 2010. This project was de-registered from CDM in April 2020 and is actively trading carbon credits in the voluntary carbon market as a registered project under Gold Standard[168]. The Bale Mountain Eco-Region REDD+ project (BMERP) is a project registered under Verra[169]. The BMERP was established prior to the OFLP and is now nested within OFLP. This demonstrates Ethiopia's ability to incorporate voluntary carbon projects in a jurisdictional-scale RBF mechanism.

[168] https://registry.goldstandard.org/projects/details/1922

[169] https://registry.verra.org/app/projectDetail/VCS/1340

Table 37: Summary of RBF mechanisms in Ethiopia

RBF mechanism, location and level	Financing value and agreement	Milestones and 2021 status	Transfer-based (TBF)?
RBP from FCPF Carbon Fund ERPA with World Bank, in Oromia Regional State	USD 18 million grant agreement for preparing jurisdictional project in Oromia; Planned RBP up to USD 50 million	August 2019: Draft Benefit Sharing Plan for RBP published; No ERPA signed as of September 2021	Likely yes
Clean Development Mechanism (CDM) project, Humbo Assisted Natural Regeneration project, Southern Nations Nationalities and Peoples Region (SNNPR), project level	World Vision and GoE programme financed project preparation and implementation; BioCarbon Fund purchased half of emissions reductions in 2017	Registered in CDM Dec 2009; ERPA signed 2009; USD 726,000 from 165,000 ER sold to BioCarbon Fund; First payment received Sep 2010	Yes; Government of Canada through the BioCarbon Fund
Carbon trading in voluntary markets – project level; Bale Mountains Eco-Region REDD+ Project/BMERP (Verra) - Oromia Regional State; Sodo Ethiopia (Gold Standard) and Humbo Ethiopia Assisted Natural Regeneration project (Gold Standard), SNNPR	Price information not available	As of 27 September 2021, 212,178 VERs issued from Gold Standard, and 7,667,511 from Verra	No

Source: NRGO 2019; Biryahwaho et al. 2012

In addition to the above, the REDD+ Investment Program (RIP) has been under implementation since mid-2017. It is a national AR and sustainable forest management (PFM) programme covering five regions. It is financed by Norway and is meant to generate ER and access RBP from Norway as part of the REDD+ Partnership Agreement between Ethiopia and Norway. Funding is channeled through the CRGE Facility, a financing mechanism developed in Ethiopia to mobilise and channel funds supporting the attainment of CRGE objectives (NICFI). The programme includes building the national and subnational MRV capacity and ensuring that the MRV system is independent and operational. Relevant MRV activities under implementation since 2017 include: Activity data monitoring and LULC; national forest inventory and emission factors; developing guidelines and protocols; building REDD+ portal; development of regional FRL and assessment of forest degradation (Bekele et al. 2018).

Ethiopia's Ministry of Finance and Economic Cooperation (MoFEC) is a GCF accredited entity[170]. This will facilitate possible future RBPs for REDD+ from GCF. There are no domestic RBP programmes in Ethiopia. A Payment for Environmental Services system (PES) was piloted in four biodiversity hotspots, funded via the GEF. An evaluation found that Ethiopia lacks the legal and policy framework for implementing PES,making it difficult to pilot on the ground (Ferguson and Tirfi 2019).

Ethiopia's preference over results-based financing with or without transfer has not been made explicit. Federal and regional government support for the implementation of OFLP in Oromia

[170] https://www.greenclimate.fund/ae/mofec

funded by the FCPF Carbon Fund mechanisms, the existence of nested projects, and historical experience with A/R CDM projects suggests that the Ethiopian government is not against transfer-based payments.

6.2.3.2 Enhancing ambition, reducing emissions, and ensuring additionality

Ethiopia submitted its INDC in 2017 (FDRE 2017) and submitted an updated NDC in 2021 (FDRE 2021). While the conditional vs. unconditional emission reductions targets were not clearly specified in 2017, they are clearly outlined in the 2021 update.In this latest update, the country commits to reducing 277.7 $MtCO_2e$ by 2030 compared to 2010 levels, of which 56 $MtCO_2e$ reductions are committed unconditionally without international funding (FDRE 2021). Land use change and forestry continues to be the major sector for emission reductions, representing 86% of conditional and unconditional emissions reductions.This is a 22 $MtCO_2e$ increase in emissions reduction ambition compared to the 2017 INDC target of 255 $MtCO_2e$ by 2030.

Ethiopia's NDC has explicitly mentioned using international carbon market mechanisms under Article 6 of the Paris Agreement as a way of increasing mitigation ambition, with a focus on bilateral and multilateral financial mechanisms within the framework of the Paris Agreement. This includes developing procedures to approve activities and transfer internationally transferred mitigation outcomes (ITMO). In the 2021 update, financial resources needed to mitigate and adapt to climate change by 2030 are estimated at USD 316 billion, of which USD 253 billion (80%) is expected from international climate finance sources.

The NDC places emphasis on robust accounting and promotion of sustainable development. To this end, Ethiopia plans to identify other sectors eligible to receive support from international carbon markets, building bilateral agreements and engaging in new multilateral finance mechanisms, developing a registry, and exploring carbon market instruments beyond the Paris Agreement, such as CORSIA (FDRE 2021).

Ethiopia participates in several initiatives to pilot the implementation of Article 6 (Climate Finance Innovators 2020). Pilot activities to mobilise Article 6 started in 2020 in the energy sector through the Mobilizing Article 6 Trading Structure programme funded by the Swedish Environment Agency.This programme explores activities that can generate ITMOs. Under the Joint Crediting Mechanism with Japan, methodologies for the energy sector were developed and no project had been registered as of October 2021 (JCM 2021a). Ethiopia participates in the East African Alliance on Carbon Markets and Climate Finance supported by the German government, to build the capacity and participation in Article 6 (GIZ n.d.).

6.2.3.3 Quantification of emission reductions and removals

Ethiopia submitted their FREL in 2017, after an initial submission in 2016.The technical assessment review (TAR) of the FREL finds that it is "*… mostly transparent and complete and is in overall accordance with the guidelines for submission of information on FRELs/FRLs.*" (UNFCCC 2017b).

Ethiopia has significantly increased its forest MRV capacity in the last 10 years. Between 2015 and 2020 it established a national forest inventory system and built institutions and technical capacity for a national forest monitoring system (Bekele et al. 2018; Nesha et al. 2021). MRV for REDD+ is led by the MRV unit with technical support and oversight from the REDD+ secretariat. Both are units within the Environment, Forest and Climate Change Commission (EFCCC), which is Ethiopia's focal point to the UNFCCC. MRV for REDD+ is institutionally present at the regional level, spearheaded by the OFLP pilot jurisdictional programme. Lessons from OFLP are used to develop and train MRV units in other regional states where REDD+ is being rolled out: Amhara, Tigray, and Southern Nations Nationalities and Peoples Region (SNNPR).

Issues such as leakage from subnational-level REDD+ action such as OFLP and the BMERP have been noted and discussed at different lengths. BMERP manages activity leakage in two ways, following methodologies from the voluntary carbon standards (VCS). First, by monitoring a leakage belt in surrounding forest areas (30,418 ha of dry forest and 148,102 ha of moist forest). Second, by setting aside a buffer of 1,323,053 credits (i.e. 1,323,053 tCO_2e) to account for potential leakage and non-permanence[171], which is slightly more than their annual expected emissions reduction. At the jurisdictional level, the OFLP has noted the risk of leakage in their Strategic Environmental and Social Assessment (SESA), but no approaches are proposed to manage this risk (The National REDD+ Secretariat and ORCU 2017). In OFLP's implementation manual, leakage is touched upon under the framework of OFLP's resettlement action plan to prevent and minimise harm from the displacement of livelihoods and peoples (NRGO 2017). The issue of displacement of emissions outside the Oromia regional state as a result of OFLP activities is not mentioned.

6.2.3.4 Accounting, managing non-permanence and transparency

The Ethiopian government is structured into five levels (federal, regional, zonal, *woreda* (district), and *kebele* (neighbourhood). Major decision-making power involving land use is exercised at regional and woreda levels (Bekele et al. 2015). Genuine stakeholder participation in forest development decision-making processes has been inadequate due to several factors which include: lack of regulations to provide communities and associations with forest management and use rights for; limited public participation in land use decisions; and lack of clear operational guidelines on how to involve communities to participate in forest management (Bekele et al. 2015). Since 2018, the forest sector is represented at the federal level as a commission (EFCCC), with no representation at the council of ministers. A government restructuring in October 2021 transferred the mandate of EFCCC to three ministerial-level entities: (i) environmental protection reports to the National Meteorology Authority; (ii) forestry, renamed Ethiopia Forest Development, reports to the Ministry of Agriculture; and (iii) climate change reports to the National Planning Commission. This recent institutional overhaul is likely to significantly delay progress in preparing for Ethiopia's readiness to participate in RBF and TBF mechanisms.

Ethiopia has developed a national forest monitoring system, with institutional structures for REDD+ MRV at federal and regional levels (Bekele et al. 2018). For monitoring REDD+ activities, Ethiopia seeks to develop a national registry as part of a robust carbon accounting system (FDRE 2021). As of September 2021, such a system had not been established.

