# Analysing REDD+

Challenges and choices

Edited by Arild Angelsen, Maria Brockhaus, William D. Sunderlin and Louis V. Verchot

CIFOR

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Foreword

I welcome this latest book from the Center for International Forestry Research (CIFOR) 'Analysing REDD+: Challenges and choices'. It is a book that climate change negotiators, national and local policy makers, development agencies, forest institutions and organisations, and REDD+ practitioners will find interesting, relevant and useful. It provides excellent information and analysis and is released at an opportune moment as the global community gears up for the next round of climate change negotiations, which will certainly include REDD+, and perhaps will scale it up even more.

This book follows two earlier REDD+ volumes from CIFOR, 'Moving Ahead with REDD: Issues, options and implications' (2008) and 'Realising REDD+: National strategy and policy options' (2009), and provides an analysis of *actual* REDD+ design and early implementation. It takes stock of national, subnational and local REDD+ experiences and identifies the *challenges* in designing and implementing effective, efficient and equitable REDD+ policies and projects. Policy choices to overcome obstacles in scaling up REDD+ are also elaborated.

As a leader in the UNFCCC negotiations on REDD+ and an implementer of REDD+ in the Philippines, I cannot overemphasise the importance of

the authors' analysis of both challenges and choices in REDD+. As we move forward to further elaborate the global rules, among others, on REDD+ safeguards, reference levels, measurement, reporting and verification (MRV), and finance, it is important to build on lessons learned and to understand better what works and what does not. By following a national case study approach, the authors of this book assist us to incorporate these lessons into the evolving global REDD+ architecture.

As a safeguards champion in the REDD+ negotiations, and a long time advocate of indigenous peoples and community based forest management approaches, I am especially happy that benefit sharing and carbon rights are included in this volume. I agree with the authors that "the REDD+ safeguards dialogue needs to move from high-level international discussions to actions on the ground."

Finally, I also welcome the authors' highlighting of Payment for Environmental Services (PES) as a potential framework for designing REDD+. Indeed, the PES idea "promises a win–win menu: local forest users will choose forest conservation if the compensation they receive is higher than potential earnings from alternative forest uses."

Kai Lee, in his book 'Between Compass and Gyroscope' from 1993 wrote that "policies are experiments, learn from them!" This is particularly true for REDD+, as much of the territory we are entering is an unknown landscape. Solid analyses like those presented in this book are essential for us to learn from, and improve upon, in our implementation of REDD+.

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While greatly appreciating these contributions, readers should note that any views expressed in this book are those of the authors. They do not necessarily represent the views of CIFOR, the editors, the authors' institutions, the financial sponsors or the reviewers.

Most of the chapters in this book are based on a large research project carried out by CIFOR and partners: the Global Comparative Study on REDD+ (GCS). A complete list of the many individuals, organisations and sponsors that have contributed to that project is included in the Appendix. Without the hard work of country partners and coordinators, representatives, enumerators, encoders, field research supervisors, respondents, key informants, project proponents and others, we would not have been able to present the results of this study.

Bogor, Indonesia, and Ås, Norway
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Summary

REDD+ is moving ahead, but at a slower pace and in a different form than we expected when it was launched at Bali in 2007. This book takes stock of REDD+ and asks a number of questions. How has REDD+ changed, and why? How is REDD+ unfolding in national policy arenas? What does REDD+ look like on the ground? What are the main *challenges* in designing and implementing REDD+? And, what are the *choices* that need to be made to enable REDD+ to become more effective, efficient and equitable? Most of the analysis is based on a large comparative research project, the Global Comparative Study on REDD+ (GCS), undertaken by CIFOR and partners.

REDD+ – as an idea – is a success story. REDD+ has been perceived as a quick and cheap option for taking early action toward limiting global warming to 2°C. It also takes a fresh approach to the forest and climate debate, with large-scale result-based funding as a key characteristic and the hope that transformational change will happen both in and beyond the forestry sector. At the same time, REDD+ has been sufficiently broad to serve as a canopy under which a wide range of actors can pursue their own ideas of what it ought to achieve.

REDD+ is evolving. The absence of a new international agreement on climate change means that a potentially large source of performance based and long-term finance is not yet available. At present, two thirds of international REDD+ funding is from development aid budgets. But there is a paradox: while there is currently no adequate and predictable long-term strategy on how to meet the financial needs of REDD+, short-term finance is available. However, disbursements are slow because countries cannot absorb the amounts available.

The smaller magnitude and the 'aid-ification' of REDD+ have had major implications for the pace of implementation and have contributed to a broadening of the scope of REDD+. Furthermore, in the absence of a strong global mechanism, wealthier developing countries with stronger institutions may opt to self-finance a significant part of REDD+. They may also choose to engage in results-based agreements with donors and international agencies. Donors and recipients may have limited interest in achieving universal REDD+ standards, and practices are likely to become increasingly diversified.

REDD+ has entered national policy arenas as an idea and with the possibility of substantial international payment for results. To study how REDD+ is being received, perceived and reconfigured, the book looks at the political economy of REDD+ through a 4Is framework: institutions, interests, ideas and information. To fully realise its mitigation potential, REDD+ requires transformational change in the form of altered economic, regulatory and governance frameworks, removal of perverse incentives and reforms of forest industry and agribusiness policies. REDD+ also has the potential – and realises this to a certain extent already – to be a game changer by offering new economic incentives (in particular, international result-based funding) as well as new information and discourses, and by bringing new actors into the arena, which may lead to new coalitions for change.

Whether the REDD+ process is able to generate transformational change, or whether business as usual policies will be maintained, depends on several factors. An analysis in seven countries suggests that a key factor for achieving transformational change lies in the autonomy of the state from key interests that drive deforestation and forest degradation, and the presence of strong coalitions that call for such change to take place. National ownership of the REDD+ policy process is also critical. Effective REDD+ strategies are least likely to be formulated and implemented in countries where international actors drive the REDD+ policy process.

Successful REDD+ strategies require strong multilevel coordination. REDD+ mechanisms must link the global need and 'willingness to pay' for climate action with national and subnational institutions and local people's needs and aspirations. The challenge lies in linking effective information, incentives and

institutions across levels. The book provides in-depth analysis of these three components.

First, enhancing and harmonising information flows between local and national levels are essential for effective measurement, reporting, verification (MRV) and control of emissions leakage (displaced emissions). Sound information flows across the levels can enhance the negotiating power of disadvantaged groups and ensure a more effective, efficient and equitable REDD+. The lack of common maps and mindsets and a unified framework for integrating various sources of information can be a major impediment for action. Stakeholders need to have a common understanding of 'where we are' before making decisions on 'where we can go' or 'how to get there'.

Second, the establishment of benefit sharing mechanisms across levels and that are accepted by all stakeholders is one of the most challenging hurdles in REDD+ implementation. Benefit sharing is important for creating positive incentives to reduce carbon emissions, but the mechanism must be seen as fair or it will threaten the legitimacy of and support for REDD+. Different discourses emphasise different principles for allocating benefits and costs, and relate – fundamentally – to conflicts over the vision for REDD+. Before designing effective benefit sharing mechanisms, it is thus necessary to resolve higher-level questions about the objectives that REDD+ seeks to achieve. Negotiating tradeoffs between objectives requires ethical, political and practical judgements. Given the diversity of views, the legitimacy of the decision making institutions and processes is crucial for the effective and sustainable design and implementation of benefit sharing.

Third, national institutional structures and policies are needed to facilitate action on the ground. A prominent example relates to the question of tenure and rights. REDD+ can be used as an incentive to support forest tenure reform while, at the same time, tenure reform is a strategy to support REDD+ implementation. Tenure reform can become an important part of needed transformational change. But while REDD+ has brought much attention to tenure, national-level efforts to address land and carbon tenure issues have been limited. Project-level interventions to address tenure encounter substantial obstacles if they do not have national backing.

Tenure and rights link closely to safeguards for REDD+, a key topic in the United Nations Framework Convention on Climate Change (UNFCCC) discussions. Policy makers, project proponents and investors value REDD+ safeguards, as evidenced by their early adoption of national and project-level social and environmental standards. At the same time, the REDD+ safeguards dialogue needs to move from high-level international discussions to actions on the ground. Achieving 'free, prior, and informed consent' (FPIC) remains

a challenge for a variety of reasons. "FPIC is an impossible dream we are chasing," notes one project proponent.

As part of the GCS, extensive surveys were done on REDD+ projects in six countries, including surveys of project proponents on their early implementation experiences. The original idea of REDD+ was to establish a results-based or payment for ecosystem services (PES) system that would make payments from the international level to individual forest users. Most of the projects that were studied intend to combine the PES approach with a more conventional integrated conservation and development project (ICDP) approach, which emphasises the enforcement of forest regulations and the provision of alternative sources of livelihoods. This *hybrid approach* enables proponents to make early progress on project establishment and the ICDP approach can serve as a fallback option if PES fails to materialise, e.g. due to uncertainties related to future funding. Yet the hybrid approach involves challenges, because the implementation of ICDP has been difficult in the past and because playing up ICDP while delaying the discussion of PES with local stakeholders may cause problems later on. When and if proponents eventually decide to use PES, they must go back to all local stakeholders to explain the plan.

The PES idea promises a win–win scenario: local forest users will choose forest conservation if the compensation they receive is higher than what they would obtain from alternative forest uses. In practice, REDD+ may, in using the hybrid model, be less straightforward and the outcomes uncertain. A household survey in project areas reveals that local people conceive REDD+ as being primarily about forest protection, while their main hopes and worries concern income and livelihoods. Key challenges for REDD+ projects thus include: i) to communicate to villagers how the projects work, the opportunities and risks, and the rights and responsibilities of stakeholders; ii) to involve villagers meaningfully in the design and implementation of the projects; and iii) to balance forest protection with the welfare concerns of villagers. The survey also showed that villagers depend extensively on project proponents for information about REDD+ and the local project, and there may be a need for independent knowledge brokers or legal advisers as well, e.g. when agreements are signed.

The success of REDD+ hinges not only on local support, but also on interventions being targeted to areas with high levels of deforestation and forest degradation, where they can yield real emission reductions and thereby ensure additionality. A study of project locations around the developing world found that countries with high biodiversity and more protected areas are more likely to have REDD+ projects, which fits with the assertions of project proponents that they consider biodiversity co-benefits when selecting sites. A detailed study in the two countries most deeply involved in REDD+ activities – Brazil and Indonesia – suggests that projects are more likely to be established

in areas with high deforestation rates and forest carbon densities. There were early concerns that projects might tend to be located in already well-protected forest areas, so this is an encouraging finding. Project proponents have selected areas where they have the potential to make an impact.

Nevertheless, the book argues that we probably need another 3–5 years before we can really know if REDD+ works. Besides the time needed to detect changes on the ground, measuring impacts in the form of reduced emissions is far from a trivial task. Forest carbon stocks must be monitored, and baselines or reference levels must be developed to build the counterfactual scenario of what would have happened without the REDD+ project or policy. Challenges in developing these reference levels include: the lack of data needed to estimate historical emission rates, and genuine uncertainty in predicting future emissions and how they will deviate from historical rates. Furthermore, reference levels are important to many stakeholders. There are strong incentives for making biased estimates in order to help project or policy interventions look successful or to generate higher payments when reference levels are used as the basis for results-based payments, e.g. selling REDD+ credits in a carbon market. Ensuring against this calls for international guidelines and independent verification of project/subnational and national reference levels.

Over the past few years, robust standards and methods have been developed for estimating emissions from deforestation at the project level. But because the first fully fledged REDD+ baseline and monitoring methodologies were adopted only recently, many pioneering REDD+ projects may not comply with them, running the risk of losing opportunities in carbon markets. The next generation of projects should learn from this experience by identifying or developing suitable methodologies *before* investing in the development of their measurement, reporting and verification (MRV) systems and baselines.

The book presents a stepwise approach to developing reference levels at the national level, in line with recent decisions by UNFCCC and building on the same logic as the tiered approach for emission factors. A stepwise approach can reflect different country circumstances and capacities and will facilitate broad participation and early startup. The availability and quality of data should determine the methods used to develop reference levels, e.g. sophisticated methods applied to poor data should be avoided as they risk multiplying errors. As improved data become available, considering the drivers and activities that cause deforestation and forest degradation will be important for adjusting reference levels to 'national circumstances'. The uncertainty of reference levels can be reflected in a conservative adjustment factor in a result-based payment scheme. This will provide incentives for investments in measurement and monitoring capacities to reduce the uncertainty.

Emission factors are needed to convert area estimates of deforestation and forest degradation to emissions and carbon stock changes. Current emission factors account for as much as 60% of the uncertainty in greenhouse gas (GHG) inventories. Country or region-specific emission factors are lacking for most tropical countries, making it impossible to accurately and precisely estimate emissions from sources and removals by sinks in REDD+ national programmes and demonstration activities. Significant investments and coordinated efforts are required as part of readiness financing in order to overcome data limitations and institutional insufficiencies. The constraints can be overcome if coordinated and targeted investments are made and productive partnerships are developed between the technical services in REDD+ host countries, intergovernmental agencies and advanced research institutes in developed countries.

While measuring outcomes on the form of reduced emissions to and increased removals of GHG from the atmosphere is the ultimate aim, in the medium term, most payments will be for readiness and policy reforms, rather than for proven changes in emissions or removals. Hence, good performance indicators are critical for all three REDD+ phases (readiness, policy reforms, result-based action). This is particularly true for Phase 2, where the focus is on policy performance. Limited attention has been given to developing such indicators, but the book argues that valuable lessons on governance indicators can be learned from the aid sector: avoid seeking the perfect indicator and use expert judgment extensively.

REDD+ design and implementation is extremely challenging: it aims to break long historical trends, build political consensus by satisfying key actors in policy arenas, generate transformational change, achieve multilevel coordination (from global to faraway local communities) and manage complex flows of information and payments, all in the midst of large uncertainties for the future climate mitigation regime and a strong global appetite for more land for food, fuel and fibre.

The changing context, the political and economic battles and the challenges on the ground present dilemmas. REDD+ promised to bring a new and fresh approach: large-scale funding and performance-based support. This was supposed to make REDD+ different and more successful than past conservation efforts. But there is not yet enough financing to change the fundamental equation of the costs and benefits of forest conversion, and thereby to make everyone winners. Thus, REDD+ needs to deliver on many fronts in villages, cities and capitals. In particular, it has to meet development aspirations. REDD+ needs to establish and strengthen broad coalitions and serve diverse interests in order to secure strong and sustained political support. The question is this: how should REDD+ be modified to generate

the necessary political support without losing focus and pulverising the idea
that made it so attractive in the first place?

REDD+ not only presents challenges but also choices, as is pointed out
throughout the book. Uncertainty should not lead to inaction. Regardless of
what happens to REDD+ as a global mechanism in the UNFCCC process,
priority should be given to three sets of actions: i) building broad political
support for REDD+, e.g. by coalition building and focusing on REDD+ as
an objective; ii) laying the foundations for eventual REDD+ success, e.g. by
investing in stronger information systems; and iii) implementing 'no regrets'
policy reforms that can reduce deforestation and forest degradation but which
are desirable regardless of climate objectives, e.g. removal of perverse and
costly subsidies and strengthening tenure and governance.

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Introduction

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1.1 Taking stock of REDD+

REDD+, as an idea, is a success story. It has generated excitement about possibilities for getting underway on climate change mitigation quickly and cheaply. REDD+ has also been broad enough to serve as a canopy under which a wide range of actors can grow their own trees. It has been through an intensive process of conceptualisation, design and implementation – even if it is still far from realising its fundamental goal, namely large-scale emission reductions. No idea for saving the world's tropical forests has generated anywhere near the same excitement and commitment of funds as has REDD+.

However, to scientists and professionals with experience in tropical forestry, it is not surprising that REDD+ has turned out to be much harder to implement than expected. Deforestation and forest degradation have a long history and powerful interests have much at stake in their continuation. The policy arenas in many countries are battlefields between interests of 'business as usual' and interests of transformational change. But this is also a good sign: those who benefit from business as usual take REDD+ seriously enough to react: this indicates that REDD+, if implemented, can have an impact.

REDD+ sets out to solve a fundamental collective action problem: to create a system that provides forest users with economic incentives that reflect the value of the carbon sequestered and stored in trees. Building that system is an ambitious political, economic and social engineering project. Establishing a payment for ecosystem services (PES) mechanism seeks to create a link between a global 'willingness to pay' and individual forest users in faraway villages. This is the challenge facing governments and project proponents trying to make live trees more valuable than dead ones.

REDD+ is evolving in the absence of a new international agreement on climate change. In the run up to COP15 in Copenhagen in 2009, the hope was that a strong new agreement could provide a large amount of REDD+ performance-based finance. Now, international funding for REDD+ primarily comes from development aid budgets, which gives it a different dynamic and has contributed to a broadening of the scope of REDD+ and added multiple objectives.

This changing context, the political and economic battles and the challenges on the ground present dilemmas. REDD+ promised to bring in a new and fresh approach: large scale funding and performance-based support. This was supposed to make REDD+ different from and more successful than past conservation efforts. But the problem, put simply, is this: we don't have enough financing to change the fundamental equation of costs and benefits of forest conversion, and thereby to make everyone winners. Higher global demand for land for food, fibre, fuel and environmental services has enlarged the challenge. Thus, REDD+ needs to deliver on many fronts in villages and cities and capitals. REDD+ needs to establish and strengthen broad coalitions and serve diverse interests in order to secure strong and sustained political support. How should REDD+ be modified to generate that support, without losing focus and pulverising the original idea that made it so attractive in the first place?

1.2   Purpose of this book

1.2.1   Three generations of REDD+ research

Just as REDD+ implementation has three phases (readiness, policy reforms, and result-based action), REDD+ research is also progressing through three generations:

First generation: designing REDD+ and learning from related experiences in the past. The first generation of REDD+ research is concerned with REDD+ architecture at all levels: the institutional set up, how to deal with particular challenges such as leakage, additionality and permanence and the specific policies that could become part of the REDD+ efforts. The key question that these efforts try to answer is: *What should REDD+ look like to be effective, efficient and equitable?*

Second generation: the political economy and implementation of REDD+. The second generation of research analyses the processes of policy formulation and decisions for early implementation of both national policy reforms and local and subnational projects. The key questions being addressed are: *How is REDD+ being decided and implemented, and why?* An important sub-question is: *What hinders or enables decisions about and implementation of effective, efficient and equitable REDD+ policies and projects?*

Third generation: assessing the impact of REDD+. The third generation of research attempts to measure and analyse the impact of REDD+, particularly on forest carbon and local livelihoods. The two basic questions to be answered in this phase are: *Does REDD+ work? How can REDD+ work better?* An important sub-question is: *How should REDD+ outcomes be measured?*

There is a natural sequencing between these generations, as they follow the actual REDD+ implementation. The first two edited REDD+ volumes from CIFOR were first generation research outputs: 'Moving Ahead with REDD: Issues, options and implications' (2008) and 'Realising REDD+: National strategy and policy options' (2009). The current volume, 'Analysing REDD+: Challenges and choices', moves us into second generation research and contains mainly an analysis of *actual* REDD+ design and early implementation. Some first generation research is retained; for example, the chapters in Part 3 ('Measuring REDD+') also address the question of how REDD+ could be designed and implemented. Indeed, moving into second and third generation research does not imply that first generation questions have been fully answered: there are still many lessons to learn, and we need to return to the questions on optimal REDD+ design as we gain lessons from answering second and third generation questions.

A characteristic of second generation research is critical distance. Recognising that there are considerable problems in moving from the idea of REDD+ to its implementation, research requires a greater detachment. There is more latitude for being appropriately and constructively critical if the researchers themselves place more emphasis on their role as evaluators and less on their role as promoters of REDD+.

The third generation research questions cannot yet be answered – at least not at the scale necessary to do them justice. The chapters in this book concerning the local implementation of REDD+ projects include findings that can provide reasons for optimism (e.g. REDD+ projects are located in high deforestation areas, Chapter 12) or pessimism (e.g. REDD+ is largely perceived as a 'win–lose' option, Chapter 11). However, assertions found in the public REDD+ debate about whether REDD+ does – or does not – deliver are either based on general optimism and hope or pessimism and worry. The bottom line is

that we need three to five years of implementation of REDD+ policy reforms and projects before we can start answering the question: Does REDD+ work?

1.2.2 Overview of the book

This book aims to take stock of REDD+ experiences to date at the national level, as well as at the subnational and local levels where projects are implemented. In the process, we ask several questions: What is happening in national policy arenas and on the ground? How has REDD+ changed? What does it really look like? Where is REDD+ heading?

The subtitle of the book – 'Challenges and choices' – indicates our aim to provide a better understanding of the *challenges* involved in designing and implementing effective, efficient and equitable REDD+ policies and projects. We want to provide comparative evidence on how the challenges materialise in different contexts and at different scales, as well as the main obstacles to success. We do not want to stop here, but also intend to suggest ways to break logjams. What *choices* will help us to overcome the obstacles we have identified?

While the book covers a wide range of topics, it does not pretend to provide a complete coverage of all REDD+ issues. There is limited attention paid to issues around global REDD+ architecture, for example, although some chapters touch on this, e.g. finance (Chapter 7), reference levels (Chapters 14 and 16), emission factors (Chapter 15) and safeguards (Chapter 17). Similarly, most of the national level policy analysis focuses on the politics of REDD+, and less on the adequacy of policies, their implementation and their impacts.

Most of the empirical material presented in the book is based on a major research effort by CIFOR and partners called the Global Comparative Study on REDD+ (GCS). The project is described in the Appendix. It has yielded a wealth of information from 5–12 countries (depending on the study concerned), allowing for comparative analysis and robust conclusions. This book is the first synthesis of research results from the project.

A recurring question within the project is: *What is REDD+?* (see also Box 1 in Angelsen 2009). Definitions occur in two important dimensions. First, REDD+ has a *vertical dimension,* where it can refer to the overall idea, the objective of reduced emissions and increased removals, a set of policies or actions to achieve that objective, the outcome resulting from these or the process involving all of the aforementioned elements. Second, it has a *horizontal dimension* related to scope. A broad definition, based on the official definition of UNFCCC from COP13 in Bali in 2007, holds that REDD+ comprises local, subnational, national and global actions whose primary aim is to reduce emissions from deforestation and forest degradation and enhance forest carbon stocks in developing countries. A narrower definition, used in GCS to select target REDD+ projects for research,

specifies that the primary aim is related to greenhouse gas (GHG) emissions and removals, *and* that actions should include result-based or conditional payments.

The authors of this book intend it to serve as a critical analysis of how REDD+ is unfolding in different arenas. While we try to keep our distance, we are also concerned researchers. We are worried about climate change, about the destruction of forests and about the poverty and well being of people living in forest areas in developing countries. We share the overall objective of REDD+ to reduce GHG emissions, but may have diverse views on what the key challenges are and how to realise the goals of REDD+. While the book contains some broad messages, the observant reader will also find divergent views and emphases across the chapters. That's the way it should be.

The chapters are written in an accessible style, but are based on rigorous research. The book should provide information and critical assessments to a variety of stakeholders: REDD+ practitioners and project implementers, policy makers at national and subnational levels, international negotiators, donors, researchers, journalists and any others with an interest in the challenges and choices that come along with trying to implement the grand REDD+ idea.

1.3 Organisation of the book

The book is divided into three parts. **Part 1: Understanding REDD+** sets out the framework for the analysis and provides a context for much of the remainder of the book. **Part 2: Implementing REDD+** provides several topical studies on REDD+ discourse at the national and local levels and considers the political economy of designing and implementing REDD+. **Part 3: Measuring REDD+** tackles the challenge of how to measure results in a result-based REDD+.

1.3.1 Part 1: Understanding REDD+

Many of the chapters in this book analyse the politics of REDD+ using the 4Is framework presented in **Chapter 2**. The 4Is consist of: *institutions* (rules, path-dependency or stickiness), *interests* (potential material advantages), *ideas* (policy discourses, underlying ideologies and beliefs) and *information* (data and knowledge, their construction and use) (Figure 1.1). The chapter uses these concepts to discuss how transformational change can occur and argues that this might happen for three different reasons: REDD+ has the potential to change fundamental economic incentives; REDD+ brings new information and discourses; and REDD+ brings new actors into the arena and may lead to new coalitions for change.

Using this framework, **Chapter 3** tracks key changes in REDD+ since it entered the global stage in 2005. First, it notes that REDD+ has been remarkably

1. Understanding REDD+
Ch 2 The 4Is framework
Ch 3 Evolution of REDD+
Ch 4 REDD+ in the global economy

Institutions
path-dependencies and stickiness

Interests
materialistic, individual–organised

Ideas
discourses, ideologies, beliefs

Information
data, knowledge

2. Implementing REDD+
Ch 5 National policy making
Ch 6 Integrating scales
Ch 7 Funding REDD+
Ch 8 Benefit sharing
Ch 9 Tenure and rights
Ch 10 Proponent challenges
Ch 11 Local hopes and worries
Ch 12 The geography of REDD+ projects

3. Measuring REDD+
Ch 13 Performance indicators
Ch 14 Baselines and monitoring in projects
Ch 15 Emission factors
Ch 16 National reference levels
Ch 17 Safeguards

Figure 1.1 Structure of the book

successful as an idea and attributes this success to the idea itself and its promise to serve different actors and interests and bridge the environment and development agendas. The authors argue that REDD+ has changed in major ways: i) moving from single (carbon) to multiple objectives; ii) developing policies and practices that go well beyond result-based payments; iii) paying more attention and providing more resources to the subnational and project (rather than national) levels; and iv) being funded mainly by international aid budgets and through the efforts of REDD+ countries, rather than from carbon markets. Now, the main characteristic of REDD+ that made it different from past efforts in the forestry sector – i.e. large-scale result-based funding – is at risk of being overshadowed by other objectives and approaches, thus endangering its effectiveness.

The global economy represents an important contextual variable for REDD+ development. **Chapter 4** tracks four key trends that have increased pressure on forests and have made REDD+ implementation more challenging: i) the expansion of global demand for food, energy and materials; ii) a growing integration of food, fibre and energy markets; iii) persistent price volatility in global food and agricultural markets; and iv) large-scale land acquisition. The chapter looks at how these forces shape land uses in the Brazilian Amazon, East Africa and Indonesia. The four trends increase the opportunity costs of REDD+, which, given the dim prospects of long term funding raises questions about the feasibility of PES-like schemes being able to make conservation sufficiently attractive to forest owners. The chapter concludes that relevant policies must address both the supply and demand sides in producer and consumer countries.

1.3.2 Part 2: Implementing REDD+

The largest section of the book deals with the experience of implementing REDD+, including the ways in which different facets of REDD+ are being shaped in the policy arena and what happens when REDD+ ideas meet realities on the ground. The first five chapters of this section focus on national level issues and the integration between national and subnational levels, while the last three deal exclusively with REDD+ subnational projects. Most chapters draw on the research done by the GCS.

The national policy arenas in REDD+ countries are a – or perhaps *the* – key arenas for determining the future of REDD+. **Chapter 5** draws on political economy and media analyses in seven REDD+ countries (Bolivia, Brazil, Cameroon, Indonesia, Peru, Nepal and Vietnam). Using the 4Is framework, the authors seek to understand national policy processes and discourses and to identify major constraints to effective REDD+ policies. The chapter argues that four factors are critical for overcoming political-economic hurdles: i) the relative autonomy of a nation state from key interests that drive deforestation

and forest degradation; ii) national ownership over REDD+ policy processes; iii) inclusiveness of REDD+ policy processes; and iv) the presence of coalitions that call for transformational change. Results from country profiles and the media-based discourse analysis indicate that all countries struggle to fulfil these criteria. In addition, formulating and implementing effective national REDD+ strategies is particularly challenging in countries where international actors are the sole force driving REDD+ policy processes.

Achieving reduced forestry emissions is inherently a multilevel puzzle. Local people face global demands for climate change mitigation, which must be met through existing and emerging national and subnational institutions and structures. **Chapter 6** argues that if the interconnections between the national and subnational levels are disregarded, REDD+ could fail. The challenge is to match institutions and incentives across the levels, ensure the flow of information required to implement REDD+ and enable the negotiation of actors with different interests across all levels. The chapter provides anecdotal evidence from three countries (Brazil, Indonesia and Vietnam) on the challenges and opportunities of multilevel governance in two areas: measurement, reporting and verification (MRV) and emissions leakage.

A key element of the multilevel governance challenge is the need to ensure flows of funding to the actors that undertake REDD+ actions and this is addressed in the two chapters that follow. **Chapter 7** looks at the overall issue of REDD+ finance and includes a discussion about and estimates of REDD+ costs. It notes that REDD+ finance faces an inflection point: while short-term finance is available, disbursements are slow and investment opportunities scarce. At the same time, there is no adequate and predictable long-term strategy on how to meet the financial needs of REDD+. In the absence of an international climate agreement and with the slow growth of REDD+ funding from carbon markets, about two thirds of the international finance so far has come from development aid budgets. Public sector finance from international donors and REDD+ country governments is likely to dominate REDD+ financing in the short to medium term.

The distribution of REDD+ funding to different actors is one of its most important design aspects. **Chapter 8** gives an overview of major debates related to the design and implementation of a REDD+ benefit sharing mechanism. Benefit sharing is important for creating positive incentives for actors to reduce carbon emissions, but it also has distributional implications and must be fair in order to build greater legitimacy and support for REDD+. While the effectiveness versus equity debate is a major discourse, there are several nuances within each of them. The chapter also provides a number of examples of planned or recently established benefit sharing mechanisms underway in REDD+ countries and in subnational projects.

Benefit sharing is related to the question of carbon rights, which in most countries is closely associated with land rights and tenure. **Chapter 9** notes that REDD+ can be used as an incentive to support forest tenure reform, while at the same time, tenure reform is a strategy to support REDD+. Tenure reform can become an important part of the transformational change that REDD+ seems both to initiate and depend upon for success. The chapter provides a broad overview of critical tenure issues in six REDD+ countries (Brazil, Cameroon, Indonesia, Peru, Tanzania and Vietnam) and describes progress so far in dealing with them. While REDD+ has brought much attention to tenure, efforts at the national scale to address land and carbon tenure issues have been limited. At the same time, project-level interventions to address tenure encounter substantial obstacles if they do not have national backing.

The following three chapters focus only on local level and subnational REDD+ projects. Chapter 10 looks at projects from the proponents' point of view and Chapter 11 from local villagers' perspectives, while Chapter 12 takes a birds' eye view and focuses on the location of projects.

The original, key idea of REDD+ was to establish a PES system that would make payments from the international level to individual forest users. **Chapter 10** shows, based on surveys of project proponents, that most of the analysed REDD+ projects combine the PES approach with a more conventional integrated conservation and development project (ICDP) approach, emphasising the enforcement of forest regulations and providing alternative sources of livelihoods. This *hybrid approach* is useful, in part because of uncertainties related to the future of REDD+, the funding stream in particular. Under conditions of policy and market uncertainty, this hybrid structure enables proponents to make early progress on project establishment and the ICDP approach can serve as a fallback option if PES fails to materialise. However, this hybrid approach may also undermine what was supposed to be one of the most powerful features of REDD+, with potentially negative effectiveness and equity consequences.

The PES idea promises a win–win menu: local forest users will choose forest conservation if the compensation they receive is higher than potential earnings from alternative forest uses. In practice, REDD+ may, with the hybrid model, be less straightforward and the outcomes uncertain. **Chapter 11** reports on a detailed household survey in GCS project areas on local perceptions, hopes and worries. The results are clear: local people think of REDD+ as being primarily about forest protection, while their main hopes and worries concern income and livelihoods. The study highlights the importance of incorporating local concerns about REDD+ when developing the communication and intervention strategies that are planned or undertaken by project proponents.

REDD+ success hinges not only on local support, but also on interventions being targeted to areas with high levels of deforestation and forest degradation, that is, areas where they can yield real emission reductions (i.e. additionality). **Chapter 12** looks at the location of projects, using various sources of information, including a global database on REDD+ projects developed by GCS. At the international level, the analysis finds that countries with high biodiversity and more protected areas are more likely to have REDD+ projects, which fits with proponents' assertions that they consider biodiversity co-benefits when selecting sites. A detailed study in the two main REDD+ countries – Brazil and Indonesia – suggests that projects are more likely to be established in areas with high deforestation rates and forest carbon densities, a welcome conclusion from a REDD+ perspective and consistent with a focus on additionality.

1.3.3 Part 3: Measuring REDD+

A key feature of REDD+ is that it should be performance- or result-based, which, quite obviously, requires that results will have to be measured. The ultimate outcome is measured in terms of reduced emissions (or increased removals), and this requires essentially three types of information: i) activity information (e.g. area converted from primary forest to crop land); ii) emissions factors (e.g. reduction in carbon per hectare when converted from primary forest to crop land); and iii) the reference emission level, or business as usual baseline (i.e. the emissions without REDD+). These are linked as follows:

*Emissions reduction = (activities * emission factors) – reference emissions*

Three chapters of Part 3 address these elements. Chapter 14 concerns the measurement of activities and baselines at the local level, Chapter 15 addresses emission factors, while Chapter 16 looks at reference levels with a national-level focus.

The lack of reliable data on emissions and removals in many countries implies, however, that a performance-based system using changes in forest carbon, as the criterion will be difficult to implement for some time. **Chapter 13** therefore argues that, in the medium term, most payments will be for readiness and policy reforms, rather than for proven emissions reductions. Hence, good performance indicators are critical for all three REDD+ phases, in particular for Phase 2 where the focus is on policy performance. Unfortunately, there has been little focus on such performance indicators in the REDD+ debate. The chapter argues that valuable lessons on governance indicators can be learned from the aid sector: avoid seeking the perfect indicator and use expert judgment extensively.

Chapter 14 notes that over the past few years, robust standards and methods have been developed for estimating emissions from deforestation at the project level. The chapter presents and discusses one of these standards in particular, namely the verified carbon standard (VCS). It also looks at the adoption of monitoring and baseline standards among project proponents in GCS, observing that most of these projects might face problems in complying with some of the basic VCS requirements. This is mostly due to the methods used to predict future deforestation, the lack of data for constructing historical deforestation rates and the use of non-permanent carbon stock sampling plots. The next generation of projects should learn from this experience by identifying or developing suitable methods *before* investing in the development of their baselines and MRV systems.

Emission factors are needed to convert area estimates of deforestation and forest degradation to emissions and carbon stock changes, both in local REDD+ projects and at the national level. **Chapter 15** notes that emission factors account for as much as 60% of the uncertainty in GHG inventories. Country or region-specific emission factors are lacking for most tropical countries, making it impossible to accurately and precisely estimate emissions from sources and removals by sinks in national REDD+ programmes and REDD+ demonstration activities. Significant investments and coordinated efforts are required as part of readiness financing in order to overcome data limitations and institutional insufficiencies. The constraints can be overcome if coordinated, targeted investments are made and productive partnerships are developed between the technical services in REDD+ host countries, intergovernmental agencies and advanced research institutes in developed countries.

The issue of developing national reference levels and reference emission levels is dealt with in **Chapter 16**. The challenges relate to the lack of quality data in many countries, genuine uncertainties in future rates of deforestation and forest degradation, and potential incentives for biased estimates. The chapter proposes to deal with these challenges through a stepwise approach to developing forest reference levels and reference emission levels, which reflect different country circumstances and capacities. This can facilitate broad participation, early start-up and motivation to improve over time. The uncertainty of any predictions is also noted and options to deal with it are discussed.

Finally, REDD+ is not only assessed on the achieved reductions in emissions, but also on the extent to which it complies with broadly accepted safeguards. **Chapter 17** observes that the early adoption of national and project-level social and environmental standards suggests that REDD+ policy makers, project proponents and investors value REDD+ safeguards. Drawing on GCS

research, the chapter discusses the safeguards, discourse and actions at the international, national and project levels. It notes that the REDD+ safeguards dialogue needs to move from high-level international discussions to actions on the ground. Achieving 'free, prior and informed consent' (FPIC) remains a challenge for a variety of reasons. "FPIC is an impossible dream we are chasing," notes one project proponent.

Chapter 18 summarises the book and looks ahead. Changes in REDD+ over the last five years have led to significant shifts in the likely size and composition of financing, the likely pace and cost of implementation and the divergence of interests across actors and levels. Challenges resulting from these changes include the 'aid-ification' of REDD+, sequencing problems faced by project proponents and less certain rewards for REDD+ efforts by forest countries and communities. In light of the uncertainty related to the magnitude and form of REDD+ finance, the chapter proposes 'no regrets' policy reforms and investments. These include building broad political support for REDD+ by reframing it as an objective rather than a programme, building the foundation for successful REDD+ implementation, and undertaking policy reforms that should be pursued regardless of climate objectives. Such reforms include clarifying tenure, improving governance and removing costly subsidies that promote deforestation and forest degradation.

Part

Understanding
REDD+

1

Seeing REDD+ through 4Is
A political economy framework

Maria Brockhaus and Arild Angelsen

- Analysing REDD+ with 4Is – *institutions* and their path-dependencies and 'stickiness', actors and their *interests, ideas* and *information* – can be useful to understand what hinders or enables change.
- Transformational change beyond the forestry sector is required to fully realise the mitigation potential of REDD+, but economic interests and power structures pose challenges to such change.
- REDD+ can also serve – and already does to some extent – as a game changer. New economic incentives, new information, growing public concern about climate change, new actors and new policy coalitions all have the potential to generate transformational change.

2.1 Introduction

This chapter introduces a conceptual framework to analyse the politics of REDD+, a framework that is then applied in subsequent chapters. Through a political economy lens, we focus on *institutions, interests* and *ideas* (Hall

1997).[1] In addition we introduce *Information* as a fourth element for effective policy change (Angelsen 2010a). We label this the '4Is framework': *Institutions* (rules, path-dependencies or stickiness), *Interests* (potential material advantages), *Ideas* (policy discourses, underlying ideologies or beliefs) and *Information* (data and knowledge, and their construction and use). While acknowledging the interdependence between the 4Is, we will unpack each element of this framework in the following sections. The 4Is allow us to identify and conceptualise constraints, challenges and opportunities across relevant topics in REDD+ policy arenas.

This framework also points to possible ways of breaking political logjams and overcoming the inherent 'chicken and egg' problem of transformational change. The REDD+ idea and its accompanying economic incentives should initiate change away from business as usual, but for REDD+ to fully achieve its main objective of reduced emissions, there need to be upfront changes in REDD+ policy arenas at all levels. Although this dilemma is not unique to REDD+, it has received only limited attention in debates and the literature. We seek to address this by asking, what motivates or hinders actors in REDD+ policy arenas to undertake transformational change processes?

Section 2.2 of this chapter defines our understanding of transformational change and why it is needed to realise the potential of REDD+. In Section 2.3 we discuss what constrains or enables change for REDD+, introduce the 4Is framework and describe each of the Is. Section 2.4 discusses possible ways to overcome the 'chicken or egg' problem of REDD+ and transformational change. We conclude with an analysis of whether REDD+ is launching a new way forward or is itself being shaped and diluted by entrenched business as usual interests.

2.2 Transformational change and the REDD+ policy arena

In the context of REDD+, we define transformational change as *a shift in discourse,*[2] *attitudes, power relations, and deliberate policy and protest action that*

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1   Numerous frameworks have been used across scientific disciplines to better analyse what we are calling here institutions, interests, ideas and information. Even though terminology and perspectives vary, they do not differ as much as, for example, when sociologists use concepts of culture, knowledge, power and history. Hall (1997) and Grindle (1999) apply these to the discipline of political economy. With regard to changing strategies for action during both settled and unsettled periods, Swidler (1986) provided deep insights in culture's causal role in shaping action and acting as a toolkit on which actors can draw to realise new strategies.

2   Dryzek defines *discourse* as "a shared way of apprehending the world". Embedded in language, discourse enables those who subscribe to it to interpret bits of information and put them into coherent studies or accounts. Each discourse rests on "assumptions, judgements and disagreements" (Dryzek 1997:8). In the environmental field in particular, discourses can be highly disparate and conflicting.

leads policy formulation and implementation away from business as usual policy approaches that directly or indirectly support deforestation and forest degradation (see also Chapter 5). Such a shift is embedded in and translated by changes in major formal and informal institutions[3] relevant to REDD+ implementation, including changes in coordination and transparency across multiple levels of governance.

Examples of transformational change in the context of *REDD+ policy outcomes* include: i) change in economic, regulatory and governance frameworks, including the devolution of rights to local users; ii) removal of perverse incentives, such as subsidies and concessions that serve selective economic interests and stimulate deforestation and forest degradation; and iii) reforms of forest industry policies and regulations that effectively reduce unsustainable extraction (Kanninen *et al.* 2007). Such change is required especially where forest destruction is linked to rent seeking and rent creation (Ross 2001) – that is, in situations where powerful groups have gained access to valuable forest land, timber or other resources, and use their power to capture and/or enlarge the forest rent. Transformational change at the national level thus implies changing the policy framework from one that stimulates forest exploitation to one that promotes forest conservation and sustainable use.

The REDD+ arena, in which these changes are supposed to occur, can be split into several sub-arenas: climate negotiations, development aid, national policy and local realities (Chapter 3). Here we look at an aggregated REDD+ arena, but with particular reference to the national policy arena.[4]

The REDD+ arena has much in common with other (climate) policy arenas. However, there are distinctive characteristics of REDD+ policy arenas that need to be factored into the analysis when applying the 4Is and which make the task of transformational change more challenging:

Multilevel institutions and multilayered processes that are embedded, sequential and hierarchical in nature, are a key characteristic of REDD+ (Chapter 6). These multiple levels within institutions create both challenges and opportunities, particularly when decentralisation or recentralisation is underway. For example, global frameworks and agreements can provide

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3 Following Douglass North, we understand *institutions* to be "the rules of the game in a society as they structure incentives in human exchange, whether political, social, or economic. ... The purpose of the rules is to define the way the game is played. But the objective of the actor or the team within that set of rules is to win the game" (North 1990:3-5). Rules are conceptually differentiated from the players in North's definition.

4 It is however, important to note that processes and decisions in one particular national policy arena may also influence others and can create spillover effects, particularly at the regional level (e.g. Amazonas, Congo Basin and in the Southeast Asian region).

funding for local implementation, local results can provide national governments with revenues from the sale of carbon credits, and national laws can enable or disable local action. Improved multilevel coordination is required for REDD+ success and is ongoing in many REDD+ relevant fields, including benefit sharing (Chapter 8) and monitoring, reporting and verification (MRV) and leakage (Chapter 6).

Multiple actors with different authorities and interests, following divergent and contradictory discourses, beliefs and mental models, also characterise the REDD+ arena. This is evident in the power dynamics within the UNFCCC negotiations. In national policy arenas, development and profit-making interests in the form of forestry industries, agribusiness, and even small-scale agricultural producers clash with conservation proponents, who want to see some forests left untouched. At the local level, prospects for employment in large plantations or involvement in outgrower schemes for oil palm often overshadow the benefits arising from the variety of non-timber products and services that standing forests provide. In addition, actors who benefit from both forest exploitation and from intact forests are not necessarily those living within or adjacent to those forests.

Governance structures are situated along a spectrum between markets and the state, and can take the form of hierarchies, coalitions or networks. REDD+ countries have political regimes ranging from democracies to authoritarian states, and this has implications on the tradeoffs that must be considered in equitable, effective and efficient REDD+ implementation (Chapter 5). Another important REDD+ debate concerns the degree of market linkage in REDD+ (Böhm and Dhabi 2011; Michaelowa 2011; Newell 2011), and the relative weights of different levels of governance.

Context dependence implies that broader policy change well beyond the forestry sector is required to achieve REDD+ objectives. This also points to hindrances to transformational change, as the forestry sector in important REDD+ countries has for decades been linked to political and economic power, for example, by allocating forest resources (rent) to individuals and groups to build political support and coalitions.

While these characteristics are not unique to REDD+, the magnitude of these challenges sets REDD+ apart from other agreements. For example, typical mitigation projects under the Clean Development Mechanism (CDM), such as hydropower or landfills or even afforestation/reforestation (A/R), are relatively simple compared to REDD+. In this highly complex arena, transformational change has to occur if deforestation and forest degradation are going to be effectively addressed.

2.3 The 4Is framework

2.3.1 Overview of key elements

Figure 2.1 presents a schematic diagram of the REDD+ policy *arena*. It is characterised by a multitude of international, national and subnational *actors*, including: ministries, agencies and other government bodies; development and environmental NGOs; indigenous rights organisations; business groups; political parties; research organisations and think tanks; and participatory venues such as roundtables and civil society forums. Groups such as 'forest-dependent people' may be represented by the above groups or have self-declared representatives who act on their behalf in policy arenas.

All of these actors operate within existing 'rules of the game' or *institutions*. Norms, regulations, and other formal and informal institutional arrangements are shaped by a history that has enabled and often stimulated deforestation and forest degradation – and which were, at least in part, created to serve the *interests* of some of the actors in the REDD+ policy domain. Consequently these actors may have limited interest in change, even though the current situation may not lead to socially and environmentally optimal results. But interests and the power to realise them can also change over time in response to changing institutions, new economic opportunities and incentives, and new ideas and information.

Actors in the REDD+ policy arena adhere to specific *ideas* (including ideologies) and often hold strong beliefs about how to manage the country's forests. They employ discursive practices to legitimise the pursuit of their interests. Indeed, the REDD+ arena is populated with distinct ideologies about what REDD+ is fundamentally about and its priorities (and strategies) for action (see Box 3.2).

Across levels and scales in the REDD+ policy arena, discourses unfold with diverse and often conflicting *information*. Knowledge is used and abused in political negotiations to justify how and why – or why not – to implement REDD+. Along with this political dimension is the technical dimension, in which actors have different capacities in accessing, processing and providing information.

Taken together, the 4Is shape the choices of what should and could be the contribution of forest and forested land to social (and individual) welfare, and the form that contribution could take.

In Figure 2.1, an ideal scenario would be one where a REDD+ idea enters the arena, leading to a revision of existing endogenous incentive structures and institutions. The degree to which these new ideas become adopted and
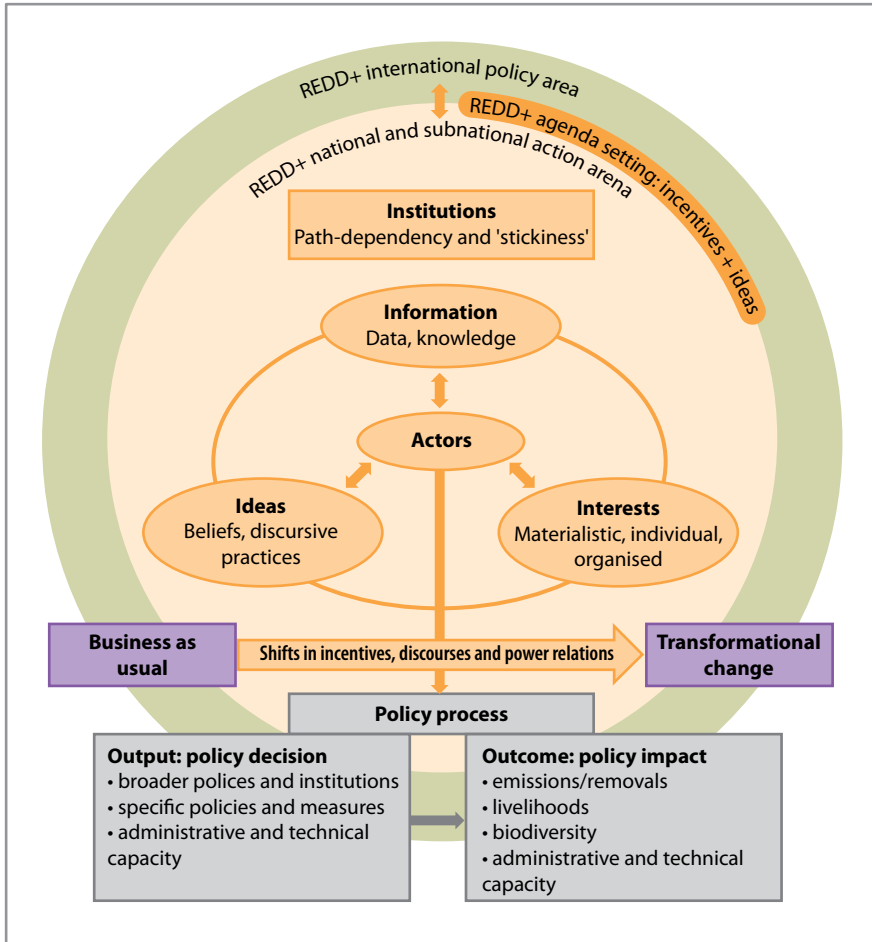
Figure 2.1 REDD+ and the 4Is

lead to desired policy changes in the short and medium term depends on: i) the dynamics inside the entire arena, and ii) the interplay among the 4Is that allows for shifts in incentives, discourses and power relations inside the national and subnational policy arena. The scenario depends on countries' institutional contexts and existing power relations as well as the stage of the REDD+ process (Chapter 5). The politics around the Indonesian Forest Moratorium clearly illustrate this interplay of constraining and enabling factors for long-term change (Box 2.1).

We discuss how to attain long-term change in Section 2.4. First, however, we examine in detail how these 4Is constrain or enable the negotiation of policy outputs and outcomes that can ultimately lead to transformational change and reduced forest emissions.

Box 2.1 Indonesia's Forest Moratorium: The politics of the possible
Frances Seymour

National-level REDD+ policies are initiated and crafted by a complex mix of policy actors, both domestic and international, inside and outside of government. The contours of Indonesia's two-year moratorium on new forest concession licenses, and the process that led up to its announcement, provide an illuminating example of 'the politics of the possible' when constituencies for transformational change confront vested interests in business as usual.

Commitment to impose "a 2-year suspension on all new concessions for conversion of peat and natural forest" was one of the key elements in the REDD+ 'Letter of Intent' (LOI) signed in May 2010 between the Governments of Indonesia and Norway. Although the original target date was 1 January 2011, the Presidential Instruction (Inpres) enacting the moratorium was not issued until a week before the first anniversary of the LOI in May 2011. The delay, accompanied by swirling rumours regarding the various versions under consideration, suggest a protracted struggle among the interests seeking to influence its scope. These interests include the national REDD+ Task Force (located in the President's Office) and its supporters in civil society, the Ministry of Forestry, and corporations with business models dependent on continuing forest conversion, including both agribusiness and mining. Because the Inpres was not retroactive and did not apply to licenses already 'approved in principle' by the Ministry of Forestry, the 5-month delay also enabled private interests the opportunity to obtain new licenses. Among other provinces, this occurred in Central Kalimantan, which was selected to be the REDD+ pilot province under the LOI.

A spatial analysis of the Indicative Moratorium Map that accompanied the Inpres resulted in an estimate of 22.5 million hectares of forest newly given temporary protection by this REDD+ policy instrument. This was a much smaller area than constituencies for REDD+ had hoped for, mainly due to the interpretation of 'natural forest' in the LOI to mean 'primary forest' in the Inpres, thus excluding some 46.7 million hectares of logged-over and other secondary forest, which is still rich in carbon and biodiversity. Furthermore, even the forest area covered by the Inpres is subject to exemptions for activities 'vital' to national development, including those for food and energy security. Such exemptions, when coupled with still-available secondary forest and already-licensed 'land banks' reportedly held by oil palm and other companies, suggest that the moratorium holds limited potential to constrain business as usual forest conversion.

Nevertheless, the moratorium's broad coverage of peatland forests could result in substantial emission reductions if its enforcement in fact reduces the rate of destruction, drainage and conversion of these carbon-rich ecosystems. In addition, the Inpres commitment to regular and transparent review and revision of the Indicative Moratorium Map represents a significant step forward in Indonesian forest governance. This process prompted the release of the Ministry of Forestry's 2009 land cover data, opening a previously closed window for public scrutiny, while periodic revisions of the Indicative Moratorium Map provide a new vehicle for civil society engagement in forest policy making.

Based on Murdiyarso *et al*. (2011).

2.3.2 Institutions: Path-dependencies and 'stickiness'

To understand historical change, North (1990) sees a key role played by institutions and how they shape and are shaped by societies through time. In North's framework, institutions are sometimes developed to capture economic opportunities for the society at large, but groups may also have the power to shape institutions to serve their particular interests. Furthermore, institutions can be seen as a public good, and there is therefore a collective action problem to be solved in order to provide effective institutions.

Established rules and power relations restrict the options for institutional change through what is called path-dependency and 'stickiness' (see Baumgartner *et al.* 2011). Path-dependencies are a reality for REDD+: *what was* and *what is* shapes *what can be*. For example, existing regime types, centralised or decentralised governance structures, and colonial or postcolonial norms often include embedded patterns of deforestation (see Box 2.2).

'Stickiness' is characterised by the resistance to change often seen in state organisations responsible for the management of natural resources. Ministries of forestry in forest-rich countries may be afraid of losing parts of their sphere of influence, or ministries of agriculture fear that REDD+ will restrict opportunities for new agricultural land. One way to overcome this institutional stickiness would be to create new institutions and introduce new actors, but this comes with its own tradeoffs. Formal power typically rests with the 'stickiest' organisations – those with enough influence to resist change – while new institutions and actors are ignored or remain marginalised.

2.3.3 Interests: Material, individual and organised

'Interests' are the material interests of actors and actor groups in the REDD+ policy arena. Different actors and groups in the REDD+ policy arena have different interests and potentials to realise material advantages with, without and through REDD+.

Various interests, for example those related to economic benefits, influence actors' positioning in the REDD+ arena (Peskett and Brockhaus 2009). Actors negotiate their interests in REDD+ policies and processes horizontally, vertically and across stages of the policy making process. Horizontal negotiations take place, for example, among ministries of forestry, agriculture, mining, planning and finance. Vertically, negotiations can take place, for example, among project implementers, civil society actors and negotiators. Coalition building among different actors leverages political power to realise interests. Which interest wins is often a result of a combination of economic and political power. However, coalition building is also hampered since these interests are often conflicting or have tradeoffs, even inside actor groups.

Box 2.2 Institutional path-dependencies in the Congo Basin
Samuel Assembe-Mvondo

Congo Basin countries are elaborating strategies for the implementation of the REDD+ mechanism. Reforms to adapt land tenure systems to international agendas are ongoing but challenges are characterised by conflicting coexistence between a prominent statutory law and an excluded and/or marginalised customary law.

For example, during the period of German administration, large areas of land in the Bakweri tribe region of Cameroon had been allocated to German companies and individuals for the purpose of growing cocoa, bananas, rubber and oil palms. This model was followed by the British colonial administration which created the Cameroon Development Corporation, the first and biggest agro-industry in Cameroon, under state ownership. Following independence, the legislative reforms of the postcolonial administration aimed at adapting the colonial legislation to the new status of independent States. This, however, led to perpetuating the dominance of written law over customary laws. This gradually eroded customary practices for the benefit of the legal system imposed by European colonial authorities. Thus, the postcolonial land tenure system overshadowed customary land tenure systems and incorporated customary land, which was considered to be *vacant and unoccupied*, into State land. Local communities were almost completely stripped of their land. Customary ownership or tenure rights were replaced with user rights granted to farmers and local communities and the possibility for any operator to resort to registration. State monopoly over land was confirmed in land laws and systematic registration. Indeed, the introduction of a new land law involved the condemnation of indigenous notions of space management. In this context, the only customary user right recognised or tolerated by statutory law is the *Droit de hache* (wood cutting or axe rights). This term is used to describe the rights arising from clearing or cutting the forest with the agreement of the first occupier. These rights derive from and are based on continuous usage (historical precedent).

The Democratic Republic of Congo (DRC) is a good illustration of such a situation. Indeed, the DRC land tenure law passed in 1973 and modified in 1980, states that all land and natural resources belong to the State. Thereby, the State does not recognise in that time any of the rules relating to access and control of land and natural resources that emanate from the local community. The postcolonial situation characterised by exclusive State ownership of land and forest resources diminished with the advent of the Rio Conference and social and democratic demands by grassroots organisations in the early 1990s. Since then, current forest legislation (2002) now recognises that local stakeholders should enjoy genuine rights to manage land and natural resources (community forest).

Box 2.2 continued

However, another trend is just starting through the adoption by the COMIFAC (Central Africa Forest Commission) Guidelines on the Participation of Local Communities and Indigenous People. This represents a break with the past colonial legal system – an innovation as the provisions of this instrument incorporate emerging mechanisms like REDD+, Forest Law Enforcement, Governance and Trade - Voluntary Partnership Agreements (FLEGT/VPA), PES and the customary ownership of land forest and resources. Furthermore, some Congo Basin countries have also recently adopted specific national legislation on the rights of indigenous populations (e.g. Pygmies), based on the ILO Convention No. 169 on Indigenous and Tribal Peoples and 2007 UN Declaration on the Rights of Indigenous Peoples (notably, Republic of Congo and Central Africa Republic).

The current trends in the evolution of local communities and indigenous peoples' rights presenting an improvement are driven by both subregional (COMIFAC commitments) and international agendas (CBD, FLEGT, REDD etc.), but build on and struggle with colonial and postcolonial path-dependencies.

Business interests can be directed for or against REDD+, depending on the economic activity of the industries or business involved, e.g. pulp and paper industry representatives (who see REDD+ as a threat) versus carbon investors (who see REDD+ as an opportunity). Similarly, state agencies and their spheres of interests and influence can be in conflict over REDD+, e.g. environmental protection agencies versus agricultural ministries. Each side justifies its position with the state's interest in social and economic welfare. However, REDD+ is taking shape in countries where the state and its bureaucratic system is often deeply intertwined with the business sector, and a lack of autonomy from business interests that drive deforestation and degradation will limit state's choices to change current practices. This is valid in particular when rent seeking, fraud, collusion and corruption are practices inside the bureaucratic system that serve individual interests against society's interests (Karsenty and Ongolo 2012). Conflicts or deadlocks can emerge if coalitions for change do not exist or if there is only limited participation of central actors who are part of the current business as usual scenarios and who contribute directly or indirectly to deforestation and forest degradation, such as state and business actors (Chapter 5).

2.3.4 Ideas, ideologies and beliefs: Discourses for business as usual or for change

Actors' actions are not only shaped by the rational pursuit of material interests, but also by ideas and ideals. Different actors have specific *ideas* (concepts or mental constructions) or *ideologies* (a normative set of ideas) in addition to

their material interests. But ideas and ideologies are not an end in themselves. Rather, as Swidler (1986) elaborates in her discussion of culture in action, they form a toolkit that indirectly provides resources for, or directly governs, the way in which actors construct strategies of action.

In a multilevel and multiactor policy arena, a variety of strategies is negotiated by the different actors, and policy change can be a result of those negotiations. Belief systems of actors in a political subsystem have different degrees of resistance to change (Sabatier and Jenkins-Smith 1999). These degrees of resistance vary according to the space for negotiation: i) 'deep core' or fundamental normative beliefs; ii) 'policy core' or basic political positions; iii) 'secondary aspects' or the evaluation of and disputes over various programmes and institutions, and specific policy preferences. Secondary aspects are more negotiable across the advocacy coalitions, and much of the REDD+ action is here. However, Bolivia's role in the UNFCCC – in which Bolivian negotiators rejected the idea of REDD+ due to its association with market-based finance – shows that aspects of REDD+ are touching upon 'deep core' beliefs and political positions.

Public policy and environmental governance is fundamentally a political process, influenced by a multitude of interests, beliefs and discursive practices which are used to frame policy discourses (Hajer 1995; Forsyth 2003; Jasanoff 2009). REDD+ is no exception. The nature of discourse affects policy making, since they frame the problem and present a limited set of choices of what is 'reasonable' or what is put forward as 'the possible' (Hajer and Versteeg 2005) – or what is, in the context of REDD+, 'effective, efficient and equitable'. Chapter 8 on REDD+ benefit sharing provides a good example of this process.

Emerging discourses and discourse coalitions are framed in support of individual or organised interests. Those discourses may legitimise and dominate action and policies in support of deforestation and forest degradation and can constrain the unfolding of new ideas like REDD+. The REDD+ landscape itself is also dominated by various and partially conflicting discourses: i) 'tenure first then REDD+ second' or 'No rights, no REDD+'; ii) REDD+ centralised versus REDD+ decentralised; and iii) REDD+ benefits for those who contribute to efficiency and effectiveness, versus benefits for those who have moral rights based on equity considerations (Chapter 8). At national and global levels, we see perceptions and discourses around sovereignty over natural resources; market and anti-market stances; and global equity (e.g. on the use of REDD+ credits as offsets). National development paradigms likewise influence the REDD+ idea by focusing on the exploitation of natural resources and the realisation of short-term economic gains.

An important aspect of REDD+, further discussed in Chapter 3, is that the concept is sufficiently unspecified to be open to different interpretations,

and therefore can fit fundamentally different normative beliefs, such as those beliefs held by environmental market liberals and 'social greens' (Box 3.1, Hiraldo and Tanner 2011a). New coalitions in the REDD+ policy arena are resulting. Yet strong disagreement is visible when details of REDD+ must be specified, such as how much it should rely on future carbon market funding, and to what extent tenure and rights should be addressed before REDD+ actions are implemented.

2.3.5 Information: Today's global currency

Information is our fourth 'I' in transformational change, yet it is inherently a part of institutions, interests and ideas. Facts, rather than speaking for themselves, are selected, interpreted, and put in context in ways that reflect the interests of the information provider. Foucault and numerous other scholars have provided insights into the close ties among knowledge, discourse and power (see Foucault 1980; Arts and Buizer 2009; Winkel 2012). Above we enumerated several often conflicting discourses. New, emerging information is replacing existing 'toolkits for action' with new ones, especially in what Swidler (1986) called 'unsettled situations'. The global problem of climate change can be considered as such an unsettled situation. But what makes a decision maker replace a development paradigm based on exploitation with a new discourse in favour of standing forests? Using these new ideas as a force for long-term change depends on structural conditions.

In addition, factors such as data disclosure, availability and credibility in REDD+ all contribute to whether information serves to constrain or enable change. Actors have uneven access to information, as well as varying technical capacities to produce, provide and transform knowledge into direct economic benefits or support for public decision making. In the REDD+ world, information is a currency and a source of power.

The collection and sharing of data and information are the nuts and bolts of the REDD+ mechanism, which is under development. More than most policy interventions, REDD+ has a specific target – reduced emissions – which should be quantified. But numbers have their own political economy and are subject to modifications and interpretations (Espeland and Stevens 2008:411) For example, emission reductions are defined relative to a baseline or reference level, and there is no straightforward way to set these (Chapter 16).

Although in theory policy making should be evidence based and solution oriented, political realities rarely match these expectations, either because there is little interest in evidence and solution-oriented action, or because evidence is not produced or made available. The process of policy learning for improved REDD+ policy design, linked to global UNFCCC guidance and

local projects, will need evidence and knowledge brokers. Brokers for policy learning, such as consulting agencies, big international NGOs and research organisations, can also be part of political processes and shape policy making. One example is the publication of the marginal abatement cost (MAC) curve by McKinsey (McKinsey and Company 2009) and their role as policy advisors in REDD+ countries.

2.4 How to achieve transformational change

To achieve what is considered an effective, efficient and equitable response to a global mitigation challenge, transformational change is needed. The ultimate output of the policy process must be change in economic, regulatory and other governance frameworks, as well as reforms of policies inside and beyond the forestry sector. We discuss three ways in which transformational change in the REDD+ area might take root: changes in economic incentives, new ideas and information, and new actors and coalitions.

2.4.1 Changing economic incentives

The provision of international financial resources for the three phases of REDD+ readiness, policy reforms and reduced emissions (Chapter 7) is exogenous to the national and subnational systems in which change is supposed to occur. This is at the heart of the original REDD+ idea: REDD+ should change the basic benefit–cost equation so that the value of a standing forest becomes higher than that of a cleared forest. Smith *et al.* (2004) calls this 'purposive transition' – a deliberate change caused by outside actors.

The logic is compelling, and evidence suggests that the prospect of significant REDD+ financing has already been a game changer in some countries (Chapter 5). But the potential for external funding to become an impetus of transformational change is mitigated by several factors: who loses out completely; who receives less compensation than the cost incurred; who will gain in net terms; and how to deal with uncertainty about the actual future payments.

First, while a country in the aggregate might benefit economically after REDD+ implementation through international funding, not everyone in the REDD+ arena will benefit. In particular, large actors who stand to benefit from continuing business as usual practices are likely to lose. Full compensation to rich and powerful groups is politically unacceptable, particularly in the international REDD+ arenas, and would undermine its credibility and jeopardise long-term funding opportunities. Moreover, most current REDD+ funding is from development aid, which has poverty reduction as the major aim. But broader support for REDD+ is needed, and this can be achieved by ensuring that there is something for everyone. But the key dilemma is that

this might result in a diluted REDD+ policy which is ineffective at reducing emissions. The Indonesian Forest Moratorium can be viewed in this light: it became part of the US$1 billion deal between Indonesia and Norway and gained sufficient support to become a reality, but along the way it involved so many compromises that its potential impact has come to be questioned.

Second, full international compensation of REDD+ costs is unrealistic for most countries for several reasons. Sufficient international funding is unavailable and middle-income REDD+ countries are expected to bear some of the costs themselves as part of the UNFCCC principle of "common but differentiated responsibilities and respective capabilities". This means that countries need to be willing to accept short- and mid-term tradeoffs for a broader long-term vision of green development and averted climate change impacts.

Third, REDD+ incentives during the early stages are not yet realities but rather promises about future results-based payments. This is indeed the nature of the results-based payments; the payments should be made after the results (e.g. emissions reductions) have occurred and are verified. Therefore, trust needs to be built in these promised incentives. Without some predictability in how much REDD+ countries will be paid for the changes they make, REDD+ is less likely to initiate the transformational change it sets out to achieve.

2.4.2 New ideas and information

REDD+ has provided a new discourse on the value of standing forests and their role in sequestering and storing carbon (Cronin and Santoso 2010; Kengoum 2011; May *et al*. 2011a; Pham 2011). While knowledge of this role is not new, REDD+ has raised awareness of the fact that greenhouse gas (GHG) emissions from tropical deforestation contribute 17% of global emissions (IPCC 2007a), and that reducing this is critical to achieve the target of limiting temperature increases to 2°C above pre-industrial levels. In doing so, REDD+ has also contributed to increased awareness of the high risks of global warming.

REDD+ has also put the spotlight on a number of old and new issues that all point to the need for change in business as usual policies and practices in order to realise the REDD+ potential. Examples include: i) indigenous and community rights, and conflicts about forest use between local groups and large scale commercial forest operations, ii) governance, corruption, and the political economy of forest use; iii) inefficiency and high budgetary costs of policies and practices supporting forest-destructive activities.[5] New discourse coalitions that include national and local actors who are joining in the context

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5   Of course, none of these issues are new. Repetto and Gillis (1998) wrote a landmark study on the role of points 2 and 3; point 1 has been raised by NGOs and researchers for decades.

of REDD+ concerns about rights, forest conservation and inequalities in forest exploitation can make a difference.

Finally, an aspect not covered much in the REDD+ literature is its potential to redefine existing roles between developed and developing countries. Forest-rich developing countries have the opportunity to provide a service to developed countries, for which they are paid. This turns the tables on the existing role of developing countries as dependent recipients of development assistance from developed countries. REDD+ could be interpreted as a mechanism for turning tables, by redefining the roles of forest-rich developing countries away from aid dependency towards support to developed countries in providing a global public good (climate mitigation). Thus, REDD+ was perceived by some developing country actors as a contribution to national sovereignty that could encourage domestic actors to engage in REDD+.

2.4.3 New actors and coalitions

Changing economic incentives and new ideas and discourses can lead to shifts in power relations among key actors (Knight and Sened 1995; March and Olsen 1998; Marsh and Smith 2000; Cleaver 2002). With the introduction of REDD+ and the accompanying promise of incentives in national and subnational policy arenas, *de facto* changes occur. Once (or if) forest carbon is defined, those with the rights to that carbon gain power. Possession of information about the concept of REDD+, the potential opportunities that REDD+ can provide, or data that are required to implement REDD+ can be new sources of power. These shifts and the changes in bargaining power can potentially bring about additional change – and indicate transformational change (Figure 2.1).

In addition, new actors enter the REDD+ arena and gain power and influence in decision making (Schroeder and Lovell 2011). As a consequence, they can use their agency to change the political representation of specific interests and could correct existing information asymmetries. These shifts may in turn change power relations. In this way the first threshold is crossed: an exogenous idea changes endogenous power relations, and processes of policy formulation and implementation should reinforce these dynamics towards transformational change.

REDD+ has attracted many actors with different agendas and ideologies, each trying to get a piece of the perceived REDD+ cake. This has resulted in a diversified and less focussed REDD+ agenda, which risks losing the initial characteristics of REDD+ that made it attractive in the first place (Chapter 3). But, such broad coalitions of different interests and actors with different ideologies (see Box 3.1) can also be a basis for transformational changes. A key marker for which scenario will materialise is whether the focus is kept on

REDD+ as an objective (Chapter 18) or whether REDD+ is diluted into a set of activities that fail to significantly reduce emission reductions.

REDD+ has the potential for transformational change, but in the end: "cash is king", and "discourse is queen". Shifts in financial incentives and in discursive practices can provide a powerful means to keep the focus on the primary target: increasing the relative value of standing trees so that fewer of them will be chopped down.

2.5 Conclusions

Reducing emissions through avoided deforestation and forest degradation requires major institutional and policy changes. We provided a 4Is lens to understand the politics and powers in REDD+. The analysis of institutions and their path-dependencies and stickiness, and actors and their interests, ideas, and information can be useful to understand what induces shifts in power relations, incentives and discursive practices.

Despite all the constraints presented, progress has been made in global and national policy arenas. REDD+ has climbed high on international and national agendas, and political processes for building REDD+ architectures are ongoing ever since the idea emerged during COP11 in Montreal in 2005. REDD+ has the potential to be a game changer by creating new coalitions around the value of standing forests (Chapter 5). But transformational change will depend on the strength of these new coalitions, the extent of shifts in discursive practices, and the creation of economic incentives both internationally and domestically that value standing forests more than cleared forests.

In this chapter we have centred the discussion around two stylised outcomes of the REDD+ game: business as usual or transformational change. In most countries the reality will be somewhere in between, and thresholds or tipping points must be overcome, e.g. the formation of new *and* powerful constituencies for change.

The following chapters outline key choices to increase the chances of transformational change, including how to overcome the constraints outlined here and take advantage of emerging opportunities. The extent of change will depend on the ability of agents in REDD+ policy arenas to: i) manage diverse interests across levels and powerful actor coalitions; ii) provide information and capacity to transfer data into knowledge that leads to a shift in attitudes among state and non-state agents; and iii) communicate a bigger vision of REDD+ and climate change mitigation that can replace existing development paradigms.

The evolution of REDD+

Arild Angelsen and Desmond McNeill

- As an idea, REDD+ proved extremely popular, in part because it was sufficiently broad to accommodate different interests. But the concept has evolved, driven by the absence of a new international climate agreement, strong business as usual interests, a large number of actors with diverging agendas, and experience in the field.
- Major changes in REDD+ include the following: i) the focus has moved from carbon only to multiple objectives; ii) the policies adopted so far are not only, or even primarily, directed at achieving result-based payments; iii) the subnational and project, rather than national, levels are receiving a large share of resources; and iv) the funding to date is mainly from international aid and the national budgets of REDD+ countries, and not from carbon markets.
- The initial characteristic of REDD+ that made it different from past efforts in the forestry sector – significant result-based funding – is at risk of being overshadowed by other objectives and approaches, thus endangering the effectiveness of REDD+.

3.1 Introduction

REDD+ has undergone drastic changes since the idea was launched at COP11 in Montreal in 2005, both in terms of how it is perceived and what it has become in practice. While some of these changes arose from a natural maturation of the idea, as we learned and gained experience, they are also the result of REDD+ being thrown into the political arena and altered by differing interests and ideologies (Chapter 2). The understanding of what constitutes REDD+ has been modified, with some actors exercising strong 'definitional power.' Moreover, slow progress in global climate negotiations and the resulting dim prospects for the long term funding of REDD+, as well as strong domestic business as usual interests (Chapter 5), have had major implications for the pace and form of REDD+ development.

Interpretations of REDD+ vary. A broad definition, based on the COP13 decision in Bali in 2007, holds that REDD+ comprises local, national and global actions whose primary aim is to reduce emissions from deforestation and forest degradation and enhance forest carbon stocks in developing countries (Angelsen 2009a). A narrower definition, used to select projects for CIFOR's Global Comparative Study on REDD+ (GCS) (see Appendix), specifies that the primary aim is related to greenhouse gas emissions and removals, *and* that actions should include result-based or conditional payments (Wertz-Kanounnikoff and Angelsen 2009).

This chapter will outline key aspects of the evolution of REDD+ as an idea and practice and review the forces behind the changes that have taken place. REDD+ is – as an idea – a success story and the reasons for this success are reviewed in Section 3.2. Section 3.3 provides a framework for examining how and why REDD+ has changed in four different arenas: climate negotiations, international aid, national policy and local reality. Section 3.4 discusses how REDD+ has changed in four key respects: objectives, policies, scale of implementation and funding. Finally, we consider the implications of these changes for REDD+.

3.2 As an idea, REDD+ is a success story

REDD+ has been a remarkably successful idea. Since RED was launched at COP11 and REDD+ was fully integrated into the global climate agenda at COP13 in 2007, it has come to be regarded as potentially one of the most effective and efficient mitigation strategies available today. Dozens of developing countries have prepared – and some have started to implement – REDD+ policy strategies. Hundreds of local REDD+ projects have been started and researchers and others have been motivated to write thousands

of publications.[1] Donors have pledged billions of dollars to REDD+ (Chapter 7) and new international programmes have been created, such as the World Bank's Forest Carbon Partnership Facility (FCPF), the UN-REDD Programme and the Forest Investment Program (FIP) of the World Bank. We would probably have to go back to the notion of 'sustainable development,' promoted by the World Commission on Environment and Development (WCED 1987), to find a more successful idea in the field of environment and development. Although sustainable development was more of an aspiration than a specific set of actions, it shares with REDD+ the attraction of meaning different things to different people. The vagueness – or broadness – of the idea is, we suggest, part of the reason for its success.[2] Also, as with sustainable development, the attraction of REDD+ derived initially from its promise to be a win–win–win policy: combining reduction in greenhouse gas (GHG) emissions with poverty reduction and the protection of biodiversity.

3.2.1 REDD+ is seen as big, cheap and quick

Greenhouse gas emissions from tropical deforestation constitute about 17% of emissions worldwide (IPCC 2007b), although more recent studies suggest that this share might only be around 12%, in part due to high growth in fossil fuel emissions (van der Werf *et al.* 2009). Reducing emissions from tropical forests not only has significant potential to reduce overall emissions, but reports by Stern (2006) and others convinced policy makers that such an approach would not be costly. According to the Stern report, eliminating most deforestation would cost only US $1–2 per tCO_2 on average, which is very inexpensive compared to almost all other mitigation options. Although these estimates have been criticised and some estimates are higher (e.g. Kindermann *et al.* 2008), a general impression was created that REDD+ would be cheap.

It was also widely assumed that REDD+ is easy and could be done quickly, making it attractive to a range of different constituencies. Speaking at COP13, when the International Climate and Forest Initiative of Norway was launched, Prime Minister of Norway, Jens Stoltenberg said, "Through effective measures against deforestation, we can achieve large cuts in greenhouse gas emissions – quickly and at low cost. The technology is well known and has been available for thousands of years. Everybody knows how not to cut down a tree."[3]

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1   A Google Scholar search cites close to 18 000 publications on REDD+ (accessed 6 March 2012).

2   "(T)he ideas which are most successful in the policy arena are not those that are most analytically rigorous but those that are most malleable, i.e. those that can be interpreted to fit a variety of differing perspectives, achieving consensus by conveying different meanings to different audiences" (McNeill 2006).

3   http://www.regjeringen.no/nb/dep/smk/aktuelt/taler_og_artikler/statsministeren/ statsminister_jens_stoltenberg/2007-4/Tale-til-FNs-klimakonferanse-pa-Bali.html?id=493899

3.2.2 REDD+ represented a fresh approach

Initially, a defining characteristic of REDD+ was the use of financial incentives to change the behaviour of forest users: forest conservation was to become more profitable than forest clearing as a result of payments for environmental/ecosystem services (PES). The logic is compelling. Carbon sequestration and storage are public goods provided by forests and forest owners. There are currently no markets or market-like mechanisms to incentivise forest owners and users to factor the value of these services into their management decisions. Through a PES system, landowners will conserve the forest because they can make more money by doing so. This aspect made REDD+ significantly different from previous forest conservation efforts (Sunderlin and Atmadja 2009). A performance-based approach, with payments made only after results have been demonstrated, was also very attractive to most financing sources.

A second distinctive feature of REDD+ was the magnitude of the funding available, which dwarfed earlier forest conservation efforts, e.g. the Tropical Forest Action Plan in the 1980s. Annual transfers to REDD+ countries were estimated to potentially bring in tens of billions of dollars, according to authoritative reports (e.g. Stern 2006; Eliasch 2008).

Finally, REDD+ aimed for reforms and transformational change beyond the forestry sector (Chapter 2). A broad, national approach was chosen[4] to enable the use of extrasectoral policies, which can have a greater impact than sectoral ones (Kanninen *et al.* 2007). A national approach would also address the challenge of leakage, a major reason why avoided deforestation was not included in the Clean Development Mechanism (CDM) in 2001.

3.2.3 REDD+ was attractive to many actors at different levels

Because REDD+ was supposed to provide compensation for reducing emissions, it represented a win–win solution for most forest actors, including landowners and REDD+ country governments. REDD+ was seen as contributing to both environment and development goals, thus avoiding the 'iron law of climate policy': whenever environmental and economic goals collide, the economic goal will win (Pielke 2010).

A key concept in the Bali Action Plan (UNFCCC 2007) was that REDD+ should involve 'positive incentives', interpreted by many to mean compensation provided by Annex I to non-Annex I countries for achieving measurable reductions in forestry emissions. REDD+ therefore fit well with

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4   While the focus was to be national, a nested approach (Pedroni *et al.* 2007) that starts at the subnational level could, under certain circumstances, be accepted as a temporary measure.

the division established in the Kyoto Protocol: Annex I countries would take on commitments for emissions reductions, while non-Annex I countries would do so on a voluntary basis (more recently expressed as NAMAs – Nationally Appropriate Mitigation Actions: the policies and actions that developing countries agree to take to reduce their greenhouse gas emissions). With some Annex I countries (in particular Norway) willing to put relatively big money on the table, REDD+ served to bridge the gap between the North and South in climate negotiations, putting it several steps ahead of other issues on the UNFCCC agenda. If negotiations failed in other areas (and they often did), REDD+ became the rabbit in the hat to demonstrate that progress could be made.

Until now, it has not been possible to use REDD+ credits as an offset, i.e. to meet obligations for emission reductions by Annex I countries. But the prospect that this will change has been a powerful motivating factor – both for forested, non-Annex I countries that anticipate potentially large revenue streams and for Annex I countries hoping to meet their commitment to emissions reductions at a lower cost.[5]

Support for REDD+ remained high, in part because it remained ill defined. Many difficult issues were left unresolved, e.g. should funding go to compensate large, commercial deforesters or to indigenous groups that are conserving forests. As long as REDD+ was still vague, different interests and viewpoints could apparently be accommodated. For example, it was agreed that reference levels should be based on 'national circumstances,' although no one knows exactly how that term should be defined (Chapter 16). Similarly, the definition of REDD+ from COP13 (UNFCCC 2007) includes "enhancement of forest carbon stocks"; some Parties have interpreted this to include plantations (which are forests, according to the standard FAO definition), while others have not.

In short, for many actors in the climate arena, REDD+ looked like the ideal solution. It could provide quick and cheap emissions reductions and win–win–win opportunities for everyone: large transfers to the South, cheap offsets for the North and funding for conservation and development projects. But as REDD+ began to be tested and more precisely defined, problems began to crop up. As long as REDD+ remained vague, a broad coalition could support the idea. But an idea is not effective until put into practice, and then powerful interests can distort and dilute it.

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5   An exception was Brazil, which was sceptical of this idea from the beginning, partly due to sovereignty concerns and later due to a fear of REDD+ credits crowding out mitigation efforts in Annex I countries. The latter is a valid concern if the overall emission cap remains unchanged, but a key argument for including REDD+ credits in a global carbon market is that the overall cap can be lowered (Angelsen *et al.* 2012).

3.3 REDD+ in different arenas

As noted previously, REDD+ has changed significantly since it was first launched, both as an idea and as a practice. Figure 3.1 provides a simple framework for analysing the changes to REDD+ using the 4Is framework outlined in Chapter 2. The left side of the figure identifies four arenas of relevance to REDD+: the UNFCCC climate negotiations, the aid arena (which includes the conservation arena and has large bilateral donors, multinational organisations and big international NGOs or BINGOs) and national and local arenas. The last two – national and local arenas – are the subject of more detailed discussion in Chapters 5 and 11 respectively.

We will begin by analysing the left side of the figure and will deal with the right side – changes over time in objectives, policies, scale, and funding – in Section 3.4. The formal institutions that connect the global and local levels of REDD+ policy and action are few and weak, but the four arenas are linked in several other ways. Many actors operate in more than one arena and some, like the BINGOs, operate in all of them. The interests and ideas of the various forest actors are therefore evident in all arenas and at all levels. Information is the currency in these arenas: not only technical information but also knowledge that is selected and interpreted by actors to promote their interests. And decisions at one level can frame and constrain discourses, policies and actions at other levels. Global level discourses are, for example, strongly mirrored in national REDD+ debates (see Chapter 5).

These debates may be analysed in terms of a range of competing ideologies, as summarised in Box 3.1. Here, the ideological narratives framing REDD+ positions and proposals are linked to the environmental worldviews of four main groups (after Clapp and Dauvergne 2005): market liberals,
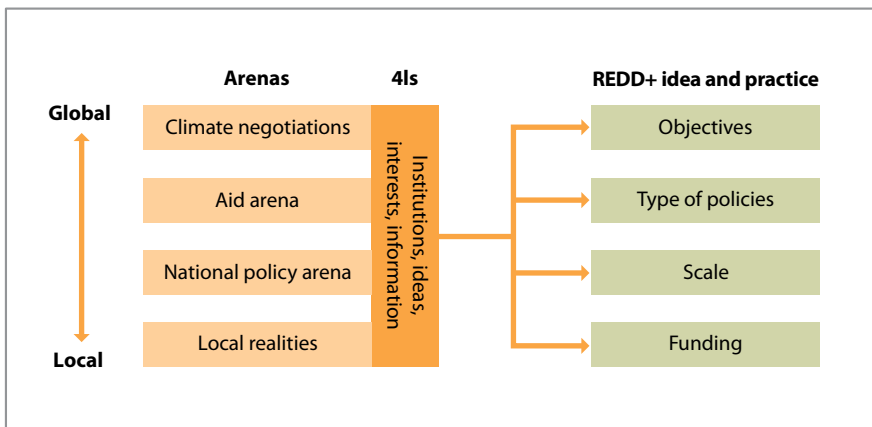
Figure 3.1 REDD+ as an emerging idea and practice

Box 3.1 The role of ideologies in framing the REDD+ agenda
Rocio Hiraldo and Thomas M. Tanner

Negotiating and developing REDD+ programmes have required the engagement of a wide range of actors. While political and financial agendas play a role in developing the REDD+ architecture, different ideological narratives underpin the positions of various actors. The way that the REDD+ debate is framed can justify one or another set of actions (Leach *et al.* 2010). The dominant ideological narratives framing REDD+ positions and proposals can, it is suggested, be linked to four main environmental worldviews (after Clapp and Dauvergne 2005).

1. Forests and economic growth: market liberals
Market liberals favour market mechanisms and view forest products as a major source of economic growth and poverty reduction for developing countries: "Without forest concessions most of the Outer Islands would still be underdeveloped" (Indonesian Ministry of Forestry, as quoted in Gellert 2005:1351). This underpins a view often associated – correctly or not – with the World Bank: that increased private sector involvement and the use of carbon markets are essential for the future sustainability of REDD+ mechanisms.

2. Forests and governance: institutionalists
The ideology of institutionalists centres on the need for strong institutions, good governance and effective laws to protect both the environment and human wellbeing. The main barriers to good governance include flawed policy and legal frameworks, minimal enforcement capacity, insufficient data, corruption and poor market conditions for wood products. This ideology is manifested in some programmes to improve country 'readiness' for REDD+ and make programme participation conditional on meeting standards of good governance. An example is the work of the FCPF and UN-REDD Programme, Australia's bilateral support to Indonesia and Norway's support to Brazil, the Democratic Republic of Congo, Guyana, Indonesia and Tanzania.

3. The ecological value of forests: 'bio-environmentalists'
The worldview of the bio-environmentalists is characterised by ecological limits and the need to modify human behaviour in order to solve global environmental problems. It drives ambitious targets for reductions in emissions and deforestation rates, reflected in campaigns by WWF and Fauna and Flora International. While bio-environmentalists are opposed to the business as usual model, their vision is not always incompatible with the market-liberal approach; they may see carbon markets as a means for achieving greater environmental sustainability. An example of an initiative motivated by a bio-environmentalist ideology would be the Greenpeace

Box 3.1 continued

support for a Tropical Deforestation Emissions Reduction Mechanism (TDERM), which is a hybrid market-linked fund model for REDD+ (Parker *et al*. 2009b).

4. Forests and rights: social greens
Social greens draw primarily on radical social and economic thought and argue that society and the environment cannot be regarded as separate entities. According to this ideology, REDD+ must therefore balance emission reduction goals with the wellbeing of forest communities, including their participation, rights and knowledge. A Friends of the Earth International submission to UNFCCC sums up this notion, stating that "ensuring Indigenous Peoples' and local communities' rights and interests in the design of REDD is beyond a matter of state obligation. A rights-based approach will also contribute to effectiveness and permanence of REDD programmes" (FOEI 2009).

Adapted from: Hiraldo and Tanner (2011b).

institutionalists, bio-environmentalists and social greens. REDD+ can be interpreted within the context of each of these ideologies and disagreements in the specification of REDD+ can frequently be understood as a clash between them.

3.3.1 The climate negotiations

RED – with one D – came onto the global stage at COP11 in 2005, when Parties were invited to submit "their views on issues relating to reducing emissions from deforestation in developing countries" (UNFCCC 2005). UNFCCC's Subsidiary Body for Scientific and Technical Advice (SBSTA), in particular, was asked to report at its meeting in December 2007 (COP13 in Bali, Indonesia). During the intervening period, several meetings were held where long-standing concerns relating to leakage, permanence, additionality and reference levels, scale and monitoring, reporting and verification were addressed (a stock-taking of these and other issues can be found in Angelsen 2008b and Parker *et al.* 2009b).

The scope of REDD+ has been a contentious issue. Forest degradation – the second D – was included in the UNFCCC's definition of REDD+ in 2007, due to the fact that a large share of forest emissions is the result of degradation. But the inclusion happened only after much pressure, including from the countries of the Central African Forests Commission. Furthermore, three additional elements were added to the definition of REDD+ to accommodate different interests: i) conservation, to accommodate the interests of high

forest, low deforestation countries and environmental NGOs; ii) sustainable management of forests, to accommodate the interests of countries with an active forest-use approach; and iii) enhancement of forest carbon stocks, to accommodate the interests of countries with growing forest stocks, such as India and China. The scope debate has largely reflected each country's different forest situation and how they can benefit from an international REDD+ regime.

In addition to including the Parties to the UNFCCC, REDD+ negotiations have been characterised by a very strong presence of NGOs and indigenous groups on issues related to local and indigenous rights and safeguards (Chapter 17). NGOs have demanded, and in many cases have gained, a place at the table in both global and country level discussions. This has influenced the definition and focus of REDD+, e.g. making safeguards a major issue, and has also broadened the objectives and scope of REDD+ (see below).

The most significant impact that the climate negotiations have so far had on REDD+ is perhaps due to what they did *not* achieve, namely a global climate agreement that promises significant long-term funding, e.g. through a cap and trade system with REDD+ credits as offsets. The funding to date has therefore been less than envisioned and has been dominated by non-market sources, which in turn has led REDD+ to further broaden its objectives and scope.

3.3.2 Aid arena

In parallel with the UNFCCC negotiations, actors in the aid arena have strongly influenced the development of REDD+. Most of the money flow is being decided in this arena through bilateral agreements, through multilateral agencies and through the operation of large NGOs, which are also dominant in REDD+ pilot projects (see Chapter 12).

Several initiatives have emerged on the multilateral scene. FCPF, which became operational in June 2008, has created a framework and a policy process for participating countries that helps them get ready for Phase 3 of REDD+ with result-based financial incentives. Currently, 37 countries receive support from FCPF.[6] The UN-REDD Programme was launched in September 2008. A collaboration between FAO, UNEP and UNDP, the programme seeks to assist developing countries to prepare and implement national REDD+ strategies. At present, 14 countries receive support from UN-REDD Programme for their national programmes.[7] FIP provides funding for scaling up financing to projects and investments identified though national REDD+ strategies.

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6   http://www.forestcarbonpartnership.org, accessed 3 April 2012.

