Approaches to REDD+ Nesting

Lessons Learned from Country Experiences





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Executive Summary

Mitigation of greenhouse gases in the land sector is complex and has a unique set of challenges. The most significant challenges arise from the geographically diffuse nature of the emissions sources (compared to, for example, point-based energy sources of emissions), the vast array of potential management responses, the ongoing effects of past actions, the interaction of human and natural processes, and the strong influences of policy and markets. These factors result in a large number and diversity of actors involved, temporal variability in emissions sources and volumes, and higher uncertainty associated with the processes generating the emission reductions. Because of this, achieving large-scale mitigation in the land sector requires collective action involving multiple stakeholders undertaking different activities.

The history of the United Nations Framework Convention on Climate Change (UNFCCC) negotiations, and why countries agreed to only encourage jurisdictional (national or subnational as an interim measure) REDD+ efforts, is complex. Regardless, many now support jurisdictional REDD+ because of its potential to be transformational—through reforming broader governance, landscape management, and government policies. Jurisdictional approaches also have the ability to access and integrate a range of financial streams, not just carbon finance, ostensibly achieving more sustainable outcomes. Without such transformation, it is argued, we can't trigger the scale of reductions needed to reach global climate goals.

In sum, it could be said that REDD+ has transformational ambition, but the challenge of managing diffuse actions and providing incentives across a landscape remains. "Nesting," or integrating smaller-scale activities into larger national (or subnational) programs, is increasingly being promoted as a way to include the land sector in national mitigation actions. Having a mix of jurisdictional and local activities (including, but not always comprising, carbon projects), however, raises the question: How can local and jurisdictional actions seeking to reduce greenhouse gas (GHG) emissions be integrated into a single system that supports both low-carbon development and the transformation that countries are seeking, and that the Paris Agreement requires?

The Forest Carbon Partnership Facility (FCPF) Carbon Fund and the BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) provide results-based finance at the jurisdictional scale. Many jurisdictions now in the pipeline for performance-based incentives include ongoing local-level activities—in some cases, existing operational carbon projects—as well as policies and programs that contribute to emission reductions. Lessons from emerging experiences to develop nested REDD+ approaches are in general not well known or communicated, but they could provide useful information and ideas for countries that wish to stimulate local actions that contribute to overall national (or subnational) performance.

This paper synthesizes several lessons learned in efforts to develop systems that integrate incentive mechanisms at multiple scales. It illustrates a number of lessons through examples and the appendix presents individual case studies from a variety of geographies—Acre (state in Brazil), Australia, Brazil (Amazon), the Democratic Republic of Congo (DRC), Guatemala, and Zambia. The hope is that the experiences of emerging "nested" systems can provide inspiration to countries developing REDD+ systems, particularly those which seek to catalyze across a landscape local actions that contribute to national mitigation.

Abbreviations

A/R	afforestation/reforestation
AAU	assigned amount unit
BNDES	Brazilian Development Bank
DRC	Democratic Republic of Congo
ER	Emission Reduction unit
ER Program	Emission Reductions Program (DRC)
ERF	Emissions Reduction Fund (Australia)
ERPA	emission reduction purchase agreement
FCPF	Forest Carbon Partnership Facility
FREL	forest reference emission level
FRL	forest reference level
FullCAM	Full Carbon Accounting Model (Australia)
GHG	greenhouse gas
IFM	improved forest management
JI	joint implementation
JNR	Jurisdictional and Nested REDD+
KP	Kyoto Protocol
MRV	measurement, reporting, and verification
NDC	Nationally Determined Contribution
NGGI	national greenhouse gas inventory
PMU	Program Management Unit
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit
WWC	Wildlife Works Carbon (DRC)

1. Introduction: The What and Why of Nesting

1.1. What Is Nesting?

The reduction of forest-related emissions involves the implementation of a range of activities, at times with overlapping objectives and spatial impact. Within a region, multiple activities using different methods are likely to be implemented by various actors (national and international), in different and overlapping geographical locations and over different times. For example, communities may be engaged in a clean cookstove program while implementing new climate-smart agricultural practices and protecting forests in a conservation area. Other groups may be actively involved in reforestation or restoration activities. The government may also implement broad-based mitigation programs (such as land tenure reform), enforce policies, or implement better land use planning that impacts forests across large landscapes, including through local-scale activities. The process is made more complicated as policies, programs, and local actions, though implemented independently, can impact each other—making it difficult to assess and quantify their individual effectiveness.

While REDD+ activities are implemented at multiple scales, REDD+ (or forest GHG mitigation) results may also be *measured and accounted* at multiple scales. There are benefits and challenges that arise when GHG performance is measured at various scales, and further challenges arise when entities claim, sell, or trade in the resulting emission reductions. These may occur at the national, subnational, or local levels:

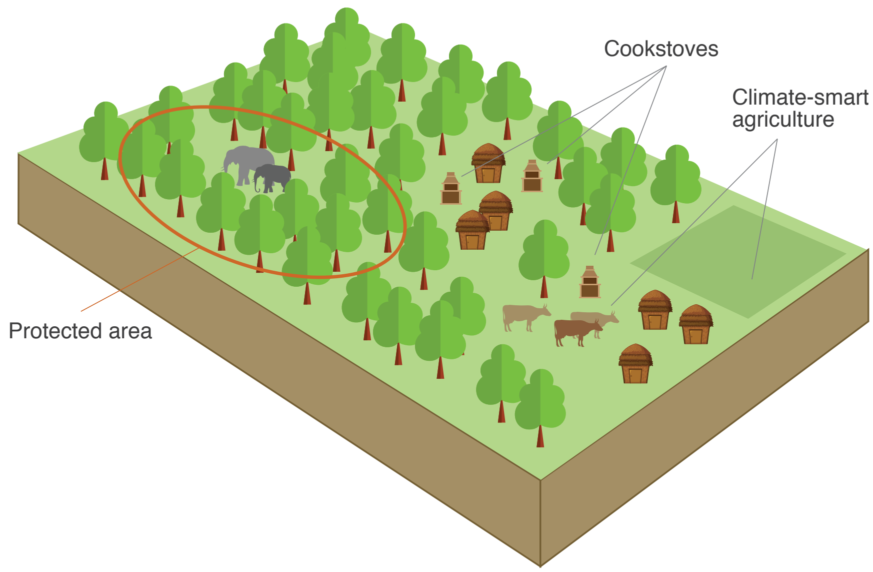
- *National level:* Under the Paris Agreement, countries must account for domestic achievement of a Nationally Determined Contribution (NDC), or "target" level of emissions (or removals), which is a type of claim to the generation of emission reductions. In addition, Article 6 allows the trading of such units to meet targets.
- *Subnational level:* A state or province may create a baseline against which performance is measured, and seek payment for results (with no carbon asset or credit generated) or generate carbon assets and sell them to willing buyers anywhere in the world.
- *Local level:* Carbon projects may also develop baselines, measure performance, and generate and sell carbon credits based on measured emission reductions.

In most countries, drivers of deforestation and forest degradation vary, requiring multiple types of activities and the participation of multiple stakeholders, as illustrated in figure 1.1. Government policies will also have impacts across the entire landscape.

The term "nesting" originated from a desire to integrate existing forest carbon projects into larger-scale REDD+ programs while allowing them to continue generating and trading carbon units. Before large-scale approaches were endorsed by the UNFCCC, many forest carbon projects had been created and moved forward more quickly than international processes. Most of these projects use reporting and accounting rules (including methods for calculating baselines and accounting for displacement), apply environmental and social safeguards, and maintain registries that are inconsistent with emerging national systems. Many of them were developed independently of national policy and systems, with carbon rights typically moving offshore. As such, they can be considered legacy projects, although many are still in active development.

This paper does not take the traditional view of nesting (which focuses on integrating legacy projects); rather, it considers a broader view—looking at ***how actions at smaller scales can best be catalyzed to contribute to larger-scale jurisdictional (national or subnational) performance.*** The concept has been considered as part of land sector mitigation policy by some countries since the late 1990s, particularly by those with Kyoto Protocol commitments. Countries that considered using the land sector within domestic systems considered how carbon units generated within such systems could be consistent with, and represented in, the national accounts. In other cases, considerations were driven by participation in mechanisms such as Joint Implementation. However, while multiple options were floated, only a few of these domestic systems were developed—for example,

Figure 1.1: Options for the allocation of funds from the sale of ERs



in Australia and New Zealand. For these systems, projects form part of a national policy response (for example, a domestic carbon trading or tax system) and are therefore more likely to be consistent with national accounting and contribute to targets. This approach is more likely to represent the future of REDD+ nesting—for example, Colombia is pursuing a system that uses revenues from a carbon tax to provide incentives for local-scale projects.

By taking this broad view of nesting, the paper assumes that it can include the following:

- Benefit-sharing approaches, where a large-scale program (national or subnational) generates emission reductions and/or receives carbon (or REDD+ results-based) finance, and shares it with smaller-scale units to incentivize local actions
- Systems that engage in carbon accounting at multiple scales—for example, countries that have GHG commitments at higher scales (such as Kyoto Protocol or Paris Agreement NDCs) or may be generating carbon units or receiving results-based finance at higher scales, but also allow smaller-scale units to generate benefits tied to GHG performance
- The incorporation of local-scale activities/projects into jurisdictional REDD+ schemes as well as subnational programs into national REDD+ schemes

There are many different forms and definitions of nesting, each developed for specific policy purposes. While focusing on REDD+, many of the issues described in this paper also apply to the broader land sector—an important consideration in light of the Paris Agreement and countries' efforts to meet their NDCs.

1.2. Why Nest?

Nesting requires considerable policy and technical support from both the private and public sectors. As such, it is important to understand why a country may consider nesting and the potential costs and benefits. The many reasons to consider nesting include but not are limited to the following:

Providing early and future benefits. Local-scale activities (including carbon projects) can stimulate private investment, provide operational on-the-ground capacity often lacking in countries, and offer lessons (and results) that, ideally, can be replicated. If the conditions are right, such activities/projects can support and become critical building blocks for jurisdictional programs. Some have been able to access finance from the voluntary carbon market.

Creating a pathway for governments to implement policies to reduce emissions, particularly in countries where mitigation is expected to occur on private or community-controlled land. For example, a government may enact a policy that provides incentives to landholders or managers who operate at a smaller scale than a national or subnational scheme, thus engaging multiple players to contribute to jurisdictional performance and track the impact of such policies. In this regard, nesting can create a standardized framework to test a variety of implementation options—including incorporating suitable technologies and approaches—and to integrate lessons from lower-level units to the jurisdictional level in a structured way. Nested systems may also provide the opportunity to engage private sector actors operating land use–based supply chains in a jurisdictional REDD+ policy.

Reducing the cost of mitigation actions. This can occur through domestic trading of Emission Reduction units (ERs), including the transfer of carbon units and flows of funds back to a group; international trading, including tracking of ERs and moving them from one country report to another; and the reduction of measurement, reporting, and verification (MRV) and transaction costs. A nested system may also provide potential purchasers of ERs with greater certainty, increasing demand (and price) for such units.

Improving national MRV systems. Projects can support subnational and national estimates by generating additional data at more refined scales. Projects designed to fit within national programs are more likely (though not always) to use reporting and accounting rules consistent with those used at the national scale. This is an important distinction when considering nesting.

1.3. Objective of the Paper

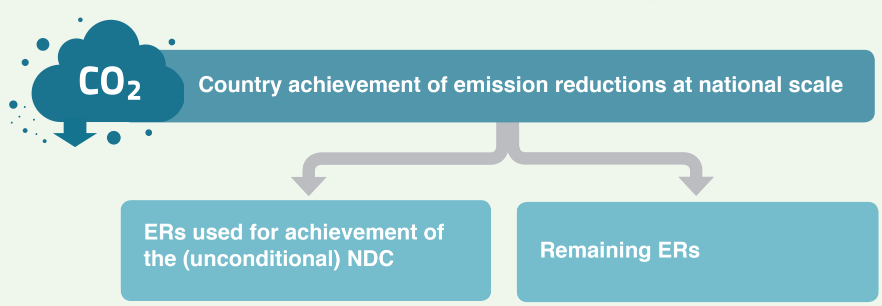
The objective of this paper is to share a few lessons from nested systems. While there are many positive benefits to nesting, experience suggests that countries struggle with development of nested systems. Very few have been operationalized (with exception to a few developed countries, such as Australia and New Zealand), although several REDD+ nested systems are now emerging. Section 2 explores four high-level "typologies" that countries may consider when developing a nested system. Section 3 summarizes three key technical challenges that countries face: alignment of measurement systems, reference levels, and double counting. Both sections illustrate options using real-world examples from countries pioneering nested approaches and explain why certain choices were made. The paper concludes with thoughts on overall lessons learned, recognizing that the journey is still young.