There are ten direct drivers of deforestation and forest degradation (D&D) identified in the national REDD+ strategy, involving small, medium and large-scale actors ranging from small-scale farmers and charcoal producers to the Ministry of Water and Electricity (FDRE 2018). Managing non-permanence will involve these actors of different levels and sectors. At the federal level, institutions were established to coordinate and bring together actors from different sectors and levels, such as the Federal REDD+ Steering Committee chaired by the MEFCC and the REDD+ Technical Working Group. Environmental causes of D&D, such as fire and pests, are managed at the federal level by the EFCCC, and regionally by relevant regional bureaus, but generally have limited resources and human capacity (EFCCC 2019).

6.2.3.5 Enhancing positive and preventing negative social impacts

Safeguards and local participation are key components of REDD+ documents in Ethiopia. Safeguards are incorporated into the national REDD+ strategy, and a roadmap for developing

[171] https://registry.verra.org/app/projectDetail/VCS/1340

safeguard systems was developed in 2015 (The National REDD+ Secretariat 2015). A framework for a safeguards information system was drafted in 2018, but is not yet in place (Bekele et al. 2018). Safeguards specialists are recruited and posted in REDD+ institutions at the regional levels, under the coordination and oversight of the national REDD+ secretariat. Regional safeguard specialists undergo training organised by the national REDD+ secretariat to increase their capacity. Guidelines to incorporate biodiversity monitoring and local knowledge are being prepared (Eyob Tenkir, personal communication, September 2021).

Forestry is aligned to Ethiopia's vision of achieving middle-income status by 2025 in a green economy, as described in the Climate Resilient Green Economy (CRGE) strategy (FDRE 2011). Forestry is one of four pillars of the country's green growth path, alongside agriculture, energy and transport/industries/buildings. Forests are seen as a source of ecosystem services including carbon stocks, and productive inputs for the other pillars. Ethiopia's prime minister made global headlines by mobilising millions of citizens to plant trees under the Green Legacy programme launched in 2019. This programme receives wide societal support with annual tree planting drives that aim to plant 20 billion seedlings over 4 years (Getahun 2020).

At the same time, the federal and regional governments allocated considerable public resources and political will in encouraging large-scale agriculture investments to achieve food security and generate rural employment, while improving tenure security over agricultural lands through land certification programmes for rural households. Parallel investments in the forestry sector, however, have not been forthcoming, resulting in an imbalance between public resource allocation in forestry and forestry's central role in the CRGE strategy.

Two recent events reflect the country's increased emphasis on agriculture and the weakened role of forestry and climate change. One is that in March 2021, Ethiopia unveiled its 10-year (2021-2030) national development plan that puts strong emphasis on three productive sectors as the engine of economic growth: agriculture, mining, and manufacturing. Forest and climate change takes a minor role as part of one of the plan's six strategic pillars. Under this pillar, two of the five objectives are directly related to REDD+: "Improve productivity and reduce GHG emissions", and "Increase forest protection and development". "Huge unutilized arable land" is seen as one of the natural endowments to achieve the objectives of this plan. The other is the government restructuring that occurred in October 2021 (explained above) which institutionally separates environment, forestry and climate change, posing considerable challenges for implementing cross-sectoral efforts such as REDD+.

6.2.4 Peru

6.2.4.1 Country RBP profile

Peru engages in several RBF mechanisms for REDD+ (Table 38). In 2014, the government established a multi-donor agreement on REDD+ with Norway and Germany expressed in a Joint Declaration of Intent (JDI) (JDI 2014). This is similar to the bilateral Letter of Intent (LoI) that Norway uses in other countries (e.g. Indonesia). Financing is structured following the three REDD+ phases, of which the 3rd phase is based on "payments for verified emission reductions" of up to USD 250 million in the period up to and including 2020. As of October 2021, disbursement of financing for REDD+ had been effected for Phase 1 (readiness) and Phase 2 (implementation) activities, but not Phase 3 (RBP).

In 2021, the JDI was extended until 2025, and UK (Great Britain and Northern Ireland) joined as a partner. In this 2021 addendum, Norway states its intention to contribute NOK 375 million

(USD 45 million[172]) annually between 2022 and 2025 up to a total of NOK 1,500 (USD 180 million) for emissions reductions verified under the Architecture for REDD+ Transactions (ART). Norway offers a floor price of USD 10/tCO_2e (JDI Addendum 1 2021), which is double the price offered under the FCPF Carbon Fund programme.

In 2020 the governments of Peru and Switzerland signed the first-ever bilateral RBF based on REDD+, represented by their respective ministries of environment, MINAM (Peru) and FOEN (Switzerland) (Swiss-Perú Implementing Agreement 2020; Sommaruga and Alfaro 2020). For Peru, Switzerland and other parties of the Paris Agreement, this agreement serves as a pilot for transacting internationally transferred mitigation outcomes (ITMOs) using bilateral agreements between national jurisdictions. It defines and uses terms pursuant to the Paris Agreement, NDC and other UNFCCC frameworks (e.g. ITMOs), closely aligning itself to these frameworks. The agreement specifically refers to Article 6.3 of the Paris Agreement. The Peru-Swiss agreement is currently the only mechanism that makes ITMOs possible in Peru.

Among the innovations of this agreement are clauses specifying that the mitigation outcomes must come from activities that (i) are in line with sustainable development and low-emission development strategies and policies; (ii) prevent negative social and environmental impacts, and respect human rights (Article 4). It is unclear which activities the Swiss and Peruvian governments have determined will be eligible to generate carbon credits (Dupraz-Dobias 2020).

Table 38: Summary of RBF mechanisms in Peru

RBF mechanism, location and level	Financing value and agreement	Milestones and 2021 status	Transfer-based (TBF)?
RBF with GCF, Subnational (Peruvian Amazon)	For emissions reductions in 2016-2018	Concept note submitted Sep 2018	
Multidonor Agreement under the Joint Declaration of Intent (JDI) (Peru, Germany, Norway, UK) (2014, 2021)	September 2014: Norway pledged USD 250 million to Peru for REDD+ RBF; May 2021 Addendum: USD 45 million/year at USD 10/tCO_2e between 2022-2025, up to USD 180 million	Addendum signed May 2021; As of Oct 2021, no disbursement related to RBF	Unknown
Swiss-Peru Implementing Agreement (2020)	In 2020, Switzerland struck a carbon offsetting agreement with Peru.	There has not been a 2021 update.	Yes
Carbon trading in voluntary markets	As of December 2020, 11 ongoing REDD+ projects	Dec 2020: 10 projects have conducted carbon credit transactions	No

Source: Dupraz-Dobias 2020; Simonet et al. 2020; https://registry.verra.org/app/search/VCS/Registered

In terms of domestic RBP programmes, in 2011, Peru started to implement the Direct Conditional Transfers (TDC) (Ministerio del Ambiente de Perú 2016) that provides conditional funds to native communities to guarantee forest conservation.TDC is managed by the National Forest Conservation Program (Programa Nacional de Conservación de Bosques/PNCB). Between 2014and 2018, the PNCB expanded the programme with BMUB funding of EUR 5 million, implemented through GIZ's "Community Forests Conservation Project (CBC II)".

[172] Approximated based on 1 USD = 8.34 NOK exchange rate, from https://www.norges-bank.no/, 21 October 2021, 16:00

The TDC involves a 5-year conservation agreement with titled indigenous forest communities to transfer PEN10 (USD 4) per hectare of conserved forest annually. Cash transfers to the indigenous community, rather than individual community members, are conditional on the presentation, approval and fulfilment of an investment plan. This economic incentive aims at the development of sustainable productive activities, strengthening forest monitoring, and developing community management capacities. The amount of money received by participating communities varies widely depending on factors including the size of the forest in their titled land and how long they have been in the programme.

The Peruvian government now funds PNCB and extended it until at least 2030. PNCB reports forest conservation agreements with 274 native communities, composed of 21,920 families and covering 2,934,713 ha of forest (MINAM 2020). More than PEN 57 million (USD 14.3 million) were distributed through Conditional Direct Transfers to participating communities up to 2019 (MINAM 2020).

As of February 3, 2021, Peru dropped from the FCPF Carbon Fund portfolio (FCPF Secretariat 2021). This comes after Peru failed to meet the deadline to sign an ERPA with the World Bank. Peru's withdrawal indicates that achieving RBP is difficult for countries.

6.2.4.2 Enhancing ambition, reducing emissions, and ensuring additionality

Peru's NDC, updated in December 2020, aims to unconditionally limit total 2030 emissions to 208.8 $MtCO_2e$, equivalent to a reduction of 30% compared to the BAU scenario. Emissions by 2030 can be further limited to 179 $MtCO_2e$ with international financing, equivalent to a reduction of 40% compared to the BAU scenario (Gobierno del Perú 2020). These updated targets are more ambitious than those in the 2015 NDC document, which are 238.6 $MtCO_2e$ (unconditional) and 208.8 $MtCO_2e$ (conditional) (see Table 39). These goals encompass targets for the following sectors: i) Energy; ii) Industrial Processes and Product Use (IPPU); iii) Waste; iv) Land Use, Land Use Change and Forestry (LULUCF); and, v) Agriculture.