7   www.un-redd.org, accessed 3 April 2012.

In addition to funding from multilateral agencies, there are several bilateral initiatives. Norway is by far the largest financial supporter of such initiatives, having concluded US $1 billion agreements with Brazil (2009) and Indonesia (2010). Despite stated commitments to donor coherence, such as those from Busan,[8] donors funding REDD+ often adopt their own procedures and practices.

The multilateral REDD+ partnership was established in May 2010, after the disappointing COP15 in Copenhagen, to serve "as an interim platform for its partner countries to scale up actions and finance for [REDD+] initiatives."[9] The intention was to provide an informal forum for discussions, enhance donor coordination, maintain the REDD+ momentum and perhaps resolve outstanding issues. Nevertheless, traditional lines of conflict have carried over to this forum.

Having shifted in the direction of aid, REDD+ has been subjected to the diversity of actors, multiple objectives and forms of development assistance that characterise that arena, an issue we will return to in Section 3.4.1.

3.3.3 National policy arena

REDD+ has generated active debate and disagreements in some recipient countries (Chapter 5). Most governments appear to be positive, but a few, notably Bolivia after 2009, are not.[10] REDD+ countries have received substantial external support, and multilateral agencies and donor countries have, in effect, become political actors on the national scene, whether or not they like to admit it.

Assuming that there was full compensation of opportunity and other costs, REDD+ actions would – in principle – produce only winners. In practice, this is unlikely: the various benefit sharing mechanisms envisioned (Chapter 8) cannot ensure that no one will lose out. Indeed, at both national and local levels, REDD+ is largely perceived to hinder economic growth (Chapter 11). Powerful economic and political actors involved in commercial agriculture, timber and mining see REDD+ as a threat to their interests (Brockhaus *et al.* 2012). It is too early to judge how business as usual interests will affect the design and implementation of national REDD+ policies, but recent controversies regarding the forest conversion moratorium in Indonesia and the forest code in Brazil suggest that a central idea of REDD+ (that it can

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8 Fourth High Level Conference on Aid Effectiveness, Busan. December 2011, see http://www.aideffectiveness.org/busanhlf4/

9 http://reddpluspartnership.org/en/

10 In spite of REDD+ resistance, Bolivia is taking steps to reduce emissions from deforestation, and therefore to implement REDD+ actions, but under a different name.

bring transformational change in the form of broad national policy reforms that will alter underlying incentives) may be undermined. REDD+ might then be forced to retreat to less threatening forest sector policies and local projects.

3.3.4 Local realities

While global REDD+ discussions have been intense, progress at the local level has been relatively slow. Even pilot projects, started on a small scale and usually with NGO involvement, are generally taking longer to implement than planned, as CIFOR's GCS has shown (Chapter 10). This has been partly due to the challenging task of clarifying boundaries and land titles (Chapter 9). The establishment of new laws and, where necessary, new institutions is taking time. As a result, the intended next stage – scaling up – has been delayed.

Local communities are often positive towards REDD+ in the expectation that it might provide them with income. However, the findings presented in Chapter 11 suggest that villagers largely perceive REDD+ as a forest conservation effort. The uncertainty about the magnitude and forms of benefits that REDD+ will bring is notable: there is generally no agreed national policy on when, how much and by what means local people will be paid. Pilot projects can make payments, but there is no guarantee that this precedent will be followed in the future. While third party verification often requires free, prior and informed consent (FPIC) by local communities (see Chapter 17), in many cases the basic question – 'consent for what?' – is unanswered. Until national governments have established what, if any, payments or other benefits local people will receive, FPIC seems to be an impossible precondition to satisfy. There is a substantial risk that high expectations created at the local level will not be satisfied, leading to disenchantment and perhaps even rejection of the scheme.

In summary, the benefits that REDD+ will bring to the local level, where it directly affects people's livelihoods, are uncertain. At one end of the wide range of possibilities is that local people will benefit, both by having their rights to the forest secured and by receiving substantial financial compensation for their efforts to reduce deforestation and forest degradation. At the other end, a 'worst case' scenario, feared by some villagers and indigenous rights groups, is that not only will they receive little or no payment, they will even lose their traditional rights to forest resources.

3.4 The evolution of REDD+: Four key trends

After an initial grand consensus about the idea of REDD+, the concept has become adapted and reconfigured as a result of emerging conflicts of interest and the lack of a new international climate agreement. This section focuses on

four key trends in the evolution of the REDD+ idea and how it has changed, in terms of objectives, policy, scale and funding, since REDD+ entered the global climate discussions in 2005.

3.4.1 From single to multiple objectives

The ultimate objective of the UNFCCC, as expressed in Article 2, is the "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (UNFCCC 1992). Initially, this was also the principal objective of REDD+. After 2005, other objectives were added, such as protecting biodiversity and reducing poverty/enhancing local livelihoods. Still more so-called co-benefits have since been added: strengthening indigenous rights, better governance and higher capacity for climate adaptation. REDD+ is also increasingly linked to the agriculture–climate agenda. It has therefore gone from having single to multiple objectives; an ironic illustration of this is the title of a REDD+ side-event during COP17 in Durban in December 2011: 'Carbon as a co-benefit'!

The push to include biodiversity in REDD+ has largely come from the big international conservation NGOs. While the climate and biodiversity objectives are highly overlapping (Strassburg *et al.* 2010), new flows of funding for REDD+ projects also provide an opportunity to fund ongoing conservation activities (modified if necessary). The drive to include development objectives in REDD+ has come from several sources. Development NGOs have played a similar role in REDD+ areas as that played by environmental NGOs in biodiversity negotiations. In addition, most international funding for REDD+ is drawn from aid budgets, which have development and poverty reduction as their main goals.

Many fear that REDD+ is becoming overloaded with good intentions and that this will reduce its effectiveness. We share this concern, but we also argue that the key to the ultimate success of REDD+ lies in combining the conservation and development objectives of sustainable development. Both in the national policy arena and in local implementation, REDD+ must deliver on both fronts to be successful (Chapters 2, 5 and 11).

3.4.2 From PES to broader policies to forest policies and projects?

REDD+ was initially envisioned as a multilevel PES system (Angelsen and Wertz-Kanounnikoff 2008), which has critical advantages. The incentives are strong and direct (Wunder 2005). Since PES is voluntary, forest users will opt for conservation only if the net benefits are higher than those arising from forest exploitation, thus a local win–win outcome is, at least in theory, guaranteed.

Creating a market for environmental services presupposes four critical elements: the existence of a quantifiable commodity or service, buyers, sellers and a marketplace with associated rules and regulations (see Box 3.2). These elements are not yet in place in most REDD+ countries: the commodity is hard to quantify, the sellers are not well defined, the big buyers do not exist and the rules of the game are not well established. Designing and implementing a system that directly rewards emission reductions (and removals) by individuals, households or groups therefore remains a major hurdle.

Besides the many practical issues related to implementing a PES system, it also has ideological opposition. Building on a tradition going back to Polanyi (1944), REDD+ has been criticised as an example of the increasing privatisation and marketing of nature (Lohmann 2012:85). For some, PES represents a system of 'capitalism in the forest,'[11] with the potential for elites to define carbon rights and benefit sharing.

While these fears may not be fully justified, REDD+ does constitute a paradox. It seeks to reduce poverty and improve the lives of poor people by compensating them for reducing carbon emissions. Yet, in reality, large-scale commercial actors, not the poor, account for the largest share of deforestation (Rudel 2007). Thus, the lion's share of funding should – following REDD+'s core principle – go to companies and people who are not poor. Nevertheless, preliminary observations of REDD+ policies suggest that these large commercial actors will not be fully compensated for their opportunity costs; early lessons from PES programmes suggest that they have, if anything, a pro-poor bias (Bond *et al.* 2009).

Project proponents have adopted a hybrid model (Chapter 10), where some form of payment to local people is only one of several elements of their strategy. At the national level, it has long been recognised that REDD+ needs to go beyond PES to involve a broad set of policies. This was the central message in a previous CIFOR book, 'Realising REDD+' (Angelsen *et al.* 2009), which distinguished among three broad sets of policies seeking to create incentives for forest conservation:

1. Policies affecting the *agricultural rent*, i.e. the profitability of forest conversion, such as agricultural subsidies and taxes, technological change and infrastructure
2. Policies regulating the *forest rent* and the capturing of that rent by forest users through schemes such as PES and community forest management
3. *Direct regulations*, in the form of creation and enforcement of protected areas, land use planning and concession policies.

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11 Slogan on buttons observed at climate meetings.

Box 3.2 Preconditions for a market for REDD+ credits

A market for REDD+ credits (or a PES system to reduce deforestation and forest degradation) rests on four pillars:

A quantifiable commodity: The commodity or service being traded in carbon markets is emission reductions. An emission reduction is defined as the difference between actual emissions and a business as usual baseline. Thus the commodity has two aspects: i) the actual emissions must be measured, reported and verified; and ii) a point of reference must be established through a business as usual baseline in order to allow the measurement of the impact on emission or removals as a result of REDD+ actions by the service provider. To further complicate matters, the parties may agree to set the benchmark for payments differently from the business as usual baseline, based on considerations of effective and efficient use of limited REDD+ funds or differentiated responsibilities (Chapter 16).

A number of sellers (service providers): Who are the service providers, and – more specifically – who has the rights to sell emission reductions from forests? In an idealised PES scheme, the owners of the forest carbon are the sellers, who will be defined by national law. While this raises major questions concerning benefit sharing (Chapter 8), it is at least conceptually simple. More complex issues arise when REDD+ is implemented at the national level through a broad set of policies, e.g. the establishment of protected areas or the Indonesian moratorium on land use conversion (Box 2.1). Who has the rights to any international payment for emission reductions: the smallholder farmer and the palm oil company that has lost income, the agencies implementing the policy or society at large?

A number of buyers: The buyers of REDD+ credits will come from three principal sources: i) public funding, including development aid, in a performance-based system; ii) private voluntary funding, as in voluntary markets, including corporate social responsibility purchases; and iii) public or private entities that buy REDD+ credits to comply with emissions restrictions using REDD+ as offsets. REDD+ funding so far has fallen into category i), while the potential for large-scale funding is mainly to be found in category iii) (Chapter 7).

Established market institutions: Rules and regulations provide the legal bases for a carbon market or PES. Institutions are needed to manage the flow of information on changes in forest carbon stocks and the flow of money to reward these changes. Two institutions are needed to make the system work: an independent body to verify or certify the emission reductions and a mechanism and an authority to handle REDD+ money flows that incentivise and compensate for these changes. These bodies must have some autonomy from government to ensure their objectivity and transparency. Establishing credible channels for international funding is time consuming and politically sensitive, which can explain the simultaneous existence of both a funding gap and a disbursement problem in REDD+ (Chapter 7).

Some of these policies conflict with other objectives, including the aim to increase agricultural production and food security and are therefore politically difficult to implement (Angelsen 2010b). Furthermore, even if the net gain to society is positive, such policy reforms would create winners and losers, with the potential losers often having sufficient power to block the reforms (Chapter 5).

At the national level, it seems too early to predict which REDD+ policies countries will pursue. Our early observations suggest a strong emphasis on strengthening local level institutions, encouraging participation and securing rights, agricultural intensification and land use planning, including concession policies and protected areas. PES schemes are mainly at an experimental stage, and at a local scale, with some notable exceptions in several Latin American countries that predate REDD+ (e.g. Kaimowitz 2008).

In short, REDD+ was supposed to be driven mainly by PES. Although most proponents at the local level aim to implement PES or PES-like systems, these may take the form of broad payment schemes, rather than specific incentives to individual users for reducing deforestation and forest degradation. National policy reforms were also called for, but these are controversial, with powerful potential losers able to block them. There are encouraging trends, including the integration of the agriculture and forestry agendas and the nesting of REDD+ in low carbon development planning, but there is also a risk that the final outcome will be a few policies limited to win–win situations and a narrow focus on forest sector policies and local projects.

3.4.3 From national to project focus – and back?

A key premise of RED(D) when it was launched was its strong national, rather than subnational, focus. This was supported by most early country submissions to UNFCCC (Guizol and Atmadja 2008), not only on grounds of sovereignty, but also because national approaches were thought to be more effective (Section 2.2). REDD+ was perceived to be a significant shift from previous project-based conservation: now national governments would be the leading actors in forest conservation.

So far (although these are still early days), REDD+ has not brought about such a shift. Much of the REDD+ funding has been awarded to local and subnational initiatives. Several factors can explain this development. First, as noted above and in Chapter 5, national-level reforms often bring about win–lose situations, with powerful groups standing to lose. Second, the availability of substantial donor pledges created the pressure to spend quickly, which was matched by a readiness on the part of conservation and development NGOs to implement projects (funding for which is still the 'bread and butter' of NGOs, in spite of their strong involvement in policy debates). Third, donors

prefer to fund concrete projects or programmes, rather than policy reforms where it is more difficult to follow the money and be sure of its end use (see Chapter 13).

Preliminary findings from CIFOR's GCS project suggest, however, that the shift from a national to a project focus may not continue. REDD+ projects are – as many have done before – finding that effective action on the ground is blocked or constrained by national policies and institutions. This can be illustrated by the case of tenure, discussed in detail in Chapter 9. The push will therefore continue for national-level reforms, and more action to enable links between subnational activities and national-level policy design can be expected (Chapter 6).

3.4.4 Funding: From market to international public sources and national contributions

In their submissions to the UNFCCC in 2007–2008, most countries argued for a dual funding approach, where public sources would provide short-term funding for capacity building, while the long-term funding for result-based payments would come from markets (Guizol and Atmadja 2008). The 2007 Bali Action Plan was, in the view of key actors, a plan to make REDD+ part of a global climate agreement where REDD+ credits could be used as offsets in a global cap and trade system. In Copenhagen in 2009, COP15 failed to deliver that agreement. In April 2009, at the invitation of Prince Charles, 21 world leaders met to establish the Informal Working Group – Interim Finance for REDD+ (IWG-IFR 2009). This initiative was a direct response to the need for REDD+ funding "until the carbon market can take over," as a participant in the process remarked to one of this chapter's authors. While at that time the takeover was expected to happen by 2013, the Durban Platform (COP17) suggests that it may not occur before 2020.

The principal reason for the delayed market funding for REDD+ relates to the lack of a global climate agreement that includes REDD+ credits, either as an offset mechanism or indirectly through, for example, auctioning emission allowances to generate revenues for a global REDD+ fund. Of the two potentially large regional carbon markets, the EU Emission Trading Service excludes REDD+, while a US carbon market is yet to materialise. However, smaller regional carbon markets may gradually provide some funding for REDD+ (Chapter 7).

Market funding is controversial, especially when REDD+ credits are used as offsets (i.e. to allow a country or company to count them as part of their mandatory emission reductions). The opposition has partly been ideological, arguing that it is immoral to pay others to allow oneself to continue to pollute. A related concern is market flooding, i.e. cheap REDD+ credits that

could lower the carbon market price and crowd out mitigation in fossil fuel sectors. A major challenge is to regulate the rate of introduction of REDD+ credits into carbon markets by adjusting the overall cap as they are introduced (Angelsen *et al.* 2012).

Expectations of private funding have also been high; but again, these were based on unfounded assumptions. Private funding can be split into three categories: i) corporate social responsibility; ii) investments for profit; and iii) offsets to comply with government regulations. The amount of corporate social responsibility funding for REDD+ has been limited, and far less than the public relations and media coverage would suggest. Voluntary markets are relatively healthy, but the overall volume is tiny and likely to remain so (Diaz *et al.* 2011). Profitable business opportunities in avoided deforestation and forest degradation may exist in the form of non-consumptive forest uses (e.g. ecotourism) or green products (e.g. shade-grown coffee), but are not 'low hanging fruits'. The main potential source of private funding is from offsetting, but, as noted, that presupposes the existence of tight emissions caps and an opening for REDD+ offsetting.

The major international funding for REDD+ in the short to medium term must therefore come from public sources in Annex I countries. Two thirds of the international public funding provided so far has been development aid through bilateral and multilateral channels (see Chapter 7 for an overview of funding sources).

Aside from the shift in focus from markets to the public sector, the second major development in the thinking on REDD+ funding is a shift from North to South, from Annex 1 to non-Annex 1 countries. The Bali Action Plan (UNFCCC 2007) stressed that REDD+ is concerned with "policy approaches and positive incentives …", with positive incentives interpreted by many to imply full compensation to developing countries. This markedly differs from the Durban Platform (UNFCCC 2011d), which "…decides to launch a process to develop a protocol, another legal instrument or an agreed outcome with legal force under the UNFCCC *applicable to all Parties…*" (emphasis added). This decision could end up being a watershed in climate negotiations, including for REDD+. The shift from REDD+ being predominantly a system of payments from North to South for reduced forest emissions, to one that is perceived as a shared responsibility, is due to a number of factors.

First, the distinction between Annex I and non-Annex 1 is outdated. Dozens of non-Annex I countries today have higher *per capita* incomes than the poorest Annex 1 country. China, a non-Annex 1 country, now occupies the first position in GHG emissions and many other non-Annex I countries have higher emissions *per capita* than the lowest emitting Annex I countries (IEA 2011). Most future growth in emissions will come from fast growing, middle-income non-Annex I

countries and it is highly unlikely that the target of limiting global temperature increase to two degrees will be reached without strong commitments from these countries. Second, many middle income countries have made pledges and developed strategies for reducing emissions as compared to a business as usual scenario.[12] REDD+ is being incorporated into these national low-carbon development strategies. Third, international mechanisms are unlikely to be able to fully compensate developing countries for REDD+ costs. Not only is the funding inadequate, but there is a lack of willingness – at both national and international levels – to fully compensate agroindustries for lost income from stopping business as usual forest conversions. A large share of the opportunity costs of a successful REDD+ is therefore likely to be borne by, for example, oil palm and soy producers. Fourth, REDD+ cannot succeed without a strong commitment from the REDD+ countries.

In sum, many of the costs of REDD+ will have to be borne by domestic actors, including governments at various levels, who are responsible for planning and implementing REDD+ and perhaps also for paying compensation for lost opportunities. In addition, it is likely that a number of domestic actors – such as agroindustries and mining companies – will not be compensated for their opportunity costs.

3.5 Why does it matter if REDD+ has changed?

REDD+ has undergone significant changes for three main reasons. First, there has been a learning and maturation process. Some initial ideas proved unrealistic, e.g. the rapid creation of PES systems that could fully incentivise and compensate forest users for their reduced emissions. These ideas nevertheless spurred the initial REDD+ enthusiasm, and this optimism – bordering on naivety – may have led to the creation of new coalitions and innovative solutions to burning climate problems.

Second, REDD+ was optimistically expected to become part of an international climate agreement that would prompt major sources of funding through carbon markets. That eventuality has been postponed until at least 2020, which means that international REDD+ funding may never reach the scale originally envisioned. As a result, REDD+ policies will necessarily have to reflect the fact that full compensation will be too expensive and most international funding in the short to medium term will come from aid budgets, with their own objectives and logic, and from domestic sources.

Third, two forces have modified the idea of REDD+: business as usual interests have formed a strong opposition to policy reforms and have limited

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12 http://www.unep.org/climatepledges/

the political action space. At the same time, supporters of REDD+ have had such differing interests that both the ends and the means of REDD+ have been reconfigured; some NGOs, for example have promoted it primarily as a means to secure indigenous land rights.

REDD+ is not a clearly defined, consistent idea. If it were truly market-based, there would necessarily be an agreed definition: everyone buying or selling would have to have a common understanding and a standardised commodity to trade. Because that is not the case, the meaning of REDD+ can be interpreted in different ways and, as a result, is being continually negotiated by different interests at international, national and local levels. Rich countries may have an interest in trying to reach agreement on what REDD+ should do, but the process of reaching such an agreement is flawed. Countries being paid to reduce their emissions may, arguably, have an interest in *not* coming to a common understanding and they certainly have varying degrees of power to determine how REDD+ is put into practice. As long as one or a few rich countries (or foundations or companies) are willing to pay them to reduce emissions, why should they need to agree on a common practice for all?

Where does this leave us? REDD+ seems to have lost some of the initial characteristics that made it such a novelty and encouraged such high hopes. Now it risks losing the essential feature of result-based payments and national-level reforms and becoming merely another form of development assistance in support of conventional forest management projects with a broad range of objectives. The most basic question remains: can REDD+ significantly reduce emissions from deforestation and forest degradation and what will it take to make it different from past efforts?

REDD+ and the global economy
Competing forces and policy options

Pablo Pacheco, Louis Putzel, Krystof Obidzinski and
George Schoneveld

- Globalisation and market and financial liberalisation have increased the exposure of forests to global trade and investment, which has aggravated the historical trends of deforestation and forest degradation.
- The main forces that compete with REDD+ include a growing integration of food, energy and financial markets, an increasing level and volatility of commodity prices, and a new wave of large-scale investments in agriculture.
- For REDD+ to reduce pressures on forests, while stimulating the transition to more equitable and sustainable development, measures are needed on the supply and demand side to stimulate the adoption of forest-conserving land uses, de-incentivise the conversion of forestlands, and incentivise increased production on non-forestlands.

4.1 Introduction

The challenges of reducing greenhouse gas (GHG) emissions, while feeding a growing population and meeting global demand for fibre and energy, are attracting increasing attention (Kissinger 2011; Wollenberg *et al.* 2011). This chapter presents an overview of current trade and investment-related drivers

of deforestation and forest degradation in the tropics and the ways in which they serve as obstacles to REDD+ implementation, with a closer look at three regions. In addition, we suggest policy options that could help tackle these global drivers by making economic growth more compatible with forest conservation.

The discussion is organised around three questions:

1. What are the main economic drivers and trends shaping deforestation and forest degradation in the tropics that represent major obstacles to REDD+?
2. Which aspects of these economic drivers represent the greatest challenges to reducing deforestation and forest degradation in Indonesia, the Brazilian Amazon and East Africa?
3. What policy approaches would be most effective for reducing the effects of these forces on forests and what are the implications for REDD+?

Deforestation has historically been linked to economic development, population growth and the associated demands for food, fibre and energy. We argue that there are a number of contemporary drivers, strongly related to global markets and investment, that lead to increased competition for land, including forestland in the tropics. These drivers include the increased integration of food, fibre, energy and financial markets; high price volatility and higher commodity prices; and a transnational land rush. They make attempts to reduce carbon emissions through REDD+ more challenging since, directly and indirectly, these drivers stimulate the conversion of forestland to agricultural use and increase logging activities that often lead to forest degradation. Nonetheless, there are important regional variations in how these drivers affect forests, as our assessments from Indonesia, the Brazilian Amazon and East Africa show.

We adopt a broad definition of REDD+ to mean the array of policies that primarily aim to reduce carbon emissions from deforestation and forest degradation and may also include result-based incentives and compensation (see Chapter 1). Many factors affect the implementation of REDD+. In this chapter, we focus on the global economic drivers and trends shaped by markets and public policies – in consumer and producer countries – that bring about changes in land use, thus affecting forest cover and quality. In order to make REDD+ policies more effective, we must consider global economic dynamics and their interactions with political and institutional conditions at the national level. On the supply side, a realignment of market incentives and regulations is needed to reorient economic development in tropical developing countries in order to reconcile food and energy provision with forest conservation, along with policy actions on the demand side.

4.2 Economic drivers and trends competing with REDD+

A number of factors and conditions at different scales influence the dynamics of deforestation and forest degradation. Figure 4.1 shows the main global economic forces and the economic and environmental policies in both consumer and producer countries that shape competition between land uses and have implications for REDD+. These forces represent different economic

Markets

Main structural market conditions
- Liberalisation of global trade (+/−)
- Expansion of global demand and changes in demand composition (−)
- Multipolarity with changes in production centers (+/−)

Policies

Policies in consumer countries
- Economic incentives to expand biofuel supply (+/−)
- Procurement policies for ensuring sustainable supply (+)
- Incentives for investments abroad to secure supply (−)

Policies in producer countries
- Land allocation (+/−)
- Incentives for agriculture (+/−)
- Investment policies (+/-)
- Land use regulations (+)
- Infrastructure development (-)

Outcomes

Outcomes with effects on REDD+
- Increased land use competition in tropical forest landscapes (−)
- Higher opportunity costs for REDD+ implementation (−)
- Growing economic benefits with unequal benefit sharing (+/−)

Triggers of land use competition
- Greater market integration of food, energy and finance (+/−)
- Price increases, price volatility and financial speculation (−)
- Large-scale investments linked to plantation models (−)

Responses

Actions to be supported by REDD+
- Supply side: compensate for forest-conserving and forest expanding uses, and incentivise production in non-forest lands
- Demand side: procurement policies linked to certification and responsible investment policies

Notes:

→ Core causality interactions

--→ Indirect interactions

(+) Factor expected to contribute positively to REDD+
(−) Factor expected to contribute negatively to REDD+

Figure 4.1 Simplified diagram of the global economic forces and policies in consumer and producer countries shaping land use competition with implications for REDD+

interests that contribute to the configuration of the institutional and political arrangements shaping land and forest use, and thus have direct implications for land use opportunity costs. REDD+ policies need to address these forces in order to effectively reduce deforestation and degradation and thus carbon emissions.

Over time, there has been a major growth in the human pressure on forests to meet demands for food and fibre in association with the rise of economies and societies (Lambin *et al.* 2003). While forests covered about 50% of the earth's land area 8000 years ago, today only 30% of land is forested (Ball 2001). In the last three decades, globalisation and market liberalisation have stimulated greater interconnectedness of markets and intensified trade and capital flows, not only between the North and the South, but also among southern countries (Khor 2000). The latter has taken place in the context of a steady expansion of global demand for food, energy and materials associated with increased consumer demand (Tilman *et al.* 2011), largely influenced by emerging economies such as Brazil, Russia, India and China (BRIC). Furthermore, the migration of industrial production to emerging economies (especially in Asia) has increased multipolarity in the global economic system, redirecting global natural resource supply chains (World Bank 2011), which has implications for global land use (Rudel *et al.* 2009).

The impacts of global economic processes on land use change, and thus on forest conversion, are both direct and indirect, and increasingly influenced by regional interdependencies mediated by international trade (Meyfroidt *et al.* 2010, Pfaff and Walker 2010). Higher consumption in some countries may lead to greater land use change in other countries. Land use dynamics are influenced by policy decisions in consumer and producer countries. Boxes 4.1 and 4.2 illustrate the effects of policy decisions in consumer countries, such as the renewable energy policy in the European Union (EU), and the domestic logging ban in China. Examples of policies implemented by producer countries (e.g. land tenure, incentives for agriculture, investment policies and land use regulations) are discussed in detail in Section 4.3.

The structural market trends described above, in their interactions with policies in both consumer and producer countries, have contributed to the emergence of three global trends that constitute the main economic triggers of contemporary land use change:

- A growing *integration of food, fibre and energy markets* causing changes in supply and demand in one market to affect others (Roberts 2008; Naylor 2011)
- Persistent *price volatility* in global food and agricultural markets that occurs within a general trend of increasing prices, which is in part associated with the 'financialisation' of commodity markets (UNCTAD 2009; Falkowski 2011)
- A trend of large-scale *land acquisition*, which is strongly associated with the two preceding trends (HLPE 2011; Anseeuw *et al.* 2012).

Box 4.1 Biofuel markets, the EU Renewable Energy Directive and forests

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The EU Renewable Energy Directive (EU-RED) established targets for 2020, including a target of 10% renewable energy in the transport sector in all Member States (EC 2009). Biofuels used to achieve the target must meet specific sustainability criteria. These include restrictions on the types of land used for production, minimum GHG reduction levels and a prohibition on clearing forests or using lands with high carbon stocks or high biodiversity for biofuel production. Biofuel certification schemes recognised by the EC include provisions to prevent the conversion of such lands into feedstocks for biofuels.

The EU-RED does address deforestation due to direct land use change. However, indirect land use change (iLUC) is not yet explicitly considered. ILUC results from the physical and economic effects of increased demand for land associated with biofuel production. For example, when biofuel feedstocks are grown on agricultural land, food production may be displaced to other parts of the world. The iLUC impacts on GHG emissions resulting from the EU-RED directive are likely to be the most contentious aspect of incentives for biofuel development as part of renewable energy policies. In 2011, the European Commission delayed a decision on whether to address iLUC factors.

Most studies suggest that biofuel development places greater pressures on land as result of iLUC (e.g. Edwards *et al*. 2010). A recent estimate indicates that an additional 5.2 million hectares of cropland will be needed globally by 2020, as compared to a baseline scenario without the EU-RED directive. About 11% of this additional expansion is estimated to take place in open forests and 30% in closed forestlands (Fonseca *et al*. 2010).

Expanding biofuel markets offer economic opportunities for developing countries to export to the EU and to develop their domestic markets. The high productivity of biomass in tropical and subtropical regions can result in lower land use impacts and lower GHG emissions than result from biofuels produced in the EU. Biofuel incentives in developing countries could be linked to REDD+, providing livelihoods for poor rural communities and stabilising the agricultural frontier, while reducing land use change and GHG emissions (Killeen *et al*. 2011). Developing countries may, however, face higher costs in meeting the sustainability criteria, due to the lack of technical, financial and human resources to support certification (Johnson *et al*. 2012).

Box 4.2 China's domestic logging ban and demand for African timber

In 1998, China instituted a domestic logging ban to protect its natural forests (Liu and Diamond 2005; Wang *et al.* 2007; Laurance 2008). Around the same time, the Asian financial crisis resulted in cash shortfalls in Japan and elsewhere and China soon became the world's largest consumer of tropical logs and semi-processed timber. New supply chains were established connecting China to timber supplies in Southeast Asia, Africa and South America. Lower tariffs on imported wood and the revocation of import license requirements facilitated this trend and attracted foreign direct investment, which resulted in increased demand for timber (Lang and Chan 2006).

While China's logging ban reduced domestic production by 30% between 1995 and 2003 (Lang and Chan 2006), it displaced deforestation and logging-related forest disturbance to other countries (Mayer *et al.* 2005). China's increasing demand for logs and sawnwood has been particularly evident in Africa, where it now exceeds that of all developed nations combined. The demand for African timber results not only in higher export volumes, but also in other changes that are likely to cause an intensification of logging. The aggregate figures indicate a shift towards imports of more highly processed wood by developed countries and a continued preference for less processed wood by the Chinese market, although imports of processed wood are increasing.

Between 1991 and 2006, timber exports from Gabon to China increased by over 8000% while exports to France, formerly the largest market, fell by more than half. Gabon's log production increased to an all time high of 2.5 million cubic metres annually (Terheggen 2010). At the same time, the Chinese market demands a greater number of species than do other markets (Putzel 2010; Terheggen 2010; Cerutti *et al.* 2011). This combination of increased volume and greater harvest intensity has several consequences. First, while less selectivity alone might mean a slower expansion of logging, in combination with higher demand it is more likely to result in greater forest degradation. Second, until both exporting and importing countries control illegal logging and timber exports, higher demand for a greater number of species may result in pressure on forests that are not allocated for logging, complicating the implementation of REDD+.

These trends place pressures on land, with impacts on forests through complex interactions. Estimates on how much deforestation for agricultural expansion contributes to global food and energy supply are still controversial. For example, Gibbs *et al.* (2010), using remote sensing analysis across major tropical regions, suggest that about 55% of the 100 million hectares of land converted to agriculture in the 1980s and 1990s were at the expense of

'intact' forests. In turn, Angelsen (2010b), based on data from the Food and Agriculture Organization of the United Nations (FAO), suggests that, at the global level, less than 10% of total crop and livestock production between 1985 and 2004 was on newly deforested lands. Taken together, these estimates suggest that although historically, clearing forests probably accounts for a relatively small portion of the increased global food supply, much of the new agricultural land tends to occur at the expense of forests. Global demand for food and energy is expected to further increase as the world population grows from its current level of 7 billion in 2011 to an estimated 9 billion in 2050 (Royal Society 2012).

4.3 A regional look at the forces shaping land use dynamics

This section examines the trends introduced in Section 4.2 and their implications for deforestation and degradation and REDD+ implementation in three regions: Indonesia in Southeast Asia, the Brazilian Amazon and East Africa. We emphasise the influence that interactions among economic and policy factors and global markets and investments have on increasing or decreasing pressure on forestlands. We also assess the opportunity costs of alternative land uses in these three regions in order to indicate the potential costs of a performance-based compensation system (i.e. a PES-like scheme) under a REDD+ policy framework. Finally, we look at some of the main policy responses adopted by these countries to tackle deforestation.

4.3.1 Forces shaping land use dynamics in Indonesia

In Indonesia, large scale projects in forestry, oil palm and food production are expected to expand to about 17 million hectares in order to meet government targets. An additional 3 million hectares will be required if coal production doubles, as predicted, by 2025 (Bahroeny 2009; Suparno and Afrida 2009; Tragistina 2011). The expected economic gains from these investments are significant. For example, in 2011, export of pulp and paper, crude palm oil and coal represented about US $35 billion (US $4 billion, US $9 billion, and US $22 billion respectively), or about 20% of total export value (COMTRADE 2012).

The growing demand for palm oil (both for food and biofuel) is a key driver of deforestation in Indonesia (Box 4.3), but large-scale land investments also target other commodities, such as timber or coal, under a trend of price increases in the international markets (Inamura *et al.* 2011). In recent years, coal mining has become an important driver of large-scale land acquisition in Indonesia. Coal production has almost quadrupled over the last ten years and the area occupied by mining concessions has expanded rapidly (Ministry of Energy and Mineral Resources 2010; Tragistina 2011). Currently, mining concessions cover about 5 million hectares in Kalimantan and Sumatra;

Box 4.3 Oil palm, food and biofuels in Indonesia

Over the past decade, Indonesia's oil palm sector has experienced tremendous growth. Between 1990 and 2010, the area occupied by plantations increased seven-fold from 1.1 million hectares to 7.8 million hectares (Sheil *et al*. 2009; Direktorat Jenderal Perkebunan 2011). At the end of 2011, Indonesia's production of crude palm oil (CPO) reached 23.6 million tonnes, which accounts for approximately 45% of global output (Slette and Wiyono 2011). Annually, the export of CPO and derivatives generates over US $12 billion in foreign exchange earnings (Bahroeny 2009; World Bank 2010). The oil palm sector is also seen as a potential key to securing Indonesia's energy needs through CPO-based biofuel production and an important source of employment in rural Indonesia.

Anticipating a doubling of global demand for palm oil by 2025, the Indonesian government plans to double its current CPO production of 23 million tonnes over the next decade, through intensification and by developing an additional 4 million hectares of oil palm plantation estates (Bahroeny 2009; Suparno and Afrida 2009; Kongsager and Reenberg 2012). There is concern that new expansion will target the secondary forest zone, which is exempt from the forest conversion moratorium in effect since 2011 (Boucher *et al*. 2011; Colchester and Chao 2011). While new investments are expected to work in partnership with local communities through outgrower schemes, questions remain about their value and effectiveness (McCarthy 2010).

Speculation about the expansion of both oil palm and timber plantations has led to concerns about national food security (Rusastra *et al*. 2008; Basuno and Weinberger 2011). Government planners estimate that over the next two decades at least 2 million hectares of new land will be needed to grow food for Indonesia's growing population (Jakarta Post 2010). Early indications show that food estate investments are targeting significant areas of forested lands (Colchester and Chao 2011). This is likely to weaken the income and food security of forest-dependent people, cause resistance and conflict and contribute to increased levels of GHG emissions in Indonesia.

The negative outcomes of oil palm expansion can be minimised. Government planners need to enforce the forest conversion moratorium and ensure that new oil palm plantations are developed on non-forest lands. The concessions already allocated and found to contain significant forest cover should be subject to legal review. If the legal standing of these concessions is sound, the government should offer land swaps and tax incentives in order to exclude forested lands from them. Similar incentives should be used to support the intensification of production of CPO on existing plantations, rather than promoting their expansion. Wider adoption of Roundtable on Sustainable Palm Oil (RSPO) certification by companies would be particularly helpful, as it includes a carbon stock threshold above which forest clearance is not permitted.

about half of them are located in forestlands. While by law only about 20% of the total concession area, or 1 million hectares, may be cleared to enable the extraction of coal, this limit is rarely respected.

Timber plantations have expanded rapidly as well. In 2006, the government launched a new policy seeking to establish 9 million hectares of new timber plantations by 2016. Although implementation has been slow, due to land allocation problems and limited interest from small holders (Obidzinski and Dermawan 2010), a positive market outlook for pulp is driving further investments. In April 2011, Indonesia's Ministry of Forestry announced large new investments in the pulp and timber plantation sector. The projected investments include seven new pulp mills, with a capacity of nearly 5 million tonnes and nearly 2 million hectares of new timber plantations, at an overall cost of US $14 billion. These investments are likely to result in major carbon emissions (Koran Kaltim 2011). While these targets may be ambitious, the existing pulp and paper mills have continued to expand their capacity and, as of 2010, have relied on natural forests for half of their raw material needs (IWGFF 2010).

The difficulties of making REDD+ economically competitive can be illustrated by comparing it to oil palm plantations. Oil palm is among the fastest expanding commodities in the tropics and, in Indonesia, oil palm estates are growing by about 400 000 hectares *per annum* (Slette and Wiyono 2011). Estimates of the net present value of oil palm plantations vary widely from US $4000 to US $29 000 per hectare (Persson and Azar 2009; World Bank 2010), although most estimates converge in the range of US $6000 – US $9000 per hectare (Butler *et al.* 2009). Keeping the same area forested generates US $614 – US $994 in carbon credits (Butler *et al.* 2009). This disparity roughly doubles if the value of timber cleared in the process of establishing plantations is included in the calculation of foregone benefits (Fisher *et al.* 2011). On a project basis, it is unlikely that carbon payments could compete with the combined benefits from timber and oil palm at their current prices. However, there could be scope for synergy with REDD+. This is particularly the case if growth in the plantation sector is mainly achieved though the intensification of existing plantation areas, if land swaps are used to move some concessions onto non-forest land, and if limits on forest clearance in mining concessions are enforced.

4.3.2 Forces shaping land use dynamics in the Brazilian Amazon

By 2010, the Brazilian Amazon had undergone deforestation equivalent to 75 million hectares, or about 18% of its original forest cover (INPE 2011). Currently, 44.6 million hectares are under pasture (62% of the total deforested area), while 3.5 million hectares constitute annual crops (5%

of the total deforested area), much of which is under soybean production (EMBRAPA/INPE 2011). Since the early 1970s, forest clearing has been related to the expansion of large-scale and extensive cattle ranching (Margulis 2004). In addition, since the early 2000s, there has been an expansion of large-scale and capital intensive agriculture, mainly for soybean production (Nepstad *et al*. 2006). Selective logging has often preceded agriculture over large areas of primary forest (Chomitz *et al*. 2007). Deforestation peaked at 2.7 million hectares per year in 2004, decreasing gradually thereafter to 700 000 hectares in 2010 (INPE 2011). Deforestation in the Brazilian Amazon is related to the integration of the region into the national economy, connecting it more strongly to demand and investment from the southern states, as well as from global markets (Nepstad *et al*. 2006; Walker *et al*. 2009).

Increases in international prices have stimulated the production of beef and soybean (Box 4.4). Other variables, such as exchange rates, have also had an important influence on export dynamics. Richards *et al*. (2012) argue that about a third of current soybean production in South America, including in Brazil, is a response to the devaluation of local currencies in the late 1990s. In contrast, a more recent depreciation of the dollar and appreciation of the Brazilian real may have counteracted a rise in global soybean prices. Thus, deforestation tends to increase and decrease in line with oscillations in international prices and exchange rates (Macedo *et al*. 2012). Government incentives for the expansion of biofuel supplies have also contributed to growth in the market for soybeans produced in Brazil, although still to a proportionately lesser degree (de Andrade and Miccolis 2011). For example, estimates suggest that 13–18% of total deforestation in Mato Grosso is due to soybean production, although less than 6% of this can be attributed to biodiesel, since most soybean is used for other products (Lima *et al*. 2011).

In the late 1990s and early 2000s, the integration of the Brazilian Amazon with national and global markets, at a time of higher prices for agricultural commodities, increased the pressure on forests from the cattle and soy sectors. This forest loss was exacerbated by economic policies promoting agricultural modernisation and agribusiness development (Chomitz *et al*. 2007). Furthermore, the expansion of ranching and commercial agriculture not only stimulated fragmentation of large-scale landholdings, but also contributed to encroachment on public lands by private landholders, who acquired land through semi-legal means, in part driven by speculative purposes (Pacheco and Poccard-Chapuis 2012). In response, the government expanded the area of public forests assigned to various conservation categories, including sustainable development reserves and protected areas (May *et al*. 2011b).

The rate of deforestation has decreased since the mid 2000s. Several factors explain this trend, including the growing enforcement of environmental laws, fluctuating prices of agricultural commodities, the implementation of private

Box 4.4 Beef and soybean in the Brazilian Amazon

Pasture development for beef production in the Amazon was, in the past, strongly related to the dynamics of the local markets. However, it now supplies more distant markets, reaching other regions in Brazil and global markets (da Veiga *et al.* 2004). The expansion of beef production has closely tracked population growth and increasing *per capita* beef consumption. In addition, Brazilian exports of beef have grown from 123 000 tonnes in 1990 to 1.4 million tonnes in 2008 (FAO Statistics 2012). In 2011, two-thirds of the exports went to Russia, Iran, Egypt and China. Although the Amazon region contributed only 15.4% to total beef exports in 2006, this share is increasing rapidly (Pacheco and Poccard-Chapuis 2012). While most beef exports originate in southeast and west-central Brazil, the growth in exports has created a gap in the domestic market, which is filled by beef from the Amazon (Kaimowitz *et al*. 2004). In recent years, there has been an important expansion of slaughterhouses in the Amazon region, due to the arrival of the main corporate actors in the Brazilian beef sector (Smeraldi and May 2009; Pacheco and Poccard-Chapuis 2012).

Soybean production in Brazil grew from 11.5 to 23.3 million hectares between 1990 and 2010. This growth is centred on Mato Grosso on the southwestern border of the Amazon, which had 10.4 million hectares under soy cultivation in 2010, a major portion in the *cerrado* (IBGE 2011). This growth was driven by the availability of cheap land, road expansion and access to new cultivation technologies (Kaimowitz and Smith 2001). The arrival of corporate traders (e.g. Archer Daniels Midland and Louis Dreyfus) and a large-scale Brazilian corporation (Grupo Maggi) have contributed to integrating the region in global markets (Baker 2004). While the domestic market is important in Brazil, a significant and increasing portion of production is devoted to export markets. About 70% of the soybean grain is processed in the country and the rest is exported; 47% of soybean cake and 60% of soybean oil are consumed inside Brazil. In 2011, 67% of Brazil's soybean exports went to China and 69% of soybean cake to the EU (COMTRADE 2012). About 23% of soybean expansion in the period 2001–2004 occurred on cleared forestland, while the remainder was on established pastures (Morton *et al*. 2006). Nonetheless, soy expansion has displaced livestock further to the forest fringes (Barona *et al*. 2010, Arima *et al*. 2011) and expanding demand for biofuels could intensify this effect (Lapola *et al*. 2010).

Pacheco and Poccard-Chapuis (2012) suggest that several policy mechanisms could limit the expansion of extensive cattle ranching and help to close the frontier: i) designating public lands as protected areas and production forest. This has already effectively halted the expansion of extensive ranching into public forestland; ii) land use constraints defined through economic and ecological zoning. This has proven to be an effective deterrent to expansion in recent years; iii) intensification of existing ranching activities, with sufficient economic incentives; and iv) promotion of cattle ranching outside the Amazon biome. This will, however, displace the problem to the *cerrado* ecosystem, which is also under intense pressure from deforestation. These policies could be combined with the certification of beef production systems that comply with environmental regulations and use more sustainable production practices. Policy options i) and ii) also apply to soybean expansion. In addition, the moratorium on soybean production introduced in 2006 has been instrumental in inhibiting the expansion of the soybean frontier into forestlands (Rudorff *et al*. 2011).

initiatives to reduce deforestation (e.g. a soy moratorium in Mato Grosso and a ban by supermarkets in southern Brazil on beef originating on illegally cleared lands) and pressures from social movements (Hecht 2012). A tighter enforcement of Brazilian environmental law between 2005 and 2009 could have helped preserve about half of the forest area that would otherwise have been cleared (Assunção and Gandour 2012).

Analysis of the prospects for REDD+ implementation in the Amazon region suggests that some forest conversion in the Brazilian Amazon – such as lands under extensive cattle ranching – exhibits low per-hectare returns, which could be compensated by carbon offsets. Börner *et al.* (2010) suggest that roughly half of projected forest loss in the period 2009–2018 (55% or 12.5 million hectares) exhibits net returns that could be compensated by payments reflecting the current prices of temporary carbon credits on voluntary markets. The latter does not take into account the fact that productivity and profits from beef production have been growing over time, thus increasing the opportunity costs for land uses that lead to deforestation (Pacheco and Poccard-Chapuis 2012). This is also the case for deforestation prompted by soybean expansion, which is much more profitable than extensive cattle ranching. Despite the low direct pressure from soybean expansion on primary forests, it indirectly leads to some forest conversion (Lapola *et al.* 2010; Arima *et al.* 2011).

A combination of law enforcement and economic incentives are required to effectively 'close the frontier' in the Brazilian Amazon in order to influence the needs and interests of diverse actors, including agro-extractive communities, smallholders and large-scale landholders. No 'one size fits all' approach to REDD+ can deliver both cost effectiveness and equity when disparate actors with different needs shape landscapes in multiple ways (Pacheco *et al.* 2011).

4.3.3 Forces shaping land use dynamics in East Africa

East Africa currently faces one of the highest deforestation rates on the continent, exceeding 1% per year (FAO 2010). Deforestation has been particularly intense in Ethiopia, Kenya and Madagascar. Agricultural expansion, logging, charcoal production and overgrazing in the semi-arid areas are considered to contribute to forest loss (Bishaw 2001; FAO 2003; Olson *et al.* 2004; Tabor *et al.* 2010). In sub-Saharan Africa, increases in production are typically associated with an expansion of the area under cultivation rather than gains in land use efficiency (FAO 2003). According to Chomitz *et al.* (2007), direct conversion of forest area to small-scale permanent agriculture is associated with population increase and accounts for approximately 60% of land use change in Africa. In addition, charcoal production, which accounts for more than 80% of urban household energy consumption, also has impacts on forest degradation (UN DESA 2004).

Global market forces may increase the intensity of land use competition. For example, despite dwindling timber reserves, Tanzania – East Africa's most forested country – reports a rapid rise in timber exports by almost 1300% in the decade 2000–2010, mostly destined for the Indian and Chinese markets (COMTRADE 2012). Milledge *et al.* (2007) estimate that, in the main logging areas of Coastal Tanzania, between 77 and 96% of high value timber species are harvested illegally, primarily as a result of corruption and poor government capacity to enforce forestry laws. Besides growing international demand, greater accessibility as a result of infrastructure development is argued to be a critical enabling factor for illegal harvesting (Tabor *et al.* 2010). Similar trends have been observed in neighbouring Mozambique (MacKenzie 2006).

Additionally, as a result of the recent rush for Africa's land (Box 4.5), large areas of forested and agricultural land risk conversion to plantation monocultures. Due to the availability of cheap, agro-ecologically suitable land, sub-Saharan Africa has become the leading destination for large-scale farmland investments – according to some – accounting for over two-thirds the total global land area acquired for this purpose since the early 2000s (Deininger and Byerlee 2011; HLPE 2011; Anseeuw *et al.* 2012). This is accompanied by an increasing 'financialisation' of global commodity markets and a rise in dedicated farmland investment funds, illustrating the role of financial institutions speculating on high future returns in these sectors (Merian Research and CRBM 2010; Knopfel 2011). Despite potential economic gains for host countries, these investment flows compete directly with conservation. There are indications that commercial plantations on lands acquired for investors in Ethiopia, Kenya, Tanzania and Uganda will expand, to the detriment of forests (WWF 2009; Mortimer 2011).

These types of investments are enabled by a domestic political economy that favours foreign direct investment (FDI). The opportunity costs for REDD+ are high, considering the net present value of crops such as sugarcane and oil palm (Butler *et al.* 2009; Persson and Azar 2010). Furthermore, while FDI flows to the agricultural sector threaten the economic viability of REDD+, high economic dependence on established domestic cash crops, such as coffee, tea, cotton and cloves, will further undermine efforts to curb deforestation. In Ethiopia, Madagascar and Tanzania, for example, the agricultural sector accounts for more than 80% of export earnings. With rapidly rising demand for East African cash crops from large emerging economies and expectations that new agricultural FDI flows will add value by enhancing domestic processing capacity, technology transfers and improving smallholder access to global marketing channels, there may be little long-term political traction for schemes that restrict expansion options.

Box 4.5 Biofuel, food prices and land investments in sub-Saharan Africa

A significant process of large-scale farmland acquisition is underway in sub-Saharan Africa (SSA). Reliable empirical evidence as to its magnitude, distribution and underlying drivers is still scant. To address these knowledge gaps, Schoneveld (2011) verified 353 large-scale farmland projects exceeding 2000 hectares in size and established between 2005 and 2011. The analysis documents plantation agriculture and forestry projects across 32 countries in SSA, covering an area of 18.1 million hectares. A high level of geographic concentration was observed, with just seven countries accounting for almost two-thirds of the total acquired area (Zambia, Ghana, Madagascar, Mozambique, Ethiopia, South Sudan and Liberia). In Ethiopia and Ghana, the threat that these acquisitions will compete with socially and environmentally valuable land uses is particularly high, as 43% (Ethiopia) and 62% (Ghana) of suitable and 'available' land has been transferred to investors since 2005. These threats are facilitated by weak domestic regulatory enforcement of investment and the fact that most of the acquired land originates from the customary land domain.

Sub-Saharan Africa is an attractive investment destination, due to the abundance of agroecologically suitable land and the possibility of leasing land at low rental rates (typically <5% of the rates in other countries with strong plantation agriculture sectors, such as Malaysia and Indonesia). This unprecedented rush for Africa's farmland is also driven by exogenous factors. First, blending mandates in industrialised countries have guaranteed a stable market for biofuel. The resulting economic opportunities have encouraged investors to seek access to vast areas of land for cultivating biofuel feedstocks, such as *Jatropha Curcas L.* and sugarcane. European and North American proponents are responsible for more than 53% of the total area acquired in SSA and 71% of that area was acquired for biofuel feedstock cultivation.

The second main driver is the 2007–2008 increase in international food prices. This created two types of investors: those that are motivated by the profit potential of high food prices and supply constraints and actors, such as parastatals and sovereign wealth funds, that are more closely linked to the policy objective of their governments to reduce national exposure to food price fluctuations. The food projects they lead tend to be initiated by southern countries, whose domestic expansion capacity is especially constrained by the limited availability of suitable land. Southeast Asian oil palm producers and South Asian staple crop producers are therefore particularly prominent. The second largest investor group, Asia, accounts for 21% of the total area acquired, 78% of which is for the cultivation of food crops. These observations highlight how strongly transboundary investment flows are influenced by domestic policies and market conditions. Thus, both supply and demand-side regulations are required.

4.4 Exploring policy options: What implications for REDD+?

The previous two sections suggest that long-term trends in population growth, higher consumer demand and, more recently, major shifts in global production, trade and technology are key to understanding the current dynamics of deforestation and forest degradation in tropical countries. To work effectively, REDD+ needs to tackle the forest-related effects of these trends and address economic drivers and policies in both consumer and producer countries, acknowledging that they manifest themselves differently in different regions. In general, these economic forces have increased pressure on the land to meet the growing demand for food, fibre and energy. This directly and indirectly places pressure on the forest margins, particularly in the tropics. Thus, in order for REDD+ policies to achieve their goals, pathways must be adopted that reduce pressures on forests, but support economic growth.

Because of the financial magnitude and volatile nature of the forces at play, we remain sceptical about the feasibility of overcoming the opportunity costs of REDD+ through financial offsets, such as PES-like schemes or carbon markets alone. There is growing recognition of the importance of regulations and institutions for effective law enforcement, clarification of tenure rights, land use planning and infrastructure development in producer countries.

While market-based approaches may work to some degree in cases where economic activities requiring deforestation bring limited profits, national-level regulatory approaches in producer countries will still be needed to rebalance the economic benefits associated with various land uses. Improved regulations in consumer countries could also complement initiatives from non-state actors, such as voluntary certification, and promote the consumption of commodities from sustainable sources as a way to reduce pressures on the forests. The equity implications of market-based and regulatory initiatives should be examined carefully, whether in producer or consumer countries.

REDD+ policies aim to contribute to a transition towards development that reconciles economic growth and forest conservation, but they face large challenges. To address these, we argue that a combination of state regulations and initiatives by non-state actors is required at both global and national levels. These policy actions need to be implemented on both supply and demand sides, in order to reduce deforestation and forest degradation more effectively. While these actions could be considered as part of REDD+ implementation, it is required to adopt a different paradigm of development, which prioritises low carbon goals based on supporting more sustainable and inclusive business models and policies.

On the supply side, policy actions could include the promotion of land-use optimisation from an economic, social and technological standpoint by: i) providing adequate compensation for forest-conserving and forest-expanding uses; ii) de-incentivising the clearing of forestlands in areas with high ecological value; and iii) incentivising increased production on non-forest lands, including degraded lands, as part of broader processes of agricultural intensification and support for smallholder agriculture. Different policy combinations could be adopted in order to achieve these aims (Angelsen 2010b). On the one hand, the rent from large-scale and extensive agriculture could be reduced by, for example, reforming land tenure or neglecting infrastructure development on new frontier lands. On the other hand, the rent derived from extractive or protective forest activities could be increased, either by supporting existing efforts of local forest users to manage their forests or by promoting markets through PES schemes.

Nonetheless, measures on the supply side only will not be sufficient to address pressures on forests. It is also necessary to address issues on the demand side. A number of policy actions could be widely adopted by major consumer countries, which should also involve emerging economies, given their increasing role in shaping global trade and consumption. Such actions include the adoption of regulations that support sustainable procurement policies, possibly linked to voluntary certification schemes, and accompanied by the removal of barriers that distort global trade. Governments and private actors also need to stimulate private and public financial institutions to adopt responsible investment policies in order to enhance the accountability of investors.

The policy options discussed here imply that REDD+ should be rethought as part of a broader institutional architecture, not only to reduce pressures on forests, but also to promote the development of more sustainable and equitable economies, which are able to combine goals of GHG emission reductions and adequate food and energy supply. Policy actions for enhancing governance and reducing the impacts of trade and investment should address both the supply and demand sides and involve efforts by producer and consumer countries, as well as combined initiatives by state and non-state actors. These efforts must be conceived as part of a broader process of economic transformation, which brings together the objectives of economic growth, poverty alleviation and forest conservation in the context of climate change.

Part

Implementing
REDD+

2

Politics and power in national REDD+ policy processes

Monica Di Gregorio, Maria Brockhaus, Tim Cronin and
Efrian Muharrom

- Achieving emission reductions through REDD+ requires four preconditions for overcoming politico-economic hurdles: i) the relative autonomy of nation states from key interests that drive deforestation and forest degradation; ii) national ownership over REDD+ policy processes; iii) inclusive REDD+ policy processes; and iv) the presence of coalitions that call for transformational change.
- Formulating and implementing effective national REDD+ strategies is most challenging in those countries where international actors are the sole force driving REDD+ policy processes.
- New coalitions capable of breaking up institutional and political path-dependencies will need the participation of state elites and the engagement of business actors to affect the political agenda in a significant way.

5.1 Introduction

This chapter presents an analysis of the policy processes on the formulation and proposed implementation of national (and federal) REDD+ strategies in seven countries: Bolivia, Brazil, Cameroon, Indonesia, Nepal, Peru and

Vietnam. Using a political economy lens, we identify major constraints to effective policy making. Starting from the main drivers of deforestation and the particular contexts in each country, we first identify key features of national policy processes, including the structural conditions, the dominant policy actors and the processes that aid or hamper the development of effective, efficient and equitable REDD+ policies. While the state of international climate negotiations certainly affects national policy processes on REDD+, in this chapter we do not discuss the relationship between the two, but focus instead on the national level.

Countries engaged in REDD+ policy development are progressing at very different paces and are involved to different degrees with international partners in multilateral or bilateral arrangements for REDD+ policy design, with a particular emphasis on capacity building (Chapter 3). Their political regimes are diverse, spanning democracies to authoritarian states. As would be expected, democratic regimes present more open and inclusive policy processes (Johannsen and Pedersen 2008). In all countries, a multitude of actors from the subnational, national and international level are involved in national REDD+ policy processes (Hiraldo and Tanner 2011a). Contentious politics are at the heart of any policy process, and the REDD+ policy arena is no exception.

Each of the seven countries has seen major policy events linked to REDD+ policy formulation (Figure 5.1). The main policy outputs relate to the establishment of new institutions, procedures and capacity building linked to readiness activities – concrete policy formulation and implementation have been limited to date. The slow progress overall might reflect the delays in obtaining financing from global climate negotiations, but domestic power struggles also factor in.

This chapter uses as a political economy analysis framework based on the 'four Is' outlined in Chapter 2: institutions, ideas, interests and information, focussing in particular on the first three. We investigate *institutional* and political path-dependencies, the *interests* of actors driving deforestation and forest degradation, and the way in which their *ideas* translate into discursive practices (Figure 5.2). All these factors affect the power of dominant coalitions that enable or limit transformational change in this policy domain. We define transformational change as a change in attitudes, discourse, power relations and deliberate (policy and/or protest) action necessary to lead policy formulation and implementation away from business as usual policy approaches and toward supporting (directly or indirectly) reduction of emissions from deforestation and forest degradation and enhancement of forest carbon stocks (Chapter 2). We argue that four preconditions must be in place to facilitate transformational change: in terms of interests transformational change requires: i) a high level of autonomy of the state *vis-à-vis* powerful economic

interests that contribute to the main drivers of deforestation and forest degradation in terms of institutional and political preconditions it requires; ii) national government ownership of REDD+ policy processes; iii) inclusion of stakeholders in REDD+ policy processes; and iv) in terms of policy dynamics it requires the presence of dominant coalitions that want to break off from practices associated with business as usual (Figure 5.2).

5.2 Methods

The following analysis is based on the findings from two research modules of the policy analysis component of the ongoing Global Comparative Study on REDD+ (GCS) led by CIFOR (see Appendix).

The first module is a *policy analysis* that investigates the political context in which national REDD+ strategies are developing and identifies possible path-dependencies and obstacles to REDD+ actions. Its main focus is on politico-economic, institutional and governance conditions in each country. The investigation in each country included desktop research, expert interviews and reviews of policy documents.

The second module is a *media analysis* of policy discourses, which investigates the composition of the policy domain, the position statements (stances) of key actors and the potential for the formation of coalitions for transformational change. We look at how REDD+ policy debates are framed in the media and compare the dominant discourse with counter-discourses (Hajer 1995; Boykoff 2008). *Media frames* are "patterns of cognition, interpretation, and presentation, of selection, emphasis, and exclusion, by which symbol-handlers routinely organise discourse" (Gitlin 1980:7). The coding and systematic analysis of the media frames identified the key policy actors supporting the frames present in the articles, their attitudes towards REDD+ and their discursive practices. Articles from three major national newspapers from December 2005 to December 2009 are included in this analysis. The comparative analysis is based on the media data collected by the single case studies.

5.3 Institutional context, path-dependencies and interests

The factors constraining transformational change are determined by the interplay of the institutional arrangements, past policies and consolidated interests that operate in sectors driving deforestation and forest degradation. Together these build path-dependencies that are difficult to overcome. A number of causes of deforestation and degradation have been highlighted in the literature, which span from direct causes such as large- and small-scale

International events

December 2007
COP13 in Bali

December 2007
Launch of World Bank's Forest Carbon Partnership Facility

September 2007
Forest 11 meeting in New York

December 2008
COP14 in Poznań

September 2008
Launch of UN-REDD Programme

2007 **2008**

Bolivia

March 2007
Creation of REDD+ Political and Technical Committee
(Starting readiness of REDD+, R-PIN, etc.)

Brazil

June 2007
Amazonas state
law of CC
and PES

July 2007
The "Zero
Deforestation Pact"

August 2008
Amazon Fund

June 2009
The Tocantins Letter of
the "Forum of
Amazonian Governors"

2007
Interministerial committee on climate change at federal level

Cameroon

July 2008
R-PIN Cameroon submission to FCPF

January 2009
Decision N°09/MINEP –
Creation of REDD
Cameroon pilot
steering Committee

Indonesia

July 2008
Establishment of DNPI

December 2008
Ministry of Forestry Regulation
68/2008 on REDD DA

Nepal

January 2009
• Establishment of REDD Cell
• Formation of REDD Working
  Group

Peru

May 2008
Foundation of Group REDD

May 2009
Creation of REDD technical group
within national council on CC

Vietnam

July 2008
FCPF R-PIN is approved

December 2008
NTP-RCC

October 2008
Prime Minister Decision 380/QD-T Tg on PES

Figure 5.1 Key REDD+ policy events by country

December 2009
COP15 in Copenhagen

November/December 2010
COP16 in Cancun

December 2011
COP17 in Durban

May 2010
The interim REDD+ partnership

2009

2010

2011

July 2009
Consultation workshops for the formulation of forest and climate change strategy

December 2010
Agreement between UN and the Government of Bolivia for UN REDD+ Bolivia

April 2010
World Peoples' Conference on Climate Change

2009
NPCC and voluntary commitments 80% REDD in Amazon and 40% in Cerrado

2010
Multiple actors dialogue on National REDD+ strategy

October 2009
Brazilian participation in the COP-15 (Interministerial meeting with President Lula)

2010
Regulation of NPCC and economy wide goal of 2 GT reduction of emissions by 2020

2011
National REDD+ strategy formulation by interministerial committee

September 2009
Validation of meeting document on Cameroon position in CC

December 2009
Presidential decree on (National Observatory of Climate Change) ONACC

December 2009
Feedback meeting on REPAR participation in Copenhagen Conference

May 2009
Ministry of Forestry Decree 36/2009 on carbon sequestration license

May 2010
Letter of Intent between Indonesia and Norway

May 2011
Presidential Instruction 10/2011 on moratorium of new licenses

September 2009
Indonesia 26% emission target commitment at G-20 Meeting

September 2011
Presidential Decree no. 61/2011 on National Plan to reduce GHGs

April 2009
R-PP finalisation

December 2009
Cabinet meeting in Kalapathar, near Mount Everest Base Camp

July 2010
Proposed Amendments to Forest Act 1993

March 2011
R-PP approved by FCPF

March 2010
Accepted as FIP pilot country

April 2011
National workshop "Climate Crisis, REDD+ and Indigenous REDD" and the Declaration of Quitos

December 2009
Announcement of reduction of net deforestation to 0% by 2021

July 2011
New national forest law approved (regulations and norms still pending)

July 2009
UN-REDD Vietnam programme phase 1

March 2010
National REDD+ Strategy

January 2011
Establishment of NRS and VRO

July 2011
National MRV framework is endorsed

September 2009
National REDD network and technical working group

October 2010
PFES Government decree

Figure 5.2 **Political economy framework**

agricultural expansion, to more indirect drivers such as state policies and wealthy business interests within and outside the forestry sector (Rudel 2007; Brockhaus *et al.* 2012). Powerful economic incentives are often behind the most relevant drivers, usually acting in 'tandem' (Lambin *et al.* 2001).

Transformational change requires a state that can operate with some autonomy from the sectors driving deforestation and forest degradation and work in the interest of society at large (Karsenty and Ongolo 2012). *Autonomy* of the state refers to the degree to which state actors can make policy decisions independently from various sectors. The form that autonomy takes is the product of the specific history of nation states. A state must be able to withstand lobbying pressure from sectors that benefit from forest exploitation and land use changes, for transformational change to occur. But autonomy has to go hand in hand with inclusive policy processes, which translate into a form of embedded autonomy (Evans 1995). The more inclusive the political system, the more likely the state will serve a broader section of society, because

demands from less powerful interests – such as civil society – find better representation in such systems (Jenkins 1995).

There is substantial evidence of lack of autonomy of the state *vis-à-vis* sectors driving deforestation and forest degradation. Collusion and corruption may be present, or simply weak forest governance, which are considered the main challenges in the development and effective implementation of policies on REDD+ (Kanninen *et al.* 2007). Illegal logging and unenforced laws are endemic in many tropical forested countries (Brack 2005). Ongoing analysis indicates strong links between forest governance and general governance conditions and their impact on the REDD+ policy process (WRI 2009).

The following analysis considers four main politico-economic and institutional conditions: i) the main drivers of deforestation, which represent interests supporting business as usual; ii) policies enabling or hindering REDD+ objectives and related institutional arrangements; iii) the autonomy of the state *vis-à-vis* economic actors driving deforestation and forest degradation; and iv) the level of inclusiveness of policy processes (Table 5.1).

The first condition refers to the *drivers of deforestation and forest degradation*. Agricultural expansion, including cattle ranching, is the main cause of deforestation, although the relative impact of large- versus small-scale and subsistence agriculture varies. This is followed by logging, mining and infrastructure development (Table 5.1). Consequently, in order to effectively tackle deforestation and forest degradation, policy makers need to identify the main policy constraints in the forestry, agricultural, cattle ranching and mining sectors and devise new incentive structures (see Box 5.1 for a discussion on Brazil). The high rents that these sectors command make it particularly difficult to redesign incentives. While the sectors that drive deforestation and forest degradation are well known, quantifying the impacts of these single sectors on deforestation and forest degradation remains a challenge in most countries.

Policies that support drivers of deforestation and related *institutional arrangements* hamper transformational change and create *path-dependencies* that are difficult to escape. In most countries tax regimes favour exploitation of forests for economic development, such as support for rural credit for cattle ranching in Brazil (although they are now lower and linked to environmental sustainability measures) and tax breaks for biofuels and plantation development in Indonesia (Table 5.1). Public funding for infrastructure development is also key to supporting the expansion of such activities. Over time these policies create institutional structures that drive up the profitability of competing land uses, effectively consolidating the power of key sectors driving deforestation and forest degradation. The challenge is to break free from such path-dependencies. In all countries there are also policies in place that can enable

Table 5.1 Drivers of deforestation, policies that clash/support REDD+ and autonomy of state actors

Country	Drivers of deforestation and forest degradation	Policies that clash with REDD+ aims	Policies that support REDD+	Lack of autonomy or possible capture by special interests	Democracy category score (index)*	Level of centralisation
Brazil	Ranching; agriculture (large- and small-scale); infrastructure; selective logging; mining; fire	Rural credit for cattle ranching (although more limited than in the past) or infrastructure development (roads and dams); poor enforcement of tenure rules	Forest Code conservation requirement on private land; improved enforcement of land use policies (including protected areas); economic and ecological zoning; efforts to certify producer legality commercial chains (beef, soy); land regularisation process and demarcation of indigenous land; real-time monitoring of deforestation	Medium–high (land speculation; illegal logging; cattle ranching; tax evasion; drug trafficking; patron–client relationships and electoral campaigns)	Flawed democracy (7.12)	Federal system
Peru	Agriculture (predominantly small-scale); infrastructure; illegal logging; mining	Tax regimes and policies supporting migration and agricultural expansion; road infrastructure projects; energy infrastructure projects (oil, biofuels and hydroelectric); support for expansion of mining; lack of environmental policies and sustainable development policies in the Amazon	Ley 29763 *Ley Forestal y de Fauna Silvestre* (New Forest and Wildlife Act) approved but not yet in force; Peru–US trade agreement; free trade agreement with China on forestry and environmental protection; trade agreement Peru–EU (REDD+, forest certification, sustainable forest management); Ley 29785 *Ley de Consulta Previa* (prior consultation law); national forest conservation programme	Medium–high (corruption of public officials and professionals); powerful cartels that favour illegal logging, coca and cocaine production and informal mining	Flawed democracy (6.59)	Centralised
Indonesia	Agriculture (large-scale including forest plantations such as oil palm, small-scale and subsistence); logging; mining	Tax dependence on forest and mining; tax breaks for forest products, farming produce, pulp and paper; mining permits in protected areas; fiscal and non-fiscal concessions for food estate and energy estate development; biofuel development; land allocation for oil palm plantations	Moratorium on granting of new licenses and improvement of natural primary forest and peatland governance (although considered a weak policy due to the influence of business on government)	Medium–high (pressure from large-scale plantations and logging, pulp and paper, mining and electoral campaigns)	Flawed democracy (6.53)	Decentralised with tensions

Bolivia	Agriculture (small- and large-scale); colonisation and soybean production; infrastructure development; (illegal) logging; mining	Political and economic incentives in agricultural sector (soybean and sugarcane agrobusiness); upcoming infrastructure projects (roads, dams); support for colonisation of the northern Amazon	Improved forest monitoring of illegal logging; increased recognition of local tenure rights; legal framework on sustainable forest management; decentralisation of forest management	Low (illegal loggers bribing forestry police and road police, but little evidence that this involves national administration)	Hybrid regimes (5.84)	Decentralised
Nepal	Agriculture; illegal logging; resettlement; infrastructure; fire	Agricultural modernisation and associated infrastructure development; hydropower development; local road construction; mining of sand, boulders and stone; lack of overarching land use policy	Subsidies for kerosene, biogas, micro-hydro, solar and improved cooking stoves; community forestry programme	Medium-high (illegal logging and smuggling to India and Tibet (China); encroachment of forestlands; corrupt politicians, bureaucrats and community leaders)	Hybrid regimes (4.24)	Decentralised
Cameroon	Agriculture (medium- and small-scale, subsistence); logging; mining	Devaluations boosting logging exports; infrastructure (roads, rails and dams); mining and large-scale agriculture projects	Law No 2011/08 on Guidelines for Territorial Planning and Sustainable Development in Cameroon	High in the logging sector (corruption driving illegal logging includes national and local elite)	Authoritarian (3.41)	Decentralised but with limits
Vietnam	Agriculture; infrastructure; logging; fire; shifting cultivation; migration	Infrastructure (roads and hydropower); self-sufficiency in food and cash crop development (rubber and coffee); National Socio-Economic Development Plan; credit schemes to alleviate poverty; land allocation; economic development as main goal of Forest Development Strategy	Decision 380 and Decree 99; payment for forest environmental services including benefit-sharing regulation (strong design, weak implementation); Law on Forest Protection and Development 2004 and Land Law 2003: legal foundation for carbon rights; National Climate Change Strategy and National REDD+ programme	Medium-high (especially at the local level and in relation to state-owned companies and land administration)	Authoritarian (2.96)	Centralised

Based on May et al. (2011b), Dkamela (2011), Indrarto et al. (2012), Pham et al. (2012), CEDLA and CIFOR (2011a), Forest Action and CIFOR (2011), DAR and CIFOR (2012)
* A high score on the index indicates democracy, while a low score indicates an authoritarian regime (Economist Intelligence Unit 2011)

Box 5.1 REDD+ the Brazilian way: Integrating old sticks with new carrots
Jan Börner and Sven Wunder

Implementing REDD+ requires policies that effectively change land and forest use decisions. In most settings, such changes imply foregone economic benefits for land users, at least in the short term. Apart from implementation costs, any effective REDD+ policy will thus inevitably have distributional consequences. Ideally, REDD+ would maximise both cost effectiveness and equity. In practice, however, policy makers tend to face hard tradeoffs between these two objectives.

Land ownership and forest use rights in the Brazilian Amazon are highly concentrated. The Brazilian Senate is now considering far-reaching liberalisations of currently restrictive land use legislation, in an attempt to catch up with a reality of widespread non-compliance. Effectively enforcing the current Brazilian Forest Code – for example, mandating the conservation of 80% of on-farm forests – would cost the country's fast-growing, land-expansive agroindustry. On the other hand, purely incentive-based REDD+ approaches would mean compensating landholders for not breaking existing conservation regulations, which is politically sensitive. At COP15 in 2009, Brazil therefore proposed a REDD+ approach that combines more rigid regulatory enforcement with a compensatory national programme of payments for environmental services (PES).

Finding the optimal mix of regulatory sticks and PES carrots has implications not only for equity, but also for implementation costs. Enforcing conservation laws requires costly field operations, but it can also produce fine revenues that may partially offset implementation costs. PES, in contrast, entails considerable budget outlays, which have political opportunity costs *vis-à-vis* other government spending. Adding fairness to REDD+ by compensating landholders' opportunity costs – whether legal or illegal but tolerated – thus comes at significant costs, especially if past good forest stewards (e.g. many Amazon indigenous people and traditional forest dwellers) are also to be rewarded.

Mixed stick-and-carrot approaches have their pros and cons. As a stand-alone instrument, PES can be enforced simply by suspending payments to non-compliant land users. PES recipients will then expect to receive at least their opportunity costs in compensation. In conjunction with pre-existing regulations, however, PES become compliance subsidies, which typically will not fully compensate land users for abiding by conservation laws. Under such a policy mix, suspending payments may not suffice to effectively encourage conservation if the regulatory threat is perceived to be improbable, e.g. in remote frontier areas. Imperfect enforcement of the complementary stick component may also induce land users to pocket PES and continue business as usual. Policy makers who effectively integrate stick-and-carrot-based REDD+ policies will thus depend on planning tools that can anticipate spatially heterogeneous implementation costs and welfare effects of synergistically operating conservation tools. In partially decentralised environmental governance systems like Brazil's, the costs of implementing environmental policies are shared between national and subnational governments. New benefit and cost sharing mechanisms will thus also be needed across administrative entities to achieve effective and equitable outcomes.

Source: Börner *et al.* (2011)

REDD+ policy formulation and implementation. They include policies on payments for environmental services; forest regulations that foster sustainable forest management; conservation, reforestation and afforestation; and government expenditures that aim to increase energy efficiency and provide alternatives to forest products. But generally these policies command fewer resources and cover very limited areas, compared to policies that support drivers of deforestation (Table 5.1).

Apart from the business sector, the state itself has economic and political interests in the exploitation and conversion of forest, as these activities contribute to economic development goals and provide financial resources for the state in the form of taxes and other levies. In order to provide incentive structures it is essential that the state holds a sufficient *level of autonomy* from economic actors driving deforestation (Karsenty and Ongolo 2012). Lack of autonomy can also be revealed by high levels of collusion between state and social actors. All seven countries face challenges in this respect (Table 5.1). Nepal and Peru face challenges in the application of forestry laws in particular at the local level where patron–client networks operate. In Brazil and Indonesia, powerful agri-businesses, cattle ranching landowners, and logging companies constantly put pressure on government to protect their sources of rents. This is evident in the attack from business interests on the Brazil Forest Code and the Indonesian Moratorium. Most lobbying occurs behind the scenes, but its effects are visible in final policy formulation, limited implementation of policies and low levels of compliance with existing policies (Coen 2004). In recent years Brazil has demonstrated an increased ability to withstand such pressure compared to Indonesia, which has a long history of cosy relations between government officials and business interests at all levels. Illegal logging licensing is also routinely used to raise resources for electoral campaigns in many of these countries. In Vietnam the main challenge relates to corruption and collusion in state enterprises, local government and civil service. High levels of capture of parts of the state by interests driving deforestation are visible in Cameroon where more than 90% of illegal logging activities involve local and national level elites. In none of the seven countries is autonomy of the state sufficient to support bold policy changes signalling a fundamental break from the traditional development model of relying on unsustainable exploitation of natural resources. State actors in Vietnam, followed by Brazil, are probably in the best position to independently support such a change. In all other cases, transformational change will require broader alliances between parts of the state and other forces able to break path-dependencies. International actors and civil society can contribute in part by pushing for such changes. Norway is one of the major international donors supporting these efforts (see Box 5.4).

Finally, the more *inclusive* policy processes are, the more likely REDD+ policies will include considerations about equity and the less likely potential

tensions and open conflict will occur among policy actors and stakeholders. Inclusiveness in policy processes is affected by the type of political regime and by its degree of centralisation. We use democracy indices and the degree of actual centralisation of the political system as proxies for inclusiveness (Table 5.1). The political regimes in the seven countries vary widely from democratic to authoritarian, as does the level of centralisation, from very centralised (Vietnam) to federal and decentralised states (Brazil, Indonesia). Overall, more authoritarian regimes such as Vietnam and Cameroon tend to be more centralised and have exclusive forms of participation in policy processes. But some regimes like Peru are both democratic and relatively centralised. More democratic states are expected to be more inclusive in policy decision making. Countries such as Indonesia and Cameroon have been subject to changing processes of decentralisation and recentralisation (Ribot 2003; Oyono 2004). Overall Vietnam and Cameroon represent exclusive political regimes, while Brazil, Peru and Indonesia are more inclusive. Bolivia and Nepal have hybrid regimes that have both democratic and authoritarian features, characterised by limited inclusiveness. The inclusiveness of political regimes will likely impact the inclusiveness of specific policy processes, including REDD+ (see Box 5.2 for a more detailed analysis of inclusiveness in the consultation process on REDD+ in Tanzania).

5.4   Policy discourse and coalitions for change

The media can be seen as a mirror of ongoing policy processes, and *media analysis* is used here to identify the dominant policy discourses and the extent to which such discourses are shared across actors. Transformational coalitions use discursive practices that challenge business as usual scenarios and call for changes in institutions, policies and incentive structures of the traditional economic development model, which is based on exploitation of forest resources. However, the mirroring of policy processes by the media is only partial. Not all actors use the media as an outlet to influence policy and public opinion; business interests are particularly media shy and prefer to lobby the government in more discrete ways (Coen 2004). The same is true for scientists, although research institutes are represented more than businesses in the media.

REDD+ media coverage in the seven countries took off after the Bali Road Map was launched at COP13 in 2007. Since then, media articles have increased in number, but the level of coverage differs substantially among countries. Between December 2005 and 2009, three major newspapers in Indonesia and Brazil contained around 190 and 250 articles, respectively, discussing REDD+, while in the other countries coverage remained at under 15 articles (Cronin and Santoso 2010; CEDLA and CIFOR 2011b; Kengoum 2011; May *et al.* 2011a; Pham 2011; Forest Action and CIFOR 2012; Libelula and CIFOR 2012).

Box 5.2 Linking knowledge to action: REDD+ policy making in Tanzania

Salla Rantala

Drawing from different types of relevant knowledge in ways that increase the effectiveness, efficiency and equitability of policy making is a pressing challenge for countries as they prepare their national REDD+ policies. Policy makers are increasingly dependent on brokers of the complex scientific knowledge related to climate change and the required regimes to address it. At the same time, policy outputs often reflect political bargaining processes between various policy actors that differ in their resources and capacities, rather than linear processes of evidence-based policy making.

In Tanzania, the government-led REDD+ Task Force has welcomed contributions by civil society, research institutions, local governments and international partners to national REDD+ strategy development. Organisations with a strong mandate to disseminate information relevant to REDD+ shared their experiences in engaging with the policy process. While formal means often included workshops and training, the most frequently mentioned successful entry points to influencing policy were finding the right organisational allies within and outside of government for joint advocacy efforts, as well as subtle diplomacy with individuals high up in the line of command across different sectors. There was also considerable consensus regarding the need to showcase real local success stories in order to convince policy makers. The most salient challenge to linking relevant knowledge to REDD+ policy making was the high cost of getting the attention of key officials. Conveners of information-sharing events have to compete for the target participants' limited time. Faced with an overwhelming choice of events, officials may end up basing their choice of attending an event on the resources available for expenses such as allowances, rather than on the information content of the event.

This challenge illustrates how the channels of resources and information in policy making may be intertwined. Other barriers mentioned by interviewees in Tanzania relate to the capacity and willingness of decision makers to consider recommendations that diverge from their pre-existing views, as well as the sluggishness of the bureaucratic system in responding to evidence. Limiting interaction to junior officials and executive branches of government instead of the 'real decision makers' was also said to account for some of the failures in effectively linking knowledge to action.

5.4.1 Ownership

In order for governments to lead sustained change in the national REDD+ policy domain, they need to be in control of policy processes and display the political will to implement these strategies. Analysing the extent to which national state actors are active in shaping policy discourse in the media can provide an indication of the degree of government ownership of REDD+ policy processes. The data presented here refer to the counts of policy actors (Table 5.2) and their REDD+ discursive practices, as mentioned in the media frames.

In four of the seven countries, state actors dominate media discourse. While in Bolivia most state actors understand REDD+ as an offsetting mechanism and unilaterally reject it, national state actors in Vietnam and Indonesia show strong pro-REDD+ attitudes. Policy discourse in Brazil is dominated by national level state actors (26%), but a high diversity of stakeholders is represented in the media, notably international environmental nongovernmental organisations (NGOs), research institutes and domestic civil society actors. Indonesia also presents a high diversity of actors, especially international NGOs. A peculiarity of decentralised Indonesia is the relatively high number of subnational actors, which mirrors ongoing negotiations between central and local government regarding the control over REDD+ resources and policy decisions (Cronin and Santoso 2010; see also Box 6.2). Brazil and Bolivia – a federal and a decentralised state, respectively – are the only other countries where subnational actors are present in media reports.

Nepal shows a high presence of civil society actors in the media, which far exceeds that of state actors. Intergovernmental bodies and international research institutes follow. But while they work in conjunction with government in most countries, they completely dominate policy discourse in Cameroon and in Peru. In fact, Cameroon presents the weakest level of government control over policy discourse. It seems that REDD+ strategies are predominantly pushed by international actors, and similar conditions are evident in Peru. While in part this might indicate a lack of state capacity to engage with complex technical issues such as REDD+, it can also be an indicator of slow progress in policy processes and lack of political will to devote resources and efforts to the formulation and implementation of a national REDD+ strategy. In Cameroon, this suggests that sustained and effective policy action around REDD+ might become limited in the near future. Nepal presents a different profile, in which civil society has more representation in the media than the government and is the main supporter of REDD+ policies (see Box 5.3).

Overall, governments in Brazil, Indonesia and Vietnam have strong ownership of national level REDD+ policy processes and are proactively supporting policy action on REDD+, although in Indonesia and Vietnam this is undertaken in

Table 5.2 Actors shaping the policy discourse (percentage of total actors expressing a position on REDD+ in media)

Actor group	Indonesia	Brazil	Bolivia	Vietnam	Nepal	Cameroon	Peru
State (national)	45	26	50	67	17	8	12
State (subnational)	7	2	3	0	6	0	0
Corporate	3	4	10	6	6	0	0
Intergovernmental	8	7	9	27	6	17	25
Research (international)	5	11	0	0	6	42	25
NGO and environ–mental NGO (international)	16	17	10	0	0	0	25
Research (national)	6	13	3	0	12	25	0
Civil society actors (national and environmental NGOs)	10	20	15	0	47	8	13
TOTAL% of organisations	100	100	100	100	100	100	100
Total number of organisations	**219**	**113**	**60**	**32**	**17**	**12**	**8**

strong alliance with international donors. An analysis of Norwegian media mirrors this, as the debate is also largely shaped by the Norwegian government and domestic environmental NGOs (for the view from a donor country, see Box 5.4). In Nepal, government control is more limited and REDD+ is discussed mainly by forest user associations in the media. In Cameroon and Peru, the voice and position of government is almost absent, indicating a low level of national ownership of REDD+ policy processes. International actors may be pushing for REDD+ policy formulation, but REDD+ policy progress is likely to suffer from this absence of national ownership.

5.4.2 Absent voices and hidden discourse

State autonomy *vis-à-vis* agents driving deforestation, government ownership of policy processes and a positive attitude toward REDD+ are preconditions for policy advances; but these conditions are by no means sufficient to ensure effective and equitable formulation of national REDD+ strategies. Transformational change requires policy actors and coalitions to be able to lead policy discussions in new directions compared to business as usual scenarios, thereby breaking away from institutional and politico-economic

Box 5.3 Constraints to effective REDD+ policy making in Nepal
Bryan R. Bushley and Dil Bahadur Khatri

Since the late 1970s, Nepal's forestry sector has undergone a process of steady decentralisation toward increased local autonomy and community-based forest management, and a more inclusive national policy making process. In recent years, however, government and forestry officials have attempted to restrict the autonomy of forest user groups and capture more economic value from forests through legislation, directives and discretionary measures. Simultaneously, the government, international NGOs, donors and civil society have embraced REDD+ and are engaged in policy making and piloting processes.

Yet, REDD+ discourses and policies have been influenced by interactions among a limited set of actors in the government, donor/international NGO and civil society sectors, with a few noticeable trends. First, the exchange of information and resources related to REDD+ is controlled by a few international and national NGOs implementing specific pilot projects, whereas government organisations are most influential in terms of shaping specific policies. Second, the participation of civil society actors in policy formulation is limited to the involvement of relatively few actors, whereas the interests of some marginalised groups, such as women and *Dalits* (low-caste 'untouchables'), are underrepresented. Third, there has been no direct involvement of private sector entities in piloting or policy making processes. Despite these deficiencies, new configurations of actors are emerging around piloting and awareness-raising efforts and advocacy campaigns for the rights of forest-dependent communities.

There are also a number of specific policy constraints that could threaten the long-term viability of REDD+ in Nepal. First and foremost is the lack of a clear legal basis for the establishment of carbon rights. Related to this is the issue of weak and ambiguous land tenure rights, especially for forest-dependent communities. Without either of these, it will be difficult to garner strong internal or external financial and political support for REDD+. Lack of clarity and consensus on adopting a fund-based *vs.* a market-based approach to REDD+ is also a major constraint. Another significant barrier is the lack of an inclusive, just and marketable benefit-sharing mechanism. A benefit-sharing pilot was carried out in three REDD+ piloting sites, with a minority (40%) of the criteria for benefits based on carbon stocks and a majority (60%) based on various social factors, such as the proportion of indigenous people, women, and disadvantaged groups in each community. But such an approach has no basis in existing carbon markets, may not be viable in a global carbon-trading scheme, and excludes other land managers besides community forest user groups. Finally, there is a need for an overarching democratic governance framework that would improve benefit-sharing mechanisms, oversee monitoring, reporting and verification, and address conflict resolution related to REDD+ implementation.

In Nepal, it appears that REDD+ may be reinforcing the centralising tendencies of the state while marginalising other important stakeholders. However, new modes of collaboration are also emerging, with the potential to transform existing institutions of forest governance. If these collaborations can successfully address the constraints outlined above, they may contribute to the realisation of a more effective, efficient and equitable REDD+ mechanism.

path-dependencies (Laumann and Knoke 1987). Inevitably, they will face resistance from conservative coalitions defending the *status quo*. Whether such transformational change occurs depends on which coalition will ultimately gain dominance in policy circles. Dominance usually requires buy-in at least in part from state elites and business interests. Coalitions can be based on common interest, ideological beliefs or a common discourse (Hajer 1995; Sabatier 1999; Benford and Snow 2000; Di Gregorio 2012).

It is not just dominant voices in the media that reveal the position of policy actors – voices that are absent can be as telling. The above analysis indicates that business views and business–state relations are barely explored in the media. This is the case even in countries such as Brazil and Indonesia, where the role of the business sector is quite significant. In general, business tends to lobby policy makers behind the scenes (Coen 2004). This is a universal phenomenon, and more so where such lobbying is perceived as problematic by the public. When such pressure entails illegal activities, secrecy becomes even more important. We have already seen how corruption and collusion between state and legal – as well as illegal – business interests is a major concern in most of the countries studied (Table 5.1). Such collusion forms low-visibility coalitions which can be very powerful in resisting transformational change and can influence not just the implementation, but also the formulation of policies.

There are, however, indications that even if such coalitions tend to operate discretely, their voices can be reflected in the media. Support for a business as usual scenario by state actors, in conditions where state autonomy is low, is a likely indicator of the existence of such dominant coalitions. The reluctance of government to take strong action with respect to REDD+ when this might threaten established rents linked to deforestation and forest degradation is a case in point.

Apart from identifying key actors, the media analysis helps to characterise the REDD+ policy positions of these actors. Their single policy positions have been aggregated into broader categories to identify coalitions for transformation change, and those resisting such change. The results of the analysis are presented next.[1]

5.4.3 Business as usual coalitions and coalitions for transformational change

In the media, powerful coalitions supporting key sectors driving deforestation and forest degradation are evident in both Brazil and Indonesia. Indonesian actors stress the need for REDD+ policies to compensate the opportunity

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1   Given the opposition of government toward REDD+ and the absence of positions that seek transformational change, Bolivia is omitted from the analysis that follows.

Box 5.4 A media-based analysis of the REDD+ discourse in Norway
Laila Borge

In 2010, the well-known climate scientist James E. Hansen said that the main effect of Norway's funding of forest protection would be a clearer conscience for members of that oil nation. Norwegian environmental minister Erik Solheim quickly retorted in a letter to *Aftenposten* (the leading Norwegian newspaper): "Norway supports efforts to prevent deforestation because this is the quickest and most cost efficient way to achieve deep cuts in greenhouse gas emissions. (...) Norway has shown international leadership with its climate and forest initiative, and we have made several other countries support this important work". This latter view has been the most widely expressed in the Norwegian media.

In 2007, during the international climate negotiations in Bali, Norway pledged NOK 15 billion (US $2.6 billion) towards efforts to reduce emissions from deforestation and forest degradation in developing countries. The Government of Norway's International Climate and Forest Initiative was established in 2008 to implement that pledge. The initiative had broad political support and the Norwegian media were overwhelmingly optimistic about the initiative. Rainforest protection was presented as a simple, inexpensive and effective way to reduce greenhouse gas emissions. Several commentators also pointed out that, by funding forest conservation, Norway could quickly become carbon neutral.