Box 1.1 The Starting Point for Countries: International Commitments

Prior to the development of the Warsaw Framework (which supported REDD+ accounting at national or subnational scales only) and the Paris Agreement, developing countries did not need to worry about nesting. Projects within their borders could generate carbon units that could be sold offshore to companies or countries without concern about how such sales affected their overall country-level mitigation performance. The Paris Agreement, in particular, changes this situation, as most developing countries now have quantified NDCs. Such commitments fundamentally change the picture for developing countries. Countries that have stated in their first NDC that they will achieve a certain target "unconditionally" may be limited in their ability to transfer units internationally.

In this situation, where a portion of emission reductions by a country must be used for the national achievement of an (unconditional) NDC, there may still be opportunities to access financing for remaining emission reductions (figure B2.1.1). The rest of section 2 builds on this context.

Figure B2.1.1: Countries achievement of an NDC and remaining ERs



2. Providing Incentives through Design of a Nested System

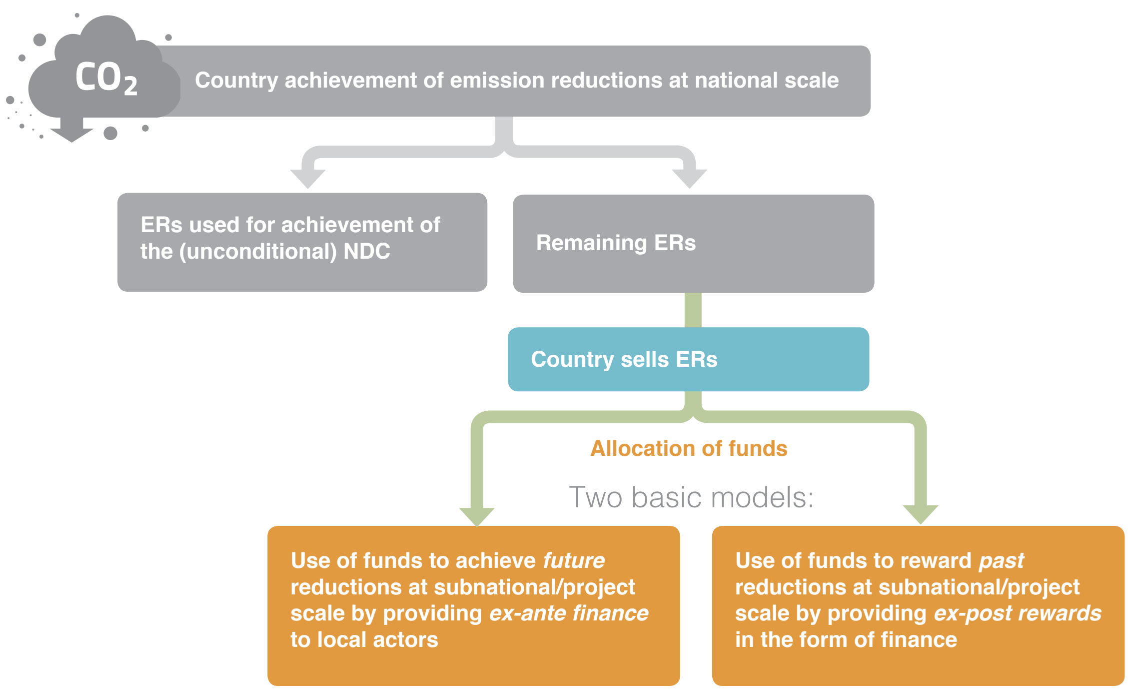
The design of a nested system should consider first and foremost how best to catalyze actions and actors needed to reduce emissions (or enhance removals)—that is, how to provide the most effective incentives to a variety of actors across a landscape. A secondary consideration may be the availability of finance for various scales, that is, the demand for jurisdictional versus project-based carbon, and the extent and types of finance the country aims to access. The choice of scenarios may also depend on where effort for data collection and management will reside, how a system can manage mismatches and non-delivery risks, and which potential projects (or smaller units) may participate in a nested system. In sum, no one method of nesting suits all circumstances. The exact methods will depend on the political, legal, and market requirements of each country. Despite this, a number of high-level decisions will likely be common across multiple countries.

We have identified four fundamental decisions that emerging nested systems appear to make:

- Whether to provide smaller-scale (nested) units ex post rewards for past actions/performance versus ex ante finance to generate emission reductions
- If providing ex post rewards, whether to share emission reductions or finance
- What portion of the finance or emission reductions achieved at the higher level should be used to catalyze local actions (versus kept at the national or subnational level)
- Whether to allow smaller-scale units the ability to generate ERs separately, that is, not as part of a top-down allocation scheme.

In the sections that follow, each of the above points is explained in greater detail and examples illustrate each of the options and the motivations behind why such options were chosen.

Figure 2.1: Options for the allocation of funds from the sale of ERs



2.1. Ex Ante Finance versus Ex Post Rewards

Countries may wish to consider what is the best way to generate action on the ground—either by providing ex ante finance to local actors to achieve certain outcomes, or by rewarding ex post performance by local actors. In the first instance, carbon finance may be *received* at the higher level (national or subnational) linked to emission reductions (or carbon stock enhancement) performance, but *how such funds are then allocated* are delinked from local performance (carbon or otherwise). In other words, funds may be used to carry out activities that contribute to reducing emissions (or increasing removals) in the future, but they are not tied to the (past) GHG reductions associated with the carbon finance received and being allocated. There are a number of possibilities for use of the funds (including noncarbon-related uses). However, most schemes funded by donor governments (for example, the Green Climate Fund, FCPF, bilateral agreements) have requirements for the "use of proceeds"—often they must support further progress on reducing forest-related emissions or support low-carbon development strategies.

In contrast, performance achieved at the higher scale can be used to reward past performance, thus incentivizing actors on the ground to engage in activities that, ideally, help to generate emission reductions. This option—allocating funds (or emission reductions) through ex post performance metrics—is covered in section 2.2.

SUMMARY

	Ex ante finance	Ex post finance
DESCRIPTION	Use of funds to generate additional (**future**) activities to sustain mitigation performance.	Use of funds to incentivize actors by providing rewards for (**past**) results-based performance.
BENEFITS	**Simple:** This option is the simplest from a technical perspective. There are no concerns, for example, with double counting or aligning multiple MRV systems. **Flexible:** A country can decide how to spend the funds in a variety of ways (including to achieve non-carbon benefits). This may also include using funding to leverage private investments.	**Stronger incentives:** Certain types of stakeholders may respond well to performance metrics (e.g., the private sector). **Catalyzes private investment:** Because a potential return on investment can engage private finance, this option may be useful for governments with insufficient resources or that do not have strong fiscal levers.
CHALLENGES	**Requires up-front investment:** This finance will likely need to come from the government unless development assistance may be used (without concerns of "double payment"). **Weaker incentives:** Because it does not reward performance, it may be said to have weaker incentives; as such, it will be difficult to engage some private sector actors. **Allocation inefficiency:** A key challenge is how to determine an equitable allocation of the funds, and if funds are intended to further mitigation, how to ensure funds are used for higher value efforts.	**Risk of non-performance:** In some cases, the allocation of finance or emission reductions will only be as high as the jurisdictional performance. In such cases, there are risks to either subnational units, or the private sector and local actors, who engage in programs or projects that are nested within the higher-level envelope—in particular, if a local project performs well, but the jurisdiction does not perform equally well, depending on the approach to nesting, the financial rewards are limited. The risk of non-performance will need to be borne by the jurisdiction or projects—and in the latter case, will dampen local investments.

Figure 2.1 illustrates the two options available in the case where a country achieves emission reductions at a higher scale and then monetizes them. It can allocate funds to either: (a) provide ex ante (grant) finance to achieve future emission reductions, or (b) reward actors that contributed to the emission reductions. Two examples are provided of countries that chose to use performance-based finance to provide ex ante grants to local actors: Brazil (box 2.2) and Guyana (box 2.3). Examples of ex post rewards are provided in section 2.2.

2.2. If Ex Post Rewards, Whether to Allocate Finance or ERs

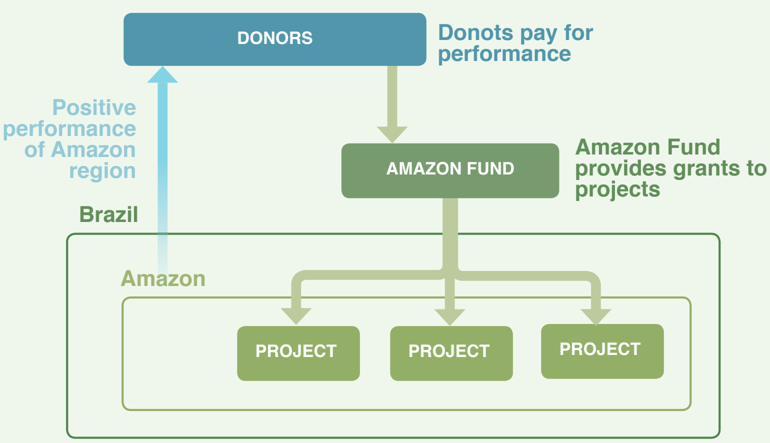
Countries may wish to provide ex post rewards to smaller-scale units as a catalyst for implementing activities that contribute to larger-scale performance.

These rewards may take two different forms: finance or emission reduction units. In other words, countries that generate emission reductions at the national or

Box 2.2 Brazil

Prior to the completion of the Warsaw Framework, Brazil set up the **Amazon Fund** to receive payments for reduced emissions from deforestation in the Amazon region. The national government provides the measurement and monitoring system that covers the entire Amazon biome, and BNDES (the Brazilian Development Bank) manages "donations" to the fund. To date, Norway, Germany, and Petrobras (a Brazilian petroleum company) have made donations, totaling more than US$1 billion. The distribution of these funds is not related to past emission reductions. Instead, the funds are used to finance project activities intended to further reduce deforestation. BNDES set criteria for the types of activities it wants to fund and then invited organizations to apply for funding based on the criteria. Entities may propose a project in any of the predetermined areas (see figure B2.2.1) and request support from the Amazon Fund. See the appendix for more information on the original design of the Amazon Fund.

Figure B2.2.1 The Amazon Fund



There is no linkage between ex post performancethat catalizes donor finance and the allocation to projects that follows.

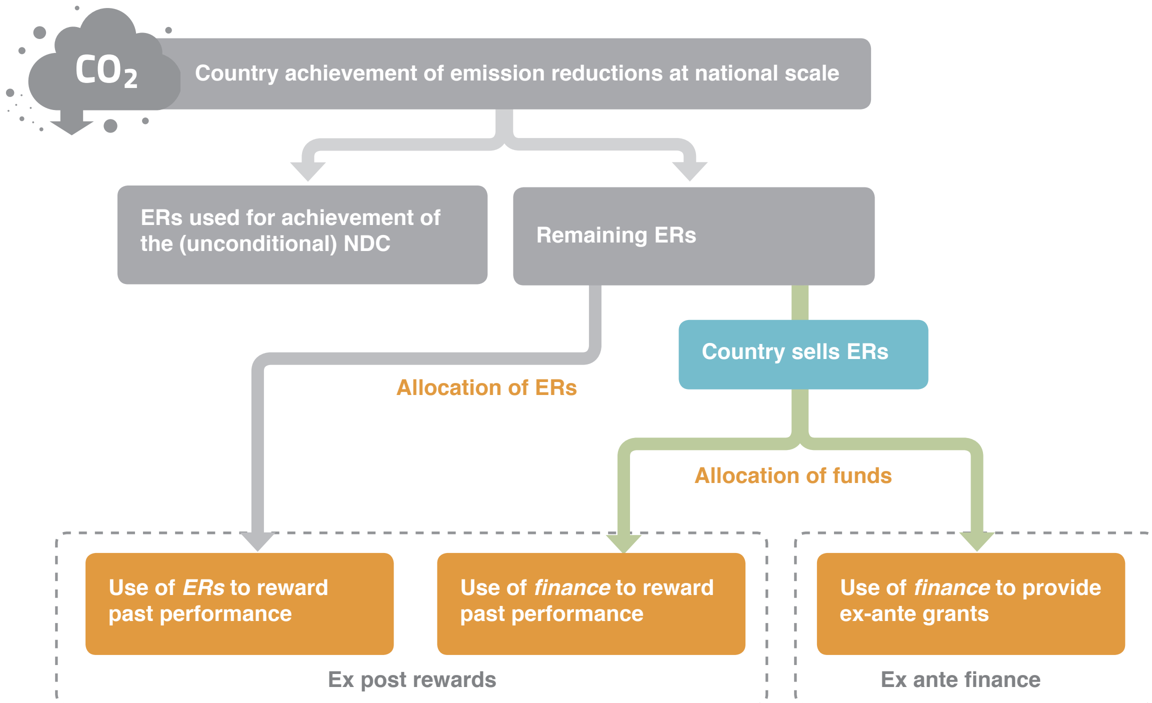
The Amazon fund supports projects in the following areas:

- Management of public forests and protected areas
- Environmental control, monitoring and inspection
- Management of susuatinable forests
- Economic activities developed through sustainable use of the forest
- Ecological and economic zoning, land use planning and land title regularization
- Conservation and the sustainable use of biodiversity
- Recovery of deforested areas

Box 2.3 Guyana

The **Guyana REDD Investment Fund** (GRIF) was developed along the same lines as Brazil's Amazon Fund, with the difference that finance is used to fund its low-carbon strategy more generally, not just for forest-related investments. Norway has provided US$250 million in results-based finance, which has been used to fund investments in low-carbon sectors, including a large hydropower project, grants and loans to a variety of micro and small enterprises (from farming to various artisans), economic development in indigenous communities, and also adaptation projects, such as reducing Guyana's vulnerability to floods. The World Bank has served as trustee of the fund.