Table 39: Absolute mitigation targets for Peru

Type	GHG Mitigation targets ($MtCO_2e$)	
	NDC (2015)	Updated NDC (2020)
Unconditional	238.6	208.8
Conditional	208.8	179.0

Source: Gobierno del Perú 2020

The 2020 NDC is an increase in ambition compared to the 2016 INDC, with the unconditional reduction being increased from 20% to 30%, and the conditional total reduction being increased from 30% to 40% (Republic of Peru 2015). Additionally, the goals in the 2020 NDC are absolute target emissions, which are an improvement from Peru's previous uncertain target type of relative reductions compared to a BAU scenario. Neither version of the NDC features much detail on the expected emission reduction contribution specifically from the forestry sector, nor LULUCF. Both versions of the NDC list forestry as one of five priority sectors for adaptation, along with water, agriculture, fishery, and health.

Peru expects international support through Article 6; however, it is still in the early stages and prepares the necessary institutional arrangements and procedures. As of November 2021, there was an ongoing process of formulating a Climate Finance Strategy in coordination with MINAM and the Ministry of Economy and Finance. The resulting financial mechanism is envisioned to

improve the financial planning for implementing the NDCs (Gobierno del Perú 2020). Peru's NDC does not specifically mention a market mechanism, but the Swiss-Peru agreement suggests that the government welcomes it.

6.2.4.3 Quantification of emission reductions and removals

Peru submitted a subnational FREL in November 2015 for the entire Peruvian Amazon biome, with the aim of transitioning to a national FREL and/or a forest reference level pursuant a stepwise approach in the future. "The FREL proposed for the Peruvian Amazon has been established taking into account historical data on annual CO_2 emissions from gross deforestation from the period 2001–2014" in the context of results-based payments under the UNFCCC up to 2020. "The proposed FREL has been constructed by linearly projecting the historical (2001–2014) GHG emissions from anthropogenic gross deforestation into the 2015–2020 period" given that "the most likely trend of deforestation in the Peruvian Amazon, in absence of enhanced mitigation actions and result-based payments, is the continuation of the historical trend of increasing deforestation in the upcoming years." Gross deforestation could include the conversion of forest plantations to other land-use categories, and emissions from river meandering were excluded (MINAM 2016).

In the technical review from March 2016, the AT acknowledges Peru's continuous improvements in their FREL and the country's ongoing effort to maintain consistency with the LULUCF emissions reported in its national GHG inventory. Moreover, they assessed the information used to construct the FREL for gross deforestation as being transparent and complete (UNFCCC 2016). Areas for improvement primarily involve using the NFI to improve carbon stock and change estimates and improving the land-use change analysis (UNFCCC 2016).

Peru submitted a modified subnational FREL in June 2016 for the entire Peruvian Amazon biome, with the aim of transitioning to a national FREL and/or a forest reference level pursuant a stepwise approach in the future. There is no significant change from the 2015 version (MINAM 2016). Peru also submitted a 2021 FREL (MINAM 2021a) that has not yet undergone review as of March 2022.

Between 2005 and 2020, Peru consistently had high capacity for using remote sensing in forest monitoring (Nesha et al. 2021). The capacity to implement and use national forest inventory is relatively weaker but has significantly increased in 2020 in relation to REDD+ readiness investments in building the country's national forest monitoring system (FCPF 2021b).

There is no mention of leakage or permanence in the modified 2016 FREL. There is no mention of addressing non-permanence risk in either the 2015 FREL, the 2016 modified FREL or the 2021 FREL.

6.2.4.4 Accounting, managing non-permanence and transparency

Peru intends to use the forest MRV carbon accounting methods for future UNFCCC reporting, mainly for the biennial update report (BUR) and for payment for results, and ensure consistency in the measurement of its national targets (MINAM 2021a). MRV policies also aim to implement a multi-purpose national forest inventory and annual deforestation statistics (Ochieng et al. 2018). The 2016 FREL acknowledges that there are technical gaps. The Tier-2 (or higher) carbon stock estimates for the conversion between forest and non-forest categories are still lacking. The country also lacks spatially explicit information on these categories for the years included in the historical reference period (2001–2014) (MINAM 2016). Some data on areas afforested, reforested or naturally regenerated since this base year is also lacking. Therefore, the MRV policies also aim to build the needed data, institutions and legal framework that builds on Peru's country context (Ochieng et al. 2018).

The Swiss-Peru Implementing Agreement (2020) specifically requires the establishment of a registry as a tool to recognise the transfer of mitigation outcomes. The registry must be: (i) publicly available; (ii) updated to reflect authorised and transferred ITMOs; (ii) include unique identifiers for all recognised ITMOs, with information regarding the origin, the vintage year, reference to the authorisations, and documentation required for the recognition of the transfer of mitigation outcomes. Peru is establishing the National Registry of Mitigation Measures (RENAMI), a platform for registering and monitoring emission reductions. Through RENAMI, Peru is hopeful that it will be possible to transfer the GHG reduction produced by mitigation actions carried out by these domestic institutions towards national and international carbon markets (Gobierno del Perú 2020). The platform was online as of October 2021[173]. The Peru REDD+ Program registry is part of the IHS Markit Registry, who also runs other environmental (including carbon) registries for voluntary carbon market standards, such as Plan Vivo and the UK Woodland Carbon Code. As of October 2021, no projects were registered.

Peru has a national forest inventory (Inventario Nacional Forestal, INF) and is developing a National Forest Monitoring System (NFMS). Moreover, a protocol for measuring changes in forest cover and mapping forest lands has been developed (MINAM & MINAGRI 2016). The protocol has been successfully implemented in the Peruvian Amazon. It is applied in the "Geobosques" platform monitoring changes in forest cover. The platform offers the opportunity of making the information available to different users (GCF 2018).

In its 2016 FREL, Peru indicated that for safeguards, it would build on its "national system on existing structures, such as the national System of Environmental Information (Sistema Nacional de Información Ambiental, SINIA)" (MINAM 2016). As of 2021, SINIA had been established and pursued the purpose of facilitating "free access to environmental information generated by public and private entities." (MINAM).

6.2.4.5 Enhancing positive and preventing negative social impacts

Peru submitted its first Summary of Safeguards Information in April 2020, and an assessment process was completed in December 2021 (MINAM 2021b). Peru is still building its national safeguards process (led by MINAM) following the Cancun Safeguards. It plans to integrate other safeguards requirements in the future such as those requested by the FCPF or the GCF (MINAM 2019).

Despite the increased ambition stated in Peru's updated NDC, the government is yet to discuss how the more ambitious targets will be met. In parallel, Peru has announced the 'Second Agrarian Reform', with commitments to support smallholder agriculture; its potential impact on forests is yet to be discussed or calculated.

Peru's Estrategia Nacional sobre Bosques y Cambio Climatico (National Strategy for Forests and Climate Change) contains policies and measures to implement REDD+, as part of its aim to promote inclusive grown and economic development and maintain ecosystem services (MINAM and MINAGRI 2016). It articulates cross-sectoral efforts to reduce deforestation and forest emissions, to make forests the driving force of sustainable development.

6.2.5 Vietnam

6.2.5.1 Country RBP profile

Vietnam is in the process of receiving RBP funding at the national and subnational levels, as summarised above. At the national level, Vietnam is in the pipeline for REDD+ RBP from the

[173] https://products.markit.com/br-reg/public/Peru-public/#/home

Green Climate Fund (MPI et al. 2020). Vietnam is preparing to improve its participation in multilateral and bilateral RBP programmes and has received preparation funding. This includes a USD 30 million support for implementation of the UN-REDD Vietnam Programme, Phase 2 from the Norwegian Government, and USD 5 million from the FCPF. The Vietnam government estimated that USD 350 million was received in grants for climate action (The Socialist Republic of Viet Nam 2020a). Vietnam, like Ethiopia, is part of the Joint Crediting Mechanism with Japan. As of October 2021, there were 14 registered projects of which none are in the forestry sector (JCM 2021b). In 2021, the government signed an LoI with Emergent to participate in LEAF Coalition's RBF programme.

There is a lack of clarity regarding what actions would qualify Vietnam for receiving RBP. Norway is a significant UN-REDD donor and is seeking policy change in Vietnam, despite Vietnam already achieving forest-related emission reductions. Until the two countries come to a consensus regarding eligibility for results-based payments, it is unclear whether and when Norway will disburse these funds (Tatarski 2019). According to the Final Evaluation of the UN-REDD Vietnam Program released in 2020, there is donor interest in supporting a proposed second phase of the UN-REDD programme in Vietnam, that assumes a subsequent results-based component. The triggers for payments are undefined, and to be determined jointly by the governments of Norway and Vietnam (Stewart and Swan 2013).

Vietnam has received REDD+ funding since 2009, most of which was used toward REDD+ readinesss activities (Nguyen und Dang 2013). By 2014, 24 out of 44 REDD+ projects in Vietnamhad been completed and 20 were ongoing, of which two had advanced to RBP**.** Many REDD+ projects in the country are focussed on readiness (Phase1) instead ofRBP.