Critical voices have grown louder in recent years, mainly from the research community and civil society. No one denies the value of the initiative's purpose, but many question whether it is possible to measure and control its effects and point out that most of the money has not yet been released. The Norwegian government is also being criticised for financing projects that destroy rainforests through the Government Pension Fund. Some media have brandished some unintended negative consequences of REDD+. In addition, the Norwegian government is criticised for buying its way out of less popular domestic CO_2 reductions.

Overall, however, the Norwegian media have remained positive, and Norway's International Climate and Forest Initiative is seen as the most successful of the government's efforts to reduce emissions. The Norwegian debate is largely shaped by the government and domestic environmental NGOs. The Brazilian government has also been quite visible in the Norwegian press. The most cited actors are the (former) Norwegian Minister of the Environment and Minister of Development Cooperation, Erik Solheim, and the Norwegian Prime Minister Jens Stoltenberg.

costs of large-scale businesses related forest conversion and warn that REDD+ should not undermine economic development. Given the low level of autonomy of state actors illustrated earlier, such statements are consistent with a situation in which part of the state apparatus sides with business interests that profit from rents from ranching, plantation development, logging and mining. But opinions of state actors are not uniform. For example, in Indonesia, the conservation branch of the Ministry of Forestry and the Ministry of Environment recognise that REDD+ policy development will require extensive policy and institutional reforms.

There are also divisions on REDD+ policy design that hamper coalition work. In Brazil, both state actors and international environmental organisations are divided about the possibility of financing REDD+ through market mechanisms. The same debate is visible in Nepal, where indigenous organisations and domestic environmental groups are in favour of market mechanisms but voice concerns about the lack of inclusion of local users in REDD+ policy decisions. They call for procedural changes in policy decision making. But state actors do not engage with issues of social inclusion in the media.

In Vietnam, the debate about compensation refers to the regulations requiring domestic state-owned enterprises (hydroelectric plants) to reward forest users for providing forest-related environmental services, since the Vietnamese government is subsuming forest PES under REDD+ policies. The media report two instances in which state-owned enterprises disagree with the Vietnamese government. Despite this resistance, it would appear that in Vietnam the national government is trying to impose a change in direction in business as usual *vis-à-vis* some state-owned business interests (Pham *et al.* 2012).

Overall stances and coalitions calling for transformational change are less prominent in the media than business as usual or neutral stances. This indicates that, overall, transformational coalitions are minority coalitions opposing more powerful coalitions supporting the status quo. In Indonesia, parts of domestic civil society oppose the inclusion of plantations in REDD+ schemes, which represents a direct attack to the dominant business as usual coalition. Yet, there is no indication of a broader transformational coalition that might include other actors such as representatives of business or government. A number of international environmental NGOs side with domestic civil society in expressing their concerns about the potential of REDD+ to limit forest access for local users or even dispossess forest-dependent groups. But this attempt to push policy makers to reconsider local forest tenure arrangements does not find a response in the discourse of the dominant coalition.

Concerns about weak governance and corruption are voiced by both international and domestic civil society actors in Indonesia. In particular, they stress the danger that corruption might lead to ineffective implementation

of REDD+. Such a position can be understood as a call for transformational change and a denunciation of collusion and capture, which often underlie business as usual coalitions. Yet, such concerns remain unaddressed in most other countries, despite the fact that weak governance is a major political constraint in most countries.

The main demand of the dominant domestic civil society coalition in Nepal is for a stronger role of local forest user groups in accessing benefits from REDD+. This view is opposed by local government, while state government seems unengaged with REDD+ issues in media debates. Forest user federations form the only REDD+ coalition engaging with the media in this country. Such a prominent position is in part linked with the long history of forest user groups and community forestry in Nepal. This is the only case in our study where path-dependencies seem to lend strength to civil society. Yet, in the absence of a broader coalition that includes allies from within the elite, its effectiveness in pushing for change remains in doubt.

In Peru, international environmental NGOs dominate media debates and share with indigenous organisations a concern about the inclusion of plantation forestry in REDD+ schemes. However, state actors are hardly engaged in discussions around REDD+ in the media, while business actors call for the strengthening of private property arrangements to ensure access to credit and security of investments. Business as usual coalitions, corruption and collusion remain hidden from public scrutiny. The same is true for Cameroon, where the media do not mention any specific state actors providing a position statement on REDD+, although it is suggested that Cameroon as a country is in favour of the development of REDD+ programmes. The absence of transformational coalitions in the media might contribute to the lack of engagement of state actors, who are not called to take a position on REDD+, and indicates that REDD+ policy developments are at a very early stage.

In summary, Indonesian state actors, although supportive of REDD+ in their rhetoric, are open in defending business as usual policies. In Brazil, state actors have taken steps to support REDD+ but entrenched interests linked to drivers of deforestation are powerful players and try to influence policy decisions. In Vietnam, the government is explicit in defying such path-dependencies, although resistance from business interests is evident. In all countries except Nepal, coalitions for transformational change, if present at all, are minority coalitions. Only in Nepal does such a coalition dominate media discourse, in large part thanks to the lack of engagement of state actors with REDD+ policy discussions. Peru and Cameroon lack any evidence of transformational change coalitions.

5.5 Conclusions

The above evidence illustrates how four important factors, which can help overcome the politico-economic constraints to policy reform and lead to effective and equitable REDD+ policy design, operate in different countries. They are: a high level of autonomy of state actors from business interests linked to forest exploitation and conversion; ownership and control by national governments of national REDD+ strategies; a high degree of inclusiveness in policy processes; and the presence of coalitions for transformation change.

The findings illustrate that in most countries these factors were neither present before the introduction of REDD+, nor are they currently being achieved – instead countries struggle with reform processes in and beyond the forest sector. One common challenge in all seven countries is the level of autonomy of state actors. While state rhetoric, expressed in media stances, illustrates 'win–win' scenarios where economic objectives go hand in hand with environmental protection, state actors seem to find it extremely difficult to embrace such a view in practice. High dependence of economic development on unsustainable exploitation of natural resources is deeply engrained in politico-economic structures. This remains the major challenge in all seven countries.

None of the countries demonstrates very inclusive policy processes, expressed by democracy indices and effective decentralisation, although Indonesia and Brazil fare better than the others. Cameroon and Vietnam present the most exclusive processes, raising concerns that latent conflicts and tensions among stakeholders might occur in the REDD+ domain and might worsen over time. Yet, in a number of countries, the lack of engagement of national state actors raises serious questions about who is driving policy processes. In three out of seven countries, national ownership over REDD+ policy developments and related reforms is weak. In these countries the significant role of international players in the financing and design of policies – in the absence of a national government that takes charge of such processes – leads to slow progress and likely problems in implementation.

Proactive efforts, predominantly on the part of civil society organisations, to build domestic constituencies that challenge powerful interests are evident in the media debate in some countries, but these remain minority coalitions. Further advances are needed if REDD+ is to be perceived not as a donor-driven activity, but as a truly national policy, one which serves the broader interest of forest-rich developing countries and is not perceived as conflicting with national development. Even in countries that are most advanced in the formulation of national REDD+ strategies, related policies are often perceived as a threat to economic development. Consequently, powerful economic

interests lobby governments to adopt policies that reduce the effectiveness of REDD+ or further slow decision making, as evident from the experience of the Indonesia Moratorium on Forest Conversion and the current threat in Brazil to revise the Forestry Code to reduce the requirements for forest protection.

What is needed now are coalitions capable of breaking up such path-dependencies: new, broad and inclusive alliances that use scientific expertise and technical and institutional capacity to overcome a traditional policy model that is unable to envision how REDD+ policies can be harmonised with development goals. The participation of state elites and the engagement of business actors in these coalitions are key to influencing the political agenda in a significant way. In most countries this will require the rise of a counter-discourse for transformational change that can challenge the old development model, disband dominant coalitions and attract support from state and business actors willing to take on these challenges.

Multiple levels and multiple challenges for REDD+

Kaisa Korhonen-Kurki, Maria Brockhaus, Amy E. Duchelle,
Stibniati Atmadja and Pham Thu Thuy

- REDD+ is a multilevel endeavour that must ensure that global demands, national and subnational structures, local people's needs and aspirations are all linked in efforts to reduce emissions from deforestation and forest degradation. If these interconnections are disregarded, REDD+ could fail.
- Enhancing and harmonising information flows between local and national levels are essential for accountable measurement, reporting and verification and emissions leakage control. Sound information flows across the levels can also enhance the negotiation power of disadvantaged groups and ensure a more effective, efficient and equitable REDD+.
- To reduce the risk of conflict, REDD+ multilevel governance systems must match incentives and interests with transparent institutions.

6.1 Introduction

Achieving the objective of reducing emissions from deforestation and degradation (REDD+) is inherently a multilevel puzzle. Local people face global demands for climate change mitigation that must be effected through existing and emerging national and subnational institutions and structures.

REDD+ requires an integrated approach involving both international and local governance levels, with challenges every step of the way. External organisations and structures are also needed to ensure independent and credible reporting and verification and to guarantee accountability.

Initially, REDD+ emphasised a national approach since it can help to manage emissions leakage, encourage permanence and provide reliable measurement, reporting and verification (MRV) (Phelps *et al.* 2010b). But national governments struggle with multilevel challenges and have faced enforcement problems in the land use sector for decades (Corbera and Schroeder 2011).

There have been various theoretical reflections about multilevel governance and REDD+ (Armitage 2008; Skutsch and Van Laake 2008; Forsyth 2009). This chapter contributes to the debate by moving beyond theory to provide examples of how multilevel governance mechanisms are used to respond to challenges in REDD+ core elements in different countries as well as identifying the main obstacles and opportunities in current REDD+ realities.

Larson and Petkova (2011) define governance as follows: "Governance refers to *who makes decisions* and *how decisions are made*, from national to local scales, including formal and informal institutions and rules, power relations and practices of decision making." In this chapter we apply Forsyth's (2009) broad definition for multilevel governance (MLG) as the implementation of public policies across diverse spatial scales and by actors with dissimilar influence and values.

Currently, REDD+ progress is fragmented between and within international, national and subnational governance levels, and *mechanisms* for multilevel governance provide specific strategies for better integration. Pahl-Wostl (2009) considers three processes that enable this integration. First, actors from one level can participate in processes at another level. Second, institutions created at one level can influence processes or institutions at other levels. Third, knowledge produced at one level can influence processes at other levels.

To go further, based on the 4Is framework[1] presented in Chapter 2 of this volume, governance systems in REDD+ must: i) ensure the match of *institutions and incentives across the levels* involved in REDD+; ii) ensure the flow of *information* required to implement REDD+ (including local information); and iii) enable the negotiation of actors with different *interests* across levels.

This chapter argues for the need to identify and understand the multilevel governance mechanisms that are being implemented within REDD+ and the benefits and risks associated with a lack of multilevel governance. It points

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1   The 4th I refers to 'Ideas' that are not explicitly considered here.

out that policy makers, negotiators, state agencies and nonstate actors, project proponents and local organisations need to understand how multilevel governance can help REDD+ to be more effective, efficient and equitable and how to strengthen governance mechanisms in existing REDD+ policies and programmes. There are encouraging examples showing that steps are being taken towards vertical integration. While multilevel governance and related issues have been debated in the conservation and development literature, as our preliminary results will show, there are still challenges in integrating multilevel thinking and action into the REDD+ policy process.

Our analysis considers the multilevel dimensions of REDD+ core elements. To support it, we provide anecdotal evidence of challenges and opportunities through a focus on measurement, reporting and verification (MRV) and emissions leakage in three countries involved in CIFOR's Global Comparative Study on REDD+ (see Appendix): Brazil, Vietnam and Indonesia. We focus on the multilevel nature of these elements within the three countries and not between international and national levels.

6.2 Framework: Dimensions of multilevel governance

Angelsen *et al.* (2009) and Kanninen *et al.* (2010) identified a number of key issues in REDD+ implementation, including the challenges of MRV system implementation, leakage control, permanence, financial mechanisms and benefit sharing as well as the participation and rights of indigenous people and local communities. Most of these elements have explicit multilevel dimensions and, if disregarded, pose risks for REDD+. In Table 6.1, we give examples of multilevel dimensions of REDD+ issues and risk factors if these dimensions are taken into consideration.

In the following sections, we will focus on two key issues: MRV and leakage control. Many of the other issues listed in Table 6.1 are covered in separate chapters of the book, e.g. benefit sharing (8), tenure (9), and reference levels (16). In this chapter we will present existing multilevel governance mechanisms, existing REDD+ responses and examples from case studies in Brazil, Vietnam and Indonesia. Finally, we highlight challenges related to the 4Is.

6.3 Multilevel governance and REDD+ response: Preliminary evidence

REDD+ includes various multilevel governance challenges as seen in Table 6.1. Most of these challenges relate to connecting actions at the local and subnational and national levels to ensure the flow and consistency of information and the management of interests across levels. Evidence from

Table 6.1 Core elements in REDD+ and their multilevel dimensions

Core elements in REDD+	Multilevel dimension	Risk if multilevel dimension disregarded
Measuring Reporting and Verification (MRV)	• Flow of information and verification across levels • Integration of spatial and field-based data • Technical capacity to use information across levels • Overlapping jurisdictional power over land use data by national and subnational agencies • Aggregation and standardisation of data across levels	• Potential conflict between subnational and national agencies on responsibility for land cover data • Datasets of differing quantity and quality and based on different methods, making aggregation difficult
Reference levels (RLs)	• Various sectors, markets and policies drive deforestation in different ways within the same country • Variation in methods to establish RLs for same area	• Inconsistency between subnational and national RLs • Lack of ownership among subnational actors if local context and land use drivers not taken into account at national level • Poor accuracy of RL if regional RLs are not modified based on local drivers and context
Leakage	• Leakage management tasks can be assigned at the subnational level; national-level carbon monitoring systems must assign liability for leakage across subnational boundaries • Guidelines for subnational governments to support and negotiate settlement of leakage-related disputes with other subnational governments	• Risk if no legitimate assignment of liability to subnational governments • Risk of deforestation and degradation shifts to areas that have lower capacity to monitor emissions and enforce REDD+ policies
Permanence	• Varying interests at different levels operate at different time horizons, creating difficulties in achieving permanent emissions reductions • Establishment of national/international mechanisms to settle disputes among different entities in assigning liability over emissions in the future • Establishment of insurance systems that account for variable subnational forest conditions/trends to help provide certainty where risk of emissions exists	• Different life spans (project cycles, election cycles, sustainability needs) can lead to inconsistent decision making over time • Risk of distorted efforts for emissions reductions when political and commodity market conditions change • Doubtful additionality when claims for credits are based on emissions reductions due to exogenous factors

Benefit sharing and financial mechanisms	• Benefit sharing systems are often national but affect local rights (colonial /post colonial tenure regimes, customary rights, local practices, see tenure) • Distribution of financial resources and technical assistance across the levels to support readiness and ongoing activities • Decisions over performance and release of funds across levels	• Risk of elite capture because of unequal power relations between donor and beneficiary across levels and scales • Risk of corruption (See Box 6.1)
Participation and rights of indigenous people and local communities	• Rights of local communities to participate • Flow of interests and information from local to global level • Indicators of participation must recognise possibility of elite capture at all levels. • Decisions at national level have local consequences	• Risk of elite capture across levels • Risk of missing learning opportunities from past failures/ successes as claims of benefits to communities and real emission reductions made at higher levels, despite lack of/contrary evidence in the field
Co-benefits (poverty alleviation, biodiversity conservation)	• Interest in co-benefits vs. emission reductions differs across levels: emissions reduction is main concern at the international level but poverty alleviation is main concern at subnational/local level. National levels may try to balance both.	• Insufficient attention to differing interests could cause disengagement of subnational/local actors, who are crucial in implementation success
Tenure	• Unclear land tenure systems are further complicated by REDD+, which operates under additional dimensions (carbon rights, which are still undefined in most countries) • Rights and responsibilities for REDD+ among land rights holders (ownership and use rights) at different levels are generally unclear and new legal frameworks under REDD+ may lead to usurpation of traditional rights	• Lack of clarity on rights to carbon and land create injustice across levels. • Risks of insecurity of land claims and elite capture due to legal pluralism • If people question their ownership over REDD+ benefits, their incentive to reduce emissions will be diminished

Box 6.1 Risks of corruption in REDD+: Lessons from Indonesia
Ahmad Dermawan

The REDD+ readiness phase in Indonesia already involves large and growing public funding as well as private investment. It also involves complex interactions among actors from the global to local levels. The successful use of these funds for policy reform and reducing carbon emissions will require cooperation among agencies. However, the situation is still far from ideal.

One of the challenges is the poorly defined boundaries of areas under state forest. Licensing regulations require applicants for any concessions, including REDD+ project concessions, to meet certain criteria and ascertain that the area is free from any existing rights. Yet there are challenges to meet these criteria. For example, although timber plantation and ecosystem restoration permits should be issued only for degraded forests and must be free from competing claims, there are still applications for land either with good forest conditions or which have other claims on them. This could allow REDD+ concession holders to deforest before the accounting period begins. Also, since subnational governments have the authority to issue permits for plantations and mining, unclear forest boundaries would provide opportunities for them to issue permits within state forests.

Another challenge is the reconciliation of timber production and tax reports to ensure that forest concessions pay their dues. Actors from district to central government levels are involved in reconciling timber production and tax payment reports with strict timelines. Yet the Supreme Audit Agency found that reconciliation is not always carried out on a regular basis. As a result, the Supreme Audit Agency found discrepancies between the amount of tax actually received by the government, and the amount it should receive. If replicated under the REDD+, it will undermine accurate credit accounting and foster corruption.

Corruption and fraud could also affect the distribution of revenues at different levels of government. Past experience shows that there have been delays in disbursing and spending shared revenues from forestry across government levels. Under the existing fiscal balancing law in Indonesia, it is not possible to share money directly across government levels and communities. Depending on how REDD+ revenues are treated in the fiscal system, the approval of future REDD+ revenues levels and the allocation of these revenues will involve much negotiation between districts, provinces and central agencies, therefore increasing transaction costs and opening the door to corruption and bribes.

After each level of government receives its share of forest revenues, past experience shows that poor financial management capacity, elites who act outside the rule of law without being penalised and the absence of accountability mechanisms have led to corruption and misuse of forest funds. This could create significant risks for corruption in climate finance in Indonesia. Failing to anticipate these risks could compromise the ability of REDD+ to meet its emission reduction and revenue targets.

Source: Dermawan *et al*. (2011)

Brazil, Vietnam and Indonesia indicates the multilevel needs and mechanisms that must be addressed to achieve key REDD+ objectives (see Table 6.2).

Measurement, Reporting and Verification (MRV) is a system for providing quantitative estimates of greenhouse gas fluxes (emissions reductions and removals). The primary focus is on monitoring changes in forest carbon stocks and/or flows, reporting those changes in a transparent and timely manner and verifying those estimates through an independent third party (Herold and Skutsch 2009). MRV faces challenges in integrating different types of information across levels (global monitoring systems, establishment of national MRV systems and MRV techniques used by subnational REDD+ projects).

Leakage occurs when interventions to reduce emission on one area (subnational or national) lead to higher emissions in another area (see Wunder 2008). If leakage is not accounted for, reported emission reductions will be overestimated.[2] Leakage within national boundaries can be reported under a national carbon accounting system but may suggest the need for financial compensation between the subnational leakage source (where emission reductions occur) and the sink (where emissions are displaced).

6.4 MRV

Most countries still lack national REDD+ frameworks and policies, although various REDD+ pilot projects have been initiated and subnational decisions have been made on REDD+ strategies. As a result, many subnational project proponents are setting reference levels for their project sites and developing their own MRV systems. Links between levels are essential to determine how emissions reductions from these subnational initiatives will be accounted for at the national level. Furthermore, external organisations are needed to ensure independent and credible reporting and verification, and to ensure accountability. We elaborate on each of these challenges below.

6.4.1 Challenge: The lack of framework

In Brazil, interactions between government agencies and civil society at multiple levels have influenced the development of REDD+, including through proposals for setting reference levels and MRV at the national level. Brazil's National Institute for Space Research is well poised to measure, report and verify emissions from deforestation and degradation in the

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2 The term 'leakage' refers to 'negative leakage', i.e. when reductions in emissions in one area lead to increased emissions in another. This is only for simplification as we acknowledge that 'positive leakage' (i.e. reductions in emissions in one area lead to *reduced* emissions in another) could also happen.

Table 6.2 Multilevel governance mechanisms, REDD+ responses and case study examples

Core issue in REDD+	Multilevel governance mechanisms	REDD+ response	Preliminary evidence from GCS	Potential options
MRV	• Capable, connected bodies at all levels that have explicit mandate, power and budget to collect and share information from various sectors to estimate carbon emissions from land use change • Different forms of information (satellite imagery, GIS, field data, local knowledge etc.)	• National carbon accounting systems • MRV capacity-building at national and subnational levels • Participatory MRV • Projects and governmental agencies outsource MRV services as needed • REDD project registry • Development of MRV guidelines for REDD+ projects	**Brazil** Advanced techniques used; project-level MRV systems in place undergoing third party verification; national framework still needed **Vietnam** Data are scattered and fragmented; national MRV framework established but still needs to be localised **Indonesia** Efforts to reconcile spatial data on land cover, concession borders and administrative boundaries	• Simplify international verification standards and methods to be more attainable by subnational initiatives • Establish legislation on reporting responsibilities to centralise data under national monitoring agencies • Establish uniform regulations on the rights, responsibilities and procedures for MRV across subnational governments • Establish funds and transparent mechanism for allocating resources to support subnational MRV
Leakage	• Vertical and sectoral coordination between local/cross-province/cross-national levels to avoid leakage, which can occur with short or long time lags, and come from different sectors • Policies to address the mix of multiple spatial, temporal and sectoral issues • Broader areas for REDD+	• National carbon accounting systems • Domestic discussion of trade/border-based policies to avoid leakage from/to other countries • Development of leakage monitoring guidelines at the project level • Studies on trade-based carbon balances across countries • Improved regional trade and security dialogues	**Brazil** Promising subnational level experience in creating broader REDD+ areas; experience in addressing potential leakage across international borders **Vietnam** Weak coordination among relevant agencies, political relationship among Laos, Cambodia and Vietnam **Indonesia** Regional and local political games affecting subnational leakage	• Mandate a national emissions monitoring body • Clarify the system for distributing REDD+ benefits and responsibilities across levels • Establish legal procedures for settling disputes over leakage across subnational boundaries • Create regional dialogues and regional agreements among neighbouring countries

Amazon through the use of state of the art remote sensing and GIS. Several REDD+ project proponents in Brazil have drawn on these national data and regional modelling efforts when establishing reference emissions levels for their project sites based on historical rates of deforestation. Proponents plan to use advanced remote sensing techniques, including airborne LiDAR data (Asner *et al.* 2010) and new algorithms for detecting forest fires (Alencar *et al.* 2011) to monitor deforestation and degradation. That said, there is still much uncertainty that must be addressed in establishing MRV systems in Brazil. Carbon emissions from degradation should be incorporated in baseline-setting, monitoring conducted on an annual basis, and remotely-sensed data integrated with robust field measurements (Souza Jr., personal communication, 9 March 2012. See also Chapter 15 concerning uncertainty about emissions factors). Brazil can claim at least two examples of local level integration in MRV systems of REDD+ projects where community-based monitoring is linked to spatial analyses. Despite these advances, given Brazil's large size, isolated subnational REDD+ projects will have little effect on reducing emissions if they are not linked to a broader national framework. In addition, the complexity of international verification standards and methods for measuring unplanned deforestation could be simplified to allow for greater accessibility by REDD+ project proponents, especially prior to finalisation of the jurisdictional and nested REDD+ approach by the Verified Carbon Standard (VCS) and national MRV frameworks.

6.4.2 Challenge: Conflict or lack of interest

In Vietnam, conflict of interests and the various land classifications used by different ministries, and even within ministries, increase the challenge of obtaining accurate information and data on forestry lands and forestry resources. Data are scattered and fragmented across different departments and units and are neither shared nor available to the public. Numerous donors have tried to assist the government to develop and improve the current MRV system. However, these efforts have been thwarted by the fact that internal stakeholders often do not share data and resources with each other, resulting in overlapping and duplicated actions. It is worth noting that current MRV initiatives fail to address the social impact assessment (SIA), as the relevant ministries for SIA are absent from the discussion.

In Vietnam, there are problems in arranging additional and independent bodies for MRV because of high transaction costs, conflicts with existing government policy (e.g. with regard to national security) disagreement between central and local authorities and among donors and lack of support from local agencies. The local governments challenge the central government and donors on the practicality and realism of these independent bodies and call for a more realistic and cost effective approach. If the potential for payment is small,

local governments may prefer to use existing mechanism and institutional arrangement with additional functions.

While participatory MRV remains a controversial issue in Vietnam, many projects have piloted participatory carbon monitoring. The World Agroforestry Center conducted the most significant test, in collaboration with national partners in Bac Kan, Thai Nguyen and Thua Thien Hue province. The new method, known as RaCSA (rapid carbon stock appraisal), was tested for its potential to help communities become involved in reporting and monitoring payments for ecosystem services (PES) contracts (Kurniatun *et al.* 2001), to explore local knowledge and investigate activities that can improve local livelihoods (Van Noordwijk 2007). Experience with this method shows that RaCSA can indeed help local people to actively participate in MRV. These lessons learned from this pilot study could potentially benefit the discussion and design of MRV system in Vietnam. However, the findings have not been widely shared among stakeholders nor fed into current policy debates, once again highlighting the disconnect between project-level activities and the national REDD+ programme.

6.4.3 Opportunity: Voluntary working groups

Indonesia provides an interesting example of an attempt to improve institutional linkages. *Ad hoc* REDD+ working groups in Central Kalimantan, East Kalimantan and Aceh, together with the national REDD+ task force, are helping to improve stakeholder participation and dialogue between ministries, private sector, civil society and academia. The working groups are temporary measure to address the lack of institutional links between sectors, and – at least in Indonesia – are a familiar mechanism for addressing emerging issues. The immediate goal is to improve dialogue, build informal networks, form a unified vision of REDD+ and create a policy and implementation space for REDD+ in relevant institutions (see Box 6.2).

6.4.4 Challenge: The lack of matching maps and mindsets

In Indonesia and Vietnam, the main problem in establishing a national MRV system is the lack of reliable, harmonised and centralised spatial data on land uses, such as forestry/mining/agriculture concessions, conservation areas and economic development zones. In Indonesia, steps have been taken to increase data transparency and to harmonise land use maps across provinces and sectors. The REDD+ Taskforce Working Group under the President's Unit for Development Control and Monitoring (UKP4) has posted spatial data on the Internet and has invited public analysis and input. This was done in response to the deforestation moratorium spurred by the Letter of Intent between the governments of Indonesia and Norway on REDD+ cooperation (see Box 2.1 in Chapter 2). Backing from the Indonesia president was key to legitimise

the mapping process. This process has generated interest at the district level. In Kapuas district, a REDD+ model district, spatial data reconciliation has become part of the REDD+ strategy (Field observations by Atmadja 2011). A multiagency initiative – the Indonesian National Carbon Accounting System (INCAS) – is establishing methods for national carbon accounting. It complies with IPCC requirements, contributing to reliable and standardised data. However, action to centralise data currently housed in various agencies is still limited.

The people and organisations responsible for implementing REDD+ projects often try to engage local policymakers in understanding the goals and objectives of their activities. But since the REDD+ payment mechanism is unclear, interest in REDD+ activities is very limited. One of the exceptions is the Kalimantan Forest Carbon Partnership (KFCP), a government-to-government partnership between Indonesia and Australia (The Government of Australia and The Government of the Republic of Indonesia 2007). Institutional presence and long-term funding for the partnership have helped to engage local policy makers in regular dialogues and collaborative decision making. (See Box 6.2 for additional cross-scale governance linkages in Central Kalimantan.)

6.5 Leakage

There are two issues related to leakage: i) the technical approach to monitoring and measuring leakage; and ii) the procedures and actions needed to manage or minimise it.

REDD+ interventions can cause local/cross-province/cross-national leakage, involve short or long time lags and come from different sectors (e.g. agricultural, mining, forestry and infrastructure; Wunder 2008). The mix of spatial, temporal and sectoral issues implies that multilevel governance mechanisms are necessary to ensure overall emissions reductions. Transnational leakage is still unregulated, possibly because strategies to limit it could include contentious trade measures that might impinge on international law and sovereignty concerns (see review in Droege 2011). Solving these disputes requires established institutions to determine the liability and legality of the selected leakage policies.

6.5.1 Opportunity: Learning from subnational experiences

An important way to control leakage is to consolidate a REDD+ framework at as broad of a scale as possible. The REDD+ leadership observed at the subnational level in the Brazilian Amazon, through the Amazonian state governments' participation in the Governors' Climate and Forests Taskforce (GCF), is an important strategy for decreasing the risks of leakage in the

Box 6.2 Regional policy networks in Indonesia
Caleb Gallemore and Rut Dini

CIFOR is undertaking research in Central Kalimantan (Kalteng), Indonesia to better understand how public, private, and civil society organisations interact in the process of constructing REDD+ policy on a provincial scale. Using a policy network analysis approach, CIFOR is studying patterns of information sharing, cooperation, funding and disagreement among approximately forty key organisations working on REDD+ policy in the province. While the research is ongoing, there is already clear evidence of the importance of cross-scale connections for understanding policy development – or lack of policy development – in Kalteng. The province entered the international spotlight when it was chosen as the first pilot province to benefit from a $1 billion agreement with Norway, which requires Kalteng to develop a subnational REDD+ policy within the context of Indonesia's own national REDD+ strategy, adapting policy developed in Jakarta to local conditions. Organisations with an interest in REDD+ policy in Kalteng report confusion about REDD+'s legal status, both locally and in Jakarta. Lacking a firm legal basis for REDD+, the province's activities – and its REDD+ institutions – remain *ad hoc*.

Organisations that are active in REDD+ activities in the province cooperate with local groups, as well as with institutions in Jakarta or further afield, but historically this cooperation has bypassed the provincial government, meaning that efforts to manage cross-scale relationships are a central task for organisations like the governor's office, which in 2009 established the *ad hoc* Area Committee on REDD and its administrative arm, the Sekretariat REDD+ Bersama, as well as the United Nations Office for REDD+ Coordination in Indonesia (UNORCID). These organisations act as bridges between the province and the national government and are also undertaking a concerted effort to combine local REDD+ initiatives into a provincial-scale strategy: a challenging task given broad local powers granted under decentralisation.

Our respondents report that cross-scale relationships present a challenge and a source of confusion. Unsure about the legal basis of their roles in REDD+ implementation, provincial policy makers sometimes feel like they are waiting for something that will never happen. Within the province, much activity remains focused on specific REDD+ projects, as regency governments hold considerable authority over land use. While connections between national and provincial policy discussions are relatively common, there are few direct or indirect connections between the village and regency scales and the networks of organisations involved in policy discussion at the provincial scale. Several organisations in the provincial policy network, however, are working to find ways to build such connections. Initiatives like www.borneoclimate.info an SMS micro-

blogging platform for discussions about REDD+ and other forest issues, provide one way to use Indonesia's widespread mobile phone usage to its advantage. There are also discussions about the possibility of establishing one or more multistakeholder forums to provide an institutionalised setting for discussions about REDD+ between government, civil society, and traditional leaders, among others. Providing an environment in which connections between these scales can emerge, however, may also require a clear legal basis for REDD+ that delineates roles at all levels.

region. Based on this forum, and with support from national NGOs and the Amazon Fund, seven out of nine Amazonian states have initiated state plans to control deforestation within the framework of the National Plan for the Prevention and Control of Deforestation in the Amazon since 2008 (May *et al.* 2011b). The states of Amazonas and Acre have passed laws designed to reduce emissions from deforestation and degradation: the Amazonas' Climate and Conservation Law (3135/2007), passed in 2007, and Acre's State System for Environmental Services Law (Government of Acre 2010; Law 2308/2010) transformed state institutions when it was passed in 2010. With the assistance of environmental NGOs, Acre's government has also considered how to control international leakage through information exchanges and capacity building with the regional government of neighbouring Madre de Dios, Peru.

6.5.2 Challenge: Transboundary leakage from mismatched domestic supply and demand for wood

Leakage issues remain difficult in terms of data collection and political debate in Vietnam. Despite the commitment of the government to address the issues, research shows challenges (Meyfroidt and Lambin 2009), particularly related to a mismatch between economic development goals and the low national production of timber. Because of its significant contribution to the national economy, the wood processing industry has become a government priority. Yet the timber industry currently depends on imports for 80% of its raw materials (Doan *et al.* 2005; GSO 2009; Forest Trends 2010). To address the problem, the Vietnam Forestry Development Strategy 2006–2020 aims to reduce dependence on imported timbers to 20%. However, as ProForest (2009) noted, this goal is ambitious due to the unplanned conversion of land to other purposes and limited cooperation between enterprises. As a result, Vietnam is likely to remain dependent on imports from other countries, entailing a high risk of buying products from unknown and possibly illegal sources in countries such as Lao PDR and Cambodia (GSO 2009; ProForest 2009; Forest Trends 2010). In addition, while the forest cover in Vietnam has increased over the past few years, mainly due to the rapid increase of

forest plantation area, the quality of forest has decreased, leading to low carbon stock.

To address the problem, the UN-REDD Programme aims to quantify displacement probabilities across country borders by compiling and analyzing existing data as well as by establishing regional dialogues. Vietnam also plans to establish an inter-governmental partnership of Mekong River countries to avoid the risk of emissions displacement under REDD. A project concept note aiming to create a technical support body was drafted and submitted to the 2nd Meeting of the Participants Committee of the Forest Carbon Partnership Facility in Panama in March 2009. Discussions have continued but an agreement has not yet been reached between the four potential members: Cambodia, Vietnam, Lao PDR and Thailand (Scheyvens 2010).

6.5.3 Challenge: Local politics as a factor in subnational leakage

In Indonesia, decentralisation has given new rights and responsibilities to districts on land and natural resource management and revenue collection. Local politics introduces an extra element to REDD+: political party-based financing, and fundraising for election campaigns. The effect of subnational emissions displacement on REDD+ implementation is significant. If a district is strict on curbing deforestation and degradation, it risks losing potential revenues and investments by deterring industries that may bring about land conversion. Those industries may instead choose to conduct business in neighbouring districts, whose government has set less rigourous policies. Districts rely on tax revenues and employment generated by industries; the district elites rely on informal money connected to doing business to finance political campaigns and maintain patronage. Hence, there is a strong incentive to prevent interested investors from leaving the districts. On the one hand, this reduces leakage from highly profitable large-scale land uses. But it also compromises emission reductions goals and causes districts to be less likely to implement REDD+.

In achieving global greenhouse gas emissions reduction goals, leakage is an accounting and attribution problem. Accounting is done at the national level, yet emissions can shift from country to country. It is difficult to ascertain how carbon emissions are displaced from another country and to what extent one country is responsible for carbon displacement into another (Wunder 2008). Most literature focuses on international leakage (Atmadja and Verchot 2012), where there are still no institutional structures to deal with it. Like the subnational leakage story described here, cutting back on leakage could lead to limiting economic growth led by industries with alternative uses for forestland, at the risk of being uncompetitive with other countries that apply less rigourous REDD+ policies. The issue rubs against

sensitive topics such as sovereignty and rights to economic development. Bilateral approaches could be a place to start but may be too piecemeal to guarantee emissions do not shift elsewhere. Hence, in implementing REDD+ at the global level, leakage becomes an economic and political problem that needs to strike a balance between ensuring effective emission reductions through mitigation leakage and the geopolitical concerns of individual countries

6.6 Institutions, interests and information: Obstacles and opportunities

Based on the anecdotal evidence above and the theoretical frameworks considered (4Is in Chapter 2; Pahl-Wostl 2009), we identify the following key aspects requiring specific attention by REDD+ decision makers: i) matching flows of information and incentives with transparency and accountability; and ii) matching interests and institutions across scales.

6.6.1 The flow of information and incentives

We outline various challenges for multilevel governance from our case studies, but also observe promising opportunities. The lack of national REDD+ frameworks is a critical challenge that affects efforts to build an accountable national MRV system and to harmonise REDD+ activities. Improving communication and flows of information between subnational REDD+ projects and the national level is an important way to create a multilevel governance system in REDD.

It is important to note that information is power in the REDD+ world and the institutions that hold the power and capacity to deliver information at both at the project and national levels play a crucial role in shaping national REDD+ politics. It is also important to integrate local knowledge into MRV systems, as recent initiatives in Brazil and Vietnam have attempted to do. Furthermore, knowledge is a product of power relations and social concerns and it is equally important to ask what knowledge is not being produced and disseminated. The definition of an MRV system and the knowledge upon which it is based are thus technical as well as political issues.

Designing a system for distributing REDD+ benefits and responsibilities requires sound information flows. Mechanisms for multilevel governance enable the equitable flow of incentives from national to subnational and local levels. The relationship between national and local governments and allowing local governments the flexibility to implement broader REDD+ interventions are key elements in the benefit sharing discussion (see Chapter 8).

6.6.2 Matching issues and institutions to scale

The integration of institutions operating at different levels may also help to harmonise spatial planning. New institutional arrangements are needed to create or build on existing bodies for accountable MRV, with a special focus on tools for overcoming the obstacles to information flow across levels. In the countries studied, however, there are still political and economic challenges to creating such institutions. This task also requires new skills and abilities to tackle various types of information, e.g. local and spatial data of varying quality.

In many countries, subnational governments can play a pivotal role in REDD+ implementation. In Indonesia and Brazil, for example, decentralisation has put the power of land and natural resource management in the hands of subnational governments, making them key players in REDD+ implementation. In such countries, it is essential to establish coherent regulations on the rights, responsibilities and procedures for MRV by subnational governments and to establish funds and transparent mechanisms for allocating resources to subnational REDD+ actors. In Indonesia, voluntary working groups are helping to overcome the lack of institutional links between sectors and scales and are providing an example of institutional integration across levels.

As seen in both Vietnam and Brazil, although coherent MRV at the national level is important, leakage management should be trans-boundary. Trans-boundary supply and demand gaps can be overcome through multilevel institutional integration and horizontal coordination, as demonstrated by the promising initiatives of the Mekong REDD Commission for Intergovernmental Partnership and Acre's collaboration with the regional government of Madre de Dios in Peru.

6.6.3 The need for participation

While REDD+ is commonly criticised for being implemented through top-down approaches, a multilevel governance approach that focuses on the flow and match of interests across levels can result in strong stakeholder participation. Evidence from REDD+ countries shows that participation in REDD+ can be greatly improved (Indrarto *et al.* 2012; Pham *et al.* 2012). The participation of actors from one level in processes at other levels is key to improving vertical coordination (Pahl-Wostl 2009). It is worth noting that the legal framework for REDD+ in all countries requires participation and consultation with different groups, but this is rarely applied in practice. (See also Box 6.3 for REDD+ process in Madagascar.)

Nevertheless, in Brazil, due to the recognition of potential challenges associated with fair engagement in REDD+, there has been substantial

Box 6.3 Decentralisation or INGOisation of REDD+? Lack of national lead in building a REDD+ strategy in Madagascar
Emilia Runeberg

Madagascar, an island state in the Indian Ocean renowned as a biodiversity hot spot, engaged with the World Bank's Forest Carbon Partnership Facility (FCPF) in 2008 in a REDD+ readiness process aimed at preparing a national REDD+ strategy. In parallel, international NGO-led REDD+ pilot projects have been established in different regions of the country with the goal of informing the national REDD+ policy formulation process. Attempts to build a coherent national REDD+ strategy are struggling in a situation where a lack of national leadership in synchronising experience from individual pilots hinders the transition from fragmented INGO-driven activities to a national, nested REDD+ governance system.

Community forest management (CFM), an envisaged backbone governance arrangement for a Malagasy REDD+, can be used to map ongoing governance activities on different levels. On the grassroot level, all REDD+ pilot projects have established CFM associations, known as COBAs, by transferring forest management rights from the state to community groups under time bound contracts. On the local level, COBAs contract with the local municipality and forest service. The management transfer is often entirely led by an environmental mediator, which in the case of major REDD+ projects has been an INGO. The role of the mediator in CFM contract design and related activities, such as attempts to create alternative livelihood activities for COBAs, cannot be overstated. At the regional level, some REDD+ projects are organising COBAs in federations, but a functional regional level governance structure remains a missing link, presently filled by the INGOs.

National level coordination of REDD+ activities has been channelled through an *ad hoc* committee known as the CT-REDD, composed of state, nonstate and para-state actors. Before its work was (temporarily?) disrupted in early 2011, CT-REDD communicated with stakeholders in order to integrate ongoing REDD+ experiences and organised regional consultations for the elaboration of a Readiness Preparation Proposal (R-PP) to be presented for the Forest Carbon Partnership Facility. Apart from the R-PP document, any national level multiactor efforts to jointly outline a direction for REDD+ have been stagnated and unfunded. On the supra-national level, Madagascar has struggled to receive funding for its R-PP vision, partly due to the national political crisis that started with a coup d'état in 2009. Instead, international donors support INGOs to continue developing REDD+ methodologies in separate project areas.

Individual projects form microcosms, making information and capacity flows highly reliant on the INGOs, individual actors with the technical capacity required for MRV and individual actors present on the governance levels described above. Control and participation in REDD+ by state actors can be expected to remain weak. The possible hidden motivations for maintaining a project-driven situation of INGO-dominance needs careful attention. Tensions between state and nonstate actors' views and interests reveal problems of state sovereignty, legitimacy and transparency. Early observation suggests that REDD+ could further increase the power of external, nonstate REDD+ beneficiaries and strengthen a transnational governance project that has shaped natural resource management in Madagascar since the 1980s (Duffy 2006).

mobilisation by indigenous groups and forest-based communities to promote local participation in the process. These groups, recognising both the potential benefits and risks associated with REDD+, have taken action to promote inclusion of social and environmental safeguards for REDD+ actions (Gomes *et al.* 2010; see also Chapter 17 on safeguards). Most NGO and government REDD+ project proponents have held or plan to hold public consultations with target actors at the project sites to present and obtain feedback.

In Vietnam, limited participation in REDD+ can be explained by a political process characterised by ineffective consultation mechanisms and weak representation by different groups. Also, as Pham *et al.* (2010) highlight, intermediaries are often hired by donors to carry out consultations but due to pressure (time, donors' priorities and cost) these consultations are inadequate. As a preliminary example from Vietnam shows, local participation is possible and could enhance the MRV system, but the evidence is not efficiently disseminated across the levels.

In Indonesia, much of the weak interest in participating in REDD+ discussions stem from participation fatigue, lack of proof that REDD+ can work and strong vested interests in other land uses that could cause emissions. Even where successful voluntary working groups were established to enhance stakeholder participation, there were too many REDD+ workshops, stakeholders' discussions and seminars, resulting in REDD+ fatigue.

6.6.4 The negotiation of interests

The information flow across levels can be impeded by conflict or a lack of interest in sharing information with other actors, as seen in the cases of Vietnam and Indonesia. Institutional stickiness and established power structures hinder the flow and match of different types of information across levels. It is important to recognise the power of informal relationships and networks in bridging the gap between agencies at different levels. In Vietnam, most stakeholders share information through informal channels, e.g. based on personal relationships or informal networks. However, these informal networks are rarely known or recognised, they lack transparency and are absolutely exclusive.

Building a coherent national REDD+ framework would help to tackle many multilevel governance challenges. As seen in Brazil, however, strong governance at the subnational level has been important for advancing REDD+ at local and national levels. Experience from Brazil provides an illustrative example of the steps needed for vertical coordination and multilevel governance in REDD+, even though there is still some way to go before a coherent national

framework is defined for the country. Although the national framework is essential for overall coordination, a multilevel governance system is a shift towards accepting the reality that all aspects of environmental governance can involve disagreements and different objectives that have to be reconciled or accepted as different. Mechanisms of multilevel governance, however, provide tools to make them to match across levels to a greater degree.

REDD+ can never operate in a political and societal vacuum but is intertwined with existing political processes and societal structures. In Indonesia, REDD+ has tightened the regional and local political games and its outcomes will affect the structure of the MRV system as well as emission leakages inside the country. Multilevel governance, including the establishment of legal procedures, is needed to settle disputes in implementation. REDD+ will require design elements to complement existing forest related policies and should be informed by the experience of decades of local and global initiatives. That would be consistent with proposals for the development of 'nested' climate governance regimes (Forsyth 2009).

6.7 Conclusions

It is obvious that REDD+ is a multilevel undertaking. As a result, it requires a multilevel governance system that is unique in the history of environmental policy (Skutsch and Van Laake 2008). The dimensions and mechanisms for such a system vary strongly among different REDD+ elements. The case studies also show that the appropriate mechanisms vary significantly across countries.

Multilevel governance in REDD+, particularly for leakage and MRV, is about harmonising information and incentives across all levels. This is, in part, a practical and technical problem: information and data for REDD+ are formed through various processes and according to different standards, making it difficult to aggregate at the national level. Furthermore, differences in data quality and quantity across data sources provide loopholes for undetected and unaccounted leakage.

However, information and incentive flows in REDD+ can lead to conflicts between subnational and national actors, which stem from conflicting interests at different levels. Information and incentives are the two main currencies in the complex REDD+ world relating back to the differences in power relations among the actors who control them. Multilevel governance systems in REDD+ should be designed with two aims: they should seek ways to help actors at different levels to better match their interests, and at the same time they should adjust and diversify REDD+ to work with different interests.

In summary, policy and institutional reforms to redefine existing information, incentive and power structures are needed to ensure successful REDD+ implementation. REDD+ can act as a game changer for wider transformational change and mechanisms for multilevel governance will play a pivotal role in this process. The sound flow of information and incentives across different levels, together with transparent institutions, will be a key to effective, efficient and equitable REDD+ implementation.

Financing REDD+

Charlotte Streck and Charlie Parker

- REDD+ finance is at an inflection point: while short-term finance is available, disbursements are slow and investment opportunities scarce; at the same time, there is no adequate and predictable long-term strategy to meet the financial needs of REDD+.
- In the absence of ambitious climate change mitigation goals, for the foreseeable future most REDD+ finance will be mobilised by the public sector. During this interim phase, in which financing for REDD+ is likely to be fragmented and channelled through various agencies, it will be important to test a variety of financing options that leverage private sector finance and directly address the drivers of deforestation.
- Wealthier REDD+ countries with stronger institutions may opt to self-finance a significant part of REDD+. They may also choose to engage in results-based agreements with donors and international agencies. The more fragile states are likely to rely on official development assistance (ODA)-type finance, which combines financial support with technical assistance and policy guidance.

7.1 Introduction

Reducing emissions from deforestation comes at a cost, since the protection of forest implies foregone revenues from timber, crops and livestock. Without legal and economic mechanisms to enforce or compensate action by owners and users, forests will continue to be worth more dead than alive. The emerging incentive framework to reduce emissions from deforestation and forest degradation (and the role of conservation, sustainable management and enhancement of forest), referred to as REDD+, seeks to promote economic development and growth without destroying valuable natural resources. In the context of REDD+, countries have agreed to "collectively aim to slow, halt and reverse forest cover and carbon loss", and to do this "in the context of the provision of adequate and predictable support to developing country Parties" (UNFCCC 2011a). Within countries, those that suffer economic loss (former forest users and beneficiaries) and current protectors or stewards of the forest may be compensated for loss or receive reward for action. Such payment may originate from international or national sources and will be channelled through national institutions. Private finance may also go directly to the beneficiaries through market-based mechanisms.

Reflecting the principle of 'common-but-differentiated responsibilities', allocation of the costs of REDD+ implementation has been an integral part of the REDD+ negotiations under the UN Framework Convention on Climate Change (UNFCCC). Finance appears implicitly within the context of technical issues, such as measurement and reference levels discussed by the Subsidiary Body for Scientific and Technological Advice or, explicitly, within the context of the financial negotiations under the Ad-Hoc Working Group on Long-Term Cooperative Action. In December 2011, at the 17th session of the Conference of the Parties to the UNFCCC (COP17), parties agreed that "results-based finance provided to developing country Parties that is new, additional and predictable may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources" and that "appropriate market-based approaches […] to support results-based actions by developing countries" could be developed (UNFCCC 2012). Parties also adopted guidance on reference levels to account for emission reductions from REDD+ activities. However, it remains unclear if and how these reference levels might be tied to financial 'results-based' incentives in the future (see also Chapter 16).

There are four major challenges associated with REDD+ finance:
• Defining REDD+ costs and estimating the financial needs of REDD+
• Mobilising sufficient international and national finance to cover the costs of REDD+ policies and measures
• Allocating and disbursing REDD+ finance efficiently, effectively and equitably to produce clear and measurable results

- Matching the requirements and needs of policy makers and other stakeholders in developing countries with those of donors or investors in REDD+, and creating and/or strengthening the institutions needed to implement policies and manage REDD+ funds.

This chapter sheds light on these challenges and discusses the implications for REDD+ implementation. Section 7.2 summarises the most common ways to calculate REDD+ costs and presents the range of cost estimates that have been put forward to significantly reduce forest-related emissions in developing countries. Section 7.3 discusses the various options that exist to mobilise REDD+ finance in the short and long term. Section 7.4 describes the disbursement challenges from REDD+ country and donor perspectives. The chapter concludes with a discussion of different institutional and policy options that can help to overcome current and future funding challenges.

7.2 REDD+ costs

7.2.1 Estimating REDD+ costs

Most estimates of the costs of REDD+ use an opportunity cost approach (see e.g. Kindermann *et al.* 2006; Blaser and Robledo 2007; Kindermann *et al.* 2008; Simula 2010). Government experts and consultants have proposed variations to this approach (e.g. Republic of Guyana 2008; UNDP and President of Ecuador 2011). Opportunity costs are the foregone revenue from the best alternative land use. Forestland in different locations has varying productivity and carbon content, and such analyses calculate the marginal costs of forest protection, concluding how much forest can be protected at a certain carbon price level. These models do not necessarily reflect the incentive required for the country to reach a particular emission reduction target (IWG-IFR 2009), neither do they take into account the political context of decision making. In some instances (e.g. where costly structural reforms have to be implemented), the costs of REDD+ to society may be much higher than calculated, but in other situations they may be lower, e.g. where REDD+ can be implemented through law enforcement and command-and-control measures that benefit society (White and Minang 2011). In most cases, policies that yield REDD+ benefits will also pursue other – sometimes primary – objectives, such as a reform of agriculture or land tenure. In these cases, it is difficult to distribute costs among the complementary goals.

An alternative approach is to estimate the budgetary costs of REDD+. This involves assessing the implementation costs of policies and measures, and the institutional reforms needed in a country. However, this approach only shifts the problem to another level, namely to express the costs and benefits of public policies in comparable terms (Heinzerling and Ackerman 2002). To achieve such comparability, any cost analyses would have to quantify the

value to society of a certain policy that results in a public good (i.e. robust infrastructure, good governance or environmental protection). It is very difficult to capture and price the unique features of a forest, including the irreversibility of its primary loss as well as its non-monetary values, e.g. recreation, enjoyment and beauty (Ostrom and Ostrom 1977).

Therefore, while cost assessments can inform REDD+ policies, they have significant shortcomings. Their underlying assumptions do not capture the full costs and benefits of protecting a country's forest estate and they may underestimate or overestimate costs, depending on the policy context. In many cases, particularly where they have been proposed by national governments or other interested stakeholders, cost estimates are driven more by a desired result than by rational analysis (see Box 7.1).

7.2.2 Global cost estimates

The Eliasch Review estimated the global costs of REDD+ to be between US $17 and 33 billion per year, assuming a 50% abatement of forest-related emissions by 2020 (Eliasch 2008). Kindermann *et al.* (2008) estimated the costs to be between €13 and 21 billion per year,[1] while the European Commission established an annual price tag of €15–25 billion (EC 2008; ONFI 2008). These studies estimate the total economic abatement potential from REDD+ activities, assuming a certain price level per tonne of carbon dioxide and a certain cost associated with land use conversion. The figure for actual abatement potential, however, is likely to be smaller than this, due to the various constraints on generating emission reductions through REDD+. As such, global cost estimates illustrate the maximum potential of forests and other land use activities to remove or retain greenhouse gases at a certain price point rather than a realistic potential for emission reductions in the short to medium term (Lubowski 2008). To illustrate the supply of emissions reductions from REDD+, Table 7.1 shows the estimated global supply of emission reductions from reduced deforestation under different price scenarios.

Looking at the country level, REDD+ costs depend on the carbon content of the forest as well as the local driver of deforestation. For example, the highest opportunity cost of REDD+ in Indonesia occurs where forest conservation competes with palm oil production. Here, opportunity costs range from US $0.49/ton CO_2e for smallholder farming in Sumatra to US $19.6/ton CO_2e for conversion of degraded forest land to palm oil (Olsen and Bishop 2009). Meanwhile, Nepstad *et al.* (2007) calculated that eliminating deforestation completely in the Brazilian Amazon would cost US $1.49/ton CO_2e, but reducing deforestation to 94% of projected levels would cost only half that amount (US $0.76/ton CO_2e).

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1   In April 2012, 1 Euro = 1.32 US Dollars.

Box 7.1 "What does REDD+ cost?" is (almost) a meaningless question
Arild Angelsen

What does REDD+ cost? At least since the influential Stern Review was published in 2006, many have argued that REDD+ is one of the cheapest options available to mitigate climate change. Others see the REDD+ mechanism as a costly effort with unpredictable results, for both the climate and forest people. So who is right?

Asking "what does REDD+ cost?" is about as precise as posing the question "what do cars cost?" It all depends on the type of car, how many cars, whether the cost of producing, buying and operating them is included, and so on. Most REDD+ cost estimates – including those of the Stern Review – focus on opportunity costs, which refer to the profit foregone from the best alternative land use, i.e. the lost benefits from not conserving forestland. A country implementing REDD+ will also face transaction and implementation costs, e.g. the costs of setting up a REDD+ system and implementing the necessary policies to achieve REDD+. The sum of opportunity costs, implementation costs (except those directly compensating opportunity costs) and transaction costs (to governments and forest users) therefore provides an estimate of the total cost to a country of avoided deforestation and degradation.

But governments of REDD+ countries might be equally interested in a variation on this question: what are the budgetary costs of REDD+? Opportunity costs can be a poor indicator of these, as they depend on the policies chosen and their effectiveness. Only in one special case would the budgetary costs be identical to the opportunity costs, namely in the hypothetical 'perfect' system of Payment for Environmental Services (PES). This implies zero transaction costs, targeting only those forest users who plan to apply their chainsaws to the forest in coming years, and requires complete information about these users' opportunity costs. These assumptions are, of course, quite unrealistic and, in practice, the cost of a PES system will be much higher, even when land tenure and other preconditions allow for it.

Many other REDD+ policies are available. Governments can stop issuing licenses for forest conversion, establish forest-protected areas, and increase the enforcement of forest laws and regulations, without any compensation to the current or prospective forest users. The budgetary costs then may be lower than the opportunity costs. Or they can reduce the profitability of agricultural encroachment by removing government subsidies, which should save money in government budgets. Other agricultural policies, such as agricultural intensification, can have costs in excess of the opportunity costs, but they may achieve additional goals, such as increased production and food security.

So, the question "what does REDD+ cost?" must be made more precise and contextual before it can be answered. First, it depends on whose costs we look at: the society at large, the government, the local forest users, or commodity traders. Second, it depends on the mix of policy instruments chosen to implement REDD+ and their effectiveness. Third, it depends on the scale of emission reductions required and how fast you want them.

Table 7.1 Global supply of emission reductions from REDD+ (GtCO$_2$e per year) (Meridian Institute 2009)

	Avoided deforestation (RED)	REDD+
No price specified		3.5–4.9 (Grieg-Gran 2008)
<US $10/tCO$_2$e	1.8 (Murray *et al.* 2009)	2.7 (McKinsey and Company 2009) [3.6*]
<US $20/tCO$_2$e	2.5 (Murray *et al.* 2009)	4.3 (McKinsey and Company 2009) [5.2*]
	1.6–4.3 (Kindermann *et al.* 2008)	
<US $30/tCO$_2$e	2.8 (Kindermann *et al.* 2008)	4.6 (Sohngen 2009)
	2.8 (Sohngen 2009)	
	2.9 (Murray *et al.* 2009)	
>US $100/tCO$_2$e or potential	4.5 (Tavoni *et al.* 2007)	7.2 (Tavoni *et al.* 2007)
	3.1–4.7 (Kindermann *et al.* 2008)	7.8 (McKinsey and Company 2009)*

*Includes emissions reductions from peatland

7.3 Mobilising finance for REDD+

7.3.1 Current sources of finance for REDD+

Currently, REDD+ finance has several sources – public, private, national and international – as well as different mechanisms (e.g. taxes, carbon markets and auctioning of allowances). Public sector finance is defined here as revenue generated through a mechanism controlled by a public body, while private sector finance does not enter the hands of the public sector. Using these definitions, four categories of REDD+ finance emerge (see Figure 7.1). International public finance currently accounts for around US $3 billion per annum, including pledges made in the context of the UNFCCC as well as funding through other channels, such as the Global Environment Facility (GEF) and the Convention on Biological Diversity (Parker *et al.* 2012). These funds are being disbursed primarily through bilateral and multilateral channels as grants and loans, with some limited use of performance-based payments.

Bilateral country programmes and projects currently fund two-thirds of all internationally supported REDD+ activities, with multilateral sources making up the remainder (Simula 2010; PWC 2011). This includes readiness programmes and, to a lesser extent, policy support and pilots for results-based payments. At the country level, Norway is the most prominent REDD+ donor. At COP 13 in 2007, the Government of Norway launched its International
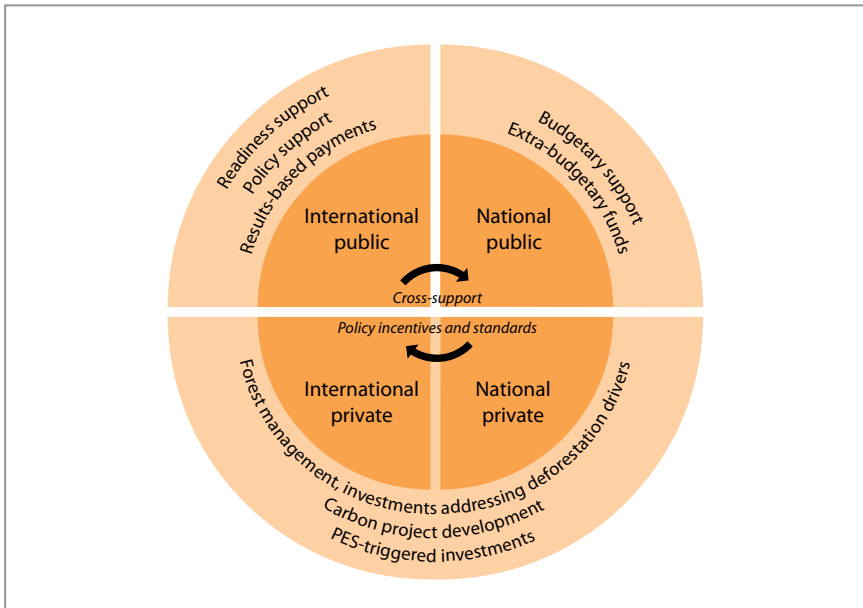
Figure 7.1 Financial sources for REDD+

Climate and Forest Initiative, pledging NOK 15 billion (US $2.6 billion) over 5 years. Since then, Norway has entered into bilateral agreements with Brazil, Guyana, Indonesia, Mexico and Tanzania, and contributed to various multilateral funds. With its bilateral agreements with Brazil, Guyana and Indonesia, Norway has pursued a 'payment-for-performance' approach to REDD+. Other major donors include Australia, France, the European Commission, Germany, Japan, UK and USA. Until now, these donors have mostly supported readiness programmes, policy development and demonstration projects. So far, no other country has entered into bilateral agreements following the performance-based payment logic of the Norwegian agreements.

Data on domestic or national finance for REDD+ is still lacking, since developing countries have little consistent reporting on fund allocation for REDD+. However, it is clear that domestic financing is significant, particularly in emerging and middle-income economies, where it surpasses international contributions for REDD+. Brazil reports an historical annual average of US $500 million for monitoring and inventory work, law enforcement and tenure reform, as well as for national and local plans to reduce deforestation. Mexico spends a similar sum (US $460 million) per year on a range of programmes including its ProArbol afforestation programme, green subsidies, demonstration activities and measurement systems. Indonesia claims to have spent US $1.5 billion on the protection of forests and the rehabilitation of degraded land, amongst other forest protection activities

(PWC 2011). Meanwhile, China has delivered around US $7 billion annually for afforestation activities to protect watersheds and other 'eco-compensation mechanisms' under a range of government-mediated programmes, including the 'Grain for Green' programme (Parker *et al.* 2012).

It is expected that the private sector will need to contribute a significant portion of REDD+ finance in the future. However, the current policy environment provides only limited incentives for private sector investment in REDD+. Some investment is being triggered by a combination of factors, including corporate social responsibility and pre-compliance, into voluntary carbon markets (about US $140 million in 2010) (Diaz *et al.* 2011). Indirect market mechanisms, such as certified cocoa, coffee, timber, palm oil and soy, which aim to combat the drivers of deforestation, also provide a scalable source of private sector finance for REDD+. These mechanisms currently generate premiums upwards of US $1 billion annually towards forest conservation in developing countries.

7.3.2 Future scale of finance for REDD+

Estimates of the future required scale of REDD+ financing vary greatly and depend largely on the sources of finance included. Within the categories of public and private sector finance outlined above, REDD+ finance can be divided into four key groups: *direct* and *indirect* private investments, and *market-linked* and *non-market* public finance (see Figure 7.2). Different methods and tools are required to scale up finance from these various sources.

Direct market mechanisms are private sector sources of finance that generate revenue directly for emissions reductions and include the voluntary and compliance carbon markets. These mechanisms can generate finance through regulation and increased demand for forest carbon credits and other direct forest services (e.g. biodiversity offsets). The amount of finance available will be determined by the number of countries that can participate in these mechanisms, the ambition of the targets, the conditions for accepting carbon credits and other factors that generate demand for forest-based ecosystem services.

Indirect market mechanisms raise finance by linking the value of forest conservation to traditional markets such as coffee, soy and beef. By lowering the 'forest footprint' of these associated markets, finance can be delivered to reduce deforestation but not necessarily in exchange for an emissions reduction (e.g. sustainable coffee markets or the commodity roundtables). Indirect market mechanisms can be scaled up by implementing demand-side regulation for green commodities. For example, legislation within the European Union (EU) or China (the two largest importers of soy globally) requiring sustainable production of soybeans would create a strong signal for 'zero deforestation' soy.
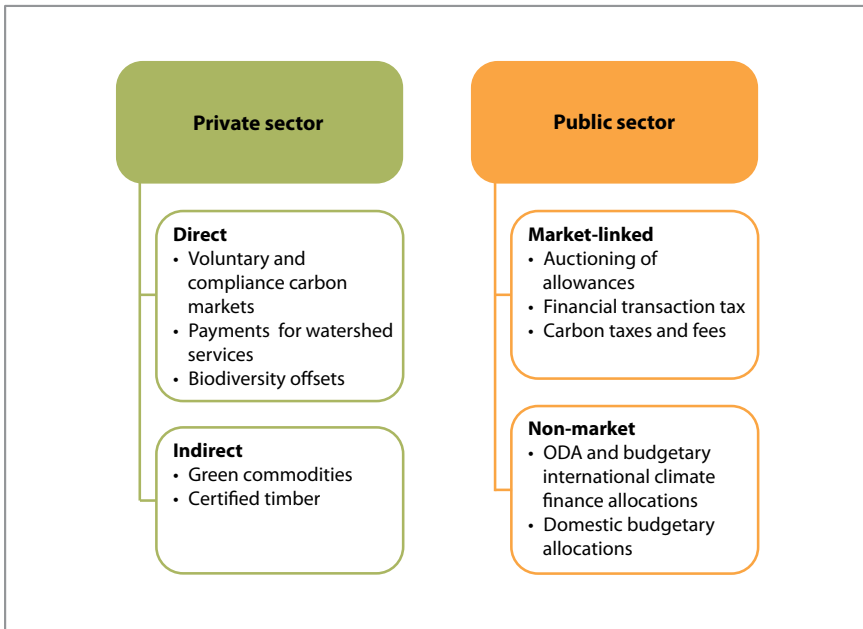
Figure 7.2 Private and public sector finance for REDD+
Adapted from Parker *et al.* (2009a) and Parker *et al.* (2012)

Market-linked and **non-market** mechanisms are both forms of public sector finance; although finance will be generated from a variety of public and private bodies (e.g. through taxes or other fees), the revenue is aggregated and disbursed by a public sector institution. **Market-linked** mechanisms generate finance from markets that are unrelated to forests (e.g. auctions of emissions allowances or a financial transaction tax). The scale of finance mobilised via these mechanisms will depend on the political coordination of competing agendas. For example, revenue from a financial transaction tax is currently being advocated for under a variety of worthy agendas, including poverty reduction, biodiversity conservation and the stabilisation of regional economies. Political coordination between these agendas can help to ensure that they benefit collectively from these sources of revenue.

Finally, the category of **non-market** mechanisms captures 'traditional' forms of public finance, such as official development assistance and domestic government spending allocated through general public budgets. Since non-market mechanisms are purely government-driven, the level of finance generated will be mainly a question of the strength of the political will and national agenda for forest conservation within individual governments. Even under international regulation (e.g. the Monterrey Consensus on Financing for Development), there is no guarantee that commitments will be adhered to.

Table 7.2 summarises the most important mechanisms for mobilising REDD+ finance. Most of these can be applied nationally and internationally. The scale of finance achieved through any mechanism will depend upon the extent to which REDD+, and forest conservation more broadly, maintains a politically compelling mandate within both developed and developing countries.

Over the short and medium term (up to 2020), public sector mechanisms are the largest potential source of finance for REDD+, with an additional US $9 billion per annum coming from non-market mechanisms and a potential US $7 billion from market-linked mechanisms. The largest share is most likely to come from national governments in developing countries. While they have potential to generate significant finance for REDD+, finance from market-linked mechanisms remains elusive. With the exception of auctioning of allowances, these mechanisms tend to be politically infeasible as they reside outside of the mandate of REDD+ proponents.

Table 7.2 Current (2010) and future (2020) levels of REDD+ finance under public and private sector mechanisms (US $ billions per annum)

Sector	Market	Scale	Current (2010)	Future (2020)
Private	Direct	Compliance market	-	7.5[a]
		Voluntary market	0.14[b]	0.6
	Indirect	Greening commodities	1[c]	5[d]
Total private			**1.1**	**13.1**
Public	Market-linked and other	Auctioning of allowances	0.04	1.5[e]
		Maritime tax or levy	-	1.7
		Financial transaction tax	-	3.8[f]
		Levy on insurance premiums	-	1.7[g]
	Non-market	Domestic government spending	10[h]	13[i]
		Official development assistance	4.4[j]	10[g]
		'Debt for nature' swaps	0.02	0.36[k]
Total public			**14.5**	**32.1**

Notes: Table adapted from Parker *et al.* (2009a) and Parker *et al.* (2012) a) assuming a forest carbon market emerges and global supply of 3 GtCO$_2$ at US $25/tCO$_2$; b) Diaz *et al.* (2011); c) US $300 million from certified timber and US $700 million equivalent to 30% of all green commodities; d) based on continued 15–20% growth in market in developing countries; e) 40% of potential auction revenues to climate activities, 50% in developing countries, 28% ecosystem-based; f) low-end assumption: 5% of EU-wide tax on financial transactions goes to REDD+; g) based on continued growth in aid budget of 3% per year, of which 5% goes towards forest protection; h) includes recent pledges under the REDD+ Partnership Voluntary REDD+ Database, see http://reddplusdatabase.org/; i) based on projected increases in protected area funding; j) from Organisation for Economic Cooperation and Development Assistance Committee database www.oecd.org/dac/stats/rioconventions; k) based on continued annual growth of 30% per year.

The private sector could become an important source of finance for REDD+, with the potential to deliver an additional US $13 billion per annum by 2020. Carbon markets have long been proposed as a strategy to mobilise private finance and achieve REDD+. Using estimates from Table 7.1 for abatement potential (at a carbon price of US $25/tCO$_2$), carbon markets could deliver US $7.5 billion by 2020. Angelsen *et al.* (2012) found that, if REDD+ credits are allowed to be traded in the global carbon market, emissions from deforestation will be reduced by 22–62% compared to business as usual levels (i.e. 42–71% compared to 2005 levels), depending on the scenario. However, the establishment of effective carbon markets depends on the acceptance of REDD+ offsets in global carbon markets.

At present, however, there is no global carbon market, neither is there an emerging global system. Since US lawmakers are not contemplating climate legislation and the EU will consider linking its emission trading system to REDD+ only after 2020, carbon markets hold limited promise in the short term. In addition, linking REDD+ to carbon markets will need careful evaluation, relying on tested REDD+ crediting frameworks accompanied by safeguards and regulation of supply and demand. In the absence of REDD+ specific finance instruments, strategies seeking long-term financial stability for REDD+ are turning to incentives for investment at the national (and regional) level.

The other key source of private sector finance for REDD+ would come through indirect market mechanisms. With limited data it is difficult to estimate the scale of finance that could be generated through green commodities. However, conservative estimates for the growth in certified commodities through initiatives such as the roundtables for responsible soy, palm oil and sugar, suggest that indirect market mechanisms could generate an additional US $5 billion per annum by 2020.

7.4 Spending REDD+ finance

7.4.1 Allocation of finance

The mobilisation of REDD+ finance is related closely to its allocation and disbursement. Allocation refers to the distribution of REDD+ finance among countries as well as among relevant policies, strategies and programmes within a country. Some resource mobilisation mechanisms already include a preference for a particular allocation of finance. Experience with the Clean Development Mechanism (CDM) shows that carbon markets channel the majority of finance to countries with a favourable investment climate, that are characterised by a well functioning government administration and judiciary, and that have high emissions. Investments through carbon market mechanisms directly to projects will also favour areas with high levels of

deforestation, forests with high carbon content, and clearly identifiable, local drivers of deforestation, where leakage and permanence can be monitored and managed within the project context. Experience with national systems relying on payments for ecosystem services also shows that clear land title and ownership are additional conditions that encourage investment into afforestation or conservation schemes.

Bilateral donors tend to prefer making payments to preselected partner countries. REDD+ finance flowing into publicly managed funds or budgets then has to be allocated among the sectors that work to counter forest carbon loss. Such allocation generally follows a national prioritisation of activities reflecting emission reduction potential and cost, political acceptability and commitment, and stakeholder input. Budgets may create an enabling environment, such as engaging in integrated land use planning, clarifying land titles and property rights, strengthening institutions and building capacities. These activities serve multiple purposes, are lengthy undertakings and address underlying rather than direct drivers of deforestation. While ODA sources may support these processes, dedicated international climate finance will probably gravitate towards more direct action to counter the drivers of deforestation. This might include investing in agriculture to increase productivity, financing alternative infrastructure solutions, and creating alternative income sources for local communities.

At present, the largest portion of REDD+ finance goes to Brazil, the Democratic Republic of Congo and Indonesia (REDD+ Partnership 2011). These countries represent a significant portion of the three most important tropical forest basins (those of the Amazon, Congo Basin and Southeast Asia) and are responsible for more than half of the global forest-related emissions. The allocation of finance to these countries reflects their emissions reduction potential, although it does not necessarily reflect greater readiness than in smaller and more engaged countries. Norway's decision to enter into a strategic partnership with Guyana, in contrast, rewards the political commitment of a small forest nation with low emissions.

7.4.2 Disbursement of REDD+ finance

Disbursement of REDD+ finance uses international and national funds[2], bilateral programmes and direct private sector incentives to channel REDD+ finance to countries and within countries to the ultimate beneficiaries.

International and regional funds are administered by multilateral finance organisations, such as the Forest Carbon Partnership Facility (FCPF), the UN

2   See, for example, the United Nations Development Programme proposal to set up National Climate Funds (UNDP 2011).

REDD+ programme, and the Congo Basin Fund. Since disbursing REDD+ finance to national actors is a lengthy process, the allocation of finance to international programmes has great appeal for donors, but there can be a significant delay before the funds are put to use. In an evaluation of FCPF, 67% of the stakeholders interviewed disagreed with the statement that finance was disbursed in a timely manner (NORDECO 2011).

Disbursing finance via bilateral agencies (e.g. Agence française du développement, Kreditanstalt für Wiederaufbau and United States Agency for International Development) may be less strategic than supporting new, dedicated REDD+ programmes, but it can be quicker, in particular when finance is disbursed via existing programmes, institutional arrangements and appraisal mechanisms. Norway's partnership with Indonesia shows that innovative governance and disbursement mechanisms require long lead times, which may be underestimated. Even when countries administer funds by proven and professional local institutions, such as the Amazon Fund, the novelty of REDD+ and its need for new actors and performance metrics is likely to cause delays and frustrate expectations (although frustration may be less when actors are used to the slow disbursement cycles of existing environmental programmes such as GEF).

Additional barriers in the flow of finance are caused by inefficiency within intermediary organisations, a lack of absorptive capacity and natural 'growing pains' in a period of learning (The Prince's Rainforest Project 2011). Taking into account the level of political and stakeholder support that is needed for successful REDD+ implementation, the time required for consultations and consensus building has often been underestimated. Added to long bureaucratic chains and the lack of REDD+ programmes ready to receive investments, these delays mean that disbursement of international REDD+ finance has fallen sharply behind the REDD+ pledges.

Furthermore, there is clear evidence that lessons learned from efforts to improve development aid effectiveness are not being transferred to climate finance in general and to REDD+ finance in particular. At the same time, the project basis and earmarked nature of REDD+ financial mechanisms means that countries have to establish special management arrangements instead of using existing national systems.

In summary, it is evident that both recipient and donor countries would benefit from the development of REDD+ finance strategies, closer coordination, institutional strengthening and capacity building. There is a particular need to respond to national circumstances as well as to satisfy the requirements of external contributors for transparent and accountable use of REDD+ finance.

7.4.3 Role of national institutions

The success of REDD+ depends on having national policies and institutions that can deliver REDD+ emission reductions at a large scale and in effective, efficient and equitable ways. There is need for an effective channel for disbursement and absorptive capacity, both underpinned by rules, processes and safeguards that are transparent and simple while also being appropriate and flexible to local needs and scales (The Prince's Rainforest Project 2011).

National disbursement mechanisms can be linked to general governance reform, sector measures and direct fiscal incentive programmes. In the case of governance reform, finance will be used largely to support the public sector by adding capacities and resources. Sector measures seek to address the drivers of forest carbon loss and include the removal of perverse incentives and the introduction of planning and safeguards. They can also define direct fiscal incentives, in which targeted groups are paid for undertaking a particular activity (e.g. tree planting, monitoring and conserving) or stopping certain actions (e.g. land conversion and logging).

In the short term, international or bilateral intermediaries will continue to play an important role in disbursing readiness funds. However, long-term REDD+ finance will need to be allocated and disbursed by national institutions. While international financial support may help to induce policy changes, it is essential that REDD+ strategies are country driven, taking into account national needs and priorities. National institutions are essential agents in mobilising and distributing finance and must comply with internationally recognised fiduciary standards. Brazil's Amazon Fund is an example of a national fund that performs many financial and technical roles that in other cases would be left to international institutions. Countries with weaker institutions will take longer to reduce their dependence on such international intermediaries as the World Bank and UN, or bilateral assistance programmes, to manage and allocate REDD+ finance (see Box 7.2).

7.5 Conclusions: Linking REDD+ finance with policies and programmes

In 2009, the Copenhagen Accord committed developed countries to a total of US $3.5 billion of fast-start finance to be disbursed during the 2010–2012 readiness phase of REDD+ (see Table 7.3 for the phases of REDD+ implementation and finance). However, by the end of 2011 (when the pledges had reached US $4.17 billion), only US $446 million had been allocated and approved to particular countries and funds (Nakhooda *et al.* 2011). A large proportion of the money is still being held in international trust funds, national budgets and recipient country funds, and it is unlikely

Box 7.2 Financing REDD+ in the Democratic Republic of Congo
André Aquino

The REDD+ process in DRC is led by the Ministry of Environment, Nature Conservation and Tourism through a dedicated national REDD+ coordination unit, staffed by national and expatriate experts. The national REDD+ strategy is still under construction, so the overall costs of achieving REDD+ are not yet known. Virtually all finance for REDD+ comes from international donors and there has been little private sector engagement so far, although an agroforestry CDM project led by a private Congolese company provides a noteworthy exception.

REDD+ readiness needs are estimated at US $23 million and funded mainly by FCPF and the UN REDD+ Programme. The Congo Basin Forest Fund will provide around US $35 million to a series of pilot REDD+ projects, while the Forest Investment Program, executed by the World Bank and the African Development Bank, will provide US $60 million to fund REDD+ investments in three large Congolese cities (Kinshasa, Kisangani and Mbuji Mayi – Kananga). Results-based payments for emission reductions are still a future goal, but the country has shown interest in accessing the Carbon Fund of the FCPF through a sub-national REDD+ programme.

There are several major disbursement challenges. Overall coordination is costly due to the multitude of sources of finance and different fiduciary and reporting procedures required by the different donors. Uncertainty at the global level on applying REDD+ finance at the national level, including how to deal with safeguards, has led to disbursement delays. Insufficient national fiduciary management capacity adds to the challenge. DRC has been dealing with disbursement delays by ensuring the national REDD+ unit has the mandate to coordinate different sources of finance, outsourcing fiduciary management to an existing fiduciary unit with the Ministry of Environment, and building the capacity of key staff.

Looking ahead, DRC is planning to establish an independent national REDD+ fund, embedded in a participatory fund allocation mechanism and with strong institutional capacity to deliver national finance in line with the emerging national strategy. International donors are expected to provide the majority of finance and, at first, these should be conditioned to policy reforms, institutional capacity building and proxy intermediary indicators. Over time, as institutional capacity is built, the fund could evolve into a verifiable emission reductions payment scheme. Parallel to the fund, DRC is allowing carbon transactions targeted at different markets (these are voluntary, emerging and regulated), within a national institutional framework to regulate carbon transactions, including the establishment of a transparent national registry.

Table 7.3 Summary of REDD+ needs (adapted from Meridian Institute 2009)

	REDD+ preparation costs	REDD+ implementation costs	
	Phase 1: Readiness and upfront costs, and ongoing capacity building and institutional strengthening costs	Phase 2: Policies and measures	Phase 3: Results-based payments
Objectives	Enable participation in REDD+, appraising policy options, establishing strategy and consensus Establish and maintain the ability to successfully implement and monitor REDD+ activities	Create enabling environments, improve forest governance and forest management, address drivers of deforestation through investments	Compensate for emissions reductions
Emissions reductions	No or little direct effect on land use emissions	Effect on emissions less direct and there may be some delay	Should have clear link to emissions reductions
Funding needs	Upfront finance required, most likely non-market based	A blend of finance will be used.	Payment can be ex-post Direct market and indirect market finance

to be disbursed by the end of 2012. Thus, while international pledges remain well short of cost estimates, there is a major problem in disbursing the finance already committed.

The overall cost of reducing emissions from deforestation depends on the types of expenditures considered, and the type and effectiveness of the chosen policy mix. The vast majority of countries – developed and developing – lack concrete strategies on how to implement REDD+. It is therefore difficult to define global and national REDD+ financial needs. However, it is clear that the long-term mobilisation of REDD+ finance remains unresolved. Even the most conservative calculation of the costs associated with implementation of REDD+ is well in excess of the US $4.17 billion pledged as fast-start finance. The development of disbursement methods and channels, the building and strengthening of international and national institutions, and the formulation of robust financing mechanisms

and policies will therefore be key measures of progress for REDD+ in the short term as well as a condition for its long-term success.

In the short and medium term (until 2020 at least), REDD+ finance will come from multiple sources that follow different rules and target different actors. A large proportion of finance will need to come from developed country budgets. The scale of such finance will depend on sustained political will in developed countries, the level of ambition of national and international climate targets, and the ability to adopt mechanisms that mobilise finance from new sources. Wealthier developing countries will continue to finance their own REDD+ programmes. Payments for fragile states could be structured to create incentives to invest in new policies and reforms aimed at critical socio-economic transformations. Incentives would be targeted to those likely to respond to them, i.e. economic agents in the field, including farmers, communities and private entities (Karsenty and Ongolo 2012). Additional support for generating REDD+ activities at national and local level may come from voluntary carbon market transactions. The Governor's Climate and Forests Taskforce, initiated by the State of California, and emerging regional carbon markets in Asia provide interesting examples of sub-national initiatives.

In summary, REDD+ is unlikely to deliver direct finance for quick or cheap emission reductions. Nevertheless, it provides an important opportunity for countries to address the structural causes of deforestation and start a process of transformational change in considering forest resources. Where they are able to act without international support, governments may prefer results-based payments at the national scale (Phase 3). However, many countries will need support in both project set up and policy reform (Phase 2). In the next years, when REDD+ implementation scales up but a legally binding international policy framework for REDD+ is still absent, finance will need to come from a variety of sources that directly engage with the private sector to combat the drivers of deforestation.

Who should benefit and why?
Discourses on REDD+ benefit sharing

Cecilia Luttrell, Lasse Loft, Maria Fernanda Gebara and
Demetrius Kweka

- Before designing effective benefit sharing mechanisms for REDD+, it is necessary to resolve the question of what REDD+ seeks to achieve. The objectives profoundly affect the design of benefit and cost sharing mechanisms.
- Benefits are not only financial. Few REDD+ projects are providing direct financial transfers to households in their early stages, thus benefit sharing requires attention to a wide range of activities.
- The legitimacy of the decision making institutions and processes is critical. Legal clarity is needed, as is consensus as to which institutions have the right to make decisions and attention to procedural rights.

8.1 Introduction

The distribution of benefits has been identified as "one of the most challenging hurdles" facing REDD+ (Costenbader 2011). Benefit sharing is important for creating positive incentives for reducing carbon emissions, but it must be seen as fair or it will threaten the legitimacy of and support for REDD+. Moreover,

benefit sharing can help to avoid the leakage associated with REDD+ and ensure permanence of emission reductions (Peskett 2011a).

Benefit sharing is not a concept that is unique to REDD+. Many natural resource sectors (e.g. mining, oil, conservation and development projects) and most governments have dealt with benefit sharing through taxation and subsidies. There is much to be learned from these experiences (see, for example, the review by Lindhjem *et al.* 2010). As has been the case in other sectors, the benefit sharing debate in REDD+ raises a number of issues, including the definition of benefits, the identification of legitimate beneficiaries, the efficient distribution of costs, the institutional structures needed for financial transfers and the processes for decision making and implementation (see Lindhjem 2010; Peskett 2011a; Vatn and Vedeld 2011).

Chapter 8 sets out proposed policies and systems for the distribution of benefits and costs at national and subnational levels across a range of countries and projects. It focuses primarily on the main discourses around the question of how benefits and costs should be distributed. We define 'discourse' as "a shared way of apprehending the world" (following Dryzek, 1997:8). Section 8.2 sets the scene for the discussion by defining key concepts and describing institutional arrangements for allocating funds. Section 8.3 lays out the main discourses on how benefits and costs should be distributed and explores the implications of the different discourses for the design of benefit sharing mechanisms. Section 8.4 discusses the importance of legitimacy in decision making processes and describes how to navigate the tradeoffs between effectiveness, efficiency and equity concerns that lie behind these discourses. The chapter concludes by summarising the tradeoffs between different discourses around benefit sharing and by underscoring the importance of legitimising the design process.

The chapter draws from CIFOR's Global Comparative Study (GCS) on REDD+ and uses information from 22 project sites in seven countries (see Appendix). Table 8.1 sets out the current status of policies and practices concerning national and subnational benefit sharing mechanisms in selected countries. Data used in this chapter were collected at the national, project and village levels in each of the project sites and were supplemented by secondary reviews of literature, informant interviews and policy analysis at the national level.

8.2 Setting the scene

8.2.1 Defining REDD+ benefits and costs

In this chapter we define benefit sharing under REDD+ as the distribution of direct and indirect net gains from the implementation of REDD+. We distinguish between two types of benefits. First, there are monetary gains

from international and national finance related to REDD+, including from the sale of forest carbon credits or donor funds linked to REDD-readiness, policy reforms and or payments based on emission reductions. Second, as REDD+ increases the sustainability of forest management, it is likely to generate benefits through the increased availability of some forest products (e.g. non-timber forest products) and by providing benefits related to non-carbon ecosystem services. Box 8.1 clarifies key terms and concepts related to REDD+ benefit sharing.

REDD+ implementation also comes with costs, which are borne by different actors and at different levels. Again, a conceptual distinction can be made between direct financial outlays related to REDD+ implementation and the costs arising from changes in how forest lands and forest resources are used under REDD+. The latter are typically referred to as opportunity costs: the income that is forgone by using forests in ways that reduce emissions. Direct costs include transaction and implementation costs. Implementation costs can include costs incurred by governments or proponents to compensate actors for opportunity costs, so care should be taken not to double count (Box 8.1; see also Box 7.1).

Another distinction can be made between: i) costs to a country; ii) costs to individual actors; and iii) budgetary costs to government agencies (see Table 8.2). Inappropriately mixing different types of costs, different actors and scales can result in misleading estimates of net benefits (see Chapter 7, including Box 7.1).

In this chapter, we use the term benefit sharing mechanism to refer to the variety of institutional means, governance structures and instruments that distribute finance and other net benefits from REDD+ programmes (following Vhugen *et al.* 2011). These may include cash transfers in PES systems, participatory forest management (PFM) and integrated conservation and development projects (ICDPs) (IUCN 2009). Other benefit sharing mechanisms are associated with policy processes, such as governance reforms, fiscal incentives and policies that address particular drivers of deforestation and degradation (Chagas *et al.* 2011).

Lindhjem *et al.* (2010) characterise benefit sharing as having two essential dimensions: *vertical benefit sharing*, which involves benefit sharing between national and local level stakeholders and *horizontal benefit sharing* between and within communities, households and other local stakeholders. An emerging question related to vertical benefit sharing concerns the appropriate balance between benefits used as direct incentives for reducing deforestation and degradation and benefits used to enhance the governance and policy context needed for successful REDD+ implementation (as argued by Gregersen *et al.* 2010; Karsenty and Ongolo 2012).

Table 8.1 Overview of REDD+ benefit sharing policies and practices in five countries

	Related legislation and national level proposals	REDD+ implementation and activities	Proposals for institutional financial arrangements
Brazil	Forest Act and REDD+ National Strategy in progress; no clear position on benefit sharing but primarily treated as a safeguard; no national carbon rights legislation has been ratified but selected states have passed legislation.	A number of state and substate projects are defining their own benefit sharing arrangements, including a few direct payments for environmental services (PES) schemes.	Public funding provided through the Amazon Fund (AF) and *Bolsa Verde*; the AF money disbursed through the National Bank for Economic and Social Development (BNDES); Forest Investment Program (FIP) resources are disbursed through the Ministry of Finance.
Indonesia	Ministry of Forestry (MoF) 2012 and 2009 regulations require REDD+ projects to obtain ministerial approval; no projects have applied for such approval to date. Ministry of Finance (2009) suggests setting national and subnational emissions reference levels; the MoF has issued some Ecosystem Restoration Concessions that could be funded through carbon credits; it is still unclear as to whether carbon is a nationally owned good which should be regulated by the state.	A number of projects (publicly and privately funded) are moving ahead of national decisions, some without the endorsement of the MoF; Ulu Masen, Aceh is an example of a provincial government project funded from international sources without passing through the central government (Peskett 2011b).	Process to draft REDD+ National Strategy in progress; a working group under the REDD+ Presidential Taskforce is designing funding instruments under the Norwegian agreement; such finance is likely to be on-budget off-treasury and so not managed through the regular government fiscal transfer system; regulations from the MoF in 2009 specify the revenue proportions to be shared by REDD+ projects according to the forest classification; the regulation has been challenged by the Ministry of Finance; the 2012 Ministry of Forestry regulation states that benefit sharing of non-tax income from forest carbon will be regulated by upcoming legislation.