Figure 2.2: Options to allocate ERs or funds



subnational scale may consider whether to: (a) issue, sell, and monetize ERs, and then share that finance with local actors; or (b) allocate ERs (figure 2.2). If a country decides to fully monetize ERs from performance achieved at the higher scale, there will likely not be ER generation at smaller scales (to avoid double counting). This is an instance where the jurisdiction is in full control of ERs generated and uses the subsequent finance received as part of a benefit-sharing system.

If a country decides to share a portion of the ERs with local actors, it may do so through two means: (a) allocating a share of issued ERs (at the jurisdictional level) to local actors, or (b) allowing local actors to issue (for performance achieved at the local scale) a prescribed number of ERs themselves. In most cases, a government will likely want to ensure that the total number of ERs issued (at local scales) is at, or below, the total number of ERs verified at the highest (for example, national) scale.

Boxes 2.4 and 2.5 illustrate two examples where a country has chosen to allocate finance or ERs as ex post rewards.

Box 2.4 Brazil

In 2017, the Brazilian government decided to switch the **incentive system for the Amazon** from an ex ante grant system for use of funds received for Amazon-wide performance (as explained in box 2.2) to an ex post reward-based system. In July 2017, CONAREDD+ (the governmental body responsible for coordinating and monitoring the implementation of Brazil's National REDD+ Strategy) issued a resolution that outlines a new allocation structure that provides incentives to the nine states of the Amazon region to achieve positive performance. The government allocates a certain percentage of the ERs achieved at the Amazon-wide scale to each state based on performance. Each state may then use their assigned ERs to collect payments for results. This approach allows the states to access different potential sources of funding; for example, Germany's REDD Early Movers program is providing results-based payments to the states of Acre and Mato Grosso.

Box 2.5 Democratic Republic of Congo

The DRC's **Mai Ndombe Emission Reductions (ER) Program** has defined a benefit-sharing plan that combines allocation of both finance and ERs.* The FCPF Carbon Fund intends to purchase some, but not all, of the ERs achieved by Mai Ndombe Province. A portion of the funds received will be allocated to local-scale activities, both ex ante grant finance to some and performance-based rewards to projects that have demonstrated a contribution to the success of the overall jurisdictional program performance. Performance-based payments are included to engage and incentivize, in particular, private sector players to contribute to the overall performance of the jurisdiction. In the DRC, providing such incentives to nongovernment actors will be critical given the limited operational capacity of the government. The structure of the benefit-sharing plan is influenced by a "legacy" project and the potential for further private sector participation (for example, timber concessions), and also community-driven projects.

Projects are capped with regard to how much they may receive from the Carbon Fund payments. This is due to the risk that projects may perform extremely well compared to the overall jurisdictional (province-wide) performance, and thus claim a high percentage of payments from the Carbon Fund. For this reason, the remaining ERs not purchased by the Carbon Fund will go into a pool of in-kind ERs that can be provided to individual projects (which may then monetize them) for performance achieved beyond that rewarded by the Carbon Fund (for example, due to the imposed cap).

*The DRC case study is based on an advanced draft benefit-sharing plan developed by the country in consultation with ER Program stakeholders. The negotiations between DRC and the FCPF Carbon Fund regarding an ERPA are ongoing; it is not clear at this stage if the provisions (which are analyzed in this paper) will be accepted by donors for contract signature.

SUMMARY

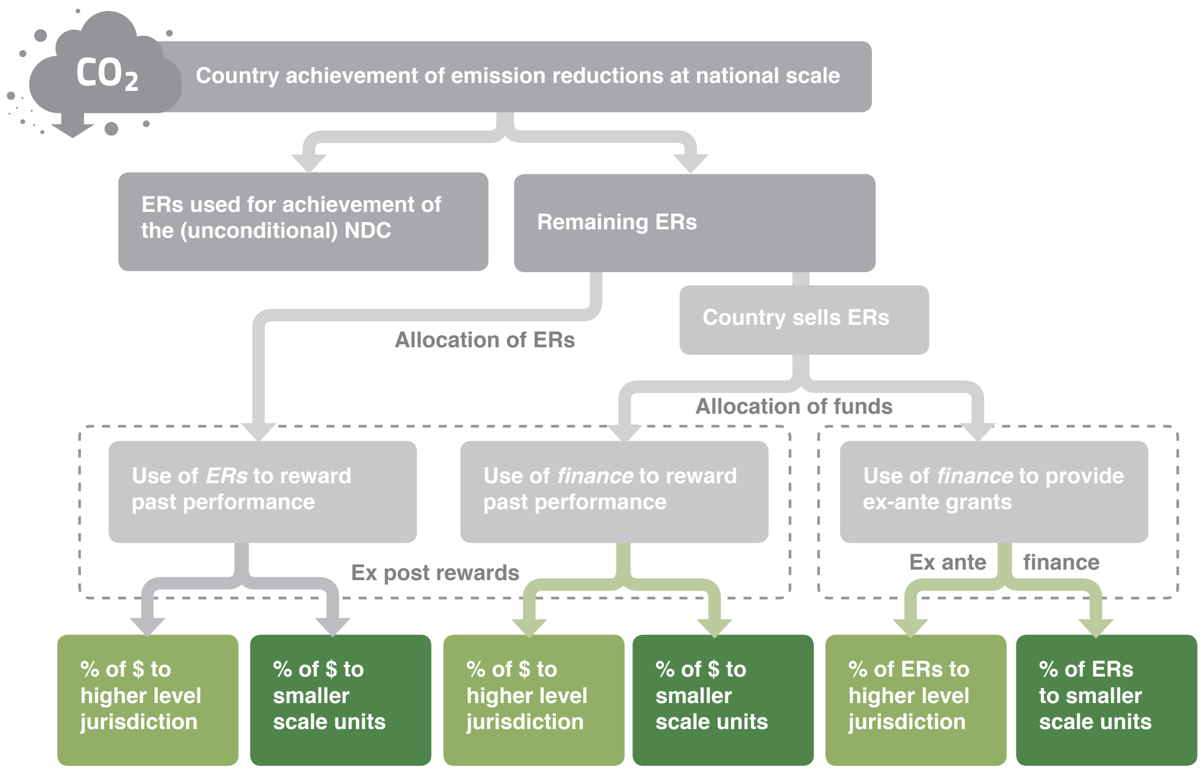
	Allocate finance	Allocate ERs
DESCRIPTION	ERs generated at the higher scale (national or subnational) are sold and monetized, and the finance shared with local actors.	ERs generated at the higher scale are either issued and allocated to smaller-scale units (subnational or project) or such units are allowed to issue ERs, but within a prescribed envelope (of jurisdictional performance).
BENEFITS	• Access to national (or subnational) results-based finance, which currently exceeds project-based finance and provides higher bargaining power through negotiation at the national level; enables planning through the signing of a forward contract (e.g., an emission reduction purchase agreement or ERPA). • Centralized financial accounting.	• Management and administration of "distributed action." • May diversify access to finance, opening opportunities for subnational or project-based finance for emission reductions (e.g., voluntary carbon markets); externalizes part of the administrative cost to the smaller units (e.g., project developers would bear the cost of selling the units).
CHALLENGES	• Projects may not have an incentive to operate at their optimum. • The cost to administer allocation of financial resources may result in lower amounts for actors generating GHG emission reductions.	• Technical challenges related to allocation of ERs, that is, the need to develop technical approaches to monitor, report, and verify GHG emission reductions at different levels. • Imbalances in performance between private and public initiatives can jeopardize the stability of the jurisdictional program.

2.3. National (or Subnational) Action versus Local Action

Another decision a government may take is related to the allocation of finance or ERs for catalyzing local (subnational or project) activity (figure 2.3). In some cases, the national (or federal) government implements a variety of policies and programs that contribute to emission reductions—and, in this instance, the government may argue that it should receive a portion of the finance generated at the jurisdictional (higher-level) scale. A government may also wish to retain funding to cover the operational costs of managing an ER program. In other cases, a government may wish to use a higher percentage of finance/ERs generated to spur local action—due to a preponderance of private lands, a lack of government capacity to operate at local scales, or other reasons.

Boxes 2.6 and 2.7 provide examples of allocating a portion of finance for national versus local action.

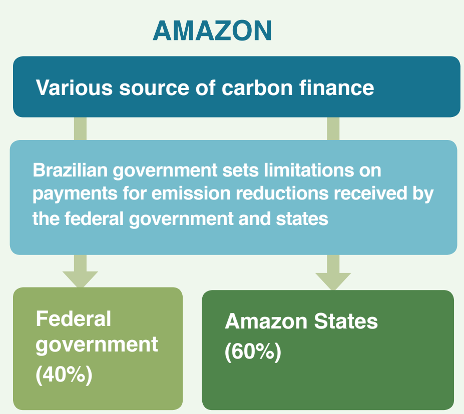
Figure 2.3: Allocation of finance or ERs between a jurisdiction and smaller scale units



Box 2.6 Brazil

As mentioned in box 2.4, the Brazil Amazon incentive structure is shifting to provide a different set of incentives. Under the new structure, the federal government will receive 40 percent of the funds (figure B2.6.1). According to the resolution that sets up the new structure, the federal government is allocated 40 percent of the emission reductions justified by the efforts it makes at the national level to reduce emissions from deforestation, including conservation of native forest in conservation units and indigenous lands. Currently, the portion received by the government is being used to capitalize and continue the operations of the Amazon Fund. The remaining 60 percent of the emission reductions are allocated to the nine states that comprise the legal Amazon based on performance metrics (see the appendix or sections 2.2 and 3.2 for further information on the new Amazon system).

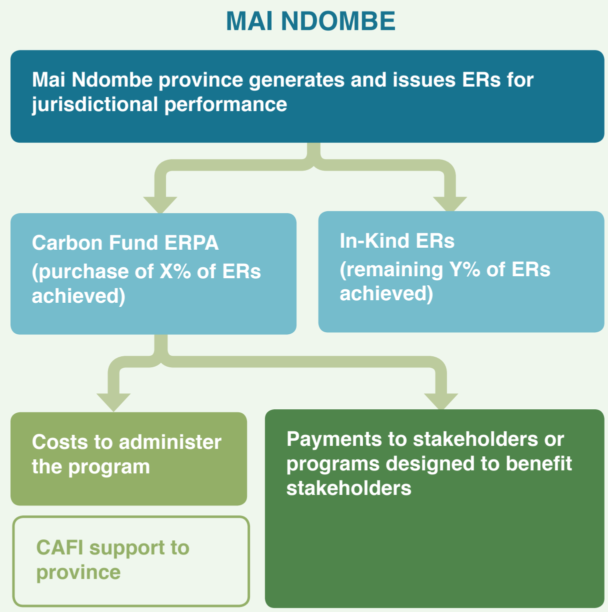
Figure B2.6.1 New Amazon Incentive Structure



Box 2.7 Democratic Republic of Congo

Under the DRC's benefit-sharing plan for Mai Ndombe, the government will reserve a portion of the funds received from sale of ERs to the FCPF Carbon Fund to pay for "fixed (operational) costs" of administering the Emissions Reduction (ER) Program. This includes support for a Program Management Unit (PMU) that assists the provincial government in managing the ER Program, including monitoring and reporting, coordination with subprojects, capacity building, assistance to the private sector and communities, the sale of ERs, and monitoring of safeguards. It also includes institutional support for the provincial government. Such allocation is part of the "Category 1" payouts, that is, it has senior rights to ERPA payments. This smaller portion of funds (for example, compared to the Amazon) is made possible, in part, because the DRC is supported by programs under the Central African Forest Initiative (CAFI).