At the subnational level, provincial authorities show interest in carbon trading to finance forest protection and climate change mitigation. The province of Quang Nam has asked the government to approve a plan to export 2.5 million carbon credits for an amount of 110 billion VND (4.7 million USD) to 130 billion VND (5.6 million USD) (VNS/VNA 2021; Nguyen 2021). They have identified potential buyers from the United Kingdom, Italy, and the United States, but await government approval to move forward with the transaction.

Vietnam is increasingly more open to carbon markets and public-private partnerships. In December 2020, the Ministry of Natural Resources and Environment held a Final Workshop for the "Vietnam Partnership for Market Readiness" to discuss the potential of domestic carbon markets and market-based mechanisms such as an emission trading scheme (ETS) (Chia sẻ 2021).

Table 40: Summary of RBF mechanisms in Vietnam

RBF mechanism, location and level	Financing value and agreement	Milestones and 2021 status	Transfer-based (TBF)?
REDD+ RBP at the Green Climate Fund	National emissions reduction per year (2014-2018) is 67,572,418 tCO_2e considering national circumstance. Of this, 30,000,000 tCO_2e out of the total annual result for 2014 is proposed to the GCF for the RBP.	Sept. 2020 – Concept note submitted to GCF	No
RBP from FCPF Carbon Fund ERPA with World Bank	USD 51.5 million; ERPA for max 10.3 $MtCO_2e$ at USD5/ tCO_2e with buy options for an extra 5 $MtCO_2e$	ER programme start: February 1, 2018; Advanced benefit-sharing plan drafted July 2019; ERPA signed Oct 2020 between World Bank and MoARD; 0% disbursed as of July 2021	Yes
LEAF Coalition in 11 provinces in Central Highlands and South Coastal Central regions	USD 10/tCO_2e for an expected emission reduction of 11.8 million tCO_2e between 2022 and 2026, contingent on fulfilling ART/TREES standard	LoI signed 31 Oct 2021	Yes
Carbon trading in Quang Nam Province	Quang Nam provincial estimates export of 2.5 million carbon credits worth approximately USD 4.7 - 5.6 million.	July 2021: Provincial government requests central government approval	Unclear
Carbon trading in voluntary markets	Nov 2020: two ongoing REDD+ projects	April 2009: One project registered on CDM; July 2021: One project registered in Plan Vivo; As of Oct 2021, no carbon credit transactions	No

Source: FCPF; Simonet et al. (2020); MPI et al. (2020); Nguyen (2021); VNS/VNA (2021); MARD und Emergent (2021); Ministry of Agriculture and Rural Development Vietnam (2019) .

Progress to an Emissions Reductions Payment Agreement (ERPA) is contingent on emissions reductions in 11 contiguous provinces in two regions between 2002 and 2027. For emission reductions to be eligible for RBPs, the government must comply with the REDD+ Environmental Excellence Standard developed by the Architecture for REDD+ Transactions (ART/TREES). The government must also be able to issue, transfer or retire emission reductions credits using the ART accounting/registry system.

Vietnam is currently developing a domestic carbon market system, which may include RBP mechanisms. The country also has several domestic payment initiatives for ecosystem service programmes. As part of the National Payment for Forest Environmental Services (PFES) Scheme, beneficiaries of environmental services, such as hydropower plants, provide financial incentives to suppliers of these services, such as local forest communities (USAID 2013). Vietnam's carbon for forest ecosystems services (C-PFES) programme is still under development and could turn

into transfer-based payments to international entities. Under this programme, charges to cement manufacturers and coal-fired power plants for their emissions would go towards financing forest conservation (Clouse 2020).

6.2.5.2 Enhancing ambition, reducing emissions, and ensuring additionality

The updated NDC features a slightly increased ambition for both unconditional and conditional commitments. The updated NDC aims to unconditionally reduce total GHG emissions by 9% (83.9 $MtCO_2e$) by 2030, compared to 8% in the first NDC. The government conditionally commits to reducing emissions by 27% by 2030, up from 25% in the first NDC (The Socialist Republic of Viet Nam 2020a). There is greater transparency regarding forest-related plans relating to both mitigation and adaptation in the updated NDC.

Vietnam's updated 2020 NDC mentions forest land under LULUCF as part of its mitigation and forestry goals. Vietnam also included agroforestry in its updated 2020 NDC to maintain food production and sequester carbon. Forestry-related mitigation measures explicitly mentioned in the NDC include the following (The Socialist Republic of Viet Nam 2020a):

- "*Protecting, conserving and sustainably using forests and forest land to increase carbon sequestration and forest certification;*
- *Planting and developing forests, giving priority to production forests, large timber forests and coastal forests; restoring protection forests and special-use forests;*
- *Defining areas for restoring natural forests, promoting forest regeneration and enrichment planting in areas planned for forestry; improving forest carbon stock quality and volume; and*
- *Developing agroforestry models to enhance carbon stocks and conserve land.*"

Forestry is also included in climate change adaptation measures, including sustainable forestry development; conserving and enhancing forest carbon stocks; and protecting, restoring and planting mangrove and coastal protection forests (The Socialist Republic of Viet Nam 2020a).

The NDC explicitly refers to Article 6 as part of financing conditional contributions, "… through bilateral, multilateral cooperation as well as through the implementation of market and non-market mechanisms under Article 6 of the Paris Agreement, in line with the socio-economic conditions and international conventions to which Vietnam is signatory." (The Socialist Republic of Viet Nam 2020a). Vietnam also intends to develop "domestic regulations to follow the roadmap of cooperation mechanisms under Article 6 of the Agreement." (The Socialist Republic of Viet Nam 2020a).

In November 2020, a revision of the Law on Environmental Protection adopted by Vietnam's National Assembly gave the Ministry of Natural Resources and Environment (MONRE) and the Ministry of Finance (MOF) the mandate to design a domestic emissions trading scheme and a crediting mechanism. This law gives MONRE the authority to establish a cap-and-trade system, including methods of allowance allocation and inclusion of domestic and international offsets. The law entered into force in January 2022, with the trading system expected to be fully operational by 2027 (ICAP 2021b).

6.2.5.3 Quantification of emission reductions and removals

Vietnam has consistently used the NFI for forest monitoring since 2005. There was a significant increase in capacity for using remote sensing between 2010 and 2015 (Nesha et al. 2021). Vietnam submitted a FREL in January 2016, modified it in July 2016, and updated it in December 2016. Vietnam took a stepwise approach in developing a FREL/FRL for the entire national

territory, including all forest areas. It uses the historical reference period 1995–2010, split into three five-year periods, in accordance with its national forest inventory (NFI) cycles (MARD and Rural Development of Viet Nam 2016). The national FREL accounts for CO_2 in above- and below-ground biomass (AGB/BGB). Non-CO_2 gases and other carbon pools (i.e. soil organic matter, deadwood and litter) are excluded. Based on the modified national FREL, Vietnam's net forest emissions are estimated to be 59,960,827 tCO_2e/year.

UNFCCC's technical assessment of Vietnam's FREL noted that the data and information used in constructing the FREL/FRL is generally complete (UNFCCC 2017a). Some of the suggested technical improvements are (UNFCCC 2017a):

- Using a consistent approach to geospatial image interpretation across the time series;
- Harmonising activity data and emission factors between the GHG inventory and the FREL/FRL;
- Improving the definition of forest degradation;
- Including other carbon pools and non-CO_2 gases;
- Assessing the effect of forest fires.

Vietnam is unclear about how it plans to address leakage and permanence issues. The only mention of leakage and permanence in Vietnam's modified (Dec 2016) FREL states, "The full inclusion of REDD+ activities in the FRL minimizes the risk of leakage or displacement of emission reductions from one activity to another." (MARD and Rural Development of Viet Nam 2016).

6.2.5.4 Accounting, managing non-permanence and transparency

The Vietnamese government has stated its commitment to improve GHG accounting across sectors. The Ministry of Natural Resources and Environment (MONRE) is taking the lead on drafting Vietnam's Prime Minister's Decision on a national MRV system for GHG emission reduction actions. The decision aims to gain international recognition of Vietnam's carbon accounting system and emissions reductions, by specifying the tasks, roles and responsibilities. It is also meant to overcome still existing lack of consistency, connectivity, integration and alignment in goals and actions, while improving accuracy and transparency (The Socialist Republic of Viet Nam 2020b). Moreover, the national GHG inventory and MRV systems were completed at all levels in 2021.

There is no mention of nested REDD+ accounting and addressing/monitoring non-permanence in Vietnam's FREL. There could be an issue of double counting between Vietnam's PFES areas and REDD+ areas, so this is something that must be carefully managed. As of 2021, yet no system or registry for carbon was in place.