Vietnam	Following consultations, the draft REDD+ National Strategy proposes that benefits be shared between local authorities, forest communities, natural resource management boards and forest protection organisations; a multistakeholder working group on benefit sharing has been established; provincial level PES has been trialled under Decision 380 and Decree 99.	Projects are moving away from an expectation of a voluntary market; UN-REDD and the NGO SNV are testing different approaches to benefit sharing, using game scenarios with communities to compare the acceptability of different options and are exploring the use of an 'R coefficient', which helps to calculate payments based both on emission reductions and social environmental impacts (UN-REDD Programme 2010).	UN-REDD Programme (2010) proposes a national fund (rather than transfers through the state budgetary system) overseen by a multistakeholder body; revenues would be distributed proportionally according to provincial performance.
Tanzania	The Tanzania National REDD+ Framework presents options for: i) handing over funds to the communities in proportion to emission reductions; ii) distributing benefits according to inputs to allow for ecological differences and to address equity concerns. The Framework proposes in-kind rather than financial benefits.	More than half of REDD+ projects are under community based forest management (CBFM) on village forest reserves where benefit sharing is likely to follow CBFM guidelines and communities will receive 100% of the revenue; on state land the benefits will be distributed between government and communities through Joint Forest Management (JFM) guidelines (not yet finalised).	The National REDD+ Framework proposes the creation of a National Trust Fund that will receive funds from buyers and distribute funds to communities/ implementers; the REDD+ Strategy favours this non-market approach, however proponents are advocating for both a trust fund and the market approach as options.
Papua New Guinea (PNG)	Design of national REDD+ programmes in progress; benefit sharing models have been delayed; no clarification as to whether carbon rights will follow customary tenure: draft regulations suggest government may regulate sale of carbon but rights to carbon stay with land holder (Covington and Baker&McKenzie 2009).	No official projects to date but some NGO and voluntary market projects are defining their own arrangements.	Trust fund or donor coordination committee not yet developed; CSOs suggest REDD+ funding body must be independent, multistakeholder; PES model proposal by expert consultation group (ECG 2011) suggests two flows (ECG 2011): continuation of voluntary market and PES under a national commitment (with early voluntary market arrangements incorporated).

Box 8.1 Key concepts for REDD+ benefit sharing

Most definitions of benefit in the REDD+ literature refer only to monetary benefits provided for emission reductions and carbon stock enhancements (Streck 2009; Lindhjem *et al.* 2010; Peskett 2011a). However, the implementation of REDD+ activities at the national and local levels can give rise to a wide range of benefits in addition to direct monetary benefits (see Table 8.2 for examples). These include:

•   *Direct benefits* arising from REDD+ implementation. These include employment, livelihood improvements and direct ecosystem benefits, which include NTFPs, fuelwood, fodder etc.

•   *Indirect benefits,* which comprise improved governance such as the strengthening of tenure rights and law enforcement, which may be related to the REDD+ readiness phase) and enhanced participation in decision making as well as benefits from infrastructure provision. Indirect ecosystem benefits include the protection of soil and water quality, biodiversity protection and climate stabilisation.

Direct and indirect benefits can occur as monetary or non-monetary benefits. Monetary benefits are those which can be quantified and valued in financial terms, and non-monetary benefits are those which are difficult to value in financial terms (e.g. enhanced natural assets, increased skills and knowledge).

Implementing REDD+ also carries costs. These include:

•   *Opportunity costs*: the net benefits forgone by not converting forests to other land uses (Börner *et al.* 2010). Opportunity costs vary according to the drivers of deforestation in a particular region or country.

•   *Transaction costs*: the costs necessary to perform a transaction involving a REDD+ payment, including the costs to external parties, such as market regulators or payment system administrators to determine that the REDD+ programme has achieved emission reductions (Pagiola and Bosquet 2009).

•   *Implementation costs*: the costs "directly associated with the actions leading to reduced deforestation, and hence to reduced emissions" (Pagiola and Bosquet 2009:3). These include, for example, the costs of guarding a forest to prevent illegal logging and relocating timber harvesting activities away from natural forests. Implementation costs may, in part, involve compensating actors for their opportunity and transaction costs, thus the three different costs might overlap.

A key distinction, according to some authors, should be made between cost recovery (*compensation*) and the distribution of any surplus once costs have been recovered (*the REDD+ rent*). Others argue that a REDD+ system where full costs are accurately compensated should not, in theory, generate

surplus rent. This argument raises a conceptual dilemma for benefit sharing, since pursuing effectiveness in a global mechanism where funding is limited implies minimising REDD+ rents (Meridian Institute 2009). Thus, conceptualising REDD+ as an extractive resource that yields net benefits may well be problematic.

Omitting the value of co-benefits from forest conservation in the calculation of net opportunity costs makes them appear to be higher than they are (Pagiola and Bosquet 2009:15). Including the various non-carbon benefits suggests, perhaps surprisingly to some, that less monetary compensation is needed to make, for example, local communities better off under REDD+.

Governance enhancement might include tenure clarification and strengthening law enforcement. In practice, all countries are giving attention to both types of benefit sharing, recognising that a conducive policy environment is required to make PES or related compensation schemes work. The relative emphasis given to the two dimensions varies depending on the specific country context and drivers of deforestation. In Indonesia and Cameroon, for example, much deforestation and forest degradation occurs illegally or semi-legally and often takes place on state or government-owned property where there is weak enforcement of land rights. Thus, stronger law enforcement, the clarification of tenure rights and agricultural intensification will be required before performance-based mechanisms will be viable. Brazilian national policy is also focusing on the importance of strengthening policy and enforcement, while countries such as Vietnam are currently paying more attention to the PES approach.

Table 8.3 presents a selection of REDD+ projects and their proposed and actual benefit sharing mechanisms to date. At the time of our review, only one project was providing direct financial transfers to households. None of the current benefit sharing mechanisms in the five Indonesian projects reviewed involved cash payments. The proponents preferred to define benefits as activities, such as capacity building, alternative livelihoods enhancement and the strengthening of tenure rights, which are viewed as necessary before PES systems can be successfully introduced. This implies that the type of benefit sharing mechanism in place is likely to change as the projects move from REDD+ readiness towards payments for actual emission reductions.

8.2.2 Institutional structures for financial flows

The distribution of net benefits and costs from the implementation of REDD+ among different actors has two aspects: the monetary gains from

Table 8.2 Examples of potential REDD+ beneficiaries and the costs and benefits they may accrue

Potential REDD+ beneficiaries	Possible roles and costs incurred	Examples of benefits
Providers of REDD+ services and co-benefits (traditional communities, indigenous people, landholders, etc.)	Direct providers of carbon reductions and stocks, normally responsible for land use change and REDD+ activities on the ground	Direct benefits; in-kind benefits; income from sale of products from REDD+ activities; technology transfer; strengthening of rights; jobs; generation of non-carbon ecosystem services
Village associations and community groups	May be involved in the implementation of REDD+ activities on the ground such as managing and monitoring the distribution of benefits	Direct incentive payments; in-kind benefits; jobs and other multiplier effects
Municipal/local government and agencies	Involved in the implementation of REDD+ necessary interventions, such as definition of land tenure, approval/evaluation of activities and defining eligible actors	Jobs; local infrastructure improvements; capacity building; fiscal transfers; generation of non-carbon ecosystem services
Project developers/implementers (local or subnational)	Responsible for the design and implementation of REDD+ projects; most likely to manage funds for REDD+ actions	Jobs; capacity building; increase in assets; technical improvements
Local agencies and individuals responsible for law enforcement	Institutions and individuals in charge of law enforcement activities, such as monitoring deforestation and applying sanctions and fines	Jobs; net income; capacity building; technology transfer
Central government	Design and implementation of policies and measures (e.g. removal of subsidies, introduction of logging moratoria)	REDD+ readiness payments; co-benefits accrued from forests; taxes and royalties; multiplier effects on the economy and institutions; generation of non-carbon ecosystem services
Public	Activities and incomes foregone	Intergenerational benefits in terms of natural assets; co-benefits accrued from forests

international finance and the benefits related to improved sustainability of forest management. Thus, the term 'benefit sharing mechanisms' encompasses a variety of institutional means, governance structures and instruments needed to distribute both the finance and the net benefits from REDD+ implementation. In the case of the former the mechanism depends on the institutional arrangements in place for allocating international and national funding. In the case of the latter, it depends on the particular mechanisms chosen for REDD+ implementation, including the rules for how financial benefits will be allocated. Most of this chapter focuses on the latter aspect; however, to set the scene for that discussion, this section discusses proposals for the governance and institutional arrangements needed to allocate finance from national to subnational levels and describes their implications for benefit sharing.

The proposals can be divided into four main categories (based on Vatn and Angelsen 2009; Vatn and Vedeld 2011) (see Figure 8.1 and Table 8.1):

1. Project-based mechanisms, such as the Clean Development Mechanism (CDM) or voluntary market standards or projects, such as those in Peru and Tanzania

2. Funds operating independently outside the national administration, such as existing conservation trust funds or the proposed National Trust Fund in Tanzania (see Table 8.1)

3. Funds that rely on the capacity of the state administration and can direct finance to the state sector, but with decisions on financial beneficiaries made by independent committees. Examples include the Amazon Fund in Brazil, the National Fund for Environment (FONAM) in Peru and the Forest Protection and Development Funds in Vietnam.

4. The conditional distribution of payments through the state's fiscal transfer systems, such as that proposed by the Ministry of Finance in Indonesia (Ministry of Finance 2009). This might involve the regular government budget, a targeted fund or a decentralised approach involving decisions over allocation of funds by the local government and taxes paid to the central government, as in Vietnam (UN-REDD Programme 2010).

These proposed approaches to financial transfers have implications for benefit sharing. Project-based mechanisms involve a contract between the provider and the buyer, but are usually somewhat removed from state structures, whereas more complex national systems have a wider range of players and layers of subnational systems to accommodate (UN-REDD Programme 2010). Table 8.1 shows that, with the possible exception of Brazil, there is little clarity in any of the countries about institutional governance arrangements for REDD+ finance transfer and many countries have a number of different proposals on the table. For example, the draft Tanzanian REDD+ Strategy proposes a centralised national system with

Table 8.3 Selection of project approaches to benefit sharing[a]

Project[b]	Type of benefit sharing arrangement[c]	Details
Tanzania – TFCG-Kilosa and Lindi	Household (HH): alternative livelihoods*; capacity building*; improved agriculture*; PES	Dividends from REDD+ paid to every qualifying member of the village as determined by village by-laws; up-front funds and individual payments based on the potential average avoided emissions per year; village assemblies decide whether to use dividends on community projects
Tanzania – Mpingo	HH: PES Community: tenure security*; certification*	Acquiring land certificates; boundary clarification*; selling timber through FSC; land use and management plans. Originally the project planned to pass on profits to communities after deducting costs but this was controversial so now they are discussing a percentage arrangement.
Tanzania – CARE	Community: alternative cooking energy*; alternative livelihoods* and capacity building*; PES	Distribution of carbon revenues will use existing village savings and loan systems. The rights to carbon will be negotiated between CARE and the community through an aggregation entity.
Brazil – Transamazon	HH: PES; alternative production strategies*; land tenure regularisation*; Community: organisational strengthening	Conditional benefits for 350 families (based on the reduction of carbon emissions, associated with reduced deforestation)
Brazil – SFX	HH: land tenure regularisation*; livelihood alternatives*; capacity building	Conditional and up-front payments for private landholders (large and small), indigenous groups and protected area managers including for: i) landholders: strengthening command and control, integrated system for environmental licensing and monitoring, increasing cattle productivity, large-scale reforestation with high value species; ii) indigenous lands: sustainable income alternatives, code for management of natural resources; iii) conservation units: formation of management council and management plan, improving protection and monitoring
Brazil – Cotriguaçu	HH: sustainable forest management*; cattle and dairy production*; alternative production strategies; land tenure regularisation*; capacity building	Benefits to all relevant actors: private landholders (large and medium) and indigenous groups
Brazil – Acre SISA	HH: PES*; alternative production strategies*; sustainable forest management; land tenure regularisation*	Benefits for increasing production in deforested areas on private and rural settlement properties including i) financing certification; ii) forest valorisation and protection of high forest cover, indigenous and extractive areas, including territorial monitoring, support of multiple-use forestry, socio-cultural projects; iii) benefits for enhancing carbon stocks in deforested areas

Brazil – Bolsa Floresta	HH: PES; income diversification; capacity building* Community: public services	Conditional benefits go to participating households, communities and associations. Families commit to a zero deforestation commitment and enrol their children in school. Monthly payment of 50 reals per household (US $30)
Vietnam – SNV	HH: improved land management*; livelihood alternatives*	Early stage of design. SNV is testing benefit sharing distribution types with communal and provincial funds. Moving away from a focus on gaining voluntary market credits; working on quantifying opportunity costs
Peru – BAM	HH: PES; in-kind benefits.	Conditional benefits for those contributing to emission reductions through a pilot reforestation initiative
Peru – Alto Mayo	HH: agricultural inputs*, capacity building; * links to sustainable markets* Community: public services	Support for sustainable organic coffee production
Indonesia – KCCP	HH: capacity building*; tenure strengthening*; alternative livelihoods	Strengthening of land tenure rights through Hutan Desa (Village Forest) establishment
Indonesia – RRC	HH: employment*; capacity building; alternative livelihoods*; credit Community: village development	Ecotourism; infrastructure; health and credit
Indonesia – KFCP	HH: employment*; alternative livelihoods*; training* Community governance training	PES a likely option in the future

a Data were compiled from C2 country team, Tanzania, 2012; C2 country team, Brazil, 2012; C2 country team, Vietnam, 2012; C2 country team, Peru, 2012; C2 country team, Indonesia, 2012, as well as direct interaction and additional inputs from the C2 country research teams. Information on Brazil projects was also taken from Duchelle *et al.* (2011a)

b Please see Appendix for full project names and details

c * Marks those which are already being implemented
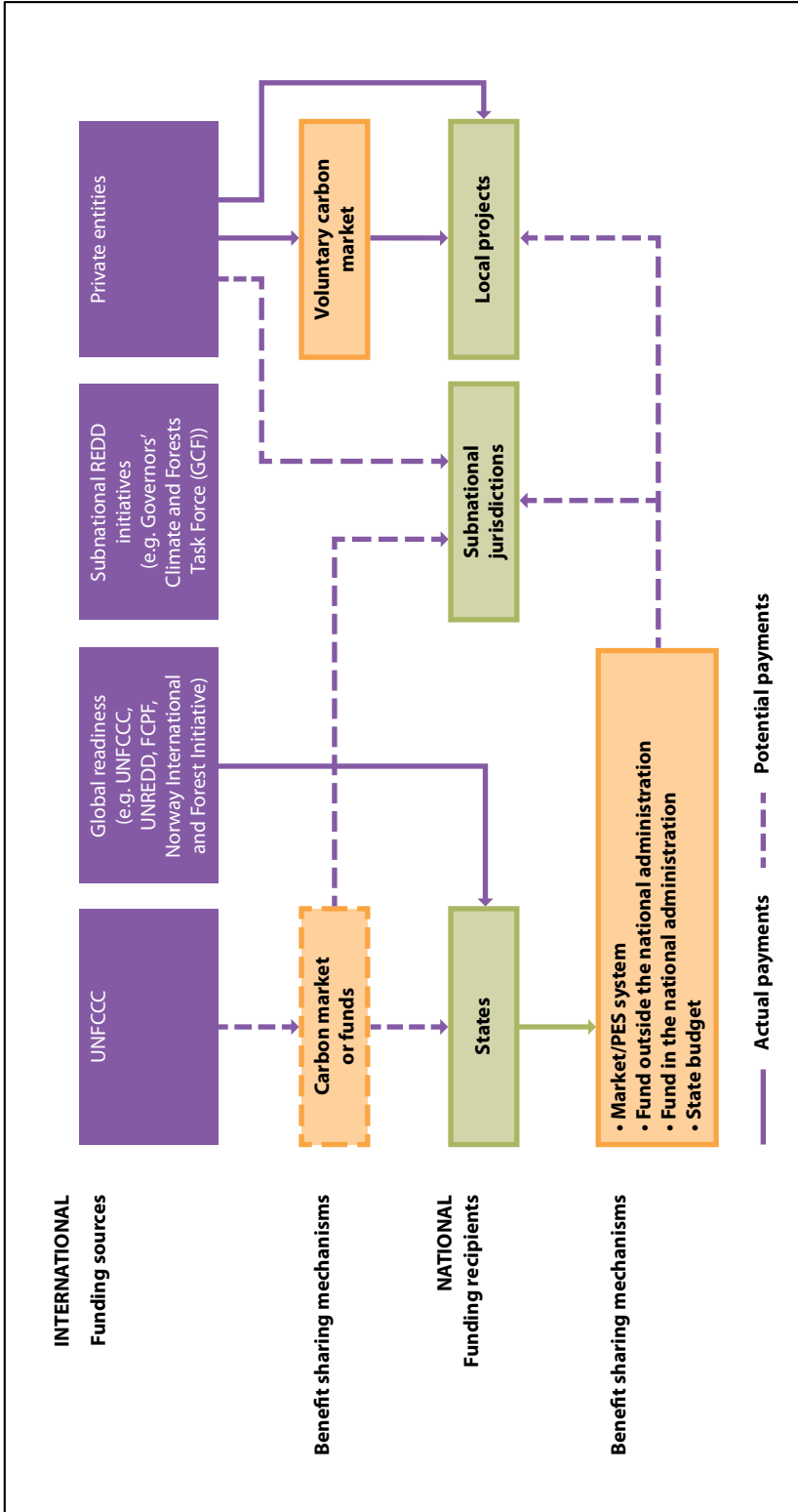
Figure 8.1 Potential structures for REDD+ financial flows to subnational levels

payment into a National Trust Fund, whereas projects (and the Readiness Preparation Proposal [R-PP]) are proposing a nested approach that allows for direct international payments to projects. In some countries, such as Indonesia, multiple processes of defining benefit sharing mechanisms are underway, although the legality of the arrangements being proposed is not clear. The fact that many REDD+ projects are operating in insecure legal and policy frameworks means that existing benefit sharing arrangements could be subject to upheaval once the national level policy is formalised.

8.3 Discourses on who should benefit

A major question dominating the benefit sharing debate at both the national and project levels is who should receive the benefits associated with REDD+. This section focuses on the main discourses on this question, the tradeoffs involved in the choices arising from each discourse and the implications of the choice for the design of a benefit sharing mechanism. Different discourses have different effects on policy making, as they frame the problem and present choices in different ways (Hajer and Versteeg 2005).

A broad distinction can be made between effectiveness and efficiency on the one hand and equity (and co-benefits) on the other.

1. The *effectiveness and efficiency discourse* focuses on the goal of carbon emission reductions. It suggests that benefits should be used as an incentive and distributed to the people or communities that bring about a reduction in emissions by changing their behaviour or actions. This argument follows the logic of PES: REDD+ serves as a mechanism for paying forest users and owners to reduce emissions. Consequently, financial benefits should principally go to the people providing these services to ensure that the services are actually delivered. It also can be considered fair practice, since these actors may incur the main costs from reduced forest use.

2. *Equity-related discourses*, on the other hand, focus on the question of which actors have the right to benefit from REDD+, with less attention given to their contributions to reducing carbon emissions. This approach has emerged from a concern that a focus on effectiveness and efficiency could result in unfair incentives (e.g. rewarding wealthy actors for reducing their illegal behaviour), increasing inequality and undermining the moral and political legitimacy of REDD+. The equity discourse has four main strands, which are discussed below.

At the national level, the relative emphasis given to the various discourses varies depending on the stakeholders involved in the design of the mechanism, the nature of the REDD+ funding that is envisaged and the type of REDD+ activity concerned. For example, in Vietnam, there is concern about the

development of performance-based payments that can accommodate co-benefits. In Indonesia, there is an emphasis on putting in place adequate incentive structures to ensure that project developers remain involved and in Tanzania, there is a concern to ensure that upfront payments are possible, in order to maintain early commitment.

Table 8.4 describes proposed models for subnational funding allocations, which were developed to influence the formulation of the national REDD+ strategy in Brazil. These models were developed by the Amazon Environmental Research Institute (IPAM) (Moutinho *et al.* 2011) and a working group organised by the Ministry of Environment (MMA 2012). The table shows how the models vary according to the weight given to the different objectives of effectiveness and efficiency or equity and how this might have implications for how benefits are distributed.

In practice, most benefit sharing mechanisms will be designed to address numerous objectives, but for each one there are significant tradeoffs. These tradeoffs raise hard questions for REDD+ design, since they will require decisions that risk undermining support for REDD+ implementation.

In the following sections, we discuss the key tradeoffs involved in various equity discourses and describe how each of these tradeoffs interacts with effectiveness and efficiency discourses to influence the design of benefit sharing mechanisms.

8.3.1 Equity discourse I: Benefits should go to actors with legal rights

A dominant discourse in the benefit sharing debate is that benefits should be distributed to those with the legal claims or rights (whether statutory or customary) to those benefits. Legal rights are rights that are bestowed on a person or entity by a particular legal system, as opposed to wider moral or ethical rights, which are covered below. However, in most countries, including those occupied by many of the project sites, establishing these legal rights is not straightforward. None of the countries reviewed have national legislation concerning property rights over carbon emission reductions (see Box 8.2) and most REDD+ projects are operating in a vacuum of uncertainty over the legal status of carbon rights. Indonesia, Peru and Tanzania, in particular, have a number of REDD+ projects with benefit sharing mechanisms that were developed before their national policies on carbon rights had been clarified. Lacking that clarity, many forest actors assume that existing land and forest tenure, and current policy instruments for sharing benefits from the forests, will serve as the basis for allocating payments for carbon emission reductions (Cotula and Mayers 2009). Land tenure is important for influencing how benefits are shared in forests,

Table 8.4 Proposed models for subnational REDD+ funding allocations in Brazil (based on Moutinho *et al.* (2011) [i] and MMA (2012) [ii])

	Proposal for funding allocation	**Implications**
Model 1 [i; ii]	Based on subnational reference emission levels, federal states would be compensated according to three criteria: i) contribution to reducing emissions; ii) the forest stock; and iii) performance against state targets for reducing deforestation.	Performance-based benefit sharing provides the greatest effectiveness, due to high accountability over GHG reductions at the national level. Equity is addressed by considering stocks and this could help to benefit indigenous people. However, the fact that funds are allocated at the state level raises some challenges for reaching local people.
Model 2 [i; ii]	Separate funds for the contribution of specific land use categories (e.g. indigenous lands, protected areas and extractive reserves, settlements and public lands) to reducing deforestation and conserving the forest stock.	Effectiveness and efficiency may be enhanced, since the model allows for the allocation of financial resources based on the needs of the different areas. Equity is enhanced by allocating finance directly to the area concerned. In addition indigenous people should benefit from the allocation of funds to specific landholding groups.
Model 3 [ii]	The allocation of funds is based on local level emission reductions (carbon allocated units). Reference levels are allocated directly to the actors responsible for reducing deforestation and promoting forest conservation.	Effectiveness may be increased, since transaction costs are low and no new institutions are needed. However allocating reference levels directly to local people is a challenge.

because it helps determine which actors have the right to carry out activities and claim benefits from a particular area of land and its associated natural resources (Peskett 2011a). However, a key issue in the carbon rights debate is that many small-scale forest users do not possess formal rights to land and/or to forest products (see Chapter 9) and thus use the forest illegally. Targeting benefits only to those individuals or entities with formal rights may work against the poorest people, raising the question of whether or not a reduction in *de jure* illegal uses should also be compensated.

Box 8.2 Debates over carbon rights in selected REDD+ countries

Rights over carbon can belong to an individual, a group, such as a community or the state, depending on national legislation. Tracking ongoing debates on this issue in a number of countries reflects the complexity of defining the legal right to benefit from carbon emission reductions.

Cameroon
Cameroon's legal system does not distinguish between rights over trees and the elements (such as carbon) stored inside them. According to Sama and Tawah (2009), the separable right to trade and benefit from carbon should be treated like other natural resource ownership and thus depends on the type of forest in question. In Cameroon, the natural resources found in state or communal forests belong to the state, those on national land, which is administered by the state, belong to the Cameroonian nation (Karsenty and Assembe 2011), those found in council forests belong to the council and the resources in private forests are owned by individuals. Some argue that a carbon credit could be categorised as an intangible asset (Correa 2009, as cited in Dkamela 2011) and take the form of a monetary asset representing the result of an action. Ownership of carbon credits would be granted to forest actors who prove that they are behind the action. This claim would not necessarily be based on land tenure, but could also include ancestral rights, operating rights, use rights or capital investment.

Brazil
According to the federal legal opinion number AGU-AFC-1/2011, the provision of environmental services could be subject to commercial agreements with indigenous groups; the carbon credits generated in indigenous lands would belong to indigenous people under article 231 of the Federal Constitution. At the subnational level, Acre, Amazonas and Tocantins have passed climate and conservation laws, which state that carbon rights belong to the state. Under these laws, the providers of ecosystem services can gain access to financial resources, assuming they receive approval and are legally based in the area where the services are being provided (Gebara 2011). In the case of Amazonas, this right may be donated to the Amazonas Sustainable Foundation (FAS), which is responsible for managing conservation sites in the state (Art.8, Law 3135/2007).

Vietnam
The Vietnamese Constitution states that all land and forest resources belong to the state, which allocates them to organisations and individuals for "stable long-term use". Accordingly, the 2004 Forest Protection and Development Law recognises the principle that buyers may purchase forest goods and services, delivering payments to those who protect and regenerate the forests. Decision 178 (2001) specifies the ways in which households and individuals can be allocated or leased land, or contracted to manage forest and details the payments they can receive for these services. Thus, individuals and organisations may have the right to benefit from providing ecosystem services. However, according to Article 84 of the 2005 Law on Environmental Protection, carbon emission transactions with international buyers would have to be approved by the Prime Minister.

Owning land or trees does not necessarily mean the owner has a legal right to benefit from carbon sequestration or reductions in carbon emissions. Though some authors do not make this distinction, Peskett and Brodnig (2011) argue (following Strecn and O'Sullivan 2007; Takacs 2009) that the term carbon rights has two fundamentally different aspects:

1. The property right to sequestered carbon, which is physically contained in land, trees and soil, does not necessarily have to coincide with the property rights over the physical resources.

2. The property right to sequestered carbon is distinct from the right to benefit from selling carbon credits. Where there is no explicit law on the right to sequester carbon, legal rights can be associated with the right to the underlying asset, activity or resource. If the legal status is not clear, contracts become important for clarifying rights and responsibilities (Norton Rose 2010).

One of the main considerations in the design of benefit sharing mechanisms is whether or not central governments will claim separate rights to benefit from trading carbon credits. This decision is rooted in the fundamental question of whether forest and associated products are viewed as nationally-owned goods and the extent to which, if this is determined to be the case, there is political consensus around the decision. In Tanzania, for example, the majority of REDD+ projects are taking place on land registered as Village Forest Reserves, which means that there is no legal requirement for the income from these projects to go to the central government. This is because the CBFM guidelines and Tanzanian Forest Act of 1998 (revised in 2002) give communities that own Village Forest Reserves the right to the revenue and benefits arising from them (United Republic of Tanzania 1998). This has implications for how these projects are viewed by the government and the wider public, since any revenues they raise will not contribute to wider national development. A latent resistance to reforms that have shifted control over land and forest away from the state to communities still exists at the national level, where some continue to perceive natural resources as nationally owned goods (interviews with national stakeholders 2012). This perception has led to recommendations that REDD+ revenues should be channelled through the National Trust Fund to enable the government to manage and distribute the funds to the communities (United Republic of Tanzania 2010).

If governments assume the ownership of carbon, the design of national benefit sharing mechanism needs to address how the benefits obtained from selling carbon would be distributed nationally. If the right to carbon were privatised, the owner of those resources would govern the benefit sharing mechanism. However in that case, further attention may be required in order to actually tackle the drivers of carbon emissions, since those with legal rights may not be responsible for high emitting behaviour.

8.3.2 Equity discourse II: Benefits should go to low-emitting forest stewards

From an equity standpoint, it can be argued that REDD+ benefits should not only go to the actors that have been causing high emissions but also to indigenous groups or other forest users that have a record of responsible forest management. For example, taking this approach, a community whose customary rights are not legally recognised, but that has been protecting the forests for a long time, would have strong claims to benefits from REDD+. The effectiveness–equity dilemma is that in many of these low-emission situations, additionality cannot be proven because there are no emissions to reduce in the first place. However, some would argue that emissions are likely to increase in the future, i.e. the realistic baseline is above the historical one, and therefore payments can be considered as additional.

Recognition of good forest stewardship can be seen in some of the projects reviewed, where benefits are being distributed to actors that are not the direct drivers of deforestation, in order to encourage collaboration and create incentives for protecting the area. This can be seen, for example, in the BAM project in Madre de Dios, Peru where the owners of Brazil nut concessions are given incentives to protect the forest, although the main contributors to deforestation, agricultural clearance and illegal logging are different actors altogether. In the best case scenario, payments to communities may lead them to guard the forest against external agents of deforestation.

8.3.3 Equity discourse III: Benefits should go to those incurring costs

An important discourse in the benefit sharing debate holds that the forest actors that shoulder implementation, transaction and opportunity costs should receive REDD+ benefits. This discourse reflects equity concerns to ensure that the people who have incurred costs are compensated for them, regardless of the carbon emission reductions for which they are directly responsible.

The tension between emission-based approaches, and the need to reward effort and inputs provided for REDD+ implementation, is reflected in the design of many emerging benefit sharing arrangements (see Box 8.3). This tension not only relates to the fact that inputs are easier to define and measure than are emission reductions (see Chapter 13), but also that most REDD+ projects are in the early stages of implementation and recognise the need to give actors incentives for getting involved.

Box 8.3   REDD+ projects in Tanzania: Exploring options to overcome the tension between performance and input-based benefit sharing

A key question in the design of benefit sharing mechanisms for REDD+ projects in Tanzania concerns the basis for making payments. Two clear options are to make payments based on i) *effort and input* or on ii) *performance and output*. In the first case, rewards will be given to communities as long as they implement activities that improve forest conditions and hence carbon stock (e.g. through the development of land use plans, participatory forest management, law enforcement or the implementation of forest management plans). This method has low transaction costs, because the activities can easily be verified, requiring less empirical evidence. The approach, however, has several drawbacks. For example, there is not necessarily a direct link between payments and reductions in the deforestation rate. The approach does not account for variability in the performance of forest managers nor does it create strong incentives for good forest management since forest managers are paid regardless of forest management outcomes (TFWG 2010). However, the approach does recognise the fact that some communities might work as hard as others but have lesser outcomes, due to different circumstances.

Nevertheless, an effort-based payment system does not take into account the differences in opportunity costs among communities. The communities that succeed in halting charcoal production or shifting cultivation will forego more farming and other economic activities than those that try to halt these activities and ultimately fail (TFWG 2010). Communities with high carbon forests (in the highland areas) will incur greater opportunity costs than communities in low carbon forests (like *miombo* in Southern Tanzania and coral-rag in Zanzibar) (United Republic of Tanzania 2009). This is because there are more valuable economic opportunities in areas where forests have higher carbon content (TFWG 2010). If the cost of these opportunities and other costs, such as varying access to markets, are not factored in, or are assumed to be constant, effort-based systems can be inequitable.

In an output or performance-based payment system, communities and forest managers are paid for their actual performance in terms of improving forest conditions and reducing degradation in ways that can be empirically verified though higher forest carbon stocks, as compared to reference emission levels. This system provides a direct link between REDD+ payments and effective forest conservation activities. However, the performance-based system has higher transaction costs because of the need for carbon measurement and third party verification methods.

8.3.4 Equity discourse IV: Benefits should go to effective implementers

Finally, there is a strong discourse that a proportion of REDD+ benefits should be shared with the forest actors that are essential for the implementation of REDD+, whether private sector, NGO or central or local government (Table 8.2). However, the determination of the exact proportion of the benefits that should accrue to these actors is a key issue for debate in many countries. The challenge is to ensure that project implementers receive enough incentive to guarantee effective implementation, while at the same time guarding against them getting windfall profits (as is discussed in the Indonesia Ministry of Finance's Green Paper [Ministry of Finance, 2009]). For example, in PNG, despite clear tenure, customary landowners gain little profit from the extraction of timber, due to the terms of timber extraction between landowners, the state and contractors, whereby the price paid to landowners for timber is fixed, regardless of increases in the market price. In Indonesia, private sector project developers are lobbying to influence the content of national policy around the setting of benefit sharing rules, arguing that project developers require adequate compensation to cover the implementation and transaction costs they are incurring as a result of REDD+ readiness activities. In Tanzania, all REDD+ project proponents are NGOs and the level of rent that could, or should, accrue to them has not been debated at the national level. However, it is a key issue they face in negotiating with communities.

This question also applies to the rights of governments to retain some revenue to cover any implementation and transaction costs they have incurred. As with revenue gathered from any forest commodity, central and local governments might retain revenue for admissible costs, such as setting up MRV and enforcement systems (Irawan and Tacconi 2009). The UN-REDD Programme (2010) recommends that the amount retained by government should be performance-based and directly related to the costs incurred.

A related question in the vertical benefit sharing debate is how to distribute REDD+ rent or taxes between levels of government, including the degree to which local governments should keep locally derived revenues. The principle of subsidiarity suggests that greater efficiency is achieved by locating powers and tasks at the lowest possible administrative level (Foellesdal 1998), but in the case of REDD+, some activities may be best handled at the central level, e.g. to contain leakage (Irawan and Tacconi 2009).

8.4 Negotiating choices and legitimacy of process

A common constraint in the countries reviewed is a lack of clarity about which is the competent agency to make decisions on benefit sharing arrangements. In some cases, this lack of clarity stalls the development of benefit sharing

mechanisms and therefore of REDD+ implementation. For example, in Indonesia, the REDD+ benefit sharing regulation developed by the Ministry of Forestry has been challenged by the Ministry of Finance, which contends that the Ministry of Forestry does not have the legal authority to make fiscal decisions. At the same time, the REDD+ Task Force is developing parallel proposals for benefit sharing in connection with the Norwegian funding for REDD+. In Tanzania, there are similar debates over which ministries have the authority to make decisions about REDD+ implementation. The Department of Environment in the Vice President's Office holds the authority for decision making concerning the implementation of REDD+, but the implementation of REDD+ projects falls under the Ministry of Natural Resources and Tourism (United Republic of Tanzania 2010), while the Ministry of Finance is responsible for monitoring and ensuring revenue collection. At the same time, the Ministry of Land makes decisions about land ownership, titling and boundaries for village forest land (where most REDD+ projects are located), while the local government authority at the district level has the mandate to approve the land use plans, which are required for establishing Village Forest Reserves.

On the one hand, project level initiatives have the advantage of serving as test cases, yielding innovative lessons for benefit sharing mechanisms, which can then be incorporated into national policies (as happened in the case of the SNV project in Cat Tien, Vietnam for example). On the other hand, project level autonomy runs the risk of project initiatives developing in parallel to national policies, possibly outside of the legitimate democratic space, thus failing to help to build the capacity of government structures and processes.

Overcoming these hazards requires a process that brings legitimacy to any decisions that are made. Legitimacy is not only a function of the effectiveness, efficiency and equity outcomes of the benefit sharing system, but also of the process to design and implement the system. Legitimacy can be enhanced by ensuring that decisions about benefit sharing mechanisms are taken by those who have the legal mandate to do so and by giving attention to establishing due process to ensure that acceptable and accountable decisions are made. Our review shows that such a process is not easy and that, in most countries, the mandate and responsibility of various government institutions is not necessarily clear. Overcoming this requires all government and non-government organisations that are involved in the design of benefit sharing policies and mechanisms to play a role in resolving the lack of clarity. Donor agencies should encourage this clarification to take place and should work through the mandated decision making processes and institutions. NGOs and private sector implementers can encourage this process by lobbying for the clarification of roles and responsibilities.

8.5 Conclusions and recommendations

We have shown that many of the conflicts over the vision of REDD+ appear to relate to the design of benefit sharing mechanisms and that design decisions often involve a tradeoff between the effectiveness, efficiency and equity of REDD+ mechanisms. The discourses, ideologies and definitions associated with benefit sharing concern a variety of objectives, ranging from the need to provide compensation for costs incurred, the need to ensure co-benefits, such as biodiversity, and the need to recognise legal rights and ensure fair outcomes. The decision to emphasise either effectiveness and efficiency or equity has significant implications for the design of benefit sharing mechanisms.

This multiplicity of objectives is due to the fact that REDD+ itself is highly loaded with expectations with regard to outcomes beyond carbon emission reductions. Managing these expectations requires clarity at both the national and project levels concerning: i) the primary objective of REDD+; and ii) the degree to which co-benefits should be addressed and can and/or should be paid for by REDD+. However, our analysis of the state of play of benefit sharing design at both the national and the project levels shows that these fundamental questions have yet to be resolved. Many REDD+ projects are operating in a vacuum of uncertainty over what form of benefit sharing mechanisms will be ultimately classed as legal and therefore what level and type of benefits will be available to be shared.

There is an argument to be made for urgent attention to designing benefit sharing mechanisms and thus, in the short term, it might be necessary to work within the reality of a suboptimal national policy context rather than waiting for reforms to happen. For example, because getting legal clarity over carbon rights may not be realistic in the near future, the benefit sharing mechanism might need to rely on contracts that specify legal rights and responsibilities. However, giving too much attention to minor details of the design of benefit sharing mechanisms before fundamental questions (such as the due process for making decisions about benefit sharing and what bodies have the legal right to do so) are resolved can be problematic.

We conclude that the major issue to be addressed is how to ensure the legitimacy of the process for addressing fundamental questions and making decisions about the design of benefit sharing mechanisms. This requires legal clarity and consensus about the institution with the powers to make such decisions and attention to procedural rights, such as transparency, participation and free prior and informed consent. There are few absolute rights or wrongs in the design of benefit sharing and thus the resolution of fundamental questions requires making ethical, political and practical judgements. These judgements concern questions such as who should benefit from REDD+ and legal and constitutional considerations concerning the right of the state to retain

revenue from private and nationally owned goods. We suggest, therefore, that effective benefit sharing mechanisms are not just about having clear principles for design, since these alone cannot hope to satisfy the interests of all stakeholders, but, more importantly, about the process for making decisions on design and implementation.

Tenure matters in REDD+
Lessons from the field

Anne M. Larson, Maria Brockhaus and William D. Sunderlin

- At the national level, efforts to address land and carbon tenure issues have been limited, although REDD+ has brought unprecedented international attention to tenure and other rights of forest peoples.
- Project level interventions to address tenure encounter substantial obstacles if they do not have national backing; at the same time, national land registration institutions are often inadequate for effectively addressing the central, underlying issue of customary tenure rights.
- REDD+ policy makers can move forward on macro level approaches by attacking the underlying drivers of deforestation, while proceeding in parallel to target solutions to specific tenure problems; both, however, are likely to face resistance.

9.1 Challenges to forest tenure reform

In many countries, tenure reform goes hand-in-hand with REDD+. Tenure reform processes support REDD+ implementation; at the same time REDD+ can provide an incentive to push forward tenure reform. Both processes, however, face substantial constraints. The challenges

to forest tenure reform have been discussed extensively in the literature. Sunderlin (2011) briefly traces the history of local control and customary rights, through the suppression of rights and the appropriation of forests, particularly under colonialism, to the current 'global forest tenure transition', under which many governments have begun to recognise – to some extent – community claims. The forms and extent of rights recognition has been varied, in some cases involving the titling of large indigenous territories, in others, land grants to smaller community forests, while in the most timid reforms communities have received new, temporary use rights that are an improvement on the past but are far from constituting substantial reform (Larson *et al.* 2010).

Although the restoration and formalisation of customary rights have received substantial international attention, this shift is not seen in all countries. Even where policies have been implemented, they have often been fraught with problems and met with resistance (Larson 2011); and some countries that have made significant strides in recognising community forest rights have tried to roll back these policies more recently (RRI 2012).

Tenure reforms take time and resources, both for the political process of negotiating compromises and passing new laws and for the technical aspects, such as reforming cadastres, and demarcating and titling land. Larson (2011) identifies three types of obstacles to tenure reforms in favour of indigenous and other communities living in forests, corresponding largely with the 4Is framework introduced in Chapter 2: limited technical, human and economic capacity to carry out accurate and effective demarcation and titling (Information); political and economic interests of actors competing for forest land and resources, including some state actors (Interests); and ideological barriers, such as opposition to, or concerns about, the idea that forest dwellers can be effective forest stewards (Ideas). These obstacles are deeply rooted in national institutional structures (Institutions).

In spite of these obstacles, there has been unprecedented attention to forest tenure under REDD+. Business as usual pressure to clear forests is in direct conflict with the awareness that standing forests are crucial for climate change mitigation (Sunderlin and Atmadja 2009). The cases studied in this chapter demonstrate both large leaps and, more commonly, small steps forward in the recognition of forest tenure rights. In all cases there is far more to be done.

This chapter assesses the experience so far in addressing tenure challenges at national and project levels and considers ways forward for tenure and REDD+. What are the primary tenure problems faced in each country and to what extent are these recognised and addressed at the national level? How are REDD+ project interventions resolving tenure problems, and

what are the obstacles to doing so? Past research on forest tenure reforms demonstrates that even if local rights are recognised by law, the ability to exercise those rights is often challenged by competing actors and interests. Given these difficulties, how can REDD+ move forward on policies and interventions that work for both forests and local people?

The research findings presented here are drawn from CIFOR's Global Comparative Study (GCS) on REDD+, focusing on the six countries studied at both national and project levels (see Appendix for a full description of methods). Those are: Brazil, Cameroon, Indonesia, Tanzania and Vietnam; national scale data are available for Peru, but project level information is only preliminary.

9.2 Why tenure matters for REDD+

Clear and secure tenure rights to land, forests and carbon have been identified as key elements for successful REDD+ strategies (see Figure 9.1). On the one hand, clarifying[1] and strengthening tenure can, in itself, contribute to decreasing deforestation and degradation. Many researchers have found that
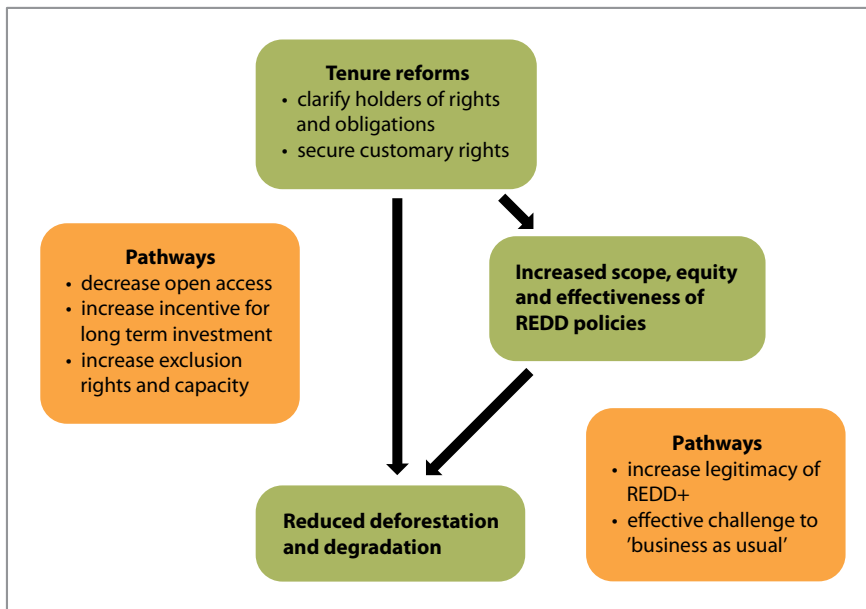
Figure 9.1 Tenure reform pathways to reducing deforestation and degradation

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1 Simply 'clarifying' rights in light of REDD+, without taking into account customary rights and issues of social justice, could have serious equity implications. In our research sites, however, most project proponents have a justice oriented agenda.

tenure insecurity commonly fosters forest clearing, open access dynamics and land grabbing and have argued, therefore, that secure land tenure rights are more likely to lead to forest conservation and long-term investment in forests. For example, farmers have often cleared forests to establish rights – sometimes as required by law, but commonly for customary claims as well. Where long-term rights are not secure, the risk of investing in slow-growing products like timber is too high; and the establishment of clear borders with the right and ability to exclude outsiders reduces incursions and overlapping claims. In some cases, however, insecurity has been associated with conservation (due to the fear of losing investments) and secure rights by no means guarantee that landholders will not clear forests for more profitable alternatives (Angelsen 2007). Nonetheless, secure tenure generally appears to be better for forests than insecure tenure, although on its own, it may be insufficient to guarantee better forest management.

Clarifying tenure, and securing rights for forest-based people, also increases the viability of REDD+ policies and assures greater equity, effectiveness and efficiency. Specific policies that support REDD+ include those that reduce agricultural rent, increase forest rent, and create or regulate protected areas, as well as cross-cutting policies such as decentralisation or governance reforms (Angelsen 2009b; Angelsen 2010b). Not every policy requires attention to tenure. For example, creating off-farm opportunities and supporting agricultural intensification in key locations while abandoning new road construction in forests could slow forest colonisation and even stimulate out-migration from forests. This could be significant for forests if migration of small and medium producers is the main cause of deforestation and degradation.

Addressing tenure substantially increases the options available. These include other policies to reduce agricultural rents, such as establishing roads in forests with strict regulations; or policies to increase forest rents, such as better prices for forest products, community forest management or payment for environmental services schemes. Protected area regulation requires clarity and enforcement of borders.

Disregarding tenure limits the scope and potential of REDD+, places forest-based people at risk and may engender such opposition that it guarantees failure (Larson and Petkova 2011). The potential risks of land grabbing by outsiders and loss of local user rights to forests and forest land is one of the main (though not only) reasons that many indigenous and other local peoples have publicly threatened to oppose REDD+, bringing substantial international attention to these concerns under the banner "No rights, no REDD" (Tauli-Corpuz *et al.* 2009; Box 9.1). The implications of tenure for REDD+ can be summarised as follows (see also Sunderlin *et al.* 2011):

Effectiveness

- The essence of REDD+ is to reward those who maintain or enhance the carbon sequestration of forests and compensate them for lost opportunities; this could include direct payment schemes to landholders, which would require a clear right holder who has rights to exclude others (see Börner *et al.* 2010).
- The holders of rights to forest carbon must be held accountable in the event that they fail to fulfil their obligation – the 'conditional' part of conditional incentives.

Efficiency

- Clear tenure rights reduce transaction costs, such as time and funds required for conflict resolution.
- Secure tenure rights increase the policy options available, and thereby enable governments and project proponents to choose more cost effective implementation strategies.

Equity

- When tenure is unclear or not formalised, forest people may be excluded from forests and/or from participation in REDD+ benefits; in particular, if REDD+ increases the value of standing forests, it may lead to a resource rush that places the rights of current residents at risk.
- REDD+ will inevitably prohibit certain uses of forest resources; this must be done with due process and compensation, and without increased hardship, for poor forest peoples.

Box 9.1 Papua New Guinea: Customary rights versus carbon cowboys

Andrea Babon and Daniel McIntyre

Papua New Guinea is unique among REDD+ countries as around 97% of its land area, and virtually all of its forest, is owned by customary landowners and regulated by custom, not by the state. Customary land ownership is enshrined in the Constitution; and customary landowners must be consulted and give their informed consent for any developments on their land. Indeed, landowners can veto any developments of which they disapprove. With reference to the 'bundle of rights', customary landowners have rights of access, use, management, and exclusion. However, customary land cannot be 'sold'.

The seemingly strong de jure tenure rights in Papua New Guinea make the country an interesting case study for REDD+. In many ways, landowners

Box 9.1 continued

in Papua New Guinea are in an extremely powerful position, as resource owners, to participate in REDD+ on their own terms. However, in practice, many landowners are not aware of their rights – leaving them vulnerable to exploitation. This has perhaps been most obvious in the granting and renewal of logging concessions, and the recent increase in the granting of Special Agriculture and Business Leases (SABLs) over vast areas of land. REDD+ is proving to be no different.

In 2008–2009, media reports began to emerge of landowners signing over carbon rights to so-called 'carbon cowboys' – unscrupulous local agents often working for foreign carbon project developers – with virtually no awareness of what they were doing and no legal framework within which to do it. At one stage, one of the most notorious 'carbon cowboys' claimed to have negotiated about 90 different carbon deals with landowners, despite the absence of a national REDD+ strategy.

The government of Papua New Guinea tried to control this 'carbon rush' by requiring any groups interested in carbon trading to have written authority to operate in the country and to be registered with the Office of Climate Change. The government also urged landowners not to sign up to any carbon deals with outside project developers until there was a policy and legal framework in place, and that there would be no legal recourse for landowners who did.

The confusion and scandal surrounding the 'carbon cowboys' highlighted the need for general awareness raising and information on REDD+ for landowners. In response, the government and NGOs have held a number of provincial consultation meetings and disseminated information through various media. However, it has been difficult to get information out to remote communities that were often the target of carbon project developers.

Negative attention from the international media, combined with pressure from NGOs and donors, appears to have brought substantial attention to the challenges of achieving effective, efficient and equitable REDD+ within the context of customary land tenure. The 'carbon cowboys' have largely disappeared from the REDD+ landscape in Papua New Guinea, and the contracts they signed are generally seen as having no validity. However, stakeholders continue to grapple with how best to engage landowners in REDD+ policy design and implementation; secure free, prior and informed consent; and ensure landowners receive meaningful benefits. Working through all these issues will take time if it is to be done effectively – something the 'carbon cowboys' failed to understand.

9.3 REDD+ and tenure: Evidence from the field

In five of the six countries studied, forests are primarily public and formally administered by the state (Table 9.1). The exception is Brazil, where 73% of forests were owned[2] by individuals, firms, communities and indigenous people in 2008; official data show a shift of almost 200 million hectares from public to private hands between 2002 and 2008 (Sunderlin *et al.* 2008). The other countries have far less private land. In five of the six countries, a portion of public land has been assigned for temporary use by communities and indigenous people, as well as to individuals in Brazil.

9.3.1 National level problems and policy

Research at the national level identified serious problems with land tenure in all of the countries studied (Table 9.2). Common issues include overlapping titles or claims, land grabbing and elite capture, and outdated or nonexistent land cadastres, among others. In particular, in Cameroon, Indonesia, Tanzania, Vietnam, and to some degree in Peru, there is a substantial difference between

Table 9.1 Forest tenure distribution (2008 data, in millions of hectares)

Country	Public (millions of ha, %)		Private (millions of ha, %)	
	Administered by government	Designated for use by communities and indigenous people	Owned by communities and indigenous people	Owned by individuals and firms
Brazil*	88.6 (21%)	25.6 (6%)	109.1 (26%)	198.0 (47%)
Peru	42.3 (67%)	2.9 (5%)	12.6 (20%)	5.3 (8%)
Cameroon	20.1 (95%)	1.1 (5%)	0.0 (0%)	0.0 (0%)
Tanzania	31.8 (89%)	1.6 (4%)	2.1 (6%)	0.1 (0%)
Indonesia	121.9 (98%)	0.2 (0%)	0.0 (0%)	1.7 (1%)
Vietnam	9.7 (73%)	0.0 (0%)	3.5 (26%)	0.1 (0%)

Source: Sunderlin *et al.* 2008, except for Vietnam (Dahal *et al.* 2011)

*Other sources have found that 24% of the Brazilian Amazon is unclassified public land and 13% comprises land settlement projects for individual landholders (Börner *et al.* 2010).

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2 'Ownership' according to RRI and in this research includes titled lands and those granted unconditionally through secure mechanisms other than titles (see Sunderlin *et al.* 2008).

what local people view as their customary rights and their formal rights from the state's perspective. Many problems for people and communities living in and near forests stem from the sense of insecurity generated by the public nature of land and forest ownership.

Despite the apparent importance of forest tenure, research so far suggests that there is little reason to believe REDD+ strategies are making significant changes to the status quo. Analysis based on a profiling exercise in the countries discussed here shows few important new tenure initiatives in relation to the problems identified. Although 90% of REDD+ Preparation Proposals (RPPs) and National Programs from UNREDD highlight tenure insecurity as a concern (White and Hatcher 2012), and although tenure was a popular topic during the stakeholder interviews conducted for the country profiles, the debate remains at a rhetorical level (see also Williams *et al.* 2011). The policy measures listed in Table 9.2 most often refer to policies that are already in place and are insufficient to solve the problem, or in some cases are a source of other tenure problems. For example, existing land allocation and registration initiatives have sometimes generated insecurity as a result of a lack of technical capacity and financial resources, inconsistent rules and procedures, and the failure to 'match' the policy with on-the-ground reality.

Among the cases, Brazil is clearly an exception. The Brazilian government launched an important land regularisation (allocation and registration) programme that links land tenure reform and environmental compliance in the Amazon. It has also recognised and delineated customary lands, and this process continues, although it is slow and problematic. The other countries have at best taken small steps. In Vietnam, the Forest Land Allocation (FLA) process has received mixed reviews (Pham *et al.* 2012) and is far from recognising customary rights (Box 9.2). The same is true for community forests in Cameroon. A recent, high level call for recognition of customary rights to forests in Indonesia is unprecedented, but it is far from clear what this will mean in practice.

Box 9.2 Myth and reality: Security of forest rights in Vietnam
Thu Thuy Pham, Thu-Ba Huynh and Moira Moeliono

The forest land tenure system in Vietnam is mainly governed by the Land Law (1993, 2003) and Law of Forest Protection and Development (2004). The Land Law provides farming families with stable and long-term rights: 20 years for land planted with annual crops, and 50 years for perennials. According to the law, the land and natural resources belong to the 'people' as a whole and are managed by the 'state' on their behalf. The state, therefore, has exclusive management and decision making rights over natural forest; it then

allocates use rights to the people. Since 1999 (Decree 163), land use rights, issued through a land use certificate called a Red Book, can be transferred, mortgaged, rented, exchanged, or inherited and are valid for 50 years.

In 2004, the Forest Protection and Development Law was passed, granting forest users management rights over the forest, as well as the right to generate income and other benefits from their labour and investments in forest land. A key highlight of this law is the state's recognition of the role and rights of communities as one type of forest land manager.

These laws provide an important legal foundation for the future implementation of REDD+. Nevertheless, two major issues have emerged that need attention from decision makers and REDD+ strategists.

First, more than 50% of the country's forests and often the highest-quality forests are managed by state companies (SFEs) and management boards, whereas households manage 18% and communities only 1%, of mostly poorer-quality and degraded forests (Hoang *et al.* 2010). Although SFEs are required to contract forest land under their control to third parties for long-term use or protection, in practice they often contract third parties on an annual basis. Furthermore, it is almost impossible for communities to enter into legal contracts due to the excessive requirements under Vietnam's 2005 Civil Code for establishing their legal status. In effect, then, communities cannot sign REDD+ contracts. This means that future REDD+ funds might be retained at the government level, with only very limited payments and carbon benefits accruing to the households and communities who are the actual forest managers.

Second, experience from implementation of the Land Law and Forest Protection and Development Law, as well as other national programmes such as Forest Land Allocation (FLA), shows mixed results. In some places these programmes have had a positive effect on poor farmers, while the overall impact is unclear. Households and communities still do not control their forests, as they still need to seek permission from the relevant agencies to use forest land or fell trees. Moreover, three problems interfere with customary and even recognised owners and might in fact create open access conditions: i) the gap between national law and traditional land use practices, ii) capital accumulation for households that have access to political power and social networks, and iii) poor enforcement of regulations affecting the effectiveness of the FLA. Allocated forest land is often infertile and, in the absence of financial and technical support from the government, lands are often simply abandoned. More seriously, land classified by the government as 'unused' is in fact under customary tenure, which is not formally recognised by law. FLA does not permit joint ownership at the household and community levels, which limits the rights of women and undermines upland production systems that are based on joint property approaches.

Table 9.2 National and project level tenure problems and initiatives

Country	National tenure problems	National policies	Project level problems	Project level initiatives
Brazil	• Unclear tenure rights, overlapping rights, extensive areas claimed by squatters (unclassified public land) • Pressures on indigenous areas in spite of clear borders and rights • Major inconsistencies in interpretation of the law, failure to implement regulations • Lack of sufficient funding and staff for land regularisation; very slow progress	• National Institute for Colonisation and Agrarian Reform (INCRA) has undertaken three major revisions of the land cadastre, in 1999, 2001 and 2004 • Formal process of indigenous lands recognition • Terra Legal programme (2009) linking Amazon regularisation to environmental compliance	• Difficulty of conducting regularisation (large areas, revision of past claims) • Land concentration • Titles and land use plans required for environmental regulation • Customary limits not always respected in regularisation • Ongoing insecurity and conflict due to histories of land conflict • Removal of colonists from indigenous area	• Technical, financial and other support for titling • Support for land use planning • Project land tenure regularisation activities in line with national policies and in collaboration with federal and state institutions
Indonesia	• Contradictory laws regarding land and forest rights, failure to recognise community customary rights in forests • Limits on customary use rights in favour of business use of forests • Absence of rules and procedures for registering community forests • Inaccurate maps • Conflicting claims, boundary disputes and forest encroachment	• Chair of REDD+ panel has proposed releasing village and customary land from state forests • Proposed project to unify all national land/ forest maps	• Conflicts with palm oil interests • Potential conflicts with logging concession holders • Failure to recognise community customary claims • Conflicting claims	• Negotiation with government at all levels • Variety of mechanisms to provide village communities with clear tenure • Negotiation with concession holders • Land use planning

Country				
Vietnam	• Gap between national and customary laws, customary tenure not recognised • Overlaps between indigenous and colonist land claims • Lack of human and financial resources for forest land allocation (FLA) • Technological problems leading to inaccurate maps • Inequity in forest allocation; land grabbing • Limited understanding by forest users of rights and responsibilities associated with FLA	• Forest Land Allocation (FLA) process (since 1983) to allocate land users up to 30 ha of forest land in production and protection forests for up to 50 years • Land Law 2003 • Upcoming National Forest Inventory	• Conflicting community versus household forest management • Notable discrepancy between local people's perceptions/customary rights and the government's perceptions • Unclear land boundaries • Ambiguous land rights and lack of understanding of the meaning of Red Book titles • Breakdown of traditional living styles influencing land tenure arrangements	• Establishment of a technical working group on land issues at provincial and district levels • Local fund on participatory forest management will discuss how to distribute payment • Exploring mechanisms to test how to integrate tenure and carbon • Contributions to land use planning at commune and district levels
Tanzania	• Government interprets formal land categories in such a way that it owns much of village land • Conflicts between farmers and pastoralists • Conflicts over evictions of pastoralists for environmental purposes • Contested and overlapping tenure regimes and risk of elite capture	• Village Land Act (1999) recognising customary tenure whether or not land is registered • Draft national REDD+ strategy classifying village land as state land ('general land') if not registered	• Carbon rights not addressed at national level • Village land classified as general land, lack of land certificates • Boundary disputes among villages • Unclear or insecure individual rights • Short or unclear time frame for management rights	• Border clarification • In process of obtaining village land certificates • Seeking to modify Community Forest Management (CFM) template from 5 to 20 years • (Little attention to individual claims)

Table 9.2 continued

Country	National tenure problems	National policies	Project level problems	Project level initiatives
Cameroon	• Conflict between customary and formal law; formal law limits local rights to use rights • Community forestry represents an attempt to make a formal link between communities and forests without recognising customary claims • Only the elite have the means to register land, which is the only formally recognised ownership right • Zoning has resulted in constant conflict among stakeholders • State authorises overlapping rights and obligations among sectors (forest, tenure, mining, water, etc.)	• Forest policy reform process begun in 1993, including the creation of community forests • Forest law reform process underway • Consultations with stakeholders on land use including boundary definition • Shift from *ad hoc* programmes to possible national policy on marginalised populations	• No guarantee of carbon rights on customary land • Mismatch between statutory community forest and customary rights leading to conflict • Bantu traditional claims and incursions • Tenuous nature of community forest rights • Border conflicts with national park • Conflicts between indigenous and migrant populations	• Helping community develop community forest management plan and strengthen local institutions • Implementing a tenure strategy with stakeholders consistent with national policy • Supporting attempts to improve community rights to forests (revision of the forest law)

Peru	• Native peoples have alienable land rights rather than broader inalienable territory rights	• New Law of Forests and Wildlife approved and awaiting implementing regulations	• No legal way to obtain rights in protected area	• Demarcating and registering concession areas
	• Overlapping titles and lack of land cadastre		• Few or no exclusion rights	
	• State authorises overlapping rights and obligations among sectors (forest, tenure, mining, water, etc)		• Possession contract is temporary and easily reversible	
	• Reserves and other forest categories declared on paper but without defined borders		• Overlapping concessions by different government offices	

Sources: Awono (2011), Dkamela (2011), Dokken *et al.* (2011), Duchelle *et al.* (2011b), Indrarto *et al.* (2012), Jambiya *et al.* (2011), May *et al.* (2011b), Pham *et al.* (2012), DAR and CIFOR (2012), Resosudarmo *et al.* (2011), Sunderlin *et al.* (2011); GCS REDD+ Component 1 Workshop and Learning Event Report April 12-14, 2011, GCS REDD+ Component 2 Meeting Barcelona February 8-10, 2012 (presentations), Proponent appraisal, proponent survey on participation and tenure.

Governance and tenure issues are largely absent from REDD+ coverage in national media in most of the researched countries. An analysis of more than 500 national newspaper articles on REDD+ published between 2005 and 2009 in five of the six countries (data on Tanzania are not yet available) demonstrates that governance issues did not feature prominently in the way media articles were framed in any of the countries (Figure 9.2).[3] A closer look at subtopics related specifically to tenure reform and carbon rights under the meta topic 'Politics and policy making' confirmed their absence. Only in Indonesia and Brazil were media articles explicitly framed around these issues: in Brazil, in 11 articles the subtopic 'REDD+ and indigenous rights policies' was advocated by representatives of rights organisations and subnational state actors; in Indonesia one article used this frame as well and was advocated by an international research organisation, while a second article was concerned with the establishment of carbon rights and was supported by a national level government actor. Preliminary analysis of articles from 2010–2011 in Indonesia, Vietnam and Peru show no significant changes.
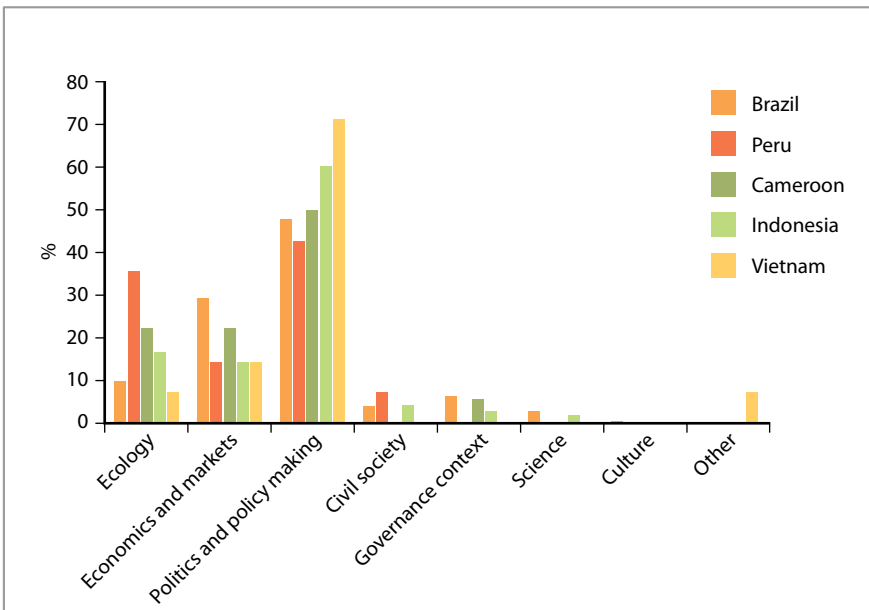
Figure 9.2 Meta topics in national media articles (percentage of total analysed newspaper articles per country)

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3   A media frame is "a broad organizing theme for selecting, emphasizing, and linking the elements of a story such as the scenes, the characters, their actions, and supporting documentation" (Bennett 1996, as cited in Boykoff 2008:555). In practice a frame is a conceptual lens that brings certain aspects of reality into sharper focus (emphasising a particular way to understand an issue) while relegating others to the background.

Nevertheless, by examining individual position statements by advocates or adversaries who responded to the issues framed in these articles, we identified a number of stances related to governance. In Indonesia, Brazil and Peru, actors stated that REDD+ will require major governance and institutional reform. In Indonesia more than 10% of all positions expressed (27 of 258) demonstrated concern that REDD+ risks dispossessing or reducing access to forest resources and harming traditional forest users (see Chapter 5). These preliminary findings indicate that although articles are rarely framed around these concerns, a number of actors position themselves around them.

The organisations that are concerned about tenure are mainly actors from international environmental nongovernmental organisations and domestic civil society organisations. An actor-level analysis showed, however, that neither of these groups is perceived by other actors in the policy arena as influential in most of the national policy networks, where Ministries of Forestry and other state entities are at the centre of decision making.

9.3.2 Project level tenure

The GCS research assessed tenure problems at the project and village levels through interviews with proponents, and village level interviews and focus groups. Proponents reported on the main tenure challenges at their sites, and village focus groups were asked about land tenure conflict and insecurity, the presence of external forest users and the degree of rule compliance, regarding their village specifically.

Most of the land in the REDD+ project research sites is formally owned by the state. In Indonesia, Cameroon and Peru, the vast majority of land in the villages studied is owned and administered by the government but under the *de facto* control of households and villages. In Indonesia, problems stem from overlapping claims, including abandoned logging concessions, small-scale loggers, and larger oil palm, mining and logging interests. Oil palm interests threaten a number of project sites. One site each in Cameroon and Peru is located in a protected area where legal land rights are not permitted for local people. The other site in Cameroon is focusing on an area designated as community forest (CF). Tenure issues include the insecure nature of community rights (renewable every 5 years), overlapping claims and conflicts between village members who fall in and outside the CF area. Users in the second site in Peru have a 40-year concession contract for Brazil nut production. Government policy is a source of conflict, as different government agencies give out overlapping concessions for the same forest area to different stakeholders (Selaya personal communication).

In Brazil, almost all of the lands in the study villages are state lands formally assigned to individuals who reside in land reform settlement projects or occupy

unclassified public lands. Two of the project sites are in areas with a history of serious land and resource conflicts, but settlement and registration projects have been underway for several years. In the third site, regularisation is a new activity under REDD+ readiness programmes. While there are still conflicts, overlapping claims and households without formal rights or title, the central tenure-related problems revolve around the logistics of regularisation – a process that is costly, slow, bureaucratic and sometimes fails to respect existing customary or locally legitimate claims (Duchelle *et al.* 2011b).

In Vietnam, in the four villages studied at one project site, most forests have been granted to individuals through land certificates known as Red Books. These certificates have generated problems, as right holders do not understand their limitations. There is an important illegal land market and problems with unclear boundaries (Huynh, personal communication). Customary land rights are strong, but there are significant differences between the government's and villagers' perceptions and understanding.

In Tanzania, REDD+ projects are being developed in areas where an important portion of the land is in the process of being assigned to or is owned by communities (see Box 9.3). Tenure problems at the project sites stem primarily from the lack of formal village land certificates in the assigned lands, which leaves lands formally under state ownership, and border disputes.

Tables 9.3 and 9.4 summarise the results of village-level focus groups on questions about tenure clarity and security. These questions were not asked in relation to REDD+ or the project intervention but were aimed at addressing the overall tenure situation prior to the intervention. Table 9.3 shows responses on the presence of land conflict, perceptions of insecurity and forest rule compliance by villagers. The presence of conflict is notable especially in the study sites in Cameroon (83%), Indonesia (55%) and Brazil (44%), although an important portion of villages in Tanzania also have lands in conflict (24%). A direct question about insecurity found problems in even more of the villages studied, ranging from 100% in Cameroon, to 85% in Indonesia, 50% in Brazil and 32% in Tanzania. Only in Vietnam was there no report at the village level of either conflict or insecurity. Compliance with forest use rules was problematic at the study villages in all countries, however, with Vietnam reporting low or moderate rule compliance in 100% of villages, Brazil in 75% of villages and the other three countries in 50–55%.

Table 9.4 addresses exclusion rights – the right and ability to exclude unwanted outside forest users. Interestingly, almost all of the villages report having the right to exclude outsiders from their land (88–100%). What is particularly notable, however, is that in Brazil, Cameroon, Tanzania and Indonesia, the vast majority of villages stated that the basis of that right was custom, whereas

only 6–20% of villages in these countries stated that the right was based in formal law.[4] Again, in contrast, the villages in Vietnam all emphasised their formal rights.

Box 9.3 Participatory forest management as an institutional foundation for REDD+ in Tanzania
Therese Dokken

Since the 1990s, Tanzania has promoted Participatory Forest Management (PFM) as a strategy for conservation and sustainable management of their forests. By 2006 approximately one-tenth of the forested land was under PFM agreement. In the Tanzania National Strategy, PFM is identified as an institutional foundation for REDD+, and access to REDD+ finances can potentially facilitate and speed up its implementation.

The main objectives of PFM are to improve rural livelihoods, conserve and regenerate forest resources, and promote good governance. There are two different approaches to PFM that differ in the level of decentralisation of rights and responsibility. The first approach is community based forest management (CBFM). CBFM takes place on land which is registered under the Village Land Act (1999) and is managed by the village council. The village has the full ownership rights and management responsibility and retains all forest-generated revenue. The second approach is a collaborative management approach, called joint forest management (JFM). It takes place on national or local government forest reserves. Land ownership remains with the state while forest management responsibility and revenues are divided between the state and the community and formalised through a JFM agreement.

Evaluations indicate that both PFM approaches contribute to improved forest management, but CBFM appears to be more effective than JFM (Blomley *et al.* 2011). Property rights are exclusive and enforceable, providing incentives for communities to invest in long-term management. In contrast, under JFM rights are unclear and local use and harvest of forest products is highly restricted. The same is true for the benefit sharing mechanisms and equity aspect of the two PFM approaches. While all benefits are transferred to the community under CBFM, there is no agreement on the portion of forest management benefits that should be transferred to communities involved in JFM. Both effectiveness and equity are important considerations for choosing which PFM strategy to pursue under REDD+ projects. Improvements and clarifications of tenure and benefit sharing mechanisms are needed, particularly under JFM, to ensure sufficient incentives for sustainable forest management.

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4   These questions were asked with the enumerator reading the options, and more than one answer was permitted.

Table 9.3 Land conflict, insecurity and local forest rule compliance in sampled villages by country (by number and percent)

Country	Villages with an area of land in conflict	Villages with tenure insecurity over at least a portion of village lands	Villages with low or moderate forest rule compliance by villagers	Total number of villages in sample
Brazil	7 (44%)	8 (50%)	12 (75%)	16
Cameroon	5 (83%)	6 (100%)	3 (50%)	6
Tanzania	6 (24%)	8 (32%)	13 (52%)	25
Indonesia	11 (55%)	17 (85%)	11 (55%)	20
Vietnam	0 (0%)	0 (0%)	4 (100%)	4

Note: includes all project sites except Berau, Indonesia and Peru

Source: Sunderlin *et al.* (2011) and village survey database

The last three questions in Table 9.4 refer to the actual presence of external users, whether that use is prohibited, and whether unsuccessful attempts have been made to exclude external users. There are external users in 44% (Tanzania) to 90% (Indonesia) of villages studied. External use is prohibited in most or all cases in Tanzania and Cameroon, and in about half in Brazil. In addition, the fact that some users have 'permission' does not necessarily mean they have the village's permission. For example, though only 28% of villages in Indonesia report that the external use is prohibited, in the other 72%, seasonal and customary users are likely to have permission from the village, while plantations, agroindustrial firms and logging concessions are more likely to have permission from an office of government but *not* from the village. Finally, some villages in each country, except Vietnam, have unsuccessfully tried to exclude outside users (16–19% in Brazil, Cameroon and Tanzania and 40% in Indonesia).

9.3.3 Project level solutions

Virtually all project proponents identified tenure problems at their sites and see their resolution as central for moving forward with REDD+ projects (Table 9.2). They took early actions to identify the sources of insecurity and conflict, and to address the causes where possible; by securing land titles for local stakeholders where this was appropriate and possible; clarifying village and forest boundaries if needed; and identifying and delimiting the forest area to be set aside (Sunderlin *et al.* 2011). Securing land tenure rights has often

Table 9.4 Exclusion rights and practice in sampled villages by country (by number and percent)

Country	Villages with the right to exclude outsiders	Basis of the right*		Villages with current external use of forests	Villages where external use is prohibited (% of those with current external use)	Villages with unsuccessful attempt to exclude external users	Total number of villages in sample
		Custom/ customary law	Formal law				
Brazil	14 (88%)	14 (88%)	1 (6%)	11 (69%)	5 (45%)	3 (19%)	16
Cameroon	6 (100%)	6 (100%)	1 (17%)	3 (50%)	3 (100%)	1 (17%)	6
Tanzania	24 (96%)	19 (76%)	5 (20%)	11 (44%)	7 (64%)	3 (16%)	25
Indonesia	19 (95%)	17 (85%)	3 (15%)	18 (90%)	5 (28%)	8 (40%)	20
Vietnam	4 (100%)	0 (0%)	4 (100%)	2 (50%)	0 (0%)	0 (0%)	4

* Some villages selected both

Note: includes all project sites except Berau, Indonesia and Peru

Source: Sunderlin *et al.* (2011) and village survey database

involved negotiating or working closely with government entities[5] in charge of land, and sometimes supporting those agencies through technical assistance or funding.

When existing mechanisms to secure rights are inadequate, some proponents have played an advocacy role, such as lobbying to reform the community forest concessions in Cameroon, which only provide rights for 5-year intervals. A few are promoting strategies to clarify carbon rights, and in some cases also advocating for village rights. In sites where there are important overlapping claims – such as with palm oil concessions in Indonesia – proponents are devoting an important part of their energy on tenure to addressing these contradictions.

Only about half of the proponents interviewed (9 out of 19) were satisfied with the outcome of attempts to address tenure issues at their sites, three were both satisfied and dissatisfied, and five were unsatisfied (two did not have an opinion). Even those who were satisfied, however, stated that there is still much more to be done. In some sites, such as one in Tanzania, the proponent stated that they had been forced to exclude some areas because problems with tenure were not resolvable (Sunderlin *et al.* 2011).

9.4 Overcoming obstacles

Tenure problems present obstacles for the effectiveness, efficiency and equity outcomes of REDD+. At the site level, project proponents have almost all given serious attention to tenure and sought to address problems to the best of their ability. Nevertheless, they are largely limited to working through existing government bureaucracies and under the constraints of current policies. Hence in most cases proponent efforts are restricted by the lack of serious attention to tenure at the national policy level (see Chapter 6).

This is not the case in Brazil, where land regularisation pre-dates REDD+, but REDD+ has generated additional incentives to move forward with reforms, through activities such as support for the Terra Legal programme at project sites. Proponents are able to work closely with government to address tenure issues (Duchelle *et al.* 2011b). Even in Brazil, however, the existing system of regularisation does not solve all problems and in some cases creates new ones.

In most of the other countries studied, substantial reforms to current tenure policy appear unlikely. In Vietnam, proposals for reform of Red Book policies

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5   Note that in a few cases the proponents *are* government entities, as in Acre, Brazil.

have met resistance. Similarly, there is little indication that the approach to customary rights in Tanzania or Cameroon will undergo radical change. In Indonesia, the recent, bold statements of a high-level government leader in support of customary forest tenure rights demonstrate how the mobilisation of evidence and courageous stakeholders through REDD+ initiatives has provided support for new tenure policies. Nevertheless, although the call for reform has come from a high level, there are many layers of government and many other powerful stakeholders who have resisted all such reforms in the past.

Under these circumstances, how can REDD+ move forward? The tenure problems discussed above can be grouped into a few main issues. Table 9.5 summarises these, their implications for REDD+ and potential solutions. Some problems clearly require land regularisation or reform, such as lack of clarity of ownership and overlapping claims or the resolution of conflicts between customary rights and state ownership. Other problems include encroachment by external actors, multiple concessions on the same land, poor rule enforcement, problems with land regularisation processes and unaccountable local representation. These problems could be addressed by other kinds of institutional reforms, including strengthening state and local institutions, harmonising state policies and the use of participatory methods and free prior and informed consent (FPIC) processes.

It is notable that all of these policies – whether they aim to resolve tenure problems specifically or advance REDD+ initiatives generally – challenge the deep-rooted economic and political interests of 'business as usual'. Business as usual in forests refers to the constellation of interests that seek to perpetuate privileged commercial access to forest lands and resources and thus, often, to forest conversion. REDD+ constitutes an institutionalised effort to confront business as usual and arrest the processes of deforestation and degradation, and therefore faces the same challenges as forest tenure reform.

Table 9.5 Tenure issues, implications for REDD+ and potential solutions

Tenure issue	Implications for REDD+	Potential solutions
Lack of clarity on ownership, overlapping claims	Limits to policy options and lower potential for success; lack of clarity regarding benefits and accountability in performance-based payments	Land allocation and registration (regularisation)
Customary rights versus state ownership	Tenure insecurity and/or failure to respect villagers rights can lead to conflict, compliance problems, local hardship and unjust benefit distribution	Ensure FPIC Rights recognition
Conflicting land use decisions/ concessions across levels and state institutions	Failure to decrease carbon emissions	Harmonise state policies Strengthen multilevel governance institutions
Lack of right and/or ability to exclude (including colonisation of indigenous lands)	Local stakeholders in REDD+ (right holder/accountable party) potentially unable to fulfil obligation in performance-based arrangements; failure to decrease emissions	Grant and enforce exclusion rights Secure the borders of indigenous and village lands (local and state institutions) Develop alternative economic opportunities for colonists
Poor rule enforcement, monitoring and sanction; failure to implement land use planning	Failure to decrease carbon emissions	Strengthen local and state institutions for planning and regulation Implement participatory land use planning processes, FPIC
Technical issues in regularisation processes; mismatch between new, formal rights and previous de facto or customary rights	Inaccurate maps leading to mismatch between land area and landholder; elite capture	Strengthen institutes in charge of land registration Greater stakeholder participation in mapping processes
Undemocratic collective land representation; decisions without broad local agreement*	Compliance problems and hence failure to decrease emissions; elite capture of benefits	Ensure FPIC including community members, not just 'representatives'

* Problem not identified in the project sites but in other cases, such as Papua New Guinea (Box 9.1) and elsewhere.

9.5 Conclusions

At both national and project levels, tenure issues have been widely recognised as relevant to REDD+. Project proponents have sought to increase the security of local forest rights, whereas national level concern has remained largely rhetorical. At the local level, most proponents are working "through their own initiative and with little external assistance" (Sunderlin *et al.* 2011). These piecemeal project interventions are insufficient on their own to secure local rights, or to address the paramount issue of formal exclusion rights – which few communities in this study have been granted.

Can REDD+ only proceed where tenure is clear and secure? Are the obstacles to improving tenure elsewhere insurmountable? Clearly, addressing tenure vastly expands the field of policy options and is more likely to lead to success, while only working where tenure is already resolved places drastic limits on the potential of REDD+. Tenure may be seen as part of the transformational change that is needed for REDD+ in the long-term. We argue that addressing tenure rights is no more challenging than the other policy reforms that would demonstrate a serious commitment to REDD+, and that the unprecedented attention to tenure issues under REDD+ suggests room for optimism. REDD+ policy makers can move forward on macro level approaches to attack the underlying drivers of deforestation, while proceeding in parallel to target solutions to specific tenure problems. Progress will depend on the development of broad alliances to overcome resistance.

REDD+ projects as a hybrid of old and new forest conservation approaches

William D. Sunderlin and Erin O. Sills

- Most REDD+ subnational projects intend to combine the integrated conservation and development project (ICDP) approach with payments for ecosystem services (PES).
- Under conditions of policy and market uncertainty, this hybrid structure enables proponents to make early progress on project establishment, and the ICDP approach can serve as a fallback option if PES fails to materialise.
- Yet this hybrid structure is a challenge because ICDP has often underperformed, and because proponents tend to play up ICDP and play down PES in consultations with local stakeholders, with potential negative consequences for effectiveness and equity.

10.1 Introduction

REDD+, defined broadly, is an umbrella term for "local, national and global actions that reduce emissions from deforestation and forest degradation, and enhance forest carbon stocks in developing countries" (Angelsen 2009a:2). As noted by Sills *et al.* (2009), REDD+ is often conceived more narrowly as a system of conditional performance-based payments. These payments can be

applied at various scales, from the level of national governments all the way down to the household. In this chapter, we examine the core attributes and interventions of REDD+ at the scale of the project site. Our findings reveal that these projects are mostly a hybrid of more traditional forest conservation strategies and performance-based payments, or payments for ecosystem services (PES).[1]

REDD+ became an integrated part of the global mitigation agenda in 2007 at the United Nations Framework Convention on Climate Change (UNFCCC) COP 13. While there were no projects labelled REDD+ at that time, there was already a history of avoided deforestation projects, many of which began when the Clean Development Mechanism (CDM) was negotiated (Caplow *et al.* 2011). There are now more than 200 subnational projects under development or implementation (Kshatriya *et al.* 2011).

Among these REDD+ projects, there are very few in which performance-based payments have actually been implemented. Action on conditional incentives in projects has been hampered by three main factors: i) slow development of international architecture under UNFCCC, associated with lack of agreement on a finance mechanism and mobilisation of funds; ii) delays in the establishment of a robust forest carbon market; and iii) national policies that are not yet sufficiently amenable to the goals of REDD+ (see Chapter 5).

This chapter describes the emerging hybrid structure of REDD+ at the project scale. Many projects combine elements of integrated conservation and development projects (ICDP) and PES. We begin by describing the methods applied in Component 2 of CIFOR's Global Comparative Study on REDD+ (GCS), our main source of evidence on this hybrid characteristic of REDD+ (Section 10.2). Section 10.3 describes the logic and utility of the hybrid approach to REDD+ proponents and speculates on the reasons for its existence. We then describe conditions of policy and market uncertainty that characterise REDD+ and explain the delays in introducing performance-based payments (Section 10.4). This provides the background for demonstrating the ways the hybrid model serves as an opportunity for REDD+ proponents (Section 10.5) but also ends up posing challenges (Section 10.6). We close with observations on the significance of our findings (Section 10.7).

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1   We define a REDD+ project as an activity that: "i) intend(s) to quantify and report changes in forest carbon stocks, following IPCC and/or other broadly accepted guidelines, and possibly transact forest carbon credits; and ii) operate(s) in a geographically defined site or sites, with predetermined boundaries as suggested by United Nations Framework Convention on Climate Change (UNFCCC) guidelines, including activities that aim to incorporate carbon into land use decisions and planning across heterogeneous landscapes at a subnational scale" (Sills *et al.* 2009:266–267).

10.2 Data and methods

The source information for this chapter is a combination of the general literature on REDD+ and field data from Component 2 of CIFOR's Global Comparative Study on REDD+ (GCS). For a description of the aims, scope and methods of Component 2, and for a list of the 22 projects studied, see the Appendix.

The field information is drawn from 19 of the 22 Component 2 project sites where field data had already been collected in early 2012. Some of the data are from a survey interview with project proponents titled 'Update of information on REDD+ interventions', administered from April to October 2011. It sought to determine if, as suspected, the introduction of REDD+ incentives at project sites was delayed. The findings describe the deployment of interventions of various kinds (both REDD+ and non-REDD+) at project sites.

The data in this chapter are also drawn from another survey administered during the same period titled 'Supplementary survey on participation and tenure'. It gives insights on various challenges faced by proponents in establishing REDD+ projects and how they addressed those challenges.

Our sample of REDD+ project sites may be biased toward those that were early in their preparations. We selected project sites where there was no risk that REDD+ interventions would start before we had a chance to complete the 'before' (prior to the introduction of REDD+ incentives) baseline data collection. Thus, our results might overstate the slow rate of progress. Nevertheless, there are very few REDD+ projects that have begun introducing performance-based payments. Juma in Brazil, one of the high-profile projects already underway, is an exception (see Box 12.2).

We do not know to what extent the hybrid pattern evident in all Component 2 study sites is representative of REDD+ as a whole. Almost all of the REDD+ projects in Brazil and Indonesia planning to implement PES are also planning interventions to improve enforcement of forest laws and/or function fully in the ICDP mode (see Chapter 12). We suspect the hybrid pattern appears in most REDD+ projects where PES is intended as a project intervention, however this remains to be proven as the data are not necessarily representative of all projects.

10.3 A hybrid of ICDP and PES approaches

All REDD+ projects in the CIFOR study sample involve a mix of two very different sets of interventions. First, there is a tandem of restricting forest access and introducing alternative livelihoods and other development projects; this is based on the assumption that such alternative livelihoods will reduce the

need to rely on forest income, and will also make the restrictions introduced more acceptable to local populations (Wells and Brandon 1992; Brandon and Wells 2009; Blom *et al.* 2010). Brandon and Wells (2009) point out that whereas in ICDPs these interventions always take place in protected areas (by definition), in REDD+ they can take place in many different kinds of landscapes, including protected areas.

These ICDP interventions can be characterised as 'pre-REDD+' in the sense that they have a long history that predates REDD+. Other similar interventions commonly found in the Component 2 sample are: participatory land use mapping, boundary determination, formulation of a village land use plan, clarification of tenure, and introduction of alternatives to, or improved technology for, firewood and charcoal (e.g. energy efficient stoves).

In addition to these ICDP and other pre-REDD+ interventions, there are plans for initiatives that are characteristic of REDD+. These are the performance-based payments conditional on the successful protection or improvement of the carbon sequestration potential of local forests. Essentially, these are PES. They are proportional to the amount of carbon sequestered in a measurable and verifiable way.

Why is this intended combination of ICDP and PES incentives evident at all Component 2 project sites? Why did proponents choose this hybrid model? The explanation must be pieced together from evidence and conjecture because we did not pose the question systematically in our surveys. We posed the question to Tim Jessup of the Indonesia-Australia Forest Carbon Partnership, who worked on the project design of the Kalimantan Forests and Climate Partnership (KFCP) project in Central Kalimantan in Indonesia. He said there was no conscious choice to combine the two models. Instead he mentioned an 'on-site logic' that makes the combination convenient. There needed to be timely action to show project benefits early on. This was in the form of rubber development projects that partially compensated for restricted forest access (by closing canals that facilitated deforestation in peat swamps). He emphasised that the restrictions imposed must be based on local consent. Later, it will be important to have performance-based REDD+ payments; if there is no conditionality, the forest management problems will not be fully overcome. Jessup noted that the conditionality attached to REDD+ must be built in from the beginning, even though the results linked to greenhouse gas (GHG) emissions reductions – on which payments will eventually be based – will not be seen immediately (Jessup, personal communication).

The message from Jessup is that the pre-REDD+ and REDD+ approaches complement each other. ICDP interventions provide a way to act early and gain favour with the community, while REDD+ as PES provides leverage

that is not necessarily available in the ICDP model. The combination of pre-REDD+ and REDD+ incentives potentially comprises a well integrated and optimal management strategy that supports fulfilment of project goals and reduces the risk of REDD+ intervention failure.

Our knowledge of approaches to forest management and conservation in developing countries, as well as some evidence from field research, helps to fill out our understanding of the utility of the ICDP/PES combination. There are several possible explanations for this hybrid approach:

Repackaging of ongoing efforts. Many REDD+ projects are actually a continuation of pre-existing forest management and conservation efforts that may or may not have included ICDP. It makes complete sense that project proponents have embraced REDD+ as a new forest management idea and blended it with their ongoing efforts, especially if past efforts have not produced all the desired results. At 13 of 18 GCS project sites, proponent activities at the site predate REDD+ becoming part of the global climate mitigation agenda in 2007. At these 13 sites, the average proponent presence at the site prior to the launching of REDD+ in 2007 is 5.2 years. Villages included in REDD+ projects are significantly more likely to have had a forest conservation NGO active in the past 5 years (see Chapter 12).

REDD+ potentially provides a long-term funding source that ICDP cannot. REDD+ is intended to involve a sustained, long-term source of funding, whereas ICDPs are by definition time-bound projects whose funding is eventually phased out. REDD+ conditional payments are intended to provide a substantial compensation and incentive for restricted forest use, ideally at a higher level than the initial measures. It is hoped that the REDD+ revenue stream, acting as a conditional incentive, will provide the crucial difference and succeed where past efforts at forest conservation and restoration (e.g. ICDP) have not. The record of failure in ICDPs is well documented (Wells and Brandon 1992; Wells *et al.* 1999; Brooks *et al.* 2006; Garnett *et al.* 2007). The pre-REDD+ incentives are a foundation upon which the REDD+ edifice will rest. At some of the GCS projects, it is expected that the REDD+ revenue stream will serve as the funding source of local alternative livelihoods and/or indirect wellbeing improvements, superseding the role played by project start-up funds. Proponents expect the stream of REDD+ income will allow the project to break free of seed funding and become self-sustaining. As explained by Steve Ball of the Mpingo project in Tanzania: "Carbon markets will cover our transaction costs. It's hard to get donor funding. We have an investment barrier and we want to overcome it via carbon markets" (Ball, personal communication). And as explained by Nike Doggart of the TFCG Kilosa site in Tanzania: "The source of (initial) funding will be capital from the project. Carbon credits will replenish the fund" (Doggart, personal communication).

In the event REDD+ cannot provide funding, pre-REDD+ approaches might have to compensate to fill the gap. Although it is hoped that REDD+ will generate a substantial stream of funding, unless funding sources are assured, there is a risk that REDD+ could repeat what has happened in CDM afforestation/reforestation projects. As explained by Ecosecurities (2007:6): "Carbon revenues generally constitute a small part of total revenues for most CDM project types. This means that most CDM projects have to generate substantial additional finance – through the sale of renewable energy, for example. Since REDD projects cannot usually be expected to produce such by-products, carbon sales will need to cover most of the implementation and transaction costs. In some cases, additional income may be generated from sustainable timber production from the project area or from efficiency gains in agricultural production through improved planning."