Figure B2.7.1 Mai Ndombe Benefit-Sharing Plan



SUMMARY

Sharing finance or ERs between the national (or subnational) government and local actors is a continuum from 0 percent to 100 percent; deciding the best proportional split will depend on needs and an assessment of the costs and benefits of national versus local allocation as well as other available financial sources.

	Finance or ERs to the higher-scale entity	Finance or ERs to local actors
DESCRIPTION	The share of finance/ERs distributed to the national or subnational government for its contribution to performance.	The share of finance/ERs distributed to local actors (e.g., for their contributions to overall performance of the jurisdiction).
BENEFITS	• National allocation incentivizes the alignment of decision-making processes in the jurisdictional program. • There is no negotiation process with local entities. • Increases national commitment to achievement of REDD+.	• The interventions are designed taking into account the local context. • Subnational governments and projects have an incentive to perform at their optimum. • The upward feedback process is simpler. • Provides direct reward for performance, encouraging private sector engagement in REDD+ in the country and achieving the efficient and cost-effective emission reductions.
CHALLENGES	• Decision power is centralized and lobby activities are easier, which can detract from optimal jurisdictional performance. • The incentive for local entities to perform at their optimum is lower.	• The process of negotiation for the attribution of funding to each local unit is much more complex and can jeopardize the overall operation of the jurisdictional system. • Monitoring of financial flows is complex and may be subject to corruption, if it exists.

2.4. Whether ERs Can Be Generated by Smaller Units

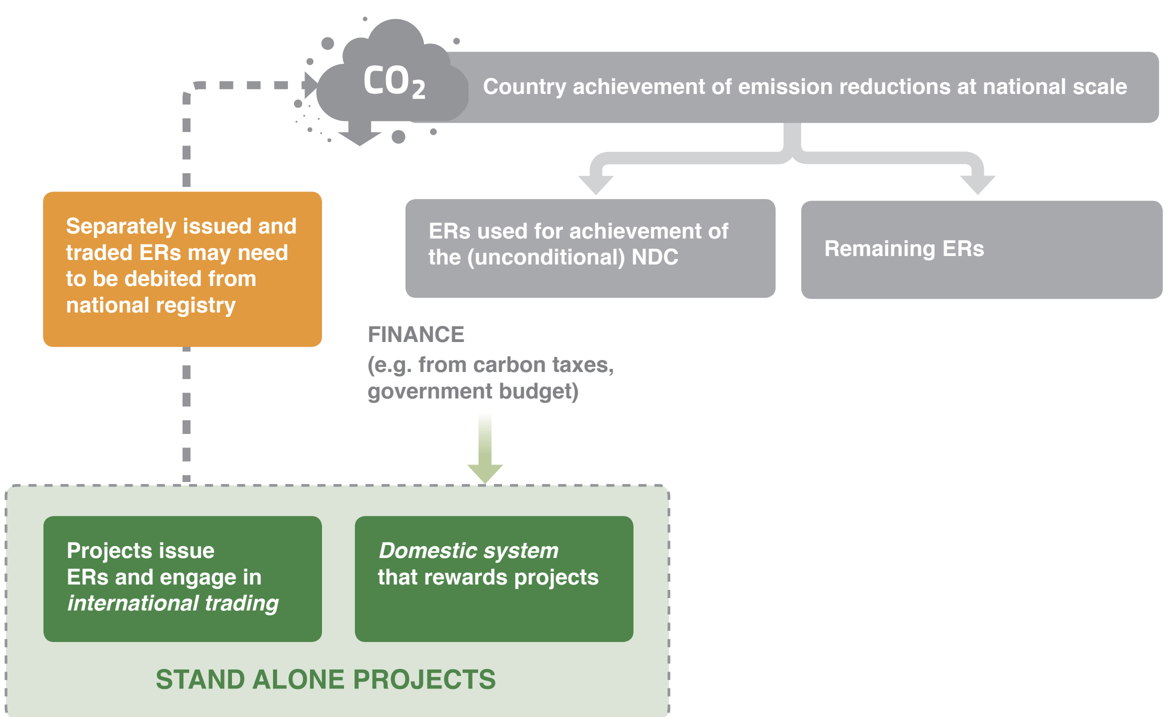
In some instances, a country may wish to allow smaller-scale units to generate emission reductions separately from the higher-scale jurisdictional program (figure 2.4). Countries may use such carbon credit generation as a policy or incentive mechanism to reward domestic actors (for example, landholders; see box 2.8 for one such example). It is anticipated that REDD+ countries (for example, Colombia) will develop internal carbon project systems where finances, including carbon taxes, fund domestic projects that reduce national greenhouse gas emissions but do not generate carbon credits that can be traded internationally.

Developing such systems may provide the highest possible incentives to local actors, but these systems also create risks that must be managed. These risks include the potential for the higher-scale jurisdictional program to overcompensate emission reductions at smaller scales, or for the lower-scale jurisdiction or project to be inadequately compensated for achieved emission reductions due to failures at the higher level. It is possible to mitigate such risks through design of the system. The risk of projects not receiving payments due to the failure of the higher-level jurisdiction is not applicable in the situation where ERs are not dependent on the higher jurisdiction succeeding in its emission reduction aims. For example, systems such as that emerging in Colombia, or operating in Australia, where finances to reward projects are derived from carbon taxes or alternative government revenue, are not dependent on national emission reduction reporting.

Alternatively, instilling sufficient technical requirements on projects for baselines, or reference levels, and monitoring can minimize the risk to governments of overpaying for emission reductions. In Australia, for example, the projects align closely with the national inventory, while an auction system ensures the government receives the best cost emission reductions. However, it is worth noting that to date only developed countries have created such systems.

Finally, **there are increased challenges where projects issue and trade emission reduction units internationally.** If project proponents are allowed to generate, issue, and sell credits internationally, a country must set up systems to avoid double counting (or "double claiming"), if it wishes to use the emission reduction for its NDC or Kyoto Protocol commitment. See section 3.3 for further discussion on double counting.

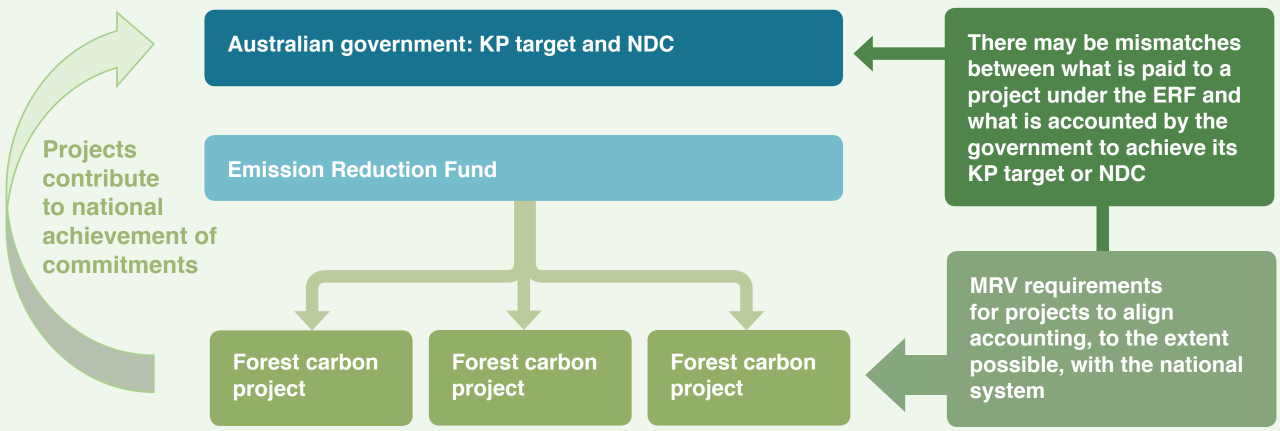
Figure 2.4: Illustration of stand-alone projects



Box 2.8: Illustration of Australia's Emission Reduction Fund

As a policy tool to support achievement of its international commitments, Australia allows landowners the opportunity to generate Australian Carbon Credit Units and, through this, generate finance through the sale of such units to the government's Emissions Reduction Fund (ERF). Such projects feed into the overall national performance and help Australia meet its Kyoto Protocol (KP) commitment (although not directly) (figure B2.8.1). However, the national government takes the risk of overpaying for emission reductions by projects (that is, if the aggregated, measured, and rewarded project performance is lower than the project's contribution to national performance, as measured by the national system). To reduce such mismatch, the government imposes certain MRV requirements on projects.

Figure B2.8.1: Illustration of Australia's Emission Reduction Fund



SUMMARY

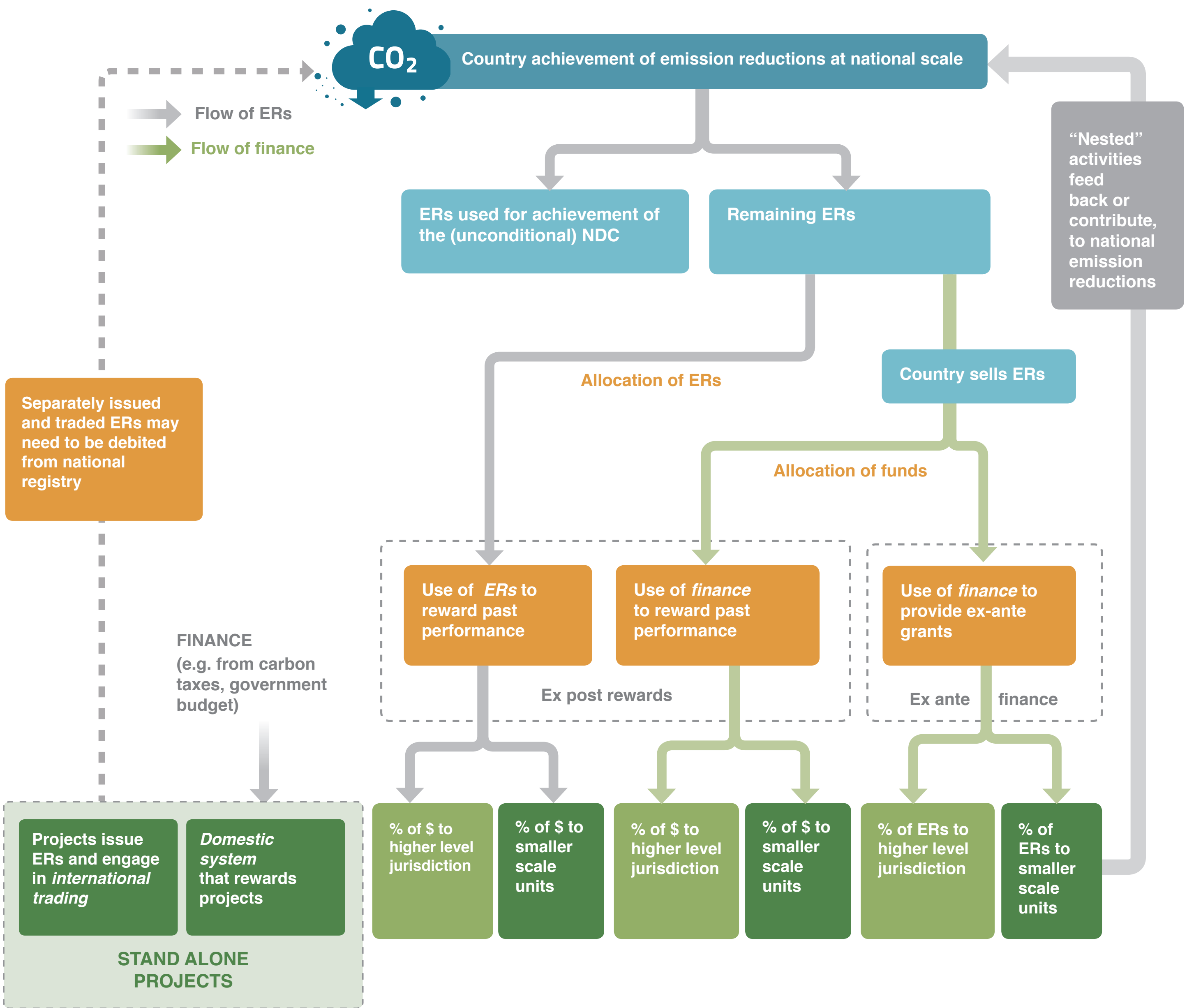
	ERs generated by smaller-scale units separately from the jurisdictional program
DESCRIPTION	The case where projects generate carbon units separate from the higher-scale, jurisdictional program
BENEFITS	• Provides stronger incentives for local actors to perform. • Catalyzes the investment of the private sector, which would be likely absent in the business-as-usual scenario. • Research and development activities can be tested for their implementation in the jurisdictional program, minimizing the necessary investment and creating incentives for the private sector, and without any impact on the jurisdictional performance.
CHALLENGES	• MRV mismatch: Allowing projects to generate their own ERs may require development of MRV rules and systems to minimize mismatch at different scales and for some entity to take on the liabilities for mismatches. • Double counting: Where projects are allowed to sell carbon units internationally, systems are needed to avoid counting the same unit twice within the same context (e.g., Paris Agreement). • Special care needs to be taken to separate emission reduction certificates created by the smaller units, that is, registry procedures need to be reliable.