6.2.5.5 Enhancing positive and preventing negative social impacts

At the national level, Vietnam has a safeguards information system (SIS) known as SIS-REDD+ that helps address safeguard aspects. The SIS has been in development since late 2015, with two objectives:

1. Short term (2016-2020): "*provide information for reporting on how the Cancun Safeguards are being addressed and respected throughout the implementation of REDD+ PaMs in line with the Country Safeguards Framework.*"

2. Long term (after 2020): "*support monitoring of priority activities in the forestry sector (e.g. PFES), and enhance forest governance by supporting the monitoring of policy implementation and law enforcement.*"

In this SIS, Vietnam outlines a variety of grievance redress mechanisms, namely "*grassroots mediation, mediation/conciliation at the Commune People's Committee, complaint settlement, commercial arbitration, and dispute settlement by courts*" (UN-REDD 2018). Vietnam submitted a safeguards document to the UNFCC in 2018. Currently, the main focus to has been on the UNFCCC requirements or the Cancun Safeguards (UN-REDD 2018).

Separate safeguard-related activities are also part of preparations for RBP from the FCPF Carbon Fund and the GCF. The unified REDD+ safeguards system includes the operationalisation of the SIS. The government will also map out the safeguard requirements, identifying potential overlaps(UN-REDD 2018).

Vietnam engages in a mix of policies for environmental protection, forestry, and national economic development, with a heavy focus on the latter. Coffee, rubber and wood-processing industries can be considered major drivers of deforestation and degradation in Vietnam. However, they represent also competitive sectors posing a risk to REDD+ programmes (Pham et al. 2019). This is reflected in Vietnam's GCF-funded projects, where Vietnam is not focussing on forestry-related activities, but instead engages in climate smart agriculture, women empowerment, ethnic minority engagement, and promotion of job opportunities for rural youth (Mulia und Nguyen 2021).

6.2.6 Democratic Republic of Congo (DRC)

6.2.6.1 Country RBP profile

RBP implementation builds on DRC's pioneering REDD+ work in the Congo Basin, marked by the establishment of several institutions and strategies: a steering committee in charge of the implementation of REDD+ (2009); the National Strategic Framework on REDD+ (2012) and the 2018 Ministerial Decree on REDD+ Investment (also called the Ministerial Homologation Decree for REDD+ projects and programs) (2012; updated in 2018); the National REDD+ Fund (FONAREDD) (2013) and the REDD+ Investment Plan (2015) (Ntirumenyerwa Mihigo and Cliquet 2020).

FONAREDD is the main mechanism for channelling international financing for REDD+. It has channelled USD 171.5 million from the Central African Forest Initiative (CAFI) between 2016 and 2020 under an LoI between DRC and CAFI (CAFI 2016). Norway is CAFI's main donor. A second LoI for 2021 to 2030 was signed on 2 November 2021 (CAFI 2021). Other donors also contribute to FONAREDD, which is co-chaired by the Ministry of Finance and the Ministry of Environment, and focusses on seven pillars: agriculture, energy, forest, land-use planning, land tenure, demography and governance.

The daily management of REDD+ is done by the National REDD+ Coordination team, as stipulated in the Ministerial Decree on REDD+ Investment (RDC 2018). It is unclear which institution is responsible for managing REDD+ finance; the National REDD+ Coordination team cannot approve projects funded by CAFI and managed by FONAREDD (Kengoum et al. 2020).

Six jurisdictional/integrated REDD+ programmes (PIREDD) (see Table 41) are implemented in the DRC and led by different international/donor agencies. Among them, PIREDD Mai Ndombe entered into an emission reductions payment agreement (ERPA) in 2018, under the FCPF Carbon Fund (2018). As of July 2021, the five effectiveness conditions required to progress to RBP had been met except for a benefit-sharing plan, and no disbursements have been made

(World Bank 2021a). The end target of payment received is USD 55 million for 11 $MtCO_2e$ emissions reductions by 30 June 2024. This ERPA is the only mechanism that is being used for transfer-based RBP.

Table 41: Integrated REDD+ programmes in DRC

Programme	Funding amount (USD million)	Lead agency
PIREDD Mai Ndombe	30	World Bank
PIREDD Kwilu	4	Japan International Cooperation Agency (JICA)
PIREDD Oriental	33	UNDP
PIREDD Maniema	30	GIZ
PIREDD Sud-Ubangi	7	World Bank
PIREDD Mongala	7	Enabel
PIREDD Equateur	6	FAO

Source: https://fonaredd-rdc.org/portefeuille-du-fonaredd/

Table 42: Summary of RBPs in DRC

RBF mechanism, location and level	Financing value and agreement	Milestones and 2021 status	Transfer-based (TBF)?
FCPF Carbon Fund; Mai Ndombe, province level	Up to 11 million tCERs at USD 5/ton, equal to USD 55 million, with call options to purchase more if certain conditions are met.	ERPA signed in 2018; July 2021: five of six effectiveness conditions met, except benefit-sharing plan	Yes
LEAF Coalition, in Tshuapa province	USD 10/tCO_2e emissions reduced. Expected emissions reductions of 10.5 $MtCO_2e$/year between 2019 and 2023	Expression of interest submitted 22 April 2021; As of February 2022, MoU signed	Yes
One CDM project and three projects in the voluntary carbon markets, in Mai Ndombe (1 project) and Tshopo (3 projects) provinces		Sept 2020: One CDM project (Ibi Bateke) 2,875 CERs cancelled	No

Source: World Bank 2021a; Simonet et al. 2020; FONAREDD 2021; The LEAF Coalition 2022

Since the DRC has started implementing RBP programmes/initiatives, there has been no jurisdictional REDD+ initiative led by domestic proponents (see Table 41). This is in contrast to the other 4 country cases, where local and national governments have a significant leadership role in jurisdictional REDD+.Since 2008, the DRC has implemented PES projects under the UNFCCC Clean Development Mechanism (CDM). One project, called "Ibi Batéké project", is an afforestation project focusing on carbon sequestration and fuelwood production (CDM 2022). Ibi Bateke has the DRC as host country, represented by Novacel Sprl, a Congolese citizen as promoter. Other partner organisations are mostly foreign: Solvay Energy Services (France),

IBRD as Trustee of the BioCarbon Fund, Spanish Ministry of Ecological Transition, Spanish Ministry of Economy and Business), and Irish Development of Communications, Climate Action and the Environment) (CDM 2022). All the PIREDD+ programmes are led by multilateral institutions (e.g. World Bank, FAO, UNDP) or foreign donor agencies (e.g. JICA, GIZ, Enabel). Given the large role of international partners, it is unclear if PIREDD+ programmes and projects are truly domestic. More leadership of Congolese stakeholders will be important for two reasons: the possibility for these Congolese stakeholders to benefit from RBP payments, and the appropriation (ownership) of the RBP initiatives by national stakeholders.

6.2.6.2 Enhancing ambition, reducing emissions, and ensuring additionality

The DRC's NDC was submitted in December 2017, with an ambition to reduce, by 2030, 17% of GHG emissions compared to BAU in 2020 (430 Mt CO_2e) (RDC 2017). The DRC contributes very little to global emissions (0.5% at 2010 levels) but contributes significantly to sequestering carbon through tropical forests (15 million ha in 2010, second-largest tropical forest in the world after Amazonia in Brazil) (RDC 2017).

Of the USD 21.6 billion needed to mitigate climate change (USD 12.5 billion) and adapt to it (USD 9.1 billion), the DRC can only finance a small percentage from its own revenues. It is a low-income country with limited financial and institutional capacity (RDC 2017).Achievement of almost all of DRC's emission reductions targets will be conditional on international finance.

Article 6 is mentioned indirectly in DRC's NDC (RDC 2017). Point 3.3 of the NDC states that the DRC is open for a voluntary cooperation to get consistent support in terms of financial resources, technology transfer and capacity building to implement the mitigation actions mentioned in the NDC, reflecting the spirit of Article 6. The Government of the DRC has the ambition to attract more funding to push the implementation of REDD+.

Forestry, agriculture and energy are the three sectors mentioned in the NDC with potential to reduce emissions. The NDC covers forestry under LULUCF as part of mitigation actions. Forestry accounts for 24.2% of the emission reduction potential and 40.7% of the estimated mitigation funding needs of in total USD 12.54 billion. Forestry interventions in the NDC are mainly afforestation and reforestation (15% emissions reduction, 27.7% of cost) and sustainable management of timber exploitation (8.4% emissions reductions, 8% of cost) (RDC 2017). In afforestation/reforestation, the DRC plans to support the planting of approximately 3 million hectares of forest by 2025, sequestering an estimated 3 MtCO_2e (RDC 2017). Co-benefits from forest ecosystem services for other mitigation and adaptation sectors, such as for hydroelectric energy, agriculture, and poverty alleviation, are taken into consideration.

The NDC of the DRC has indirectly made reference to the Article 6 of the Paris Agreement, and part 3.3. of the NDC corresponds to paragraph 1 of Article 6.Although the NDC of the DRC does not clearly state how the Paris Agreement will be implemented, the signature of the two LoIs (2016-2020, 2021-2030) between the DRC and CAFI are applications of Article 6. The Decree 2018 on REDD+ Investment (RDC 2018) provides the legal framework for the establishment of a carbon market for REDD+, such as essential definitions (e.g. carbon market, carbon credits), allocation of carbon rights to the state, and description of the approval and registry procedures.