PES alone is not enough. This point reinforces what is said above by Tim Jessup. REDD+ as PES cannot be a stand-alone process in subnational projects. From the point of view of the proponent, it must be accompanied not just by forest access restrictions and livelihood compensations, but also by policies and measures at the national level that are aimed at restraining large-scale actors and addressing the underlying causes of deforestation.

The 'additionality' of reducing illegal deforestation through REDD+ payments is problematic. Performance-based payments for reducing illegal deforestation have been questioned as a component of REDD+. For example, Börner and Wunder (2008) point out that in the Brazilian Amazon, it would be legally questionable to pay for reduced deforestation in protected areas or in violation of the Forest Code. This legal ambiguity of paying to stop illegal deforestation has sparked debate over the role of protected areas in REDD+ in general (Boucher 2009; Dudley 2010). First, for REDD+ projects, certification systems such as Verified Carbon Standard (VCS) allow for unplanned and unsanctioned deforestation in baseline scenarios but require supporting evidence that laws are not effectively enforced. Second, there is concern that payments to reduce illegal deforestation are particularly likely to create perverse incentives, contributing to the tendency to ignore environmental laws. However, the fact remains that in regions of rapid deforestation, environmental laws are widely ignored and much of the deforestation is illegal. Thus, REDD+ projects must find some way to address this deforestation, despite questions about the legal basis and perverse incentives created by direct payments. One response is to collaborate with local authorities to improve monitoring and enforcement of existing laws – an approach that is characteristic of ICDPs.

Combining of ICDP and PES helps avoid off-site leakage. Finally, ICDP and PES are an optimal combination at the local level for preventing the displacement of deforestation and degradation from within to outside REDD+

project boundaries. Those prevented from deforestation by local forest access restrictions are motivated not to simply shift to another place by having their labour time absorbed in new activities. In the event that the alternative livelihood offered is not sufficient to deter this leakage, the additional funding stream offered via REDD+ as PES helps assure there are additional incentives (both in the form of rewards and sanctions) to assure project goals are met.

Risk management. Under conditions of REDD+ policy and market uncertainty (see the next section), it makes sense to diversify forest management strategies.

10.4 Policy and market uncertainty

In this section we explain how REDD+ policy and market uncertainty have affected the outlook and actions of REDD+ proponents. This is a prelude to explaining how this uncertainty influences the way the combination of pre-REDD+ and REDD+ incentives are deployed.

Why have subnational projects taken more time to materialise than expected, and what are the consequences for REDD+ on the ground? There are essentially three perspectives at three different scales: international, national and project level.

First, proponents are in some cases waiting for clearer policy and market signals at the international level. The failure to reach a climate change agreement in Copenhagen in 2009 disheartened many proponents. The relative successes in Cancun and Durban in reaching an agreement on some REDD+ issues revived proponent interest and morale, though it remains frustrating to some proponents that the architecture and guidelines for REDD+ (e.g. safeguards) remain unclear.

Second, those proponents who aim to rely on marketing of forest carbon are eager for reassuring signals. There has been a boom in the voluntary forest carbon market in recent years, with REDD+ playing a particularly strong role. Forest carbon credits from REDD+ grew from 1.2 $MtCO_2e$ in 2007 to 19.5 $MtCO_2e$ in 2010, accounting for two-thirds of the total 29.0 $MtCO_2e$ of forest carbon credits traded in 2010 (Diaz *et al.* 2011:ii–iii). Latin America has played a particularly strong role in this trend (Diaz *et al.* 2011:iii). While the voluntary market is relatively healthy, it rests increasingly on corporate social responsibility and other green branding motivations, rather than preparation for a future compliance market. And while the voluntary market is relatively healthy, the pre-compliance market is stagnant. The boom in voluntary forest carbon credits notwithstanding, market drivers are uncertain and future demand will depend on regulatory drivers and political decisions that remain to be made (Diaz *et al.* 2011:viii). Lack of long-term security about future

demand and prices in the carbon market undermines the ability of proponents to guarantee payments to local stakeholders in the long term. This underlies proponent fear of raising expectations about income for local participants that cannot be realised.[2] We examine this challenge in depth later in the chapter.

Third, the policy environment in various countries is not yet conducive for making confident steps in establishing REDD+ on the ground. The Forest Code in Brazil and the Moratorium in Indonesia are cases in point. It is unclear whether revisions of the Forest Code in 2011 will motivate private forest protection through market incentives, or increase incentives for deforestation (Sparovek *et al.* 2012). The Indonesian Forest Moratorium, begun in 2011, boldly aimed to stop deforestation on a large scale, but has yielded to lobbying pressure and now exempts secondary forests and logged-over forests from conversion (Murdiyarso *et al.* 2011; see also Box 2.1 for a summary). With so much as yet unresolved in basic forest land use policy, and with so many overlapping forest land use claims, there continues to be uncertainty that proponents can reap dividends from investments they have made. In Indonesia, there has been much attention to the case of the Rimba Raya project in Central Kalimantan, where the proponent argues he has played by the rules, yet they do not yet have a government license to proceed (Fogarty 2011).

Policy and market factors are not the only obstacles to the establishment of REDD+ projects. Some project-specific factors have slowed proponents down. Laying the groundwork for REDD+ demonstration sites has been more complex than expected in terms of resolving local land use and tenure issues,[3] defining project goals, writing project design documents, applying for and getting third party certification, conducting stakeholder consultations (in particular conducting free prior and informed consent) and outreach, among other issues.

10.5 The hybrid model as an opportunity

Earlier we discussed the reasons why project proponents embrace a hybrid model. In the context of policy and market uncertainty, it appears there are two aspects of this model that are particularly useful to proponents: i) proponents can move ahead in laying the groundwork for REDD+ even with the delays and policy and market uncertainty; and ii) proponents can use ICDP as a fallback measure in the event REDD+ conditional incentives fail to materialise or are insufficient.

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2   See for example the case of Setulang in East Kalimantan, Indonesia, where potential buyers of biodiversity services did not engage in a PES scheme mainly because of their limited time horizon and uneasiness about the conditionality principle (Wunder *et al.* 2008).

3   For example, in Indonesia, at every one of our project sites a large company has a claim on a part of the project land.

10.5.1 Opportunity to move ahead

There are good reasons for proponents to move ahead early. Ideally, pre-REDD+ and REDD+ interventions would be made at roughly the same time, among other reasons so that the REDD+ funding stream can relieve the project of dependence on terminal start-up funds. In reality, at the REDD+ project sites in the GCS study, the introduction of pre-REDD+ incentives has begun before the introduction of REDD+ conditional incentives (see Table 10.1). There are several reasons for this.

First, the pre-REDD+ incentives can proceed on a timetable that is not dictated by the establishment of the REDD+ funding mechanisms. These interventions (forest use restrictions, alternative livelihoods, etc.) generally do not require REDD+ architecture, national policies or a viable forest carbon market in order to be implemented. Constraints on implementation of these measures are proponent organisation planning horizons and funding. Conventional forest conservation interventions are predicated on the idea that an initial intervention that provides new knowledge, infrastructure or institutions can lead to self-sustaining change in forest management. Thus, short-term funding is consistent with the logic of these interventions, even though experience shows that it has been a serious hindrance to achieving impact. The logic of PES, on the other hand, is one of ongoing payments for a flow of ecosystem services, requiring either sufficient funds to establish a project trust fund or sufficient certainty about the future market for those ecosystem services.

Second, many pilot projects are expected to move ahead in conducting activities on the ground within a limited time frame, and pre-REDD+ interventions are a feasible use of project funds. Results in the form of reduced emissions cannot be delivered in the near term, but only after several years. Local populations need to have benefits early.

Third, as noted above, uncertainty and delays in the formulation of REDD+ policies and mechanisms mean some proponents either cannot or are hesitant to introduce REDD+ incentives. As explained by Raja Jarrah of the Hifadhi ya Misitu ya Asili (HIMA) project in Tanzania: "'Tasters' will be paid out of project funds when the agreement is signed. Otherwise PES payments will not begin for years." (Jarrah, personal communication)

Fourth, there are some functional reasons for moving ahead with pre-REDD+ activities. For example demarcation of village and forest boundaries and formulation of a village land use strategy often needs to happen before applying forest access restrictions, and before monitoring and rewarding performance.

Table 10.1 Timing of introduction of interventions at 21 REDD+ project sites in GCS Component 2

Country	Project site	Time of beginning of restrictions on forest use	Time of introduction of alternative livelihoods	Estimated time of introduction of REDD+ payments
Brazil	Acre	2012	2009–2011	2012
	Mato Grosso	2011	2011–2012	2012
	Transamazon	Unsure	Unsure	2012
	Sao Félix	2012	2011	2012
Peru	BAM	Data not yet available	Data not yet available	2012
	CI Alto Mayo	Data not yet available	Data not yet available	2012
Cameroon	CED	Respondent unsure	2010	Respondent unsure
	GFA	2007	2007	Respondent unsure
Tanzania	TFCG intensive	2011–2012	2011–2012	2012
	TaTEDO	Late 2010	2010–2011	2012
	TFCG extensive	2011–2012	2011–2012	Nov–Dec 2011
	Mpingo	2010	2013	2015
	JGI	2010	2010	Unsure
	CARE	2011	2011	June–December 2012
Indonesia	Ulu Masen	2010–2011	2010–2011	Mid 2012
	KCCP	2012–2013	Not applicable	Late 2012
	KFCP	Will not do this	2009	2012
	Katingan	Not applicable	2008	September 2012
	Berau	2013	2013	Respondent unsure
	Rimba Raya	2012	2012	2012
Vietnam	Cat Tien	Not applicable	Early 2012	Not applicable

10.5.2 ICDP interventions as a fallback option

This can happen in the event that the preconditions for REDD+ fail to materialise, if proponents decide they cannot or will not go ahead with REDD+ or if REDD+ payments stop. As explained by Dharsono Hartono of the P.T. Rimba Makmur Utama site in Central Kalimantan, Indonesia: "We don't want to be over-dependent on REDD. We want to be able to be versatile in the event that REDD is not the main source of income. Perhaps ecotourism will be the main source of income in the future." (Hartono, personal communication)

Several of the 19 proponents in our sample have voiced worries about whether they are prepared to introduce conditional incentives based on emission reductions. One such project (TNC Berau in Indonesia) is unsure about using these incentives because the carbon methods for district-level payments may not be developed in time, or the emerging national programme may not involve subnational payments at the district level. Another project (ICV in Brazil) has decided not to pursue REDD+ conditional income because it is averse to dealing with the forest carbon market.

We asked proponents at the 19 project sites which among all project incentives is likely to have the strongest positive effect on maintaining or increasing the capacity of forests in the project boundaries to sequester carbon. Their answers are displayed in Figure 10.1.

The answers should be treated cautiously because of the possibility of confounding variables. At some projects, the stream of PES income is intended as the long-term source of livelihood alternatives. Nevertheless, the responses are an indication of the degree to which proponents are focused on alternative livelihoods rather than PES as a key measure for attaining the goals of the project. This may reflect both the enduring popularity of the ICDP model, and disillusionment with the near-term prospects of REDD+.

10.6 The hybrid model as a challenge

While the hybrid model provides the opportunities described above, it also introduces two possible challenges in the context of policy and market uncertainty. These relate to the liability of relying wholly on ICDP if this proves necessary, and delayed or incomplete local outreach about REDD+.

10.6.1 Reliance on ICDP can be a liability

As noted earlier, ICDP approaches to forest management have encountered a host of problems. If REDD+ project proponents either choose or are forced
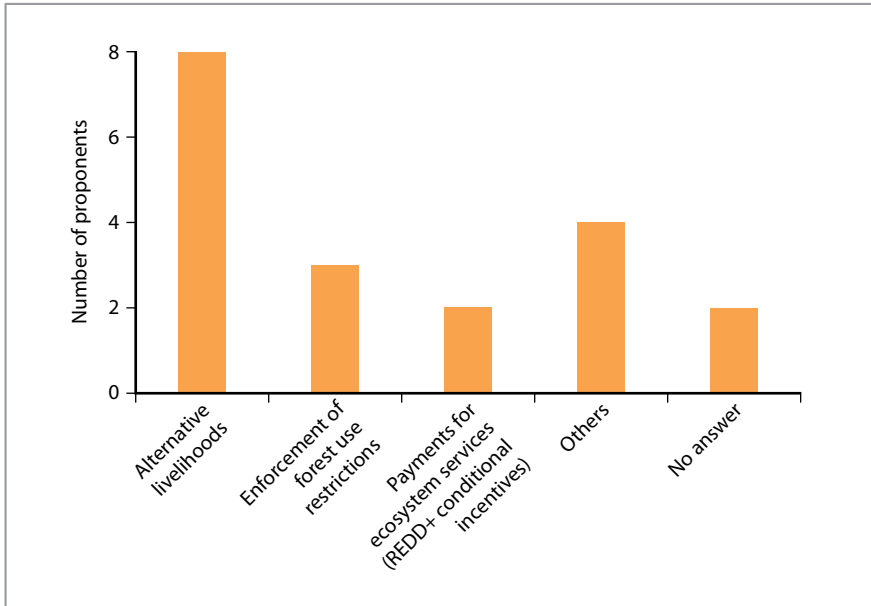
Figure 10.1 Intervention proponents expect to have most positive impact on carbon sequestration

Note: Based on the following question, posed to 19 proponents in the GCS: "Which of these incentives (livelihood alternatives, increased enforcement, PES, other) is likely to have the strongest positive effect on maintaining or increasing the capacity of forests in the project boundaries to sequester carbon?"

to abandon their efforts to introduce performance-based payments, they risk replicating the design and implementation errors encountered in past ICDP efforts. Among the key problems encountered in ICDPs were: lack of clarity in objectives; ineffective efforts in involving local populations; overly ambitious plans; limited capacity of developing country institutions engaged to implement ICDPs; inability to create viable alternative livelihoods and increase incomes in and around protected areas; tendency to under-appreciate the threat posed by external actors such large enterprises and infrastructure; and inadequate enforcement of forest protection laws (Brandon and Wells 2009).

If project proponents focus wholly on ICDP, their risks may be low if the expectation is to institutionalise management change through a one-time engagement with the community. Conversely, the risks may be high if the expectation from the outset was that a durable REDD+ stream of income would be required to achieve and sustain the forest management changes envisioned.

10.6.2 Some proponents delay or do not complete outreach on REDD+

All REDD+ proponents must conduct outreach at the local level about climate change and about how the project aims to contribute to climate change mitigation, as well as how local people can contribute to this goal and what the livelihood gains and risks are. This outreach is essentially the 'informed' part of free prior and informed consent (FPIC). FPIC is supported by international conventions, is in some cases required by national law, and is a precondition for third party certification and meeting social safeguards. All projects have set aside funds for conducting the massive FPIC undertaking, which often involves conducting meetings in all villages within project boundaries, and in some cases at the sub-village level.

Among the 19 projects studied, six are deliberately delaying outreach about REDD+ at the local level. At some of these sites, the local participants have no idea that conditional REDD+ payments are being contemplated (see also Chapter 11). One of the main reasons for the delay is that proponents want to avoid raising expectations about an income source that might fail to materialise. It may be no accident that project sites where outreach is delayed are all in the humid forest zone. The carbon content and therefore the potential additionality and income stream are higher in humid forests than in dry forests. In dry forest projects there is no tendency in our sample to delay outreach, perhaps because the forest carbon income stream will be small, and therefore the adverse consequences of dashed expectations are correspondingly small.

In explaining the reasons for inadequate or delayed outreach of local stakeholders about REDD+, the proponents said the following:

- [Concerning why they might not be able to educate villagers in places where it has not yet been done:] "The main reason is lack of time and human resources … There was also a concern about raising expectations." (Monica de los Rios of the Acre project in Brazil).
- "We have not shared enough information early enough. There are now misconceptions and misunderstandings about REDD. We ourselves don't have enough information to explain REDD in detail … We lack specifics because we ourselves have not done the math." (Raja Jarrah of the HIMA project in Tanzania).
- "Villagers may not understand REDD as we do. The term 'REDD' is not used. It is too confusing for them to understand. We have to avoid jargon. Besides, our goal is restoration. We don't want to raise hopes … We have to gradually introduce the idea." (Dharsono Hartono at the Katingan site in Indonesia).

- "The situation is too complex for us to effectively convey to local communities our REDD plan in full detail. It is possible to spend a lot of money on this and still not reach full community understanding. We budgeted what seemed a reasonable amount and are hoping to stick to that." (Steve Ball of the Mpingo site in Tanzania).

From one point of view, the delay of outreach is entirely reasonable and innocent. It makes complete sense not to raise expectations unnecessarily. And the proponents fully intend to conduct this outreach once the policy and market signals are conducive, and once they have overcome delays generated by obstacles in the project itself. On the other hand, there are some latent dangers. In some cases, FPIC activities have already been conducted without doing outreach on REDD+, meaning that at some point in the future proponents will have to go back to the villages and conduct this outreach and reframe the conditions for informed consent. This is an expensive proposition. Some projects are at the end of their available funds and it is difficult to see how they will afford to conduct this outreach with their available budget. In the worst case scenario, REDD+ would get underway in these projects without fully informed consent.

10.7 Conclusions

REDD+ subnational projects plan to combine pre-REDD+ (mainly ICDP) and distinctively REDD+ (performance-based payments) management approaches to realise their goals. This approach confers clear advantages to project proponents including: a way to continue with what proponents can and have done; on-site synergies that optimise the two models (achieving with one model what the other cannot); a way to cope with funding uncertainties; and a way to minimise off-site leakage.

We have seen that pre-REDD+ interventions have moved ahead while REDD+ interventions are slow to materialise, in part because of policy and market uncertainties related to REDD+. The decisions of proponents in the context of this uncertainty highlight the benefits and liabilities of the hybrid approach. On the one hand, an ICDP approach allows project pioneers to move ahead before the policy and market conditions for REDD+ are fully ready, and to have a fallback in the event that enabling conditions for REDD+ fail to materialise in ways that convince proponents that risks are worth the benefits. On the other hand, the ICDP model in and of itself has a troubled history, and the gap between early implementation of ICDP interventions and delay of the introduction of PES means proponents tend to delay being fully open with local stakeholders about the nature and scope of planned REDD+ interventions.

What needs to happen so that REDD+ can move ahead at the subnational project level in a way that optimises the potential synergies between ICDP and PES? A key starting point is to learn from the past. Brandon and Wells (2009:232–235) and Blom *et al.* (2010:167–170) provide useful guidance on how to plan and implement better ICDP projects.

These steps are largely within the realm of control of the proponents themselves, whereas much of what needs to happen is at a scale higher than the project level. In order for REDD+ to move ahead on the ground, policy and market inertia will have to be overcome. This requires a finalisation of REDD+ international architecture and finance mechanisms, development of a regulatory framework for the development of a viable forest carbon market, and the creation of the creation of national laws and regulations related to REDD+ that prioritise forest protection and the wellbeing of local stakeholders.

Local hopes and worries about REDD+ projects

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- Local forest users in sampled REDD+ project areas understood REDD+ to be fundamentally about forest protection; simultaneously, they hoped that local REDD+ projects would improve their incomes and worried that they could negatively affect their livelihoods.
- Villagers depend extensively on proponents for information about REDD+ and the local REDD+ project, and there may be a need for independent knowledge brokers or legal advisers.
- The key challenges for REDD+ projects are: i) to communicate to villagers how REDD+ projects work, the opportunities and risks, and the rights and responsibilities; ii) to involve villagers meaningfully in the design and implementation of the project; and iii) to balance forest protection with the welfare concerns of villagers.

11.1 Introduction

Halting deforestation and forest degradation in developing countries involves potential trade-offs between conservation and livelihood development. Due to their often heavy dependence on land and forest resources, local forest users may suffer from interventions to protect forests, unless they receive adequate

compensation for changing their livelihood strategies. One of the reasons that REDD+ has become such a popular idea so quickly is its potential to generate a sufficiently large funding stream to fully compensate the opportunity costs incurred by local forest users over the long term. REDD+ can thus be viewed as a potential win–win solution for maintaining standing forests and supporting local livelihoods (Brown *et al.* 2008; Phelps *et al.* In press; see also Chapter 3).

As a climate change mitigation initiative, REDD+ can be implemented in different ways, including through a subnational project-based approach. REDD+ subnational projects in various stages of development and forms are being initiated in many countries (Kshatriya *et al.* 2011; see also Chapter 10). These projects involve stakeholders that range from local communities to large-scale private or state entities. Local forest users who currently are, or could be, engaged in activities that contribute to greenhouse gas emissions are the principal targets of REDD+ projects, since they will help determine how projects are implemented while also being directly affected by them.

Policy makers and researchers alike have stressed the importance of genuinely engaging local people in decision making and supporting local livelihoods to promote positive forest management outcomes (e.g. Ostrom and Nagendra 2006). Forest conservation efforts are believed to have a greater chance of success when local economic concerns are taken into account (Ferrarro and Hanauer 2011). In practice, however, aligning conservation goals with improved local livelihoods has often faced substantial challenges (Sunderland *et al.* 2007; McShane *et al.* 2011).

Villagers' meaningful involvement in and support of REDD+ projects can help ensure that projects achieve their goal of long-term emission reductions (Harvey *et al.* 2010b; Helvetas Swiss Intercooperation *et al.* 2011). Such involvement requires project proponents (i.e. the organisations that coordinate the REDD+ projects) to engage local stakeholders in all project phases, from ensuring the basic right of free, prior and informed consent (FPIC) at the project's outset to establishing mechanisms for transparency and equity throughout (May *et al.* 2004). Through the FPIC process, proponents engage in outreach activities in project area communities, during which they can explain the fundamental concept of REDD+ along with specific project strategies. REDD+ projects must be designed and implemented in such a way that local livelihood concerns are addressed in order to move towards a win–win outcome.

An important precondition for meaningful community participation in REDD+ is local knowledge about climate change and the REDD+ project (Sunderlin *et al.* 2011). To obtain informed consent, it is especially important that local people understand why forests are important in the context of climate change, how REDD+ projects will be organised and administered

as a means to achieve climate change mitigation, and how the interventions will affect their lives. This information includes benefit distribution, rights and responsibilities, as well as risks and costs associated with local people's involvement in the REDD+ project. Without this kind of outreach, REDD+ risks repeating past errors of conservation initiatives that have often bypassed and marginalised local people and consequently lost their support. Moreover, on moral grounds, local people should have a voice – and that voice should be heard – in project design and implementation (Newell and Wheeler 2006). It is thus critically important to understand local people's knowledge, expectations and concerns about REDD+ projects, along with their recommendations for how to improve them.

Given the *potential* win–win character of REDD+, in this chapter we ask the following question: Do local people's understanding of and expectations for REDD+ projects reflect broader win–win objectives of REDD+ to simultaneously promote conservation and improve local livelihoods? To answer this question, we draw on research in communities at nine REDD+ project sites located in four countries: Brazil, Cameroon, Indonesia and Tanzania.[1] For this study, we focus on local communities or groups of smallholders and not on other potentially important stakeholders in local REDD+ projects.

The chapter is composed of three parts: in Section 11.2 we explain the methods and field data of the study; in Section 11.3 we present the findings and discuss their relevance; and in Section 11.4 we offer conclusions and propose steps forward.

11.2 Field data

The nine REDD+ projects analysed are located in Brazil (2), Cameroon (2), Indonesia (3) and Tanzania (2). They vary in terms of drivers of deforestation and degradation, project objectives, intervention mechanisms, and project development stage (Table 11.1). While all projects (by definition) aim to avoid deforestation and forest degradation, most projects have additional specific objectives for conservation, sustainable resource use, improving local livelihoods or alleviating poverty. Project proponents at these sites include government agencies, private entities and/or NGOs. Intervention mechanisms include combinations of increased enforcement, support for livelihood alternatives and payments for environmental services (PES).

The analysis is primarily based on data from quantitative surveys with 1243 households in the nine project areas. We carried out field data collection

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1   These nine projects were selected out of the 22 (intensive and extensive) sites across six countries (see Appendix). The analysis relies heavily on household data and therefore focuses on intensive sites only. In addition, data from other sites were not available at the time of writing because the field work had not yet been done or because we were not able to pose the relevant questions at those sites.

Table 11.1 REDD+ projects analysed

REDD+ Projects	Main drivers of deforestation or degradation in project area	Specific project objectives (in addition to REDD+)	Leading proponent(s)
Brazil – Acre	Swidden agriculture Timber harvesting Cattle ranching Road building	Implementation of State Plan for Control and Prevention of Deforestation	State government
Brazil – Transamazon	Swidden agriculture Timber harvesting Cattle ranching	Reconciliation of smallholder production systems and natural resource conservation	Research NGO
Cameroon – CED	Swidden agriculture Timber harvesting	Environmental protection and livelihood improvement	Environment and development NGO
Cameroon – Mount Cameroon	Swidden agriculture Permanent agriculture (cocoa and palm oil)	Responsible use of forest resources	Provincial government
Indonesia – Ulu Masen	Timber harvest Swidden agriculture Permanent agriculture (cocoa)	Water conservation	Provincial government
Indonesia – KCCP	Permanent agriculture (incoming oil palm plantation) Forest concession Illegal mining	Secure village forest management rights	Conservation NGO Village communities
Indonesia – KFCP	Peat drainage and peat fires*	Peat rehabilitation and revegetation	Donor country – national government
Tanzania – TaTEDO	Clearing land for settlement Subsistence fuel wood; commercial charcoal	Access to sustainable modern energy technologies in marginalised communities; poverty reduction; conservation; self-reliance	NGO working on energy issues
Tanzania – TFCG Kilosa	Drought and wildfires Swidden agriculture Timber harvest Subsistence fuel wood; commercial charcoal Cattle ranching	Conservation of high biodiversity forests	Conservation NGO

Note: *Most emissions from KFCP are not from deforestation and forest degradation, as the area emitting the most GHG is peatland already deforested/degraded

from mid-June through October 2010, at a time when most projects were in their early stages of development. The household surveys were complemented by interviews with REDD+ project proponents about specific intervention mechanisms. Importantly, we recognise that nine project sites is far too small a sample to fully represent the many incipient REDD+ project sites across the tropics, and this is not necessarily representative of the countries in which the projects are located.

In applying the survey, we first inquired about villagers' *knowledge* about REDD+ in general, and about the local REDD+ project, in particular, by posing the questions: i) "Have you heard of REDD+ prior to this interview?" and ii) "Have you heard of (*the local REDD+ project)* prior to this interview?" For those who answered affirmatively to at least one of the questions above, we then asked for a short explanation of REDD+ and/or of the REDD+ project to get a sense of their *understanding* of these concepts. These were open-ended questions, and multiple responses were allowed. If the respondent correctly stated at least one characteristic of REDD+ or the local REDD+ project, that person was judged to have a basic understanding of REDD+ or the local REDD+ project. These questions were simply used as a screening mechanism to assess the appropriateness of asking further questions related to local hopes and worries for REDD+ and were not designed to get a full view of respondents' understanding of REDD+.

To those who had heard of the local REDD+ project and showed a basic understanding of REDD+ or the local REDD+ project, we posed the following questions: i) "What are your hopes about how (*the local REDD+ project*) will benefit your household?" ii) "What are your worries about how (*the local REDD+ project*) will affect your household?" and iii) "What are your recommendations on how the implementation of (*the local REDD+ project*) in your village should be improved? Respondents who were unable to demonstrate a basic understanding of REDD+ or of the local REDD+ project were not asked these questions.

11.3   Findings and discussion

11.3.1 Local knowledge of REDD+

Villagers' knowledge, or familiarity, with REDD+ and/or with the local REDD+ project was generally low. Of the total 1243 households interviewed, only 327 (26%) had heard about the concept of REDD+ and 502 (41%) had heard about the local REDD+ project (Table 11.2). Only at two sites were more than half of all respondents familiar with REDD+, and only at three sites were more than half familiar with the REDD+ project in their area. These low numbers partly reflect the time at which we posed the questions;

Table 11.2 Project status and knowledge of REDD+ and local REDD+ project (2010)

Project	Project status at time of fieldwork (2010)	Knowledge of REDD+ in general (% respondents)	Knowledge of local REDD+ project (% respondents)
Brazil – Acre	Implementation of monetary incentive for sustainable agriculture	15	92*
Brazil – Transamazon	Village meetings to introduce proposed REDD+ project	30	39
Cameroon – CED	Participatory livelihood analysis in two villages; organisational training in one village; participatory mapping and carbon baseline in one village	74	72
Cameroon – Mount Cameroon	Improved farming techniques; capacity building for village forest management committees; law enforcement	25	63
Indonesia – Ulu Masen	Consultation at level of village clusters	2	6
Indonesia – KCCP	Preparatory activities for development of Village Forests, including consultations with key stakeholders, strengthening village capacity, village mapping of High Conservation Value Forests	5	23
Indonesia – KFCP	Village meetings to introduce proposed REDD+ project; instalment of facilitators in villages, detailed design of dams for canals in peatlands, hydrology monitoring	13	27
Tanzania – TaTEDO	Collection of socioeconomic baseline information; land tenure regularisation	52	28
Tanzania – TFCG Kilosa	Village meetings to introduce proposed REDD+ project	18	11
Average		**26**	**41**

Note: *Villagers at this site were not asked about the statewide REDD+ programme as a whole, but rather about a specific project within the larger programme, which focused on incentives for sustainable agriculture and was the first action to be implemented in the project area.

some proponents had not yet begun or concluded their outreach work to explain the REDD+ project. In other cases, the outreach work may have been performed but the respondents (for whatever reason) were not reached or did not internalise the knowledge conveyed.

As expected, we found the project proponent to be the single most important source from which villagers heard about REDD+ or the local REDD+ project. At seven of the nine sites, more villagers heard about REDD+ from the proponent than from any other source. Similarly, at six of the nine sites, villagers heard of the local REDD+ project from the proponents. At the remaining three sites, information about the REDD+ project was mostly obtained from: an NGO that, at the time, supported the proponent (Indonesia Ulu Masen); the village leader (Tanzania TFCG Kilosa); or several other sources (Indonesia KCCP). The government or extension agents (where they were not proponents) were a minor source of information about both REDD+ and the REDD+ project. Strikingly, in one of the two cases where the proponents were themselves the government (Indonesia Ulu Masen), villagers had heard about REDD+ and the REDD+ project from an NGO operating in the area instead of from government officials.

It makes sense that proponents are the main source of information about the REDD+ projects, because they can speak most confidently on behalf of their respective projects. The overall lack of local familiarity with REDD+ and local REDD+ projects that was observed in this study suggests that information communicated to villagers may have focused on specific project activities and was not necessarily tied to the broader REDD+ project or the concept of REDD+ in general. Interestingly, at the Tanzanian sites, understanding of the concept of REDD+ was greater than of the specific project itself.

There are various reasons for what appears to be inadequate communication of REDD+ in general and the local REDD+ project at project sites. Importantly, the pace of international negotiations has slowed down the establishment of national policies and institutions related to REDD+, which has affected the progress of subnational REDD+ projects (see Chapter 10). In this climate of uncertainty, some proponents fear unnecessarily raising the expectations of local stakeholders and have thus decided to postpone communicating the concept of REDD+ and to delay disseminating information about the local REDD+ project to local villagers in the project area (Sunderlin *et al.* 2011). Importantly, since we conducted our field research, several proponents have conducted basic REDD+ outreach at their sites, which has likely increased local knowledge in these places. For instance, at Indonesia KCCP and KFCP, as activities advance and as the project attracts more attention, more villagers seem to be familiar with REDD+.

11.3.2 Local understanding of REDD+ projects

Households' understanding of the objectives of the REDD+ projects in sites in Brazil, Cameroon and Indonesia are summarised in Figure 11.1. The results from the two project sites in Tanzania were dropped due to a low number of responses.
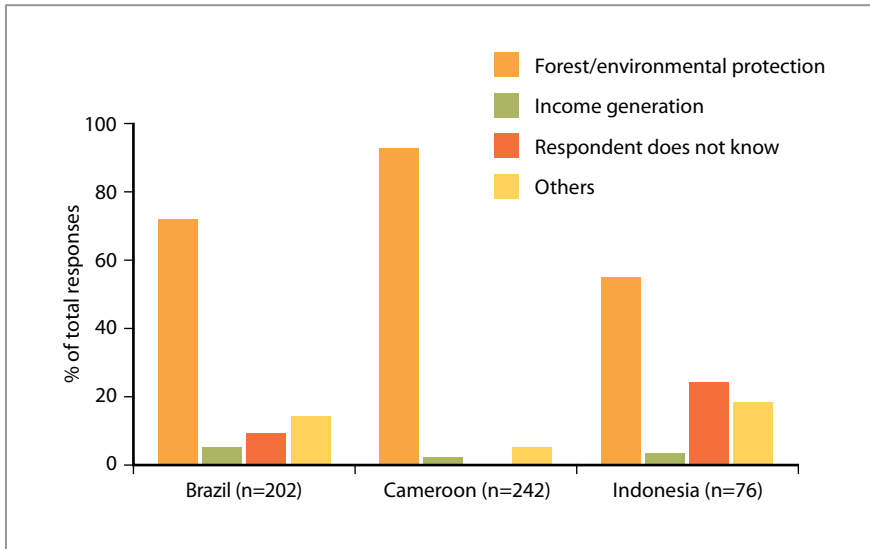
Figure 11.1 Local understanding of the local REDD+ project objectives

In all three countries, households overwhelmingly perceived REDD+ and/or the local REDD+ project to be focused on forest/environmental protection. The emphasis on forest protection may be explained by observing villagers' source of information about REDD+/the local REDD+ project. As described above, the most frequent source of people's information about REDD+/the local REDD+ project was the proponents or their partners, and several of the proponent organisations have a conservation focus. Furthermore, proponents might have been reluctant to talk about or emphasise potential income streams or livelihood issues, for fear of unnecessarily raising hopes and expectations before project planning was more advanced. Responses in the 'others' category included perceptions that the objective of the local REDD+ project was to change agricultural practices or empower communities.

Households expressed a range of hopes and worries related to the local REDD+ project (Figure 11.2). Most responses can be grouped into five themes: income improvement, forest protection, reduction of threats from climate change, tenure security and project realisation. Local hopes reflect the realisation of these themes (i.e. income improvement, forest protection, etc.), whereas worries reflect the fear that the project will fail in meeting those goals (i.e. inability to improve income, inability to protect forests, etc.).
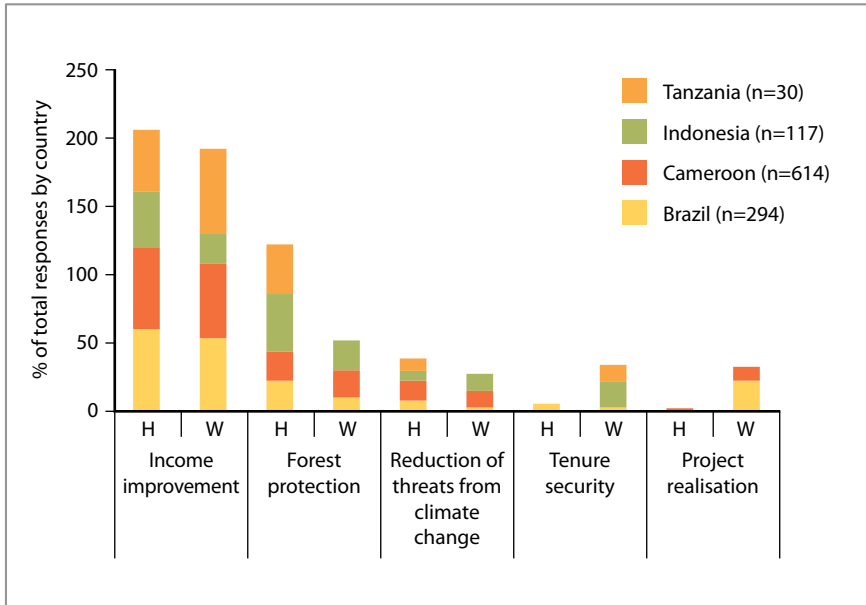
Figure 11.2 Local hopes and worries concerning the REDD+ project

Income improvement: in general, income-related outcomes were the most frequently expressed hopes and worries related to local REDD+ projects. The type of income improvements varied among sites. In Brazil and Indonesia, providing alternative or supplementary income was considered a more important hope than compensation from lost forest income, emphasising that villagers wanted new land use opportunities, as opposed to simply being prevented from using forests. In contrast, compensation for lost forest income was the hope of a large proportion of respondents at both of the Cameroon sites, suggesting that respondents already imagined that their forest use would be limited. In Cameroon CED, it is possible that the project's shift to establish community forestry is seen as potentially limiting current timber exploitation and clearing of land for agriculture. In Cameroon Mount Cameroon, villagers are clearing forests in a national park for agriculture, which would likely be restricted by the REDD+ project. In general, compared to the other three countries, villagers in Cameroon appeared to be generally more wary of their local projects.

Forest protection: while most villagers understood REDD+ projects focus on forest protection, this was secondary to income improvements as a hoped for outcome. This finding implies that villagers were differentiating between project aims and the potential personal benefits that they could derive from the project. It also suggests that the idea of improved income in exchange for forest protection (i.e. the REDD+ concept of compensation for reduced emissions) may have been understood by some people at the local level. Our

finding suggests that out of 295 respondents who said the REDD+ project was about forest protection, 197 of them had hopes for – among other things – income improvement.

In one project in Indonesia (KCCP), the hope for increased forest protection was probably related to the expressed desires that the project would halt big companies from deforesting community lands and allow continued local access to forest goods and services. Consistent with the hopes expressed by villagers in Brazil Acre, Cameroon (CED and Mount Cameroon) and in Indonesia (Ulu Masen and KCCP), inability to prevent big companies from converting local forests was an important worry in these places. In Indonesia, villagers primarily refer to large-scale agricultural activities as responsible for conversion of neighbouring forests, along with logging activities. This finding is consistent with the trend of pressures for oil palm development and forest conversion in nearby villages in the area. Similarly, some villagers at the Brazilian and Cameroon sites relate their desires for forest protection to the presence of large companies that are degrading community forests, such as logging companies, considered a main driver of degradation in these project areas (Table 11.1).

Reduction of threats from climate change: this theme was mentioned as a hope in all but two projects sites, but was considered less important than improved income and forest protection. This finding is probably due to the lack of a perceived connection at the local level between REDD+ project actions and the concept of REDD+ as a climate change mitigation tool.

Tenure security: the idea that the REDD+ project might limit rights to land or forests was an important worry in Indonesia, as was the idea that it could create uncertainty over tenure in Tanzania. In Indonesia, respondents may have erroneously related the REDD+ project to past failures in a large government agricultural project, which led to forest conversion, or to a more recent conservation project that prevented villagers from continued access to their forests. In most project sites, hopes for rights-related outcomes, i.e. improved land tenure, respect for local rights, and access to forest goods and services did not emerge strongly. This finding can be interpreted in different ways, including that local people were not confident in the ability of REDD+ to resolve these issues, or that more immediate income-related concerns dominated. An exception to the general finding was at Brazil Acre where land regularisation efforts, as part of REDD-readiness activities, fostered hope for acquiring land titles.

Project realisation: the worry that the project would not go ahead was notable at a couple of sites in Brazil and Cameroon. This was a major concern at Brazil Transamazon, where a previous PES-like project ended prematurely.

Similarly, in Cameroon CED, villagers were worried that project promises would not be realised or that they would be cheated by proponents. Unlike the villagers who own land outside of the community forest that the project is working to establish, villagers with property inside the forest can no longer freely exploit their land. As a result, the latter group has felt penalised and frustrated as their access has been limited without having seen any concrete results of the REDD+ project. Although the proponent had started to carry out certain activities, villagers were anxious to see REDD+ investments that would distinguish REDD+ from other conventional conservation activities.

11.3.3 Other responses

In addition to the five main categories of responses discussed earlier, there were also a number of diverse and site-specific responses. For instance, in both of the Brazilian sites, provision of technical assistance and training were important for promoting sustainable agricultural practices (see Box 11.1). Other hopes included the provision of governmental services and enhanced wellbeing in general. In Indonesia support for children's education (KCCP) and respect for local rights (KCCP and KFCP) were noted as hopes, while in Cameroon CED support for better housing was expressed.

In Brazil, there was a particular concern related to having to abandon swidden agriculture. This concern was directly related to the proponent interventions at Brazil Acre, where farmers were asked to give up using fire and engage in more sustainable agricultural practices through the use of a nitrogen-fixing legume in order to qualify for a direct cash payment.

No hopes or worries to express: A substantial proportion of respondents who had a basic understanding about the REDD+ project did not have any hopes or worries to express. There are at least two plausible explanations for this finding. First, our criterion for measuring people's understanding of REDD+ or the local REDD+ project was kept at a minimum, because we wanted to capture as many perspectives as possible, including those with very basic understanding. Therefore, our set of respondents may have included villagers who had little basic understanding of REDD+ or the project and who thus did not yet have a critical view on whether the REDD+ project was beneficial or a liability to their interests.

Second, we posed the question at an early stage of REDD+ project development, long before most of the project interventions were introduced and perhaps even talked about, for reasons discussed earlier. At the project sites where there was little project-related information or action, it makes sense that there would be few hopes and worries expressed by local people.

Box 11.1 Are REDD incentives in line with local people's perceptions? Lessons from the Transamazon region of Brazil

Marina Cromberg

Over the last decade, there has been much enthusiasm over the concept of payment for environmental services (PES), which is viewed as a complement to integrated conservation and development programme (ICDP) and command and control approaches. In the context of REDD+, PES schemes have been adopted by proponents of multiple subnational pilot REDD+ projects across the tropics. In many cases, however, the choice of this incentive type may be more in line with technical objectives than with the needs of local participants.

The pilot REDD+ project 'Sustainable Settlements in the Amazon: The challenge of transition from family production on the frontier to a low carbon economy', proposed by the Amazon Environmental Research Institute (IPAM) has three levels of action, one of which targets 350 families in the Brazilian Transamazon region that participated in *Proambiente* (a governmental programme that aimed to conciliate smallholder production with natural resource conservation). For these families, IPAM seeks to provide a package of incentives to conserve forests and increase agricultural production in deforested areas, including direct cash payments and investments in sustainable production techniques.

To understand if the REDD+ project incentives are in line with people's interests and needs, we interviewed 137 families in the project site in July and August 2010. We first asked if the families had heard about the REDD+ project, and if so, if they could describe it. For the families that were able to accurately describe the project (43 families; 31%), we asked about their hopes and recommendations for it.

The results indicate that the majority of the families (26) hoped the project would improve their incomes. The second most commonly listed hope was that the project would contribute to sustainable production (14), and the third was that it would help protect forests (10). The main recommendation of local farmers was that the project should help make production systems more sustainable, through access to technical assistance, machinery and training (17). Other recommendations included providing benefits in accordance with farmers' needs (8), receiving adequate/higher payments (6), avoiding false promises (4), and investing in infrastructure (3).

While almost all respondents hoped that the REDD+ project would increase household incomes, their recommendations revealed that non-monetary forms of compensation, used to enhance production systems, may be more important than direct cash payments. Indeed, farmers stated that current slash-and-burn agricultural practices have low economic returns and negative environmental impacts, but that they lacked the resources and skills to change these practices. Therefore, increasing household incomes indirectly through improved production techniques, as IPAM has contemplated in their REDD+ project, may be more effective than PES alone in terms of reducing emissions from deforestation. That said, such new agricultural practices and production alternatives must be introduced in accordance with local realities and knowledge to avoid interventions that are overly difficult for local producers to implement. REDD+ projects with incentive structures that are closely aligned with local needs may likely result in greater project effectiveness, efficiency and equitability.

11.3.4 Local recommendations for REDD+ projects

Villagers' recommendations across the nine project sites encompass a wide range of issues and can be grouped into six major categories (Table 11.3).

Local recommendations for project improvement varied, but in general the themes were consistent with people's hopes and worries. Again, improvement and/or maintenance of income stood out as the most frequent response at the majority of sites, referring to increased income, better livelihood means to obtain income, and increased wellbeing. That said, there were varying opinions about *how* to improve income. Some respondents opted for direct cash payments, others for in-kind compensation, and yet others preferred indirect support such as technical assistance in improving agricultural production systems. Forest protection and reforestation of degraded lands were included as recommendations and were suggested to be largely linked to the function of forests in sustaining people's welfare.

Other important issues that did not surface in the hopes and worries were captured clearly in villagers' recommendations. Notably, villagers wanted proponents to communicate better about their projects and demonstrate more transparency. People also wanted to engage and participate meaningfully in the implementation of the project. Importantly, villagers' recommendations strongly reflect the expectation that REDD+ projects respect and uphold communities' rights.

11.3.5 Putting the findings together

The findings clearly reveal that, from the perspective of villagers, positive income-related outcomes are a top priority. The process of establishing and implementing REDD+ projects is also of importance to villagers. For instance, local people want to be informed of the project, participate in the project, and want it to be implemented in a transparent manner. This relates to the 'Information' in the 4 Is discussed in Chapter 2. Inadequate information flow about REDD+ and the REDD+ project – at least at the time of the field research – was reflected in villagers' limited knowledge and understanding of REDD+. This in turn explains a rather high number of respondents having no hopes and worries to express about the local REDD+ project. While many proponents plan to conduct REDD+ outreach and the FPIC process, local people must be able to give their consent to, or conversely, reject a project, based on sufficient and accurate information.

One may argue that there is no need to burden villagers with outreach on the broad, complex and rather abstract concept of REDD+, insofar as it may not directly affect the attainment of emission reductions and improvement of local livelihoods. We argue, however, that local forest users should know about the basic concept of REDD+ in order to understand how REDD+

Table 11.3 Local people's recommendations for REDD+ projects

Villagers' recommendations		
Improved income and welfare	Improve, or at least not limit, local livelihoods	Support for local production systems such as provision of agricultural inputs, irrigation, soil improvement, reduction of transport costs, pest prevention, improved efficiency of agricultural production in fallows and expansion of agricultural land to increase income. Project should not be too restrictive on local land uses or livelihoods.
	Increase income	Government assistance to supplement income; direct cash payments; regular and larger payments from project
	Improve services and infrastructure	Support to improve local utilities (water, electricity) and infrastructure (roads, schools, health centres, dams)
	Provide incentives or compensation to not deforest	Provision of diversified income if people are no longer allowed to cut trees; compensation for protecting forests
Community engagement in the REDD+ process and implementation	Provide better information/community awareness about the project	Better presentation of the project by proponents to enhance community awareness; clarification of project goals with local people; openness and transparency about project; information on project updates; capacity building
	Encourage community participation	Involvement of local people in project and project management; promotion of equitable participation; sufficient consultation with villagers before decisions are made; inclusion of villagers in decision making
	Encourage community–government collaboration in managing forests	Increased enforcement and adherence to rules
Sustainable land use practices and forest protection	Strengthen sustainable agriculture	More sustainable and conservation friendly agricultural practices; ban on use of fire
	Conserve or maintain existing forests	Maintenance of forest reserves for people's livelihoods; protection of rubber gardens from large-scale agribusiness and timber plantations; education for conservation; imposition of sanctions on people who cleared too much land by requiring them to replant, reforest and protect and preserve forests
Benefits accrued at local level; equitable and transparent benefit distribution	Money must reach the community and increase value of direct cash payments; compensation should be in kind and not in cash; benefits to communities should be ongoing/continuous, particularly when people have to stop their activities; benefits should be shared accordingly among villagers; there should be a participatory management of funds and transparency	
Strengthened community rights	Establishment of clear village management rights; joint efforts to claim communities' rights; maintenance of villagers' customary rights; land titles; establishment of clear village boundaries; promotion of tenure rights for the interests of the community	
Realisation of project promises	Realisation of concrete results of the project; greater efficiency in projects so that they are not simply experimental, but definitive as well	

projects work, the opportunities and risks, as well as rights and responsibilities associated with their participation, before they can give their consent to accept or reject a REDD+ project within the framework of FPIC. Nonetheless, it may be difficult to implement FPIC properly, especially since it has been suggested that FPIC is not a one-off process, and should be cyclical as the project advances and changes (Chapter 17), requiring multiple knowledge sharing moments during the course of the project lifetime.

To what extent can projects' interventions be in tune with local desires? All of the projects analysed are planning to provide livelihood alternatives for villagers, which potentially address some of the expectations and concerns of the local communities. Although responding to local concerns is important to gain the support of these stakeholders, expecting a REDD+ project to completely fulfil people's desires and needs is likely beyond the project's capacity and may not be realistic, especially given that the basic objective of REDD+ is to reduce greenhouse gas emissions.

There are also major risks and costs associated with the implementation of REDD+ projects that must be internalised by the project proponents. Furthermore, the architecture of REDD+ projects is complex, the technological dimensions are intricate, and monitoring involves conscious efforts. For example, eventual benefits that can be distributed to local people will depend on the carbon proceeds that the project is able to secure. Ensuring full and equitable participation can be costly for the project in terms of time and resources. The question is to what extent projects will remain sufficiently attractive for local communities to choose REDD+ *vis-à-vis* other initiatives that are detrimental to forests, but more promising in terms of income generation or livelihood. The key challenge is to fulfil the needs and desires of local forest users within the project's constraints and limitations.

11.4   Conclusions and ways forward

Part of what makes REDD+ different from conventional conservation approaches is the possibility of large income streams that could promote a win–win outcome of forest protection and improved livelihoods. This chapter examines whether local forest users' views of REDD+ projects reflect this win–win assertion. The findings highlight the fact that where villagers were aware of REDD+ and/or the local REDD+ project, they understood the main objective to be forest protection. However, they did not link forest protection to improved incomes in terms of REDD+ project objectives, despite the fact that all projects plan to support alternative livelihoods, and in some cases, apply PES. Further participation in REDD+ projects hinges on income improvements, and proponents need to address the livelihood and wellbeing concerns of local stakeholders.

Another challenge for the overall REDD+ effort is that villagers depend on proponents for information about REDD+ and the local REDD+ project; proponents therefore have a critical role in fostering local knowledge about REDD+ interventions. It is expected that proponents would strive to ensure that local people's concerns are observed and respected in REDD+ projects, but conflicts of interest and power imbalances can make proponents' efforts to provide unbiased information difficult. There may be a need for independent knowledge brokers or legal advisers for the community, for example when legal agreements are signed, to allow them to make informed decisions.

In summary, this study highlights the importance of incorporating local hopes and concerns into the design and implementation of REDD+. It also underscores the need to improve the communication between project proponents and local stakeholders. The hopes, worries and recommendations expressed by local people in the sampled sites seemed to reflect experiences and disappointments with previous conservation and development initiatives. Since REDD+ holds promise for bolstering forest conservation as well as local livelihoods, local people potentially have much to gain, but also much to lose if this new forest management regime fails. Given the high stakes of REDD+, it is critical that local voices are heard, not only by project proponents, but also by national and international decision makers.

Site selection for forest carbon projects

Liwei Lin, Subhrendu K. Pattanayak, Erin O. Sills and
William D. Sunderlin

- Countries with a higher biodiversity index and jurisdictions with more protected area are more likely to have forest carbon projects, corroborating proponents' assertions that they consider biodiversity co-benefits when selecting sites.
- Jurisdictions with higher deforestation rates and forest carbon densities in Brazil and Indonesia are more likely to have forest carbon projects, consistent with a focus on additionality. However, projects also tend to be located in more remote (and possibly less threatened) areas in Brazil.
- Villages inside project boundaries (in a sample of REDD+ projects studied by CIFOR) depend largely on agriculture, emphasising the challenge of reducing deforestation without undermining agriculture-based livelihoods.

12.1 Introduction

Projects are a key part of the REDD+ landscape. Over 200 projects are being implemented or developed in around 40 countries (Kshatriya *et al.* 2011). In 2010, REDD+ projects accounted for the largest share of transactions in the

voluntary carbon market (Peters-Stanley *et al.* 2011). As the most concrete embodiment of the ongoing international policy discussions about REDD+, projects are a key reference point for understanding how REDD+ will unfold on the ground. They are also a valuable source of lessons for future REDD+ implementation, as discussed in Chapters 9, 10, 11 and 14 (tenure, proponent challenges, hopes and worries, and MRV in local projects) as well as other literature (e.g. Harvey *et al.* 2010b; Hajek *et al.* 2011).

Previous research assessing the distribution of REDD+ initiatives across countries found biases *against* Africa and *towards* countries with higher forest carbon stocks (Wertz-Kanounnikoff and Kongphan-Apirak 2009; Cerbu *et al.* 2011). In addition, Cerbu *et al.* (2011) found that higher biodiversity and governance indicators increase the probability of a country having REDD+ projects. But to date there has been no attempt to assess the subnational geography of REDD+ projects. This is more challenging due to the lack of consolidated information on the boundaries of REDD+ projects (unlike protected areas, for example) and because their precise boundaries are often in flux and/or confidential until they are presented for validation by a carbon offset standard.

In this chapter, we use data on the jurisdictions (countries, municipalities or districts, and villages) where projects are located to obtain insights into site selection. The location of projects is important because it shapes the possibilities for additionality and for learning from experience. First, however, we discuss sources of information on forest carbon projects and update information found in Sills *et al.* (2009) on who and what are involved in these projects.

12.2 Information sources on projects

This chapter draws on three sources of information about REDD+ projects (Figure 12.1). The first is a catalogue of global forest carbon projects developed under the Global Comparative Study (GCS) on REDD+ (see Appendix) (Kshatriya *et al.* 2011). This catalogue builds on and complements other efforts to track projects, as described in Box 12.1. The catalogue was compiled through internet searches (including the websites listed in Box 12.1), email correspondence and interviews with project proponents, a review of the grey literature on carbon offset projects, and expert input on individual countries. It includes projects in all stages of implementation, from initial planning to those that are selling verified carbon credits.

Second, with the assistance of CIFOR staff and associates in Brazil and Indonesia, we were able to obtain more detailed information on the proponents and jurisdictions (municipality or district) where projects are located in these countries. We also contacted many of the proponents – 33 (75%) of projects in Indonesia and 20 (56%) in Brazil – for information on

Distribution of REDD+ projects by country

0   4–6   10–19   >35
1–3   7–9   20–34   ★ GCS research sites

Brazil

0
1
2
3

Number of REDD+ projects by municipality

Indonesia

0   1   2   3   4   5

Number of REDD+ projects by district
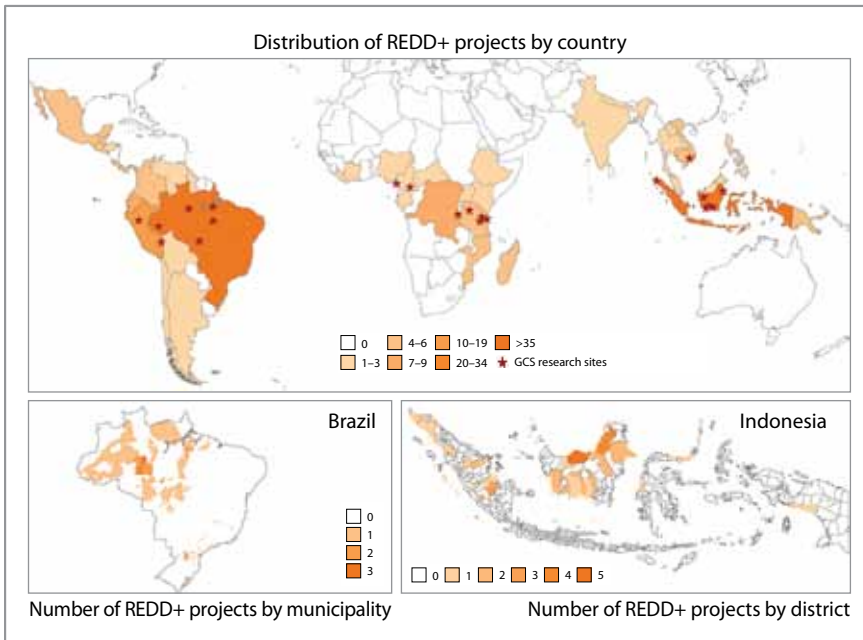
Figure 12.1 Distribution of REDD+ projects

their basic strategies. Our focus on Brazil and Indonesia is motivated by the fact that they generate more than half of global emissions from deforestation (Murray and Olander 2008), have the largest numbers of forest carbon projects (Kshatriya *et al.* 2011) and are among the top three countries in terms of total forest carbon stock (Saatchi *et al.* 2011).

Third, for 20 projects in the GCS (in six countries), we also have basic information on villages located both inside and adjacent to the projects, gathered as part of the sample selection process for the before-after-control-impact (BACI) evaluation method described in the Appendix. This information was gathered from key informants, secondary statistics and field visits.[1] The database includes 148 villages located within the boundaries of REDD+ projects and 170 villages located outside of the project boundaries but in the same region. While this does not represent a random sample of villages, it broadly characterises the types of villages in REDD+ projects.

12.3 Overview of forest carbon projects

We define REDD+ projects as interventions to increase, quantify and report forest carbon stocks relative to business as usual reference scenarios

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1   This GCS research instrument and database are called the 'Village Appraisal Form'.

Box 12.1 Catalogues of REDD+ projects
Mrigesh Kshatriya and Liwei Lin

There are several platforms that catalogue and present information on REDD+ projects. In 2011, CIFOR launched a global catalogue of forest carbon projects with a map interface and links to further information on the projects, available at http://www.forestsclimatechange.org/redd-map. Other organisations that are tracking the development of REDD+ projects or forest carbon projects can be categorised into the following:

- Standard-setting organisations such as CCBA, VCS and Plan Vivo
- Environmental NGOs such as the Institute for Conservation and Sustainable Development of Amazonas (IDESAM), Global Canopy Programme, and Forest Trends (including Forest Carbon Portal and Carbon Catalog)
- Research organisations such as CIFOR and IGES (see below)
- Intergovernmental organisations such as UNFCCC Clean Development Mechanism (CDM) and World Bank Carbon Finance Unit.

In addition to the CIFOR catalogue, the following websites are good starting points for information on REDD+ projects:

The Climate, Community and Biodiversity Alliance (CCBA)
(http://www.climate-standards.org)
The CCBA is a consortium of environmental NGOs and IGOs that have developed standards for evaluating forest carbon projects. Of the 75 projects that have been, and are currently being, audited, 20 are in Africa, 17 in Asia, and 25 in Latin America, with the rest in the USA and Europe.

Verified Carbon Standard (VCS)
(http://www.vcsprojectdatabase.org)
The VCS was founded to provide quality assurance in the certification of projects in the voluntary carbon market. The website contains information on over 750 projects from forest conservation to the waste disposal sector, but only 22 that fall within the agriculture, forestry or land use category in developing countries.

Plan Vivo
(http://www.planvivo.org/projects/registeredprojects/)
Plan Vivo Foundation is a registered UK NGO that has created standards for designing and certifying community-based forest projects. The Plan Vivo project registry has 17 projects, 10 operating in Africa, 3 in Asia and 4 in Latin America.

Forest Carbon Portal
(http://www.forestcarbonportal.com)
Developed by Ecosystem Marketplace, a programme of the US-based NGO Forest Trends, Forest Carbon Portal has a searchable database of forest carbon offset projects around the world. The aim of this inventory is to link

forest carbon projects to carbon markets, and it is designed for a broad range of stakeholders. Of the 40 REDD+ projects on this platform, 11 are in Africa, 2 in Asia and 21 in Latin America, with the remainder in North America and Europe.

Carbon Catalog
(http://www.carboncatalog.org/)
Carbon Catalog is an independent directory of carbon credits, also recently acquired by Ecosystem Marketplace. It lists 136 carbon providers from nonprofit and commercial organisations, and includes 627 projects worldwide. Of the projects in the forestry sector, 27 are in Africa, 16 in Asia and 22 in Latin America.

The REDD Countries Database (RCD)
(http://www.theredddesk.org/countries)
The RCD – part of the REDD desk platform – is an independent database of activities on the ground, which has been developed by the Global Canopy Programme and the Forum on Readiness for REDD in collaboration with in country research organisations. Currently, the RCD includes information on 144 REDD+ initiatives (subnational projects and readiness activities) in seven countries.

Institute for Global Environmental Strategies (IGES)
(http://redd-database.iges.or.jp/redd/)
The IGES is an international research institute established under the Japanese government. The IGES REDD+ online database describes projects and country readiness activities. With a total of 29 projects, 3 are in Africa, 17 in Asia and 9 in Latin America.

in a geographically defined subnational area of a developing (non-Annex I) country. There is often ambiguity about whether the 'plus' in REDD+ includes af/reforestation (AR). In existing compliance markets, there is a distinct line between REDD projects (which intend to reduce deforestation or forest degradation) and AR projects (which create new forests). According to the rules laid out under the Kyoto protocol, only the latter are eligible to participate in the CDM. This line is blurred, however, with REDD+ projects. Many projects self-labelled as REDD+ include some component of tree planting, whether motivated by a desire to ensure the supply of wood products, or generate employment or market credits that can be linked to new trees in the landscape. We include afforestation projects that are planting trees only outside existing forests within the broader category of 'forest carbon' projects. We define 'REDD+ projects' as forest carbon projects that include at least some intervention in existing forest areas, be it avoiding deforestation, avoiding degradation, restoring forest or improving forest management.

This includes earlier avoided deforestation projects (catalogued in Caplow *et al.* 2011) launched prior to REDD+ but which have remained active since its advent.

12.3.1 Goals and activities

Focusing on Brazil and Indonesia, nearly all (48 out of 53) of the REDD+ project proponents whom we contacted cited reduced deforestation as one of their goals, and of these, over 40 also cited reduced degradation or restoration of forests (Table 12.1). Many proponents indicated that they were pursuing all of our listed goals: avoiding deforestation, avoiding degradation, restoring forest and afforestation (Figure 12.2). We asked the proponents whether they were accomplishing these goals through community forest management, monitoring and enforcement of forest laws and regulations, integrated conservation and development initiatives around protected areas (ICDP), and/or payments for ecosystem services (PES, as cash or in-kind rewards). A few proponents noted additional activities, like dissemination of new technologies such as improved cookstoves and reduced-impact logging. Table 12.1 and Figure 12.2 summarise the results, which confirm that most but not all proponents are planning conditional, performance-based payments in the spirit of payment for ecosystem services (PES). All of the Indonesian projects planning PES and nearly all (13) of the

Table 12.1 Number of REDD+ projects in Brazil and Indonesia by goals and activities

	Number of projects pursuing each goal/activity	
	Brazil	**Indonesia**
Goals		
Avoided deforestation (AD)	20	28
Avoided degradation (Adg)	14	23
Restoration (RS)	13	21
Activities		
Community forest management (CFM)	12	18
Monitoring and enforcement (Enforcement)	15	22
Integrated conservation and development projects (ICDP)	16	23
Payment for ecosystem services (PES)	14	20
Total REDD+ projects contacted	**20**	**33**
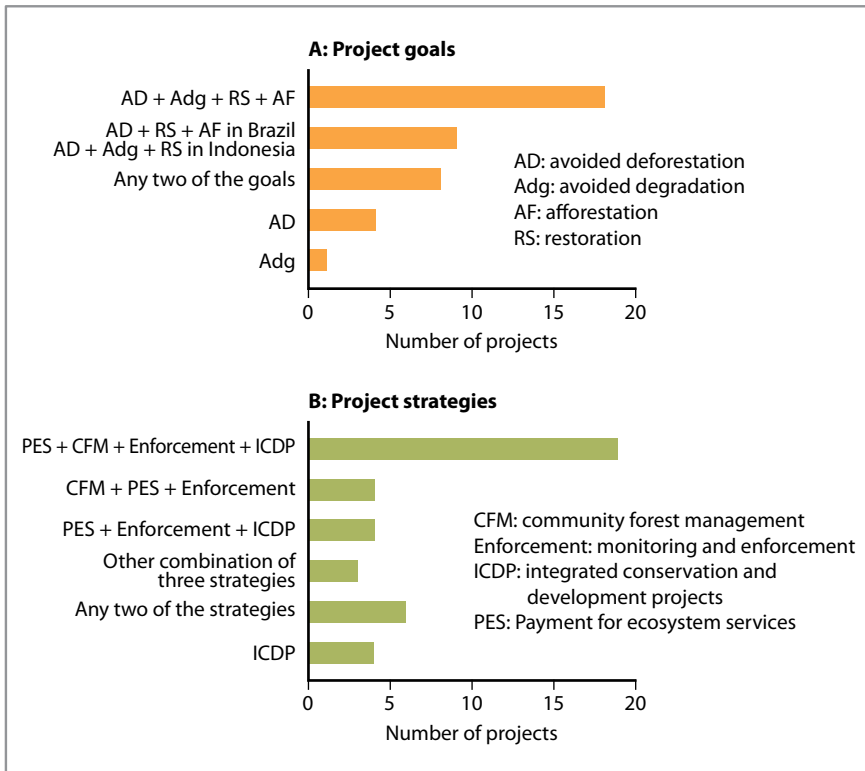
Figure 12.2 Number of projects in Brazil and Indonesia pursuing different combinations of goals and activities

Brazilian projects planning PES are also investing in improved monitoring and enforcement or ICDP-type interventions, consistent with the hybrid model discussed in Chapter 10.

This mix of strategies is also consistent with the range of deforestation pressures taken on by projects. In Indonesia, the proponents we contacted indicated in roughly equal numbers that they are focused primarily on "changing the behaviour of actors who are currently deforesting or degrading the forest in the specific local area of the project" or on "preventing or pre-empting anticipated future deforestation or degradation threats" (e.g. development of palm oil plantations by companies from outside the project area). In Brazil, proponents were slightly more likely to say that their projects focused on preventing future threats rather than changing the behaviour of current actors. Better enforcement may be the most commonly cited strategy in part because it is relevant to both types of threats, whereas community forest management, integrated conservation and development, and PES are typically implemented with local populations who have some tradition of using (and have traditional property rights to) the local forest. In project

sites where outside actors (who do not have a tradition of or rights to forest use) are the main deforestation threat, it is more challenging to counter this threat with performance-based payments, integrated conservation and development, or community forest management. Another type of hybrid strategy employed by projects is to use these strategies to build local alliances and support for warding off external threats of deforestation (see Box 12.2).

12.3.2 Key players

Forest carbon projects are being implemented by governments, nongovernmental organisations and the private sector, resulting in significant variation in emphasis and effectiveness (Agrawal *et al.* 2011). The majority of forest carbon projects that we catalogued are being implemented by NGOs, typically with environmental or sustainable development missions (see Virgilio *et al.* 2010). The GCS sample illustrates this trend, with projects led by international environmental organisations such as Conservation International, The Nature Conservancy, Fauna and Flora International, and the Jane Goodall Institute; international development organisations such as CARE and SNV; and national environmental organisations such as Amazon Environmental Research Institute, Tanzania Forest Conservation Group and the Centre for Environment and Development (see list of CIFOR project sites in the Appendix on the GCS). Out of 107 forest carbon projects in Brazil and Indonesia, 65 (61%) are led by NGOs. Of these, 20 (30%) are led by NGOs based in the United States, with others from Europe (e.g. Germany, Switzerland and UK), Asia (e.g. Australia and Japan) and the host countries. In Brazil and Indonesia, there is a private sector proponent in 43% of projects. Examples from the GCS sample of projects include private consulting groups like Mazars Starling Resources in Indonesia and GFA Consulting Group in Cameroon. Finally, local governments are often partners in project implementation and are taking the lead role in jurisdictional projects (e.g. the Brazilian state of Acre and Indonesian province of Aceh).

Other key players in the project landscape include funders and standards organisations, along with the certifiers or auditors who verify compliance with those standards. As discussed in Chapter 7, funders include philanthropic donors, the private (for profit) sector, and governments through multilateral initiatives (UN-REDD Programme, Forest Carbon Partnership Facility, Forest Investment Program and Congo Basin Forest Fund) and bilateral aid. The most prominent donor of bilateral aid has been the Norwegian government through its International Climate and Forests Initiative, which has pledged over US $680 million for REDD+ (Tipper 2011), including both REDD+ projects and readiness activities. The next biggest bilateral donor to REDD+ is the United Kingdom (Climate Funds Update 2012).

Box 12.2 Integrating conservation tools in the *Bolsa Floresta* programme, Brazilian Amazon
Jan Börner and Sven Wunder

The Juma Sustainable Development Reserve (SDR Juma) REDD project started in 2007 as part of the *Bolsa Floresta* programme in the largest Brazilian state, Amazonas. *Bolsa Floresta* is an ambitious conservation programme covering over 1 million hectares in 15 of Amazonas State's protected areas. The SDR Juma lies relatively close to the rapidly expanding agricultural frontier of Apuí, in the southeastern corner of Amazonas. Its population consists mainly of traditional small-scale producers who, apart from staple crop production, rely heavily on forest product use and fishing for subsistence. Projected future deforestation is nonetheless high for Juma, as cattle production is expected to gradually encroach onto its southern and eastern boundaries.

The *Bolsa Floresta* programme engages primarily with the local population in the protected areas and intends to promote good forest stewardship through conditional conservation incentives and interventions aimed at improving quality of life. As such, it innovatively combines different conservation policies, including ICDPs and PES. First, direct PES under *Bolsa Floresta* is a well-disseminated and locally popular innovation in Amazonas, but represents only a small share of total programme spending. Second, *Bolsa Floresta* improves local health services and education, thus compensating for the general underprovision of public services in these remote protected areas. Third, local resident associations are being strengthened, including for example, in SDR Juma through improved river transport offered to residents through local associations. Fourth, *Bolsa Floresta* promotes alternative production strategies in the villages through ICDP-type interventions (e.g. small animal husbandry, on-farm processing for value-added products) in order to make production systems more intensive and sustainable.

The programme thus aims to address a well-known Achilles heel of the recently quite successful Brazilian strategy for reducing Amazon deforestation through establishment of protected areas and enforcement of other conservation regulations. Effective regulation hinges on frequent and expensive field presence and may have local livelihood costs. In response, *Bolsa Floresta* is designed to buffer local household-level income losses resulting from compliance with protected area rules (PES component), provide improved organisation and compensatory collective benefits (association and social components) and reduce local dependence on forest degrading activities (alternative income component). Hence, the programme implementer Sustainable Amazon Foundation (FAS) hopes to enhance conservation alliances with local residents through the integration of these components, and thus bolster the integrity of protected areas even if pressure from outside increases as the agricultural frontier gradually approaches. Evidence from older Amazon colonisation frontiers suggests that stable forest-agriculture mosaics can emerge from smallholder-dominated landscapes, thus avoiding the more common conversion to extensive pasturelands. *Bolsa Floresta* is an attempt to move in that direction, and time will tell the extent of its success.

The leading standards for REDD+ projects are the Climate, Community and Biodiversity Project Design Standards (CCB Standards) and the Verified Carbon Standard (VCS) (Diaz *et al.* 2011), discussed further in Chapters 14 and 17. Winrock's American Carbon Registry also has a standard for forest carbon projects, including a method for REDD+ based on avoiding planned deforestation, and is developing a standard for projects nested in jurisdictional REDD+ systems. California's Climate Action Reserve includes forest carbon projects in the US and is developing a protocol for REDD+ projects in Mexico. Plan Vivo has been used primarily for agroforestry and af/reforestation projects but has REDD+ projects in its certification pipeline. Other standards include CarbonFix for af/reforestation projects and the relatively new Global Conservation Standard for carbon stocks in protected areas (Merger *et al.* 2011). Both the organisations coordinating development of these standards and most of the auditors that certify compliance with the standards are from the same group of OECD countries as the donors. However, Brazil is a partial exception to this rule, with two national standards (Social Carbon managed by the Ecologica Institute and *Brasil Mata Viva* managed by *the Bolsa de Títulos e Ativos Ambientais do Brasil*), as well as Social and Environmental Principles and Criteria developed by Brazilian NGOs as guidelines for implementing REDD+ in the Brazilian Amazon.

12.4 Project location

12.4.1 Why location matters

In order to achieve additionality, it would be logical to locate projects where significant deforestation or forest degradation is expected. As suggested by the literature on PES in Costa Rica, an intervention cannot have much incremental impact on reducing deforestation where deforestation rates are already low (Sánchez-Azofeifa *et al.* 2007). However, this does not rule out the possibility that interventions could encourage forest regeneration and/or better management of forests (Daniels *et al.* 2010; Arriagada *et al.* 2012), especially in a setting like Costa Rica with relatively clear land tenure and good governance (Pagiola 2008). Extending this to REDD+, a necessary – but not sufficient – condition for reducing emissions from deforestation (RED) is the presence of a significant stock of forest carbon threatened by future deforestation, as indicated by recent deforestation trends and the presence of deforestation drivers (e.g. roads). If this condition is not met, then REDD+ interventions must achieve additionality through the D+ (avoided degradation or enhancement of forest carbon stocks).

Some have questioned "how many REDD+ projects would truly fall within … the agricultural frontier, where, in the absence of REDD+, most deforestation is likely to occur and thus the greatest additionality can be achieved. An examination of some cases in Mexico and Honduras, for

example, reveals the highest deforestation in areas where governmental forestry and environmental agencies have least access due to social conflicts and where no REDD+ activities are being planned" (Louman *et al.* 2011:368). This highlights the tradeoff between locating projects where there is the most deforestation to be avoided and locating them where effective interventions can be implemented realistically. This depends not only on governance conditions, but also on the opportunity costs of forest conservation and the operating costs for projects. The analysis by Busch *et al.* (2012) suggests likely site selection for REDD+ projects in Indonesia based on a given carbon price and the distribution of opportunity costs. Agrawal and co-authors suggest that existing REDD+ projects have been tailored primarily to provide social and ecological co-benefits valued by early investors, while in the future, "the segment of the carbon market likely to expand the most may be the one in which social and ecological co-benefits receive lesser attention" (Agrawal *et al.* 2011:384). We therefore consider forest carbon stocks, deforestation rates and drivers, and indicators of governance, opportunity costs and co-benefits as potential determinants of optimal site selection. Understanding patterns in site selection to date is a first step towards meeting the challenges of identifying optimal sites for future projects, designing nested REDD+ systems that include projects, and generalising or transferring lessons from REDD+ projects.

12.4.2 Cross-country distribution

The two countries with the highest emissions from land use change are Brazil and Indonesia (Houghton 2009). As reported by Houghton (2009), different methods suggest somewhat different rankings of other countries, but in addition to Brazil and Indonesia, top emitters may include Democratic Republic of the Congo, Myanmar, Nigeria and Venezuela. The cross-country distribution of REDD+ projects can also be compared to the distribution of total forest carbon stocks, which have been estimated to be highest in Brazil, Colombia, Democratic Republic of the Congo, Indonesia and Peru (Saatchi *et al.* 2011). However, there is significant variation across studies (Gibbs *et al.* 2007).

As of November 2011, CIFOR's global catalogue listed forest carbon projects in 51 non-Annex I countries. Of these, nine countries only have projects engaged exclusively in AR, but there are 43 countries with at least one of the more than 200 REDD+ projects worldwide. This wide spread of projects across many countries is important for informing the development of a future REDD+ regime, which will have to be inclusive to avoid being undermined by international leakage (Murray and Olander 2008). However, while many countries have one or two projects, most are highly concentrated in just three countries: Brazil, Indonesia and Peru. We examine these cross-country patterns and their possible underlying causes.

In Indonesia, there are 51 forest carbon projects, of which seven appear to be exclusively engaged in AR. The other 44 (many in Kalimantan) involve some combination of reduced deforestation, reduced degradation, restoration, reforestation and forest management. We have catalogued 56 projects in Brazil, which can be divided into 20 that involve only AR, mostly located in the Atlantic coastal forest region, and 36 that involve some combination of strategies that could be labelled REDD+, mostly located in the Amazon. Peru has 41 forest carbon projects, including 22 that appear to be pursuing only AR. The concentration of projects in Brazil and Indonesia is consistent with their global importance as sources of GHG emissions from land use change (Murray and Olander 2008). However, as suggested by Phelps *et al.* (2010a) and Calmel *et al.* (2010), factors other than forest carbon clearly also play an important role in the selection of countries for REDD+ projects. Democratic Republic of the Congo, for example, has just 11 projects (four focused exclusively on AR), despite its importance in terms of both forest carbon emissions and stocks. Similarly, Colombia has a high forest carbon stock yet only 10 projects (five exclusively AR), and we have identified only one project each in Venezuela and Nigeria and none in Myanmar.

Lin (forthcoming) examines the distribution of REDD+ projects across tropical developing countries (a subset of the non-Annex I countries under the Kyoto Protocol). Of these 86 countries in Africa, Asia and Latin America, 48 have at least one forest carbon project. After controlling for land area, population, GDP, governance index and rate of forest loss, she finds that the probability of forest carbon projects in a country is positively related to the country's biodiversity (as measured by the Global Environment Facility Benefit Index for Biodiversity (Pandey *et al.* 2008)), the percent of the country in terrestrial protected areas (from the World Database on Protected Areas (IUCN and UNEP 2010)), and the experience of the country with remote sensing and the CDM (from Resources for the Future [RFF]'s Forest Carbon Index (Deveny *et al.* 2009)). This is consistent with the stated priority given to biodiversity in project documents, as reported by Cerbu *et al.* (2011). It may partly explain the large number of projects in Peru, which has a high biodiversity index (7th out of the 86 countries) in addition to a large forest carbon stock and supportive government policy.

12.4.3 Subnational geography

To assess subnational patterns in site selection, we identified the number of projects in each municipality in Brazil and district in Indonesia. This allowed us to evaluate whether projects have been targeted to jurisdictions with significant carbon emissions from deforestation that could potentially be reduced by project interventions. We obtained data on deforestation rates from Hansen *et al.* (2008), who map gross forest cover loss between

2000 and 2005; forest carbon from RFF's Forest Carbon Index (Deveny *et al.* 2009); and percent forest cover in 2000 from the global land cover database (EC 2003).

Figures 12.3 and 12.4 show box and whisker plots[2] for deforestation rates, forest carbon density, and forest cover comparing municipalities in Brazil and districts in Indonesia with and without REDD+ projects. We have subdivided each country into the forest frontier regions (the Brazilian Legal Amazon and Indonesia's Outer Islands, shown in light grey) and the more economically developed regions (Brazil outside of the Amazon and the island of Java, shown in dark grey). For the Legal Amazon and the Outer Islands, the box plots show that projects tend to be located in places with higher forest cover and higher forest carbon content, but not necessarily higher deforestation rates. This suggests that projects are targeted to places with large stocks of forest carbon, but which are not necessarily facing threats to those stocks. However, while the median forest cover and forest carbon density are higher for municipalities and districts with REDD+ projects, the inner-quartile ranges overlap. In other words, there is also great variability in all three measures of forest carbon, indicating that there are other factors driving site selection. Controlling for these factors could provide a clearer picture of how site selection relates to forest carbon.

In selecting sites for REDD+ projects, proponents are likely to also consider the costs or difficulty of reducing emissions and the potential for co-benefits (see list of proxy measures in Table 12.2). Many of the factors that encourage deforestation are also likely to increase the difficulty and cost of project implementation, e.g. high opportunity costs, high population density, unclear tenure and poor governance. Thus, factors such as road or population density could either increase the likelihood of projects by creating the potential for additionality, or decrease the likelihood by making it difficult to effectively reduce deforestation. We compile subnational data on population density from national census agencies, and on road density from the Digital Chart of the World (total meters of roads divided by the size of the administrative unit in square meters) (DMA 1992). RFF's Forest Carbon Index also includes a direct measure of opportunity cost (Naidoo and Iwamura 2007). Key co-benefits expected from REDD+ include biodiversity conservation and poverty alleviation. We proxy for potential biodiversity co-benefits with percent of land in protected areas (IUCN and UNEP 2010) and for potential poverty alleviation co-benefits with poverty indices (from national census agencies).

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2   Boxplots show the distribution of the dataset. The line inside the rectangle represents the median of the distribution. The upper and lower boundaries of the rectangle indicate the upper quartile (25%) and the lower quartile (25%), respectively. The two lines outside of the rectangle are lower extreme and upper extreme values.
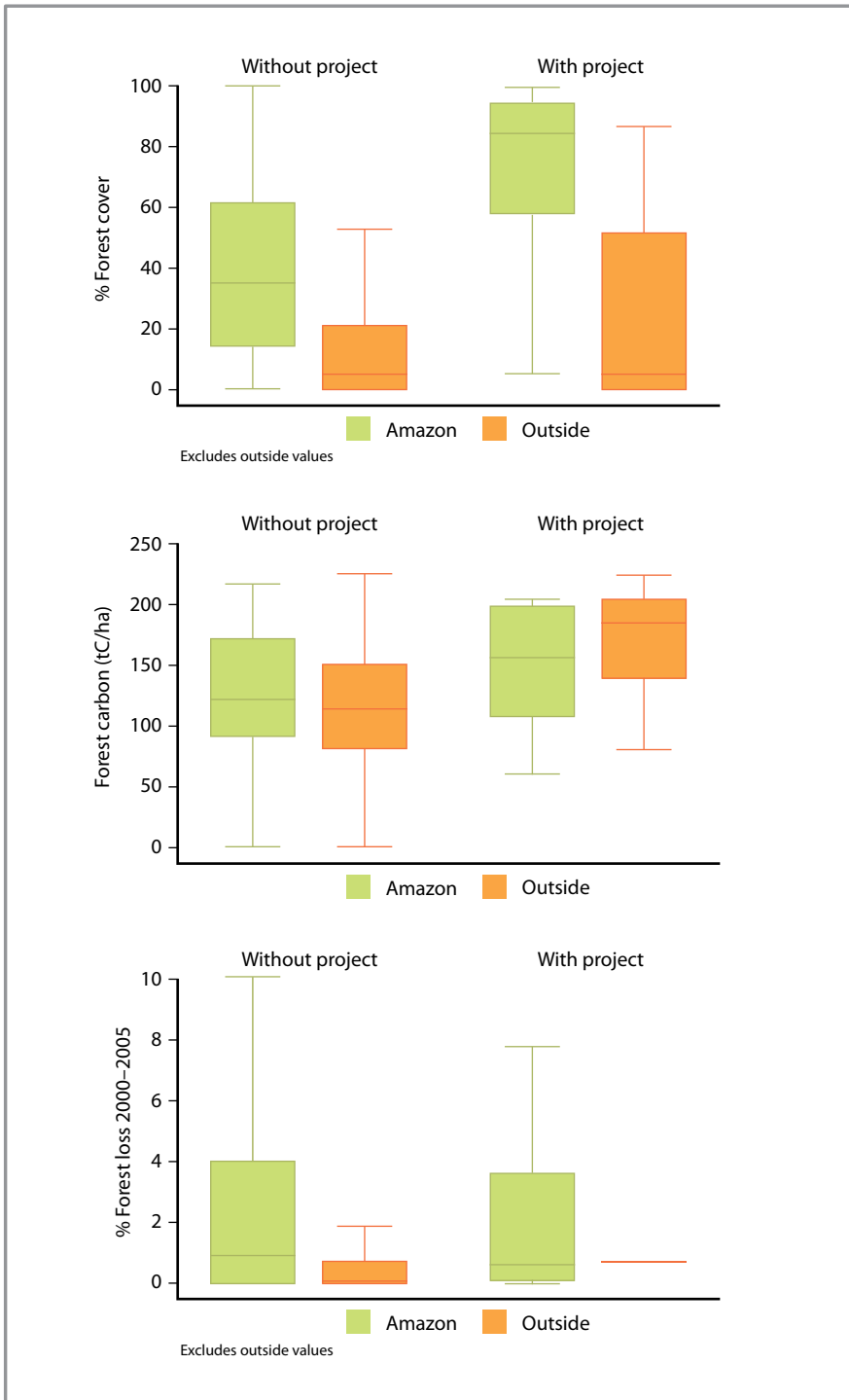
Figure 12.3 Comparison of municipalities with at least one REDD+ project to municipalities with no REDD+ projects, subdivided into municipalities in the Legal Amazon vs. the rest of Brazil ('outside')
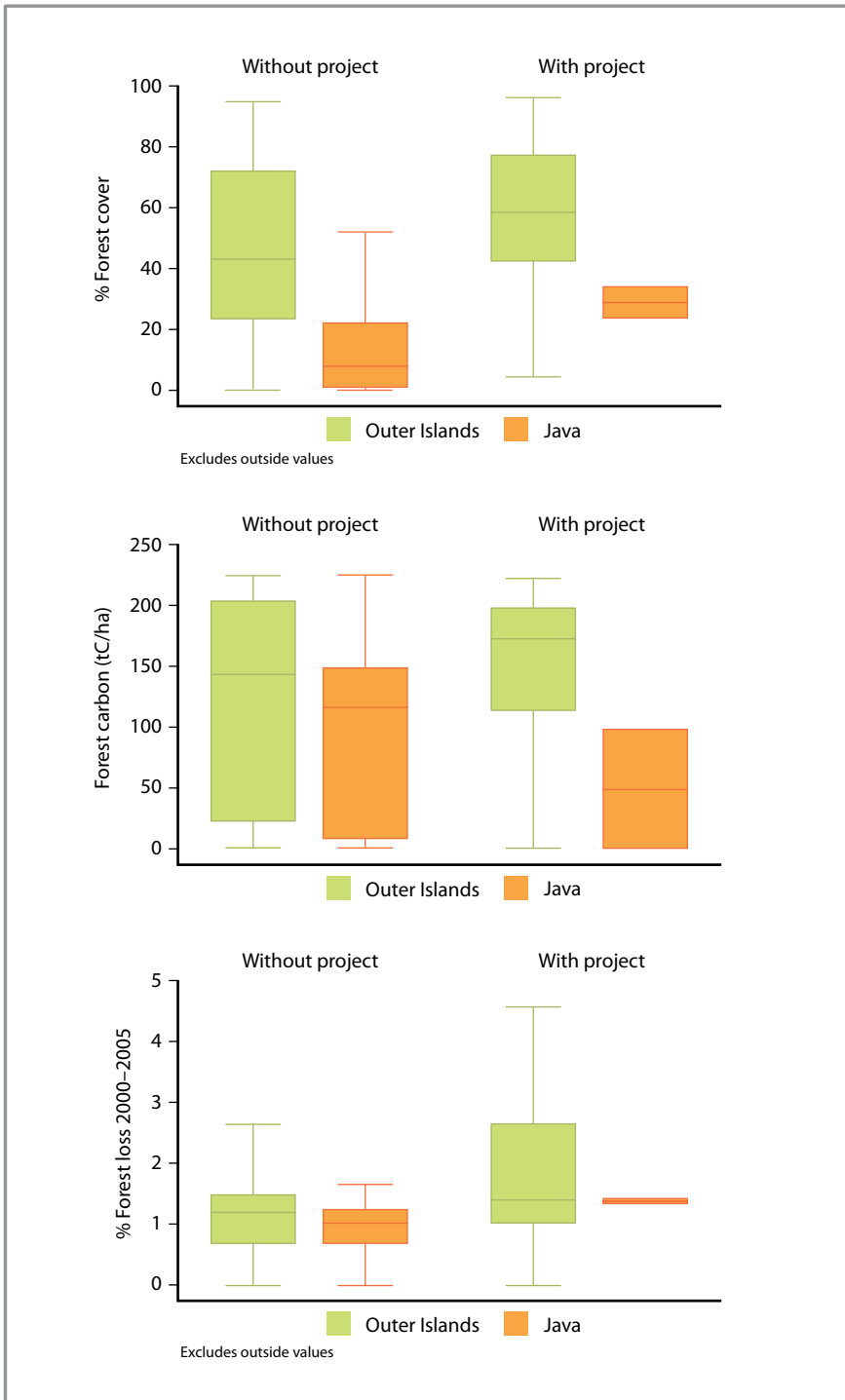
Figure 12.4 Comparison of districts with at least one REDD+ project to districts with no REDD+ projects, subdivided into districts on the Outer Islands (outside the provinces of Java) vs. Java

Table 12.2 Mean values of factors considered in site selection in municipalities or districts with and without REDD+ projects

	Brazil		Indonesia	
	With REDD+	**Without REDD+**	**With REDD+**	**Without REDD+**
Forest carbon (tC/ha)	145	117	153	116
Deforestation rate (% of forest cover)	2.4	0.9	2.3	1.3
Opportunity cost (US $/ha)	915	833	547	788
Land in protected areas (%)	28.2	8.3	25.9	11.8
Poverty (headcount ratio)	0.39	0.41	0.14	0.17
Population density (per km²)	112	105	98.7	959
Road density (per km²)	0.03	0.08	0.09	0.11
Area (km²)	12 132	1262	10 191	3923
Observations	155	5414	48	392

Table 12.3 reports the results of a count regression model of the number of forest carbon projects in a Brazilian municipality or Indonesian district on these explanatory variables. The number of projects is positively and significantly related to both forest carbon density and the deforestation rate, controlling for other factors in this multivariate model. There is no statistically significant relationship with opportunity costs, but road density is negatively related to the number of projects in Brazil. Controlling for deforestation rate, projects are more likely to be placed in inaccessible areas, perhaps because of the expectation that it will be easier and less costly to reduce activities that involve deforestation or degradation in areas that are far from markets. Population density and poverty rates are only statistically significant in Brazil, with more projects expected in municipalities with higher population density but lower poverty (all else equal). Thus, the evidence is mixed on the role of expected poverty alleviation co-benefits in site selection. However, the coefficients on percent of land in protected areas are positively and strongly significant in both models, suggesting that proponents and donors are attracted by the potential biodiversity benefits of conserving forest near protected areas. This could be because both projects and protected areas are located in biodiversity-rich forests, or because proponents prefer to establish projects near protected areas, which signal biodiversity co-benefits to the market and perhaps also offer some advantages in monitoring and enforcement.