2.5. Combining Multiple Incentives

Allocation systems may also be designed to combine the concepts above. Doing so may be more complex, but it allows the flexibility to provide different types of benefits and incentives to stakeholders. For example, the private sector responds well to performance-based metrics, whereas some government policies may be more difficult to measure in quantitative terms and/or correlate strongly with carbon performance. A country may decide to allocate a predetermined amount of funding to the government to cover operating costs of a nested system, or to provide finance for government programs, while reserving a percentage of carbon finance or ERs to distribute to various stakeholders (for example, projects) based on performance metrics.

Figure 2.5 illustrates the sum of all the options described in sections 2.1 through 2.4. In box 2.9, we describe the DRC's Mai Ndombe benefit-sharing plan, a system that combines multiple incentives. As can be seen, providing different types of incentives (ex ante finance and ex post rewards) is complex, but it allows the most appropriate incentives for different actors.

Figure 2.5: Illustration of key decisions in the design of nested systems

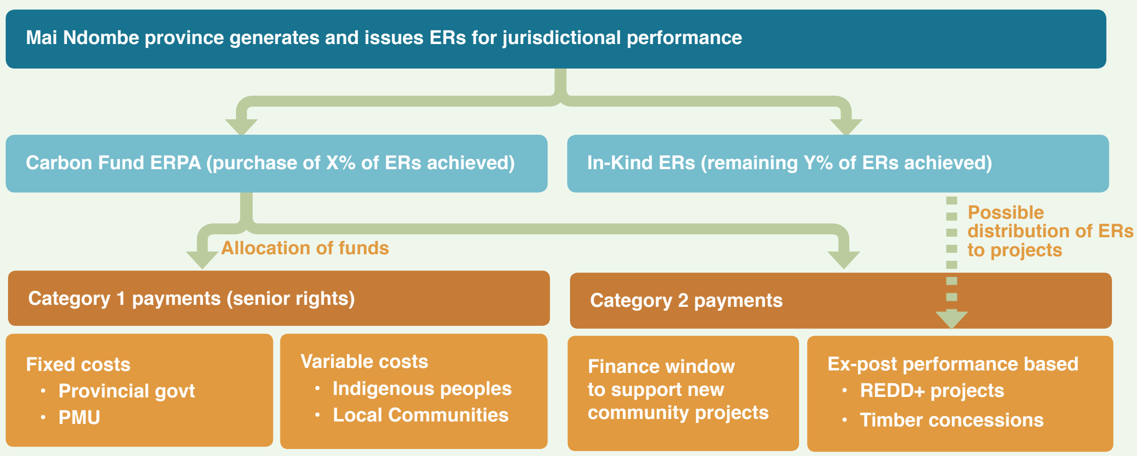


Box 2.9 Democratic Republic of Congo

The DRC's Mai Ndombe benefit-sharing plan is an example of a system that combines multiple incentives. The plan defines two categories of "payouts" for funds received from performance at the highest level. Category 1 has "senior rights" to ERPA payments, after which Category 2 payments are made. The Carbon Fund will purchase some portion of the ERs generated, and finance from the sale will be allocated to both Category 1 and 2 stakeholders. Additional ERs not purchased by the Carbon Fund may also be distributed, including to projects that perform well but whose finance from the Carbon Fund ERPA is capped (figure B2.9.1). In this regard, the plan includes the following:

- Ex ante payments to indigenous peoples and local communities through two mechanisms: 2 percent of the proceeds, respectively, under Category 1 payments and a dedicated finance window for new community projects, as described in section 2.1
- Ex post rewards, including finance and possibly also ERs, to private sector and possibly also community projects, as described in section 2.2
- The provincial government, as described in section 2.3

Figure B2.9.1 Mai Ndombe Benefit-Sharing Plan



3. Technical Challenges of Nesting

Different design pathways will result in different technical challenges or demands. Systems developed purely for the purposes of meeting UNFCCC requirements will likely be unable to support nesting (or other reporting requirements) efficiently and will lead to inconsistencies. It is critical that countries looking to nest projects, be they legacy or future projects, consider this fact in the initial design of a national system. Where it is not considered, there are likely to be more challenging problems with alignment and double counting.

Allowing stand-alone projects, where carbon performance is measured and accounted at multiple levels in *parallel*, is the most challenging. When smaller units within the jurisdiction are generating and issuing carbon credits and/or directly receiving payment for results, this situation may require aligned MRV systems. By contrast, nesting structures that focus on allocating finance or ERs generated at the higher scale (that is, through benefit-sharing plans) are less challenging, and they may range from simple systems (for example, use of funds to provide ex ante finance to projects) to more difficult systems (distribution of ERs based on ex post GHG performance). These variations are illustrated in figure 3.1.

A number of additional technical and governance elements, well beyond those required by COP decisions on REDD+, would be needed in order for jurisdictional REDD+ schemes to implement nested systems toward the far right of figure 3.1. Such systems require MRV systems that go beyond those designed only for reporting to the UNFCCC, aligned baseline setting, and means to avoid double counting. In addition, such systems must assign responsibilities for non-performance and liabilities for mismatches that will occur between the different system levels, as well as manage potential non-permanence and force majeure events.

This section of the paper describes several of these challenges and gives examples of how different nested systems have tackled each issue—noting that resolving the technical challenges for, in particular, avoided deforestation—are still in the early stages. Two of the examples (Acre, Guatemala) illustrate as yet unsuccessful nested systems—and explain why this has been the case.

3.1. Data and Methodological Mismatches

There are differences in the data used by the national governments compared to forest carbon projects (table 3.1). Such differences are typically more significant with legacy projects. Most national governments

Figure 3.1: Nested systems vary regarding the level of required MRV alignment

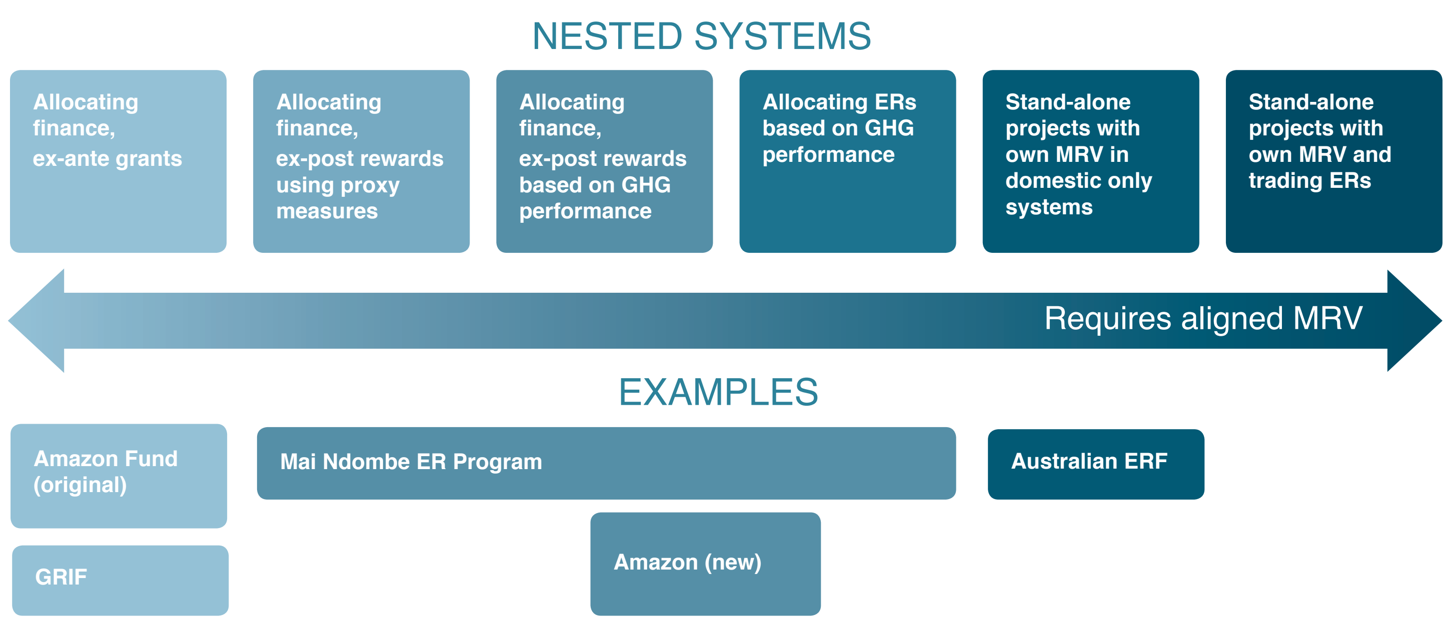


Table 3.1: Differences between national and project scale GHG estimates

National	Project
• Uses (medium resolution) Landsat to measure forest cover change • Carbon stock estimates from national forest inventory or default values • Stratification based on national forest classes; may combine strata to reduce uncertainties • Often only includes above- and below-ground biomass; excludes non-CO_2 gases	• May use higher resolution imagery to measure forest cover change • Often collects and uses own site-specific carbon stock estimates • More strata than national GHG inventory due to use of data with finer spatial scales • May choose or be obligated to measure deadwood, litter, soil, and non-CO_2 gases

measure land cover change using Landsat imagery and derive carbon stock and carbon stock change estimates from national forest inventories, International Panel on Climate Change default emission/removal factors (for gap filling), and, in some developed countries, existing growth models. In many developing countries, initial estimates from national systems have only been developed over the past two to three years and will require ongoing improvement. When forest carbon projects were being developed, many developing countries could not provide national data or systems to consider or work with. Furthermore, many of the guidelines applied, such as the Verified Carbon Standard (VCS), had very different requirements, such as shorter time series of data but a higher degree of accuracy. In most cases, this led to the use of site-specific ground data and project-specific assumptions of additionality and leakage.

Given these differences, it is not surprising that national systems will produce different estimates of forest-related emissions (and/or removals) compared to projects. At the national scale, a country may also aggregate data differently than smaller scales for various reasons. For example, some countries for the purpose of developing a national forest reference emission level (FREL) have stratified their data into fewer forest classes—balancing availability of data, measurement costs, and uncertainty, and also simplifying the implementation of an accuracy

Box 3.1 Australia

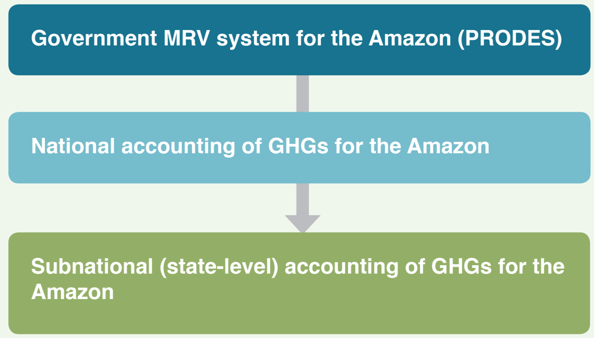
The Australian government's **Emissions Reduction Fund** provides financial incentives for landholders to mitigate climate change. The permitted activities and methods for quantifying abatement are aligned but not identical to those in Australia's national greenhouse gas inventory (NGGI). For example, the environmental plantings method is premised on the establishment of forests with native endemic species on cleared land; the method requires that the plantings be of sufficient size to be detected by the national inventory system, with an identical definition of forest as used for Australia's NGGI. Abatement is estimated using the Full Carbon Accounting Model (FullCAM), the same modeling system that underpins Australia's NGGI. However, unlike the approach used for the NGGI, within the ERF methods, FullCAM is configured using project-level information, not regional or national default values. For example, the project proponent enters specific management events relevant to their forests (planting dates, fertilizer treatments, tree species, and so on), as opposed to the management regime being applied based on statistical data. This approach creates a mismatch between Australia's NGGI and individual projects; however, across all the projects within the scheme, it is expected that the two abatement estimates would be comparable. Furthermore, by using the same underpinning framework it is possible, should it be decided, to ensure that the project-level management is represented in the national inventory. The issue of how to include projects in the national accounts was thought about early in the original system design (1998), providing the government with considerable policy flexibility when designing its mitigation policies.