6.2.6.3 Quantification of emission reductions and removals

DRC submitted a national FREL in January 2018 and a modified, more ambitious FREL in May 2018. In the May 2018 submission, the FREL was changed to an average of 1,078 Mt CO_2e/year for the period 2015–2019 (compared to the original FREL, with average emissions of 1,181 Mt CO_2e/year from 351.4 Mt CO_2e for the period 2000–2010 and 829.6 Mt CO_2e for the period 2010–2014) (MEDD 2018a; 2018b).

For both FRELs, the only GHG emissions included are CO_2 to be consistent with the national GHG inventory. The modified FREL was created using a simple linear extrapolation of historical emissions from 2000–2014 for the period 2015–2019 (MEDD 2018b). The modified FREL features enhanced transparency compared to the original submission. The technical review by the assessment team for the modified May 2018 FREL notes that the data and information used to construct DRC's FREL are generally in accordance with the guidelines (UNFCCC 2018). Suggestions for future improvements include additional scientific information to support the selection of a linear trend model and including more pools and gases.

The updated May 2018 FREL submission does not address leakage or permanence. Nevertheless, the 2018 REDD+ Investment Decree clearly highlights the issue of leakage in its articles 9, 11 and its Annex II on the engagement to respect social and environmental safeguards in accordance with the Cancun Agreements. This Annex II stipulates "As a REDD + project proponent, I solemnly commit to… minimize the harmful effects on the services provided by non-forest ecosystems and biodiversity by taking concrete measures that are compatible with the preservation of biological diversity and which aim to reduce the displacement of emissions"(RDC 2018; as cited in Ntirumenyerwa Mihigo 2016, 380). This is supported by articles 6, 10, and 24 that require project developers to respect social and environmental safeguards during the implementation of the REDD+ investment project.

Between 2005 and 2020, DRC consistently improved its forest monitoring capacity, notably the capacity of conducting and using national forest inventories for forest monitoring (Nesha et al. 2021). The DRC established an MRV action plan for 2015– 2018 to build a National Forest Monitoring System,which was complemented by the development of theNational GHG Inventory (Kengoum et al. 2020).

6.2.6.4 Accounting, managing non-permanence and transparency

Nested carbon accounting is at the core of REDD+ implementation in DRC, due to the dominant role of integrated REDD+ programmes (i.e. PIREDD). The concept of nesting reflects DRC's vision to promote a mix of actors at different levels to stimulate private investment and build capacity on the ground. DRC's 2012 Ministerial Decree on REDD+ Investment includes the concept of "nesting". Nesting describes the integration of forest carbon projects into larger-scale REDD+ programmes. The Decree reflects DRC's vision on promoting a mix of jurisdictional and local REDD+ activities to be included in national mitigation actions. This is meant to help stimulate private investment (FCPF 2018a) The 2018 REDD+ Investment Decree provides legal guidance on nested accounting and benefit sharing (RDC 2018). It addresses the issue on accounting and double counting among the elements to consider in the compliance of the application on REDD+ investment projects in Articles 6.11 and 10.13.

Communities identified critical issues with regard to nesting, during the consultation process for developing the benefit-sharing plan of the PIREDD Mai-Ndombe. For example, there is a lack of clarity on who owns carbon rights when the law gives carbon rights to the state, and in turn the state gives carbon rights to proponents and communities carrying out nested projects. This may leave out migrants without inherited customary rights, or women because their rights are often limited to using but not selling or renting land (REPALEF et al. 2020).

A registry of REDD+ projects is legally established by virtue of the Decree of 2012 on REDD+ Investments. The National REDD+ Framework Strategy states that the Directorate of Sustainable Development of the Vice-Prime Minister of Environment and Sustainable Development is in charge of this Registry. The 2018 updated decree describes the registry system and process in further detail in Articles 7 to 14, and Appendix I. Article 2 of this Decree designates the National Coordination of REDD+, established through the Decree 2009 on the establishment of the

Committee in charge of REDD+ Implementation and registration of REDD+ projects. By October 2021, the system was not yet established or publicly available.

With regard to permanence, the 2011 Law on the Fundamental Principles on the Protection of the Environment deals with fire and pest management in its section on the management of natural disasters and emergency situations (Articles 64 to 67). This law further discusses these issues in its Chapter 6 on the prevention of risks and the fight against pollution and pests.

6.2.6.5 Enhancing positive and preventing negative social impacts

The DRC developed national social and environmental safeguard standards for REDD+ (Kengoum et al. 2020) but has not yet submitted a Summary of Information on Safeguards, despite the document being a requirement for RBP (UNFCCC 2021). The DRC is also still developing its Measuring, Reporting and Verification (MRV) system of forest land uses within REDD+ (Kengoum et al. 2020). The instruments on the social and environmental safeguards are validated, and the National System of Forest Monitoring called SNSF/MRV is operational and validated as well (Ongala 2020). A feedback and grievance redress mechanism is described as being under development for the FCPF programme (FCPF 2016a). As of March 2022, there is still no such mechanism in place.

The DRC is engaged in the implementation of the Agenda 2030 for Sustainable Development. In 2017, the DRC, through the Ministry of Planning, adopted a policy on the contextualisation of the sustainable development goals in the DRC (RDC 2016). In this regard, several SDGs are particularly connected with the forestry sector, especially the SDGs 13 on Action for Climate and 15 on Life on land. In addition, there are discussions led by civil society on how to align the NDC, the Agenda 2030 and the post-2020 Biodiversity Framework.

6.3 Synthesis

6.3.1 Comparison across countries

Table 43 provides an overview of the main findings of the country analysis.

Table 43: Overview of main findings of country analysis

Aspect of analysis	Comparative analysis
Country situation of REDD+ and results-based financing	All 5 countries have strong interest in REDD+ and have engaged in numerous RBP initiatives. Countries also develop and build results-based finance based on their existing domestic policies (e.g. PES). However, many countries cannot take off from the readiness phase (e.g. Vietnam) and are still struggling to put institutional settings in place to receive payment.
Enhancing ambition, reducing emissions, and ensuring additionality (related to Sections 4.2, 4.3, and 4.4)	In their NDCs, all countries indicate a need for external financial support for more ambitious emission reduction targets – in some, achieving a substantial tranche of ER hinges on international finance. Some countries (e.g. Vietnam, Indonesia) also develop domestic carbon markets to provide incentives for both national and international stakeholders to engage. In countries with an existing PES scheme (e.g. Vietnam), the additionality of REDD+ RBPs needs to be determined, but methods to do so remain unclear.
Quantification of emission reduction and removals (related to Section 4.5)	The countries studied have quantified emissions reductions using IPCC guidelines and have made good progress in developing their MRV systems. None of the countries has any system to monitor leakage across jurisdictions, or leakage outwards of the country; however, REDD+ project proponents in DRC are required by law to control leakage.

Aspect of analysis	Comparative analysis
Accounting, managing non-permanence and transparency (related to Sections 4.6, 4.7, 4.8, and 4.9)	All countries analysed indicate strong commitments to an accountable and transparent framework, but the transparency index is low in most countries. The drivers of deforestation and degradation in most countries are rooted in national and powerful interests, and the country commitments on REDD+ fluctuate and depend on political interest and leadership. There are no policies and measures to address these uncertainties; systems to ensure the permanence of emissions reductions from REDD+ are still unclear, and leakage outside jurisdictional boundaries is poorly monitored.
Enhancing positive and preventing negative environmental and social impacts (Section 4.10)	All countries studied have articulated their vision of sustainable development/green growth/low emission development and have aligned REDD+ with that vision. The extent to which this is translated into sectoral strategies and legal and policy frameworks varies by country. All countries analysed have established safeguard information systems (SIS) but these were generally not fully operational as of March 2022. Benefit-sharing plans are key to define REDD+ benefits and beneficiaries, and align RBPs/TBFs with existing financial and fiscal instruments and budgetary mechanisms. All countries have drafted this plan in the context of a World Bank jurisdictional/landscape level RBP/TBF mechanism (e.g. FPCF-CF), but only one jurisdiction (East Kalimantan, Indonesia) has published a final plan.

Source: own compilation.

6.3.2 Common concerns

The country analysis revealed a lack of concrete TBF experience. Despite the many possible mechanisms out there (see Chapter 3), the countries we analysed have operationalised TBF mainly through two financial arrangements only: the FCPF Carbon fund emissions reductions payment agreement and more recently LEAF.

Several countries participate in TBF programmes, but none has gone through the process of receiving payments, transferring emission reductions, registering those transfers and making corresponding adjustments to avoid double counting.

As of March 2022, the TBF money has not flown to any of the countries yet. The TBF experiment has remained hypothetical and elusive for most countries who are in the pipeline, and unattainable for Peru, who have decided to leave the FCPF programme. Several countries participate in GCF's REDD+ results-based payment programme, but this is not a transfer-based finance mechanism.

Regulators, implementers and buyers need to navigate a diversity of standards, methods and procedures operating at different levels. Despite the limited TBF experience, countries coordinate a wide range of RBPs, each with their own standards, methods and procedures. In all the country cases, different RBPs intend to pay for emission reductions at different jurisdictional levels (e.g. national, provincial, districts) or projects. In addition, some countries (e.g. Indonesia) develop their own domestic standards to support their own domestic carbon market. At the same time, none of the countries studied have developed a robust registry system to accurately account for and manage RBP.