Table 12.3 Negative binomial models of the count of forest carbon projects in a Brazilian municipality or Indonesian district

Variable	Brazil		Indonesia	
	Coefficient	Mean	Coefficient	Mean
Forest carbon (in 100s of tC/ha)	0.970***	1.18	0.487**	1.21
Deforestation rate	0.087***	1.06	0.104**	1.46
Opportunity cost (in 1000s US $)	0.121	0.83	−0.191	0.76
% of land in protected area	0.586***	9.95	1.877***	13.38
Poverty rate (Poverty headcount ratio)	−1.162*	0.41	1.472	0.17
Population density (in 1000s per km^2)	0.411***	0.07	−1.581	0.87
Road density	−10.850***	0.08	−2.047	0.11
Area (in 10 000 km^2)	0.428***	0.18	0.568***	0.48
Constant	−4.061***		−3.181***	
Observations	4134		391	

Significant at 1% (***), 5% (**) or 10% (*) level.

Note: In the negative binomial model, an additional overdispersion parameter is estimated. As expected, this parameter is significantly different from zero in the models for both Brazil and Indonesia.

Many of the same factors are significant in different versions of the model. For example, we can estimate the model only for REDD+ (rather than all forest carbon) projects, including only municipalities or districts in the forest frontier (Amazon and Outer Islands) and considering only the probability of having at least one project (rather than the count of projects). Across the various possible combinations, the results that are most robust are positive associations with percentage of land in protected areas, deforestation rate and forest carbon.[3]

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3 For example, in logistic regressions of the probability of at least one REDD+ project in a municipality in the Amazon or district in the Outer Islands of Indonesia (estimation results not reported here), most variables retain their sign and statistical significance. The only notable change in sign of a coefficient is on deforestation in the Brazilian Amazon: higher deforestation rates are associated with a lower probability of a REDD+ project, perhaps because those areas are considered lost causes and therefore do not attract projects.

Finally, we note that there are important factors omitted from this model due to lack of data. Based on interviews with REDD+ project proponents[4] during UNFCCC COP15 in December 2009, Lin *et al.* (2012) found that the top five factors in proponent decisions about where to locate REDD+ projects within countries are the deforestation rate, forest carbon content, biodiversity, interest of donors and governance. Our model confirms that the first three factors have been important in site selection for REDD+ projects, but we cannot test governance or the geographical interest of donors due to lack of data.

12.4.4 Local boundaries

For REDD+ projects in the GCS sample, we gain further insight on site selection by characterising villages located within project boundaries (which we label 'REDD+ villages') in comparison to villages in the same region but outside project boundaries. Again, we have larger samples for Brazil and Indonesia, so we report results for those countries separately, in addition to overall results for projects in all six countries where the GCS is conducting research at the project scale (Table 12.4).

This comparison suggests that villages are significantly more likely to be selected for REDD+ projects if forest conservation NGOs were active in the village in the past 5 years. This is consistent with the common perception of REDD+ as a new source of funds for existing forest conservation projects, raising potential additionality concerns (Ingram *et al.* 2009; Sills *et al.* 2009). However, it could also be interpreted as a sign that REDD+ projects are more likely to succeed, since they are building on previous efforts by forest conservation organisations. In Brazil, this is consistent with the pattern in social capital: there are on average more functional groups or organisations (e.g. farmers groups, credit groups and education committees) in REDD+ villages as compared to other villages in the region. However, the opposite is true in Indonesia and in the global sample: there are statistically fewer functional groups in REDD+ villages.

On average, REDD+ villages are more remote, as measured by distance from the nearest road used by four-wheel vehicles. This difference is statistically significant in the global sample and marginally significant in Brazil, but not in Indonesia. While estimated forest cover is not statistically different and we were not able to obtain good quality estimates of deforestation rates, the fact that REDD+ villages are systematically further from roads suggests that they are under relatively less deforestation pressure and have lower opportunity costs from avoided deforestation. This is consistent with the findings that Brazilian municipalities with higher road density are less likely to have REDD+ projects

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4   The project proponents interviewed at COP15 were from NGOs (72%), the private sector (16%) and Official Development Assistance (12%).

Table 12.4 Characteristics of villages located within and outside REDD+ projects in the GCS sample

	Overall mean		P-value for difference in means	Mean for Brazil		P-value for Diff in Means.	Mean for Indonesia		P-value for difference in means
	REDD+	Outside		REDD+	Outside		REDD+	Outside	
Number of villages	148	170		49	51		64	45	
Number km to nearest road passable by 4-wheel vehicle	21	11	0.02**	13	8	0.16†	34	28	0.58
% forest	48%	49%	0.70	47%	50%	0.38	47%	46%	0.90
% where conservation NGO had been active	58%	34%	0.00***	69%	43%	0.00****	64%	11%	0.00*
Number of community groups	3.1	4.9	0.00***	2.1	1.4	0.02**	3.4	4.9	0.04**
% strong forest tenure	51%	61%	0.08*	78%	75%	0.73	16%	16%	0.99
Deforestation pressure from:									
Large–scale agriculture	24%	21%	0.51	29%	8%	0.01***	31%	44%	0.16†
Small-scale farmers	80%	85%	0.25	100%	100%	n.a.	58%	51%	0.49

Overall statistics include villages in Cameroon, Peru, Tanzania and Vietnam, as well as Brazil and Indonesia. Overall distribution of village characteristics is significantly different across REDD+ and other villages both in the overall sample and in Brazil and Indonesia. For each variable, differences in means may be significant at *** (99%), ** (95%), * (90%) or † (80%) level.

and have fewer forest carbon projects overall. That is, while many of these REDD+ projects are in regions under deforestation pressure (confirmed by the positive and statistically significant coefficients on deforestation in Table 12.2), it appears that proponents are choosing to work in more remote corners of these regions. This may be because REDD+ interventions are expected to be more competitive with development alternatives or because higher biodiversity co-benefits are expected further from market centres that generate demand for agricultural products. This latter explanation is corroborated by the proponent appraisal conducted by the GCS: 65% of REDD+ project proponents indicated that they considered biodiversity when deciding which villages to include, and half (3 out of 7) of the proponents who ranked site selection criteria indicated that biodiversity was the most important.

Small-scale farmers are a primary deforestation pressure in more than half of all villages (both inside and outside projects) in all countries. While in Brazil large-scale actors are more likely to be the primary source of deforestation in REDD+ villages than in villages outside those boundaries, the opposite is true in Indonesia. Thus, the profile of sites selected for REDD+ projects in Brazil is more remote locations, with active conservation NGOs, substantial local social capital, and deforestation pressures by large-scale actors from outside the region (e.g. see Box 12.2 describing the *Bolsa Floresta* project). This pattern is consistent with Brazilian project proponents' desire to create local alliances to forestall outside deforestation threats. In contrast, the site profile in Indonesia is locations with active conservation NGOs, but lower social capital, and lower threats by large-scale actors from outside the region. Such differences across these two countries merit further research and consideration as we seek to draw lessons from their projects.

Finally, there are some commonalities across all villages in our sample (not reported in Table 12.4). Most villages within these REDD+ projects are agricultural. In the majority (57%) of villages in REDD+ projects, agricultural crops are the primary income source of most households. In 63% of the villages, fewer than 20% of households earn the majority of their cash income from forests. Other income sources include animal husbandry (mostly cattle), fishing and mining. This dependence on agriculture suggests that there is deforestation by local agents that could potentially be reduced by project interventions. Further, it suggests that the key livelihood concern associated with these REDD+ projects is likely to be restrictions on agricultural practices such as shifting cultivation.

12.4.5 Caveats and recommendations for further analysis

Modelling the site selection process by jurisdiction (country, municipality or district, and community) allows us to compile data on a large number of projects, and thereby avoid potential biases from limiting our sample to

projects willing to share maps of their boundaries. However, it clearly also introduces some measurement error because mean values for countries, municipalities or districts do not necessarily characterise specific project sites. The same analysis could be conducted with projects that are certified and therefore have publicly available maps, but findings may not be generalisable beyond certified projects. To some degree, the database on villages inside and adjacent to REDD+ projects in the GCS sample provides this more fine-grained information. The caveat on those data is that the villages were neither censused nor randomly sampled. However, field researchers attempted to identify similar villages inside and outside project boundaries, and thus the bias should have been towards zero difference.

In addition to compiling more precise information on project boundaries, a second area for future research should be to account for variation in governance at the subnational level. Likewise, the analysis could be improved with better data on biodiversity and potential livelihood co-benefits at the subnational level (in place of percentage in protected areas and official poverty statistics). Finally, more qualitative in-depth research on the decision making process of particular proponents and for particular projects could significantly enrich our understanding of project site selection and its implications.

12.5 Conclusions

If projects are to directly contribute to the diverse objectives of REDD+ (first and foremost, reduced emissions of forest carbon, but also social and environmental co-benefits), then they should be located in places where they can address significant emissions of forest carbon, threats to biodiversity and low income levels. Clearly the ability to meet these objectives depends on myriad factors, including the geographic expertise of the proponent and local governance conditions. However, it also fundamentally depends on the existence of biodiversity, poverty and forest carbon emissions.

Taking all tropical developing countries into consideration, higher deforestation rates are *not* associated with greater likelihood of REDD+ projects. Yet, the greatest number of projects by far are being developed in the two countries that dominate global forest carbon emissions: Brazil and Indonesia. In these countries, prioritisation of high forest carbon density and deforestation are evident at the subnational level, although there is also a preference for more remote (and therefore possibly less threatened) jurisdictions in Brazil and villages in the six country GCS sample. Specifically, municipalities in Brazil and districts in Indonesia have more projects if they have higher forest carbon density and higher deforestation rates. However, at the local level, REDD+ villages are systematically further from roads than non-REDD+ villages. And in Brazil, road density is negatively associated with the number of projects in

municipalities, after controlling for other factors. Likewise, after controlling for these other factors, there is a weak statistical association between project location and poverty in Brazil, but not in Indonesia.

Overall there is a strong preference for locations with high potential biodiversity co-benefits. Countries with a high biodiversity index are more likely to have projects. Municipalities and districts with a higher proportion of their land in protected areas are more likely to have projects. And proponents report that biodiversity is an important consideration in site selection.

Finally, our sample of villages within and around REDD+ projects confirms that they are primarily agricultural and that small-scale farmers are viewed as one of the primary deforestation and degradation threats. Although there are exceptions, most villages are not highly dependent on forest products for household income. This suggests that a key challenge for REDD+ on the ground will be to slow local deforestation without undermining agricultural livelihoods or alienating local people who are key potential allies against the external deforestation threats that are also prominent in these locations.

Part

3

Measuring
REDD+
performance

Performance indicators and REDD+ implementation

Sheila Wertz-Kanounnikoff and Desmond McNeill

- REDD+ aims to achieve a defined impact – reduced emissions – and payments may be made based on performance towards achieving this goal. This implies that there must be assessments of the results of REDD+ programmes.
- In the medium-term, most payments will be for readiness and policy reforms, rather than proven emissions reductions. Hence good performance indicators are critical for all three REDD+ phases, in particular for phase 2 where the focus is on policy performance.
- Valuable lessons on governance indicators can be learned from the aid sector: avoid seeking the perfect indicator and use expert judgment extensively.

13.1 Challenges

REDD+ aims to achieve a defined impact – reduced emissions – and payments may be made based on performance towards achieving this goal. This implies that there must be assessments of the results of REDD+ programmes. Implementation will occur in three phases: readiness

(phase 1); policy measures (phase 2); and 'results-based actions' (i.e. payments based on changes in emissions and removal) (phase 3). This process is now formalised in an international agreement (UNFCCC 2011e). Although bilateral REDD+ programmes are currently advancing at a faster pace than multilateral processes, they seek to complement the UNFCCC process and should abide by the same principles (for example REDD+ Partnership 2010).

Performance indicators can be used to monitor results. These indicators need to be credible to allow all parties undertaking and funding REDD+ activities to ensure they are successful (Daviet 2009). Performance indicators need to be selected taking into account the different objectives of the three REDD+ implementation phases.

Previous REDD+ measurement, reporting and verification (MRV) initiatives have tended to focus on phase 3, where the challenge is largely technical – to measure greenhouse gas (GHG) emissions and removals (Chapters 14–16). But the more immediate challenge, which has received little attention so far, is to measure performance during the initial phases, and especially during phase 2 where the focus is on policy performance. This chapter aims to clarify and inform the debate around REDD+ performance measures.

13.2 Rationale and types of performance indicators

Performance measurement is not generally an end in itself, but a means to various different ends: to evaluate, control, budget, motivate, promote, celebrate, learn from or improve performance (Behn 2003). No single indicator is appropriate for all uses, so it is crucial to be clear about the purpose of measurement when selecting indicators.

Performance must be measured against agreed benchmarks. Typically, different types of indicators are needed at each stage (Table 13.1). Intermediate (input and process) indicators can allow earlier monitoring to help keep projects on track, but in general it is desirable to measure performance towards the end of the results chain – outputs, outcomes and impacts. However, it is important not to rush this: to prematurely introduce an emission-based system with poor MRV systems and inadequate data for setting reference levels may create payments for unreal emissions reductions, which would destroy credibility and jeopardise the legitimacy of the system.

Performance indicators have been widely used for evaluations in the aid sector. According to the Development Assistance Committee (DAC) of the Organisation of Economic Co-operation and Development (OECD), performance indicators refer to "variables that allow the verification of

changes in development intervention or show results relative to what was planned" (OECD 2002). Indicators should be simple and 'SMART' (specific, measurable, attainable, relevant and time bound) and comparable across countries (OECD 2008).

13.3   Lessons from the development aid sector

Towards the end of the 1990s and early 2000s, countries receiving development aid began to be viewed as partners, and donor aid was increasingly provided for budget support. This allowed recipient countries more freedom in its use, but offered less performance accountability for donors. In recent years donor countries have exerted more pressure for aid to be results-based. The reasons for this are varied, but are linked to growing demands for 'development effectiveness' as stipulated in the 2005 Paris Declaration on Aid Effectiveness (OECD 2005). There is now greater demand for performance measurement – not only of outputs, but also outcomes and impacts – based on objective indicators. This is particularly challenging because it coincides with a shift in aid away from investment in infrastructure such as roads, water supplies and health clinics, towards interventions in governance, human rights, empowerment and conflict resolution, which are far more difficult to evaluate.

REDD+, as originally envisaged, is not development assistance but a payment for a service rendered (Chapter 3). As a business-like transaction, it is perfectly normal that payment is based on results. But in the short-term at least it appears that REDD+ will be largely financed from aid budgets or private sources (Chapter 7). While payment will still be based on results, the motivation for measuring performance is likely to be different. REDD+ implementation can learn from the use of performance indicators in the development aid sector (Box 13.1).

Although ideally assessments will be based on outcomes and impacts, in practice this is difficult for three main reasons: the timing of assessment, attribution of results to intervention, and reliability of information.

The further along the results chain one wishes to measure performance, the more time needs to pass. Impact cannot be measured until several years have elapsed, which is not possible for many donors, NGOs or governments. Although donors would like to base their payments on performance, in reality they cannot wait 10–15 years in order to measure whether the desired impact has been achieved.

Moreover, the further along the results chain one moves, the more difficult it is to attribute an end result to a specific intervention. Impacts are influenced

Table 13.1 The results chain and different types of performance indicators

Level	Input	Process *Often merged with the 'input' category*	Output	Outcome	Impact
Focus	Quantities of financial, human and material resources used in the development intervention, often expressed in dollar amounts or amounts of employee time.	Activities during implementation, i.e. actions taken or work performed through which inputs are mobilised to produce specific outputs.	Immediate results of the intervention. May have a quantity and quality dimension, and often include counts of the number of beneficiaries.	Intermediate effects (observable behavioural, institutional and societal changes that take place over 3 to 10 years) of an intervention's output.	Broader and longer term effects (10 years or more) produced by an intervention (directly or indirectly, intentionally or unintentionally). Often captured by national sector or subsector statistics.
Terms used	Input indicators	Process milestone indicators Process indicators	Output indicators	Results indicators Outcome indicators	Impact indicators Goal indicators
Examples for REDD+	Resources spent Share of budget devoted to environment Person days provided as technical assistance	Date by which a national REDD+ action plan is completed. Free prior informed consent (FPIC) compliant consultations conducted. Roadblocks encountered to policy change or implementation	Policy adopted and enforced. Number of staff trained and deployed. Number of loggers that adopted reduced impact logging practices.	Quantified reductions in deforestation. Increased proportion of restored native forest cover.	Quantified changes in carbon emissions.

Sources: Binnendijk (2001), OECD (2002), Daviet (2009), European Union (2010), OECD (2010), Managing for Development Results (2011)

Box 13.1 Performance indicators in development aid

Input-based indicators, including process indicators, have not proved very effective for measuring performance. They may be disconnected from the end result and risk creating perverse incentives (for example where 'expenditure' or 'numbers of meetings' are used as indicators of performance). Current best practice emphasises the use of indicators starting at the output level (Adam and Gunning 2002; Mumssen *et al*. 2010).

Quantifiable outcome indicators are often not available and are easier to obtain for the social sectors (such as health and education) than for institutional processes such as governance and public financial management (Koeberle *et al*. 2006). This is also a challenge for measuring the implementation of REDD+ policies and transformational reforms such as tenure reform and anticorruption measures.

The attribution of a result to a specific intervention becomes increasingly difficult and time intensive (and hence costly) the further one moves along the results chain. Performance assessment has – in practice – often been limited to output/outcome indicators. This has led to a focus on intermediate results, which do not guarantee achievement of the ultimate goal (Gunning 2006).

The further one moves along the results chain, the greater responsibility the provider (e.g. REDD+ country government) bears for performance. It is important to consider whether the provider is reasonably able to bear that responsibility and at what cost (Binnendijk 2001; Mumssen *et al*. 2010).

Because exogenous factors can hinder performance, governments may be reluctant to use outcome (let alone impact) targets as triggers for financing, because they can be held accountable for outcomes outside their control (e.g. extreme natural events and global financial crises). 'Risk indicators' (Binnendijk 2001) and partial insurance (Gunning 2006) have been recommended to complement the use of outcome indicators.

Independent collection of data for performance measurement is important. If the contract partners (governments) are involved in data collection there is a risk of moral hazard (Gunning 2006; Mumssen *et al*. 2010). This highlights the need for independent verification procedures for REDD+.

Finally, despite all best practice advice, performance measurement has a strong political dimension where good partnership is valued more highly than actual performance.

by a number of factors, which makes it difficult to establish causalities. This is even more difficult when measuring performance of 'soft' projects, such as improved governance (e.g. better justice, tenure reforms, etc.) and capacity building. Performance here is more difficult to measure than for 'hard' infrastructure projects such as water supply or transportation, which have more concretely measurable outputs and outcomes, and more easily established links between output, outcome and impact. It is an illusion to assume that one can develop a purely scientific or technical performance measurement system for all aspects of success.

Finally, the information needed for performance measurement is not always readily available or may be politically contested and unreliable. Information must be collected systematically as an add-on activity with additional costs, which tend to increase as one moves towards the impact end of the results chain.

13.4 Options for measuring REDD+ performance

What do these complexities of performance measurement mean for REDD+? Globally, there are few agreed indicators of REDD+ performance, except that they should be country driven and that ultimately, in phase 3, they should measure changes in GHG emissions and removals. The Meridian Options Assessment Report (OAR) suggests that performance indicators could be developed and approved as part of national REDD+ implementation plans (Meridian Institute 2009). Similarly, readiness preparation proposals (R-PP) submitted to the Forest Carbon Partnership Facility (FCPF) are required to outline how the REDD+ partner country will develop (interim) performance measures. This suggests that REDD+ performance indicators can vary across countries, depending on national circumstances, stakeholder views and REDD+ strategy objectives. Experiences in Guyana, the Democratic Republic of Congo (DRC) and Indonesia bear this out (Table 13.2).

Performance measurement is important for both accountability and for promoting effective REDD+ implementation. Performance indicators need to fulfil two different purposes, which must be considered in their selection: i) to monitor and measure the effects of projects and policies to see what is, or is not, working, in order to design better projects and policies; and ii) to evaluate results as a basis for financial rewards and progress to further phases. This is analogous to the reference level discussion (Chapter 16), where a business as usual scenario is used to measure impact, and to set a crediting baseline for defining payment levels.

The first purpose of performance indicators focuses on measures to improve project design. This requires an *implementation metric* that assesses

progress in, and effects of, planning, piloting and implementing a national REDD+ architecture (in phases 1 and 2). In the case of Guyana (Table 13.2), indicators in this category are termed 'enabling indicators' to reflect the preparatory character of the project or policy interventions. Examples of these enabling indicators include 'MRV system in place' or 'financial mechanism established'.

The second purpose of REDD+ performance indicators is to evaluate results in order to assess payment levels. This requires a *performance metric*, as well as an agreed benchmark (or crediting baseline). In phase 3, performance metrics may be outcome indicators (changes in gross deforestation rate) or impact indicators (changes in carbon emissions). In phase 2, when the focus is on implementing policies and measures, 'interim' performance indicators can be used. In the Norway–Indonesia Partnership, for example, payment is based on indicators such as "existing MRV activities identified and initial assessment on data gaps for the purpose of MRV completed" (Table 13.2). These 'interim' performance indicators will be replaced by outcome or impact indicators as soon as the MRV system matures and the country moves into phase 3.

Outcome indicators (deforestation rates) are sometimes distinguished from impact indicators (carbon emissions), the former being called 'interim' performance indicators. However, outcome indicators are sufficient as a basis for making payments, in combination with IPCC standard emission factors. Deforestation rates are therefore not really applicable as 'interim' performance indicators for phase 2 (e.g. the Guyana–Norway Partnership in Table 13.2), although they are often used.

Figure 13.1 shows types of performance indicators which are relevant to the three REDD+ phases. In phase 1, where the focus is on readiness (and most countries involved in national REDD+ processes are in this phase), performance measures are mainly based on input measures (e.g. consultations conducted) and some output measures (e.g. REDD+ national action plan approved).

The definition of performance indicators is critical in phase 2, where the focus is on implementing policy measures to establish an appropriate national REDD+ architecture. In this phase, the indicators need to play a dual function: i) to measure improvements in the national REDD+ architecture to support progress towards phase 3, and ii) to evaluate performance, primarily using output measures, as a basis for payments.

By phase 3, the national REDD+ architecture should be in place and REDD+ performance can be measured with outcome or impact indicators. Brazil is currently one of the few countries with the capacity for phase 3

Table 13.2 Examples of performance indicators in national REDD+ initiatives

Guyana Sources: Donovan et al. (2010), Guyana–Norway Joint Concept Note (2011)	Democratic Republic of Congo Source: Government of DRC (2010)	Indonesia Source: Indonesia–Norway Joint Concept Note (2010)
Enabling indicators 1. Strategic framework in place 2. Continuous multistakeholder consultation process established 3. Governance strengthened 4. Financial mechanism in place 5. System to monitor, report and verify (MRV) in place 6. Rights of indigenous people and other local forest communities protected.	1. A national REDD+ strategy with a time horizon of 2030 is developed, constructed in a participatory manner comprising: An ambitious and high quality national REDD+ strategy that represents a consensus between different stakeholders The strategy is based on a decision tool (reference scenario) and robust strategic social and environmental evaluation (SESA). A practical, multisectoral and budgeted investment plan for REDD+. 2. An interim institutional framework for REDD+ implementation is ready by 2013, including: A functional register of carbon projects and initiatives An interim national fund/mechanism for carbon finance management Procedures for environmental and social assessment.	1. Preparation for the establishment of a National REDD+ Agency reporting directly to the President: Presidential decree creating a REDD+ Task Force [with specified mandate] [...] 2. Groundwork is complete for a 2-year moratorium on forests and peatland concessions: A moratorium is effective from 1 January 2011. [...] 3. Initial design is complete for an independent MRV institution. Existing MRV activities identified and initial assessment of data gaps for MRV completed [...] 4. Interim financing instrument established [...]

Interim performance indicators	3. A comprehensive MRV system for REDD+ is operational including:	5. National REDD+ strategy developed through credible, transparent, inclusive and institutionalised multistakeholder process
Deforestation indicators: Annual gross deforestation […]	An operational MRV system for GHG emissions (deforestation/ degradation) managed at the country level	[...]
Degradation indicators: Loss of intact forest landscapes Forest management (i.e. selective logging) activities in natural or seminatural forests – all areas to be rigorously monitored and activities documented	MRV system for social, environmental, governance and economic aspects	6. First pilot province selected […]
Area within 500m of new infrastructure to be counted as 50% annual carbon loss through forest degradation	The dual MRV system is accepted by REDD+ stakeholders.	7. Focal points in the GoI and GoN appointed […]
Areas and processes of illegal logging to be monitored and documented as practicable Area of forest burnt each year to decrease compared to current amount […]		8. Independent review group identified […]
Indicators of increased carbon removals: Not monitored in interim period.		9. Communications campaign designed to make REDD+ activities transparent, inclusive and credible […]

The brackets '[…]' indicate that only a subset of performance measures is shown here.

	Phase 1 Readiness	Phase 2 Policy measures	Phase 3 Results-based action
Implementation metrics	***Input indicators*** • Readiness funds disbursed • Consultations done		
	Output indicators • Pilot projects • R-PP approved		
Performance metrics		***Output indicators*** • Strategies, policies and laws adopted • Institutions (MRV etc.) in place	***Outcome indicators*** • Gross deforestation • Increased share of restored native forest cover
			Impact indicators • Quantified changes in carbon emissions

Input	Output	Outcome	Impact

Results chain

Figure 13.1   Options for performance indicators across REDD+ phases

actions. Although technically the final impact of REDD+ is a reduction in climate change, this will require a long-term trend of reduced emissions. For operational reasons we therefore argue that reduced emissions offer a valid impact indicator for REDD+.

REDD+ performance measurement will also need to deal with specific challenges. First, appropriate indicators for governance related policy change in phase 2 must be defined. Experience from the aid sector suggests that it is more difficult to measure improvements in governance (soft projects) than in infrastructure investment (hard projects). REDD+ is, in a sense, a combination of the two types: the ultimate achievement – reduced deforestation and degradation with resulting reduction in emissions – is 'concrete', but in order to reach this stage it is first necessary to make progress in 'softer' aspects of performance.

Second, REDD+ performance measurement inevitably raises political issues: most notably the questions 'By what standards is performance to be assessed?' and 'Who does the assessment?' As the Guyana case shows (Box 13.2), it is not easy to achieve agreement on the appropriate performance indicators, and the interpretation of standards for evaluation can differ substantially across stakeholders. Any independent assessor brings some level of subjective bias and it is difficult (and costly) to control for that. Even in phase 3, where

clear technical standards are being established for reduced forest emissions and enhanced removals (e.g. the Verified Carbon Standard), there remains a strong political dimension, as exemplified in the setting of reference levels (Chapter 16). Evaluations of REDD+ performance need to be realistic about this.

One solution might be to define qualitative aims and link them to more concrete, scheduled actions. Aims might include areas such as transparency, participation and rights. The actions would focus on implementation to secure the aims: specific plans, systems and laws to be prepared, passed and implemented. Rather than, say, 'laws enacted' a better performance indicator would be 'laws enacted and put into practice'. Performance becomes a set of conditions to be met, with the performance indicators spelled out as clearly as possible upfront, to minimise room for varying interpretations.

Moreover, for the purpose of REDD+, it may well be useful to include expert judgment in the overall assessment. Indicators serve as important tools for objective performance assessment, but they can also fall short in capturing actual performance (or underperformance). As Albert Einstein is said to have put it, "not everything that can be counted counts, and not everything that counts can be counted." To avoid oversimplifying performance measurement – with the risk of incorrect conclusions – the use of simplified performance measures should be preceded by a thorough analysis of their likely effect on stakeholders' behaviour. Valuable lessons could be learned from the independent verification of REDD+ performance in Guyana (Box 13.2).

Finally, the growing body of experience may lead to an international consensus on standards for REDD+ performance measurement, with room for expert reviews. A standardised assessment system, if properly implemented, could then be used to i) compare a country's REDD+ performance with a regional or international set of norms, and ii) assess countries' performances over time. This may reduce the risk of political hijacking of performance assessment, allow more targeted interventions, facilitate collaboration and coordination between donors, and enhance countries' ownership of reform. Such an effort would require the support of international organisations and governments, as well as relevant regional bodies, when designing and piloting the performance measurement framework. In addition to lessons from the aid sector, other UNFCCC processes, such as the discussions around 'programmatic CDM' (Climate Focus 2011), new market mechanisms (OECD 2012) or the expert reviews of Annex I countries' Greenhouse Gas Inventories (UNFCCC 2011b) could help inform the development of a more standardised REDD+ performance measurement framework.

Box 13.2 Performance measurement in the Guyana–Norway REDD+ Partnership

A Memorandum of Understanding (MoU) between Guyana and Norway was signed on 9 November 2009 to formalise cooperation on issues related to climate change, especially those concerning REDD+ (Guyana–Norway Joint Concept Note 2011).

A trust fund, the Guyana REDD+ Investment Fund (GRIF), was established as the financial mechanism for this cooperation. Norway made an initial contribution of approximately US$ 30 million, in the expectation that others would also contribute. The fund will receive up to US$ 250 million from Norway in performance-based payments for the period up until 2015, based on an independent verification of Guyana's deforestation and forest degradation rates and progress on REDD+ enabling activities. The World Bank was appointed to act as trustee and is responsible for providing financial intermediary services to the GRIF (Government of Norway 2010).

A multistakeholder Steering Committee (SC) serves as the oversight and decision making body for disbursements of GRIF funds. It is composed of the Governments of Guyana and Norway, World Bank (Trustee), United Nations Development Programme (UNDP) and Inter-American Development Bank (IDB) as 'Partner Entities', and Observers (NGOs from Norway and Guyana) (Government of Norway 2010).

Projects that contribute to Guyana's Low Carbon Development Strategy (LCDS) are eligible to receive payments from the GRIF. These payments are based on performance in terms of reduced emissions. Project proposals include the controversial Amaila Falls Hydro project, but as of January 2012, only two concept notes had been approved: for institutional strengthening, and small enterprises and alternative livelihoods (Guyana REDD+ Investment Fund 2012).

Guyana's performance in terms of implementing REDD+ and the LCDS is measured, and independently verified, against two sets of indicators (Guyana–Norway Joint Concept Note 2011; see also Table 13.2):

- *Indicators of enabling activities*: a set of policies and safeguards to ensure that REDD+ contributes to the achievement of the goals set out in MoU between Guyana and Norway (2009) for an inclusive and transparent REDD+/LCDS process.
- *REDD+ performance indicators*: a set of forest-based GHG emissions indicators. These are 'interim' performance indicators that will gradually be substituted as a MRV system is established.

Guyana and Norway have agreed that annual independent assessments of progress against the enabling indicators will be conducted by one or

more neutral expert organisations to be jointly appointed. For the period to 30 September 2010, the Rainforest Alliance carried out the independent assessment (Donovan *et al*. 2010), following an international tender process in accordance with Norwegian procurement regulations.

Although described as 'indicators', it is apparent that those above (and in Table 13.2) are not indicators in the strict sense of the word. They are not specific, measurable, attainable, relevant and time bound (SMART) or comparable across countries. Furthermore, no criteria were specified for evaluating the evidence supplied by the Government (Lang 2011a).

For the first independent verification assessment, the Rainforest Alliance therefore defined additional and more tangible verification indicators (Donovan *et al*. 2010). This verification report was heavily criticised by civil society for being superficial and too lenient, thus not providing an accurate picture of progress on the ground (Global Witness *et al*. 2011; Lang 2011a). In an open letter to the Norwegian Minister of Environment, several members of civil society questioned the transfer of a second tranche of funds for 2010–2011 (Lang 2011a).

The Norwegian Government welcomed this criticism as a means of improvement (Lang 2011b) and released the second instalment of approximately US$ 38 million in July 2011. This increased the GRIF budget to US$ 68 million (Earle 2011).

13.5 Conclusions

REDD+ aims to achieve a defined impact – reduced emissions – and payments may be made based on performance towards achieving this goal. This implies that there must be assessments of the results of REDD+ programmes using performance indicators. Although it is generally desirable to measure performance towards the end of the results chain, in order to measure directly the achievement of a project or policy's aims, in the medium-term most payments will be for readiness and policy reforms, rather than proven emissions reductions.

The focus on impacts as the basis for performance assessment has led to a neglect of the intermediate results, at the readiness and policy reform stages (phases 1 and 2), which define the preconditions for achieving cost effective and equitable REDD+ outcomes. Good performance indicators for REDD+ are needed in each of the three phases and not just in phase 3, which has been the focus of past discussions. The immediate challenge relates to measuring performance in phases 1 and 2, and especially in the latter, where the focus

is on policy performance. Here, valuable lessons can be derived from the aid sector, notably concerning performance indicators of governance reforms and the need to complement these with expert judgments to yield a more complete picture of actual progress and achievements realised.

The growing body of experience and data on performance measurement may ultimately allow the establishment of internationally agreed standards for REDD+ performance assessment. A standardised assessment system, if properly implemented, would offer many benefits including a reduced risk of political hijacking. In addition to lessons from the aid sector, such an effort could be informed by other relevant UNFCCC processes such as the discussions on 'programmatic CDM', new market mechanisms and the expert reviews of Annex I countries' Greenhouse Gas Inventories.

Baselines and monitoring in local REDD+ projects

Manuel Estrada and Shijo Joseph

- Over the past few years, robust standards and methods have been developed to estimate emissions from deforestation at the project level.
- Because the first full-fledged REDD+ baseline and monitoring methodologies were adopted only recently, many pioneering projects might not comply with them, running the risk of losing opportunities in carbon markets.
- The next generation of projects should learn from this experience by identifying or developing suitable methodologies *before* investing in the development of their baselines and measurement, reporting and verification (MRV) systems.

14.1 Introduction

Accurate and transparent estimates of greenhouse gas (GHG) emissions from deforestation and forest degradation and carbon stock enhancements are critical for assessing the mitigation benefits of REDD+ projects. The precise estimation of such benefits is required to guarantee the integrity of climate change mitigation schemes where they are used to comply either with legally binding

emission reduction commitments or with voluntary goals. At the same time, the quality of such estimates affects the potential for a project to access funds (high-quality carbon credits are more likely to be attractive to a wider range of potential buyers and investors in the carbon market than are those estimated using less robust methods) as well as the amount of funds they attract (credits created following good methods and practices are usually sold at higher prices).[1]

This chapter identifies common challenges faced by project developers when establishing baselines by assessing the capacities and availability of data in ongoing projects against internationally recognised standards and methods. The results of this assessment provide some guidance to project developers, donors and the international REDD+ community on how these challenges might be overcome and the areas where investments should be prioritised to improve the estimation of credible baselines.

This analysis is based on information gathered through CIFOR´s Global Comparative Study on REDD+ (GCS) and represents the experience of 17 pioneering REDD+ projects from Brazil, Cameroon, Indonesia, Peru, Tanzania and Vietnam (see Appendix). As can be seen in Table 14.1, these projects focus on reducing emissions from deforestation and forest degradation. Some projects also include carbon stock enhancement activities, such as improved forest management and afforestation, reforestation or regeneration of forests.

The scope of the analysis is defined by two facts: first, the projects are at the initial stages of development (only two of the nine projects for which information was available have already engaged in the preparation of Project Descriptions[2]), which implies, among other things, that the information currently available on project monitoring plans and techniques does not allow their quality to be assessed. Second, most of the projects – 10 out of 17 – are seeking validation under the Verified Carbon Standard (VCS)[3] - currently the most commonly used standard in the voluntary forest carbon market. Accordingly, the analysis takes the requirements set by the VCS for REDD+ projects as the basis for evaluating the methods and data used to estimate the carbon benefits of the GCS projects.[4] Moreover, given the lack

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1   Although it must be noted that, increasingly, the value of such credits considers not only their 'methodological' robustness, but also the contribution of the projects from which they originate to the generation of wider environmental and social benefits.

2   The Project Description details a project's GHG emission reduction or removal activities and is required to register the project under the VCS.

3   Formerly Voluntary Carbon Standard (VCS).

4   It must be noted that all of the projects were assessed against the VCS guidance, even if the project developers have not yet decided which standard they will apply or if they intend to use another standard altogether (e.g. the Plan Vivo).

of data on monitoring systems, the assessment is limited to the estimation of project baselines.

This chapter introduces the methods available for estimating emissions in REDD+ (Section 14.2), as well as the general VCS requirements for REDD+ projects and the recognised project types (Section 14.3). It describes critical steps and the data that are needed to comply with provisions for constructing baselines according to VCS methodologies (Section 14.4). The chapter then evaluates the current status of GCS projects with regard to these requirements (Section 14.5). Finally, based on this assessment, Section 14.6 provides preliminary conclusions and recommendations.

14.2   Methods available for estimating the mitigation benefits of REDD+ projects

The creation of real, long-term, additional and measurable greenhouse gas emission reductions and enhancements in carbon stocks through REDD+ projects requires the establishment of credible baselines (the without-project scenario), precise monitoring and reporting of project results and robust standards and institutional frameworks to verify them impartially and consistently.

The scientific and methodological basis for estimating GHG emissions and removals due to activities in the agriculture, forest and other land uses (AFOLU) sector are provided by the '2006 Guidelines for National GHG Inventories' (IPCC 2006) and the '2003 Good Practice Guidelines for Land Use, Land Use Change and Forestry' (GPG-LULUCF), produced by the Intergovernmental Panel on Climate Change (IPCC 2003). The IPCC Guidelines are intended to be used at the national level, but may be adapted, based on guidance provided by the IPCC GPG-LULUCF, and applied at the project level. A more comprehensive overview of the IPCC Guidelines is provided in Chapter 15 of this volume.

The IPCC Guidelines set the foundation for the development of a number of robust standards that establish essential requirements for the quantification and generation of GHG emission reductions and removals and for the creation of their associated carbon credits. These include the VCS and the American Carbon Registry (ACR), which are considered to represent the best practices in the voluntary carbon market.

In practice, the standards are applied through baseline and monitoring methodologies, which set out detailed procedures and equations for quantifying the mitigation benefits of a project, including methods to determine project boundaries, assess additionality (i.e. whether the initiative only took place

Table 14.1 Overview of projects collaborating with GCS

Country	Principal project developer and site	Selected standard	Main pressures on forests	Activities	Likely VCS project types
Brazil	*Instituto Centro de Vida* (ICV), Mato Grosso.	VCS	Small to large-scale cattle ranching; illegal timber harvest	REDD + IFM + O	AUDD
	Instituto de Pesquisa Ambiental da Amazônia (IPAM), State of Para	N.A.	Cattle ranching and beef production; small-scale traditional agriculture; illegal timber harvest	REDD +IFM+ARR	AUDD
	Biofílica Investimentos Ambientais and Fundação Orsa, Amapá	N.A.	Small-scale agriculture; illegal logging; infrastructure development; government-approved logging	N.A.	AUDD APD
	The Nature Conservancy, São Felix do Xingu	N.A.	Ranching; illegal logging	REDD + ARR + IFM	N.A.
	Fundação Amazonas Sustentável (FAS), *Bolsa Floresta*	VCS	Illegal logging; infrastructure development; mining commercial plantations; small-scale agriculture	REDD	AUDD APD
Peru	*Bosques Amazonicos S.A.C.* (BAM), Madre de Dios	N.A.	Cattle ranching and beef production; mining; infrastructure development; small-scale subsistence agriculture	N.A.	
	Conservation International (CI), San Martin	N.A.	Shifting cultivation; illegal logging; infrastructure development; cattle ranching and beef production; small-scale agriculture	N.A.	AUDD
Cameroon	*Centre pour l'Environnement et le Développement* (CED), South and East regions	Plan Vivo	Small-scale traditional agriculture/frontier agriculture; illegal timber harvest; subsistence fuelwood/charcoal collection	REDD + ARR	AUDD
	GFA-Envest, Southwest Province	N.A.	Oil palm and other commercial plantations; small-scale traditional agriculture/frontier agriculture; illegal timber harvest; subsistence fuelwood/charcoal collection	REDD + IFM	N.A.

Country	Organization/Project	Standard	Drivers	Activities	
Tanzania	Tanzania Traditional Energy Development and Environmental Organization (TaTEDO), Shinyanga	VCS	Small-scale traditional agriculture/frontier agriculture; illegal timber harvest; subsistence fuelwood/charcoal collection; overgrazing	REDD + IFM	N.A.
	Tanzania Forest Conservation Group (TFCG), Lindi	VCS	Mainly shifting agriculture; timber harvesting; building poles; (maybe production of charcoal); firewood	REDD + IFM	AUDD
	Tanzania Forest Conservation Group (TFCG), Kilosa.	VCS	Encroachment for small-scale/subsistence farming; shifting cultivation; timber harvesting; charcoal production; fire	REDD + IFM	
	Care International, Zanzibar	VCS	Timber harvesting; charcoal production; infrastructure development	REDD + O	
	Mpingo Conservation and Development Initiative (MCDI), Kilwa	VCS	Fire	IFM	
Indonesia	Fauna and Flora International Indonesia (FFI-Indonesia), West Kalimantan	VCS	Oil palm; small-scale subsistence farming; illegal logging	REDD+IFM+ARR	
	The Nature Conservancy (TNC), East Kalimantan	N.A.	Oil palm; timber harvesting; pulp plantations; mining	REDD + IFM	
Vietnam	Netherlands Development Organization (SNV) Cat Tien, Lam Dong District	VCS	Small-scale traditional agriculture; illegal timber harvesting	REDD + IFM	AUDD

Notes:
VCS: verified carbon standard REDD: reduced emissions from deforestation and forest degradation; AUDD: avoided unplanned deforestation and degradation; APD: avoided planned deforestation; IFM: improved forest management; ARR: afforestation, reforestation and revegetation; O: other.

due to the generation of carbon credits), determine the most plausible baseline scenario and quantify the GHG emissions that were reduced or removed due to project activities. Before being applied, the methodologies – elaborated by project proponents – must be validated by a third party against the requirements established by the standard. The validating party must be authorised by the entity in charge of the standard in order to audit the proposed methodologies. To date, there are five VCS-approved methodologies for REDD[5] projects (see Table 14.2). Each methodology is designed to match specific baseline and project scenarios and, once validated, the methodology becomes public[6] and can be applied to any project that complies with its applicability conditions. Project developers are free to use any methodology matching the characteristics of their projects or to develop a new methodology if none of the existing approaches is suitable.

14.3 General VCS requirements and REDD+ project types

The VCS requirements contain general rules for all REDD+ projects. They cover issues such as eligibility conditions for the project area, definition of project boundaries (geographic boundaries, crediting period and GHG emission sources and carbon pools), demonstration of additionality and the treatment of non-permanence risks (i.e. the risks that carbon removals are reversed after the credits have been created). In the context of the VCS, REDD+ activities are divided into two types: REDD+ projects, which relate to deforestation (legal and illegal, see below) and degradation (illegal) and improved forest management

Table 14.2 VCS approved methodologies for REDD* projects as of March 2012 (VCS 2012)

VM0004 – Methodology for Conservation Projects that Avoid Planned Land Use Conversion in Peat Swamp Forests, v1.0
VM0006 – Methodology for Carbon Accounting in Project Activities that Reduce Emissions from Mosaic Deforestation and Degradation, v1.0
VM0007 – REDD Methodology Modules (REDD-MF), v1.1
VM0009 – Methodology for Avoided Mosaic Deforestation of Tropical Forests, v1.1
VM0015 – Methodology for Avoided Unplanned Deforestation, v1.0

* It should be noted that in the VCS context, the '+' activities qualify as improved forest management and are not considered in the Table.

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5   We use REDD without the '+' when projects only deal with deforestation and forest degradation.

6   The developers of methodologies approved under the VCS Programme on or after 13 April 2010 are eligible to receive compensation. This compensation amounts to US $0.02 per verified carbon unit (VCU) issued to projects using the methodology or a revision of the methodology.

projects, which include initiatives addressing 'legal' degradation due to poor management, sustainable forest management and carbon stock enhancement. Two main requirements are that the project area for REDD projects shall meet an internationally accepted definition of forest, such as those based on UNFCCC host-country thresholds or FAO definitions (FAO 2006) and shall have qualified as forest for a minimum of 10 years before the project begins.

The general rules on REDD projects are complemented by provisions addressing a subset of these projects: i) avoiding planned deforestation (APD), i.e. projects that reduce net GHG emissions by stopping or reducing deforestation on forest lands that are legally authorised to be converted to non-forest lands; and ii) avoiding unplanned deforestation and/or degradation (AUDD), i.e. projects that reduce net GHG emissions by stopping the deforestation and/or degradation of forests that would have occurred as a result of socioeconomic forces promoting alternative uses of forest land. This distinction is necessary because the drivers, agents and dynamics of deforestation associated with each project type have different methodological implications, for example, with regard to the establishment of baselines and estimates of leakage. In deforestation projects, the area where deforestation is expected to occur is delimited by a government permit and the rate of deforestation is set by this permit or by the common practice observed in similar concessions. In unplanned deforestation projects, the determination of the area of expected deforestation depends on the decisions of a relatively large number of people over a region similar to the project area and the expected rate of deforestation derives from, for example, the historical evolution of drivers, agents and socioeconomic circumstances affecting the region, as well as from its geographical characteristics.

As can be seen in Table 14.1, most of the GCS projects that submitted information on the drivers of deforestation qualify mainly as AUDD; therefore the following assessment will focus exclusively on AUDD projects and methods.

14.4   Key VCS requirements for estimating REDD+ baselines

14.4.1 Provisions for setting baselines for REDD projects

The baseline for a REDD project is the scenario that reasonably represents the anthropogenic changes in carbon stocks in pools and emissions of GHGs that would occur *in the absence* of the project. Baselines are estimated *ex ante* and must be reassessed and revalidated every ten years in order to reflect changes in the project context that might affect the rate of deforestation. REDD baselines include two main elements: a land use and land cover change component

(the activity data) and the associated carbon stock change component (the emission factor).

Requirements for the land use/land cover component of the baseline scenario: For AUDD projects, the activity data component of the baseline scenario is based on historical trends observed in a reference region over at least the previous ten years;[7] these are used to make future projections about deforestation. Table 14.3 summarises some of the key data and tasks needed to estimate the land use and land cover change component of an AUDD project's baseline scenario under each of the VCS REDD+ methodologies that apply to AUDD. Table 14.4 presents remote sensing data requirements for the construction of baselines across the approved VCS AUDD methodologies.

Table 14.3 Key data and tasks needed to establish an AUDD project's baseline deforestation/degradation rate and/or location

Data / Task	VM0006	VM0007	VM0009	VM0015
GIS analysis to apply criteria demonstrating similarity of the reference to the project area	Required	Required unless using population driver approach	Required	Required
Rate modelling of deforestation (from historic forest cover change analysis)	Simple historic average or trend	Simple historic average or trend or population drive	Logistic model based on historic averages and covariates (drivers)	Simple historic average or trend or based on covariates
Spatial modelling of deforestation and GIS coverage (i.e. shape files) of spatial drivers (e.g. digital elevation models, road networks, etc.)	Required	Required if unplanned frontier deforestation or if < 25% of project boundary is within 120m of recent deforestation	None (not spatially explicit)	Required

Source: Adapted from Shoch *et al.* (2011)

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7   The reference region is the analytical domain from which information on historical deforestation is extracted and projected into the future to spatially locate the area that will be considered deforested in the baseline scenario.

Table 14.4 Remote sensing data requirements for historic (baseline) forest cover change analysis for AUDD methodologies

Data / Task	VM0006	VM0007	VM0009	VM0015
Remote sensing/ imagery resolution	≤ 30m	≤ 30m	≤ 30m	≤ 100m
Remote sensing/ imagery time series needs for reference area	Imagery from four time points from the period 0-15 years prior to project start	Imagery from three time points from the period 2-12 years prior to project start	Imagery from at least two time points prior to project start; at least 90% of the reference area must have coverage from at least two time points	Imagery from at least three time points from the period 10-15 years prior to project start, with one taken within two years of project start
Remote sensing/ imagery minimum classification accuracy (forest/ non-forest)	70% of sampled pixels (with uncertainty discounts)	90% of sampled pixels	Not pixel-based; quality control guidelines to minimise point interpretation error	90%
Remote sensing/ imagery minimum classification method	Review high resolution imagery or database of known classes at locations	Review high resolution imagery or ground truthing	N/A	Review high resolution imagery or ground truthing
Remote sensing/ imagery minimum cloud free	80%	90%	Unspecified -shifting sample point approach flexible in regions with significant and variable cloud cover	Unspecified

Source: Adapted from Shoch *et al*. (2011)

14.4.2 Requirements for the carbon stock component of the baseline

A baseline scenario should cover both significant carbon stock changes in all relevant pools and emissions by sources of the GHGs that would occur within the boundaries of the project area. According to the VCS AFOLU requirements, AUDD projects should always include the aboveground tree biomass carbon pool. The inclusion of other carbon pools is required only when there is the chance that project activities may significantly reduce the pool.

Most approved methodologies require that forest carbon stock estimates be based on a direct inventory of the project area or on measurements taken from forests that are representative of the project area. Some methodologies also allow the use of conservative estimates from the literature or IPCC defaults. For baseline (post-forest conversion) land uses, all VCS REDD methodologies permit the use of default carbon stock values from local studies or literature or, where these are not available, from direct sampling of proxy sites. The use of data from the literature or IPCC defaults will usually have different implications for uncertainty, thus some methodologies require the lower and upper ranges of the values to be used for forest and non-forest classes respectively. Where spatial modelling is not included in baseline construction, and thus emission factors are not matched to specific pixels on a map, methodologies generally employ an area-weighted average emission factor from a stratified sample or assume that the strata with the lowest average carbon stocks will be deforested first (Shoch *et al.* 2011). Table 14.5 summarises the methods used in each approved methodology to measure carbon stocks, as well as the frequency with which they should be reassessed.

14.5 Preliminary assessment of GCS projects

The general requirements introduced in section 14.3 and the tasks and data required by VCS methodologies presented in section 14.4.1 were compared to available GCS project data to identify data gaps and capacity needs. This comparison revealed that:

General requirements: the available data are not sufficient to determine whether the project areas were entirely covered by forest at the start of the projects or whether forest in these areas had been in place for at least ten years, as required by the VCS.

Project and reference area similarity: most GCS projects limit the scope of their monitoring to the project area, which implies that they do not consider

Table 14.5 Required sources of carbon stock estimates in baseline scenarios

Stock estimate	VM0006	VM0007	VM0009	VM0015
Project area forest carbon pools	Forest biomass inventory of each identified forest stratum with permanent sample plots	Forest biomass inventory with fixed area or variable radius sample plots (must take place within +/-5 years of the project start date)	Forest biomass inventory with fixed area plots (must take place in the first monitoring period, i.e. prior to first verification)	Forest biomass inventory with temporary or permanent plots or conservative default
Post conversion	Default factors from literature or measurements from temporary plots on representative areas	Default factors from local studies or literature or measurements from temporary plots on representative areas	Not needed if project area is semi-arid tropical forest. Otherwise requires soil carbon sampling from proxy farms in the reference area to parameterise the soil carbon loss model	Default factors from literature or measurements from temporary plots on representative areas

Source: Adapted from Shoch *et al.* (2011)

a reference region (or a leakage belt[8]), indicating non-compliance with VCS requirements. In spite of this, five out of the nine project developers that submitted information on this topic have already developed baseline scenarios, three are in the progress of developing scenarios and one has not yet started the process.

Modelling the rate of deforestation: nine out of 17 project developers have modelled the historical rate of deforestation in the project area and three more are in the process of doing so. Five project developers used a simple historic average or a linear projection to estimate the deforestation rate, four used GIS-based modelling with covariates of deforestation agents and one relied on the opinion of experts. Two projects did not specify the approach they used to estimate the historical rate of deforestation. The project that is

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8   The 'leakage belt' is the area outside project boundaries where any deforestation above the baseline projection will be considered leakage.

relying simply on expert knowledge could face problems in complying with VCS requirements.

Spatial modelling to project the location of deforestation: only three of the 17 projects have used spatial models to project the location of future deforestation, which is in line with the VCS requirements. The other 14 projects relied mostly on expert knowledge or on basin-wide (or national scale) modelled outputs.

Remote sensing imagery time series for the reference region: as previously noted, most projects do not consider a reference region when estimating their baselines, so it is not clear if the remote sensing images they possess would cover such a region. The available information indicates that about ten of the 17 projects have sufficient data for estimating the historical rate of deforestation over a period of ten years and 13 of them have remote sensing images for more than three points in time during that period (Figure 14.1).

Remote sensing resolution: only seven of the 17 projects report having high resolution data (<10m), while all of them possess medium resolution data (10–60m). Consequently, it could be expected that at least seven projects would be able to meet the VCS requirement regarding remote sensing.

The analysis shows that 13 of the 17 GCS projects studied have started to measure aboveground biomass, thus potentially complying with VCS
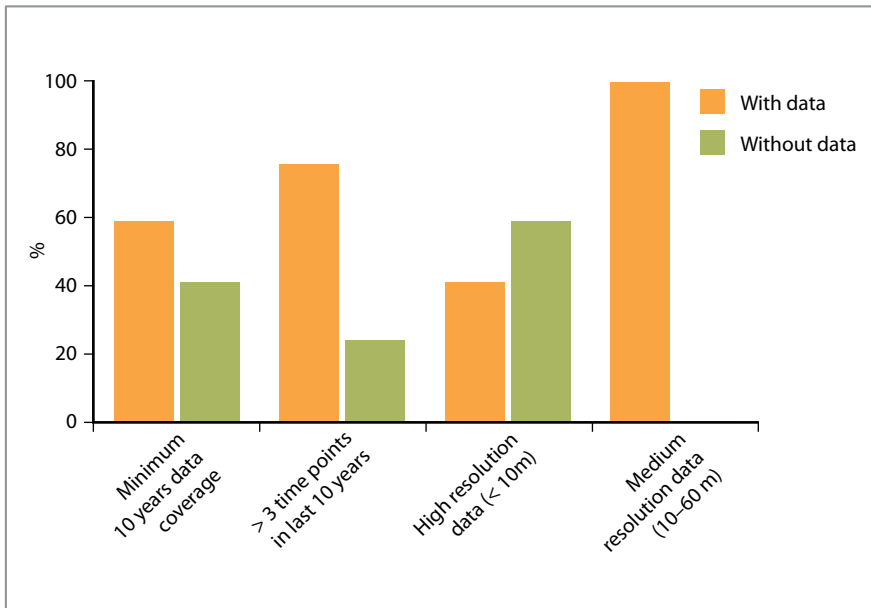
Figure 14.1 Historical remote sensing data available for GCS project sites

requirements. In many cases, the projects plan to use the root:shoot ratio as an alternative to measuring belowground biomass. The projects will use the ratio cited by the IPCC or obtained through local level studies. It is worth noting that nine of the 17 projects use site-specific allometric equations[9] to estimate forest carbon stocks, only three have carbon conversion coefficients and the rest of the project sites plan to use general allometric equations and default carbon conversion values available in the literature. The projects did not specify what methods and data they will use to estimate carbon stock changes from other land uses in their baseline scenarios.

With respect to carbon stock sampling methods, eight projects are using stratified random sampling and two are using simple random sampling. Only one project uses permanent sampling, despite the fact that permanent sampling is required by the VCS methodologies. In addition, three projects use a systematic sampling technique.

14.6 Conclusions and recommendations

The analysis described in this chapter shows that most of the projects participating in the GCS study might face problems in complying with some of the basic VCS requirements. This is mostly due to the methods used to predict future deforestation, the lack of data for constructing historical deforestation rates and the use of non-permanent carbon stock sampling plots.

It can be argued that most of the methods currently available for baseline development and MRV had not yet been developed when these pioneer projects started, thus project developers could not use them to guide their initial efforts (although it must be recognised that, in some cases, the projects were not primarily designed to generate tradable emission reduction credits or to use project-level methodologies). This situation may have led to an ineffective use of time and resources, since some of the project activities that had already been completed would have to be repeated to ensure VCS compliance. Moreover, in AUDD projects there could arise a cart before the horse situation, whereby a project site is selected before the true extent of future deforestation in the area has been modelled. This could result in the initial site being less at risk than previously thought, which could have financial and impact implications for project developers.

It must be kept in mind that the experiences described in this chapter relate to some the first REDD+ projects in the world, thus the challenges they face are likely to more daunting than the problems that will be faced by projects in

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9   Allometric equations express the quantitative relationship between the dimensions of a tree and the biomass. They are used to estimate the biomass of trees based on easy measures, such as tree height or diameter at breast height (DBH).

future, especially considering the trend to move from project-level baselines and MRV systems to subnational and national baselines. Nevertheless, some recommendations may serve to facilitate the development of methodologically robust projects (under the VCS or any other scheme) and to guide REDD+ policy and funding decisions, particularly for AUDD projects.

- It is advisable to apply the best MRV practices and standards available, i.e. those based on IPCC guidance
- Before developing project baselines and designing monitoring plans, project developers should seek a suitable methodology to guide their MRV planning and technology and data-related investments; where no suitable methodologies are available, relevant elements of existing methodologies may be used as a basis for constructing new ones
- Baseline modelling should be used to determine the location of the project area in order to ensure that project activities will focus on deforestation hot spots and can ensure additionality.

Chapter 15

Emissions factors
Converting land use change to CO_2 estimates

Louis V. Verchot, Kamalakumari Anitha, Erika Romijn, Martin Herold
and Kristell Hergoualc'h

- The lack of country and region specific data poses a serious limitation
  to converting area estimates of deforestation and forest degradation to
  carbon stock change estimates for most tropical countries. Thus we cannot
  make accurate and precise estimates of emissions and removals in national
  REDD+ programmes and REDD+ demonstration activities.
- Progress on building the institutional capacity of countries to conduct
  forest inventories and other measurements for improving greenhouse gas
  inventories in forestry and other land use sectors has been slow in most
  non-Annex I countries.
- The above constraints can be overcome if coordinated, targeted investments
  are made and productive partnerships are developed between the technical
  services in REDD+ host countries, intergovernmental agencies and advanced
  research institutes in developed countries during the readiness phase.

15.1 Introduction

The ability to measure performance is a prerequisite for implementing
any results-based mechanism and, in the context of REDD+, accurately

measuring emissions reductions is part of this challenge (see Chapter 13). Many groups are working to develop measurement systems for supporting the implementation of REDD+ in countries lacking the technical capacities to accurately assess emissions from deforestation and degradation. Countries need to measure two types of parameters to assess emissions. 'Activity data' is the jargon used in monitoring, reporting and verification (MRV) circles to describe data on the magnitude of human activity resulting in emissions or removals. For REDD+, these data usually refer to the areas occupied by management systems, deforestation or degradation but they could also refer to other things, such as amounts of inputs, i.e. fertiliser. To estimate the carbon stock changes and other greenhouse gas emissions resulting from land use and land use changes, including those in forest areas with increasing biomass, countries require so-called 'emission/removal factors' (for simplicity, we will shorten this to emission factor [EF]). These factors represent the emissions or removals in all relevant carbon pools and of all relevant greenhouse gases (GHGs) per unit of activity. For example, if an average forest loses 200 tonnes of carbon per hectare when it is cut down and deforestation in a particular year is 2,000 hectares, a country could estimate its deforestation emissions by combining these two types of data. Subsequent land uses also have carbon stocks and GHG emissions (e.g. nitrous oxide from fertiliser or methane from livestock) and these must be taken into account when estimating the effects or the foregone effects of land use and land use change (for reference emissions, see Chapter 16).

A number of initiatives involve improving remote sensing technologies to detect deforestation, reforestation and forest degradation. Several efforts have focused on improving systems for national and international measurement and monitoring of deforestation and forest degradation (Achard *et al.* 2002; Bucki *et al.* 2012). These efforts involve improved methods for quantifying deforested areas, detecting areas that have been degraded and monitoring areas that have been replanted, etc. Yet most of these approaches stumble over the problem of converting area estimates into emissions or removals values because of the lack of reliable emissions factors for the wide variety of ecosystems. Studies suggest that as much as 60% of the uncertainty of emissions estimates is due to poor knowledge of carbon stocks in forests and other land use systems (Houghton *et al.* 2000; Baccini *et al.* 2012).

For several reasons, it is important to improve our knowledge of carbon stocks and GHG fluxes associated with land use and land use change as part of the readiness phase of REDD+. Improved knowledge can help to better target interventions and improve implementation efficiency. It will also improve benefit sharing schemes by ensuring that activities do not lead to false claims of emissions reductions and will help in properly attributing credit for real reductions.

The objective of this chapter is to look critically at constraints to MRV posed by the lack of emissions factors for important types of land use change and key carbon pools in tropical ecosystems. We will start with a brief overview of some important concepts underpinning the Intergovernmental Panel on Climate Change's (IPCC) greenhouse gas inventory methods and recommendations for good practices in this area. We will then look at the importance of emissions factors within this framework, examine the constraints in tropical ecosystems and some recent advances that are helping to reduce these constraints. Finally, we will discuss the roles of different stakeholders and analyse investment priorities for further reducing the challenges to MRV.

15.2 Introduction to the relationship between the IPCC, the UNFCCC and REDD+

The main efforts to develop methods for GHG inventories have been led by the National Greenhouse Gas Inventory Programme (NGGIP) of the IPCC, which issued a first set of guidelines for national GHG inventories in 1994. The guidelines were revised in 1996 (GL1996). They have provided a useful framework for the compilation of national estimates of emissions and removals in many sectors and still serve as the basis for national GHG inventories. However, there was a need for further guidance on how best to deal with uncertainties so that countries could produce inventories that were "accurate in the sense of being neither over nor underestimates so far as can be judged, and in which uncertainties are reduced as far as practicable" (IPCC 2000). This led to the development of two supplementary reports on good practice to assist countries in "…the development of inventories that are transparent, documented, consistent over time, complete, comparable, assessed for uncertainties, subject to quality control and assurance, efficient in the use of the resources available to inventory agencies and in which uncertainties are gradually reduced as better information becomes available" (IPCC 2000; 2003). 'Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories' (GPG2000) was published in 2000 and provided updated guidelines for compiling inventories in several sectors, including agriculture (IPCC 2000). 'Good Practice Guidance for Land Use, Land Use Change and Forestry' (GPG-LULUCF) was published in 2003 (IPCC 2003). The 'Good Practice' reports did not replace the IPCC Guidelines but provided additional guidance or revisions, which complemented and were consistent with the guidelines.

In 2006, the IPCC issued a revision of the GL1996 that built on the GPG2000 and GPG-LULUCF. The revised guidelines (GL2006) recommend using consistent inventory methods for agriculture, forestry and other land uses to allow for more comprehensive inventories of emissions from most land use categories.

In a decision adopted by COP 15 in Copenhagen in 2009 (UNFCCC 2009b), the UNFCCC requested that countries wishing to participate in the REDD+ mechanism "use the most recent Intergovernmental Panel on Climate Change guidance and guidelines, as adopted or encouraged by the Conference of the Parties, as appropriate, as a basis for estimating anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes." Thus, the GL1996 and the GPG-LULUCF provide the framework for current efforts in REDD+. However, decisions at COP17 in Durban in 2011 have set the UNFCCC on a path to adopt the 2006GL for use by 2015, so those guidelines can also be used.

The basic structure of the inventory procedures is organised around a simple equation:

Emission = A • EF

This equation formalises what was said in the introduction about the types of data needed to develop an estimate of emissions. *A* represents activity data in the equation. The IPCC provides three possible approaches to obtaining activity data, which can be adapted to the needs of a particular inventory situation (see Chapter 14; IPCC 2006). The *EF* in the equation represents emission factors. These factors are often based on a sample of measurement data that can be averaged to yield a representative rate of emissions for a given activity associated with land use change (e.g. conversion of forestland to grassland) or with land remaining in a land use category (e.g. rehabilitated forestland).

In most cases, inventories cover five carbon pools: aboveground biomass, belowground biomass, deadwood, litter and soil organic matter. The IPCC uses the concept of key categories to determine the level of rigour that needs to be applied to estimating both activity data and emissions factors (IPCC 2000). A key source/sink category is an activity and/or carbon pool that has a significant influence on the estimate of GHGs with respect to the absolute level trend, or uncertainty in emissions and removals. A key category receives priority treatment in GHG inventory. In the aggregate, non-key sources and sinks comprise less than 10% of the uncertainty of an inventory or less than 5% of the total emissions. Detailed methods need to be used for estimating emissions and removals for key categories. Key category analysis is required to determine the following:

- Which land use and management activities are significant
- Which land use or livestock subcategories are significant
- Which emissions or removals from various carbon pools are significant

- Which non-CO_2 gases and from which categories are significant
- Which approach (see the description of tiers below) is required for reporting.

IPCC also identifies three 'tiers' for reporting. Tiers represent the methodological complexity required to estimate the emissions and removals from a category, based on its influence on a country's total inventory, data availability and national circumstances. The IPCC recommends that inventory compilers apply either Tier 2 or 3 methods to key categories of land activities that account for major sources of uncertainty or emissions and use Tier 1 methods for non-key categories (Figure 15.1).

Tier 1 is the simplest approach and is applicable to non-key categories where country or region specific emissions factors are missing. The compilers of inventories should use specific activity data for a country or region but they can use global default values with unknown uncertainty for the emissions factors. Tier 1 methods allow compilers to produce a complete inventory and avoid investing in data collection for activity categories that account for only a small portion of the total emissions or removals or that account for only a small proportion of the uncertainty. The estimation of uncertainties by source category at Tier 1 is done using statistical error propagation equations.

Tier 2 methods follow a similar framework as Tier 1. Country or region specific activity data are used but emissions and removals are estimated using country or region specific emissions factors. Higher temporal and spatial resolution
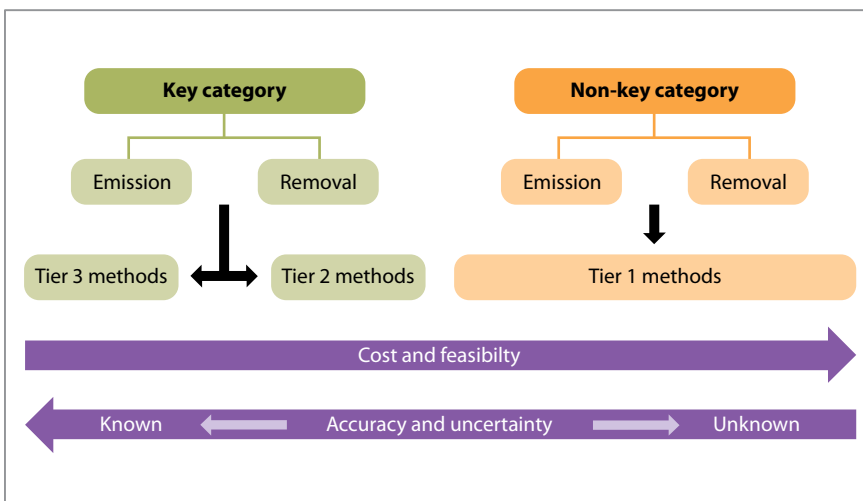
Figure 15.1 Relationships between key categories and the tier levels for inventory compilation and accuracy vs. cost tradeoffs (Adapted from Maniatis and Mollicone 2010)

and more disaggregated activity data are typically used in Tier 2 methods, in association with specific emissions factors for appropriate climatologic or geological subregions and specialised land use or livestock categories.

Tier 3 methods require spatially explicit and high resolution data on land cover dynamics. Tier 3 uses higher order methods, including models and inventory measurement systems, which are repeated over time. Land areas where a land use change occurs can usually be tracked over time, at least statistically. Most models include climate-related variation in aspects such as growth, senescence and mortality and thus allow for estimates with annual variability. Models should undergo quality checks and validation. Tier 3 produces high quality output in terms of precision and accuracy as the bias is reduced and the complexity of the system is well represented. The major constraints to implementing Tier 3 methods are the cost and effort involved in the production of quality datasets and site specific measurements.

15.3   IPCC methods for developing EFs

The IPCC has two approaches to developing emissions factors for the inventory equations. Carbon stock changes in any pool can be estimated using an approach called the Gain–Loss method, which can be applied to all carbon gains or losses (IPCC 2006). Gains are attributed either to growth or to transfers of carbon from another pool (e.g. the transfer of carbon from an aboveground biomass carbon pool to a dead organic matter pool due to harvest). Losses are attributed to transfers of carbon from one pool to another or to emissions due to decay, harvest, burning, etc. In this system, it is important to account for transfers, since any transfer from one pool to another is a loss from the donor pool and an equal gain to the receiving pool. Consequently, CO_2 removals are transfers from the atmosphere to a carbon pool (usually biomass); CO_2 emissions are transfers from a carbon pool to the atmosphere.

The second approach is called the Stock–Difference method, which is applied where carbon stocks in relevant pools are measured at two points in time to assess carbon stock changes. Generally, carbon stock changes are estimated on a per hectare basis and the value is then multiplied by the total area in each stratum (activity data) to obtain the total stock change estimate for the pool. On occasion, activity data may be in the form of country totals (e.g. m^3 of harvested wood), in which case the stock change estimates for the aboveground biomass pool are calculated directly from the activity data, after applying appropriate factors to convert to units of carbon mass. When using the Stock–Difference method for a specific land use category, it is important to ensure that the area of land in that category at times t_1 and t_2 is identical to avoid confounding stock change estimates with area changes. Table 15.1

presents examples of how Tier 1 default factors can be derived using IPCC default values for aboveground biomass.

The Gain–Loss method lends itself to ecological modelling approaches using coefficients of stocks and flows derived from empirical research. This approach will smooth out interannual variability to a greater extent than the Stock–Difference method. Both methods are valid and should provide comparable results over time but each is more appropriate for certain pools. For example, a Stock–Difference approach based on forest inventories is the most practical way to estimate changes in aboveground biomass carbon (Brown 2002; Qureshi *et al.* 2012). For other pools, for example, the soil and organic matter carbon pool in peat soils (see Box 15.1), the Gain–Loss Method is more practical. Figure 15.2 summarises the steps involved in generating emissions factors using both methods. To apply either approach, it is necessary to first develop a meaningful stratification of the landscape and determine which activities and pools require higher tier accounting and which can be addressed using Tier 1 methods. Data must then be collected and compiled in such a way that they provide a representative estimate of the ecosystem and management system in question.

15.4　The current state of EFs and opportunities for improvement

15.4.1　MRV capacity and EFs

As part of CIFOR's Global Comparative Study (GCS) on REDD+ (see Appendix), we carried out an analysis of MRV capacity in 99 tropical non-Annex I countries. The study scored each country on several types of capacity (e.g. remote sensing, forest inventory, carbon stock assessment) and national engagement (e.g. completeness of national reporting, engagement in UNFCCC REDD+ technical negotiations). The study then scored the REDD+ challenges (e.g. fire incidence, presence of peat soils, high carbon densities) and remote sensing challenges (e.g. high cloud cover, mountainous terrain) in the countries. Gaps were then calculated using the difference between the scores for challenges and capacities and the countries were grouped into categories based on the magnitudes of their scores.

The analysis showed that the majority of countries lack the capacity to implement a complete and accurate national monitoring system for measuring the performance of REDD+ implementation according to the IPCC guidelines, as will be required in Phase III when payments will be based on quantified emissions reductions (Romijn *et al.* 2012). Forty-nine countries had a very large capacity gap, while only four countries had a very small capacity gap. These latter countries already had good to very good

Box 15.1 Using the Gain–Loss method to improve the facility of estimating emissions factors for tropical peatlands

Indonesia is one of the greatest emitters of GHGs in the world, with about 80% of national emissions coming from land use and land use change. In insular Southeast Asia, deforestation rates in peat swamp forests are twice as high as in any other forest type (Miettinen *et al.* 2011). For this reason, quantifying GHG emissions from land use change in peatlands is critical. A major concern is the estimation of carbon loss from the peat. Recent estimates suggest that carbon loss associated with the conversion of peat swamp forest to oil palm plantation contributes more than 63% to total losses. Losses from the biomass amounted to 158 Mg C ha^{-1} whereas those from the peat reached 270 Mg C ha^{-1} over 25 years, which is the rotation period of an oil palm plantation (Hergoualc'h and Verchot 2011).

Peat loss may be assessed either by measuring changes in carbon stocks (the Stock–Difference approach) or changes in carbon flows (the Gain–Loss approach). An accurate assessment of soil carbon stock changes following land use change requires carbon stock measurements over the full depth of the peat profile, because changes occur at greater depths in drained soils; losses are not limited to the top 30 cm as they are in mineral soils. Indeed, the combined physical and chemical activities associated with drainage, peat subsidence and fires may make it hard to determine which soil layers should be compared before and after land use change. Nevertheless, it is clear that studying only the superficial layers of peat soils is not a valid approach to comparative studies of changes in peat carbon stocks associated with land use change. In addition, most peat formations in Southeast Asia are in the shape of a dome, hence the selection of representative and consistent locations within the dome before and after land use change is necessary to avoid erroneous emissions or removals estimates. Developing an adequate sampling scheme is especially challenging, given the lack of maps locating the position of peat domes in many landscapes, limited accessibility (pristine peatlands are often remote and difficult to reach) and authorisation constraints.

Given the problems cited above, a better approach for assessing peat carbon loss after land use change is the Gain–Loss method. This approach requires knowledge of the main carbon inputs (litterfall and root mortality) and the main outputs (soil heterotrophic respiration rates, loss associated with fires, methanogenesis, leaching, runoff and erosion). These flows are easier to estimate accurately and without bias than are changes in stocks. Soil respiration may be a useful indicator of peat carbon loss. However, the heterotrophic component must be estimated and losses have to be balanced against gains in order to evaluate how much carbon the peat is losing or sequestering. The balance between gains and losses before and after land use change must be compared in order to assess emissions and removals associated with land use change.
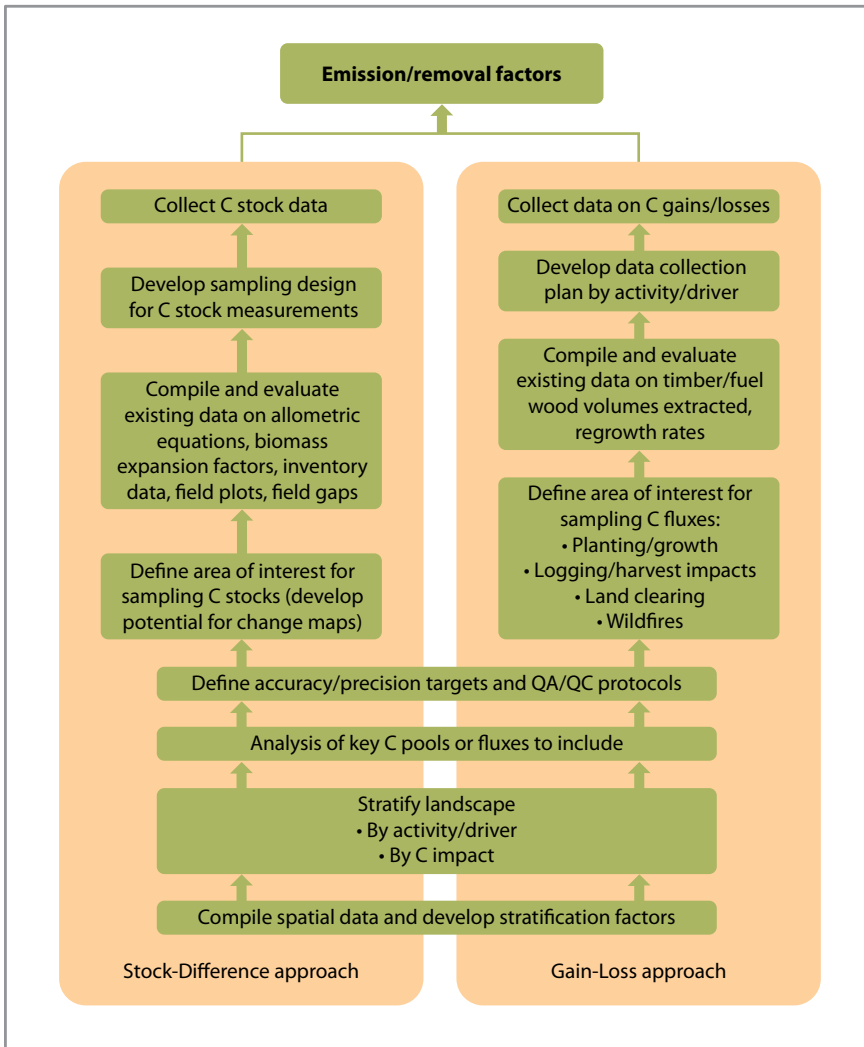
Figure 15.2 Steps involved in the estimation of emission factors (Adapted from Meridian Institute 2011a)

capacities for measuring forest area change and for performing a national forest inventory on growing stock and forest biomass. In the countries with very large capacity gaps, problems stemmed from limited engagement in the UNFCCC REDD+ process, lack of experience in the application of the IPCC guidelines and lack of access to appropriate data for Tier 2 inventories (Hardcastle *et al.* 2008; Herold 2009). The study documented where capacity is inadequate at technical, political and institutional levels to allow a complete and accurate estimation of forest area change and associated carbon stock changes and showed that the REDD+ mechanism is creating requirements that are beyond the experience of many national technical services.

Table 15.1 Examples of Tier 1 emissions factors for biomass (aboveground and belowground) associated with the conversion of forest to grassland in Africa, calculated by means of the Stock–Difference method and using default values for carbon pools (IPCC 2006)

	Forest					Grassland/pasture			
	Aboveground biomass *	Belowground biomass[†]	C density[‡]	Carbon stocks in biomass pool	Total above- and belowground biomass[§]	C density	Carbon stocks in biomass pool	Emissions factor for biomass[¶]
	Mg d.m. ha⁻¹	Mg d.m. ha⁻¹	Mg C Mg d.m.⁻¹	Mg ha⁻¹	Mg d.m. ha⁻¹	Mg C Mg d.m.⁻¹	Mg ha⁻¹	Mg ha⁻¹
Tropical rainforest	310	115	0.46	195	16	0.47	8	188
Tropical moist deciduous forest	260	52	0.46	144	16	0.47	8	136
Tropical dry forest	120	34	0.46	71	9	0.47	4	67
Tropical shrubland	70	28	0.46	45	9	0.47	4	41

Note: 1 Mg = 1 tonne, d.m. = dry matter.
* Values for African forests from Table 4.7 of GL2006
[†] Based on ratio of belowground biomass to aboveground biomass from Table 4.4 of GL2006
[‡] C densities from Table 4.3 of GL2006
[§] Values for grasslands from Table 6.4 of GL2006
[¶] Difference between the total C stocks in above- and belowground biomass of each system

This capacity gap was also obvious during two recent global Forest Resources Assessments (FRA) (FAO 2006; 2010) conducted by the Food and Agriculture Organization (FAO 2007; Mollicone *et al.* 2007). Marklund and Schoene (2006) analysed country submissions to the 2005 FRA and found the quality and reliability of data to be highly variable. Most countries lack good forest inventory data and rely on conversion factors and default values to estimate carbon stocks. Of the countries that do have inventory data, most have measurements at only one point in time. Of the 229 countries and territories that reported to the 2005 FRA, only 143 reported on carbon in the biomass pool and only 50 reported on carbon in litter and soil pools. Thirty-four countries provided no carbon stock data. There were small improvements in the 2010 FRA (see Box 15.2).

In another GCS study, CIFOR surveyed 17 REDD+ demonstration sites across Latin America (7), Africa (7) and Southeast Asia (3). Fifty-three percent of the projects were found to use site specific or country specific allometric equations for assessing aboveground biomass, as would be required for a Tier 2 approach Forty-seven percent of the projects use generalised equations for the whole tropics. The other carbon pools are usually less important in these projects, but can still represent a significant portion of net emissions. Not surprisingly, capacity to inventory these pools was even lower. Only 24% of the project teams were familiar with methods for estimating belowground biomass. In the case of dead wood carbon measurements, 41% of the teams were familiar with the methods. For litter and soil carbon pools, most of the respondents plan to use either the values set by the IPCC or to neglect these pools. Most of the projects that were surveyed did not have sufficient information to deal with carbon estimation in various pools. An exception was a project in Brazil, which used site specific allometric equations to estimate aboveground biomass coefficients (Higuchi *et al.* 1982; Silva 2007), belowground biomass and dead wood (Silva 2007). Litter was estimated using Tier 1 default values. The project will not inventory the soil carbon pool.

Finally, the development of MRV methods for REDD+ projects focuses mostly on remote sensing and ground inventories by professional foresters (GOFC-GOLD 2010). These are expensive and may be of limited effectiveness in following actual developments on the ground at the necessary scale to inform project implementation. There is growing experience with community-based MRV (see Box 15.3) to address the lack of involvement of the people living or depending on land where REDD+ schemes are being carried out. Practical approaches are being developed and tested for engaging local people effectively in monitoring (Skutsch 2010).

15.4.2 EFs for biomass carbon pools

To implement the Stock–Difference or the Gain–Loss methods, inventory compilers need data on forest and non-forest ecosystems to be able to produce

Box 15.2 Evidence of progress between FRA 2005 and FRA 2010

Between the 2005 and 2010 reporting periods for the FAO Forest Resources Assessment (FRA), some modest improvements can be seen in monitoring capacity. Figure 15.3 shows the changes in capacity to report on carbon in different pools. Most of the improvements occurred in African countries, where overall monitoring capacity was not well developed in 2005. Progress is usually associated with the fact that these countries reported on two carbon pools in 2010 (aboveground biomass and soil) instead of only one (aboveground biomass). However, they are still reporting at Tier 1 level, using IPCC default values. Remote sensing capacity and the use of time series data for monitoring changes in forest areas barely increased between 2005 and 2010. Forest inventory capacity also showed little improvement over this period. A decrease in monitoring capacity can be found in a few countries, in some cases due to an internal political situation.

The apparent lack of significant improvement in monitoring capacity between FRA 2005 and 2010 reporting suggests that efforts by REDD+ to build capacity have not yet had much impact on national reporting. The international community needs to commit greater human and financial resources to addressing capacity gaps in order to change this situation.

Difference 2005–2010

Increase

No change

Decrease
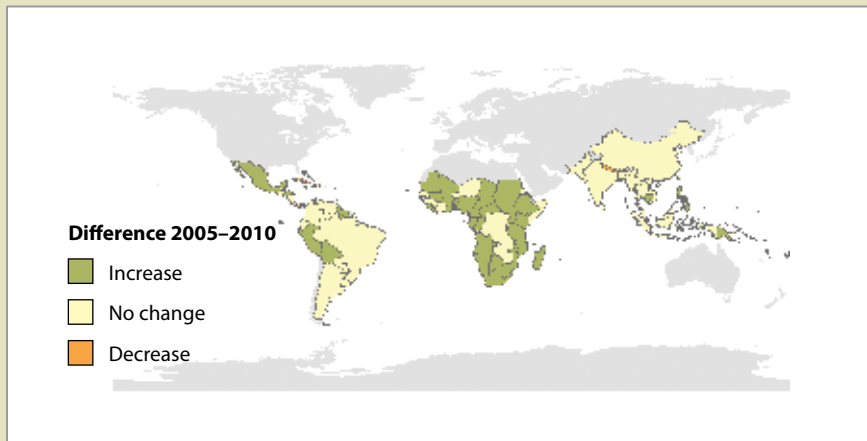
Figure 15.3 Change in capacity for 99 tropical non-Annex I countries based on the difference between FAO/FRA 2005 and 2010 reporting on the five different forest carbon pools

Source: Romijn *et al.* (2012)

Box 15.3 From global to local in REDD+ MRV: Linking community and government approaches

Finn Danielsen, Neil D. Burgess and Martin Enghoff

In recent years, a number of manuals have been developed to guide local data collection on forest biomass (Verplanke and Zahabu 2009; Subedi *et al.* 2010; An *et al.* 2011; UN-REDD Programme 2011b; Walker *et al.* 2011). Studies have shown that local people can reliably collect data on aboveground biomass and forest use and can meet the requirements at higher reporting tiers of the IPCC (Danielsen *et al.* 2011).

Community involvement in REDD+ MRV is particularly useful in forest areas that are under some form of community regime, where resource rights are recognised by the government and where there is local interest in managing the forest area. Involving communities helps link national REDD+ implementation to local decision making and forest management (Danielsen *et al.* 2010). Moreover, it reduces the risk that REDD+ will undermine local forest tenure. It also helps to promote the transparency and accountability of REDD+ initiatives and contributes to equitable governance and benefit sharing.

The question arises as to how to successfully integrate community monitoring of REDD+ effectiveness with the monitoring undertaken by national REDD+ implementing institutions. In the past, most community forest monitoring initiatives have been localised (Fry 2011). There are no examples of community schemes that have been scaled up to the national level.

To effectively link community and state monitoring for REDD+, community monitoring needs to be embedded in a scheme that feeds data into national MRV initiatives. The national REDD+ programme should also ensure that the communities are compensated for their labour. The involvement of communities in REDD+ MRV must be supported by national policies to ensure that sufficient funds and staff are set aside for the development of the community monitoring component in the national REDD+ programme.

In most countries, community-based organisations already have experience in community forest monitoring. These organisations, or other institutions representing communities, should be encouraged to take a central role in the design, development and piloting of the community monitoring component of the national REDD+ programme. It is advisable to start small, see what works and then expand as experiences accumulate (Herold and Skutsch 2011).

At the national level, there is a need for a minimum standard for community forest monitoring so that the same approach is used at all sites throughout

Box 15.3 continued

the country. The standard should specify the format of the raw data (measurements of tree girth, wood density) and auxiliary supporting information (location, date). Any additional requirements for data on forest resources status and forest governance developments should also be specified. The standard should describe how and when the data should be transmitted from the community-based organisations to the government. It should also prescribe how to collect, verify, check, process and analyse the data (Pratihast and Herold 2011). Quality checking requires comparing random spot checks with data sets from other sources. The national REDD+ programme should inform the community-based organisations and communities about signs of displacement of carbon emissions from forest loss and degradation in neighbouring forest areas.

It is important to allow government staff the time to provide feedback to the communities, in terms of questions about their data, and help them to solve any land management issues that may arise. There will be a need for regular community visits by national REDD+ staff. Where possible, it would be helpful to involve government staff with experience in participatory rural appraisal techniques and in holding dialogues with community members.

emissions factors for net changes associated with land use or land use change. In the case of agricultural and grassland ecosystems with little to no woody vegetation, estimating biomass is not technically difficult. Most agronomic studies carried out by agricultural universities and research institutions around the world measure total productivity, not just harvest. So developing default biomass values for most cropping systems will require a literature search, although this may be complicated in many non-Annex I countries by the fact that these data are often found in grey literature and may not be readily available internationally. Biomass and productivity are also measured for managed pasture systems and in many cases for indigenous rangelands. For the biomass carbon pools, the technical challenge is estimating biomass of woody vegetation.

One of the main limitations to improving emissions factors is the lack of appropriate biomass equations for converting plot scale measurements collected in a traditional forest inventory into biomass estimates and, subsequently, into carbon numbers (IPCC 2006). The most common biomass equations – allometric equations – use easily measured dimensions of trees, like diameter and height, to predict biomass. A review of 850 allometric equations in sub-Saharan African countries revealed that less than 1% of the tree species in the region have country-specific models and less than 2% of the equations account for root biomass (Henry *et al.* 2011). Additionally, seven tree species accounted

for 20% of the available equations (all equations are available in the open access database of Carboafrica: www.carboafrica.net). Thus, for many species, we must rely on equations that are not specific to the species being sampled and that have not been validated. The review also questioned the quality of the available equations, since most of them gave values that regularly fell outside expected ranges. The authors concluded that no countries in sub-Saharan Africa have enough nationally appropriate biomass models to use in assessing forest carbon stocks and their variation under the IPCC Tier 2 or Tier 3 approaches. For example, Cameroon has around 600 forest trees species, of which 20 species have specific allometric models. Generalised or averaged models must be used for the other species and their bias is unknown.

The most common approach to inventorying very diverse tropical forests is to use general equations, which are based on measurements of a variety of tree species from different ecosystems across the tropics. A simple geometrical argument suggests that the total aboveground biomass of a tree should be proportional to the product of the trunk basal area and the total height of the tree, which provides an estimation of a volume. This volume, multiplied by the specific gravity, allows an estimation of the mass per unit volume (Chave *et al.* 2005). Several pantropical equations exist and are widely used (Brown *et al.* 1989; Brown and Lugo 1992; Brown *et al.* 1997; Fearnside 1997; Chave *et al.* 2005). However, the predictive power of these models can only be determined if they are validated using tree biomass data obtained directly from destructive harvest experiments, which is rarely done (Crow 1978; Cunia 1987; Brown *et al.* 1989; Chave *et al.* 2001; Houghton *et al.* 2001). Ketterings *et al.* (2001) proposed a method of non-destructive sampling for 'tuning' the biomass equations to a site using the relationship between specific gravity, diameter or basal area and height. This approach holds promise but requires much more work before it can become a practical tool for inventory. Recently, Picard *et al.* (2012) proposed a Bayesian model averaging approach to combine different biomass models and improve allometric biomass estimates. This approach is appropriate when there are several models available for an area and one cannot *a priori* judge which model is the best to use.