Box 3.2 Brazil

In Brazil's **new Amazon system**, states are allotted emission reductions based on each state's performance and allowed to raise funds based on this allocation.

The monitoring of each state's performance (of forest cover and change) uses the same data used to measure Amazon-wide GHG performance, that is, the data generated by the federal monitoring system PRODES through INPE (Brazil's National Institute for Space Research). In this regard, data flows down from national systems, not up from subnational units.

Figure B2.6.1 New Amazon Incentive Structure



KEY POINTS

There are differences in data used by national governments, for example, for reporting GHG inventories to the UNFCCC, compared to that used by forest carbon projects. Such differences are typically more significant with legacy projects.

Data to measure results may flow top-down or bottom-up (or both). In Brazil, data are flowing from the national system to the states; in Australia, a more sophisticated system integrates data flows in both directions.

It is much easier to nest subnational units than projects. Alignment of data reduces the level of mismatches that occur when measuring performance at multiple scales. Subnational jurisdictions typically use national data and therefore are more easily aligned to national estimates. There may be instances where subnational jurisdictions use higher-resolution spatial data or region-specific carbon stocks—in such cases, the national system can integrate data into its systems more easily than project data, particularly if such units use administrative boundaries that aggregate to cover 100 percent of the national territory.

assessment. Other differences may exist through projects requiring data to be at more regionally or locally specific scales. For example, carbon stock estimates (typically from a national forest inventory, or NFI, plot system across the entire country) may differ when averaged up at the national scale versus provided at a project or regional scale.

If a country's nested approach allows stand-alone projects, a higher level of accuracy and precision, and a more granular stratification (of areas and estimates of carbon stock for forest/land classes), may be needed at the national level. In some instances, it is simply not possible for a project to use national-level data—for example, there may be insufficient accuracy of the spatial data that is required for the standard that the project wishes to use. Higher levels of accuracy may require resources unavailable to a government, and more granular data can be a trade-off with uncertainty estimates—which at higher scales is sometimes larger than the expected change (or performance). The level of accuracy of measurements required at multiple scales may also depend on the risk tolerance of the actors involved (and who bears that risk). Precision may be less of an issue so long as the system does not generate biased results.

3.2. Baseline Setting or Allocation

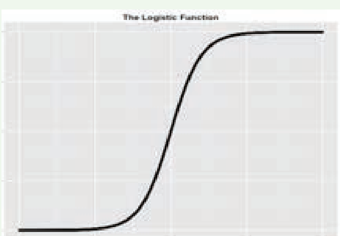
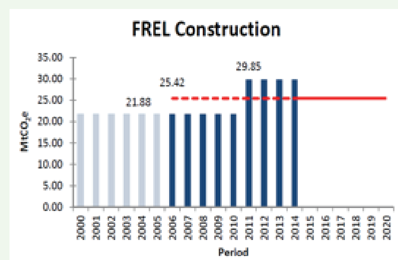
Currently, the way in which carbon projects develop baselines and account for emission reductions is often fundamentally different to the methods used for jurisdictional approaches. Large-scale reference

Box 3.3 Why Avoided Deforestation Projects Cannot "Apply the Jurisdictional Baseline"

Once a jurisdictional reference level is set, in most cases, it is not possible to simply "apply the jurisdictional baseline to projects" (as is suggested in the Verified Carbon Standard Jurisdictional and Nested REDD+, or VCS JNR, framework). Projects within a jurisdiction are based in areas with different dynamics and deforestation (or forest degradation) pressures, such that it is not possible to simply "divide up" the baseline based on, for example, a ratio of area coverage, unless the jurisdiction experiences a near-perfect mosaic of deforestation or degradation. If projects are asked to apply a jurisdictional deforestation rate, the result is incentivizing projects to choose the least risky lands as accounting areas (where expected deforestation is lower than the overall jurisdictional deforestation rate).

Where legacy projects exist, nesting can become both politically and technically challenging—particularly if projects developed baselines prior to the higher-level jurisdiction. Table B3.3.1 illustrates three very different baseline methods used within Zambia (at project and national scales).

Table B3.3.1 Three Baseline Methods Used in Zambia

BCP's Lower Zambezi REDD+ Project	**COMACO's Landscape Management Project**	**National FREL**
Ref. period: 1984–2009 Method: Logistic function modeled after a "reference region"	Ref. period: 2002–13 Method: Modeled emissions	Ref. period: 2006–14 Method: Historical average
	TerrSet Land Change Modeler was used to calculate expected deforestation based on assumption that small-scale farmers are the main agent of deforestation; the key variables used in the model include distance to settlements and roads and topography.	

If a project is located in an area of high-expected deforestation (for example, a "hot spot" or frontier), it is fair to expect higher than average deforestation. However, it is also the case that several projects—applying project-based methodologies and located within a single region—may quickly exceed a historical average baseline of the region. In such cases, agreements will need to be made that often require projects to take a "haircut" on their baseline (and thus their expected performance), sometimes putting at risk the business models in place.

levels often use historical averages to calculate (or project forward) a reference level. Results-based financing for large-scale programs (largely funded by donor governments) also has preferred the use of historical averages (with upward adjustment for high forest cover, low deforestation, or HFLD, countries). By comparison, projects use a range of methods and models to project forward an assumed business-as-usual scenario.

It is easier to nest afforestation/reforestation (A/R) and improved forest management (IFM) projects than it is to nest avoided deforestation projects.
This is largely the case because for A/R, in most cases, the baseline is zero since the starting point is an area of land that is non-forest, which is similar to the baseline assumed at the jurisdictional level (for example, the Kyoto Protocol's accounting rules for A/R are "gross-net," which basically sets the baseline to zero). For

IFM, the baseline would be the historical GHG flux rate (which is analogous to FRELs under the Kyoto Protocol). In both cases, these baselines are more aligned with national reference level approaches—unlike the "counterfactual" baseline setting of avoided deforestation or forest degradation projects. In addition, both A/R and IFM are spatially explicit and can more easily apply national carbon stock estimates and growth rates, and drivers are not outside the accounting area (as is often the case for deforestation and forest degradation).

Boxes 3.4 and 3.5 provide examples of setting baselines for smaller units within a jurisdictional program.

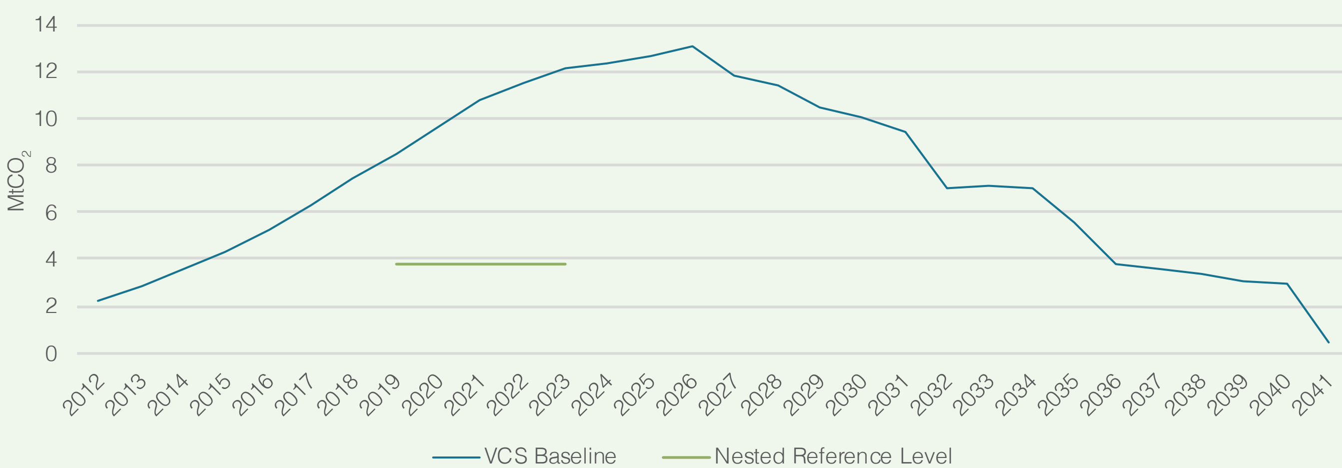
3.3. Avoidance of Double Counting

Double counting (or double claiming) is a term used to describe the use of a single emission reduction unit more than once. If countries design nested systems that are based on allocating finance or ERs generated at the higher scale, there is no risk of double counting because the allocations are designed to fit within the

Box 3.4 Democratic Republic of Congo

Mai Ndombe province exhibits the classic case where an existing legacy project—Wildlife Works Carbon (WWC) Mai Ndombe project—was validated with a projected baseline methodology prior to the jurisdiction determining its own baseline.* The jurisdictional reference level is an average historical baseline with a small adjustment (per Carbon Fund guidelines). To nest the existing WWC project within the historical average jurisdictional reference level, WWC was required to reduce its baseline over the ERPA period of 2018 to 2022. Differences between the two baselines are illustrated in figure B3.4.1 (see the appendix for more details on the baseline calculation).

Figure B3.4.1 VCS Baseline and the Nested Reference Level



In Mai Ndombe's ER Program, projects will be able to receive a portion of payments from the Carbon Fund based on performance. In return, such projects will be required to: (a) use agreed baselines, (b) only generate credits against the agreed baseline (that is, they may not develop a separate baseline under, for example, the VCS, and separately issue Verified Carbon Units), and (c) accept the capped amount that any one private sector or large community project may receive from the Carbon Fund. The PMU is expected to develop guidance and information on how future project baselines may be developed.

*The DRC case study is based on an advanced draft benefit-sharing plan developed by the country in consultation with ER Program stakeholders. The negotiations between DRC and the FCPF Carbon Fund regarding an ERPA are ongoing; it is not clear at this stage if the provisions (which are analyzed in this paper) will be accepted by donors for contract signature.

Box 3.5 Brazil

Under the **new Amazon incentive system**, states receive a portion (60 percent) of finance. This finance is allocated to states using a stock-flow method. This method was developed to address the challenge of different circumstances among states, that is, high versus low deforestation rates, high versus low forest cover. The method provides incentives both to conserve standing forests (carbon stock) and to reduce deforestation (that is, a reduction in the flow of emissions to the atmosphere). It does so by combining two criteria: (I) the amount of forest area within each state as a percentage of the total forest area in the Amazon, and (II) the amount that each state reduced its area of deforestation as a percentage of the total area reduced in the Amazon. The addition of these two criteria forms the overall percentage of Amazon emission reductions apportioned to each state (that is, the "catch" limit) for fund-raising. The metrics used can be considered proxies for carbon performance—that is, forest conservation and reducing deforestation.

This allocation method is illustrated in the table below (reproduced from the CONAREDD+ Resolution). Each state is allocated at least 2 percent of the total finance received by the Amazon Fund. Thereafter, the percentage is a function of performance on the two metrics.

Table 3.5.1 Amazon Fund Stock-Flow Allocation Method

STATE	Criteria I: % of Amazon native forest area	Criteria II: % contribution to reduced forest loss	Criteria I + Criteria II	Distribution of "catch" limits among states
ACRE	1.35%	0.60%	1.92%	2.00%
AMAZONAS	13.45%	0.60%	14.04%	13.28%
AMAPÁ	1.05%	0.0%	1.05%	2.00%
MARANHÃO	0.32%	1.6%	1.95%	2.00%
MATO GROSSO	2.93%	13.0%	15.93%	15.06%
PARÁ	8.22%	9.8%	18.01%	17.03%
RONDÔNIA	1.16%	3.7%	4.90%	4.63%
RORAIMA	1.43%	0.3%	1.70%	2.00%
TOCANTINS	0.09%	0.4%	0.49%	2.00%
TOTAL	30%	30%	60%	60%

When the resolution from CONAREDD+ was issued, 13 REDD+ projects developed in the Amazon biome had already been validated under the VCS, and few of them had used PRODES data to identify their baseline and build their reference levels. The CONAREDD+ Resolution means that projects within states—specifically those states that will further allocate funds through a state-level nested system that provides incentives to projects—will need to invest in remodeling the baseline and, in many cases, will have to assume a lower generation of credits that may jeopardize their financial feasibility.