6.3.3 Opportunities

All countries analysed have increased their NDC ambition. Some refer to Article 6 explicitly, and they have elements of RBP in place (national strategy, MRV system, Safeguard Information System), and have gained experience in working with international donors. Most countries

develop their domestic carbon policies and also align climate action with broader moves towards development and sustainability. This creates a basis for further increase of ambition, and enhancement of climate action.

All countries have sufficient technical capacity for forest monitoring to produce emission reduction estimates that can be the basis for RBPs. Financial agencies are developed in some countries (e.g. FONAREDD in DRC, BPDLH in Indonesia) and are designed to manage RBPs and – potentially – TBFs. There is continued country interest in seeking financing to enhance forest-based climate action, as expressed in country NDCs. Countries have also developed safeguard information systems, although most are not yet operational or enforced. Experience with jurisdictional RBP projects, such as World Bank's FCPF Carbon Fund or the BioCarbon ISFL fund, has catalysed the development of many of these enabling conditions.

6.3.4 Challenges

While all countries have experience with, and structures for, RBP, not all of the latter are functional, and some key elements such as Benefit-sharing mechanisms are still missing. Benefit-sharing being a key component of RBP, such mechanisms need to be developed or consolidated urgently. This requires their design in an open, participatory and transparent process with all stakeholders.

National Registries of national and subnational climate interventions are missing; or, when available (Indonesia, Peru), they are so far incomplete. Uncertainties, leakage and permanence are mostly only insufficiently addressed. As these are complex issues, they may need more discussion and support from science, and donor countries. MRV systems to monitor non-carbon benefits – much more complex to assess than carbon or forest area - are not yet fully in place.

The multiplicity of carbon accounting standards that apply to interventions at different levels (e.g. the Warsaw Framework operating at national levels, the World Bank's FCPF framework working in jurisdictions) requires that countries have to deal with different systems for projects and jurisdictions and allows for multiple interpretations of carbon accounting robustness. Furthermore, country stakeholders do not have the capacity to enforce these standards which creates inequitable access to these payments. There is a lack of linkages and of clarity between TBF and the domestically developing carbon trading systems (e.g. in Indonesia).

Safeguard Information Systems, while existing, are often not yet fully functional, and require more assistance and the development of national technical capacity for developing meaningful action behind these information systems. Also, more advanced approaches such as prioritising safeguard options based on identifying high-risk areas are still missing.

Financial management capacity at both national and subnational level continues to be limited, and legacy problems such as unresolved land tenure continue to hamper progress.

Internal friction between state and non-state actors, and actors at national vs. subnational levels, about the right to directly negotiate with financers, has sometimes become a problem. In countries like Ethiopia and Vietnam, this has been clarified from the start with the central government asserting its role. In Indonesia, the national government is taking a stronger regulatory role over non-state proponents of the earlier REDD+ projects.

We have seen in the case studies that political interest sometimes fluctuates, and other contexts, such as the civil war in Ethiopia, hinder progress or jeopardise the permanence of policy achievements. Challenges continue for countries to properly identify and address drivers of deforestation and forest degradation, often also in view of power inequalities vis-à-vis power-holding elites or strong private sector interests to maintain the status quo.

7 Overall conclusions and recommendations

7.1 General conclusions

The approach of RBP can be an important instrument to deliver measured reductions of emissions and enhancements of removals. Despite the empirical evidence being weak as RBP has not yet been deployed widely, the general concept is appealing to both donors and recipients. The various existing piloting mechanisms have offered opportunities for gaining experience and building capacities. In further pursing RBP approaches it is important to draw on the lessons learned with the existing approaches and to synthesize best practices. Important lessons learnt from REDD+ are that country ownership and institutionalization are key for achieving the envisaged results of RBP approaches. Moreover, robust methodological approaches, such as for determining reference levels or with regard to consistent use of datasets, are important for the integrity of the approaches. The further development of RBP needs to address also the question of benefit sharing and whether all results achieved will be rewarded by countries providing finance.

The opportunity to transfer results as credits to the buyer makes investments into REDD+ projects more attractive for buyers. Whether the transfer is advantageous for the selling countries is debated as they may be selling "low-hanging fruits" and subsequently face higher mitigation costs for achieving their own targets.

TBP make assurances for environmental integrity more essential, in particular with regard to baselines, additionality, leakage, and non-permanence. REDD+ financing mechanisms have developed different approaches for addressing these risks:

Additionality means that the emission reductions or removals occur due to the incentives provided through the REDD+ finance mechanisms. Additionality checks can involve multiple steps that include assessments of legal requirements, economic incentives or barriers to demonstrate that projects or jurisdictional activities would not be attractive without revenues from carbon crediting. A key challenge, in particular for REDD+ finance mechanisms, is that the observed emission reductions could occur due to multiple reasons, some of which being beyond the control of the activity participants, such as changes in prices for agricultural commodities or climate change. A second challenge is that most existing REDD+ finance mechanisms allow claiming emission reductions or removals that may result from the implementation of laws and regulations. Ensuring additionality would require, in particular, ensuring that new mitigation activities are implemented, or existing activities are enhanced, that these activities can impact emissions at scale beyond other factors influencing emissions, and that the mitigation activities are not implemented due to legal requirements or other policies or incentives. For many – but not necessarily all – REDD+ mitigation activities it may thus be difficult or impossible to comply with the requirement of additionality.

Another major challenge is the establishment of robust **baselines**. Historic averages are often used under carbon crediting mechanisms but do not ensure conservativeness (see e.g. Grassi et al. 2013) and are explicitly no longer compatible with the Paris Agreement requirements (see Chapter 4). Also, the rules under the Paris Agreement establish new requirements for aligning baseline with NDCs and the long-term temperature goals. This requires existing baseline approaches to be significantly updated.

Establishing baselines is particularly challenging for activities avoiding deforestation or degradation, due to the considerable uncertainties in relation to future deforestation or degradation levels. Assuming that historical deforestation levels will continue in the future may

over-estimate emission reductions, in particular for countries with high historic deforestation rates where this approach might inflate baselines. Any categorisation into countries of high forest area and low deforestation requires a rigid definition of the categories to avoid loopholes. Also, setting baselines using models remains highly uncertain under all financing mechanisms analysed. This is especially true for mitigation activities related to reducing deforestation and degradation that require an assessment of complex socio-economic dynamics that form the underlying drivers. A requirement for regular updates and associated downward adjustment of baselines helps to increase stringency and reflects the need for increased contributions towards 2050. REDD+ TBP mechanisms have developed different approaches to baseline setting, also to reflect different levels of data availability and monitoring capacities.

Non-permanence risks are addressed by REDD+ TBP mechanisms through various measures to reduce reversal risks, issuing temporary credits, establishing liabilities for compensation of reversals such as through pooled buffer reserves, or applying discount factors. A key difference among programmes is for how long non-permanence is compensated for (from 1 to 100 years). Given that non-permanence risks can only be mitigated but not avoided, this poses the question whether projects with significant risks for non-permanence, such as afforestation in fire-prone regions or establishment of forest plantations, should at all be eligible for TBP approaches.

Approaches to address **leakage** differ with regard to the scale and type of the activity. Risks are large for projects that affect the production of globally traded agricultural goods. For smaller projects, leakage risks can be best avoided by careful project design, such as by avoiding shifts of pre-project activities, and by adequate monitoring systems. However, global leakage, i.e. the displacement of emissions due to international market shifts, can hardly be avoided for larger activities, such as jurisdictional REDD+. Consideration of **ecological leakage** is not common among analysed mechanisms. However, with increasing impacts of climate change on the resilience of ecosystems in general, there is also an increasing risk for negative effects of mitigation measures on adjacent areas, potentially reducing overall effectiveness of mitigation and ecosystem integrity. An ideal approach to addressing leakage includes identifying and mitigating leakage risks, monitoring and quantifying any remaining leakage during the activity's lifetime, and accounting for leakage by deducting leakage emissions in the calculation of total emission reductions and removals. The leakage assessment relies on data and information that is often difficult to get. There is an opportunity to involve more global assessments and available data to achieve a more consistent and comparable risk evaluation. Ultimately, activities with a high risk of unaccounted leakage should not be considered for carbon crediting as environmental integrity of such activities cannot be ensured.

Presently, most REDD+ mechanisms have some form of **environmental and social safeguards** and recognise **non-carbon benefits**. While it has been argued that results-based payment should not be made over-complicated and should focus on the provision of carbon benefits, the analysis shows that it is important to adhere to environmental and social safeguards and that there are at least indirect ways of promoting non-carbon benefits. Moreover, rewarding only carbon benefits without further safeguards could provide perverse incentives to pursue activities that maximize the storage of carbon while ignoring important other considerations such as preserving biodiversity. Existing RBP and TBP approaches should be strengthened in this regard.