We conclude the discussion of aboveground biomass with a final word on the allometric nature of these equations. In most ecosystems, it is relatively easy to measure the diameters of trees. Foresters use a standard measure of diameter at breast height, which is at 1.3 m above the surface of the soil. There are various recommendations for measuring irregular trees (e.g. forked trees, trees with buttresses, etc.) or trees on slopes, but these are beyond the scope of this chapter. In dense tropical forests, measuring the height of trees accurately is difficult. While height generally increases the accuracy of biomass equations, most equations in humid tropical forest situations forego this measurement and rely solely on diameter or diameter and wood density. In the survey of African biomass equations cited above, only 15% used height (Henry *et al.* 2011).

As noted above, belowground biomass is not well represented in allometric equations. Most inventory approaches use the Stock–Difference approach, wherein belowground biomass is estimated through so called root:shoot ratios, which use the relationship between belowground and aboveground biomass (IPCC 2003; 2006). The survey of a small number of REDD+ demonstration projects indicated that both allometric equations and root:shoot ratio data were insufficient for carbon estimation at all levels: local, regional and national. With few exceptions, most of the projects surveyed plan to use the generalised equations found in Cairns *et al.* (1997) and Mokany *et al.* (2006). Some projects plan to use IPCC Tier 1 default values.

Mokany *et al.* (2006) reviewed a large number of published root:shoot ratio values and suggested that quality is also an issue for this measure. Excavating root systems properly is difficult and needs to be undertaken by trained individuals; sometimes even scientists do not get it right. Out of 786 root:shoot values collected, 63% had to be discarded, either because the values were unverifiable or because the methods used to generate them were inadequate. Among those retained, only 20 observations were from tropical forest ecosystems. Other tropical systems were equally poorly sampled. Despite this serious limitation, the authors validated several relationships that were known from smaller scale ecological studies and found that root:shoot ratios varied with some predictability and can be useful for inventory purposes while more data are gathered. For example, the root:shoot ratio decreases as precipitation increases in forest and woodland ecosystems, although the relationship is subject to wide variation. In all ecosystems, the root:shoot ratio also decreases as shoot biomass increases. While this behaviour is expected for mathematical reasons, it can be used to set priorities for data collection.

15.4.3 EFs for other carbon pools and GHG fluxes

Approaches have been developed for inventorying the changes in other carbon pools. However, data for local, regional and inventories are largely lacking. Palace *et al.* (2012) reviewed a total of 49 studies on deadwood in tropical forests. Many of these studies used a percentage of total fallen deadwood to estimate standing deadwood. Standing and fallen deadwood were both measured in 21 studies, with a ratio of standing to total deadwood, ranging from 6% in a disturbed forest to 98% at a heavily disturbed site. In undisturbed forests, standing to fallen deadwood stocks ranged from 11% to 76%. The authors found that in dry tropical forests (2.5–118.6 Mg d.m. ha^{-1}), the percentage of fallen deadwood tended to be smaller than in moist tropical forests (1.0–178.8 Mg d.m. ha^{-1}). The proportion of deadwood to total aboveground mass can be surprisingly high: 18 to 25%, even in unmanaged forests. The GOFC-GOLD sourcebook (GOFC-GOLD 2008) indicates that deadwood can make up to about 7% of total carbon stock; understory vegetation and litter values are usually less than 3% of total carbon

stock. In our survey of REDD+ demonstration projects, some were found to use well defined methods for measuring carbon in deadwood, based on approaches developed by several authors (Heath and Chojnacky 1995; IPCC 2003; Pearson *et al.* 2005; Zanne *et al.* 2009). Two projects in Tanzania do not plan to measure deadwood because the local community uses it as fuelwood. Most projects do not intend to measure litter carbon.

Finally, fire related emissions are an important concern for which data and methods are still not well developed. For example, fire releases large amounts of CO_2, but is also a major source of non-CO_2 GHG emissions, such as CO, CH_4, N_2O, NO_x. For the IPCC equations, the mass of fuel that actually burns is the critical factor for estimating non-CO_2 emissions. Yet country and ecosystem specific factors for these emissions do not exist in most cases. The combustion of the individual fuel elements proceeds through a sequence of stages: ignition, flaming and glowing and pyrolysis (smouldering), glowing and pyrolysis, glowing and extinction. Each of these stages involves different chemical processes, which result in different emissions (Yokelson *et al.* 1997).

A comprehensive review of the emission factors for fires was conducted by Andreae and Merlet (2001). The authors concluded that there were adequate data for emissions factors from tropical savannas, but that there were not sufficient data for most other major ecosystems to generate robust emissions factors for the different gases. The effect of species composition in the fuel mix is also largely unstudied, despite potentially having an important impact on emissions. For example, emissions of NO_x and N_2O from fire can vary as a function of the N content of the fuel. Species with high N concentrations, like some legumes, would be expected to have higher emissions of these gases.

15.5 The way forward

The first conclusion that can be drawn from the above analysis is that while adequate information exists for Tier 1 GHG inventories, for most tropical systems there are inadequate data available for developing higher tier approaches. Fortunately, more data are available for estimating emissions from large carbon pools like aboveground biomass, but for the most part these data were collected for specific purposes and are not representative of an ecosystem over large scales. Thus, we cannot estimate their bias. Other pools, like belowground biomass or soil carbon, contribute significantly to total ecosystem carbon stocks, but are less well characterised. Whereas the stated goal for REDD+ is quantified emissions reductions in a performance-based scheme, we are far from being able to make better than order-of-magnitude estimates of emissions from sources and removals by sinks with adequate certainty in national REDD+ programmes. We know about precision because most syntheses calculate standard errors. We also know that the data used to

generate equations and emissions factors are not globally representative and thus we have no idea of the bias in these estimates.

The second conclusion is that progress over the past decade has been slow, both with respect to the generation of new data to support better GHG inventories and the capacity of countries to implement higher tier inventories in the forestry sector. There are several MRV capacity building efforts underway as part of REDD+ readiness activities, but their impact was not evident in the 2010 FRA. There are signs that the scientific community is responding to policy needs for better data to enable more accurate and precise inventories and a number of new and important syntheses have been published. Nevertheless, efforts at the moment are piecemeal and uncoordinated.

There have been several multilateral and bilateral partnerships between developed countries and MRV institutions in early action REDD+ countries. The UN-REDD Programme and its partners are working with a number of countries to establish transparent MRV systems. The Australian partnership in Indonesia is just one example of bilateral cooperation. These partnerships have largely concentrated on land use assessment and land use change detection; the issue of limitations due to emissions factors is only beginning to be discussed.

Most developing countries have forestry research institutes and university faculties of forestry. The Cancún agreements settled on a three-phase approach to REDD+ and, as part of the capacity building in Phases 1 and 2, trained personnel will need to be mobilised to contribute necessary data and knowledge to facilitate higher tier inventories. During Phase 1, inventories will have to be implemented with a hybrid of Tier 1 and Tier 2 approaches for activities that meet the key category criteria. Investments and coordinated efforts will be needed to overcome the constraints to GHG inventories of limited emissions factors. As more data are gathered, fewer Tier 1 estimates will have to be made in key categories. A great deal of progress can be made over the next ten years if coordinated, targeted investments are made in capacity building and mobilisation. In the meantime, partnerships between research institutes and university faculties working on forestry, agriculture and other land management systems in REDD+ host countries, intergovernmental agencies with technical capacities (e.g. GEO, UNEP, CGIAR) and advanced research institutes in developed countries should be established to enable coordination, complementary technical skills and capacity building. South–south cooperation and the building of regional technical networks should be fostered as well.

A stepwise framework for developing REDD+ reference levels

Martin Herold, Arild Angelsen, Louis V. Verchot, Arief Wijaya and John Herbert Ainembabazi

- Developing forest reference (emission) levels for REDD+ is an urgent and challenging task, given the lack of quality data in many countries, genuine uncertainties about future rates of deforestation and forest degradation and potential incentives for biasing the estimates.

- The availability and quality of data should determine the methods used to develop reference levels. Consideration of the drivers and activities causing deforestation and forest degradation will be important for adjusting reference levels to national circumstances.

- A stepwise approach to developing reference levels can reflect different country circumstances and capacities and will facilitate broad participation, early startup and the motivation for improvements over time, alongside efforts to enhance measurement and monitoring capacities.

16.1 Introduction

Forest reference level (RLs) and forest reference emission levels (RELs) are most commonly used as a business as usual (BAU) baseline to assess a

country's performance in implementing REDD+ (UNFCCC 2011c).[1] RLs are needed to establish a reference point or benchmark against which actual emissions (and removals) are compared. In fact, emission reductions cannot be defined without having first agreed on the RL, which is therefore critical for gauging the effectiveness or forest carbon impact of REDD+ policies and activities.

A second use of the RL is to serve a benchmark for payments in a results-based REDD+ mechanism. This financial incentives benchmark (FIB) determines the emission levels after which a country, subnational unit or project should start being paid for their results. The way the FIB is set has implications for REDD+ transfers, and ultimately for environmental integrity (carbon effectiveness), cost efficiency and equity (benefit sharing).

Despite its critical importance, political consensus on how to set reference levels is limited to general guidance (UNFCCC 2011c, see Box 16.1) and science does not provide clear proposals for how to proceed (Huettner *et al.* 2009; Obersteiner *et al.* 2009; Estrada 2011). Three challenges are prominent. First, there is a critical lack of data and the reliability of the few data that exist is often questionable. An essential step in estimating RLs is to get historical activity data on deforestation and forest degradation, but for most countries these are limited, due to the lack of forest monitoring capacities (Meridian Institute 2011b; Romijn *et al.* 2012).

Second, BAU scenarios are by nature forward looking. While predicting the future is always difficult, rates of deforestation and degradation show much greater annual variability than, for example, emissions from fossil fuels. There is genuine uncertainty that cannot be fully resolved by better data and models; factoring in uncertainty therefore becomes a key aspect of setting RLs.

Third, there can be incentives among actors to distort the estimates (Chapter 2). Donors, governments and project proponents, for example, may all have an interest in high BAU baselines, which will make the impact of any policy or project look more favourable. NGOs, for example, need to demonstrate success to ensure continued funding, while governments need to prove to voters or the international community that their policies have been effective. The sharp decline in Brazilian deforestation since 2004 is a case in point, with debate over whether it has been due to good policies or to falling commodity prices and the global economic crisis. Financial interests are even more

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1   The difference between reference level (RL) and reference emissions level (REL) is not always clear. The distinction is often made that REL refers to gross emissions from deforestation and forest degradation, while RL refers to deforestation and forest degradation, as well as other REDD+ activities on enhancement of carbon stocks, sustainable management of forests and forest conservation. In this chapter we use RL as a general term, which encompasses RELs; much of the discussion here focuses on emissions.

> **Box 16.1 UNFCCC COP17 guidance and its implications**
>
> UNFCCC (2011c) provides modalities for forest RLs, supported by an annex with 'Guidelines for submissions of information on forest RLs'. The RLs should be consistent with anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks in a country's greenhouse gas inventories and thus in accord with available historical data. When developing RLs, countries are invited to submit details about their national circumstances and, if the RLs are adjusted to take these into account, to include details as to how this was done. Furthermore, UNFCCC has agreed that a stepwise approach to national RLs may help countries to improve their benchmark over time and recommends that countries should periodically update their RLs to take into account new knowledge and new trends. Importantly, the UNFCCC decision acknowledges that subnational RLs may be elaborated as an interim measure, with an eventual transition to a national RL. The possibility of omitting non-significant carbon pools or specific REDD+ activities in the construction of RLs – as expressed in the UNFCCC decision – is of great importance because it allows countries to take a conservative approach to estimating forest carbon stock changes (Grassi *et al*. 2008).

pronounced in setting the financial incentive benchmark (FIB) in a results-based REDD+ mechanism: for any given level of emissions, the payment is directly related to the level of FIB. This situation calls for an institutional system with clear guidelines on how to develop RLs and a strong element of expert judgement and independent verification.

International guidance on the development of RLs is emerging, including that provided by the UNFCCC (2011c) (Box 16.1) and the VCS methods for REDD+ projects (Chapter 14). Yet, in the absence of more specific guidelines and in a context of the lack of good data and genuine uncertainty, countries must choose how to proceed with their RL development processes. This includes, for example, the exact historical reference period to use and which national circumstances to include in BAU baseline calculations.

This chapter will not pursue the discussion on international guidelines and modalities for setting RLs, but readers should refer to the UNFCCC decisions (Box 16.1) and the discussion in Meridian Institute (2011a; 2011b). Neither does the chapter much discuss RLs in REDD+ projects, an important issue that is thoroughly covered in Chapter 14. While maintaining a national focus, this chapter should also be relevant for RLs in projects and for the further development of international guidelines on RL setting.

One way to deal with the three challenges of data, uncertainty and interests is a *stepwise approach*, which is presented in this chapter. This approach aims

to better structure and deal with the variety of RL methods that exists, the variability in data and their quality, uncertainties and country circumstances. The framework should help stimulate broad country participation in estimating RLs, and provide a starting point, even with limited data, from which to improve RL setting as countries progress through the REDD+ implementation phases and build their capacities.

Section 16.2 of this chapter gives an overview of key concepts, including the distinction between the BAU baseline and the FIB. It further discusses the main methods for setting the BAU baseline and the considerations that are relevant when moving from BAU baselines to FIB. Section 16.3 presents the stepwise framework and elaborates each of the three steps, from simple historical extrapolations with limited data available, to more sophisticated predictions at disaggregated scales. Section 16.4 discusses the problem of uncertainty and different ways of handling it. The final section offers some concluding thoughts.

16.2   Concepts and methods

16.2.1   Two meanings of RLs

Two distinct meanings and different uses of RLs may be distinguished. First, the RL is used for the *BAU baseline*. This is used to measure the impact of REDD+ policies and actions and to define emission reductions, which are the difference between realised emissions and the RL. Second, the RL is used as a benchmark for estimating results-based incentives, e.g. direct payments to countries, subnational units or projects for emissions reductions. This has been referred to as the crediting baseline (Angelsen 2008a), compensation baseline (Meridian Institute 2011b) or the financial incentive benchmark (FIB) (Ecofys 2012). We use the third term in this chapter.

The distinction between the different meanings and roles for RLs is important since they answer different questions: i) what would the emissions be without REDD+; and ii) at what level of emissions reductions should a country, subnational unit or project start receiving payments? Yet the distinction between the BAU and the FIB is politically controversial because it raises the possibility that the FIB could be set lower than the BAU baseline, which could result in less than full payment for results. This touches on wider issues in the climate negotiations, such as the allocation of responsibilities and costs among countries. The BAU and FIB concepts are therefore *not* recognised in any UNFCCC decision; nevertheless, from an analytical viewpoint it is essential to make this distinction to clarify the analysis and discussion.

There is broad agreement that RLs should take into account historical data and be adjusted to national circumstances (UNFCCC 2009a: Decision 4/

CP.15). This makes good sense from an analytical perspective: historical deforestation and degradation is a good predictor for the near future, but rates of deforestation and degradation also change. The factors that can lead to higher or lower rates of deforestation and degradation, as compared to the historical ones, are often referred to as 'national circumstances'. This is a broad term, and interpreted in different ways by the Parties and recent attempts to specify these have not reached consensus.

Following the distinction between the BAU and the FIB, we find it useful to distinguish between national circumstances that are relevant for setting BAU baselines and those that are relevant to consider when setting the FIB. This is illustrated in Figure 16.1. The question to ask regarding whether national circumstances are relevant for a BAU baseline is: 'Does the inclusion of a particular national circumstance generate more accurate (less biased) and more precise (lower variation) BAU baseline predictions?' We return to this question in Section 16.3.6. The relevant national circumstances for a FIB are based on political considerations as to what is considered 'fair' and are discussed further in Section 16.2.3.

16.2.2 Methods for estimating BAU baselines

Three different methods for estimating future BAU deforestation and degradation have been proposed in the literature, e.g. by Gutman and Aguilar-Amuchastegui (2012).

1. **Strictly historical approach:** This approach uses only average annual rates of deforestation during the recent past (typically over 10 years) (Santilli *et al.* 2005). A prominent example of this approach is the RL used by the Amazon Fund in Brazil, which is incorporated in the agreement between
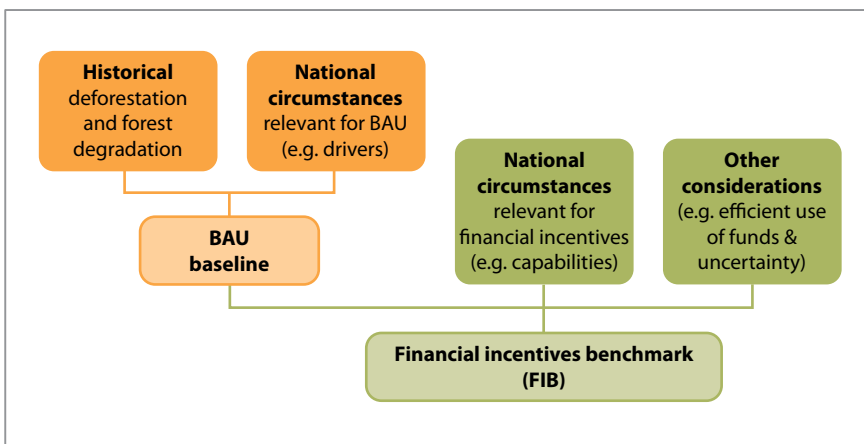
Figure 16.1 Key elements for setting reference levels

Brazil and Norway and uses average deforestation over the past 10 years, updated every 5 years.

2. **Adjusted historical approach**: Historical rates are the point of departure, but other factors that are considered important are included to improve predictions. Examples of such factors are the stage in the forest transition, i.e. the degree to which countries with high forest cover and low deforestation rates expect to see accelerating deforestation in a BAU scenario.

3. **Simulation models:** Future deforestation and resulting emissions can be predicted by simulation models, which come in many forms (Huettner *et al.* 2009). Such models may include historical rates of deforestation, but the basis is typically land rent and the demand and supply of new land for agriculture. The supply is determined by factors such as accessibility (e.g. roads) and agricultural potential. A much cited example is the cellular automata model by Soares-Filho *et al.* (2006) for the Brazilian Amazon.

Regression analysis can be used to test the importance of different potential drivers of deforestation and degradation when disaggregated national data on these activities and deforestation rates are available for different points in time. A recent study (Ecofys 2012) tested different multiple regression models to predict deforestation in three countries with historical data of good quality: Brazil, Indonesia and Vietnam (see Box 16.2). Further testing of these models as more data becomes available will – hopefully – yield more robust conclusions about what and how different national circumstances can be included in BAU baselines to improve prediction.

More complex modelling approaches can be suitable for RL development in countries that have high-quality data. These can be used to test different methods for RL setting, model deforestation drivers and explore the implications of different policy scenarios. Examples of such models include IIASA's GLOBIOM model and the OSIRIS modelling tool (Martinet *et al.* 2009). Modelling drivers can be particularly important when dealing with uncertainties. However, it should be noted that more complex and sophisticated modelling does not necessarily provide more accurate predictions of BAU emissions. When data are limited, extrapolation and complex modelling are often based on assumptions and can run the risk of multiplying errors and increasing uncertainties that could compromise the integrity of REDD+. Another uncertainty related to simulation models is their political acceptability as the basis for determining BAU baselines or FIBs, either within a future UNFCCC-based REDD+ regime or in bilateral agreements. Relatively simple adjustments of the historical emissions appear to be a more acceptable approach, as the Guyana–Norway agreement has illustrated.

16.2.3 From BAU to financial incentives

The reasons for setting the FIB differently from the BAU baseline have been discussed at length by the authors in Ecofys (2012) and only a summary is provided here. Three different considerations are relevant, see Figure 16.1.

First, there are circumstances particular to the country that may be relevant to the FIB. One possibility is to invoke the UNFCCC principle of 'common but differentiated responsibilities and respective capabilities' (CBDRRC) and use the FIBs to allocate varying degrees of payment among REDD+ countries. A key question concerns the specific criteria to use to differentiate between responsibilities and capabilities. This could, for example, be *per capita* income, where middle income countries have their FIBs adjusted downwards, whereas least developed countries receive relatively higher FIBs. While the specific interpretation of the CBDRRC principle is among the most controversial issues in climate negotiations (and goes well beyond REDD+), the post-Durban discussions have increasingly put this on the table.

Second, there are effectiveness and efficiency considerations that suggest that FIB should to be set below the BAU baseline. Consider the case where a donor country has a fixed sum of money to spend for REDD+ and makes a deal with a REDD+ country. As long as the REDD+ country has positive net benefits from the deal, the lower the FIB could be, the higher the carbon price and the greater the incentives for larger emission reductions (Angelsen 2008a; Meridian Institute 2009). Alternatively, for a given carbon price, the lower the FIB, the lower the costs for a carbon buyer and the money saved can be spent on REDD+ elsewhere.

Third, we suggest that the financial incentives benchmarks might be an adjusted BAU baseline to reflect uncertainty. Options for handling uncertainty are discussed in Section 16.4.

16.3 A stepwise approach

16.3.1 Key dimensions of the stepwise approach

The stepwise approach proposed by the UNFCCC (2011c), as is the case with many issues in REDD+ implementation, will evolve and consolidate over time (Box 16.3). As countries move through their REDD+ implementation phases, they have to develop national, or as an interim measure, subnational forest RLs. The understanding, reliability and validity of data for RLs are bound to improve through that phased process.

Box 16.2 Regression analysis to estimate deforestation drivers

One way to move beyond Step 1 is through the use of multiple regression analyses.[a] The method can be used to test the importance of historical deforestation and different national circumstances, including deforestation drivers. It requires that disaggregated national data (subnational level) on deforestation, forest cover and other relevant factors are available for at least two periods (i.e. covering three points in time). We undertook such an analysis in three tropical countries: Brazil, Indonesia and Vietnam.

Figure 16.2 shows the importance of different factors in predicting deforestation. Historical deforestation is a good predictor of future deforestation in all three countries, with the effect (elasticity) of deforestation being highest in Vietnam (0.57) followed by Brazil (0.51) and last by Indonesia (0.21). Elasticity refers to the percentage change in deforestation rate associated with a 1% increase in the variable in question. For example, in Figure 16.2, a 1% increase in the historical deforestation rate in a province in Vietnam gives a predicted future deforestation rate that is 0.57 % higher. The fact that the elasticity is less than one suggests that a simple extrapolation of historical rates can be misleading.

Elasticity estimates with 95% confidence interval

■ Brazil ■ Indonesia ■ Vietnam
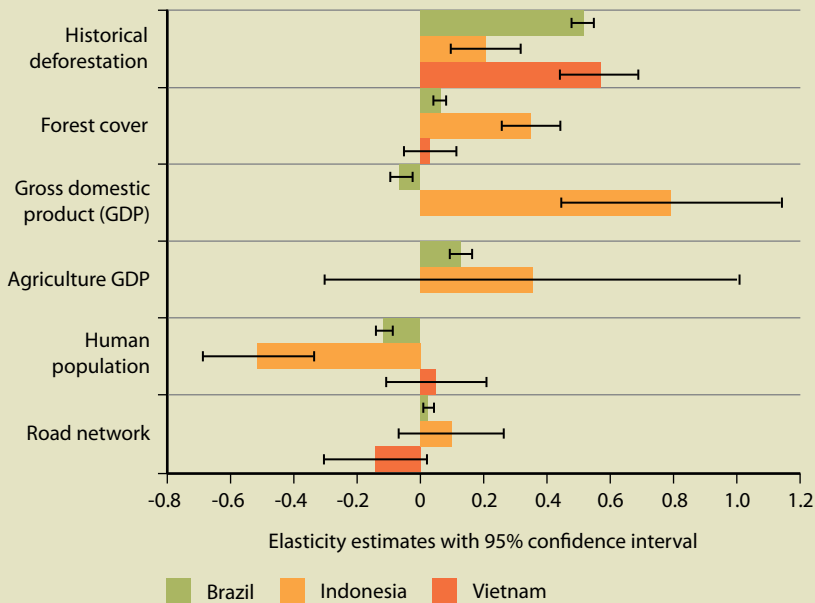
Figure 16.2 Predictors of deforestation in Brazil, Indonesia and Vietnam

Notes: Brazil and Vietnam regressions include a time trend variable not included in the graph. All variables are in logarithmic form. The black lines gives the 95% confidence interval of the coefficient estimate, i.e. if that line crosses the '0' on the horizontal axis, the regression coefficient is not significant.

Large forest areas contribute to higher rates of deforestation, although the effects are small: Indonesia (0.35), Brazil (0.06), and Vietnam (0.03). The forest area provides a direct test of forest transition hypothesis, which suggests that countries with large forest cover can be expected to have *accelerating* deforestation (Mather and Needle 1998; Mather *et al*. 1999). The small and insignificant effect observed in Vietnam is consistent with recent trends of net reforestation in the country (Meyfroidt and Lambin 2008). In contrast, Indonesia is experiencing higher deforestation rates and thus the higher elasticity is not surprising.

The analysis also incorporated other factors that are potentially important in setting RLs. In Indonesia, economic growth is associated with higher deforestation rates, another indication of many parts of the country being at an early stage in the forest transition (income level also provides a test of the forest transition hypothesis). In Brazil, high population growth is associated with lower deforestation rates. Surprisingly, roads have no significant effect on deforestation rates, beyond what is already captured in the impact on historical deforestation rates.

Regression analysis of this kind will not capture all of the drivers and variables that cause deforestation. Variables that show no variation within the country, although they may be important drivers of deforestation, cannot be included in this type of regression model because it is the variation within the country that produces the results. Also, new drivers or policies are hard to analyse, since these predictions are based on the historical relationship between variables.

Source: Ecofys (2012)

a Regression analysis is a statistical method that seeks to establish the quantitative relationship between one dependent variable (e.g. current deforestation rate) and a set of independent variables (e.g. historical deforestation rates, current forest cover and income per capita). Regression analysis estimates the conditional expectation in the form of a set of regression coefficients, e.g. how much current deforestation is expected to increase if income increases while other variables are kept constant. One possible model specification, used in this analysis, is the logarithmic model (log-log), which uses the natural logarithms of deforestation, forest area and other variables. This makes the interpretation of results easier as the coefficients of each variable can be interpreted as elasticities, which answer the question of how much deforestation changes in percent when the value of an independent variable (e.g. forest cover) increases by one percent.

Reflecting the variability in available data from which to estimate future trends and the lack of capacity in many countries (Herold 2009; Romijn *et al.* 2012), a stepwise approach provides a starting point for all country situations. The approach is conceptually similar to the use of different IPCC Good Practice Guidelines (GPGs) approaches for estimating activity data and tiers for carbon stock/emission factor data (see Box 16.3 and Chapter 15 for details) and reflects gradual improvements in several dimensions (Table 16.1).

Table 16.1 Dimensions of a stepwise approach to developing reference levels (see also Box 16.3)

	Step 1	Step 2	Step 3
Activity data/ area change	Possibly IPCC Approach 1 (national net change) but also 2 (national gross changes) or 3 (national gross changes spatially explicit)	IPCC Approaches 2 or 3 (to estimate gross changes)	IPCC Approach 3 (spatially explicit data required)
Emission factors/ carbon stocks	IPCC Tier 1 (defaults) but also 2 and 3 (national data) if available	Tier 2 or 3 (national data)	Tier 2 or Tier 3 (national data)
Data on drivers and factors of forest change	No driver data available or used	Drivers at national level known with quantitative data for key drivers	Quantitative spatial assessment of drivers/activities; spatial analysis of factors
Approaches as guidance for developing reference levels	Simple trend analysis/projection using national statistics, based on historical data	Country-appropriate methods for interpolation/ extrapolation using historical data and statistical approaches	Potential to use options such as spatially explicit modelling and other statistical methods for considering both drivers and other factors of forest cover change
Adjustments/ deviation from historical trend	Simple rules (in technical terms)	Assumptions and evidence for adjustments key drivers/activities	Analysis and modelling by drivers and activities
Scale	National or subnational	National or subnational	National (required in REDD+ Phase 3 for results-based payment)

Inclusion of REDD+ activities	May focus on only 1 or 2 activities with a need to consider emissions, i.e. deforestation and/or degradation	Aims to focus on all five REDD+ activities but emissions (deforestation and forest degradation) to be considered as minimum	Aims to focus on all five REDD+ activities but emissions (deforestation and forest degradation) to be considered as minimum
Omission of pools and gases	Focus on key category pools and gases with conservative omissions	Focus on key category pools and gases with conservative omissions	Aims to consider all pools and gases in context of full IPCC key category analysis
Uncertainty assessment	No robust uncertainty analysis possible; use of default uncertainties and/or conservative estimates	Modelling to accommodate uncertainties and testing using available data	Independent and quantitative uncertainty analysis possible, sensitivity analysis and verification using available data

Box 16.3 3 Phases, 3 Approaches, 3 Tiers, 3 Steps

'Phases', 'approaches', 'tiers' and 'steps'. Confused? Not after reading this box. These different terms all have quite specific meanings in the REDD+ and climate mitigation debates.

Phases of REDD+ implementation

REDD+ implementation is following a phased approach, suggested by Meridian (2009) and agreed at COP16 (UNFCCC 2010). The three phases are:

Phase 1 – the readiness phase: the initial phase focuses on the development of national strategies or action plans, policies and measures, capacity building and demonstration activities.

Phase 2 – policy reforms and results-based demonstration activities: the second phase focuses on the implementation of national policies and measures, as well as on demonstration activities that use results-based payment mechanisms.

Phase 3 – results-based actions: transitioning into Phase 3 will involve moving to more direct results-based actions, i.e. emissions and removals that should be fully measured, reported and verified, with payments based on these results.

Approaches for estimating area change in land use (activity data)

The IPCC guidelines provide three approaches and tiers for estimating emissions, with increasing levels of data requirements, analytical complexity and accuracy for higher tiers and approaches (GOFC-GOLD 2011). REDD+ countries are encouraged to use the 'Good Practice Guidance for Land Use, Land Use Change and Forestry' (IPCC 2003) to assist in their reporting on greenhouse gas emissions and removals. To estimate emissions and removals, two primary variables are important: activity data and emission factors, which can be estimated with different levels of sophistication. Three approaches can be used for tracking activity data or forest area change:

Approach 1: total area for each land use category recorded, but no information included on conversions (only net changes)

Approach 2: tracking of conversions between land use categories (only between 2 points in time)

Approach 3: spatially explicit tracking of land use conversions over time.

***Tiers* for estimating change in forest carbon stocks (emission factors)**
Emission factors give the change in forest carbon stocks for different types of forests, and for up to five carbon pools: aboveground, belowground, deadwood, litter and soil organic carbon. Emission factors are used to determine how much carbon per hectare is lost and released to the atmosphere as a result of a human activity, e.g. deforestation. Data for estimation can come from different tiers.

Tier 1: default values for forest biomass and forest biomass mean annual increments corresponding to broad continental forest types (e.g. African tropical rainforest). Tier 1 also uses simplified assumptions to calculate emissions.

Tier 2: country-specific data (i.e. collected within the national boundaries) and forest biomass recorded at finer scales through the delineation of more detailed strata.

Tier 3: actual inventories with repeated measures on permanent plots to directly measure changes in forest biomass and/or well parameterised models in combination with plot data.

***Steps* for developing reference (emission) levels**
Using the following three steps for developing reference levels is a new idea, developed in this chapter and in earlier work by the authors. It has been recognised by COP17 (Decision 12/CP.17, par. 10: "Agrees that a stepwise approach to [RL/REL] may be useful, enabling Parties to improve the [RL/REL] by incorporating better data, improved methodologies and, where appropriate, additional pools …"). The different steps are useful because they provide a starting point for all countries to explore (initial) RLs. They lay out the means to improve RLs as capacity increases and data availability improves. The approach is designed to lead to more comprehensive and accurate RLs for higher steps, and when moving towards results-based compensation (i.e. in phase 3):

Step 1: Use available data (even if uncertain) to provide a starting point for RL establishment with simple projections, based on historical data.

Step 2: Build more robust national datasets for country-appropriate extrapolations and adjustments, including data for key drivers.

Step 3: Integrate spatially explicit assessments and modelling, using reliable data on activities and drivers.

For more details on the steps, see Table 16.2.

16.3.2 The three steps

The concept of the stepwise approach largely depends on the available data and country capacities and thus requires adjustments for national circumstances and uncertainties.

Step 1 is the starting point for countries to engage in RL setting and can be based on coarse national-level data only. It will be challenging to provide quantitative evidence for deviating from the projected historical trend and only simple rules should be used for potential adjustments to take account of national circumstances. All countries should be able to undertake a Step 1 approach with only modest effort using available data, even if uncertain. Examples of a Step 1 methodology can be taken from the Brazilian Amazon Fund (a subnational approach) and Guyana (a national approach). The Amazon Fund REL is based on gross deforestation and a conservative estimate of aboveground carbon stocks of 100 tC/ha. The annual deforestation rates used in the calculation of emission reductions are compared to the average deforestation rates over ten year periods, which are updated every five years (Amazon Fund 2009). For Guyana, the predicted BAU deforestation was set as the average between the mean *national* deforestation rate for 2000–2009 and the mean *global* deforestation rate. An aboveground carbon stock of 100 tC/ha was also assumed for Guyana, and these formed the basis for payments (Norwegian Ministry of Environment 2011).

Step 2 makes a first attempt to include national circumstances quantitatively, i.e. by undertaking evidence or driver-based assessments to adjust historical rates, and by using better country data (e.g. Tier 2 for carbon stocks) than can be gained by relying on Step 1. However, at this stage historical trend data are likely to dominate the estimate of future trends. This is exemplified in the results of regression analyses (Ecofys 2012), where predictions were made based on subnational activity data for at least decade or so in Brazil, Indonesia and Vietnam. These examples are described further in Box 16.2. Currently, only a few countries have the data available to undertake a Step 2 approach, but the situation is expected to change significantly over the next two to three years (Box 16.4).

Step 3 develops the Step 2 approach further, using higher quality data that allow a wider choice of modelling methods. In particular, more spatially explicit activity data and driver-specific information support, for example, the use of more complex spatially explicit regression or simulation models that should allow for a more robust and forward looking estimate. The approach may actually avoid the need to use historical deforestation as the key predictor since specific drivers and activities may be analysed, modelled and predicted individually (but calibrated with historical trends). Approaches for Step 3 RL have been presented in the scientific literature (e.g. Soares-Filho *et al.* 2006), but so far no REDD+ country has developed RLs using this approach.

The idea for the stepwise framework is to provide a pathway for reducing uncertainty and moving to higher steps over time, which will allow countries to develop more accurate forest RLs for assessing the impact of their policies and measures, if for example payment rates are higher for higher quality of RLs. Approaches have been documented that use available data sources and improve monitoring capacities to provide quality activity data and emission factors (GOFC-GOLD 2011). Countries can acquire data to develop forest RLs at higher steps fairly quickly and at a reasonable cost (UNFCCC 2009a).

16.3.3 The importance of historical data

Getting reliable information on the recent history of forest change is critical in any approach to RL setting (Meridian Institute 2011b; Romijn *et al.* 2012). UNFCCC guidelines (Box 16.1) highlight the importance of a data-driven approach to setting RLs. In addition to including data on recent forest area changes and associated emissions and using approaches suggested in the IPCC GPGs (IPCC 2003), the development of forest RLs also requires information on drivers and activities. The empirical analysis of the relationship between drivers and their contribution to national emissions is one approach to advancing through the steps. COP Decision 1/CP.16 (UNFCCC 2010) encourages countries to identify land use, land use change and forestry (LULUCF) activities, in particular those that are linked to the drivers of deforestation and forest degradation and to assess their potential contribution to the mitigation of climate change.

For Step 1, consistency and transparency are very important, while data can contain significant uncertainties that are largely unknown and should be assessed and managed using default uncertainties and conservative assumptions. Step 2 and Step 3 for developing RLs would be based on improved national data coming from activity data using IPCC Approach 2 and 3 (Box 16.3).

16.3.4 National circumstances

National circumstances are already a reporting requirement for all UNFCCC parties. The assessment of national circumstances could include information (UNFCCC 2003) on geographical characteristics (e.g. climate, forest area, land use, other environmental characteristics), population (e.g. growth rates and distribution), economy (e.g. energy, transport, industry, mining), education (e.g. including scientific and technical research institutions) and any other information considered relevant by the country. As there are currently no clear guidelines, each country has the freedom to assess these variables using autonomous methods.

The overall rationale for inclusion of particular national circumstances is to generate more accurate and precise BAU baseline predictions. The question remains whether guidelines, for example in the form of a list of potential variables that can be used to adjust historical emission rates, are feasible from a political and scientific viewpoint. An alternative would be to decide on the documentation needed to validate variables beyond historical emissions. A combination is also possible, i.e. a short list of acceptable variables and documentation requirements if a country goes beyond that list. The potential for biased estimates suggests the need for clear guidelines and an independent verification process.

Scientific discussions have just started on how to make robust adjustments to historical rates and some early evidence is presented in Box 16.2. Meridian Institute (2011b) discusses three potential national circumstances: the stage in forest transition, the role of specific drivers and existing development plans, but also notes the lack of broad evidence on these. The inclusion of national circumstances is expected to improve as part of the stepwise RL development, as more and better data become available and capacities increase.

16.3.5 National versus subnational approaches

The stepwise approach includes the option for subnational RLs as an interim measure, but countries need a clear rationale for doing so and they need to understand how these will eventually be compiled into a national RL. It is often difficult to scale up subnational RLs into a national RL that is transparent, complete, consistent and accurate.

Testing the development of forest RLs at the subnational scale and as part of a learning-by-doing approach may provide useful insights on how to develop RLs at the national level for Phase 3 of REDD+, when any financial accounting scheme will be based on results-based actions. In this context, a Step 3 approach for RLs will be based on subnational analysis, e.g. to account for different ecological conditions and different drivers across subnational units.

16.3.6 Flexibility in considering carbon pools, other gases and REDD+ activities

Countries have the flexibility to omit non-significant carbon pools, other GHG gases and specific REDD+ activities in the construction of forest RLs (UNFCCC 2011c), and it makes good sense to focus on key categories during early steps when data are highly uncertain (see also Chapter 15). In this context, estimating emissions is generally more important than estimating removals. Similar to the concept of IPCC key source categories

Box 16.4 Developing RLs in Indonesia

Several countries are working to develop RLs at higher steps, investing significant efforts in consolidating and improving their historical data and analysing their national circumstances, including deforestation and degradation drivers (e.g. Pham and Kei 2011; Sugardiman 2011). In Indonesia, the Ministry of Forestry, supported by AUSAID under the framework of the Indonesian National Carbon Accounting System (INCAS), continues to refine the forest carbon monitoring and accounting capacity as a complement to the national forest inventory (NFI), which is used as a basis for estimating emission factor. For activity data, current land cover maps were generated from mosaic Landsat TM/ETM satellites (for 2000, 2003, 2006 and 2009) with 30 metre spatial resolution and partly validated through field validation. The methods for setting up the RLs and projecting future BAU deforestation are based on combining spatial planning data with historical deforestation rates at subnational units. This includes province/district development plans and projections of 'planned deforestation', such as expansion of estate crops (plantations), mining and conversion of forested lands that are legally designated as convertible forest or other land uses. As in the Amazon Fund in Brazil, projected deforestation rates will be adjusted every five years. For Indonesia, the national RL is more likely to be an aggregate of subnational RLs (Step 2).

The province of Central Sulawesi, which is a pilot study of the UN-REDD Programme, has undertaken a detailed study on carbon accounting, compiling NFI data and collecting additional field data with the intention of implementing the Stock–Difference approach in five years time (UN-REDD Programme 2011a). Furthermore, under the Letter of Intent (LoI) between the Governments of Indonesia and Norway signed in May 2010, Central Kalimantan was selected as a pilot province for REDD+ measurement, reporting and verification (MRV) activities. The REDD Task Force brings together government agencies and has recently finished the MRV strategy guidelines. The agencies include the Ministry of Forestry, the National Council on Climate Change, the National Institute of Aeronautics and Space, the Ministry of Environment and the National Survey and Mapping Coordination Agency. RELs are proposed for two different forest landscapes: forests on mineral soils and peatlands. While these MRV demonstration activities should be finished by the end of 2012, emission factors are most likely to be predicted based on a hybrid of Gain–Loss and Stock–Difference approaches.

Under the LoI with Norway, a third REDD+ phase (see Box 16.3) is to be introduced, starting in 2014, where Indonesia is to "receive annual contributions for independently verified national emission reductions relative to a UNFCCC reference level (or a reference level set by Indonesia and its partners based on Indonesia's emissions reductions pledges and UNFCCC methodological guidance (4/CP 15), in accordance with relevant decisions of the Conference of the Parties, if no UNFCCC reference level has been set for Indonesia)."

(Chapter 15), a country is obliged to report on emissions while reporting on removals is optional. Emissions from deforestation need to be reported as do forest degradation emissions, unless they are rigorously proven to be insignificant. In addition, consistency is key: once pools and/or activities are omitted from the RLs, they cannot be included in REDD+ performance reporting. If additional pools, gases and activities are added, the RLs need to be adjusted retrospectively with suitable data to ensure consistency in reporting performance.

16.4 Linking uncertainty in stepwise RLs and financial incentive benchmarks

The stepwise approach provides RL development options ranging from approaches based on simple and (likely) uncertain data (Step 1) to those using more complex data and a rigorous uncertainty analysis (Step 3). It is reasonable that higher levels of certainty should be rewarded by higher rates of payment. This incentive is important to help the stepwise approach to work and encourage countries to graduate to higher steps in order to develop higher quality RLs. Step 1 RLs may in many instances be considered too uncertain to be used or accepted in a REDD+ payment scheme. The stepwise system has to take uncertainty into account for reasons of effectiveness, efficiency and for 'fair risk sharing' between the parties of the agreement. Several options have been proposed for dealing with uncertainty and these are summarised in Table 16.2.

One proposal is to allow an *ex post* adjustment of the RL, originally termed 'Compensated Successful Efforts' (Combes Motel *et al.* 2009). Deforestation pressures in, for example, the Brazilian Amazon are closely linked to the profitability of cattle and soybean production and allowing the adjustment of RLs based on the prices of these commodities would better reflect the true BAU scenario and therefore allow the better measurement of real emissions reductions.

The corridor approach, proposed by Schlamadinger *et al.* (2005), recognises that any point estimate of the reference level will be uncertain. A factor is therefore introduced where greater emissions reductions get increasingly lower discount factors (i.e. higher price per tCO_2). The approach defines an interval (corridor) around the point estimate of the RL, with the discount factor increasing from 0 to 1 (zero to full payment) within this interval. Thus, REDD+ countries would get some payment even if they face strong deforestation drivers, making their policies less successful in reducing deforestation. A donor country, on the other hand, would not pay fully where deforestation is reduced for other reasons than successful REDD+ policies. The corridor approach has, to our knowledge, not been applied in any agreements

Table 16.2 Options for dealing with uncertainty in setting RLs (Ecofys 2012)

Option	Elaboration	Pros	Cons	Most applicable for
1. *Ex post* adjustment of RL	RL formula agreed *a priori*; final RL set when parameters (e.g. agricultural prices) are known	Predictable; adjustments made as more data become available	Hard to establish the formula	Steps 2 & 3
2. Corridor approach	Gradually increasing payments within a RL corridor	Flexible; payments also mimic marginal cost curve	Political acceptability	Steps 1–3
3. Uncertainty or conservativeness factor adjustment	Estimated difference between the outturn and RL multiplied by an uncertainty or conservativeness factor (<1), based on assessment of data quality	Reduced risk of over-payment and hot air; incentives to produce better data; somewhat accepted by UNFCCC; easy to implement	Makes REDD+ less attractive for countries with poor data	Steps 1–3
4. Renegotiation	Renegotiate RL during the course of implementation of a REDD+ agreement	Flexible, can incorporate unforeseen factors	Political gaming	Steps 1 & 2
5. Insurance	Could design insurance contract-based approaches in Steps 1 & 2	Well developed markets for insurance	Probably expensive; complex contract	Steps 2 & 3

so far, although the recent adjustment of the Guyana–Norway agreement has some elements of the approach.[2]

Another approach is to use uncertainty or conservative adjustments. In this context, an adjustment to the RL could reflect the degree of uncertainty, such that countries with the poorest data would apply a multiplicative discount based on the degree of uncertainty, e.g. in the form of a lower price per tCO_2. This approach addresses one of the problems of uncertainty, namely the risk of overpayment and unjustified REDD+ credits. The use of conservative assumptions is reflected in the recent UNFCCC decision (UNFCCC 2011c) concerning the possibility of omitting non-significant carbon pools or specific REDD+ activities in developing RLs. Thus, this approach is, at least in principle, already used by the UNFCCC and currently provides the simplest and most suitable option to account for uncertain RLs in payment schemes (Grassi *et al.* 2008) and allows participation in REDD+ while better inventory systems are being developed.

Other options for dealing with uncertainty are contract renegotiation or insurance, but these have not been explored in the context of REDD+ RLs. The question of insurance in relation to permanence has been discussed by Dutschke and Angelsen (2008) and options reviewed there are relevant to RLs as well.

Table 16.2 includes a column on the applicability of the various adjustments to particular steps. Since many countries will start with Step 1 or 2 approaches, conservative adjustment currently provides the simplest solution. Regular renegotiations are also a possible option, but are vulnerable to political bias. The corridor approach has several attractive features and can be considered an elaborated variant of the conservative adjustment approach (with progressive adjustments).

16.5 Conclusions

Establishing forest reference levels for developing countries is among the most urgent and challenging tasks in REDD+. While some general guidance from the UNFCCC on developing forest reference levels exists (UNFCCC 2011c), significant challenges remain. Countries are asked to choose the approaches they will take for setting RLs, but many struggle from a lack of quality data, genuine uncertainties about future rates of deforestation and degradation and potential incentives for biasing their estimates, in particular when reference

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2   The revised reference level under the Guyana–Norway partnership follows the concept of a corridor approach whereby any increase in deforestation from the current extremely low rates would be penalised (by reduced payment) and above a certain cut-off level, payments would completely disappear (Norwegian Ministry of Environment 2011).

levels are linked to payment schemes and payment levels. To reflect this, we have highlighted two different meanings and uses of RL: the RL used as a benchmark for measuring the effect or impact of REDD+ policies and action and RL used as benchmark for calculating payments for emissions reductions to countries, subnational units or projects.

A stepwise approach to developing forest RLs can help to overcome the challenges of lack of data, uncertainty and competing interests, and could encourage wider participation by countries in REDD+. It is a data-driven approach; thus the availability of more and higher-quality data will increase the robustness of the RLs over time. While taking a Step 1 approach is simple and the results may have a high level of uncertainty, it does allow countries to at least initiate RL activities and provides a benchmark for assessing trends and interim performance. Step 2 allows greater inclusion of national circumstances and links RLs to known drivers of deforestation and degradation as a means to adjust historical land use change rates. Step 3 develops this approach further, with greater spatially disaggregated data and a more explicit analysis of drivers and factors. Step 3 could be implemented, for example, through the use of spatial simulation models that also allow a more forward-looking modelling component.

The stepwise approach, by nature, will result in RLs of varying levels of uncertainty and this should be taken into account in any payment scheme. Where uncertainty varies (between countries for example), the financial incentive benchmark that modifies the BAU baseline is a means to reward efforts to reduce uncertainties and move to higher step RLs over time. There are several approaches for dealing with RL uncertainty; the conservative adjustment factor currently provides the most suitable option. This approach is, at least in principle, already being discussed and considered by the UNFCCC (Grassi *et al.* 2008; UNFCCC 2011c).

REDD+ safeguards in national policy discourse and pilot projects

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- Early adoption of national- and project-level social and environmental standards suggests that REDD+ policy makers, project personnel and investors value REDD+ safeguards.
- To gain national-level buy-in for REDD+ safeguards, national sovereignty must be recognised and competing safeguard policies should be harmonised.
- The REDD+ safeguards dialogue needs to move away from high-level international discussions and towards action. This includes introducing guidelines, low-cost strategies and capacity building to support the interpretation, implementation, monitoring and reporting of safeguards.

17.1 The key challenge

REDD+ safeguards are policies and measures that address both direct and indirect impacts of REDD+ on communities and ecosystems. They do this by identifying, analysing and managing risks and opportunities (Murphy 2011). The Cancun Agreement reached at the 16th Conference of the Parties

(COP16) of UNFCCC calls on Parties to promote, support and report on the implementation of seven social and environmental safeguards for REDD+ (see Box 17.1). These include transparent governance; respect for the rights of indigenous peoples and local populations, as well as their full participation in REDD+ activities; and actions that reduce the risk of biodiversity loss, reversals (permanence) and displacement of emissions (leakage) (UNFCCC 2011a).

Establishing internationally recognised social and environmental standards to guide national REDD+ policy and project design is critical to achieving effective, efficient and equitable social and environmental outcomes. REDD+ policy makers face a major challenge in establishing a set of safeguard policies that can be implemented, monitored and enforced at relatively low cost, and that are salient to carbon investors. In many REDD+ countries, discussions on safeguards are in their infancy and represent only a minor component of the overall REDD+ policy dialogue. REDD+ readiness initiatives focus

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Box 17.1 United Nations Framework Convention on Climate Change (UNFCCC) safeguards articulated in the Cancun Agreement

1. Actions complement or are consistent with the objectives of national forest programmes and relevant international conventions and agreements

2. Transparent and effective national forest governance structures, taking into account national legislation and sovereignty

3. Respect for knowledge and rights of indigenous people and local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the UN Declaration on the Rights of Indigenous Peoples

4. Full and effective participation of relevant stakeholders, in particular indigenous people and local communities, in the actions referred to in paragraphs 70 and 72 of this decision

5. Actions are consistent with the conservation of natural forests and biological diversity, ensuring that 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 benefits

6. Actions to address the risk of reversals

7. Actions to reduce the displacement of emissions.

Source: UNFCCC (2011a)

primarily on carbon monitoring, reporting and verification (MRV), paying little attention to other core issues relating to safeguards.

This chapter assesses the current state of international, national and project-level social and environmental safeguards for forest-based climate mitigation. Drawing on the '4 Is' framework outlined in Chapter 2, it describes the analysis of REDD+ safeguards at different scales. Secions 17.3, 17.4 and 17.5 present analyses of the current international dialogue concerning REDD+ safeguards, national and project-level perspectives, and experiences with REDD+ safeguards. The final section identifies key challenges and opportunities for moving forward.

17.2   Safeguards as seen through a political economy lens

The 4Is framework (Chapter 2) links institutions, interests, ideas and information to form a basis for the analysis of REDD+ safeguards. The framework uses a political economy lens, which can help explain how safeguard policies are designed, why safeguards are adopted, and their importance to achieving the overall objectives of REDD+. REDD+ safeguards are norms or institutions (North 1990) that focus on achieving minimum social and environmental standards, take account of incentives to supply and demand carbon credits produced in compliance with internationally recognised standards, and include discussions on the role of information and ideas in putting REDD+ safeguard policies in place.

REDD+ safeguards as they are currently formulated are a set of norms or *institutions* that guide expectations surrounding social and environmental outcomes associated with the reduction of carbon emissions in developing countries. Unlike rules, which have sanctions associated with failure to comply, REDD+ safeguards provide a set of guiding principles describing the supply of, and demand for, emissions reductions. Whether REDD+ safeguards will include language that elevates them to the level of rules remains to be seen. Even if they remain non-binding or voluntary, investors have the ability to informally sanction producers of carbon by demonstrating preferences for carbon supplied in adherence with safeguards.

Implementing, monitoring and reporting on REDD+ safeguards involves significant transaction costs. Adhering to safeguard policies should therefore have tangible benefits that outweigh these costs. Due to uncertainty regarding the final articulation of REDD+ safeguards and the nature and volume of the carbon market, national governments and project proponents have an *interest* to position themselves such that the carbon they supply will at least meet the minimum safeguard of doing no harm. Many REDD+ initiatives also strive to provide co-benefits to local resource users. Beyond market incentives, proponent organisations, donors and national governments may be motivated

by pre-existing social and environmental mandates to adhere to social and environmental safeguards or by the expectation that REDD+ can be effective only when social objectives and norms are observed.

Norms also influence demand-side expectations. Donors or private sector carbon buyers may prefer carbon produced in adherence with safeguards (e.g. companies claiming corporate social responsibility or donors claiming environment and development objectives). In addition, investors' interest in safeguards seems to be driven by a desire to reduce the risk of damage to their reputations.

Ideas and ideology play a strong role in arguments for safeguards, based on a rights-based approach that emphasises the unique human rights of indigenous people to grant or withhold their free, prior and informed consent (FPIC) for activities affecting the land they have traditionally occupied and/or used (Indigenous People's Summit on Climate Change 2009). Some advocates are of the opinion that all affected communities (not just indigenous groups) should be required to grant their FPIC for REDD+.[1] Those making normative arguments also insist that REDD+ must explicitly benefit (rather than just avoid harm to) local populations.

The idea or principle of national sovereignty has become a major issue in debates surrounding the establishment of a set of international REDD+ safeguards. National governments want to retain their autonomy in social and environmental policy, which makes it challenging to implement internationally mandated safeguards.

Implementing effective REDD+ safeguard policies is a complex task. Stakeholders at different levels have a vested interest in ensuring social and environmental safeguards are observed, implying a mechanism for the flow of *information*. National governments therefore need to collect and report aggregate information on social and environmental indicators to show that safeguards have been met. Developing countries have expressed frustration because donors are imposing complex and costly requirements that vary from one agency to another, particularly at a time when funding flows for REDD+ are slow (Kovacevic 2011).

17.3 The international REDD+ safeguards discourse

The current UNFCCC REDD+ safeguards are best described as non-binding 'principles' rather than actual policies or rules. The agreement and guidance being

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1   See Lawlor and Huberman (2009) for a review of the UN Declarations and Covenants on Human Rights that are most relevant to articulating a rights-based approach to REDD+, based on these established international norms.

forged at the UNFCCC on safeguard information systems attempts to strike a balance between prescriptive rules, national sovereignty and transaction costs. On the one hand, it aims to provide REDD+ countries with detailed guidance, so they can identify negative impacts and allow stakeholders to judge how well safeguards are being implemented. On the other hand, it acknowledges that countries vary in their capacity to implement and report on safeguards, and that many safeguard systems are already in place, which should be built upon rather than duplicated (UNFCCC 2011c). Stakeholders are waiting for the Subsidiary Body for Scientific and Technological Advice (SBSTA) to further clarify the definition and MRV requirements of REDD+ social and environmental safeguards. At the same time, other international bodies, including the Convention on Biological Diversity (CBD), the United Nations Declaration on the Rights of Indigenous Peoples (UN DRIP) and the Universal Declaration on Human Rights, are evaluating whether their social and environmental safeguard policies are harmonised with those of REDD+ (Hite 2010) (Box 17.2).

Beyond the UNFCCC, several international and nonprofit organisations have articulated safeguard standards for REDD+ policies at the national level. This 'do no harm' commitment is reflected in the social protection policies being applied by the Forest Carbon Partnership Facility (FCPF) including the Strategic Environmental and Social Assessment (SESA) and Environmental and Social Management Framework (ESMF) (FCPF 2011). FCPF works with countries to build their institutional capacity for the design and implementation of REDD+. For example, it engages in participatory consultations with stakeholders to identify and manage potential risks to indigenous peoples and forest-dependent communities (Rapp 2011). The REDD+ Social and Environmental Standards (REDD+ SES) initiative, led by the Climate, Community and Biodiversity Alliance (CCBA) and CARE International, brings civil society together with the private sector and government agencies in developing countries to build country-specific indicators to track the compliance of government-led REDD+ programmes with the initiative's eight principles and 34 supporting criteria (CCBA and CARE 2010).[2] These principles include commitments to enhance the wellbeing of local communities and contribute to good governance (REDD+ SES 2010). The UN-REDD Programme is engaged in a parallel process to develop social and environmental principles and criteria that mirror the Cancun Agreement's safeguards and these will apply to countries receiving financial support for REDD+. The programme has also developed principles and criteria that enhance REDD+'s potential to deliver social benefits (UN-REDD Programme 2011c). However, the UN-REDD Programme principles and criteria do not make specific reference to such key issues as land tenure. Furthermore, unlike the World Bank, which has a formal inspection mechanism, UN-REDD Programme has no accountability mechanism.

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2   Version 2 of these standards is currently in draft form and is going through a public comment period for revision. Version 2 has 7 principles and a reduced number of criteria.

Box 17.2 Linking Convention on Biological Diversity (CBD) and REDD+ biodiversity safeguards: Experience from sub-Saharan Africa

Efforts to avoid deforestation and forest degradation should promote the conservation of biodiversity (Harvey *et al.* 2010a; CBD 2011), and increasing forest ecosystem resilience offers opportunities for forest carbon stability (Thompson *et al.* 2011). Nevertheless, the strong focus of REDD+ on maintaining carbon stocks has raised concerns that biodiversity could be at risk if not properly considered (CBD 2010). Dialogue between the CBD and UNFCCC is needed to address this concern. The CBD COP 10 in Nagoya, Japan, paid attention to the link between biodiversity targets and UNFCCC REDD+ safeguards, with several of the 20 biodiversity targets articulated (Aichi Biodiversity Targets 5, 7, 11 and 15) being directly relevant to REDD+.

Following such global dialogue, a number of consultation and capacity building activities have taken place at the regional level. In 2011, a joint CBD–UNFCCC workshop addressed the links between biodiversity targets and REDD+ in sub-Saharan Africa. Held in Cape Town, South Africa, the workshop brought key members of CBD and UNFCCC together with other partners, including representatives of indigenous and local communities. Existing safeguard frameworks from UN-REDD Programme, the Forest Carbon Partnership Facility (FCPF) and the Climate, Community and Biodiversity Alliance (CCBA) helped guide the discussions. The participants discussed the application of REDD+ safeguard policies on biodiversity, identified indicators for assessing REDD+ within the objectives of the CBD, and highlighted the challenges facing effective implementation of biodiversity safeguards in the region. Members of the Collaborative Partnership on Forests (CPF)[a] provided information on their experiences with REDD+ formulation and implementation at the national and project level.

The key conclusions and recommendations were:
1. Biodiversity safeguards should be addressed as early as possible in the REDD+ process.
2. Deficiencies in land zoning processes should be addressed.
3. There is no specific safeguard to address the risk of afforestation in an area of high biodiversity.
4. Insufficient attention has been paid to the potential for moving deforestation and degradation pressure to areas of low carbon value and high biodiversity.
5. Little attention has been given to potential losses of traditional ecological knowledge.

The workshop outputs were used to inform the Parties in advance of the CBD COP 11 and to facilitate further streamlining of biodiversity safeguard policies between the CBD and UNFCCC. In sub-Saharan Africa, capacity building remains a major challenge and more research is needed to shed light on the links between REDD+ and biodiversity outcomes. At the regional and national levels, data on carbon pools and flows and correlations with indicators of biodiversity need to be made available. The collection and processing of this type of data requires in-country capacity to link carbon and biodiversity outcomes, and to analyse the underlying causes of carbon–biodiversity tradeoffs and synergies.

a The CPF is an informal voluntary arrangement of 14 international organisations and secretariats with substantial programmes on forests.

There are several voluntary certification standards for assessing social and environmental impacts at the project level. The most prominent of these is the Climate, Community and Biodiversity (CCB) Standard, which has been adopted by an estimated 64% of all forest carbon projects (EcoSecurities 2010).[3] Nearly 60% of forest carbon credits sold on the voluntary market in 2010 came from CCB-certified projects (Diaz *et al.* 2011). Projects' widespread and voluntary uptake of the CCB Standard is an example of what Cashore (2002) refers to as "non-state market-driven governance", reflecting the ideas and interests of actors on both the demand side (investors, consumers) and supply side (project proponents) of REDD+.

REDD+ safeguards are evolving in many policy arenas and markets. They are being applied at different scales of governance, including project or subnational levels, national level and in the international policy arena. In addition to the need to harmonise across different scales there are important questions regarding how REDD+ safeguards can be streamlined with existing international environmental agreements (e.g. CBD) and their social and environmental safeguard policies.

17.4 National REDD+ safeguards policy discourse

This section draws on data taken from CIFOR's Global Comparative Study on REDD+ (GCS, see Appendix) and explores national REDD+ media dialogues and national capacities focused on REDD+ safeguards. A comparative case study approach is used to analyse national media communication in four REDD+ countries in an attempt to understand the extent of policy dialogue on REDD+ safeguards. Data from country profiles helps shed light on how REDD+ activities, institutional structures and policy decisions might lead to effective, efficient and equitable outcomes. The country profiles also provide indicators that can be used to measure national capacity to implement, monitor and report on safeguards.

17.4.1 Analysis of media discourse

GCS undertook a rigorous media discourse analysis in a number of countries, including Brazil, Cameroon, Indonesia and Vietnam,[4] to assess newspaper coverage of REDD+ policy formulation and implementation.[5] The investigators conducted analysis of the national print media and

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3   Plan Vivo is another established certification standard that requires projects to produce climate and livelihood benefits (Plan Vivo 2008).

4   The print media in Vietnam is controlled by the central government.

5   While Peru and Tanzania are included in CIFOR's Global Comparative Study on REDD+, media analyses are not yet available for these countries.

interviewed journalists.[6] Media are seen as a window on informal and formal policy discussions (Boykoff 2008). The analysis conducted here identified specific references to core elements of REDD+ safeguard policies, including governance and safeguards, social welfare, biodiversity and MRV.

The analysis revealed that core issues relating to governance and safeguards are not covered well by the national media. Of primary concern is the presence of corruption in national forestry institutions and the impact that increased funding flows from REDD+ may have on existing institutions, specifically providing new opportunities for rent seeking by public officials. Concerns were raised in the Indonesian media about contradictions between general REDD+ policy and policies in other sectors, but no specific reference to safeguard policies was made. There was significant coverage of issues related to indigenous rights and human rights in Brazil and Indonesia, but not in Cameroon and Vietnam. Property rights for land, tenure and carbon also received attention and included discussion on the loss of access to forests, as well as concerns about the distribution of benefits under REDD+. Overall, limited coverage of indigenous, human and property rights suggested little attention was paid to safeguards in the national policy dialogue.

Biodiversity was consistently linked to conservation, with conservation identified as the best option for retaining native forest in Brazil and Cameroon. The Vietnamese media presented biodiversity conservation as a potential co-benefit of REDD+. Where countries had relatively well-developed MRV systems, the media discussed leakage and permanence as important issues for achieving REDD+, but they were not covered in countries with low MRV capacity. Lack of explicit reference to 'safeguards' was expected; prior to the Cancun COP in 2010 the term was not widely used in the media in many countries. However, the Brazilian media discussed safeguards explicitly in its reporting on the outcomes of ongoing international negotiations on REDD+.

The media in Brazil and Indonesia appear to be most aware of safeguards. Although they did not cover all the aspects, there was explicit discussion of core issues, including corrupt forest institutions, sovereignty, indigenous rights, property rights, leakage and permanence. The fact that Brazil has demonstrated strong leadership in establishing a national REDD+ safeguards policy (see Box 17.3) and Indonesia has an advanced policy process helps explain these findings.

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6 Data are primarily from 2005–2009 but updated data to 2011 for Brazil and Indonesia are used to make a preliminary analysis and identify trends. Data are drawn from REDD+ politics in the media case studies (Cronin and Santoso 2010; Kengoum 2011; May *et al.* 2011a; Pham 2011).

Box 17.3 National REDD+ safeguard policy in Brazil

Brazil is the world leader in developing national policy for social and environmental safeguards. The process started in 2009, when several civil society organisations began to develop social and environmental principles and criteria for REDD+ programmes and projects. The initiative aimed to: i) strengthen forest governance and the management of natural resources by indigenous people and local communities; ii) encourage public participation in policy making; iii) coordinate action among stakeholders; iv) increase information transparency; and v) generate respect for, and awareness and recognition of, the rights of indigenous people and local communities for their territories, lands, natural resources and traditional livelihoods and cultures (Gomes *et al.* 2010).

The Institute for Agriculture and Forest Management Certification (IMAFLORA) led the consultation process, which was open to all key stakeholders. Four regional workshops ensured the inclusion of indigenous people, local communities and small-scale landholders.[a] These stakeholders benefited from capacity building prior to the workshops to ensure they fully understood the safeguards documents and their implications. The team also invited private sector groups to contribute their opinions. By May 2010, the final document describing Brazil's principles and criteria for REDD+ was ready and this was recommended to national and state-level policy makers.[b] The principles and criteria presented in the document provide the basis for Brazil's national safeguards and REDD+ strategy as requested by the Cancun Agreements.

In 2011, the Ministry of Environment organised two meetings to inform the development of Brazil's REDD+ national strategy (MMA 2011). The participants were drawn from different sectors of civil society and government. They worked together to evaluate whether the proposed safeguard framework would cover the main risks to biodiversity and indigenous people/local communities, and to identify the main challenges in applying it.

In the second meeting, the participants reviewed different approaches and definitions of safeguards. Following these discussions, the Ministry of Environment presented a list of safeguards for consideration in developing Brazil's REDD+ national strategy:

1. Legal regulation
2. Guarantee of rights
3. Economic sustainability and poverty reduction
4. Biodiversity conservation and recovery
5. Governance

Box 17.3 continued

6. Benefit sharing

7. Monitoring and transparency

8. Permanence and leakage

9. Participation.

The meetings were successful in promoting an open process towards the development of a national safeguard strategy. They also highlighted the main requirements for successful implementation: i) good governance and participation, which includes securing political will, dialogue and coordination; ii) information and capacity building; iii) stakeholder participation, monitoring and conflict resolution; iv) benefit sharing; and v) coordination of sectoral policies, e.g. the forest code (MMA 2011). A major obstacle to the effective implementation of Brazil's national safeguard policy is the lack of clear data and criteria that can be used for monitoring purposes.

Despite focusing attention on the safeguards issue, Brazil has assumed a 'blocking' position in the international arena following COP17 in Durban in 2011. During the SBSTA meeting, Brazil opposed international reporting on how safeguards for REDD+ will be addressed and respected. Some regard this position as selfish, since it blocks progress on REDD+ negotiations and could undermine the credibility of REDD+ with international investors. Any action that impedes funding will be particularly harmful to countries that lack a coherent safeguard strategy.

a These workshops generated 379 comments on the 8 principles and 27 criteria. In total, the consultation process resulted in 559 considerations, comments and suggestions, all of which are available online.

b For the full document see: http://www.observatoriodoredd.org.br/site/pdf/ DevelopingREDD.pdf

17.4.2 National capacity for REDD+ safeguard implementation

If governments are to engage in safeguard policies, they must be able to assess social and environmental outcomes at the national level.[7] Furthermore, when making national-level commitments to international safeguards, countries need to provide comparable indicators of change in the core areas, as articulated by UNFCCC. At present, most REDD+ countries are struggling with the minimum requirement: to demonstrate reduced deforestation and degradation. Only when they grow their capacity for MRV, encompassing

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7   Sources for this section include Dkamela (2011), May *et al.* (2011b), DAR and CIFOR (2012), Indrarto *et al.* (2012), REPOA and CIFOR (2012).

leakage and permanence, can these two safeguards be monitored properly. However, the challenge of performing national-level assessment of social impacts and biodiversity co-benefits has received limited attention in most REDD+ countries. Data collected by GCS provides profiles for five REDD+ countries (Brazil, Cameroon, Indonesia, Tanzania and Vietnam), which include an assessment of their level of capacity for implementing, monitoring and reporting on the core thematic areas of REDD+ safeguards (social welfare, biodiversity, permanence and leakage).

The countries studied appear to have little capacity to monitor social and biodiversity impacts. With the exception of Tanzania, benefit sharing agreements have yet to be articulated, therefore it is difficult to evaluate welfare outcomes related to REDD+. In addition, most countries are struggling to interpret FPIC. In Indonesia, FPIC is a precondition for community involvement in REDD+; however, assessing whether or not FPIC has been obtained first requires a definition of it. On a more positive note, there is evidence of strong participation in the REDD+ policy process at the national level. Brazil, Indonesia and Tanzania have achieved meaningful stakeholder engagement in policy discussions regarding social and biodiversity co-benefits, although discussions surrounding the monitoring of REDD+ biodiversity impacts is still at the planning stage. For example, Indonesia's National REDD+ Strategy calls for the development of a non-carbon MRV system that includes biodiversity.

Brazil, Indonesia and Tanzania have developed the capacity to monitor land use change, and they are at different stages with respect to setting reference levels and putting into place national systems to identify leakage. These countries are among the most advanced with respect to carbon MRV and are well placed to monitor and report on leakage and permanence. However, they still have hurdles to overcome, which include deciding how often to monitor, getting real-time information on land use change, and using site-specific data to triangulate and confirm leakage and permanence. Other countries (e.g. Cameroon and Peru) lag behind and are not yet able to monitor leakage and permanence. Furthermore, all country reports noted some ambiguity relating to ownership. When property rights to land, trees and carbon are unclear, it is unlikely that permanent reductions in deforestation will be achieved (see Chapters 6, 8 and 9).

Building capacity to implement, monitor and enforce REDD+ safeguards is a critical issue, and the countries with the most evolved REDD+ infrastructure can address leakage and permanence. However, most are not yet able to monitor social leakages nor to evaluate the extent and integrity of consent and participatory processes (see Chapter 6).

17.5 Learning from project experiences

Although in the early stages, many REDD+ projects are already implementing the seven UNFCCC safeguards. This section reviews project motivations and experiences with safeguarding the welfare of local communities and biodiversity. The GCS team interviewed project personnel with the aim of reviewing the extent to which their projects fulfil the following targets: i) respect the rights of indigenous people and local communities (UNFCCC safeguard 3); ii) facilitate the full and effective participation of local stakeholders (UNFCCC safeguard 4); and iii) ensure consistency with conservation and biodiversity goals (UNFCCC safeguard 5). Data were collected from 19 projects in Brazil (4), Cameroon (2), Indonesia (6), Tanzania (6) and Vietnam (1). All but four reported that they have already obtained or plan to obtain CCB certification.

17.5.1 Obtaining free, prior and informed consent

While FPIC does not appear in the UNFCCC safeguards, it is implicitly referred to in safeguard number 3: a call for parties to respect indigenous people's rights, as framed by UN DRIP. Under this decision, member states must obtain FPIC for activities affecting the lands customarily owned, occupied and/or used by indigenous people. The CCB standard requires projects to obtain FPIC from all local communities (indigenous or otherwise). When asked about obtaining FPIC, most project teams have obtained or plan to obtain FPIC (50 out of 59 villages in the GCS sample). Nine projects provided information about the type of consent obtained (or planned for), with most securing consent through oral agreement and only two by written permission. Five of the nine consulted with sub-groups as part of the FPIC process.

The scale of the project appears to affect the attention paid to FPIC, in particular the definition of the person or group giving consent and the distribution of information about the project. Teams from the larger projects, some of which involved entire provinces or multiple administrative districts or municipalities, sought to obtain agreement from state- and district-level administration, as well as government agencies, communities and industry sectors. The smaller-scale projects (subdistrict or municipality) primarily sought agreement from village-level institutions or from the community itself via village meetings. One project hired lawyers for the community and encouraged them to seek independent advice before committing. The larger projects tended to inform communities through stakeholder workshops, while the smaller ones used the local media (primarily radio), as well as distributing posters and leaflets and holding question and answer sessions.

Motivation for conducting FPIC falls into three categories: i) upholding human rights; ii) complying with formal rules or institutions such as voluntary standards (e.g. CCB) or national law (e.g. Tanzania Land Act);

and iii) achieving reductions in deforestation and degradation. As Figure 17.1 shows, achieving forest carbon goals (success) and upholding human rights are the primary motivations. In line with the emphasis on rights (ideas, informal institutions) and effectiveness (interests), some project representatives stated that obtaining FPIC could never be complete, since FPIC is "a process and not an event" and "by definition it never ends".

The information disclosure requirements and transaction costs associated with FPIC can cause problems. Project staff had difficulty in getting a sufficient proportion of people to attend information meetings. They also found it a challenge to secure sufficient financial and time resources for the participation process, especially in ensuring that project information reached individual households in a timely manner. One project representative noted that, despite having signed agreements and building a good level of trust, "FPIC is an impossible dream" and "actually very difficult to deliver". The incipient nature of REDD+ poses a further major challenge, since FPIC asks people to consent to something that is still evolving and has a number of open questions regarding compensation for changing land use.

17.5.2 Community involvement in project design

Most projects (16 out of 18) involved local communities in project design and implementation, for example, in identifying the drivers of deforestation and degradation, developing baseline scenarios, and deciding on appropriate
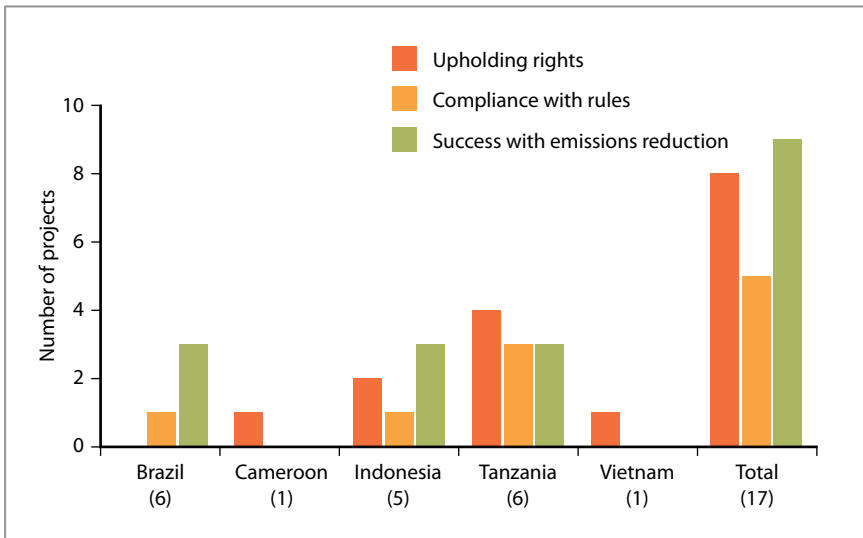
Figure 17.1 Project motivation for obtaining FPIC: Rights, rules and success

Notes: Data missing for one project in Cameroon and one project in Indonesia. Number of projects in parentheses.

intervention and alternative livelihood activities. In one project, local communities helped shape the wording of contracts. Stakeholder meetings organised by the Acre project in Brazil led to a fundamental overhaul of the project design, replacing a site-specific project with a more comprehensive state-wide programme and shifting the emphasis from payments to incentives for environmental services. The main challenges were: identifying leaders who truly represent the community/sector; ensuring local communities have a meaningful voice in decision making; and obtaining the financial resources needed to enable full participation, especially when attempting to reach nomadic populations.

17.5.3 Biodiversity and conservation goals

Some of the survey data sheds light on how REDD+ projects are addressing issues of biodiversity and conservation. Ten projects – Brazil (1), Cameroon (2), Indonesia (2), Tanzania (4) and Vietnam (1) – reported that their locations were chosen to take biodiversity and nature conservation issues into account. However, only five – Indonesia (1), Tanzania (3) and Vietnam (1) – planned to pursue forest management objectives targeting the conservation or regeneration of specific species.

17.6 Challenges and choices for REDD+ safeguards

This analysis highlights several challenges and choices for the successful implementation of REDD+ safeguards. The global forest policy community is currently looking to the UNFCCC and other internationally recognised standards to finalise REDD+ safeguards and to provide guidance regarding monitoring and reporting on progress towards achieving them.

17.6.1 Challenges

Our analysis points to several challenges for REDD+ safeguards as they are formalised and integrated into national REDD+ policy:

Horizontal harmonisation: REDD+ safeguard policies need to be streamlined with other international safeguard policies (e.g. CBD). However, the process of harmonising safeguards across sectors and policy arenas adds transactions costs to their development and implementation.

Vertical harmonisation: There is overlap among international, national and project-level REDD+ safeguards and standards. This needs to be exploited in a productive way so as to minimise transaction costs and use existing data and indicators most effectively.

Sovereignty: Deciding to what degree nation states should have autonomy over social and environmental safeguard policies.

Capacity: There is considerable heterogeneity in capacity to monitor and report on safeguards at the national scale. While progress is being made towards building capacity to monitor and report on leakage and permanence, national-level monitoring systems showing how REDD+ is affecting governance, welfare and biodiversity safeguards lags behind.

Costs: The costs of implementing social and biodiversity safeguards, including FPIC, fostering participation and monitoring biodiversity, are high and, if too high, they may make REDD+ unfeasible.

Ignored issues: Some critical issues – chiefly land, tree and carbon rights (Chapter 8) – are not being addressed adequately. This lack of attention in international safeguards policies may have implications for both social and environmental outcomes. Clarity is particularly important with respect to what is being safeguarded (i.e. forests, trees, carbon, livelihoods or biodiversity) and for whom.

17.6.2 Choices

Despite these considerable challenges, there are opportunities for REDD+ safeguards to be implemented successfully. Using the 4Is framework, the following avenues are proposed for policy action.

Foster safeguards as universal norms: Even when monitoring and reporting on international and national safeguards is voluntary, most, if not all, countries will not deviate too far from the norm regardless of their national circumstances. If the voluntary carbon market takes off, these norms will be further upheld.

Balancing the interests of diverse actors: Project implementers and national governments want to produce carbon that does no harm or that has social and environmental benefits. Investors protecting their reputations, and those with welfare or conservation interests, favour safeguard policies. Both groups want to minimise costs, but also to maximise benefits. This apparent synergy should be monitored in the near future and facilitated to maintain incentives that favour social and environmental safeguards.

From normative ideas to policy practice: Safeguard issues and their implementation are receiving attention in a number of REDD+ countries, where discussion forums are helping to inform the policy process. National level discourse on safeguards should be encouraged and supported. Significant progress has been made in Brazil, but this experience has yet to influence the global arena.

Improving information: There is a lot to learn from project experiences, national-level dialogues and other natural resource- and climate-related initiatives. But information on how to develop, implement, monitor and report on safeguards needs to be shared. Voluntary REDD+ standards at the national and project scale are being adopted widely. They are also instilling an ethic for welfare and biodiversity co-benefits and the requirement to collect information on the status of safeguards throughout a project life cycle.

Summary and conclusions
REDD+ without regrets

Frances Seymour and Arild Angelsen

- Changes in REDD+ over the past five years have led to significant shifts in the size and composition of financing and the likely pace and cost of implementation, as well as to the divergence of interests across actors and levels. Challenges resulting from these changes include increased 'aid-ification,' sequencing problems faced by project proponents and uncertain rewards from REDD+ efforts by forest countries and communities.

- Lessons learned from the first generation of REDD+ initiatives include the importance of the jurisdictional scale in between national and local levels for land use decision making, the need for cross-scale coordination to address issues such as tenure, benefit sharing and monitoring and the tenacity of interests and institutions associated with business as usual.

- To move forward, REDD+ objectives must be clarified and strategies developed to bridge the financial gap created by the lack of a new international climate agreement. Pending greater certainty regarding the future of REDD+, priority should be given to 'no regrets' policy reforms that are desirable, regardless of climate objectives, and to building constituencies and capacities critical to the eventual success of REDD+.

18.1 Introduction

The preceding chapters provide a snapshot of the state of play in REDD+ and summarise preliminary research findings from CIFOR's Global Comparative Study on REDD+ (GCS) from selected national policy arenas and project sites. This chapter summarises and synthesises the key themes that emerge from earlier chapters and builds on them to look ahead to the challenges and choices facing REDD+ policy makers, practitioners and researchers.

REDD+, and the context in which it operates, have undergone important changes since it officially became part of the international climate change agenda at COP11 in 2005. Most significantly, a new international agreement on climate change has not yet been achieved (Section 18.2). This changed context has major implications for the way that REDD+ will unfold over the coming years (Section 18.3). In addition, several lessons can be learned from the first generation of REDD+ projects and policy reforms (Section 18.4). The uncertainty over the future of REDD+ may lead to inaction, but we argue that a wide range of 'no regrets' REDD+ policy reforms would be worthwhile, regardless of the future of REDD+ and should be implemented to achieve objectives beyond climate mitigation (Section 18.5). Finally, we provide some concluding thoughts on REDD+ (Section 18.6).

18.2 Changes in the context for REDD+

The idea of avoided deforestation as a climate change mitigation strategy was tabled and rejected during UNFCCC negotiations related to the Kyoto Protocol in 1997. As a result, the forest-related activities included in the Clean Development Mechanism (CDM) were limited to afforestation and reforestation. A decade later, a number of changes made it possible to include what came to be known as REDD+ in the Bali Road Map at COP13 in 2007. These changes included:

- A change in political framing. When reduced emissions from deforestation was again tabled at the COP11 negotiations in 2005, it was done so by developing countries and in the context of national action, thus bridging the North–South divide.
- A new sense of the urgency and importance of including deforestation and forest degradation, following the IPCC Fourth Assessment Report's (IPCC 2007c) illumination of the significance of emissions from land use change.
- The publication of analyses stressing the low cost of reducing emissions as compared to other mitigation options.
- Improvements in technology, which made methods available for measuring changes in emissions from deforestation and, potentially at least, forest degradation.

Thus, the idea of REDD+ began to take shape as a climate change mitigation strategy that could be promoted as effective, efficient and equitable.

In the run-up to COP15 in Copenhagen in 2009, when a new post-2012 international climate agreement still seemed feasible, there was a sense that REDD+ was one of those rare issues offering something for everyone: deeper overall emissions cuts for a given level of global spending on mitigation, cost efficient offsets for industrialised countries, significant new financial flows for developing countries and, if designed correctly, the co-benefits of biodiversity conservation and poverty reduction. It was widely expected that this alignment of interests at the global level would lead to a binding post-2012 agreement, including REDD+ performance-based finance that would flow down to create incentives for national REDD+ policies and local projects in a two-tier, payments for ecosystem services (PES)-like model (Angelsen and Wertz-Kanounnikoff 2008).

Three years later, the outlook for REDD+ is quite different.

The pre-Copenhagen expectations for how REDD+ would play out have not been met. In part, this resulted from the fact that the global community failed at COP15 to reach an overall climate agreement to replace the Kyoto Protocol, and will not now do so before 2015 at the earliest (Chapter 3). The prospects for significant REDD+ finance generated by a carbon market under such an agreement have correspondingly declined. While negotiations continue to make incremental progress on global REDD+ architecture, the relative importance of the UNFCCC as a top-down driver of the necessary finance and rules for REDD+ has diminished significantly. As a result, there are now multiple REDD+ policy arenas populated by aid agencies, big international NGOs and various domestic actors. The participants in these arenas often compete for funding, leadership in standard setting and influence over the discourse on how REDD+ should be defined.

Another set of changes arose from the fact that REDD+ emerged just as the world entered a period of economic and financial turmoil. In the mid-2000s, the global economy experienced a commodity price boom, with prices for food, fuel and metals reaching unprecedented levels. These high prices – and the associated fears about food and energy insecurity – led to a global rush to secure access to land for agriculture and minerals development (Chapter 4). Increased competition for forestland will probably increase the costs of REDD+ and outpace the improvements in land use planning necessary for it to be considered as an option. Then, the global financial crisis that struck in 2008 distracted attention away from climate change; pressure on national budgets will probably constrain the volume of aid funds available to bridge the REDD+ financing gap caused by the lack of an international climate change agreement.

18.3   Implications of the changed context

The changed context for REDD+ has slowed down the pace of implementation and has introduced a higher level of uncertainty regarding whether and how the original idea will be realised.

18.3.1   The 'aid-ification' of REDD+

With the prospect of large-scale market-based finance for REDD+ postponed until at least 2020, the current dominance of the institutions and sources of funding associated with traditional development aid is likely to continue for the foreseeable future. This has a number of implications for REDD+, including a broadening of its objectives, types of interventions and performance criteria (Chapter 13). It entails the risk of repeating past mistakes associated with development assistance (Chapter 7). While there has been some recent experimentation with cash on delivery assistance models, aid agency policies and procedures – and in some cases the politics and budgetary procedures of development assistance funding in donor countries – may be incompatible with the result-based payment systems envisioned for REDD+.

REDD+ financing roles have sometimes proven uncomfortable for donor agencies, as has been the case with the World Bank's role as channel for Norwegian funds to Guyana. As described in Chapter 13, attention has only recently turned to the need for performance indicators for the first two phases of national REDD+ implementation, with wide scope for disagreement on appropriate standards and processes for measuring achievement. The risk that good partnership is valued higher than actual performance threatens both the effectiveness and efficiency of REDD+.

Reliance on aid funding for REDD+ also creates a broader scope that includes development objectives, leading to a relative decrease in the emphasis on climate protection through emission reductions and a relative increase in emphasis on co-benefits, especially poverty reduction. From a political perspective, REDD+ in the donor–recipient framing of aid – rather than as a transaction among equal partners in the context of an international agreement – creates an unfortunate domestic political dynamic in recipient countries and raises sovereignty concerns.

Taken together, these factors suggest that the 'aid-ification' of REDD+ increasingly leads to a decoupling of REDD+ finance from performance-based payments for emission reductions, which was central to the original idea. Performance-based payments for co-benefits closely tied to REDD+ objectives – such as strengthening community-level tenure over forests – offer one possible avenue for maintaining the link. REDD+ policies and projects

will become increasingly diversified, just like development aid itself, and could be unified only by having reduced emissions as one among several goals.

18.3.2 Sequencing problems

A wide variety of public, private and NGO project proponents heeded the call by the 2007 Bali Action Plan for Parties to undertake REDD+ demonstration activities. More than 200 REDD+ projects are now underway in some 43 countries (Chapter 12). Project proponents were eager to make progress as rapidly as possible, in order to position their initiatives to take advantage of the REDD+ financing expected after COP15 in 2009.

The failure to conclude an overall climate agreement in Copenhagen and the relatively slow pace of national-level REDD+ policy development have left these projects in a precarious position in a number of ways. As described in Chapter 10, the uncertainty of REDD+ finance is leading some project proponents to hedge their bets by shifting the relative focus of their efforts to traditional integrated conservation and development project (ICDP) activities. Such approaches risk decoupling REDD+ from performance-based PES and repeating the limited success of the previous generation of ICDPs.

They also risk outpacing protracted international negotiations on rules for measurement, reporting and verification (MRV) and safeguards. An assessment of early REDD+ projects suggests that most of the MRV methods being deployed do not meet current Verified Carbon Standard (VCS) standards, which could be a model for future negotiated standards (Chapter 14). Additionally, uncertainty is leading some project proponents to hold back on fully disclosing information about the potential financial flows that might be realised through REDD+; in doing so they risk failing to comply fully with the principles of free, prior and informed consent (FPIC), which are likely to be included in future safeguard regimes.

Early REDD+ pilot projects are being put at risk by the slow development of national-level legal and regulatory frameworks. Legal certainty over who owns forest carbon rights, and regulatory certainty about sharing REDD+ costs and benefits across levels and stakeholders, remain elusive (Chapter 8). Although tenure has emerged as a key issue at many project sites, there is limited evidence of the serious national attention needed to resolve tenure insecurity and conflict (Chapter 9). While some interventions can be implemented under existing tenure conditions, in the absence of reform, such interventions are limited in scope, effectiveness and efficiency, and may also lead to more inequitable distributional outcomes.

18.3.3 Countries and communities left facing risk

Increased uncertainty regarding the timing and size of international REDD+ financial flows, coupled with economic changes leading to increased competition for forestland, have shifted the calculation of REDD+ risk and reward at both the national and local levels. The credibility of the win–win promise of REDD+ (i.e. that the costs of reducing deforestation and forest degradation will be compensated) is in danger of erosion.

For REDD+ to be successful at the national level, constituencies for transformational change must prevail over interests in business as usual (Chapter 2). Slow progress in the UNFCCC negotiations has weakened the hand of the former (by postponing the prospect of large-scale international finance in the long term), while economic changes have strengthened the hand of the latter (by increasing the opportunity cost of forest protection). To the extent that REDD+ requires actions that go beyond no regrets development strategies, governments poised to move beyond the readiness phase into setting policies and measures that reduce deforestation and forest degradation need a reliable source of long-term international finance that cannot be provided at the necessary scale by development assistance (Chapter 7).

Changes in the context for REDD+ have also affected risk calculations at the local level. REDD+ project proponents have begun repositioning their projects for the possibility that expected financial flows do not materialise (Chapter 10). The concern expressed by villagers in Indonesia – that REDD+ projects will not be able to prevent large companies from converting local forests to other uses – is consistent with our understanding of broader economic forces. It is telling that the villagers surveyed understand REDD+ projects to be aimed at forest protection, with their hopes and worries focused on the potential impact on their incomes (Chapter 11). This suggests that they are not confident of a direct positive link between forest protection and livelihoods in proposed REDD+ schemes.