Box 3.6 Australia

Australia's national system includes the baselines for Forest Management Reference Levels as well as for reporting against the 1990 baseline for Kyoto. These baselines represent a historical average and a point-based baseline, which current scenarios are compared against. Both baselines were in place prior to the implementation of Australia's domestic carbon market. This market generally uses national or state-based information for determining additionality of an activity type (for example, environmental planting or avoided deforestation when a certain permit is owned) and project-level information for quantifying the baseline scenario in terms of tonnes of abatement. The methods used at the project level aim to only quantify abatement that would be detected by Australia's NGGI; however, the success of this is measured at the scheme level. That is, an individual project may report more or less abatement than would be detected by the NGGI, but as a whole it is expected that the aggregate estimate of projects' performance would be comparable to the estimate of abatement at the national level.

Box 3.7 Guatemala

Guatemala has three REDD+ projects validated under the VCS, two of them in the northern lowlands, in the department of Petén, and one in the east of the country, in the department of Izabal. The two validated projects located in Petén were designed using the subnational jurisdictional baseline that was generated to comply with the requirements of the VCS JNR and which includes a geographically explicit logistic future deforestation model, that is, a model forecasting where and how much deforestation will occur in the future based on the tendency observed in the historical data. The development of a geographically explicit subnational reference level and future deforestation model, in this specific case, incentivized the establishment of public-private REDD+ activities. Guatemala developed in 2017 a national forest reference emission level and forest reference level (FREL/FRL) to comply with the requirements of the FCPF, which has been calculated as the aggregation of the FREL/FRLs of each of the five subnational jurisdictions considered in the country's National REDD+ Strategy. A future deforestation model remains to be developed. In the current scenario, unless the specific FREL/FRL of each subnational jurisdiction can be used and a geographically explicit future deforestation model is calculated and applied, projects do not have an incentive to nest because they would have to assume a FREL/FRL that considers lower generation of emission reductions per area unit, and this impacts the financial feasibility of stand-alone REDD+ projects.

KEY POINTS

For avoided deforestation or avoided forest degradation, because there are different dynamics and pressures on forests occurring across a landscape, jurisdictional baselines (for example, average deforestation rates) in most cases cannot be simply downscaled to project-level actions.

The stock-flow method used by Brazil is one solution to providing incentives for both standing stock (that is, conservation of existing forests) and reductions in deforestation—but it is more easily applied to nesting of subnational areas into a national system.

It is much easier to nest A/R and IFM projects than avoided deforestation because baseline or reference level construction methods are more similar at small and large scales.

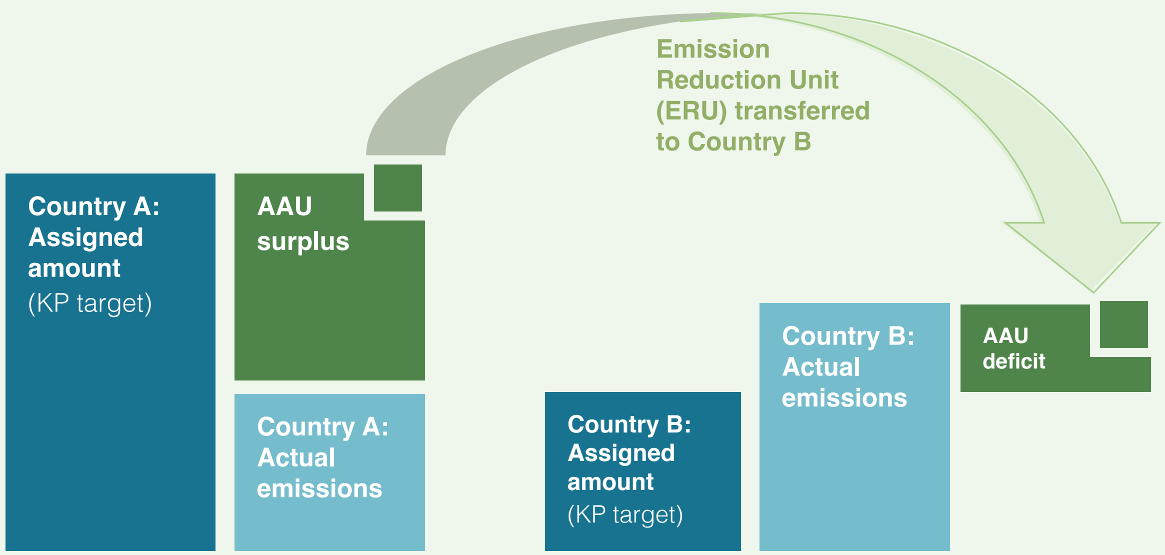
Smaller-scale baselines (and results measurements) do not necessarily need to perfectly match higher (jurisdictional) baselines as long as, in aggregate, they add up and do not exhibit bias—that is, that smaller-scale performance, on average, is aligned with the overall higher-scale performance.

Developing nested baselines can change significantly the incentives (and validity of business models) for smaller-scale activities.

Box 3.8 Joint Implementation

Joint implementation (JI) under the Kyoto Protocol may also be thought of as a type of nesting. Under JI, countries (typically with surplus assigned amount units, or AAUs) generate and sell emission reduction units (ERUs) to countries that face deficits or find it more cost-effective to purchase ERUs than to reduce emissions domestically. Once the project verifies emission reductions, the host country transfers ERUs to the investing country (figure B3.8.1). In general, JI functions as a nesting scenario that allows stand-alone projects—where individual projects generate units that are measured separately from the national *monitoring* system but included within the national *accounting* scheme. This "flexibility mechanism" was developed under the Kyoto Protocol to allow countries to lower the cost of meeting their target if additional abatement was possible (at a lower cost) in other countries.

Table B3.8.1 Illustration of trading ERUs under Joint Implementation



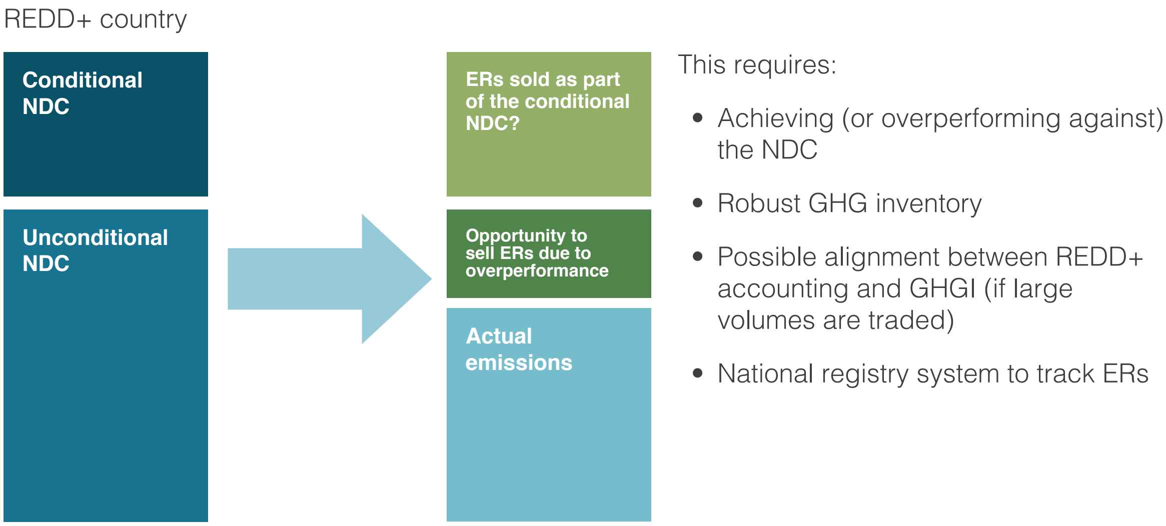
Mismatches between national GHG inventories and calculation of units by projects are generally unknown; however, the relatively low volume of traded units compared to AAUs minimizes the risks of misalignment.

envelope of jurisdictional performance. However, where jurisdictions and projects or subunits with the jurisdictional area are accounting simultaneously, there needs to be a mechanism to avoid double counting. In addition, because often it is not possible to perfectly nest projects within a jurisdiction, there will be a need to "true up" the accounting and manage liabilities for the expected quantitative correction that may occur. This requires clarity on which party or parties are responsible both for managing the mismatches and for the liabilities for any "overshoot" that occurs. Alternately, systems (for example, buffers) may be developed to share the burden up front of such overshoot.

It is worth noting for this topic that these issues are less critical for performance-based payments not tied to the generation of credits (assets) or not used in compliance systems. Where carbon finance operates more akin to payments for (ecosystem) services, and no rights or titles are transacted, double usage of the emission reduction is less problematic (although some donor governments are concerned with double payment for such reductions). Selling into voluntary carbon markets—for example, to entities whose purchase of the offset does not appear under any accounting within the UNFCCC—also is less problematic. These may be considered as situations where double claiming may not be desirable, but it does not affect the integrity of any single system.

Boxes 3.8 and 3.9 describe examples of avoiding double counting.

Figure 3.2: Example of a REDD+ country selling ERs while achieving its NDC



Box 3.9 Australia

In **Australia**, the risk of double counting across different schemes is managed through the legislative restrictions on projects that participate within the domestic scheme. The scheme does not permit projects that are part of other offset schemes to participate. Similar provisions in voluntary schemes also reduce the risk of double counting. For example, Australia did have forest protection projects registered and operating under the VCS; however, when Australia started reporting on forest management under the second commitment period of the Kyoto Protocol, the VCS suspended crediting of those projects to ensure the avoidance of double counting. In this circumstance, the projects were transitioned through a specific method under the domestic scheme. As Australia's NGGI does not directly incorporate project-level reporting—it relies only on the national inventory system for emissions information—there is no risk of double counting abatement from project areas or activities within the NGGI.

To maintain consistency with Australia's international obligations, the Emissions Reduction Fund project proponents are issued Australian Carbon Credit Units, which are managed through a centralized registry, the Australian National Registry of Emissions Units. These credit units are directly exchangeable for Kyoto units, and then can be traded, surrendered, or canceled through the registry. Thus, if a project is issued a credit that can't be reconciled through the national inventory system, the Australian government has this as a liability. The methods, therefore, aim only to recognize abatement that can be identified through the national inventory system.

Box 3.10 Brazil

In Brazil's new **Amazon** approach, the challenge of performance mismatch between the higher level (total Amazon) and the states is managed through a system that does not create nominal (emission reduction) units for each state's performance; instead, it allocates a percentage of emission reductions from an overall envelope based on jurisdictional performance. In other words, each state is given the right to raise funds for a portion of the emission reductions generated at the Amazon region level. They are not provided a baseline against which to generate and issue separate emission reductions.

KEY POINTS

Nested systems will need to consider how to avoid certain types of double counting; this will become increasingly critical for countries as the Paris Agreement is implemented—although final rules are still unknown.

Where volumes traded internationally are small, it may not be necessary to align measurement systems—if credits traded can simply be deducted from national totals. However, this requires knowledge of overperformance and the total number of available units for trading.

If a system is entirely domestic (that is, no international trading), it may not be necessary to perfectly align measurement systems—since reporting to the UNFCCC, for example, can be considered separately from the domestic carbon trading system. However, for reasons of efficiency, it may still be useful to require projects to use certain data and methods to align as closely as possible with national-level accounting.

Double counting can also be avoided by *allocating* emission reductions, as in Brazil's new Amazon incentive system, which provides states with a percentage of emission reduction units achieved at the higher scale rather than allowing the issuance of nominal units against baselines. This may, however, reduce incentives for subunits to perform.

With regards to REDD+, countries with conditional NDCs *may* consider selling ERs as part of the conditional portion of emission reductions. Or, if a country expects to *overachieve* at the national level—that is, exceed its unconditional NDC—it has the flexibility to allow even more ERs to be sold (figure 3.2). If a purchasing country uses these reductions to achieve its NDC, those reductions will need to be debited from the selling country's national accounts, as in the Kyoto Protocol, to avoid double counting.