Safeguard rules to mitigate non-carbon risks are more widespread than rules to promote non-carbon benefits. One reason is that they are explicitly required within the UNFCCC's Warsaw Framework (through the Cancun Safeguards) and safeguard information systems. However, these are minimum standards that should be operationalised in a country-specific way and leave

scope to be more ambitious. Another challenge is that both Article 6.2 and the Article 6.4 mechanism require addressing negative environmental and social impacts – independent of the Cancun Safeguards. As countries may approach this in different ways, this might entail a number of different safeguard provisions being developed over time, with an as yet unclear outcome for the stringency of safeguards for REDD+ activities and also the ‚competitiveness' of resulting emission reductions and removals. The effectiveness of REDD+ finance mechanisms in addressing non-carbon risks can be promoted by requirements for follow-up on safeguard implementation. As the analysis shows, such follow-up could include, for instance, requirements to monitor and report on the implementation of safeguards, partly based on pre-specified indicators; to disclose the respective findings; to have reports validated by independent third parties; to provide safeguard information systems and grievance redress mechanisms; or to sanction non-compliance with safeguards.

Overall, it may be useful to distinguish more clearly between approaches for RBP and TBP when it comes to ensuring environmental and social integrity. TBP approaches require more rigour on many of the issues identified above, as the emission reductions or removals are used by buyers to achieve climate targets, and thus substitute the reduction of emissions in other places. Many of the above requirements are still important, but less essential for RBP. Therefore, it may be useful to distinguish requirements based on the purpose for which the payment is made. This approach could also be taken up by carbon crediting programmes which could either issue two types of units with different stringency requirements attached – one suitable for offsetting and another that may be used for "contribution claims" – or focus only on TBP approaches. This approach might ensure that finance flows to REDD+ activities from the private sector continue but at the same time ensure the necessary level of integrity when the emission reductions or removals are used to offset emissions elsewhere.

7.2 Conclusions from the country analyses

This study analysed in detail how results- and transfer-based finance are used in five countries – Democratic Republic of Congo, Ethiopia, Indonesia, Peru and Vietnam. The five countries engage in various RBF programmes, typically in bi- or multilateral agreements with the World Bank (Emission Reductions Payment Agreements (ERPAs) under the FCPF Carbon Fund), the Green Climate Fund (GCF), Norway, Japan, Germany, the UK and Switzerland, targeting national-level as well as jurisdictional levels. The countries also have experience with REDD+ projects, some of which trade carbon credits on the voluntary market. A subset of these REDD+ finance mechanisms (e.g. FCPF Carbon Fund and BioCarbon Fund) allow for carbon credits to be transferred to entities outside of the country where credits were generated.

All countries analysed participate in RBPs for jurisdictional programmes and projects, with national MRV systems and legal frameworks for RBPs in place, and FRELs assessed by the UNFCCC Technical Assessment as 'transparent and complete'. Forest monitoring capacity is good in Indonesia and Peru and has considerably improved in Ethiopia, Vietnam and DRC, but leakage and permanence are insufficiently addressed in all countries. Also, important elements such as benefit-sharing mechanisms, are missing. Safeguard Information Systems exist but are not fully functional or are being developed.

Important challenges to implementation relate to integrating forest-related mitigation and adaptation activities into the larger economic and development policy context of the countries, and to maintaining momentum for forest related activities, in particular in view of policy swings and conflicts.

Both RBP and TBP approaches need to recognise the diversity of different development stages, contexts and capacities of countries in order to be successful. However, they also need to be sufficiently stringent to be operational across these countries to achieve effective GHG mitigation. Also, the donor side is diverse in terms of requirements and methodologies, demanding sufficient flexibility and compatibility by countries.

7.3 Recommendations

7.3.1 Use of TBP or RBP approaches

The analysis in this study showed that **ensuring environmental integrity is challenging for many REDD+ mitigation activities**, in particular for avoiding deforestation and degradation. As environmental integrity is particularly critical for TBP approaches, overall, it may be useful to distinguish more clearly between RBP and TBP approaches. **TBP approaches require more rigour** on many of the issues identified above, as the emission reductions or removals are used by buyers to achieve climate targets, and thus substitute the reduction of emissions in other places. If this substitution is not correct, the aggregate NDCs will not be achieved, and the Paris targets will be missed. Many of the above requirements are still important, but less essential for RBP. Therefore, it may be useful to distinguish requirements based on the purpose for which the payment is made. This approach could also be taken up by carbon crediting programmes which could either issue two types of units with different stringency requirements attached – one suitable for offsetting and another that may be used for "contribution claims" – or focus only on RBF approaches. This approach might ensure that finance flows to REDD+ activities from the private sector continue but at the same time ensure the necessary level of integrity when the emission reductions or removals are used to offset emissions elsewhere.

Second, we recommend pursuing TBP approaches only for those types of activities where risks related to environmental integrity can be appropriately managed. This holds in particular for ensuring additionality, establishing baselines, managing leakage, avoiding double counting and addressing non-permanence. For example, activities with highly uncertain baselines or significant risk for global leakage should not be pursued under TBP approaches. If TBP approaches are used in the land-sector, non-permanence should be ensured through a combination of measures, including long-term monitoring and compensation for any reversals.

The rules under Article 6 of the Paris Agreement are a considerable advancement compared to the rules under the Kyoto Protocol. Where TBP approaches are pursued, Article 6 rules should be adhered to. In some areas, this requires developing new approaches, such as ensuring that baselines are aligned with NDCs and the long-term temperature goals of the Paris Agreement or requiring a benefit sharing between donors and recipients.

7.3.2 Recipient countries

As the diversity of financial flows for results- and transfer-based financial flows increases, consistency of carbon accounting practices within countries is urgently needed. For example, a number of countries establishing domestic carbon trading or tax systems and allowing carbon credits to be used to comply with obligations under these schemes (e.g. Colombia and Indonesia) also receive funds from national and subnational jurisdictional RBF mechanisms. For example, REDD+ projects could be nested within a larger jurisdictional program. For RBF approaches, REDD+ countries need to align national reference levels much more with their long-term development strategies, making sure they are consistent with their NDCs and other international commitments.

Currently, countries are often not even aware of all carbon crediting activities that are implemented in their territory. To help countries develop a coherent strategy for funding REDD+ activities, it would be useful to develop a centralized repository of information. This could facilitate the avoidance of double counting but also inform the countries strategy to achieve its NDC and long-term goals and to possibly use Article 6. It may also help avoiding double counting, such as by nesting project-level activities under a jurisdictional scheme. These approaches may require that countries establish laws or regulations that ensure that approval of activities is required and undergoes the necessary scrutiny.

Centralised registration systems for climate action need to be improved, notably in ensuring data is accurate, complete and up to date. Integration with existing databases that are already part of forest land use monitoring (such as forestry registration/permit systems), or tax/public revenue/fiscal transfer systems related to land use, could improve data completeness.

7.3.3 Finance providers

REDD+ financing mechanisms need to address and provide incentives for all three REDD+ phases: readiness, implementation, and payment for results. Readiness activities should be seen not only as up-front establishment of enabling conditions, but also as long-term investment to address underlying social issues preventing equitable access to and benefits from REDD+. Financing of implementation activities need to ensure REDD+ evolves with changing political, social and economic contexts.

Countries and private entities providing finance should deliver long-term and predictable results-based funding, to reduce uncertainty among REDD+ countries about whether they will be rewarded for effective and costly actions.

The future **carbon market will likely be rather fragmented**. Demand will come from various sources, such as from countries to achieve their NDCs, the use of carbon credits under domestic policy instruments such as emissions trading systems or carbon taxes, from CORSIA and from the voluntary carbon market. These markets will entail different requirements, with countries, companies and international bodies establishing different minimum requirements for carbon credits to be used in their respective markets. At the same time, there will be **two types of carbon credits**: those that are authorized under Article 6 and those that are not. This will also lead to a range of prices in different markets. Sellers will incentives to sell to those markets that reward them with higher prices. Buyers may want to ensure integrity but also sufficient supply to their respective markets.

Ensuring environmental and social integrity is even more challenging in such a fragmented carbon market. It may therefore help to develop **robust criteria for integrity** that will apply across different markets. Article 6 establishes, to some extent, a basic framework of requirements that are globally applicable for authorized carbon credits. At the same time, other initiatives are underway to either establish **threshold standards for integrity**, such as the Integrity Council for the Voluntary Carbon Market (IC-VCM), or to provide more transparency on integrity, such as the Carbon Credit Quality Initiative (CCQI).

REDD+ finance, or finance for "nature-based solutions", form a very large part of the current markets, in particular the voluntary carbon market. The views on integrity risks and what type of activities should be pursued for TBF approaches is strongly debated. In the situation of a fragmented carbon market, it would be helpful if consensus would emerge over time, on what type of activities should be eligible and how integrity should ensured.

7.3.4 Scientific community

Reducing uncertainty by enhancing the accuracy of monitoring could be a step towards a more robust RBF approach. This could be facilitated though the **development of open, transparent and user-friendly tools and methods** with high accuracy. Such tools do not necessarily have to provide a high temporal and spatial resolution. Instead, they need to be able to consistently integrate information from different scales. Tools and methods need to especially **address high-forest/low-deforestation countries** and regions to support them in maintaining low rates of deforestation.

Tools and methods need to allow for transparent information exchange, facilitate open, public review of assumptions and underlying data to facilitate reconciliation of results. The scientific community can become an important stakeholder group as **independent reviewers** in the development of RPF approaches.

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