18.4 Lessons from first generation REDD+ initiatives

The changes in context for a second generation of REDD+ initiatives are not limited to those resulting from the status of UNFCCC negotiations and global economic conditions. In addition, new (or newly-affirmed) knowledge and understanding derived from the first generation of REDD+ initiatives are emerging as well.

18.4.1 REDD+ costs more and takes more time than expected

REDD+ initiatives are costing more and taking more time to implement than was originally expected. Perhaps not surprisingly for those with experience of

the institutions and governance systems characteristic of the forestry sector in developing countries, many REDD+ targets and timelines announced in 2007 have proved unrealistic. In particular, it appears that the time needed for stakeholder consultation and consensus building has often been underestimated (Chapter 7).

The Forest Carbon Partnership Facility (FCPF) originally offered grants of US $3.6 million per country for REDD+ readiness activities, based on an initial estimate of the costs of developing a REDD+ strategy and monitoring system. This estimate contrasts with later country proposals that requested an average of US $15–20 million, reflecting both a broadening of the range of activities included and a deepening of countries' understanding of REDD+ requirements – such as the need for greater attention to institutional arrangements for managing REDD+ funds, social and environmental safeguards and stakeholder consultations (personal communication, Ken Andrasko, World Bank FCPF).

We have previously recognised the dilemma that "REDD+ is urgent…but cannot be rushed" (Seymour and Angelsen 2009). The need for national ownership (Chapter 5) means that REDD+ must be grounded in a legitimate domestic political process; in the light of continuing uncertainty regarding the contours of the international regime, transformational change at the national level is unlikely to come quickly or easily. As a result, the REDD+ community is faced with the irony that, although long-term financing is a critical concern, donors have found it difficult to spend fast-start money (Chapter 7). Given the internal and external pressures on donor agencies to move money, this could be interpreted as a positive sign that the linking of REDD+ funds to performance is being taken seriously.

In addition to the longer-than-expected timelines for REDD+ decision making processes, gaps in data availability and capacity to support the technical requirements of REDD+ are turning out to be larger than originally thought. Despite the advances in technology that helped move deforestation in developing countries back onto the UNFCCC negotiating table between the COPs in Kyoto and Bali, and an early focus of REDD+ readiness investments in MRV, significant gaps persist (Chapter 14). Most forest countries do not yet have the data, the capacity or the political will (e.g. to share and disclose data) that they need to fully support a performance-based payment system.

There has been progress on the application of remote sensing technologies to detect deforestation and forest degradation. However, the data required to calculate the emission factors needed to translate changes in forest condition to changes in emissions are altogether missing for large areas of the world's forests (Chapter 15). There has been conceptual progress towards establishing

robust reference emission levels (RELs), but progress within countries has been slow, due to a lack of data and inherent uncertainties in predicting business as usual emission scenarios (Chapter 16). Despite investments in readiness activities, so far there have only been modest improvements in the technical capacities of institutions responsible for MRV.

The slower-than-expected pace and higher-than-expected costs also have implications for the politics of REDD+ at the national level in both donor and REDD+ countries, putting REDD+ proponents on the defensive. The Governments of Norway and Indonesia faced uncomfortable scrutiny as the 2010 year-end deadline for issuing a moratorium on new forest concessions came and went, without an announcement until May 2011. In early 2012, the Government of Australia faced criticism by academics (Olbrei and Howes 2012) and the media (Hamann 2012) for the limited apparent progress of a high-profile REDD+ project funded by AusAID in Kalimantan, Indonesia.

18.4.2 Tenacity of business as usual institutions, interests and ideas

Another set of lessons learned from the first generation of REDD+ initiatives – although not entirely unexpected – concerns the difficulty of challenging those actors with vested interests in business as usual, the complexity of retrofitting existing institutions for new purposes – or creating new ones – and the effort needed to dislodge established ideas regarding how forests should be managed and by whom.

As shown by the media analysis conducted for the GCS, the discourse on REDD+ at the national level has been dominated by state actors, who may voice the interests of the corporate sector (Chapter 5). Proposals to weaken the Forest Code in Brazil, and the narrow scope of the moratorium in Indonesia (Box 2.1), can be understood as effective pushback from those who see their interests threatened by REDD+. The relative lack of emphasis so far in national REDD+ strategy discussions on the need to clarify forest tenure and carbon rights suggests an avoidance of changes that might threaten the *status quo*.

We have previously observed the dilemma that REDD+ "must be new… but build on what has gone before" (Seymour and Angelsen 2009). This dilemma is especially acute when choosing institutions for new REDD+ functions. Where existing institutions have taken the lead, they have tended to reproduce previous patterns in addressing new REDD+ challenges. This holds true not only at the international level (e.g. how multilateral donor agencies have programmed REDD+ funds) and the national level (e.g. how ministries of forestry have adapted REDD+ to their existing forest

management paradigms), but also at the project level, where conservation-oriented NGOs have selected sites in accordance with biodiversity-related objectives (Chapter 12), and are implementing ICDP-like activities (Chapter 10). To many actors, REDD+ has become a new source of funding for pre-existing activities, with a slight relabelling to fit the climate agenda.

But establishing new institutions for REDD+ is also difficult. New REDD+ entities face challenges to their authority and legitimacy, and the process of establishing new REDD+ financial mechanisms has been accompanied by delays and frustration (Chapter 7). At the same time, a positive outcome of REDD+ in many countries has been to open up dialogues on forest management beyond the ministries directly responsible, with REDD+ task forces growing to involve ministries of finance and planning, other line ministries and civil society.

18.4.3 Cross-scale issues

A third set of lessons emerging from the first generation of REDD+ initiatives concerns the significance of the cross-scale coordination needed to achieve the objectives of effectiveness, efficiency and equity. The utility of 'polycentric' institutions in forest governance (Ostrom 2010) and a 'nested approach' to REDD+ implementation (Pedroni *et al.* 2007) have been long recognised. Recent experience has further illuminated the specific issues and challenges requiring linkage across scales, the relative importance of different levels of governance for different functions and the divergence of interests across those levels.

A review of the first generation of REDD+ initiatives suggests many lost opportunities for national and local-level experiences to inform each other. Project proponents appear in some cases to have intentionally avoided engagement with nebulous national-level REDD+ policies and institutions, thus missing the chance to shape them. On the other hand, national-level REDD+ policy makers have not consistently looked to project-level experience as a source of insight regarding on-the-ground realities.

The analysis presented in this volume thus points to the need for increased vertical integration of REDD+ and better efforts by REDD+ champions to work across scales. Chapter 6 provides examples of obstacles faced by cross-scale MRV and leakage control efforts in Brazil, Indonesia and Vietnam, but also some promising approaches for overcoming those obstacles. Addressing forest tenure constraints on REDD+ (Chapter 9) and ensuring compliance with safeguards (Chapter 17) will both require increased coordination between the national and local levels to ensure that policy frameworks are grounded in local realities and that the objectives of those policies are realised at the local level.

The distribution of costs and benefits is perhaps the largest test facing effective multilevel governance in the context of REDD+. Fundamental questions regarding who should benefit from REDD+ financial flows – and on what basis and through what form of compensation – have not yet been answered and different stakeholders at different levels have different views on the right answers (Chapter 8). As discussed in Chapter 3, the power of REDD+ as an idea has, in part, been due to the ability of every stakeholder to project his or her vision of what REDD+ will mean in practice. Getting specific about benefit sharing will be a stringent test of the idea's resilience. Elaborating the options and implications of alternative benefit sharing mechanisms is thus one of the highest priorities for further REDD+ research and experimentation. And, since there is no simple or agreed-upon formula to use in designing the benefit sharing mechanisms, the legitimacy of the process becomes critical.

Finally, early REDD+ experience has highlighted the importance of the jurisdictional scale, i.e. the subnational level between national policies and local projects. It is at this meso-level jurisdictional scale that much decision making about land use takes place and where some of the more promising REDD+ initiatives – such as those in Brazil – are taking shape.

18.5 Navigating an uncertain REDD+ future

The uncertainty over the future of REDD+, caused not least by the slowness of UNFCCC negotiations overall and changed global economic conditions, means that REDD+ must increasingly be justified on the basis of its prospective contributions to multiple objectives at multiple levels, and not just global climate change mitigation. REDD+ cannot for the foreseeable future depend on a top-down flow of incentives for change, so its supporters need to invest more in bottom-up strategies to build constituencies for change that do not depend on a binding global agreement or significant finance in the near term.

Some might respond to this uncertainty with a wait-and-see approach. We believe that a better approach is to ask three questions: i) what can be done to build broad political support for REDD+? ii) what are the highest priority actions for building the foundation for eventual REDD+ success? and iii) what are the actions that would be useful to implement anyway, whatever scenarios of international REDD+ funding and global economic development materialise?

We address these three questions in the following subsections. Table 18.1 provides a summary of priority actions arranged by level.

18.5.1 Building broad political support for REDD+

Reframe REDD+ as an objective rather than a forestry programme. One of the successes of REDD+ so far is the high level of awareness it has created – beyond narrow climate and forest policy circles – of the significance of forest-related emissions. An international consensus that such emissions should be reduced stands, with or without a specific financial mechanism under the UNFCCC, and thus is a legitimate objective to be included in public policy across sectors and levels. In particular, the shift in the North–South politics of climate negotiations – in which middle-income countries are expected to shoulder more of the costs of mitigation – means that actions to reduce forest-based emissions in those countries cannot expect full international compensation (Chapters 3 and 7).

Thus, rather than allowing the REDD+ idea to be defined as calling for sector-based REDD+ *programmes*, which are often confined to the forestry sector, supporters need to reframe reduced forest-based emissions as an *objective* to be achieved in a broader context. Such an approach is fully consistent with UNFCCC texts, as well as with the buzzwords that have gained currency in the context of Rio+20 (including 'low carbon development,' 'green economy' and 'climate-smart agriculture') and the broad-based approaches to sustainable development that they signify. Liberating REDD+ from the confines of the forestry sector – and from a definition limited to payments for verified emission reductions – is also a precondition for addressing many of the extra-sectoral drivers of deforestation.

Invest in political legitimacy. Despite the international consensus on the urgency of reducing forest-based emissions, slow progress in UNFCCC negotiations, the assertion that forest protection is contrary to development, broader attacks on climate science and the increasing reliance of REDD+ on aid, all threaten its political legitimacy in both donor and recipient countries. For REDD+ to maintain its legitimacy, it will be necessary to keep moving forward, and to do so in ways that strengthen rather than undermine confidence in its integrity and its fairness, both within and between countries.

At the global level, achieving legitimacy will require progress towards real reductions in emissions, which implies addressing long-standing challenges of additionality, leakage and permanence. Globally accepted rules on reference emission levels and MRV need to be grounded in sound science and, to the extent possible, unadulterated by politics, even while adjusting those rules to take into account national circumstances in the interest of fairness.

At the national level, political legitimacy will require REDD+ constituencies that are sufficiently broad and deep to be resilient to the inevitable setbacks that will happen as REDD+ policies begin to challenge business as usual

Table 18.1 Priority actions by type and level

Level	Constituency building	Foundations for success	No regrets
International	Accelerate progress toward consensus on performance-based financing mechanisms and reference emission levels in UNFCCC negotiations (Chapter 16).	Secure existing sources and identify new sources of public finance for REDD+ and develop private sector investment opportunities (Chapter 7). Develop performance indicators for REDD+ Phases 1 (readiness) and 2 (policy) (Chapter 13). Finalise MRV modalities to set international standards for reporting and verification (Chapters 14, 15).	Improve the availability of spatial data and emission factors (Chapter 15).
National	Support national-level constituencies for transformational change (Chapter 5). Ensure legitimacy of decision making through attention to REDD+ processes and institutions (Chapters 5, 8).	Improve legal certainty regarding forest carbon rights (Chapter 8). Fill gaps in data and capacity for MRV.	Pursue no regrets fiscal policies, e.g. removing perverse subsidies. Establish cabinet-level dialogues to address extra-sectoral drivers of deforestation, e.g. agriculture and mining. Incorporate tenure reform/clarification into national development strategies (Chapter 9).

Jurisdictional	Support integrated land-use planning processes and develop tools for managing tradeoffs among food and energy production, ecosystem services provision and conservation objectives (Chapter 4).	Incorporate experimental design for performance-based finance.	Strengthen local institutions and enforcement power. Invest in institution building for spatial analysis, planning and information collection. Generate and disseminate knowledge on the role of forests in supporting agricultural productivity and climate resilience.
Project	Ensure adequate attention to local needs for livelihoods and information.	Incorporate experimental design for PES.	Invest in capacity building for local communities to participate in MRV activities to increase transparency and commitment (Chapter 15).
Cross-scale	Reframe REDD+ as an objective rather than a forestry programme at all levels.	Ensure devolution of REDD+ decision making to the appropriate level. Assess the costs of REDD+ and who bears them, and develop benefit sharing mechanisms to address different interests (Chapter 8). Incorporate attention to safeguards (Chapter 17).	Improve vertical and horizontal coordination among government institutions relevant to REDD+ implementation (Chapter 6). Develop intermediary institutions for accumulation and transmission of information from the ground to national-level institutions (Chapter 6).

interests and the possible scandals – such as misappropriation of REDD+ funds – that will inevitably accompany action on the ground. Serious attention to safeguards is necessary, both to avoid substantive harm as well as damage to the reputation of REDD+. Legitimacy will also depend on the perceived integrity of the process to determine and implement REDD+ benefit sharing mechanisms.

Cultivate broader constituencies for REDD+. Political reality makes it imperative to include economic development goals in the climate agenda, so that REDD+ can enjoy broad and sustainable support. REDD+ has been such a powerful idea in part because of its promise to deliver on multiple objectives. Often mentioned co-benefits include biodiversity conservation, poverty reduction and improved governance, but the mobilisation of constituencies for these objectives in REDD+ policy arenas has been uneven. Indeed, some constituencies have lined up to oppose REDD+ on the basis that it may undermine the rights and tenure of forest communities. Some clear examples of REDD+ initiatives leading to stronger rights and tenure, coupled with serious attention to safeguards, could build confidence that it is more of a promise than a threat.

In addition, and consistent with the reframing of REDD+ proposed above, more attention could be given to the benefits of maintaining forests at the landscape scale. Discourses on food security continue to wrongly characterise forests as impediments to increased agricultural production through extensification; greater efforts are needed to disseminate existing knowledge and generate new knowledge regarding the importance of forest-based ecosystem services to agricultural productivity. The role of forests in buffering economic interests from the impacts of climate change – a key component of strategies for adaptation – continues to be grossly underappreciated. Demonstrating the contribution of REDD+ to objectives such as maintaining agricultural productivity and climate resilience could help counter the persistent framing of forest protection as being opposed to development.

18.5.2 Priority actions for building foundations for success

Maintain link to PES, but in association with other tools. There are many reasons to fear that a weakening of payment for performance as a key attribute of REDD+ will reduce its effectiveness, making it no different than previous forestry sector interventions (such as ICDPs) that have enjoyed limited success. Thus, it will be critical to assemble various sources of finance – including voluntary carbon markets, domestic finance and development assistance – to bridge the gap to the anticipated global compliance market for forest carbon credits and to begin to demonstrate payment for performance at both international/national and national/subnational scales.

But with the likelihood of lower than expected finance, at least in the short term, and the rising prices of commodities that compete for the same land, it is clear that REDD+ cannot depend on cash flows and PES instruments only. Maintaining an optimal forest cover in the landscape – from the perspective of global climate mitigation and biodiversity conservation objectives, as well as more local livelihood and ecosystem services objectives – will require a skilful combination of instruments, including traditional command and control, law enforcement approaches, fiscal incentives and smarter infrastructure development and land use planning.

Focus on key bottlenecks impeding progress. The number of problems to be solved in order to achieve effective, efficient and equitable REDD+ outcomes can seem daunting. It is important, therefore, to target investment to removing key bottlenecks at the policy level and filling key gaps in the knowledge and capacity needed for REDD+ implementation.

At the global level, negotiators should give priority to speeding up progress on financing mechanisms and other implementation modalities. At the national level, REDD+ supporters should focus on building constituencies for transformational policy change, including outreach to the progressive business sector, which hitherto has been relatively neglected, as well as to constituencies for forest tenure reform. Across scales, continued investment is needed to assemble the nuts and bolts of MRV systems, including filling current gaps in data and capacity.

Shift relative emphasis to cross-scale and jurisdictional-level efforts. The first generation of REDD+ initiatives (and associated research) has tended to focus on national-level policy processes and local-level pilot projects, with perhaps an overemphasis on projects and a suboptimal level of interaction between the two. Going forward, greater attention should be given to the jurisdictional scale as the locus of critical land use planning processes and the space where increased transparency and public participation would be desirable even in the absence of REDD+. In addition, more investment is needed in mechanisms to facilitate cross-scale linkages, not least in the design of policies and institutions for REDD+ benefit sharing.

18.5.3 No regret policy reforms

There are a number of forest-related and other reforms that would represent good public policy even if they did not generate forest emissions reductions as an additional benefit. In addition, the information, institutions and capacities needed for REDD+ are also necessary to serve other societal objectives.

Clarify land tenure. The clarification of land tenure would lead to more efficient land use, stimulate investment to raise agricultural productivity and

contribute to economic development. Critically, the resolution of conflicts over land would also remove a key source of violence in rural areas.

Remove perverse subsidies. Agents of deforestation are often the beneficiaries of cheap credit, infrastructure, tax breaks and other incentives provided by the state. The removal of such subsidies would lead to a more efficient allocation of resources and create fiscal space in government budgets, while also building constituencies for improved forest management in ministries of finance.

Strengthen the rule of law. Reducing opportunities for forest-related crime, including corruption, is another way to create fiscal space by ensuring that rents from the exploitation of forest-based resources are captured by the state. Stopping large-scale illegal forest conversion through targeted law enforcement serves biodiversity conservation objectives as well.

Improve the availability of forest-related data. Better data and information management systems are essential for informed planning, granting and monitoring of permits and other forest management tasks.

Strengthen institutional capacity. Competencies in functions such as transparent financial management, inclusive land-use planning and coordination across sectors and levels are necessary for the planning and implementation of most development activities at all levels.

Improve forest governance. Improvements in forest governance more generally – including transparency, inclusive decision making processes and mechanisms for accountability – help empower constituencies for the public interest. Such improvements also provide tools to protect the rights and livelihoods of forest communities that may be threatened by external agents of forest conversion.

18.6 Concluding thoughts

18.6.1 Key features of REDD+ to protect

As the idea of REDD+ continues to evolve rapidly, and its concrete expressions diversify, it is worth pausing to reflect on the key elements that make REDD+ worth pursuing and that could be at risk. First, of course, is the objective that the name describes, reducing emissions from deforestation and forest degradation. The ever-accumulating evidence that the Earth is on a path to potentially catastrophic climate change makes the pursuit of this objective a moral imperative.

Next is the association of REDD+ with transformational change. Achieving REDD+ is not about business as usual in international forestry cooperation:

piecemeal technical interventions ranging from reduced impact logging to improved cooking stoves. Instead, it is about transformational shifts in the political economy of forests, challenging the destruction of forests for the benefit of narrow vested interests at the expense of the broader public interest and forest communities. It is about changing the economics of forests through new incentives to conserve a globally important ecosystem service and it is about changing the politics of forests by recognising new rights and decision making norms.

Accordingly, the features of REDD+ that distinguish it from past efforts to change forest governance and management are critical. One of these is the link to performance: shifting the focus from inputs and outputs to outcomes and results is essential for REDD+ effectiveness and legitimacy. Another is its implementation at the national and jurisdictional scales. No matter how innovative or standards-compliant, not even hundreds of pilot projects are likely to add up to transformational change in the absence of national-level policy and institutional development and improvements in subnational land use planning.

18.6.2 The risks of REDD+… and of its loss

At the time the Global Comparative Study on REDD+ was conceived, there was a prevailing assumption that REDD+ was poised to take off quickly. For the advocates of forest communities, a quick start to REDD+ was scary, since it was feared that any programme to make forests more valuable would make forest communities worse off, given the governance conditions characteristic of many forested countries.

For forest communities, a slower start to REDD+ has in some respects been a good thing, in terms of providing more time for their voices to be incorporated into REDD+ policy processes at all levels and more attention to the rights, livelihoods and safeguards issues of particular importance to them. At the same time, the problems anticipated by some would be 'good problems to have', because if they were to arise, at least it would indicate that REDD+ is assuming some reality on the ground, REDD+ funds are flowing and REDD+ policies are starting to challenge vested interests.

If REDD+ were not getting some traction, we would not have to worry about its risks. But a bigger risk would be for REDD+ as a vision to fail to compete with business as usual. The local benefits of maintaining forests are significant: on average, households located in and around forests derive more than one fifth of their income from forest resources, according to findings by CIFOR's Poverty and Environment Network (PEN).[1] It would be ironic, and tragic,

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1   http://www.cifor.org/pen

if relatively benign land uses arising from REDD+ (from the perspective of social and environmental impacts) were to lose out to the wholesale conversion of forests – and often, dispossession of communities – associated with commercial-scale agribusiness and mining because REDD+ was seen as too risky.

18.6.3 Reasons for optimism

The litany of problems encountered by the first generation of REDD+ initiatives can make for discouraging reading. But despite adverse changes in the broader context, and hard lessons learned from early experience, the potential of REDD+ continues to capture the imagination and attract continuing investment at all levels due to the facts that: i) there is wide consensus that it will not be possible to keep global warming below the 2˚C target without a concerted effort to reduce emissions from land use change; ii) UNFCCC negotiators continue to advance, if slowly, toward agreements on finance, safeguards and RELs/MRV and financial commitments from bilateral and multilateral donors have not yet shown signs of diminishing; iii) national governments and pro-REDD+ constituencies continue to develop REDD+ policies and strategies, in many cases with the explicit support of heads of state; iv) subnational actors (such as those associated with the Governors' Climate and Forests Task Force) have emerged to complement the hundreds of project-level initiatives.

In addition, several positive advances currently and prospectively attributable to REDD+ will be useful, regardless of what happens to REDD+ as a global mechanism, national strategy or collection of local projects. These include greater global awareness of the importance of forests in climate protection, increased transparency of forest-related information and decision making in a number of countries and renewed attention to forest tenure issues. REDD+ as a worthy objective is still very much alive.

Appendix

CIFOR's Global Comparative Study on REDD+ (GCS)

Louis V. Verchot, Maria Brockhaus, William D. Sunderlin and Arild Angelsen

CIFOR is implementing a research and knowledge-sharing strategy on Reducing Emissions from Deforestation and forest Degradation (REDD+). The objective of the strategy is to provide REDD+ policymakers and practitioner communities with the information, analysis and tools they need to ensure *effective* and *efficient* reduction of carbon emissions with *equitable* impacts and co-benefits – including poverty reduction, protection of local livelihoods, rights and tenure, and enhancement of non-carbon ecosystem services. We call this the 3E+ framework, and it was elaborated upon in the previous book 'Realising REDD+' (Angelsen *et al.* 2009).

The strategy is being implemented through three research components:
1. National REDD+ initiatives
2. Subnational projects
3. Monitoring and reference levels

The specific objective of the first component is to support the achievement of 3E+ outcomes by national REDD+ strategies and policies. This objective is being realised by generating information, analysis and tools that consider diverse stakeholder interests and are designed to inform national REDD+ strategies and policies (Chapters 5, 8, 9 and 17 in this book). In addition, our vision is that second-generation national REDD+ initiatives will incorporate best practices derived from detailed assessments of the first-generation strategies and policies.

The specific objectives of the second component are to inform first-generation subnational REDD+ projects by analysing their design and implementation. The results of the analysis and tools we are developing will increase learning about how to achieve 3E+ outcomes from REDD+ projects. The lessons learned and best practices derived from the detailed assessment of first-generation REDD+ demonstration activities will also inform and improve second-generation REDD+ demonstration activities.

The specific objective of the third component is to support better and more cost efficient measurement, reporting and verification (MRV) systems

Table A1 Countries included in GCS research

Country	Component 1	Component 2	Component 3
Brazil	X	X	
Peru	X	X	X
Cameroon	X	X	X
Tanzania	X	X	
Indonesia	X	X	X
Vietnam	X	X	X
Bolivia	X		X
Democratic Republic of Congo (DRC)	X		
Nepal	X		
Burkina Faso	X		
Mozambique	X		
Papua New Guinea (PNG)	X		

Note: the three categories (in different colours) reflect the amount of work (in decending order) carried out by GCS

Table A2 goes here

Table A2 Partners in the GCS project

Partner	Acronym	Country	Component(s)
University of Melbourne	UoM	Australia	1 & 2
Centro de Estudios para el Desarrollo Laboral y Agrario	CEDLA	Bolivia	1 & 2
Instituto Boliviano de Investigación Florestal	IBIF	Bolivia	3
Institut de Recherche pour le Développement		Bolivia	3
Instituto de Mudanças Climáticas e Regulação de Serviços Ambientais	IMC	Brazil	2
Instituto Centro de Vida	ICV	Brazil	2
Instituto de Pesquisa Ambiental da Amazônia	IPAM	Brazil	2
The Nature Conservancy	TNC	Brazil	2
Fundação Amazonas Sustentável	FAS	Brazil	2
Rede de Desenvolvimento, Ensino e Sociedade	REDES	Brazil	2
Centre pour l'Environnement et le Développement	CED	Cameroon	2
GFA-Envest		Cameroon	2
University of Ngaoundere		Cameroon	3
Ministry of Environment and Protection of Nature		Cameroon	3
Conseil pour la Défense Environnementale par la Légalité et la Traçabilité	CODELT	DRC	1
Nordic Agency for Development and Ecology	NORDECO	Denmark	3

Table A2 continued

Partner	Acronym	Country	Component(s)
Organisation National Forestiere Internationale	ONFI	France	3
Gottingen University		Germany	3
Biocarbon Consult		Germany	3
Indonesian Center for Environmental Law	ICEL	Indonesia	1
Lembaga Studi Pers dan Pembangunan	LSPP	Indonesia	1
REDD Aceh Task Force (Government of Aceh)		Indonesia	2
Fauna and Flora International Indonesia	FFI-Indonesia	Indonesia	2
AusAID (Kalimantan Forests and Carbon Partnership)	KFCP	Indonesia	2
The Nature Conservation	TNC	Indonesia	2
Infinite Earth (PT. Rimba Raya Conservation)		Indonesia	2
Starling Resources / PT. RMU		Indonesia	2
Indonesian Soils Research Institute		Indonesia	3
Center for Climate Risk and Opportunity Management, Bogor Agriculture University		Indonesia	3
World Agroforestry Centre	ICRAF	Kenya	3
Universidade Eduardo Mondlane	UEM	Mozambique	1
ForestAction		Nepal	1
The Netherlands Development Organisation	SNV	Netherlands	1
Wageningen University	WU	Netherlands	2 & 3

			1, 2 & 3
Norwegian University of Life Sciences	UMB	Norway	
Centre For Climate Change And Sustainable Development at the University of Papua New Guinea	CCCSD UPNG	Papua New Guinea	1
National Research Institute	NRI	Papua New Guinea	1
Libelula Comunicación Ambiente Y Desarrollo Sac	Libelula	Peru	1
Bosques Amazonicos S.A.C. REDD project with Brazil nut harvesters, Madre de Dios	BAM	Peru	2
CI. Alto Mayo Project, San Martin		Peru	2
WWF-Peru	WWF	Peru	3
Associación para la Investigación y el Desarrollo Integral	AIDER	Peru	3
Derecho, Ambiente y Recursos Naturales	DAR	Peru	1
Research on Poverty Alleviation	REPOA	Tanzania	1
Tanzania Traditional Energy Development and Environmental Organization	TaTEDO	Tanzania	2
Jane Goodall Institute	JGI	Tanzania	2
CARE		Tanzania	2
Tanzania Forest Conservation Group	TFCG	Tanzania	2
Mpingo Conservation and Development Initiative	MCDI	Tanzania	2
University of Aberdeen		UK	3

Table A2 continued

Partner	Acronym	Country	Component(s)
Comparing Climate Change Policy Networks, University of Minnesota	COMPON	USA	1
World Resource Institute	WRI	USA	1
University of North Carolina	UNC	USA	2
Duke University		USA	2
North Carolina State University	NCSU	USA	2
Central Institute for Economic Management	CIEM	Vietnam	1
Centre of Research and Development in Upland Areas	CERDA	Vietnam	1
Son La Forestry Department	Son La FD	Vietnam	1
The Netherlands Development Organization	SNV	Vietnam	2
Research Centre for Forest Ecology and Environment of Forest Science Institute of Vietnam	RCFEE	Vietnam	3
Transparency International	TI	International	1
Common Market for Eastern and Southern Africa	COMESA	Regional	3

for REDD+ projects and national REDD+ schemes. We are developing new knowledge in four areas: MRV institutions and institutional capacity; approaches to assessing national and sub-national reference emissions levels and reference levels (RELs/RLs); emissions factors for better implementation of IPCC Tier 2 inventory methods (for definitions, see Chapter 15, and Box 16.3); and community participation in MRV. Currently most developing countries use Tier 1 methods in national greenhouse gas (GHG) inventories. We aim to develop better knowledge about sampling design and assessment of carbon stocks in order to facilitate implementation of IPCC Tier 2 approaches to carbon inventory. This will ensure more accurate and precise estimates of emissions reductions.

A fourth component of the project aims to *disseminate* the knowledge generated in the three research components to REDD+ policy makers and practitioners at all levels. This component is based largely on a web-based system, but information is also distributed through more traditional means, such as this book.

We are currently working in 12 REDD+ countries, each with a different focus and coverage of the three research components.

The project involves a large number of partners. National partnerships encompass both governmental, such as the provincial Government of Aceh and the Ministry of Forestry in Cameroon, and nongovernmental organisations such as *Rede de Desenvolvimento Ensino e Sociedade* (REDES) and the Indonesian Center for Environmental Law (ICEL). Internationally, the project works with UN partners (e.g. FAO, UNDP, UNEP, UNFCCC) and large international NGOs (e.g. CARE, The Nature Conservancy, WWF). In addition, there are several partnerships with private companies (e.g. Starling Resources) and universities in developed countries (e.g. North Carolina State University, Norwegian University of Life Sciences, University of Melbourne).

Component 1: National REDD+ processes

Component 1 analyses the policy processes that lead to the formulation and implementation of national REDD+ strategies. The study is currently underway in nine countries (Bolivia, Brazil, Cameroon, Democratic Republic of Congo (DRC), Indonesia, Nepal, Peru, Tanzania and Vietnam) and partial analysis is being undertaken in three additional countries (Burkina Faso, Mozambique and PNG). A media-based discourse analysis is underway in Norway.

The research objective is to inform national policy makers about how constraints to effective policymaking can be addressed through adequate
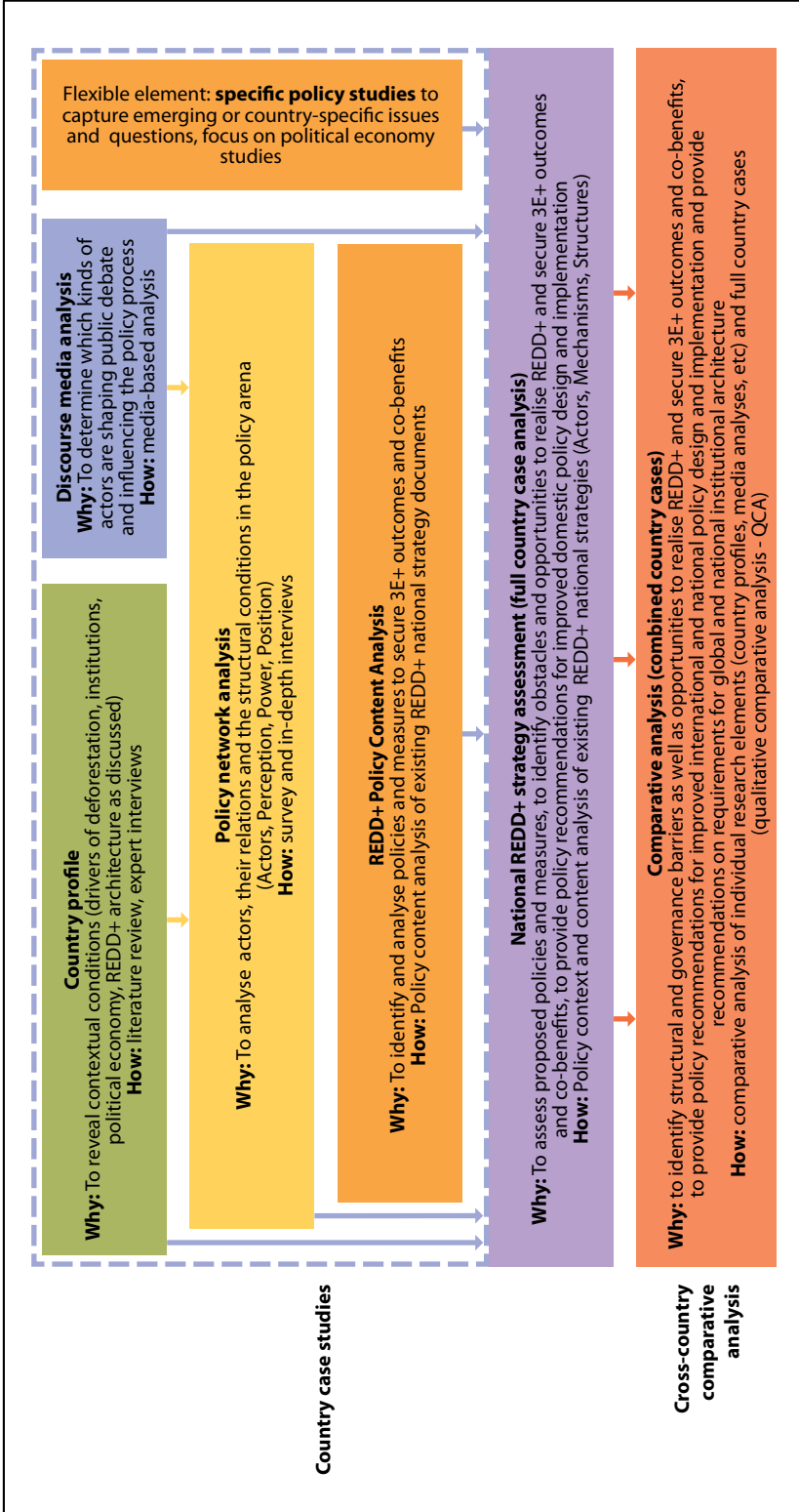
Figure A1 Research design and work modules of GCS Component 1

Table A3 Component 1 methods for analysing national REDD+ strategies: description and key objectives

Method	Objective and description
Country profile: Detailed guidelines for each section/subsection Open interviews	Provides an in-depth description of the national context relevant to REDD+, the options for REDD+ under discussion and an overview of the policy dynamics outlining the key issues and challenges in the country. Describes drivers of deforestation, general and forest sector governance, natural resource and carbon tenure, relevant sector policies and programmes, and design options for REDD+ in terms of MRV; financing; benefit and cost sharing; alignment of institutions and policies; coordination; identification of key actors, consultation and policy events. The profile includes a summary assessment of the 3E+ implications.
Media-based discourse analysis: Media coding (three major national daily newspapers) with predefined code book, articles selected based on predefined keyword searches Media informant interviews	Analyses predominant discourse in the media to examine: Frequencies, frames (meta topics, topics) and actors (advocates and adversaries of frames), and their stances (position statements) on: Existing REDD+ discourse and the way in which it is shaping the options negotiated in the national REDD+ arena Reforms under discussion, both specific to REDD+ and of broader relevance Actors influencing or using specific discourse 3E+ implications of the various discourses.
Policy network analysis: Expert panel Actors in-depth interviews Social organisational survey	Assesses the actors and structural aspects of the REDD+ arena and considers implications for the 3E+ content of REDD strategies. Examines questions including: Who is involved in national REDD+ policy making? What are their perceptions, interests and power relations? What are their networks of information and influence? Repeated over time, this method can assess dynamics and power relations. Results of policy outcomes emerging from Components 2 and 3 will allow us to assess the efficiency outcomes.

Table A3 continued

Method	Objective and description
REDD+ policy content analysis	Identifies existing national strategy documents and provides a detailed content analysis of proposed policies and measures to secure 3E outcomes and co-benefits.
Policy studies: Conducted continuously, as appropriate	Covers specific policies, political economy questions, or options, such as biofuel or soy bean policies. Reviews specific lessons from reforms or mechanisms such as existing environmental trust funds. Provides insight into political economy aspects of REDD+ and the implications for 3E+ REDD+ design. Flexible application of this method allows for rapid response to emerging research questions.
National REDD+ strategy assessment	Brings together all five previous modules to assess the complete national REDD+ strategy to: i) identify obstacles and opportunities to realise REDD+ and secure 3E+ outcomes and co-benefits, and ii) provide policy recommendations for improved domestic policy design and implementation. The strategy assessment is based on a broad policy context and content analysis of existing national REDD+ strategies (actors, mechanisms, structures).
Global comparative analysis: Qualitative comparisons of country case research modules Comparative network analysis QCA (qualitative comparative analysis)	Provides guidance for second generation REDD+ design to address problems appearing in national policy arenas from first generation initiatives. Various analytical lenses will be applied, for example the 3E+ criteria, governance factors and country context variables. Draws on data derived from all methods above and provides comparison across national case studies within each method, such as a global comparative media analysis, and across methods.

policy design. Particular focus is given to providing evidence-based options for achieving efficient, effective and equitable REDD+ policy strategies. Policy recommendations will include aspects of institutional design for specific country contexts.

The research investigates how the 3E+ outcomes of REDD+ national strategies, and their formulation and implementation, depend on existing governance conditions, including the actors involved in the policy process, the mechanisms and the structures. More broadly, it analyses how the institutional context, the discursive practices and the macro-economic conditions of a country affects national policies. The degree of political commitment, the internal power dynamics and the existence of mechanisms for policy learning are analysed to explain the degree of success of policy design and implementation. In addition, the research investigates how a lack of appropriate institutional mechanisms limits the effective targeting of financial incentives to reduce deforestation and achieve broader co-benefits, as well as possible options to overcome these obstacles.

Comparative analysis complements in-depth single case study research and assesses the social, political-economic and institutional factors that explain the varying 3E+ outcomes of national REDD+ strategies.

CIFOR researchers have developed five work modules to analyse national REDD+ strategies: a country profile, a media analysis, a policy network analysis, a REDD+ policy content analysis and a flexible module for specific policy studies that respond to individual country's research needs. These are explained more in Table A3 and Figure A1.

Component 2: Subnational projects

Component 2 aims to provide a solid empirical foundation for answering this overarching research question: How can REDD+ projects be designed in such a way that their outcomes fulfil the 3E+ co-benefits criteria? It also aims to answer the following subordinate questions: Do REDD+ projects meet the 3E+ co-benefits criteria? If yes, how? If not, why not? Based on this knowledge, how do we improve the design and implementation of current and future projects?

Component 2 aims to answer these questions through a counterfactual approach called 'before–after/control–intervention' (BACI). Socioeconomic and biophysical field data are collected before and after the introduction of conditional, performance-based REDD+ incentives (payments for environmental services, or PES) – the BA part of BACI. The data are collected in villages that are both outside (control) and inside (intervention) the boundaries of REDD+ projects – the CI part. Jagger *et al.* (2010) describe the BACI approach in detail and Sunderlin *et al.* (2010) present the technical guidelines for implementing Component 2.

The data serve as a baseline for predicting how the project will perform later on (*ex ante* approach) and, in conjunction with the second round of data collected after the introduction of REDD+ interventions, help to retrospectively measure the impact of REDD+ (*ex post* approach).

Component 2's field research will be carried out at 24 project sites in the six core GCS countries: Brazil (7), Peru (2), Cameroon (2), Tanzania (6), Indonesia (6) and Vietnam (1). Table A4 lists the 22 projects sites already selected and where field work has begun.[1] All of the projects use the BACI approach except *Bolsa Floresta* in Brazil; conditional REDD+ incentives were introduced here before Component 2 began, so the BACI approach was not possible.

The units of analysis are: the project site; the village within project boundaries; and the household within the village (household analysis was not done at all project sites). At 16 'intensive' project sites, we analyse the project as a whole: approximately eight villages (four control and four intervention) and approximately 240 households (30 in each village). At five 'extensive' project sites, we analyse the project and four intervention villages, but no control villages and no households. At the time of writing (May 2012), data have been collected at 20 project sites (19 BACI and one non-BACI), 170 villages and 3905 households (see Table A5).
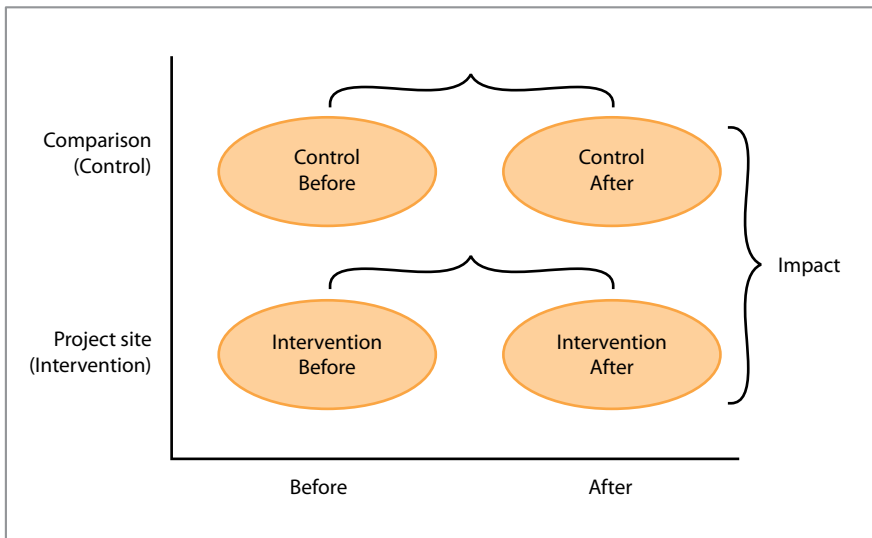
Figure A2 Component 2's BACI method

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1   Two project sites remain to be selected in Brazil.

Table A4 REDD+ project sites in GCS Component 2 research

Country	Project Name	Abbreviation	State/ Province	Main proponent organisation	Website	Number of villages		Project site type	Data used in this book?
						Control	Intervention		
Brazil	Acre State System of Incentives for Environmental Services	Acre SISA	Acre	IMC	http://gcf.wsodqa.com/ StateOverview	4	4	BACI-Intensive	Yes
	Northwest Mato Grosso Pilot REDD+ Project	Cotriguaçu	Mato Grosso	ICV	www.icv.org.br/ quem_somos/noticias/ mato_grosso_presents_ redd_program_and_pilot_ project_in_copenhaguen. icv	4	4	BACI-Intensive	Yes
	Sustainable settlements in the Amazon: the challenge of transition from family production on the frontier to a low carbon economy	Transamazon	Pará	IPAM	www.ipam.org.br/ biblioteca/livro/id/250	4	4	BACI-Intensive	Yes

Table A4 continued

Country	Project Name	Abbreviation	State/ Province	Main proponent organisation	Website	Number of villages		Project site type	Data used in this book?
						Control	Intervention		
	REDD+ Pilot Program in São Felix do Xingu	SFX	Pará	TNC, Brazil	www.nature.org/ ourinitiatives/urgentissues/ climatechange/index.htm	4	4	BACI-Intensive	Yes
	Blosa Floresta Program	Bolsa Floresta	Amazonas	FAS	http://fas-amazonas.org/ noticia/bolsa-floresta- program-invests-more- than-400-thousand-in-the- uacari-rds?lang=en	6	34	Non-BACI	No
Peru	Brazil Nut Concessions REDD Project	BAM	Madre de Dios	BAM	www.bosques-amazonicos. com/en/our-projects/ redd-in-concessions-of- brazil-nuts-in-madre-de- dios-peru	0	0	BACI-Intensive	No
	Alto Mayo REDD+ Initiative	Alto Mayo	San Martin	Conservation International	www.conservation.org/ learn/climate/strategies/ field/pages/projects.aspx	0	0	BACI-Intensive	No
Cameroon	Payment for Ecosystem Services (PES) project in Cameroon South and East Region	CED	South and East Region	CED	www.cedcameroun.org/ en/programmes/axes-de- travail/axes-strategiques- thematiques/1209- changement-climatique	4	2	BACI-Intensive	Yes

	Mt. Cameroon REDD Project	Mount Cameroon	South West region	GFA-Envest	www.gfa-group.de/envest/ projects/gfa_envest_ projects_eng_3431628. html	3	4	BACI-Intensive	Yes
Tanzania	Community-based REDD Mechanisms for Sustainable Forest Management in Semi-Arid Areas	TaTEDO	Shinyanga	TaTEDO	www.tatedo.org/cms/ images/stories/broncure/ reddbronchure.pdf	5	4	BACI-Intensive	Yes
	Making REDD Work for Communities and Forest Conservation in Tanzania	TFCG-Kilosa	Morogoro	TFCG	www.tfcg.org/pdf/ TFCG%20MJUMITA%20 REDD%20project%20 leaflet.pdf www.tfcg.org/pdf/article_ about_tfcg.pdf	2	5	BACI-Intensive	Yes
	Making REDD Work for Communities and Forest Conservation in Tanzania	TFCG-Lindi	Lindi	TFCG	www.tfcg.org/pdf/ TFCG%20MJUMITA%20 REDD%20project%20 leaflet.pdf	0	4	BACI-Extensive	Yes

Table A4 continued

Country	Project Name	Abbreviation	State/Province	Main proponent organisation	Website	Number of villages		Project site type	Data used in this book?
						Control	Intervention		
	Building REDD Readiness in the Masito Ugalla Ecosystem Pilot Area in Support of Tanzania's National REDD Strategy	JGI	Kigoma	JGI	www.janegoodall.org/ programs/tanzania-redd-program	0	4	BACI-Extensive	Yes
	HIMA – Piloting REDD in Zanzibar through Community Forest Management	CARE	Unguja/ Zanzibar	CARE International in Tanzania	www.care.org/careswork/ projects/TZA070.asp	0	4	BACI-Extensive	Yes
	Mpingo Conservation Project	Mpingo	Lindi	MCDI	www.mpingoconservation. org/about.html	0	4	BACI-Extensive	Yes

Indonesia	Reducing Carbon Emissions from Deforestation in the Ulu Masen Ecosystem	Ulu Masen	Aceh	Government of Aceh (Task Force REDD Aceh)	www.climate-standards.org/projects/files/Final_Ulu_Masen_CCBA_project_design_note_Dec29.pdf	4	4	BACI-Intensive	Yes
	REDD Pilot Project Development, Community Carbon Pools	KCCP	Kalimantan Barat	FFI-Indonesia	www.fauna-flora.org/explore/indonesia/	4	4	BACI-Intensive	Yes
	Kalimantan Forests and Carbon Partnership	KFCP	Kalimantan Tengah	AusAID KFCP	www.forestpeoples.org/sites/fpp/files/publication/2011/10/central-kalimantan-briefing-2.pdf	4	4	BACI-Intensive	Yes
	The Rimba Raya Biodiversity Reserve Project	RRC	Kalimantan Tengah	Infinite Earth (PT. Rimba Raya Conservation)	www.infinite-earth.com/projects-details.html	4	0	BACI-Extensive	Yes
	Katingan Conservation Area: a Global Peatland Capstone Project	Katingan	Kalimantan Tengah	Starling Resources / PT. Rimba Makmur Utama	http://starlingresources.com/projects-katingan.php	4	4	BACI-Intensive	Yes

Table A4 continued

Country	Project Name	Abbreviation	State/ Province	Main proponent organisation	Website	Number of villages		Project site type	Data used in this book?
						Control	Intervention		
	Berau Forest Carbon Program	Berau	Kalimantan Timur	TNC	www.nature.org/ ourinitiatives/urgentissues/ climatechange/index.htm	4	5	BACI-Intensive	No
Vietnam	SNV Site, Cat Tien, Lam Dong District (VNM1)	SNV	Lam Dong	SNV	http://pubs.iied.org/pdfs/ G02745.pdf	4	4	BACI-Intensive	Yes
					Total	60	110		

Table A5 Distribution of Component 2 villages by type (control/intervention) and mode (intensive/extensive/non-BACI) where data already collected

Research mode	Number of project sites	Intervention		Control		Total villages	Total households (HHs)
		Villages	HHs	Villages	HHs		
Intensive	14	56	1853	54	1712	110	3565
Extensive	5	20	-	-	-	20	-
Non-BACI	1	34	244	6	96	40	340
Total	20	110	2097	60	1808	170	3905

Note: This table includes data for all projects sites except the two in Peru where field research had just begun at the time of writing, and two project sites in Brazil not yet chosen.

Table A6 GCS Component 2 research instruments

Instrument category	Instrument	Purpose
Scoping/preparation	Village appraisal	Compile data for statistical matching of control and intervention villages
	Proponent appraisal	Information on project goals, objectives, scope, attributes, achievements to date
	Site narrative	Assessment of consistency between proponent strategy and local drivers of deforestation
Field survey of local stakeholders	Household survey	Data on household composition, assets, tenure, income, change in forest cover, views on wellbeing change, views on REDD+
	Village survey	Basic village information, tenure, livelihoods, land management practices and rules, views on wellbeing change, challenges, views on REDD+
	Women's survey	Information on women's livelihoods, gender-specific activities, forest management, decision making, views on wellbeing change, views on REDD+
	Medium and large landholder survey	Data on household composition, assets, tenure, income, land use management/licensing, change in forest cover, views on wellbeing change, views on REDD+
Survey of project implementation	Timeline of village activities	Characterise and record details of project implementation in each village to date
	Stakeholder list	Identify implementation and opportunity cost stakeholders and determine the most significant stakeholder groups
	Opportunity and implementation costs	Assess proponents' perception of opportunity costs and related work they are planning or have done; obtain estimates of total implementation costs to date
	Opinion survey on perceptions and politics	Assess perceptions of REDD+ and the project, identifying unanticipated benefits or costs
	Project checklist	Understand the broader context of the project, including interactions with the national level and plans related to carbon finance and benefit sharing
	Cost scoping exercise	Scope out the willingness of proponents to collaborate on in-depth analysis of project costs

MRV	Survey on MRV	Information on remote sensing and GIS data availability, techniques employed, REL estimation, and monitoring plans
Miscellaneous	Update on timing on REDD+ Interventions	Know the timing of interventions such as forest access restrictions, alternative livelihoods, PES
	Supplementary survey on participation and tenure	In-depth information on proponent engagement of community in establishing and implementing project, and attention to tenure issues

Note: As explained earlier in this Appendix, the Bolsa Floresta project site in Brazil had already introduced REDD+ conditional incentives and is therefore not part of the BACI research method. For this project, the survey instruments from the first two categories in this table were adapted to measure ongoing project implementation.

The original plan was to conduct both the *ex ante* and *ex post* research within the first GCS period (2009–2013). Due to delays in the introduction of REDD+ conditional incentives at almost all sites (see Chapter 10), this was impossible. Instead, in the first GCS period, Component 2 has focused almost wholly on compiling the baseline data – in anticipation that the 'after' data will be collected after 2013 – and on conducting *ex ante* analysis on the process and early outcomes of setting up REDD+ projects.

Component 2 research uses a wide variety of research instruments, depending on purpose, unit of analysis and target population. Table A6 classifies the research instruments into purpose categories and describes their uses. Some instruments can be accessed at the GCS web page: www.cifor.org/nc/online-library/browse/view-publication/publication/3286.html

Component 3: Monitoring and reference levels

Component 3 of the study provides policy makers and practitioners with information and tools for better GHG inventories and methods for establishing national and subnational reference levels. The study is currently underway in Peru, Cameroon, Indonesia and Vietnam. Partial analyses have been done in Bolivia and Kenya. The research investigates how REDD+ can be implemented effectively and efficiently. Work in this Component contributes to the question of equity through improving impact attribution (who has done what) and precision. Equity is discussed as one consideration in setting reference levels. We have also included analyses of some of the socially and environmentally oriented carbon standards, such as the Climate, Community and Biodiversity Alliance (CCBA) in the analysis. Table A7 summarises the research methods.

The research investigates MRV effectiveness and efficiency at the institutional level by looking at capacity and identifying capacity gaps. Countries need to be able to measure forest area change and assess carbon stock changes to implement a national MRV system. The different biophysical conditions in countries mean that MRV challenges vary; our analysis compares challenges to capacities to identify gaps. We used two recent international reporting exercises in the Forestry Resources Assessment to examine progress in capacity building.

Building on many years of CIFOR research on the economic drivers of deforestation, we developed a stepwise approach to setting RELs/RLs (see Chapter 16). Decisions in the UNFCCC raise the importance of using data-driven approaches to the construction of RELs/RLs, in terms of using historical data, adjusting for national circumstances and being transparent about the carbon pools and gases that have been included or omitted. The quality of both available data and data to be collected by countries is a key issue that underpins the construction of forest RELs/RLs. We used subnational data

Table A7 Methods for analysing national REDD+ strategies: description and key objectives

Method	Objective and description
Institutional capacity	Determine baseline capacity levels in all 99 non-Annex I countries
	Develop country case studies of capacity assessments to understand why capacity remains low and what can be done about it
Reference emissions levels	Develop and test a stepwise approach using multiple regression models
	Develop country case studies using statistical models for predicting future trends in GHG emissions
Emissions factors	National assessments of data sources for UNFCCC reporting of GHG emissions
	Synthesis of scientific literature for improved emissions factors for tropical wetlands and for non-CO_2 GHGs
	Field work to develop new emissions factors with host country partners in technical services
Community-based monitoring of forest carbon	Comparative field testing of forest inventory by communities vs. by professional foresters, to assess cost–accuracy tradeoffs
	Participative design of forest monitoring for community needs that include measurements required for carbon monitoring
	Sociological research on attitudes and changes in attitudes associated with community-based forest monitoring

with different aggregation levels to test our approach, which uses a regression modelling framework. This allows countries to model future deforestation and analyse scenarios of plausible future emissions. This analytical tool should help countries determine likely future emissions ranges with transparent assumptions about known drivers of deforestation.

The availability of emissions factors for implementing IPCC methods for national GHG accounting continues to be a major constraint to implementing MRV in many developing countries. Our team has assessed the current state of knowledge of these factors in target countries and important forest ecosystems, and set priorities for collecting additional data. They are now working with technical services in the countries to collect the data needed to improve inventories. We are focusing on land use change in tropical wetlands and African forests, where data are particularly lacking. We have generated new biomass equations and excavated root systems to estimate root:shoot ratios. We have taken many flux measurements to assess the effects of land use change on soil respiration and on the fluxes of N_2O and CH_4, using

chamber techniques. We have also measured the effects of fertiliser on peat decomposition. By participating in this work, local researchers in Africa, Asia and Latin America are developing their skills in empirical quantitative methods.

Lastly, research on developing appropriate community-based measurement methods to facilitate the participation of local stakeholders in the process is beginning. Communities can provide a valid stream of data to national MRV systems and we are working in several locations to design and test approaches. We are comparing the accuracy and cost of forest inventories done by communities with those done by forestry professionals. We expect that community participation should increase the transparency of REDD+ studies and enhance community ownership of REDD+ activities. We will test this assumption empirically through sociological research.

Integration

This book represents the first synthesis of research results from CIFOR's Global Comparative Study. Unlike our previous books on REDD+, this volume presents new research findings from a programme specifically designed to support REDD+ policy development and implementation. The three research components of the GCS provide different angles from which to observe the development of REDD+ in first generation countries. The first two components differ in their scales of analysis, but in reality these two scales connect in countries. Likewise in the GCS, the scales connect and some of the more interesting interdisciplinary research is being developed at the interface between the components. MRV spans several scales and forms the conduit through which information is collected and moves across scales and levels. It serves as the basis for equity assessments as it determines who has done what in terms of emission reductions. The interaction of all three components of this research programme, and the interface between different disciplines, is where the essential learning is taking place. Connecting research across multiple scales and levels, and the required interdisciplinarity for sound and comprehensive research, also represent challenges.

We face additional challenges from the fact that REDD+ is a moving target, but it is moving slower than expected. Working with demonstration projects we also face challenges of confidentiality and sensitivities with respect to sharing and using data. Research on REDD+ faces numerous problems, and the GCS REDD+ study is no exception. Box A1 summarises some of these challenges.

REDD+ is a rather complex mechanism to ensure environmental integrity and real emissions reductions, and it will be implemented in countries with limited capacities. We believe that for REDD+ to be effective, the realities on

Box A1 Challenges of REDD+ research

Frances Seymour

REDD+ presents several challenges to researchers. The **idea and scope of REDD+** are evolving rapidly. Since the idea of including deforestation in developing countries was tabled at UNFCCC COP11 in 2005, Reducing Emissions from Deforestation (RED) has added a second 'D' for forest degradation, and then a '+' for the conservation of forest carbon stocks, sustainable management of forests and enhancement of forest carbon stocks. As Chapter 3 describes, REDD+ was initially conceptualised as a global to national to local PES scheme. Over time, the idea has significantly broadened to incorporate co-benefits, such as biodiversity conservation and poverty reduction, and is increasingly decoupled from performance-based payments. The term 'REDD+' can be variously understood as an objective, a proposed mechanism under the UNFCCC, or a broad suite of policies, programmes and projects moving forward in its name. Researchers are thus challenged to define a limited scope for studying REDD+.

The **practice of REDD+** is advancing slowly. Following inclusion in the Bali Action Plan at COP13 in Bali and the announcement of significant funding commitments, many expected REDD+ implementation to move forward quickly. In part due to the failure to reach an overall agreement on climate change at COP15 in 2010, and the associated decline in the near-term promise of market-based finance, the pace of progress has slowed at all levels. Researchers employing methods that compare circumstances before and after interventions are left waiting for REDD+ interventions to happen, having collected baseline data. Much analysis of the conditions necessary and sufficient for REDD+ to be effective, efficient and equitable remains speculative. For example, the four conditions outlined in Chapter 5 as necessary for effective national-level policy making have not yet been observed in any study countries.

REDD+ is multiscale. As observed in this book, REDD+ efforts at each level are inextricably tied to the progress of REDD+ at other scales. The original research design of the GCS on REDD+ gave insufficient attention to the subnational (or jurisdictional) scale, which has emerged as an important level for land use planning, programme implementation and policy development (for example, in the case of the Governors' Forests and Climate Task Force).

REDD+ is controversial. REDD+ is a contested idea, with proponents and opponents clashing in forums ranging from international negotiations through national media to academic journals. Researchers must navigate ideologically-charged terrain to avoid the fact and appearance of bias.

> **Box A1** continued
>
> **Some aspects of REDD+ are sensitive.** Data relevant to REDD+ can include sensitive information from proprietary business plans, maps showing illegal land conversion, and testimony regarding violent conflicts over land tenure. Researchers gathering data on REDD+ often have difficulty winning the trust of key informants and must pay particular attention to honouring confidentiality commitments.
>
> **Field work is difficult.** Collecting data in remote areas, where forests are still intact, has its hazards. GCS field crews have encountered tiger poachers, vehicle breakdowns, poor road conditions, hornet attacks, 'rustic' accommodation, fire, smoke and other challenges associated with tropical field work. In most places, medical facilities are rudimentary and rescue organisations do not exist.

the ground in these countries must be taken into account. REDD+ has the potential to be a transformative programme for tropical forests, but its success is not guaranteed. Through our ongoing research efforts in the GCS, we aspire to provide enough early lessons to avoid major pitfalls and mistakes that could derail the whole process. To paraphrase Albert Einstein, REDD+ should be as simple as possible, but not simpler!

Acknowledgements

Component 1

The methods and guidelines used in this research component were designed by Maria Brockhaus, Monica Di Gregorio and Sheila Wertz-Kanounnikoff. The methods applied for the media analysis and policy network analysis build on work undertaken in COMPON,[2] led by Jeffrey Broadbent and financially supported by the National Science Foundation. Monica Di Gregorio and Maria Brockhaus adapted the COMPON 'Protocol for Media Analysis' and the 'Protocol for Policy Network Analysis'. Many people contributed to country case studies, including media analysis, policy network analysis and country profiles, and have provided data, analysis and support.

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2   http://compon.org

Moira Moeliono (Indonesia); Sheila Wertz-Kanounnikoff (Mozambique); Thuy Thu Pham (Nepal); Arild Angelsen (Norway); Andrea Babon (PNG); Mary Menton (Peru); Salla Rantala (Tanzania); Thuy Thu Pham and Moira Moeliono (Vietnam).

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3   www.cifor.org/nc/online-library/browse/view-publication/publication/3283.html

4   www.cifor.org/publications/pdf_files/Books/BSunderlin1001.pdf

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Field research teams in the six study countries are composed of the following individuals.

Brazil: Amy Duchelle (country representative); Riyong Kim Bakkegaard, Marina Cromberg, Maria Fernanda Gebara, Raissa Guerra, Tadeu Melo (field research supervisors); Carolle Utrera Alarcon, Marileide Gonçalves, Leonela Guimarães, Thiago Machado Greco, Giselle Monteiro, José Roberio Rodrigues, Kaline Rossi (encoders).

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GCS project support

Donors

Terms and abbreviations

2BSvs	Biomass biofuels sustainability voluntary scheme
3E	Effectiveness, efficiency and equity
4Is	Institutions, interests, ideas and information
AAU	Assigned amount unit
ACR	American Carbon Registry
AD	Avoided deforestation
ADg	Avoided degradation
ADM	Archer Daniels Midland
AF	Amazon Fund
AF	Afforestation
AFOLU	Agriculture, forest and other land uses
AfD	Agence Française du Développement (French Development Agency)
AG	Aboveground biomass
AIDER	Associación para la Investigación y el Desarrollo Integral (Association for Integral Research and Development, Peru)
ANSAB	Asia Network for Sustainable Agriculture and Bioresources

APD	Avoiding planned deforestation
AR	Afforestation and reforestation
AR4	Fourth Assessment Report of the United Nations Intergovernmental Panel on Climate Change
ARR	Afforestation, reforestation and revegetation
AUDD	Avoiding unplanned deforestation and/or degradation
AWG-LCA	Ad Hoc Working Group on Long-term Cooperative Action of the United Nations Framework Convention on Climate Change
BAM	Bosques Amazonicos
BAM	Border adjustment measure
BAU	Business as usual
BINGO	Big international nongovernmental organisation
BG	Below ground biomass
BNDES	Banco Nacional de Desenvolvimento Econômico e Social (National Bank for Economic and Social Development, Brazil)
BRIC(S)	Brazil, Russia, India, China, (South Africa)
BSM	Benefit sharing mechanism
C	Carbon
CAIT	Climate analysis indicators tool
CAT	Cap and trade
CBD	Convention on Biological Diversity
CBFF	Congo Basin Forest Fund
CBFM	Community-based forest management
CBO	Community-based organisation
CC	Climate change
CCBA	Climate, Community and Biodiversity Alliance
CCB(S)	Climate, Community and Biodiversity (Standards)
CCCSD UPNG	Centre for Climate Change and Sustainable Development, University of Papua New Guinea
CCDS	Climate change development strategy
CDM	Clean Development Mechanism
CED	Centre pour l'Environnement et le Développement (Centre for Environment and Development, Cameroon)
CEDLA	Centre for Latin American Research and Documentation, the Netherlands
CER	Certified emission reduction
CERDA	Centre of Research and Development in Upland Areas, Vietnam
CFM	Community forest management

CGIAR	CGIAR is a global research partnership for a food secure future
CH$_4$	Methane
CI	Conservation International
CIEM	Central Institute for Economic Management, Vietnam
CIFOR	Center for International Forestry Research
CODELT	Conseil pour la Défense Environnementale par la Légalité et la Traçabilité (Council for Environmental Defense through Legality and Traceability, Democratic Republic of Congo)
CO$_2$	Carbon dioxide
COBA	Communauté de Base (local forest management associations, Madagascar)
COMESA	Common Market for Eastern and Southern Africa
COMIFAC	Central Africa Forest Commission
COMPON	Comparing Climate Change Policy Networks
COMTRADE	United Nations Commodity Trade Statistics Database
COP	Conference of the Parties
CPO	Crude palm oil
CRBM	Campagna per la Riforma della Banca Mondiale (Campaign for the Reform of the World Bank, Italy)
CSO	Civil society organisation
CSR	Corporate social responsibility
CT-REDD	Comité Technique REDD
DAC	Development Assistance Committee of the OECD
DAR	Derecho, Ambiente y Recursos Naturales (Law, Environment and Natural Resources, Peru)
dbh	Diameter at breast height
DD	Deforestation and (forest) degradation
DMA	Defense Mapping Agency, USA
DNPI	Dewan Nasional Perubahan Iklim (National Council on Climate Change, Indonesia)
DoF	Department of Forestry
DRC	Democratic Republic of the Congo
DW	Dead wood
EC	European Commission
ECG	Expert Consultation Group
EF	Emission factor
EIU	Economist Intelligence Unit
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária (Brazilian Enterprise for Agricultural Research)

ENGO	Environmental nongovernmental organisation
ER	Emission reduction
ES	Environmental services
ETM	Enhanced thematic mapper
ETS	Emissions trading scheme (European Union)
EU-RED	European Union Renewable Energy Directive
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization of the United Nations Statistical Database
FAS	Fundação Amazonas Sustentável (Amazonas Sustainable Foundation, Brazil)
FCPF	Forest Carbon Partnership Facility
FDI	Foreign direct investment
FFI	Fauna and Flora International
FIP	Forest Investment Programme
FLA	Forest land allocation
FLEGT	Forest Law Enforcement, Governance and Trade (European Union)
FONAM	El Fondo Nacional del Ambiente (National Fund for Environment, Peru)
FOEI	Friends of the Earth International
FPIC	Free, prior and informed consent
FRA	Forest resource assessment (UN Food and Agriculture Organization)
FSC	Forest Stewardship Council
G-20	The Group of Twenty Finance Ministers and Central Bank Governors
GCF	Governors' Climate and Forests Task Force
GCS	Global Comparative Study on REDD+
GDP	Gross domestic product
GEF	Global Environment Facility
GEO	Group on Earth Observations
GFA - Envest	A consulting firm in Cameroon
GHG	Greenhouse gas
GIS	Geographic information system
GOFC-GOLD	Global Observation of Forest and Land Cover Dynamics
GPG	Good practice guidance
GRIF	Guyana REDD+ Investment Fund
GSO	General Statistics Office
Gt	Gigatonne

ha	Hectare
HCVF	High conservation value forests
HIMA	Hifadhi ya Misitu ya Asili (Piloting REDD in Zanzibar through Community Forest Management, Tanzania)
HLPE	High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security
IBGE	Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics)
IBIF	Instituto Boliviano de Investigación Florestal (Bolivian Forest Research Institute)
ICV	Instituto Centro de Vida (Center of Life Institute, Brazil)
ICDP	Integrated conservation and development project
ICEL	Indonesian Center for Environmental Law
IDB	Inter-American Development Bank
IDESAM	Institute for the Conservation and Sustainable Development of Amazonas
IE	Infinite Earth
IEA	International Energy Agency
IFM	Improved forest management
IGES	Institute for Global Environmental Strategies
ILUC	Indirect land use change
IMAFLORA	Instituto de Manejo e Certificação Florestal e Agrícola (Institute for Agriculture and Forest Management Certification, Brazil)
IMC	Instituto de Mudanças Climáticas e Regulação de Serviços Ambientais (Institute of Climate Change and Ecosystem Services Regulation, Brazil)
INCAS	Indonesian national carbon accounting system
INCRA	Instituto Nacional de Colonização e Reforma Agrária (National Institute for Colonization and Agrarian Reform, Brazil)
INGO	International nongovernmental organisation
INPE	Instituto Nacional de Pesquisas Espaciais (National Institute for Space Research, Brazil)
Inpres	Instruksi Presiden (Presidential Instruction, Indonesia)
Int	International
IPAM	Instituto de Pesquisa Ambiental da Amazônia (Amazon Environmental Research Institute, Brazil)
IPCC	Intergovernmental Panel on Climate Change
ISCC	International Sustainability & Carbon Certification
ISO	International Organization for Standardization

IUCN	International Union for the Conservation of Nature
IWGFF	Indonesian Working Group on Forest Finance
IWG-IFR	Informal Working Group – Interim Finance for REDD+
JCN	Joint concept note
JFM	Joint forest management
JGI	Jane Goodall Institute
KCCP	Ketapang Community Carbon Pool, Indonesia
KFCP	Kalimantan Forest Carbon Partnership, Indonesia
KfW	Kreditanstalt fuer Wiederaufbau (Reconstruction Credit Institute, Germany)
LCDS	Low carbon development strategy
LiDAR	Light detection and ranging
LoI	Letter of intent
LSPP	Lembaga Studi Pers dan Pembangunan (the Institute for Press and Development Studies, Indonesia)
LU	Land use
LUC	Land use change
LULUCF	Land use, land use change and forestry
MCDI	Mpingo Conservation & Development Initiative, Tanzania
MDG	Millennium Development Goal
MfDR	Managing for development results
MIFEE	Merauke Integrated Food and Energy Estate, Indonesia
MINEP	Ministry of Environment and Nature Protection, Cameroon
MLG	Multilevel governance
MMA	Ministério do Meio Ambiente (Ministry of Environment, Brazil)
MoU	Memorandum of understanding
MRV	Measurement/Monitoring, reporting and verification
n/a	Not applicable or not answered
N$_2$O	Nitrous oxide
NAFORMA	National Forest Resource Assessment, Tanzania
NAMA	Nationally appropriate mitigation actions
NASA	National Aeronautics and Space Administration
Nat	National
NCSU	North Carolina State University, USA
NEC	National Executive Council, UK
NGGIP	National Greenhouse Gas Inventory Programme
NGO	Nongovernmental organisations
NOK	Norwegian Kroner

NORDECO	Nordic Agency for Development and Ecology
NOx	Nitrogen oxide
NPCC	National Policy on Climate Change
NRI-PNG	National Research Institute, Papua New Guinea
NRS	National REDD+ Steering Committee
NTF	National Trust Fund, Tanzania
OAR	Option assessment report (Meridian Institute)
OCCD	Office of Climate Change and Development, Papua New Guinea
ODA	Official development assistance
OECD	Organisation for Economic Cooperation and Development
ONACC	Observatoire National sur les Changements Climatiques (National Observatory on Climate Change, Cameroon)
ONFI	Organisation Nationale Forestière Internationale
PAMs	Policies and measures
PES	Payments for environmental services
PFM	Participatory forest management
PNGFA	Papua New Guinea Forestry Authority
PWC	PricewaterhouseCoopers
RaCSA	Rapid carbon stock appraisal
RCFEE	Research Centre for Forest Ecology and Environment, Forest Science Institute of Vietnam
RED	Reducing emissions from deforestation
REDD	Reducing emissions from deforestation and forest degradation
REDD DA	Reduced emission from deforestation and forest degradation - demonstration activity
REDD+	Reducing emissions from deforestation and forest degradation and enhancing forest carbon stocks
REDD-MF	REDD methodology modules
REDES	Rede de Desenvolvimento, Ensino e Sociedade (Network for Development, Education and Society, Brazil)
REL	Reference emission level
REPAR	Réseau des Parlementaires pour la Gestion Durable des Écosystèmes Forestières d'Afrique Centrale (Network of Parliamentarians for Sustainable Management of Forest Ecosystems in Central Africa)
RFF	Resources for the Future
REPOA	Research on Poverty Alleviation, Tanzania
RL	Reference level

R-PIN	Readiness Plan Idea Notes
RPP	Readiness Preparation Proposal
RRI	Rights and Resources Initiative
RS	Restoration
RSB	Roundtable on Sustainable Biofuels
RSBA	RED Bioenergy Sustainability Assurance
SABLs	Special agriculture and business leases
SBSTA	Subsidiary Body for Scientific and Technological Advice of the United Nations Framework Convention on Climate Change
SES	Social and environmental standards
SESA	Strategic environmental and social assessment
SFEs	State forest enterprises
SIA	Social impact assessment
SIGSIF	Registrados no Sistema de Informações Gerenciais do Serviço de Inspeção Federal (Management Information System of the Federal Inspection System, Brazil)
SIF	Serviço de Inspeção Federal (Federal Inspection Service, Brazil)
SISA	System of incentives for environmental services
SMART	Specific, measurable, achievable, relevant and time bound
SNV	Netherlands Development Organisation
Son La FD	Son La Forestry Department, Vietnam
SOC	Soil organic carbon
SSA	Sub-Saharan Africa
TaTEDO	Tanzania Traditional Energy Development and Environmental Organization
TDERM	Tropical deforestation emissions reduction mechanism
TFCG	Tanzania Forest Conservation Group
TFWG	Tanzania Forestry Working Group
TI	Transparency International
TM	Thematic mapper
TNC	The Nature Conservancy
UEM	Universidade Eduardo Mondlane (Eduardo Mondlane University, Mozambique)
UKP4	Unit Kerja Presiden Pengawasan dan Pengendalian Pembangunan (The President's Unit for Development Control and Monitoring, Indonesia)
UMB	Universitetet for miljø- og biovitenskap (Norwegian University of Life Sciences)
UNC	University of North Carolina, USA

UNCTAD	United Nations Conference on Trade and Development
UN-DESA	United Nations Department of Economic and Social Affairs
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNORCID	United Nations Office for REDD+ Coordination in Indonesia
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
UoM	University of Melbourne, Australia
VCS	Verified carbon standard (formerly known as voluntary carbon standard)
VCU	Verified carbon unit
VER	Verified emission reduction
VPA	Voluntary partnership agreement
VRO	Vietnam REDD+ Office
WCED	World Commission on Environment and Development
WGIII	Working Group III of the IPCC
WRI	World Resources Institute
WU	Wageningen University, the Netherlands
WWF	World Wildlife Fund/Worldwide Fund for Nature

Glossary

4Is
> Institutions (rules, path-dependency or stickiness), Interests (potential material advantages), Ideas (policy discourses, underlying ideologies, beliefs) and Information (data and knowledge, its construction and use)

Activity data
> Data on the magnitude of a human activity resulting in emissions or removals. For REDD+, this usually refers to land areas in management systems, deforestation or degradation, but it can also refer to other things, such as the level of inputs (e.g. fertiliser).

Additionality
> Additionality is the requirement that a REDD+ activity or project should generate benefits, such as reduced emissions or increased removals, that would not have happened without the activity (i.e. the business as usual scenario).

Afforestation
> Afforestation is the direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land, through

planting, seeding and/or the human-induced promotion of natural seed sources.

AFOLU

AFOLU is an acronym for 'agriculture, forestry and other land use.' This term was put forward in the Intergovernmental Panel on Climate Change National Greenhouse Gas Inventory Guidelines (IPCC GL) (2006) to extend the 1996 Guidelines, which covered only agriculture and forestry.

Allometric equation

Allometric equations express the quantitative relationship between the dimensions of a tree and its biomass. They are used to estimate the biomass of trees based on easy measures such as tree height or diameter at breast height (dbh).

Annex I and Non-Annex I countries

Under the UN Framework Convention on Climate Change (UNFCCC), nations fall into two categories: developed countries (Annex I countries) and developing countries (Non-Annex I countries). In accordance with the principle of 'common but differentiated responsibilities,' Annex I countries have greater commitments to enacting policy and reporting than Non-Annex I countries. Most Annex I countries have committed to reducing greenhouse gas (GHG) emissions under the Kyoto Protocol.

Approach (referring to activity data)

There are three approaches to collecting activity data for GHG inventories, according to the IPCC GL:
Approach 1: Total land use area, with no data on conversions between land uses
Approach 2: Total land use area, including changes between categories
Approach 3: Spatially explicit land use conversion data.

Baseline

The term is used in different ways, but normally to signify a business as usual scenario. In REDD+, this represents the projected anthropogenic changes in forest carbon stock that would occur in the absence of the proposed project activity or policy intervention. See also reference level. In project evaluations, 'baseline' can also refer to pre-project conditions (e.g. a 'baseline study' involves collecting socio-economic and ecological data before a project starts, implicitly assuming that any change is due to the project).

Benefit sharing

The distribution of direct and indirect net gains (monetary and non-monetary benefits) from the implementation of REDD+

Biofuel

Fuel derived from organic matter, such as wood, plants, crops and waste

Biomass

The total dry mass of living organic matter

Business as usual

A policy neutral reference to future emissions or removals, estimated using projections of future emission or removal levels without any REDD+ activity. The term is also used in a political economy sense to mean the continuation of policies and practices consistent with the *status quo* in the pre-REDD+ political economy of a country.

Carbon market

A market in which carbon emission reductions are traded, usually in the form of carbon credits (verified or certified emission reductions). Carbon markets take the form of: i) a voluntary market (where emission reduction targets are not regulated); or ii) a compliance market (where carbon credits are traded to meet regulated emission reduction targets). The largest carbon market is currently the EU's Emissions Trading System (ETS).

Carbon offset

A reduction in emissions or increase in removals made to compensate for an emission made elsewhere. Carbon offsets are measured in metric tonnes of CO_2-equivalent.

Carbon pool

A reservoir that accumulates or releases carbon. The Marrakesh Accords recognise five main carbon pools in forests: aboveground biomass, belowground biomass, dead wood, litter and soil organic matter.

Carbon sequestration

The removal of carbon from the atmosphere to long-term storage in sinks through physical or biological processes, such as photosynthesis

Carbon sink

A pool (reservoir) that removes carbon from the active part of the carbon cycle

Carbon stock

The quantity of carbon contained in a carbon pool

Clean development mechanism (CDM)

An offset mechanism under Article 12 of the Kyoto Protocol designed to assist Annex I countries in meeting their emission reduction targets, and

to assist Non-Annex I countries to achieve sustainable development. The CDM allows Annex I countries to finance and implement projects that reduce the emissions in Non-Annex I countries so that they can get credits (certified emission reductions) to meet their own emission reduction targets.

Co-benefit

Benefits arising from REDD+ in addition to climate mitigation benefits, such as enhancing biodiversity, enhancing adaptation to climate change, alleviating poverty, improving local livelihoods, improving forest governance and protecting rights

Compliance market

Markets created and regulated by mandatory national or international climate regimes. They allocate or auction GHG emission limits (quotas or caps) to countries, subnational units or companies and allow them to buy carbon credits to meet their cap, or sell them if they emit less than their cap (i.e. trade, thus also known as cap and trade).

Compulsory/compliance/mandatory market

Markets created by international, national or regional legal regimes to limit GHG emissions

Conference of Parties (COP) to the UNFCCC

The governing body of the UN Framework Convention on Climate Change (UNFCCC). It meets once a year.

Deforestation

The permanent conversion of land from forest to non-forest. In the Marrakesh Accords, deforestation is defined as 'the direct human-induced conversion of forested land to non-forested land.' FAO defines deforestation as 'the conversion of forest to another land use or the long-term reduction of the tree canopy cover below the minimum 10% threshold.'

Degradation

Degradation refers to changes within the forest that negatively affect the structure or function of the forest stand or site, and thereby lower its capacity to supply products and services. In the context of REDD+, degradation can be measured in terms of reduced carbon stocks in forests that remain as forests. No formal definition of degradation has yet been adopted, because many forest carbon stocks fluctuate due to natural cyclical causes or management practices.

Direct market mechanism
Mechanisms that raise funding from the direct sale of verified or certified emissions reductions in a voluntary or compliance carbon market

Emission factor
A factor that quantifies the emission or removal of a GHG per unit of activity data, e.g. per ha of deforestation

Externality
A cost or benefit incurred to actors other than the actor(s) undertaking the action. Also referred to as spillover or side effect

Forest
FAO defines forest as having minimum canopy cover of 10%, minimum tree height *in situ* of 5 m, minimum area of 0.5 ha, and where agriculture is not the dominant land use. The UNFCCC allows for a more flexible forest definition: minimum canopy cover 10–30%, minimum tree height 2–5 m, minimum area 0.1 ha. Individual countries have their own definitions.

Forest Carbon Partnership Facility (FCPF)
A World Bank programme to help developing countries reduce emissions from deforestation and forest degradation. Objectives include capacity building for REDD+ and helping countries prepare for future systems of financial incentives under REDD+.

Free, prior and informed consent (FPIC)
The UN Declaration on the Rights of Indigenous Peoples (2007) upholds the rights of indigenous people to grant or withhold their FPIC for: activities affecting the lands they have traditionally owned, occupied, or used; any proposed relocation and; any legal or administrative measures affecting them. FPIC implies that consent has been obtained without coercion in advance of project authorisation and commencement, and that the affected parties fully understand the scope, duration and potential impacts of the activities.

Fund-based approach
Approach that mobilises funding for REDD+ through budgetary contributions and distributes funding on agreed conditions and criteria

G-20
The Group of Twenty Finance Ministers and Central Bank Governors. It includes 19 country members and the European Union. The objectives of the G-20 include coordinating policy to achieve global economic stability,

promoting financial regulations that reduce risks and prevent future financial crises and creating new international financial architecture.

Implementation costs
The costs of setting up a system and putting into place the necessary policies and actions to achieve REDD+

Indigenous people
There is no universally agreed definition of indigenous people, although some international legal instruments provide definitions. According to the United Nations, rather than define indigenous people, the most useful approach is for them to identify themselves according to the fundamental right to self-identification set out in declarations of human rights.

Indirect land use change
The unintended consequence or side effects on land use (and emissions) arising from implementing projects or policies; for example, growing biofuel feedstocks on agricultural land may result in land elsewhere being allocated to food production.

Indirect market mechanism
A mechanism that raises funding for REDD+ through linking forest conservation to transactions in non-carbon markets, e.g. for commodities or services related to drivers of deforestation

IPCC 2006 Guidelines (IPCC GL)
The Intergovernmental Panel on Climate Change (IPCC) published this methodological report in 2006. It provides guidelines for national GHG inventories.

Kyoto Protocol
A 1997 agreement under the UNFCCC. Annex I countries that ratified the Protocol have committed to reducing their emissions of carbon dioxide and five other GHG by an average of 5.2 % between 2008 and 2012, compared to their 1990 level. The Kyoto Protocol now involves 191 countries, but accounts for less than 64% of GHG emissions. As of April 2012, the USA is the only signatory nation that has not ratified the Protocol and Canada renounced the Protocol in December 2011. The first commitment period of the Kyoto Protocol ends on 31 December 2012.

Leakage
In the context of climate change, carbon leakage happens when interventions to reduce emissions in one area (subnational or national)

lead to an increase in emissions in another area. The official UNFCCC term is 'displaced emissions.'

LULUCF
Acronym for 'land use, land-use change and forestry.' LULUCF activities are covered under Articles 3 (paragraphs 3 and 4), 6 and 12 of the Kyoto Protocol.

Market-based funding
Generating funds from a voluntary or compliance carbon market for REDD+ by selling verified or certified emission reductions. The buyers can be individuals, private companies or public entities. Market-based funding can also refer to generating money from non-carbon markets, e.g. an aviation tax earmarked for climate mitigation and adaptation.

Multilateral funds
Funds that receive contributions from more than one donor government and are in most cases administered by international organisations

Non-market funding
Traditional forms of funding, such as official development assistance and domestic government spending

Opportunity cost
In the REDD+ setting this refers to forgone profits from the best alternative land use.

Path-dependence
Path-dependence explains how the scope of current policy decisions is limited by decisions made in the past, even though past circumstances may no longer be relevant (i.e. 'history matters').

Payments for ecosystem/environmental services (PES)
A buyer who values environmental services pays the provider or manager of the land use that supplies those services; in return, the seller continues to deliver them. In REDD+, PES refers to a results-based system in which payments are made for reduced emissions or increased removals relative to an agreed reference level.

Perverse incentive
A policy that creates an incentive yielding unintended and undesirable results

Phases
These refer to different stages of REDD+ implementation in countries:
Phase 1: Establishment of REDD+ frameworks, strategies, policies and accounting frameworks (REDD+ readiness)
Phase 2: Implementation of REDD+ policies and measures, and possibly payments based on their implementation
Phase 3: Results-based payments for REDD+ (i.e. for emissions and removals).

Policies and measures (PAMs)
In REDD+, PAMs are nationally enacted policies and actions that countries undertake to reduce carbon emissions or increase removals.

Readiness
REDD+ country actions – including capacity building, policy design, consultation and consensus building, and testing and evaluation of a REDD+ national strategy – that are taken prior to the comprehensive implementation of REDD+

Reducing emissions from deforestation and forest degradation (REDD) and enhancing forest carbon stock in developing countries (REDD+)
The term 'REDD+' is used in many ways. A *broad* definition, based on the official COP13 terminology, holds that REDD+ comprises local, subnational, national and global actions whose primary aim is to reduce emissions from deforestation and forest degradation and enhance forest carbon stocks (increase removals) in developing countries. A *narrower* definition is that REDD+ *also* includes results-based or conditional payments, which was a core idea when REDD+ was first launched.

From another perspective, REDD+ may not only refer to actions: it may refer to the overall *idea*, the *objective* of reduced emissions and increased removals, the set of *policies or actions* necessary to achieve that objective, the *outcome* as measured in reduced emissions and increased removals or the *process* involving all of these elements. REDD (without the plus) is used to refer only to deforestation and forest degradation, and does not include forest carbon stock enhancement.

Reference level
Two distinct meanings and different uses may be distinguished for RLs. First, the RL is used for the *business as usual scenario* or *baseline* for changes in carbon stocks, which is used as a benchmark for measuring the impact of REDD+ policies and actions and to define emission reductions. In this sense, reference level can refer to gross emission levels from deforestation and forest degradation (RL) and to net emission levels from all emissions and removals from deforestation, forest degradation, conservation, sustainable

management of forests and enhancement of forest carbon stocks (REL). Second, in a result-based system, the reference level is used as a benchmark for estimating payments to countries, subnational units or projects for emissions reductions. In this book, we refer to this use as the financial incentive benchmark (FIB).

Reforestation

Reforestation is the direct human-induced conversion of non-forested land to forested land, through planting, seeding and/or the human-induced promotion of natural seed sources on land that was forested, but that has been converted to non-forested land.

Removal

Refers to the removal of CO_2 or other GHGs from the atmosphere and their storage in carbon pools, such as those found in forests. See also carbon sequestration.

Root:shoot ratio

A measure of the ratio of biomass in the roots to that in the shoots. This ratio is often used to estimate the below-ground component of the biomass carbon pool based on measurements of aboveground biomass.

Shifting cultivation

An agricultural system in which plots of land are cultivated temporarily, then abandoned when the soil loses its fertility or weeds become dominant. The plot of land is then left to be reclaimed by natural vegetation.

Slash-and-burn agriculture

An agricultural practice that involves cutting and burning forests or woodlands to create fields, typically part of a shifting cultivation system

State autonomy

The degree to which a state can make policy decisions independently from social groups

Swidden agriculture

An agricultural practice that involves cutting and burning of forests or woodlands to create fields, typically part of a shifting cultivation system (also referred to as slash and burn agriculture)

Tier

The IPCC Good Practice Guidance tiers are levels of methodological complexity for measuring GHG emissions:
Tier 1 is the most basic and uses global default values for carbon stocks.
Tier 2 is intermediate and uses national values.

Tier 3 is most demanding in terms of complexity and data requirements, using site-specific values for carbon stocks.

Transaction costs

A cost that is incurred when making an economic exchange. It includes costs related to search and information, enforcement, implementation and monitoring. Transaction costs are typically used in relation to a PES system, but sometimes are also used beyond the original meaning, to include any REDD+ costs, except opportunity costs.

Transformational change

A change in attitudes, discourse, power relations and deliberate actions necessary to lead policy formulation and implementation away from business as usual policy approaches.

UN-REDD Programme

The UN-REDD Programme is a collaborative programme for reducing emissions from deforestation and forest degradation in developing countries. It includes the FAO, the UNDP and the UNEP in a multidonor trust fund, established in July 2008, which pools resources and funds programme activities. The programme provides support to countries for readiness activities and policy development and implementation.

Voluntary market

Markets that function alongside compliance markets. Buyers are companies, governments, NGOs and individuals who are voluntarily buying verified emissions reductions (VER), e.g. to offset their own emissions.

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As an idea, REDD+ is a success story: It is a fresh approach generating hope of significant result-based funding to address an urgent need for climate change mitigation. The idea has been sufficiently broad to serve as a canopy, under which a wide range of actors can grow their own trees.

REDD+ faces huge challenges: Powerful political and economic interests favour continued deforestation and degradation. Implementation must be coordinated across various government levels and agencies; benefits must be distributed and need to balance effectiveness and equity; tenure insecurity and safeguards must be genuinely addressed; and transparent institutions, reliable carbon monitoring and realistic reference levels are all required to support result-based systems.

REDD+ requires – and can catalyse – transformational change: New economic incentives, new information and discourses, new actors and new policy coalitions have the potential to move domestic policies away from the business as usual trajectory.

REDD+ projects are hybrids in high deforestation areas: Project proponents are pursuing strategies that mix the enforcement of regulations and support to alternative livelihoods (ICDP) with result-based incentives (PES). Projects tend to be located in high deforestation and high forest carbon areas, yielding high additionality if they succeed.

'No regret' policy options exist: Despite uncertainty about the future of REDD+, stakeholders need to build political support and coalitions for change, invest in adequate information systems, and implement policies that can reduce deforestation and forest degradation, but are desirable regardless of climate objectives.

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