3.4. Using Proxies Rather Than GHG Metrics

If a jurisdiction is allocating finance or ERs based on ex post performance, it will need to decide what metrics to use, and these may be best determined based on the actions or outcomes it wishes to incentivize. Carbon performance may be one option, or metric, used to allocate finance. Performance could also be measured, for example, by hectares of forest

Box 3.11 Australia

In **Australia**, the government provides financial incentives through the Emissions Reduction Fund to promote project-level action to mitigate climate change. Abatement must be estimated using methods that are provided for through legislation. These methods must only recognize abatement that can be used to meet Australia's climate change targets, as determined by the national accounting framework. The adoption of this scenario was influenced by the status of the NGGI system, forest management, and the associated governance arrangements around these.

Australia has a spatially explicit NGGI system, which uses a Tier 3 model (FullCAM) to estimate the emission and removals from forests. This modeling framework was designed to overcome differing governance and data collection arrangements for the forests; where the national government is responsible for reporting GHGs to the UNFCCC, it is the state governments who have constitutional responsibility for managing public lands, including forests. As a result of this approach, for nesting, the spatially explicit nature of Australia's GHG inventory supports the adoption of payments based on project-level performance in reducing GHG emissions, as all project areas are covered by the national system (that is, the same tools can be used for projects as are used by the national system), and the national system can in turn be improved to better match the project-level estimates.

protected, which allows for simpler measuring while still contributing to emission reductions. Other options, or metrics, could be considered, such as use of clean cookstoves to reduce charcoal consumption, demonstration that improved agricultural practices are put in place that reduce pressure on forests, protection of certain ecosystem services (for example, important watersheds), and so on. If more than forest carbon is being considered (for example, agricultural emissions), other criteria may be added, such as tillage, residue, or burning practices.

If non-carbon metrics are used, and if there is not a strong correlation to the mitigation measured at the higher level, the activities may not contribute to the GHG performance needed to access carbon finance. For example, measuring forest cover change as a proxy may be strongly correlated with carbon performance at the higher level, but it may also be problematic if forests of lower carbon stock are protected while higher carbon stock forests are cut. The optimal metrics differ by context—for example, the use of carbon metrics may be strongly correlated with GHG performance, but it also may be technically challenging for local communities and not well understood.

Boxes 3.11 and 3.12 illustrate examples where GHG metrics (Australia) are used versus proxies (Zambia).

Box 3.12 Zambia

COMACO, a nongovernmental organization operating in Zambia, has built a system to provide market premiums to communities in Eastern Province. They have created what is called a “Conservation Compliance Scoring” system that rates participating chiefdoms on a number of metrics: conservation farming practices (for example, fire management, minimum tillage, crop rotation, use of residues and compost, non-burning of farm), wildlife protection (for example, poaching, habitat protection), forest conservation (for example, illegal logging, charcoal production), and conservation and community leadership.

Scoring is based on information from COMACO’s internal auditing of conservation farming practices as well as additional information on wildlife conservation and forest management. Scoring is adjusted for the varying landscapes in which chiefdoms reside. The plateau area chiefdoms have their sustainable agriculture and forestry scores more heavily weighted, whereas the valley area chiefdoms have their sustainable agriculture and wildlife protection scores more heavily weighted. This difference in weighting takes into account that the plateau has lost most of its forests (deforestation), while the valley is home to a variety of wildlife.

COMACO acts as an off-taker of farm products generated by local communities. In the past, scores were used to provide premium commodity prices (around 10-20 percent above market), and now are used to support farmer cooperatives. One can envision that a system such as this could also be used as a basis for distributing carbon finance. Building on other revenue streams, such as agriculture or tourism, allows for a broader set of incentives than carbon and more diverse revenue streams, which can mitigate the risks of an uncertain future carbon market.

Figure 3.12.1 COMACO’s Conservation Compliance Scoring System

KEY POINT

The use of GHG metrics to reward smaller-scale activities within a jurisdiction may be viable for countries with more advanced MRV systems that include spatially explicit data. For countries that do not have such systems, or where carbon accounting may not resonate with local communities, use of a proxy measure may be an option worth consideration.

The Zambia model (box 3.12) is not currently used to share carbon revenues; however, it is provided as an example of a potential model that could be adapted. It shows how a system may be built on an already existing system to provide benefits to local communities.

3.5. Why Has Nesting Failed in Some Cases?

In some cases, although there may be utility in providing projects with incentives, circumstances have created barriers to developing a nested system. In the Brazilian state of **Acre**, Law 2308 (SISA Law, October 22, 2010) created a legal framework for operationalizing a jurisdictional REDD+ program. This legal framework considered a registry in which projects developed within the geographical scope of the jurisdictional program could be registered if they were previously recognized and integrated into Acre's IES Carbon Program. When the legal framework of the jurisdictional REDD+ program was promulgated, there were already REDD+ private initiatives in Acre that had been validated and verified (that is, had issued carbon credits) under the VCS. The divergence between technical aspects employed in the private initiatives and in the jurisdictional REDD+ program, however, were significant and created disincentives for nesting—for both the developers of private projects and the government of Acre as the jurisdictional REDD+ program proponent.

The government of **Guatemala** has been involved directly or indirectly in the development of different REDD+ projects and considered the certification of a subnational jurisdictional REDD+ program under the VCS JNR. The subnational baseline and the future deforestation model developed for the jurisdictional REDD+ program were geographically explicit and had different strata that represented the various forest types occurring in the subnational region. This created a significant source of economies of scale for the implementation of private initiatives in the northern lowlands of Guatemala. The projects seeking validation in the subnational region could use the data and information from the subnational baseline to construct their own baselines and nest into the subnational jurisdiction. When the Guatemalan government decided to seek finance from the World Bank's FCPF, the process of validation of the jurisdictional scheme under the VCS JNR was left on standby. This is because the reference level developed under the VCS JNR only considered the deforestation component; per the approach assumed by the country under the FCPF, forest degradation and carbon stock enhancement components also would need to be included. As a result, the projects were not nested and, instead, continued operating as stand-alone activities.

4. Lessons Learned

Experience with nesting is still in its infancy. This paper attempts to consider some of the early lessons emerging from efforts to develop nested REDD+ (or forest GHG mitigation) systems. While jurisdictional REDD+ is assumed by many to be the pathway to “transformation,” there are many policy reasons for considering the development of nested systems within jurisdictional programs.

The Paris Agreement suggests a rethink of the concept of nesting for REDD+. Developing countries must now consider how to achieve national targets (that is, NDCs), which fundamentally change the dynamic for carbon projects operating within countries. Meanwhile, governments must consider the right blend of policies and incentives that will drive change at scale, and many lack the resources needed to implement multiple programs with and in communities. For this reason, this paper suggests reconsidering nesting—going beyond the traditional concept of “project to jurisdictional GHG accounting integration” to the broader consideration of how to catalyze local actions to support national GHG performance.

If well structured, a nested system can increase the performance of large-scale jurisdictional mitigation efforts. The Australia example illustrates that such a system can mobilize investments and operational capacity that otherwise may not occur if only national government policies and measures are at play. Development of such systems should consider how best to allocate incentives across national, subnational, and local actors. The variety of emerging systems shows there is no one-size-fits-all solution.

Experience suggests that projects can best support jurisdictional efforts if they are part of the initial design of a REDD+ system. It is easier to create a nested system if this goal is identified as a policy requirement early in the process. The initial choices on whether, and how, to nest efforts by smaller units have implications for the design of MRV systems. As the DRC Mai Ndombe case suggests, technical requirements are more easily incorporated from the start rather than retrofitting the system to accommodate legacy projects. The longer the delay to set up such systems, the more challenges a country may face—as more projects with disparate systems are created.

For most countries, a nested system will be “allocation” driven. Systems that allow stand-alone projects to trade internationally are more challenging—from both the policy and technical point of views. For this reason, many of the emerging nested systems—for example, in Brazil and the DRC—are based on how to allocate either finance or emission reductions, but they do not recognize or allow projects to freely trade emission reduction units.

Donors can impact jurisdictional programs, including nested systems. To date, the establishment of jurisdictional REDD+ schemes and support for new low-carbon economic models would not have been possible without the crucial role played by donor governments. Donors have largely been responsible for establishing the requirements to receive payments linked to REDD+ performance—which influences the way jurisdictional REDD+ programs are developed, including the relative balance of resources spent on MRV systems compared to implementing activities to reduce emissions. This not only affects the quality of the emission reductions claims and the co-benefits accrued, but also can impact the structure and sustainability of the program itself. In some instances, such as in the Brazilian state of Acre and Guatemala, donors have, perhaps inadvertently, discouraged the development or continuity of projects, including those that can support jurisdictional programs.

Nesting projects is as much a policy issue as it is a technical one. There is a tendency to focus on the technical implementation of nesting projects, with less regard to the policy requirements. It is evident from the examples that the national policy setting and directives have as much, if not more, of a bearing on the approach to nesting as technical issues. Careful consideration of shifting costs, risks, and rewards must be undertaken in the design of the framework for nesting before any technical solutions are researched.

That said, there are a number of lessons learned related to technical issues:

- Most project methodologies were developed prior to the creation of jurisdictional methodologies.

As such, methods used by projects to measure performance do not align well with methods used by national or subnational governments to measure REDD+ results. Similarly, current methods for estimating carbon stock changes at the national level are not always “fit for purpose” for incentivizing action on the ground. Thus, flexibility on all sides is needed to transition legacy projects into a national (or subnational) system.

- Suggesting that projects “apply the jurisdictional rate of deforestation” will not work in most instances, as it does not provide the right incentives for projects to invest in high-risk areas—as is evident in the DRC Mai Ndombe case. Other options will need to be developed for, in particular, nesting avoided deforestation projects.
- Nesting of avoided deforestation—where counterfactual baselines are more difficult to estimate—is more challenging than A/R (where a baseline can be set to zero for non-forestland) or forest management (where similar methods can be applied at small and large scales).
- The more spatially explicit information is available (and can be applied to nested systems), the stronger the incentives, as illustrated by the Guatemala case study. Conversely, the establishment of non-stratified, single-value FREL/FRLs often disincentivizes the protection of high carbon stock, deforestation-threatened forests.

A focus on the development of national (only) estimates of GHGs and FREL/FRLs may be less resource intensive at the start, but more costly in the end—particularly if more highly stratified systems lead to stronger incentives for action. There is a need to balance the cost of an MRV system that can operate at national and project scales effectively with the benefits of enabling local actions, including catalyzing investments and engaging local, operational capacities to implement activities that reduce emissions (or enhance removals).

One barrier to the development of nested systems is a lack of technical capacity within developing country governments. There are clear asymmetries of knowledge and information that exist between (often international) project developers and forest/REDD+ country governments, which can be an impediment to cooperation. Models should be investigated that embed centralized technical support within governments to ensure continuity over time, objectivity, accuracy, and quality. It is critical to have technical personnel aware of the jurisdictional context at different levels and trusted by political decision makers.

Finally, the establishment of jurisdictional REDD+ is a learning-by-doing process. It has been a decade-long journey to date for the development of national REDD+ systems, and while there are some existing experiences, there remain many areas still in the early stages of learning, including how best to involve local actors and catalyze local activities to contribute to large-scale jurisdictional results. This paper only scratches the surface of issues in nesting—and we expect many more lessons to emerge in the years to come.

Box 4.1 Considerations for the Future

The authors and reviewers of this paper raised a number of additional issues critical to the design of a nested system, but we couldn't address them all in a single paper. Here are some questions to possibly consider in further explorations of nested systems:

- What are the policy (setting of reporting/accounting rules, transparency requirements, whether and how to integrate legacy versus new projects, etc.) and operational (sharing of data, process for transferring funds/units, operation of underpinning systems, etc.) challenges of nesting and how can they be overcome?
- What technical measurement and monitoring systems could best support nested approaches?
- What are the risks inherent in a nested system (for example, MRV mismatches, double counting, etc.) and how should responsibility for them be shared? Who is willing to take on such risks? How can registries help to manage some of these risks?
- What are the conditions under which a nested approach or system makes sense (for example, centralized versus decentralized government systems, balance of private versus public lands, where decision-making authorities lie)? What legal frameworks enable nesting (or not)?
- Where should the costs be borne for both the implementation actions that reduce emissions (or enhance removals) and the MRV of GHG performance? Where does the intellectual property sit for measurements of GHGs?
- What are the technical and administrative requirements expressed by demand-side actors (to date, donor governments or voluntary standards) for the jurisdictional REDD+ initiative?